Ref.: HYDHZMBEEM00_0_2038L.14 25 June 2014

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.4 for December 2013 to February 2014 (Revision 2)**

Reference is made to the submission of Quarterly EM&A Report No.4 for December 2013 to February 2014 version 2.0 dated 23 June 2014 certified by the ET Leader provided to us *via* email on 23 June 2014.

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. H F Chan (By Fax: 3107 1388)
DCVJV – Mr. Chu Chung Sing (By Fax: 3121 6688)

Internal: DY, YH, CL, ENPO Site

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ENVIRON Hong Kong Limited 英環香港有限公司
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**www.environcorp.com**

**Dragages -China Harbour-VSL JV**

# Contract HY/2011/09

# Hong Kong-Zhuhai-Macao Bridge

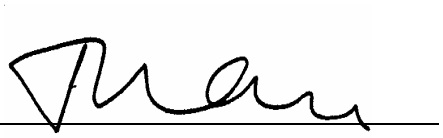
# Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill

# Quarterly EM&A Report

# December 2013 to February 2014

# (Version 2.0)

Certified By



Dr. H.F. Chan
Environmental Team Leader
(Date: 23 June 2014)

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 4th 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 2013 and February 2014.

## 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 | 4th, 10th, 16th, 21st and 27th December 2013<br>2nd, 8th, 14th, 20th, 24th and 30th January 2014<br>5th, 11th, 17th, 21st and 27th February 2014 |
| 24-hr TSP Monitoring | |
| Noise Monitoring | 5th, 11th , 17th , 23rd and 30th December 2013<br>9th, 15th , 21st and 27th January 2014<br>6th, 12th , 18st and 24th February 2014 |
| Water Quality Monitoring | 2nd, 4th, 6th, 9th, 11th, 13th, 16th, 18th, 20th, 24th, 26th , 28th and 30th December 2013<br>2nd, 4th, 6th, 8th, 10th, 13th, 15th, 17th, 20th, 22th, 24th , 28th and 30th January 2014<br>1st, 4th, 6th, 8th, 11th, 13th, 15th, 17th, 19th, 21st, 25th and 27th February 2014 |
| Dolphin Monitoring (Line-transect Vessel Surveys) | 3rd and 20th December 2013<br>3rd and 24th January 2014<br>24th and 26th February 2014 |
| (1)(2)(3) Additional Land-based Dolphin Behaviour and Movement Monitoring | 22nd and 27th January 2014 |
| Environmental Site Inspection | 3rd, 10th, 17th , 24th and 31st December 2013<br>7th, 14th , 21st and 28th January 2014<br>5th, 11th , 18th and 28th February 2014 |
| Archaeological Site Inspection | 30th December 2013 |

Remark: (1) In view of the construction activities have no significant change in December 2013, no additional land-based dolphin behavior and movement monitoring was conducted in December 2013.

(2) Detailed monitoring methodology and results in January 2014 will be provided in a separate report after the completion of full set of additional land-based dolphin behavior and movement monitoring.

(3) Due to the short notice given to Dolphin Specialist, additional land-based dolphin behaviour and movement monitoring could not be arranged on 27 and 28 February 2014.

**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 | 4 | 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 | 10 | 18 | 0 | 0 |
| | Suspended Solids (SS) | 40 | 27 | 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-2014-01-001 | Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill (Contract No. HY/2011/09 | 3 January 2014 | Noise |
| Com-2014-01-002 | Hong Kong-Zhuhai-Macao Bridge | 16 January 2014 | Air Quality |

**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).

**Future Key Issues**

8. 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 P84)**

- Construction of the temporary jetty
- Installation of temporary casings, piling jackets, temporary piles, platform and permanent casings
- Dismantling of piling jacket
- Pile excavation by Reverse Circulation Drill (RCD) method
- Pile excavation by Kelly method
- Inter-face coring test, full depth coring test and sonic test
- Pre-drilling works
- Operation of floating concrete batching plants
- Trimming of pile head
- Grouting works
- Driving of sheet piling
- Trial water cracking and trial shaft grouting
- Precast shells waterproofing works

- Advanced concrete breaking works inside the permanent steel casing

**Land Viaduct (P85 to P114)**

- Land piling and concreting works
- Rebar threading for coupler
- Drainage and water main diversion works
- Backfilling
- Tree transplant and maintenance works
- Installation of portal beam
- Excavation works and Earth Lateral Support (ELS)
- Pouring of pile cap and pile head breaking
- Formation works
- Pours of column
- Erection of side formwork for the portal and kickers
- Road diversion works
- Pre-drilling works, pile cap, column and portal construction

# 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 4th Quarterly EM&A report which summarises the impact monitoring results and audit findings for the EM&A programme in the period between December 2013 to February 2014.

**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 and EP-352/2009/B) based on the Application No. VEP-409/2013 and VEP-411/2013 respectively. The environmental Permit (Permit No. EP-352/2009/C) was then issued on 5 September 2013.

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 |

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 2013:**

**Land Viaduct (P84 to Eastern Abutment at SHT) and Preparation Works**

(a) Land piling works are in progress with total 15 and21 nos. of pile concreted in Portion C and Portion A respectively. 6 piles were concreted in this reporting period. All land piling machines are carrying out piling works in Portion A due to pending of existing drainage, watermain and Communication Cable (COM cable) of Airport Authority (AA) division in Portion C;

(b) 18 pours of column were completed with 6 pours in this reporting period;

(c) Rebar threading for coupler continues in Portion C;

(d) Hong Kong Airport Authority's permit for formations of piling platform at P82 & P83 is still pending;

(e) Tree transplanting was completed and maintenance works commenced.

(f) Drainage diversion work remains in progress with laying of approximately 60m of 1200mm diameter pipe and 50m of 1350mm diameter pipe. Excavation works and ELS are in progress;

(g) Installation of portal beam at P109 is in progress;

(h) Earth Lateral Support (ELS) for pile cap construction at P111 and P112 were completed. Pouring of pile cap at P111L was completed and P111R are in progress. Pile head breaking at P112 L & R are also in progress;

(i) Formation work for Portal P110 was commenced.

**Marine Viaduct (P0 to P84)**

**RCD Method:**

(j) Construction of temporary jetty works at P68 is in progress;

(k) Installation of temporary casings at P55 & P59 is in progress;

(l) Piling jackets were installed at P14, P22, P56, P57, P72 & P77;

(m) Permanent casings were installed at P14L, P22L, P56R, P57R, P72R & P77R;

(n) Pile excavation by RCD method in progress at P14, P22, P55, P56, P57 & P66 with 25 piles concreted in this reporting period;

(o) Piling jackets were dismantled at P22R, P55L &P66;

(p) Works with cofferdam: Driving of sheet piling at P74 was commenced; Temporary platform at P71 was installed.

(q) Inter-face coring tests were carried out at P46, P47 & P71;

(r) Full depth coring tests were carried out at P71R-3;

(s) Sonic tests were carried out at P71 & P73;

(t) Grouting works were carried out at P47 & P71;

(u) Barges moved back to Airport Channel on 23 Nov 13.

**Kelly Method:**

(v) Installation of temporary piles, platforms and permanent casings at P17, P18, P36 were carried out;

(w) Piling platform at P20 and P44 were removed;

(x) Pile excavation by Kelly method in progress at P19, P42, P37, P38, P39 with 17 piles concreted in this reporting period;

(y) P0 L & R precast shells were installed. Trimming of pile head is in progress;

(z) Inter-face Coring Test and sonic test were carried out to completed piles at P20, P40, P48 and P7

**Casting Yard / Floating Batching Plant**

Progress of the precast concrete segment casting yard:

- Construction of the two load-out jetties completed; test and commissioning under process.

- All gantries (18 nos.) erected; 7 nos. tested and commissioned; 11 nos. under testing and commissioning.

- Mould fabrications are on-going with 1 no. “Type “B”, 8 nos. “Type A” (including 2 no. Segments on pier (SOP)’s), 2 nos. Type D moulds and 1 no. “Type CH2” (long spans) assembled; other “Type CH” and “Type CP” mould fabrication continues at casting yard.

- Rebar jigs fabrication and installation continues with 18 of 30 nos. completed

- Rebar and PT material delivery continues

- A total of 64 segments concreted in this reporting period and up to end of the reporting period total 150 segments casted. The floating concrete batching plant 1602 is in operation with 7 piles concreted;

**Casting Yard for Precast Concrete Shell for Pilecap**

3 nos. (cumulative 7 nos.) of CP1 precast shells were cast in precast yard and 2 nos. of CP1 precast shells were installed at Pier P0 in this reporting period.

**January 2014:**

**Land Viaduct (P84 to Eastern Abutment at SHT) and Preparation Works**

(a) All land piling machines are carrying out piling works in Portion A due to pending the completion of diversion of existing drainage & watermain and the commencement of COM cable of AA division in Portion C;

(b) P114 area site formation for piling works was completed. Pile P114R was excavated to rock head and drilling of rock socket is in progress;

(c) AA COM cable slewing was completed and backfilled. Piling equipment for Pile P113C was mobilized on site and pile excavation started;

(d) 27 pours of column were completed with 9 pours in this reporting period;

(e) Rebar threading for coupler continues in Portion C;

(f) AAHK's permit for the construction of the carriageway diversion and formations of piling platform at P82 & P83 is still pending for approval;

(g) Tree transplanting was completed and its maintenance works are on-going.

(h) Drainage diversion works remains in progress. Most pipes were laid except some pipes at manhole connection. MH2, MH3 & MH4 were completed. Backfilling was partially completed;

(i) Waling of ELS for pile cap construction at P111 L & R and P112 L & R were removed upon completion of pile cap and backfilled up to the top level of the pile cap.

(j) The erection of the supporting false work (brackets and main carrier beams) for the portal beam construction at P109 was completed. Erection of side formwork for the portal and kickers are in progress;

(k) Formation work for Portal P110 was in progress.

**Marine Viaduct (P0 to P84)**

**RCD Method:**

(a) Construction of temporary jetty for piling works atP68 is in progress;

(b) Piling jackets were installed at P14R, P56L, P57L, P76R;

(c) Permanent casings were installed at P14R, P55R, P56L, P59L, P59R & P77R;

(d) Pile excavations are in progress at P14, P22, P55, P56, P57, P59, P72 & P77;

(e) Piling jackets were dismantled at P14L, P55R, P57R & P73L;

(f) Inter-face coring tests were carried out at P46, P50, P51, P65, P66 & P73;

(g) No Full depth coring tests was carried out in this reporting period;

(h) Sonic tests were carried out at P46, P50, P65 & P73;

(i) Grouting works were carried out at P46 & P73;

**Kelly Method:**

(j) Installation of temporary piles were carried out atP16 (friction test pile), P17, P18, P32, P33, P34, P35 & P36;

(k) Installation of platforms were carried out at P16, P17, P18, P35 & P36;

(l) Installation of permanent casing were carried out at P16, P18, P35 & P36;

(m) Piling platform removal and temporary pile extraction were carried out at P20, P38, P40 & P44;

(n) Pile excavation by Kelly method are in progress at P16, P18, P19, P37 & P39;

(o) Trial water cracking and trial shaft grouting at P18-L5 was completed;

(p) Inter-face core test were carried out at P20, P37, P42, P45 & P49;

(q) Sonic tests were carried out at P20, P44 & P49.

**Pilecap Construction:**

(r) P0-L&R precast shells waterproofing works and stage one reinforced concrete works was completed. Stage two reinforced concrete works is in progress. Casting is scheduled to complete before end of January 2014;

(s) Installation of precast shells at P47 and P48 were completed. Waterproofing and stage 1 reinforced concrete works is in progress;

(t) Preparation work for the installation of the precast shells for pilecap construction at P46 is in progress;

(u) Advanced concrete breaking works inside the permanent steel casing at P20 and P44 has commenced;

(v) Works with cofferdam: Driving of sheet piling at P74 was carried out; driving of sheet piling at P71 was commenced.

**Precast Segment**

(w) Progress of the precast concrete segment casting yard:

- Test and commissioning of the two load-out jetties are in progress;

- All gantries in total of 18 nos. were erected. 7 nos. gantries were tested and commissioned and the remaining 11 nos. gantries areunder processing;

- Mould fabrications for 1 no. Type B, 10 nos. Type A(including 2 no. SOP's), 2 nos. Type D, 1 no. Type DT, 4 nos. Type E, and 1 no. Type CH2 (long spans) were assembled. Other Type CH and Type CP mould fabrication continues at the casting yard;

- Rebar jigs fabrication and installation continues with 18 of 30 nos. completed;

- Rebar and PT material delivery continues;

- A total of 13 segments were cast in this reporting period and up to end of the reporting period total 169 segments cast.

**Precast Concrete Shell Casting and Installation**

3 nos. (cumulative 10 nos.) of CP1 precast shells and 1 no. (cumulative 1 no.) of CP4 precast shell were cast in precast yard.

**February 2014:**

**Land Viaduct (P81 to Eastern Abutment at SHT) and Preparation Works**

(a) All land piling machines are carrying out piling works in Portion A and P114L due to pending the completion of diversion of existing drainage & watermain and Communication Cable (COM cable) of Airport Authority (AA) in Portion C;

(b) Piling work for P84 started;

(c) Pile P114R rock excavation was completed with founding level inspected. Rebar cage installation and concreting will be carried out after completion of Pile P114L due to space constraint;

(d) Pre-drilling at P106L started;

(e) 31 pours of column were completed with 4 pours in this reporting period;

(f) Rebar threading for coupler continues in Portion C;

(g) Hong Kong Airport Authority's permit for the construction of the carriageway diversion at P82 & P83 was received and site set up works started;

(h) Hong Kong Airport Authority's permit for formations of piling platform at P82 & P83 is still pending for approval;

(i) Tree transplanting was completed and its maintenance works are on-going;

(j) Drainage diversion works mostly completed;

(k) Water pipes laying for water main diversion were mostly completed. Connection to existing water main pipe and testing is pending for AAHK's permit;

(l) Waling of ELS for pile cap construction at P111-L&R were removed upon completion of pile cap and backfilled up to the top level of the pile cap;

(m) Wailing of ELS and backfill at P112 started;

(n) All side formwork and wing slab soffit for Portal P109 were completed. Steel fixing is in progress;

(o) At portal P110, side formwork and wing slab soffit formwork were completed. Steel fixing for bottom mat and side bars are in progress.

**Marine Viaduct (P0 to P84)**

**RCD Method:**

(a) Construction of temporary jetty for piling works atP68 remains in progress;

(b) Piling jackets were installed at P61, P28L, P64 & P72L;

(c) Piling jackets were dismantled at P22, P56 & P72R;

(d) Permanent casings were installed or spliced at P14R, P57L, P59, P61, P70, P76R & P72R;

(e) Pile excavations are in progress at P14, P22, P57, P59, P61, P70, P72, P76 & P77 with 25 piles concreted in the reporting period;

(f) Inter-face coring tests were carried out at P50, P66 & P73;

(g) Full depth coring tests was carried out at P50;

(h) Sonic tests were carried out at P51, P65 & P66;

(i) Grouting works were carried out at P50 & P65;

**Kelly Method:**

(j) Installation of temporary piles were carried out atP30, P31 & P32;

(k) Installation of platforms were carried out at P17, P31, P33 & P34;

(l) Installation of permanent casing were carried out at P33 & P34;

(m) Piling platform removal and temporary pile extraction were carried out at P19, P37, P39, P40 & P42;

(n) Pile excavation by Kelly method are in progress at P16, P18, P19, P37 & P39;

(o) Pile excavation by Kelly method are in progress at P18, P19, P35 & P36 with 13 piles concreted in the reporting period;

(p) Friction test pile at P16: load test were carried out from 24 – 28 Feb 14;

(q) Inter-face core test were carried out at P20, P37, P39, P40, P42, P45, P49 & P78;

(r) Full depth coring tests for P37-L3 and P42-R1 are in progress;

(s) Sonic tests were carried out at P20, P44 & P49.

**Pilecap Construction:**

(t) P0 - stage 2 concreting for pile cap was completed;

(u) P46 - Installation of precast shells and waterproofing works were completed. Pile trimming works are in progress;

(v) P47 – Installation of precast shells and 1st stage concreting were completed. Reinforcement fixing for 2nd stage concreting is in progress;

(w) P48 – Installation of precast shells were completed;

(x) Preparation works for the installation of the precast shells for pilecap construction at P44 are in progress;

(y) Advanced concrete breaking works (pile head trimming) at P20, P43 & P49 are in progress whereas the works in P65 has been commenced;

(z) Works with cofferdam: Driving of sheet piling at P71 in progress; erection of temporary working platform for sheet piling at P73R in progress.

**Column Construction**

(a) P0-L&R steel fixing to the columns are in progress. Concreting is scheduled on March 2014 and 5 March 2014 for P0-R and P0-L respectively.

**Deck Erection**

(b) Preparatory works for erection equipment are underway:
- Lifting Frame LF2-1 fabrication commenced in Dongguan;
- Modification for P109 Loading Installation commenced at Portion C.

**Precast Segment**

(a) Progress of the precast concrete segment casting yard:

- Test and commissioning of the two load-out jetties are in progress;

- All gantries, in total of 18 nos., were erected. 7nos. gantries were tested and commissioned and the remaining 11 nos. gantries are under processing;

- Mould assembly for 1 no. Type B, 10nos. Type A (including 2 no. SOP's), 2nos. Type D, 4nos. Type E (with 3 checked by survey), 1 no. Type CH2 (long spans) were assembled. Other Type CH and Type CP mould fabrication continues at the casting yard;

- Rebar jigs fabrication and installation continues with 24 of 30 nos. (18 in Line No. 2 and 6 in Line No. 6) completed;

- Rebar and prestress tendon (PT) material delivery continues;

- A total of 22 segments were cast in this reporting period and up to end of the reporting period total 191 segments cast.

**Precast Concrete Shell Casting**

(b) 2 nos. (cumulative 12 nos.) of CP1 precast shells and no (cumulative 1 no.) CP4 precast shell were cast in the reporting period.

**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<br>AMS4 – San Tau | While the highest dust impact was expected |
| | 24-hr TSP | Once / 6 days | | -- |
| Noise | $L_{10(30\ min.)}$ dB(A)<br>$L_{90(30\ min.)}$ dB(A)<br>$L_{eq(30\ min.)}$ dB(A) (as six consecutive $L_{eq,\ 5min}$ readings) | Once per week | NMS1 – Sha Lo Wan<br>NMS4 – San Tau | Daytime on normal weekdays (0700-1900 hrs) |
| Water Quality | • Temperature(°C)<br>• pH(pH unit)<br>• turbidity (NTU)<br>• water depth (m)<br>• salinity (ppt)<br>• dissolved oxygen (DO) (mg/L and % of saturation)<br>• 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<br>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.<br>• If the water depth is less than 3m, mid-depth sampling only.<br>• 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 the submitted Acoustic Decoupling Measures Plan.

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 (30$^{th}$ December 2013). 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 2013 | AMS1 | 125 | 27 - 254 | 381 | 500 |
| | AMS4 | 139 | 36 - 245 | 352 | |
| January 2014 | AMS1 | 100 | 14 - 226 | 381 | |
| | AMS4 | 125 | 47 - 259 | 352 | |
| February 2014 | AMS1 | 43 | 12 - 74 | 381 | |
| | AMS4 | 44 | 15 - 99 | 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 2013 | AMS1 | 140 | 24 – 260 | 170 | 260 |
| | AMS4 | 86 | 17 - 140 | 171 | |
| January 2014 | AMS1 | 114 | 66 – 207 | 170 | |
| | AMS4 | 108 | 67 - 131 | 171 | |
| February 2014 | AMS1 | 81 | 12 - 177 | 170 | |
| | AMS4 | 74 | 17 - 117 | 171 | |

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 | 1) Exhaust from marine traffic<br>2) Other construction site nearby |
| 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 2013 | NMS1 | 70 | 68 – 71 | 75 dB(A) |
| | NMS4 | 62 | 58 – 65 | |
| January 2014 | NMS1 | 68 | 66 – 71 | |
| | NMS4 | 62 | 59 – 63 | |
| February 2014 | NMS1 | 70 | 67 – 72 | |
| | NMS4 | 61 | 55 – 64 | |

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 2013 to February 2014, 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 192.30 km of survey effort was collected, with 86.2% 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 125.70 km, while the effort on secondary lines was 66.60 km. 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 2013 to February 2014, a total of 36 groups of 145 Chinese White Dolphins were sighted. All except six sightings were made during on-effort search. Twenty-three on-effort sightings were made on primary lines, while another seven 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 2013 to February 2014 is shown in **Figure 1 of Appendix F**. The dolphin groups were evenly distributed throughout the WL survey area, with higher concentrations near Kai Kung Shan. The only areas where dolphins were rarely sighted included the northern end of the survey area as well as the waters between Tai O and Yi O.

4.12 Notably, only one sighting was made along the HKLR09 alignment in WL survey area during the present quarter (**Figure 1 of Appendix F)**. It appeared that general shift in dolphin distribution further south of the WL survey area in the present quarter, and they rarely occurred at the juncture between NWL and WL survey areas. The few dolphin groups sighted in the vicinity of HKLR09 alignment were mainly small groups of dolphins. (**Figure 2 of Appendix F)**

*Encounter rate*

4.13 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 2013 to February 2014 were also compared with the ones deduced from the baseline monitoring period (September – November 2011) (**Table 4.7**).

4.14 In WL survey area, the average dolphin encounter rates in the present three-month study period was either slightly higher (in STG) or similar to (in ANI) the ones recorded in the 3-month baseline period respectively, indicating the dolphin usage during this impact phase monitoring period in this survey area did not show any obvious change when compared to the baseline phase.

**Table 4.6 Dolphin encounter rates (sightings per 100 km of survey effort) during the impact monitoring period (December 2013 – February 2014)**

| 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 3, 2013) | 9.7 | 67.6 |
| | Set 2 (December 20, 2013) | 20.1 | 50.4 |
| | Set 3 (January 3, 2014) | 18.8 | 32.9 |
| | Set 4 (January 24, 2014) | 10.5 | 21.1 |
| | Set 5 (February 24, 2014) | 29.4 | 135.1 |
| | Set 6 (February 26, 2014) | 19.6 | 53.8 |

**Table 4.7 Comparison of average dolphin encounter rates from impact monitoring period (December 2013 – February 2014) 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 2013 - February 2014 | September-November 2011 | December 2013 - February 2014 | September-November 2011 |
| **West Lantau** | 18.01 ± 7.24 | 16.43 ± 7.70 | 60.12 ± 40.18 | 60.50 ± 38.47 |

(Note: the encounter rates deduced from the baseline monitoring period have been recalculated based only on the survey effort and on-effort sighting data made along the primary transect lines under favourable conditions)

4.15 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 (fourth quarter of the impact phase), the p-value for the differences in average dolphin encounter rates of STG and ANI were 0.723 and 0.987 respectively. Therefore, no significant difference in dolphin encounter rate was detected between the baseline period and the present quarter.

4.16 Another comparison was made between the baseline period and the cumulative quarters in the impact phase (i.e. first four quarters of the impact phase), and the p-value for the differences in average dolphin encounter rates of STG and ANI were 0.784 and 0.969 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.

4.17 To facilitate the comparison with the AFCD long-term monitoring results, the encounter rates were also calculated for the present quarter (December 2013 to February 2014)

using both primary and secondary survey effort. The encounter rates of sightings (STG) and dolphins (ANI) in WL were 15.7 sightings and 58.5 dolphins per 100 km of survey effort respectively.

*Group size*

4.18 Group size of Chinese White Dolphins ranged from 1-17 individuals per group in WL survey area between December 2013 to February 2014. 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 December 2013 to February 2014 was higher than than the ones recorded in the 3-month baseline period (**Table 4.8**). More than half of the dolphin groups were composed of 1-2 dolphins, but there were also 13 groups with more than 5 animals per group, and three groups with more than 10 animals per group. Some of the larger groups were associated with operating purse-seiners.

**Table 4.8 Comparison of average dolphin group sizes from impact monitoring period (December 2013 – February 2014) and baseline monitoring period (September-November 2011)**

| | **Average Dolphin Group Size** | |
|---|---|---|
| | **December 2013 to February 2014** | **September – November 2011** |
| **West Lantau** | 4.03 ± 3.71 (n = 36) | 3.63 ± 2.97 (n = 46) |

4.19 Distribution of dolphins with these 13 larger groups during December 2013 to February 2014 is shown in **Figure 3 of Appendix F**. These groups were mostly sighted between Kai Kung Shan and Peaked Hill, which were further away from the HKLR09 alignment.

*Habitat use*

4.20 From December 2013 to February 2014, the most heavily utilized habitats by the dolphins mainly concentrated near Tai O Peninsula, Kai Kung Shan, Peaked Hill and Fan Lau (**Figures 4a and 4b of Appendix F**). However, it should be noted 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 dolphin densities were much lower between the HKLR09 alignment and Tai O Peninsula during the present impact phase monitoring period (**Figure 5 of Appendix F**).

*Mother-calf pairs*

4.22 During the three-month impact phase monitoring period, only five unspotted juveniles

(UJ) were sighted in WL survey area. These young calves comprised only 3.4% of all animals sighted, which was much lower to the percentage recorded during the baseline monitoring period (6.6%).

4.23 The occurrence of these young calves were scattered between Kai Kung Shan and Peaked Hill, which was in stark contrast to the baseline period when calf occurrence was more frequent near Tai O Peninsula (**Figure 6 of Appendix F**).

*Activities and associations with fishing boats*

4.24 A total of five dolphin sightings were associated with feeding respectively during the three-month impact monitoring period, comprising of 13.8% of the total number of dolphin sightings. This percentage was similar to the percentage recorded during the baseline period (13.0%). Only one of the 36 sightings was associated with socializing activity.

4.25 Distribution of dolphins engaged in the feeding activities during the three-month study period is shown in **Figure 7 of Appendix F**. The sightings associated with feeding activities were scattered between the bridge alignment and Kai Kung Shan, with no particular concentration. This distribution pattern was similar to the baseline period, when most feeding activities were concentrated in the middle portion of the survey area between Tai O Peninsula and Kai Kung Shan (**Figure 7 of Appendix F**).

4.26 During the three-month period, three dolphin groups were associated with an operating purse-seiner, while one group of two dolphins was associated with an operating gill-netter, together comprising of 11.1% of all dolphin groups. This was much lower than the percentage recorded in baseline period (6.5%).

*Summary of photo-identification works*

4.27 From December 2013 to February 2014, over 2,000 digital photographs of Chinese White Dolphins were taken during the impact phase monitoring surveys for the photo-identification work.

4.28 In total, 42 individuals sighted 73 times altogether were identified (see summary table in **Appendix III of Appendix F** and photographs of identified individuals in **Appendix IV of Appendix F**. Most identified individuals were sighted only once or twice during the three-month period, but five individuals (NL128, WL93, WL109, WL152 and WL180) were sighted thrice, while two individuals (WL91 and WL25) were sighted four and six times respectively.

4.29 During the three-month period, four recognizable females, including NL33, NL188, NL264 and WL171, were sighted to be accompanied with her calf during her re-sighting. Notably, the first three individuals spent most of their time in North Lantau waters in the past, and therefore only a very small number of dolphins that focused their range use in West Lantau waters were mother-calf pairs, similar to the results in previous monitoring quarters.

*Individual range use*

4.30 Ranging patterns of the 42 individuals identified during the three-month study period were determined by fixed kernel method, and are shown in **Appendix V of Appendix F**.

4.31 Among these 42 individuals, six of them (NL33, NL188, NL226, NL264, NL288 and NL296) occurred primarily in North Lantau and ventured into West Lantau during the three-month period, while two other individuals (NL156 and WL179) split their time between North and West Lantau waters. The other 34 individuals centered their range use in West Lantau waters. (**Appendix V of Appendix F)**

4.32 Notably, the ranging patterns of a few individuals (e.g. SL44, WL182) do not overlap with the HKLR09 alignment at all, but mostly located around the southwestern side of Lantau Island (**Appendix V of Appendix F).** Therefore, it is unlikely that the impact of HKLR09 construction activities will affect their range use during the impact phase.

**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, and the dolphin occurrence in West Lantau survey area remained the same as in the baseline period.

4.34 Nevertheless, dolphin usage in WL region should be continuously monitored, to further examine whether it has been 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 was conducted on 22nd and 27th January 2014 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 in January 2014**

| Date | Time | Weather | | Number of Staff | Number of Dolphin Sighting |
|---|---|---|---|---|---|
| | | Beaufort | Visibility | | |
| 22/01/2014 | 09:05 - 14:32 | 2 | 2.5 | 3 | 1 |
| 27/01/2014 | 08:54 - 14:58 | 1-3 | 2.5 | 3 | 4 |

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 and 4 Action Level exceedances were recorded in the reporting period.

Noise

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

Water Quality

5.5 There are 40 Action Level exceedances and 27 Limit Level exceedances were recorded for suspended solids. 10 Action Level exceedance and 18 Limit Level exceedances for turbidity were recorded in the reporting period.

5.6 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) Adverse water quality outside the site boundary;
3) Sediment plume due to natural fluctuation of shallow water and localized plume in the monitoring area;
4) Sediment plume and floating wastes discharging to the monitoring stations from the area outside the site boundary;
5) The exceedances at the monitoring station which is situated at the upstream of the site;
6) The exceeded results were similar or within the ranges baseline monitoring results; and
7) Water quality mitigation measures such as casting and silt curtain were also properly implemented.

Dolphin Monitoring (Line-transect Vessel Survey)

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

## Summary of Environmental Complaint

5.8 Two 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-2014-01-001 | Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill (Contract No. HY/2011/09 | 3 January 2014 | Noise |
| Com-2014-01-002 | Hong Kong-Zhuhai-Macao Bridge | 16 January 2014 | Air Quality |

**Summary of Notification of Summons and Successful Prosecution**

5.9 There was no prosecution or notification of summons received since the Contract commencement.

# 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 2013 and February 2014 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 4 Action Level exceedances were recorded in the reporting period.

6.5 For water quality monitoring, there are 40 Action Level exceedances and 27 Limit Level exceedances were recorded for suspended solids. 10 Action Level exceedance and 18 Limit Level exceedances 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 3rd, 10th, 17th, 24th and 31st December 2013, 7th, 14th, 21st and 28th January 2014, 5th, 11th, 18th and 28th February 2014 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 2013. No access to Sha Lo Wan (West) Archaeological site for works areas and storage of construction equipment was observed.

6.10 There were two 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.

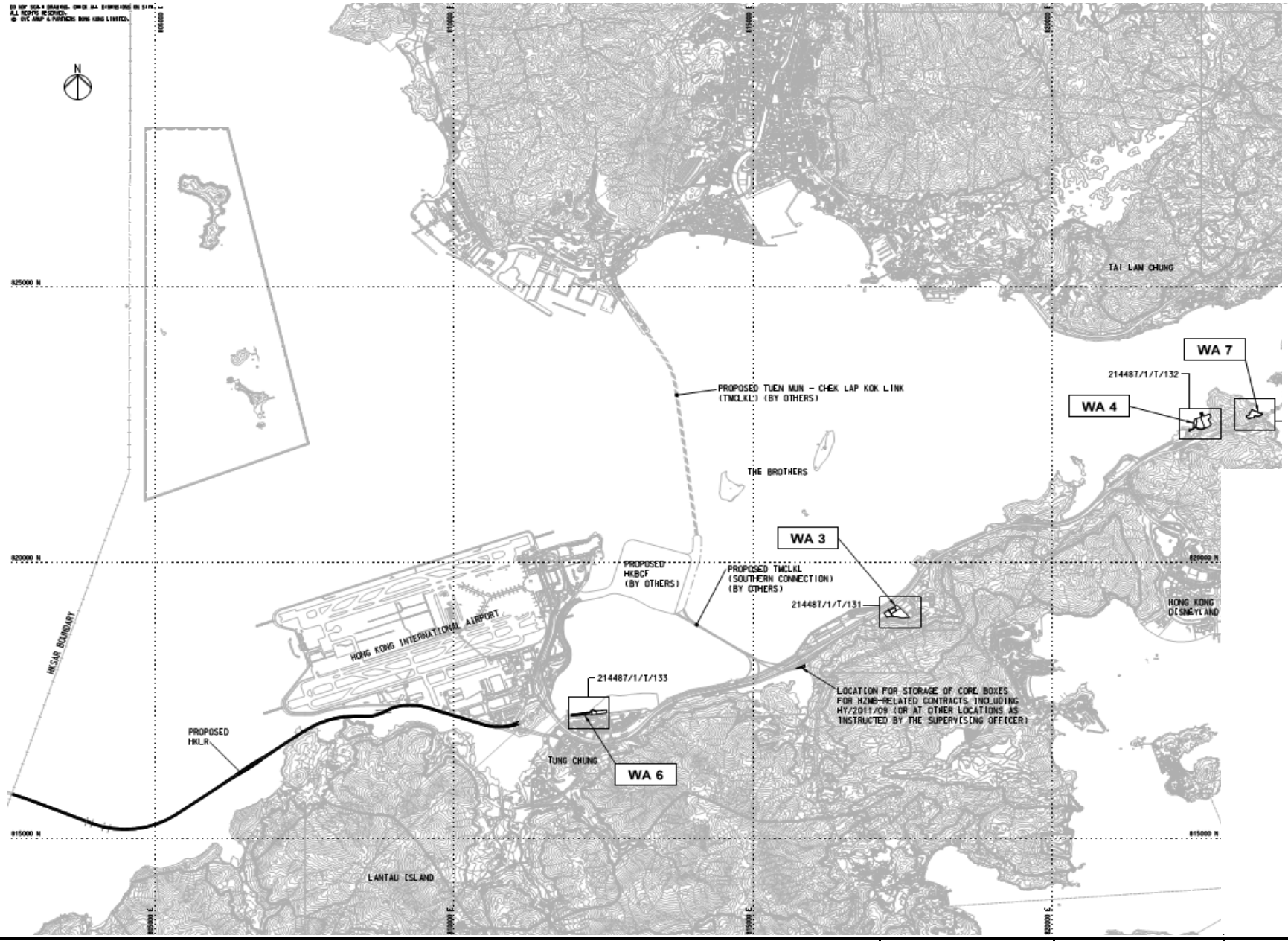
*Ecology Impact*

- 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*

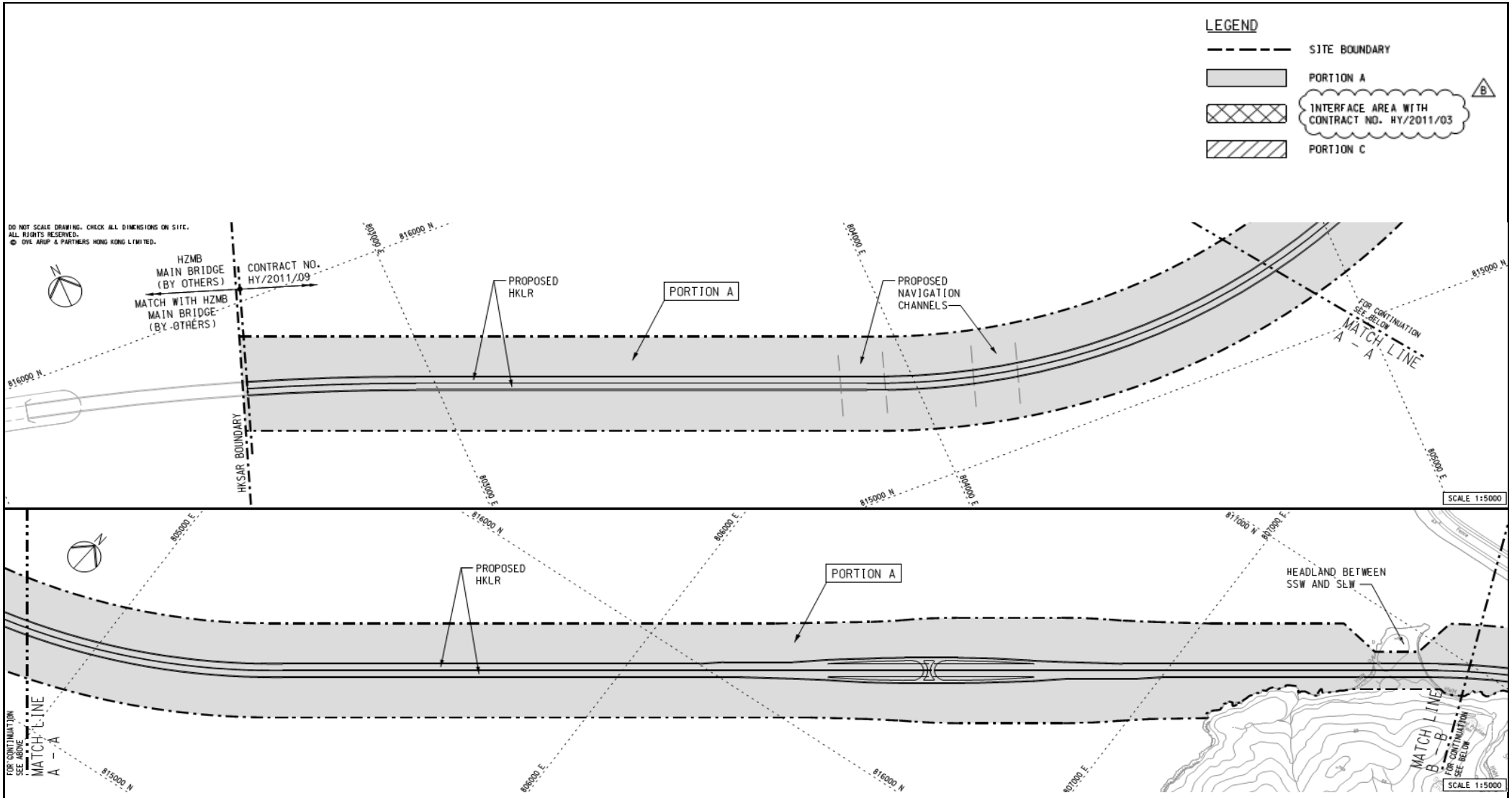
- To check for any accumulation of waste materials or rubbish on site.
- To ensure the performance of sorting of C&D materials at source (during generation);
- To carry out inspection of dump truck at site exit to ensure inert and non-inert C&D materials are properly segregated before removing off site.
- 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)**



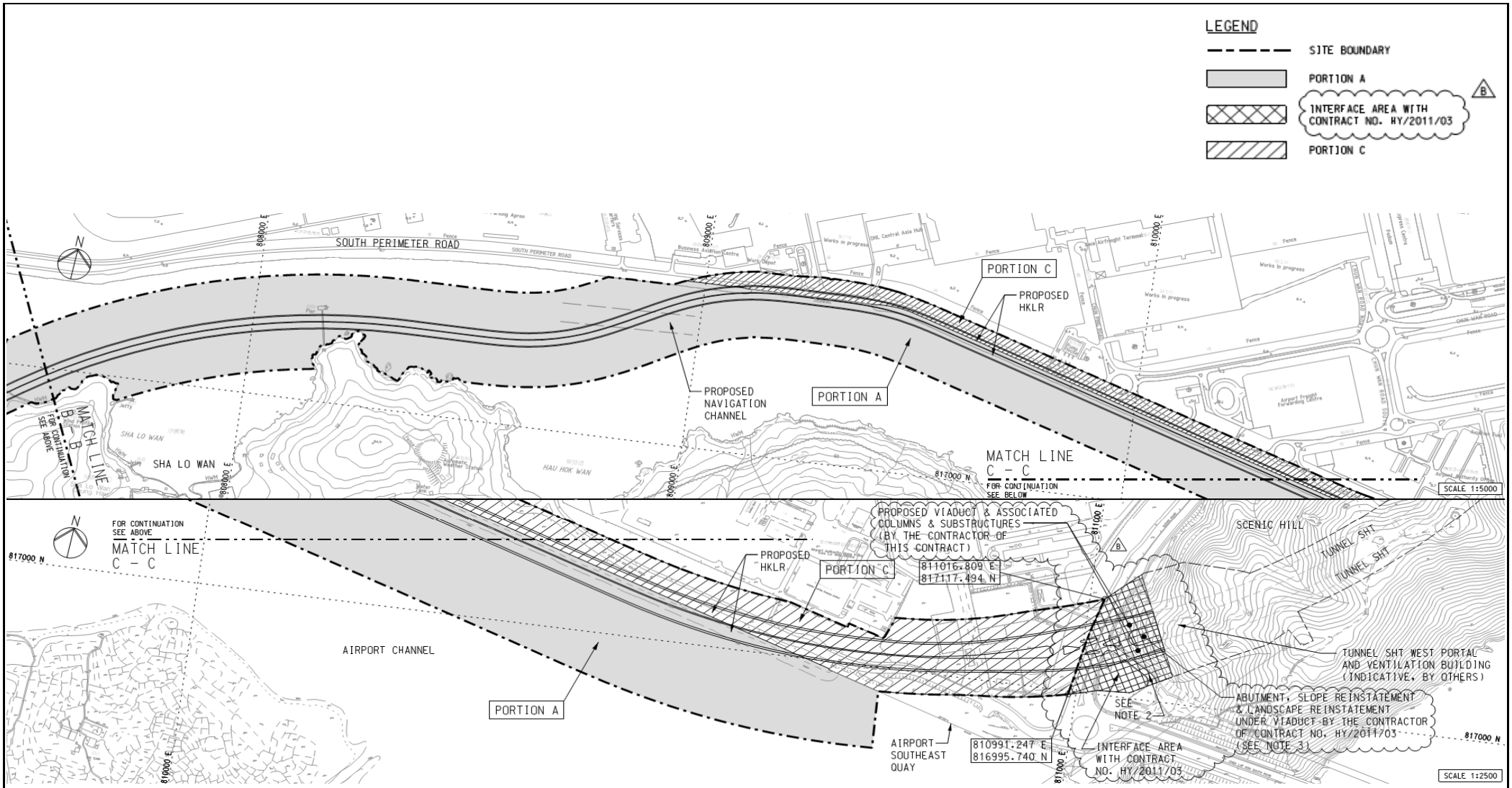

| | | | |
|---|---|---|---|
| Title | Contract No. HY/2011/09<br>Hong Kong-Zhuhai-Macao Bridge<br>Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill<br>Site Layout Plan (WA3, WA4, WA6 and WA7) | Scale: N.T.S<br>Date: Feb-13 | Proposa No. MA12014<br>Figure: 1a |

CINOTECH



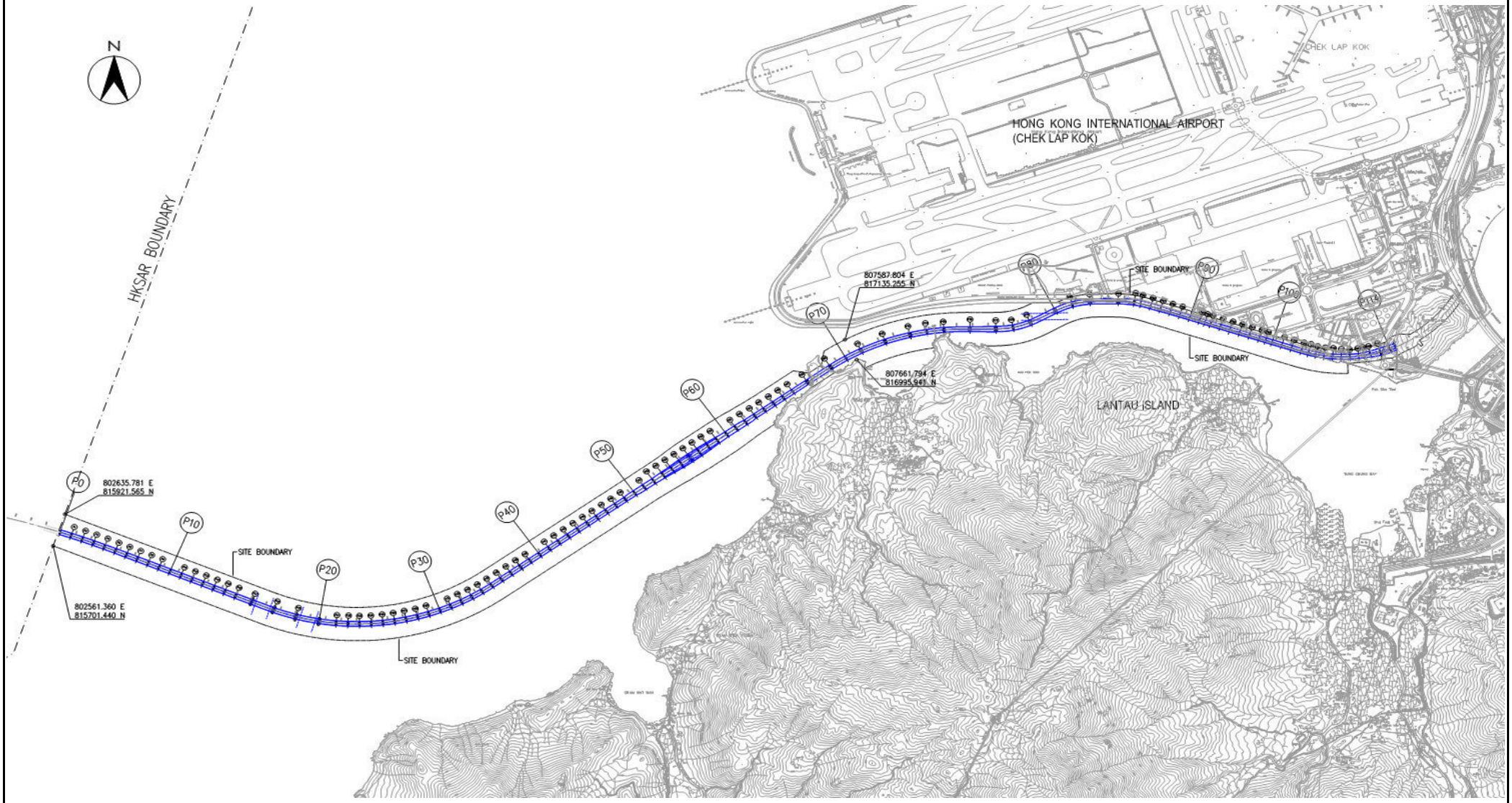

| | | | |
|---|---|---|---|
| Title | Contract No. HY/2011/09<br>Hong Kong-Zhuhai-Macao Bridge<br>Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill<br>Site Layout Plan (Portion A) | Scale: N.T.S<br>Date: May-13 | Proposa No.: MA12014<br>Figure: 1b |

CINOTECH



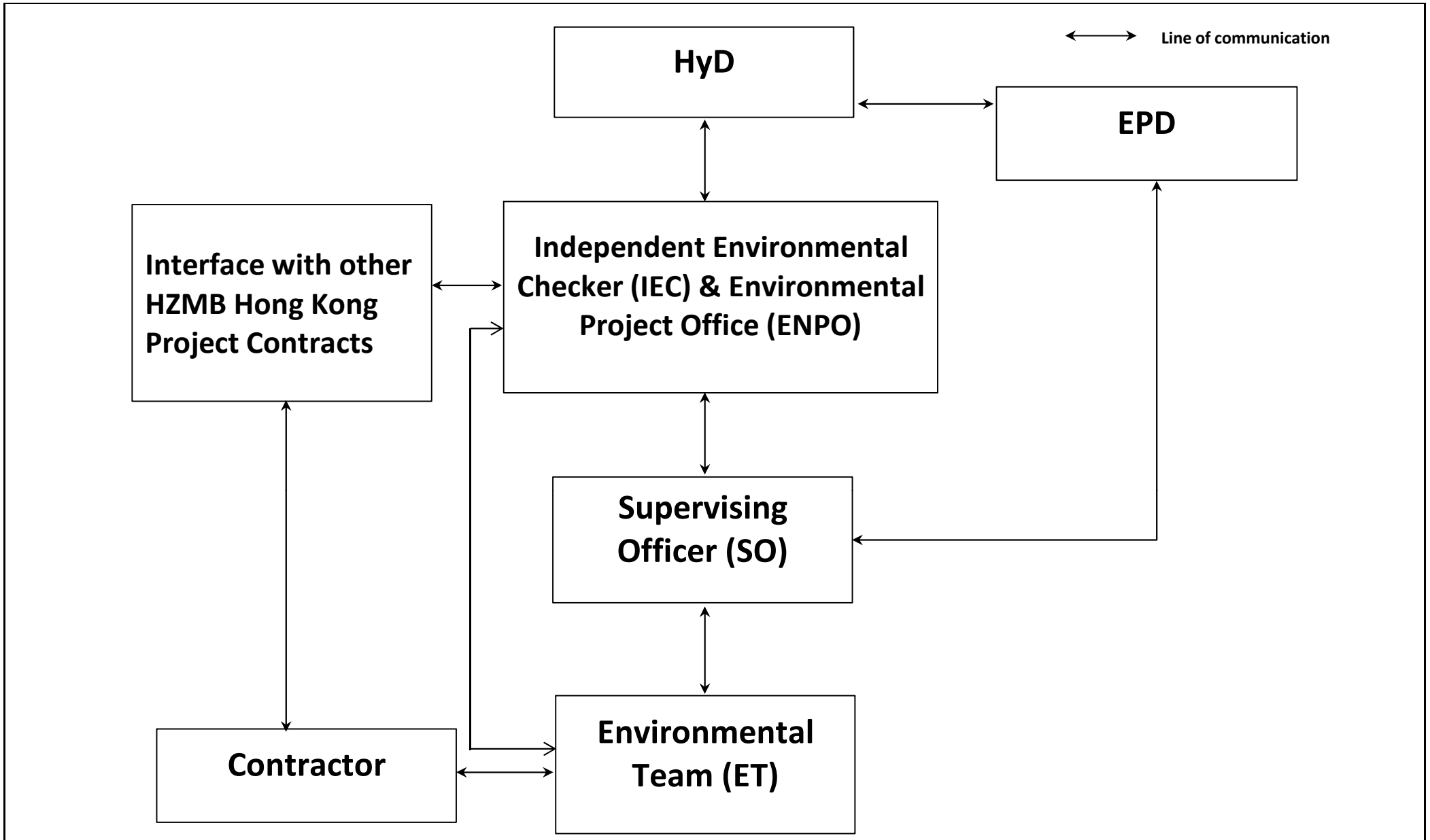

| | | | |
|---|---|---|---|
| Title | Contract No. HY/2011/09<br>Hong Kong-Zhuhai-Macao Bridge<br>Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill<br>Site Layout Plan (Portion A and C) | Scale: N.T.S<br>Date: May-13 | Proposa<br>No. MA12014<br>Figure 1c |

CINOTECH



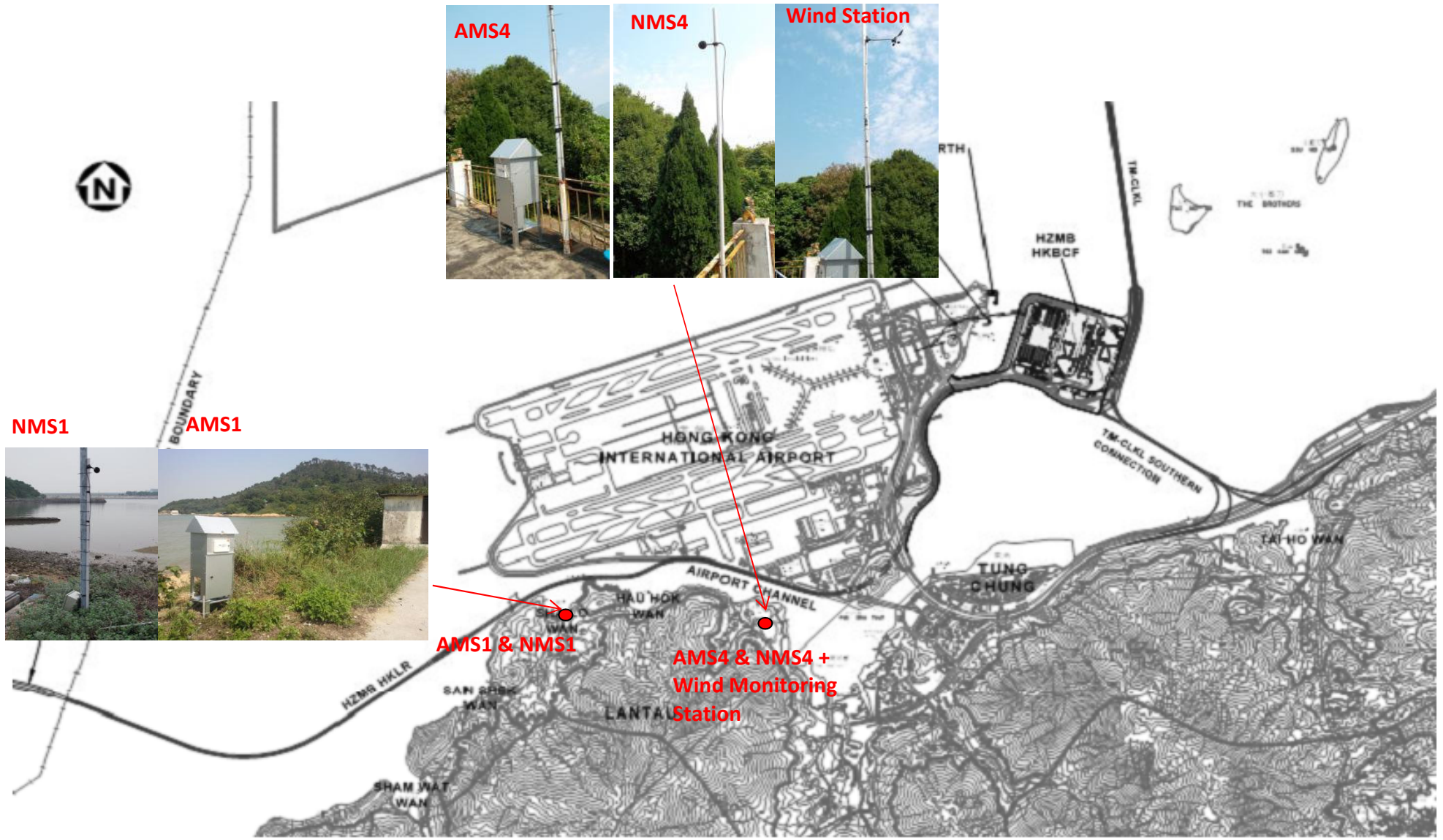

| | | | |
|---|---|---|---|
| Title | Contract No. HY/2011/09<br>Hong Kong-Zhuhai-Macao Bridge<br>Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill<br>Site Layout Plan (Pier(s) Site) | Scale: N.T.S<br>Date: Feb-13 | Proposa No. MA12014<br>Figure: 1d |

CINOTECH



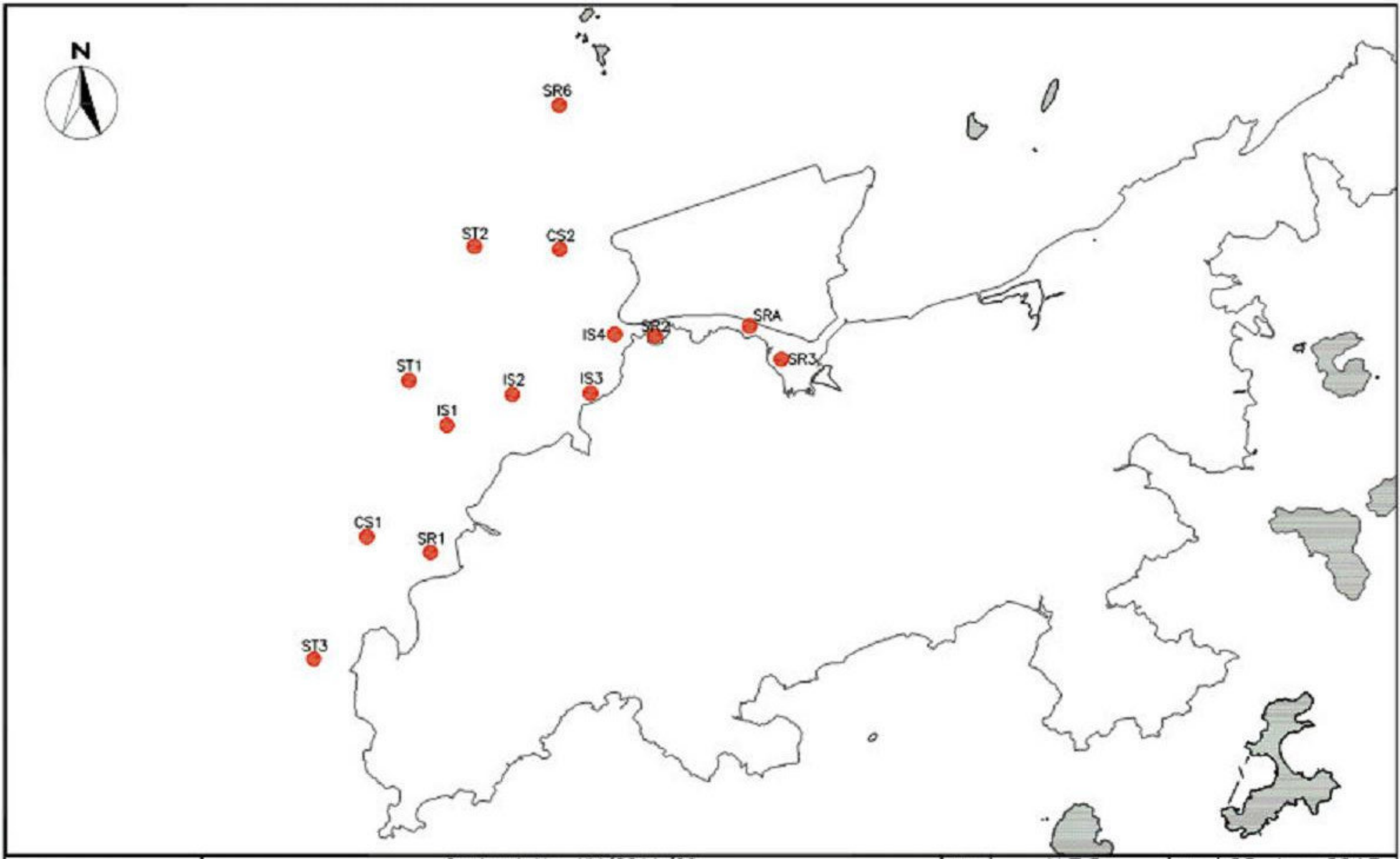

| | | | |
|---|---|---|---|
| Title | Contract No. HY/2011/09<br>Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill<br><br>Project Organisation for Environmental Works | Scale: N.T.S<br>Date: Feb-13 | Proposa No. MA12014<br>Figure 2 |

CINOTECH




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

CINOTECH




CINOTECH
Cinotech Consultants Limited

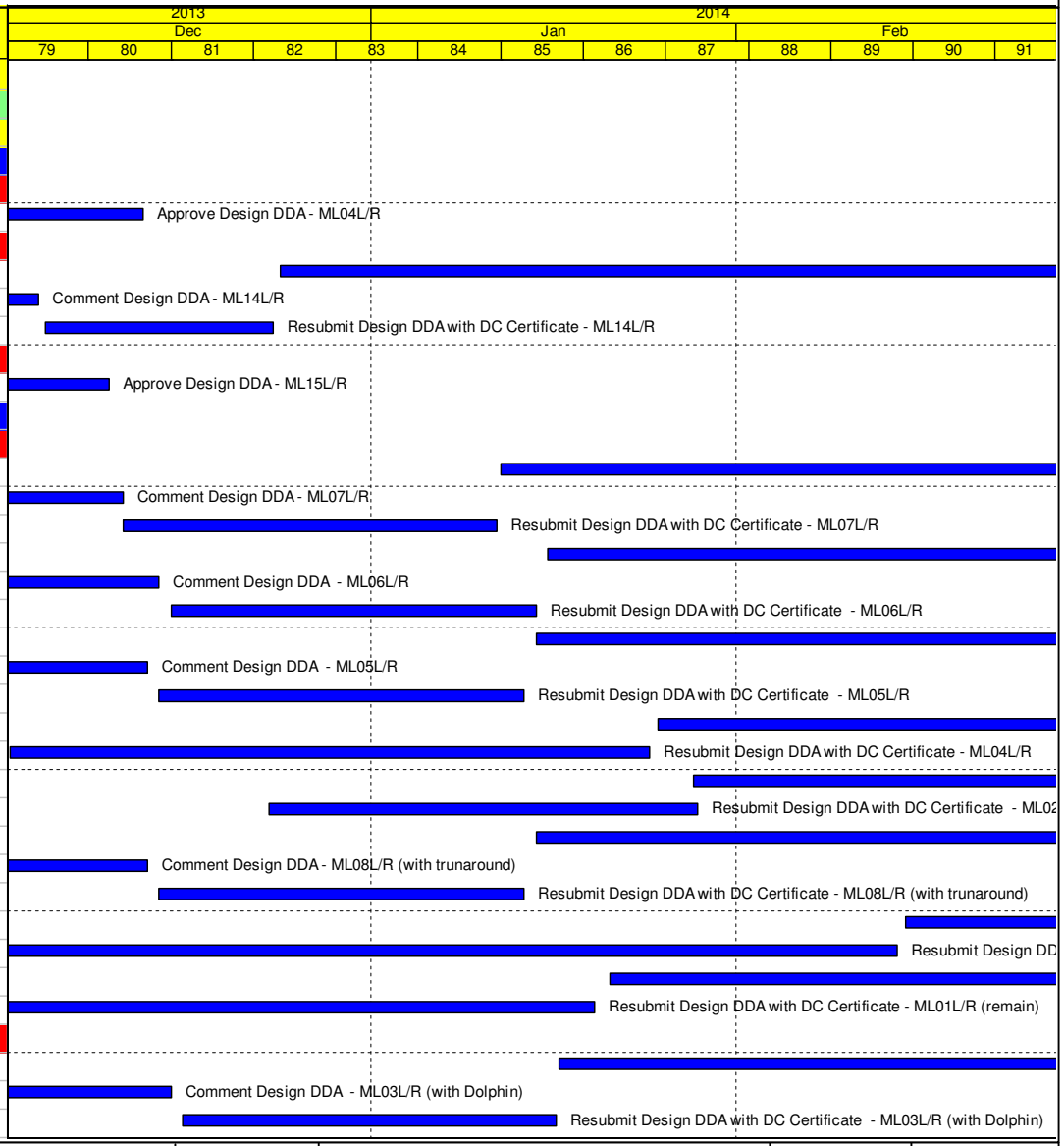
Contract No. HY/2011/09
Hong Kong–Zhuhai–Macao Bridge Hong Kong Link Road – Section Between HKSAR Boundary and Scenic Hill
Locations of Marine Water Quality Monitoring Stations

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

# APPENDIX A
# CONSTRUCTION PROGRAMME

Dragages - China Harbour - VSL Joint Venture 寶嘉 - 中國港灣 - 威勝利聯營

| Activity ID | Activity Name | Original Duration | Start | Finish |
|---|---|---|---|---|
| **HKZB Hong Kong Link Road - 3 Months Rolling Programme 1403 (Based on DWP_01b)** | | | | |
| **Design and Design Checking of the Works** | | | | |
| **Detailed Design Approval (DDA)** | | | | |
| **Foundation** | | | | |
| **Western Water** | | | | |
| DDA04.01-40 | Approve Design DDA - ML04L/R | 35 | 29/08/13 A | 12/12/13 A |
| **Airport Channel** | | | | |
| DDA14.01-40 | Approve Design DDA - ML14L/R | 35 | 24/12/13 A | 04/03/14 A |
| DDA14.01-20 | Comment Design DDA - ML14L/R | 35 | 29/08/13 A | 03/12/13 A |
| DDA14.01-30 | Resubmit Design DDA with DC Certificate - ML14L/R | 25 | 04/12/13 A | 23/12/13 A |
| **Airport Island** | | | | |
| DDA15.01-40 | Approve Design DDA - ML15L/R | 35 | 16/10/13 A | 09/12/13 A |
| **Substructure** | | | | |
| **Western Water** | | | | |
| DDA07.02-40 | Approve Design DDA - ML07L/R | 35 | 12/01/14 A | 28/03/14 |
| DDA07.02-20 | Comment Design DDA - ML07L/R | 35 | 29/01/13 A | 11/12/13 A |
| DDA07.02-30 | Resubmit Design DDA with DC Certificate - ML07L/R | 43 | 11/12/13 A | 11/01/14 A |
| DDA06.02-40 | Approve Design DDA - ML06L/R | 35 | 16/01/14 A | 28/03/14 |
| DDA06.02-20 | Comment Design DDA - ML06L/R | 35 | 14/06/13 A | 14/12/13 A |
| DDA06.02-30 | Resubmit Design DDA with DC Certificate - ML06L/R | 21 | 15/12/13 A | 15/01/14 A |
| DDA05.02-40 | Approve Design DDA - ML05L/R | 35 | 15/01/14 A | 28/03/14 |
| DDA05.02-20 | Comment Design DDA - ML05L/R | 35 | 24/07/13 A | 13/12/13 A |
| DDA05.02-30 | Resubmit Design DDA with DC Certificate - ML05L/R | 21 | 14/12/13 A | 14/01/14 A |
| DDA04.02-40 | Approve Design DDA - ML04L/R | 35 | 25/01/14 A | 28/03/14 |
| DDA04.02-30 | Resubmit Design DDA with DC Certificate - ML04L/R | 21 | 01/12/13 A | 24/01/14 A |
| DDA02.02-40 | Approve Design DDA - ML02L/R | 35 | 28/01/14 A | 28/03/14 |
| DDA02.02-30 | Resubmit Design DDA with DC Certificate - ML02L/R | 21 | 23/12/13 A | 28/01/14 A |
| DDA08.02-40 | Approve Design DDA - ML08L/R (with trunaround) | 35 | 15/01/14 A | 28/03/14 |
| DDA08.02-20 | Comment Design DDA - ML08L/R (with trunaround) | 35 | 01/06/13 A | 13/12/13 A |
| DDA08.02-30 | Resubmit Design DDA with DC Certificate - ML08L/R (with trunaround) | 21 | 14/12/13 A | 14/01/14 A |
| DDA09.02-40 | Approve Design DDA - ML09L/R | 35 | 15/02/14 A | 28/03/14 |
| DDA09.02-30 | Resubmit Design DDA with DC Certificate - ML09L/R | 21 | 28/08/13 A | 14/02/14 A |
| DDA01.02-80 | Approve Design DDA - ML01L/R (remain) | 35 | 21/01/14 A | 28/03/14 |
| DDA01.02-70 | Resubmit Design DDA with DC Certificate - ML01L/R (remain) | 21 | 03/07/13 A | 20/01/14 A |
| **Navigation Channel** | | | | |
| DDA03.02-40 | Approve Design DDA - ML03L/R (with Dolphin) | 35 | 17/01/14 A | 28/03/14 |
| DDA03.02-20 | Comment Design DDA - ML03L/R (with Dolphin) | 35 | 06/02/13 A | 15/12/13 A |
| DDA03.02-30 | Resubmit Design DDA with DC Certificate - ML03L/R (with Dolphin) | 21 | 16/12/13 A | 16/01/14 A |




Actual Work
Remaining Work
Critical Remaining Work
◆ Milestone

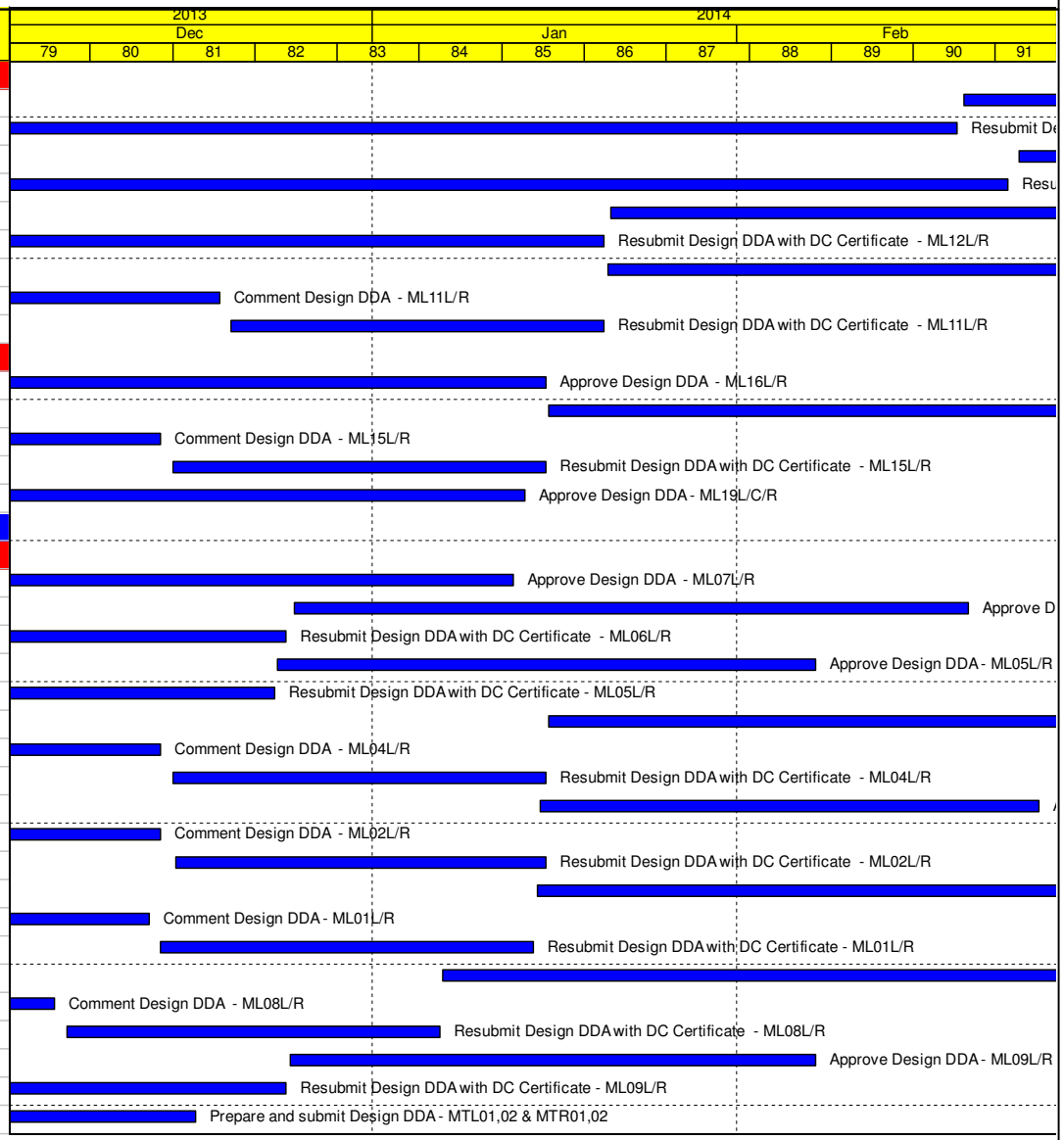
**3 months programme (Dec 13 to Feb 14)**



| Date | Revision | Checked | Approved |
|---|---|---|---|
| 23/06/14 | programme based on Mar 14 submitted 3MRP | Tim | |
| | | | |
| | | | |

Dragages - China Harbour - VSL Joint Venture 寶嘉 - 中國港灣 - 威勝利聯營

| Activity ID | Activity Name | Original Duration | Start | Finish |
|---|---|---|---|---|
| **Airport Channel** | | | | |
| DDA10.02-40 | Approve Design DDA - ML10L/R | 35 | 20/02/14 A | 28/03/14 |
| DDA10.02-30 | Resubmit Design DDA with DC Certificate - ML10L/R | 21 | 31/08/13 A | 19/02/14 A |
| DDA13.02-40 | Approve Design DDA - ML13L/R | 35 | 25/02/14 A | 29/03/14 |
| DDA13.02-30 | Resubmit Design DDA with DC Certificate - ML13L/R | 21 | 15/11/13 A | 24/02/14 A |
| DDA12.02-40 | Approve Design DDA - ML12L/R | 35 | 21/01/14 A | 28/03/14 |
| DDA12.02-30 | Resubmit Design DDA with DC Certificate - ML12L/R | 21 | 27/09/13 A | 20/01/14 A |
| DDA11.02-40 | Approve Design DDA - ML11L/R | 35 | 21/01/14 A | 28/03/14 |
| DDA11.02-20 | Comment Design DDA - ML11L/R | 35 | 07/02/13 A | 19/12/13 A |
| DDA11.02-30 | Resubmit Design DDA with DC Certificate - ML11L/R | 21 | 20/12/13 A | 20/01/14 A |
| **Airport Island** | | | | |
| DDA16.02-40 | Approve Design DDA - ML16L/R | 35 | 07/11/13 A | 15/01/14 A |
| DDA15.02-40 | Approve Design DDA - ML15L/R | 35 | 16/01/14 A | 28/02/14 A |
| DDA15.02-20 | Comment Design DDA - ML15L/R | 35 | 29/08/13 A | 14/12/13 A |
| DDA15.02-30 | Resubmit Design DDA with DC Certificate - ML15L/R | 21 | 15/12/13 A | 15/01/14 A |
| DDA19.02-40 | Approve Design DDA - ML19L/C/R | 35 | 29/10/13 A | 14/01/14 A |
| **Superstructure** | | | | |
| **Western Water** | | | | |
| DDA07.03-40 | Approve Design DDA - ML07L/R | 35 | 24/07/13 A | 13/01/14 A |
| DDA06.03-40 | Approve Design DDA - ML06L/R | 35 | 25/12/13 A | 20/02/14 A |
| DDA06.03-30 | Resubmit Design DDA with DC Certificate - ML06L/R | 25 | 24/11/13 A | 24/12/13 A |
| DDA05.03-40 | Approve Design DDA - ML05L/R | 35 | 24/12/13 A | 07/02/14 A |
| DDA05.03-30 | Resubmit Design DDA with DC Certificate - ML05L/R | 24 | 23/11/13 A | 23/12/13 A |
| DDA04.03-40 | Approve Design DDA - ML04L/R | 35 | 16/01/14 A | 28/03/14 |
| DDA04.03-20 | Comment Design DDA - ML04L/R | 35 | 26/10/13 A | 14/12/13 A |
| DDA04.03-30 | Resubmit Design DDA with DC Certificate - ML04L/R | 47 | 15/12/13 A | 15/01/14 A |
| DDA02.03-40 | Approve Design DDA - ML02L/R | 35 | 15/01/14 A | 26/02/14 A |
| DDA02.03-20 | Comment Design DDA - ML02L/R | 35 | 26/10/13 A | 14/12/13 A |
| DDA02.03-30 | Resubmit Design DDA with DC Certificate - ML02L/R | 32 | 15/12/13 A | 15/01/14 A |
| DDA01.03-40 | Approve Design DDA - ML01L/R | 35 | 15/01/14 A | 28/03/14 |
| DDA01.03-20 | Comment Design DDA - ML01L/R | 35 | 27/07/13 A | 13/12/13 A |
| DDA01.03-30 | Resubmit Design DDA with DC Certificate - ML01L/R | 46 | 14/12/13 A | 14/01/14 A |
| DDA08.03-40 | Approve Design DDA - ML08L/R | 35 | 07/01/14 A | 28/03/14 |
| DDA08.03-20 | Comment Design DDA - ML08L/R | 35 | 31/07/13 A | 05/12/13 A |
| DDA08.03-30 | Resubmit Design DDA with DC Certificate - ML08L/R | 38 | 06/12/13 A | 06/01/14 A |
| DDA09.03-40 | Approve Design DDA - ML09L/R | 35 | 25/12/13 A | 07/02/14 A |
| DDA09.03-30 | Resubmit Design DDA with DC Certificate - ML09L/R | 25 | 24/11/13 A | 24/12/13 A |
| DDATR.03-10 | Prepare and submit Design DDA - MTL01,02 & MTR01,02 | 35 | 13/11/13 A | 17/12/13 A |




Actual Work
Remaining Work
Critical Remaining Work
Milestone

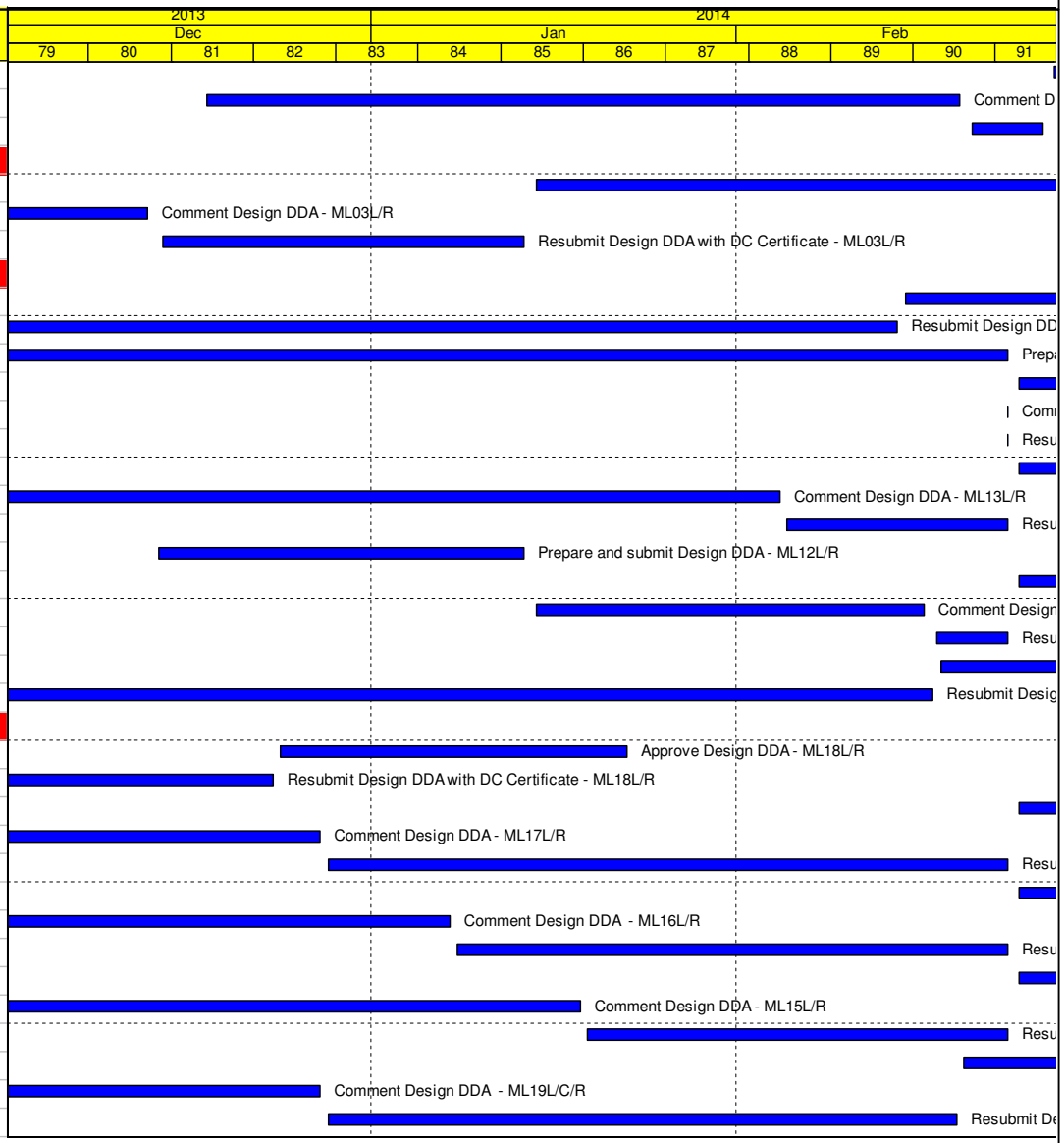
**3 months programme (Dec 13 to Feb 14)**



| Date | Revision | Checked | Approved |
|---|---|---|---|
| 23/06/14 | programme based on Mar 14 submitted 3MRP | Tim | |
| | | | |
| | | | |

Dragages - China Harbour - VSL Joint Venture 寶嘉 - 中國港灣 - 威勝利聯營

| Activity ID | Activity Name | Original Duration | Start | Finish |
|---|---|---|---|---|
| DDATR.03-40 | Approve Design DDA - MTL01,02 & MTR01,02 | 35 | 28/02/14 A | 01/04/14 |
| DDATR.03-20 | Comment Design DDA - MTL01,02 & MTR01,02 | 35 | 18/12/13 A | 20/02/14 A |
| DDATR.03-30 | Resubmit Design DDA with DC Certificate - MTL01,02 & MTR01,02 | 25 | 21/02/14 A | 27/02/14 A |
| **Navigation Channel** | | | | |
| DDA03.03-40 | Approve Design DDA - ML03L/R | 35 | 15/01/14 A | 17/03/14 A |
| DDA03.03-20 | Comment Design DDA - ML03L/R | 35 | 29/06/13 A | 13/12/13 A |
| DDA03.03-30 | Resubmit Design DDA with DC Certificate - ML03L/R | 46 | 14/12/13 A | 14/01/14 A |
| **Airport Channel** | | | | |
| DDA10.03-40 | Approve Design DDA - ML10L/R | 35 | 15/02/14 A | 28/03/14 |
| DDA10.03-30 | Resubmit Design DDA with DC Certificate - ML10L/R | 25 | 27/11/13 A | 14/02/14 A |
| DDA14.03-10 | Prepare and submit Design DDA - ML14L/R | 61 | 30/11/13 A | 24/02/14 A |
| DDA14.03-40 | Approve Design DDA - ML14L/R | 35 | 25/02/14 A | 29/03/14 |
| DDA14.03-20 | Comment Design DDA - ML14L/R | 35 | 24/02/14 A | 24/02/14 A |
| DDA14.03-30 | Resubmit Design DDA with DC Certificate - ML14L/R | 25 | 24/02/14 A | 24/02/14 A |
| DDA13.03-40 | Approve Design DDA - ML13L/R | 35 | 25/02/14 A | 29/03/14 |
| DDA13.03-20 | Comment Design DDA - ML13L/R | 35 | 29/10/13 A | 04/02/14 A |
| DDA13.03-30 | Resubmit Design DDA with DC Certificate - ML13L/R | 25 | 05/02/14 A | 24/02/14 A |
| DDA12.03-10 | Prepare and submit Design DDA - ML12L/R | 45 | 14/12/13 A | 14/01/14 A |
| DDA12.03-40 | Approve Design DDA - ML12L/R | 35 | 25/02/14 A | 29/03/14 |
| DDA12.03-20 | Comment Design DDA - ML12L/R | 35 | 15/01/14 A | 17/02/14 A |
| DDA12.03-30 | Resubmit Design DDA with DC Certificate - ML12L/R | 25 | 18/02/14 A | 24/02/14 A |
| DDA11.03-40 | Approve Design DDA - ML11L/R | 35 | 18/02/14 A | 28/03/14 |
| DDA11.03-30 | Resubmit Design DDA with DC Certificate - ML11L/R | 25 | 01/10/13 A | 17/02/14 A |
| **Airport Island** | | | | |
| DDA18.03-40 | Approve Design DDA - ML18L/R | 35 | 24/12/13 A | 22/01/14 A |
| DDA18.03-30 | Resubmit Design DDA with DC Certificate - ML18L/R | 25 | 03/09/13 A | 23/12/13 A |
| DDA17.03-40 | Approve Design DDA - ML17L/R | 35 | 25/02/14 A | 29/03/14 |
| DDA17.03-20 | Comment Design DDA - ML17L/R | 35 | 19/09/13 A | 27/12/13 A |
| DDA17.03-30 | Resubmit Design DDA with DC Certificate - ML17L/R | 25 | 28/12/13 A | 24/02/14 A |
| DDA16.03-40 | Approve Design DDA - ML16L/R | 35 | 25/02/14 A | 11/03/14 A |
| DDA16.03-20 | Comment Design DDA - ML16L/R | 35 | 23/10/13 A | 07/01/14 A |
| DDA16.03-30 | Resubmit Design DDA with DC Certificate - ML16L/R | 25 | 08/01/14 A | 24/02/14 A |
| DDA15.03-40 | Approve Design DDA - ML15L/R | 35 | 25/02/14 A | 20/03/14 A |
| DDA15.03-20 | Comment Design DDA - ML15L/R | 35 | 23/11/13 A | 18/01/14 A |
| DDA15.03-30 | Resubmit Design DDA with DC Certificate - ML15L/R | 25 | 19/01/14 A | 24/02/14 A |
| DDA19.03-40 | Approve Design DDA - ML19L/C/R | 35 | 20/02/14 A | 28/03/14 |
| DDA19.03-20 | Comment Design DDA - ML19L/C/R | 35 | 08/08/13 A | 27/12/13 A |
| DDA19.03-30 | Resubmit Design DDA with DC Certificate - ML19L/C/R | 25 | 28/12/13 A | 19/02/14 A |




Actual Work
Remaining Work
Critical Remaining Work
◆ Milestone

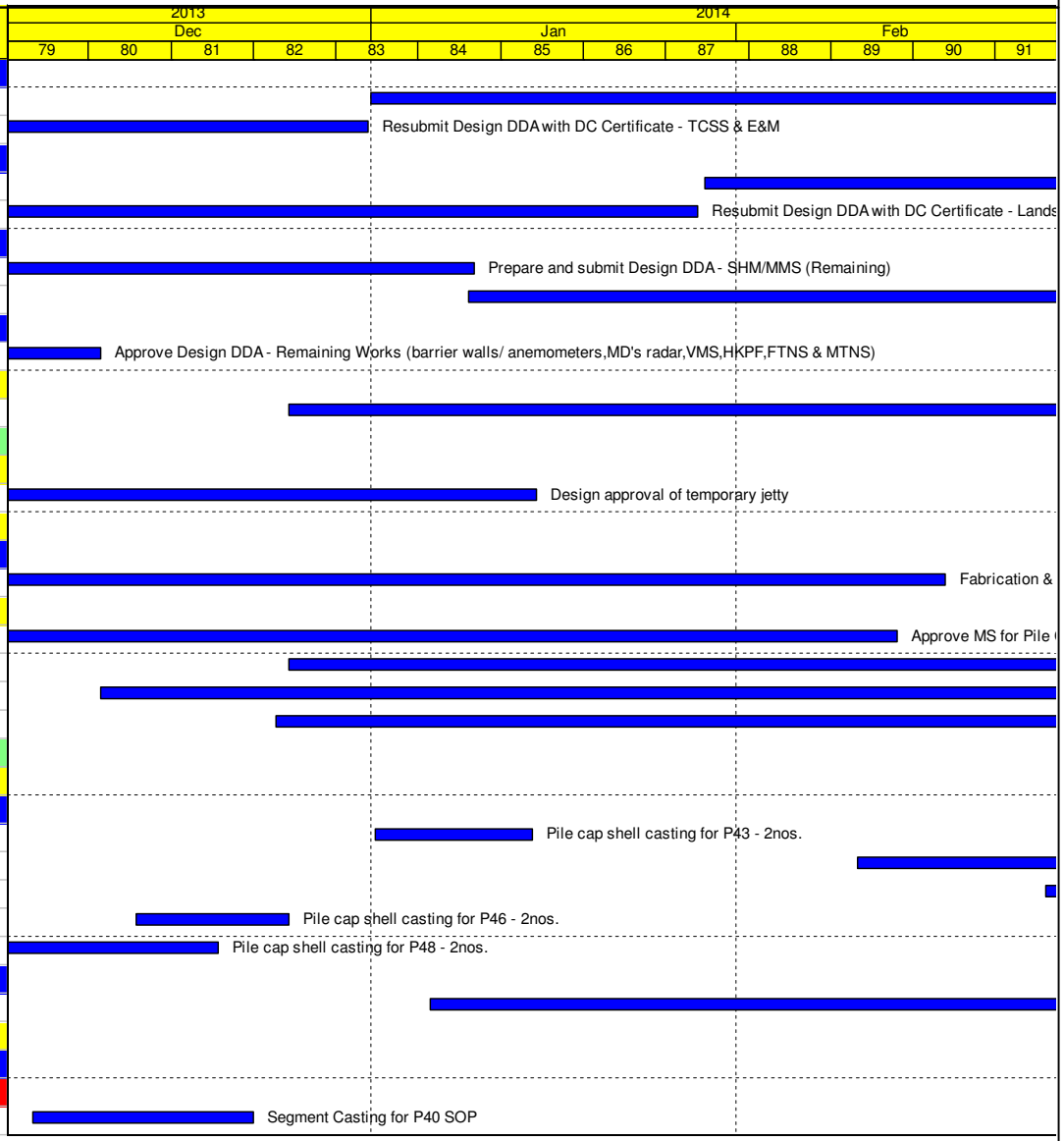
**3 months programme (Dec 13 to Feb 14)**



| Date | Revision | Checked | Approved |
|---|---|---|---|
| 23/06/14 | programme based on Mar 14 submitted 3MRP | Tim | |
| | | | |
| | | | |

Dragages - China Harbour - VSL Joint Venture 寶嘉 - 中國港灣 - 威勝利聯營

| Activity ID | Activity Name | Original Duration | Start | Finish |
|---|---|---|---|---|
| **TCSS and E&M** | | | | |
| DDAEM-40 | Approve Design DDA - TCSS & E&M | 35 | 01/01/14 A | 28/02/14 A |
| DDAEM-30 | Resubmit Design DDA with DC Certificate - TCSS & E&M | 32 | 30/11/13 A | 31/12/13 A |
| **Landscaping** | | | | |
| DDALA-40 | Approve Design DDA - Landscaping | 35 | 29/01/14 A | 28/03/14 |
| DDALA-30 | Resubmit Design DDA with DC Certificate - Landscaping | 35 | 19/10/13 A | 28/01/14 A |
| **SHM/MMS** | | | | |
| DDASHM-50 | Prepare and submit Design DDA - SHM/MMS (Remaining) | 80 | 30/11/13 A | 09/01/14 A |
| DDASHM-60 | Comment Design DDA- SHM/MMS (Remaining) | 35 | 09/01/14 A | 28/03/14 |
| **Remaining Works** | | | | |
| DDAREW-40 | Approve Design DDA - Remaining Works (barrier walls/ anemometers,I | 35 | 29/08/13 A | 09/12/13 A |
| **Segment Catalog** | | | | |
| SD1180 | Prepare segment catalog for ML19 | 45 | 25/12/13 A | 28/03/14 |
| **Project General Submission** | | | | |
| **Temporary Piling Platform/Cofferdem** | | | | |
| PGS2215 | Design approval of temporary jetty | 21 | 14/11/13 A | 15/01/14 A |
| **Segment Casting Yard** | | | | |
| **Segment Moulds** | | | | |
| PGS2315 | Fabrication & 1st Deliver segment mould (Long span) | 100 | 11/11/13 A | 18/02/14 A |
| **Major Method Statement** | | | | |
| PGS2375 | Approve MS for Pile Cap | 60 | 20/06/13 A | 14/02/14 A |
| PGS2395 | Approve MS for Column & Portal | 57 | 25/12/13 A | 29/03/14 |
| PGS2415 | Approve MS for SOP Installation | 60 | 09/12/13 A | 29/03/14 |
| PGS2435 | Approve MS for Segment Erection | 60 | 24/12/13 A | 29/03/14 |
| **Procurement and Fabrication** | | | | |
| **Pile Cap Shell Casting** | | | | |
| **Type CP1 & CP5** | | | | |
| PC1390 | Pile cap shell casting for P43 - 2nos. | 7 | 01/01/14 A | 14/01/14 A |
| PC1400 | Pile cap shell casting for P44 - 2nos. | 7 | 11/02/14 A | 28/02/14 A |
| PC1410 | Pile cap shell casting for P45 - 2nos. | 7 | 27/02/14 A | 13/03/14 A |
| PC1420 | Pile cap shell casting for P46 - 2nos. | 7 | 12/12/13 A | 25/12/13 A |
| PC1440 | Pile cap shell casting for P48 - 2nos. | 7 | 20/11/13 A | 19/12/13 A |
| **Type CP4 & CP6A** | | | | |
| PC1670 | Pile cap shell casting for P20 - 2nos. | 40 | 06/01/14 A | 29/03/14 |
| **Segment Casting** | | | | |
| **Type A, C, D Segment (Total 12 set Moulds)** | | | | |
| **Type A Segment (Western Water Typical Span)** | | | | |
| SC5488 | Segment Casting for P40 SOP | 8 | 03/12/13 A | 22/12/13 A |




Actual Work
Remaining Work
Critical Remaining Work
◆ Milestone

**3 months programme (Dec 13 to Feb 14)**



| Date | Revision | Checked | Approved |
|---|---|---|---|
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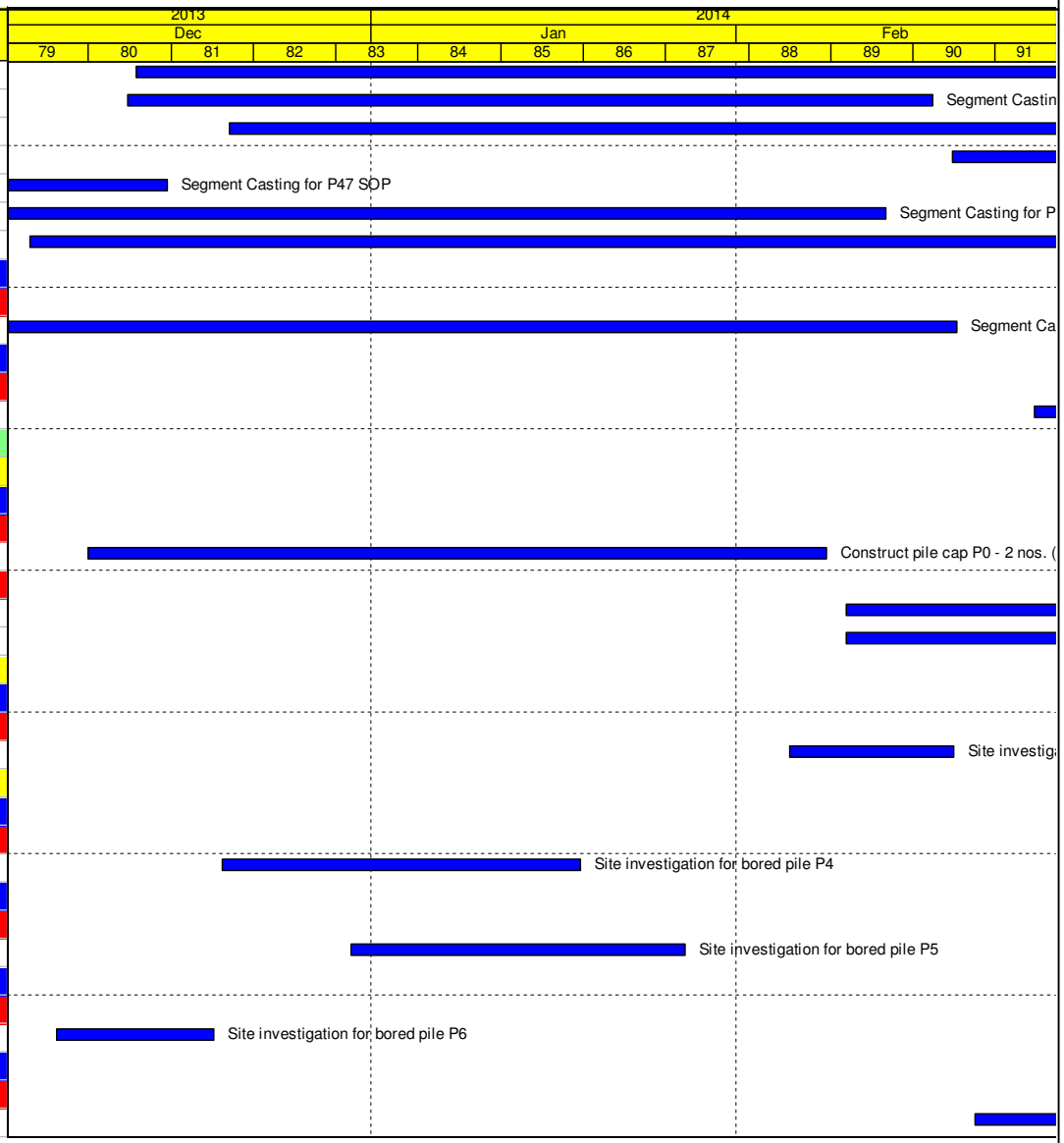
Dragages - China Harbour - VSL Joint Venture 寶嘉 - 中國港灣 - 威勝利聯營

| Activity ID | Activity Name | Original Duration | Start | Finish |
|---|---|---|---|---|
| SC5498 | Segment Casting for P40 field segment | 40 | 12/12/13 A | 21/03/14 A |
| SC5508 | Segment Casting for P41 SOP | 8 | 11/12/13 A | 17/02/14 A |
| SC5518 | Segment Casting for P41 field segment | 40 | 20/12/13 A | 05/09/14 |
| SC5528 | Segment Casting for P42 SOP | 8 | 19/02/14 A | 08/03/14 A |
| SC5628 | Segment Casting for P47 SOP | 13 | 09/11/13 A | 14/12/13 A |
| SC5638 | Segment Casting for P47 field segment | 40 | 13/11/13 A | 13/02/14 A |
| SC5678 | Segment Casting for P49 field segment | 36 | 03/12/13 A | 20/05/14 |
| **Type B Segment (Total 1 set Mould)** | | | | |
| **Turnaround** | | | | |
| SC6198 | Segment Casting for P60 field segment | 40 | 28/10/13 A | 19/02/14 A |
| **Type CH Segment (Total 12 set Moulds)** | | | | |
| **ML03 (P16 TO P21)** | | | | |
| SC1010 | Segment Casting for P20L CH1 to CH4 (MCH2) (Learning) x 2 | 32 | 26/02/14 A | 22/03/14 A |
| **Viaduct between HKSAR Boundary and Landing Point on Airport Island** | | | | |
| **ML01L/R 75mx8 - Stage 1 of Works** | | | | |
| **Pier P0L/R** | | | | |
| **Pile Cap Construction** | | | | |
| WW1050 | Construct pile cap P0 - 2 nos. (Learning) | 40 | 08/12/13 A | 08/02/14 A |
| **Column Construction** | | | | |
| WW1060 | Construct column P0 - 2 nos. (insitu) | 7 | 10/02/14 A | 06/03/14 A |
| WW1062 | Construct column head P0 - 2 nos. (insitu) | 10 | 10/02/14 A | 06/03/14 A |
| **ML01L/R 75mx8 - Stage 2 of Works** | | | | |
| **Pier P1L/R** | | | | |
| **Site Investigation** | | | | |
| WW1090 | Site investigation for bored pile P1 | 12 | 05/02/14 A | 19/02/14 A |
| **ML01L/R 75mx8 - Stage 4 of Works** | | | | |
| **Pier P4L/R** | | | | |
| **Site Investigation** | | | | |
| WW1330 | Site investigation for bored pile P4 | 24 | 19/12/13 A | 18/01/14 A |
| **Pier P5L/R** | | | | |
| **Site Investigation** | | | | |
| WW1410 | Site investigation for bored pile P5 | 24 | 30/12/13 A | 27/01/14 A |
| **Pier P6L/R** | | | | |
| **Site Investigation** | | | | |
| WW1490 | Site investigation for bored pile P6 | 12 | 05/12/13 A | 18/12/13 A |
| **Pier P7L/R** | | | | |
| **Site Investigation** | | | | |
| WW1570 | Site investigation for bored pile P7 | 12 | 21/02/14 A | 06/03/14 A |




Actual Work
Remaining Work
Critical Remaining Work
Milestone

**3 months programme (Dec 13 to Feb 14)**



| Date | Revision | Checked | Approved |
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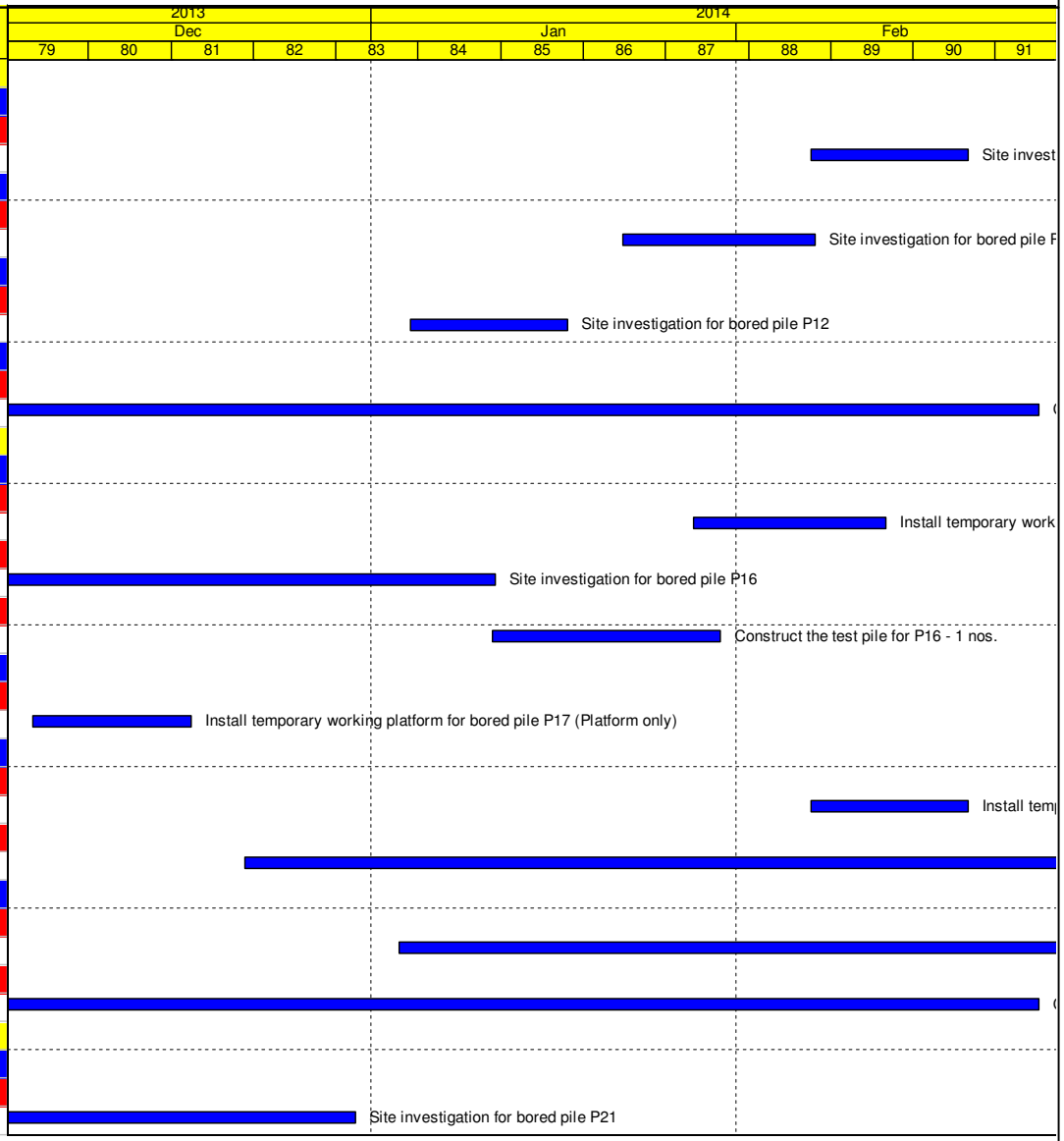
Dragages - China Harbour - VSL Joint Venture 寶嘉 - 中國港灣 - 威勝利聯營

| Activity ID | Activity Name | Original Duration | Start | Finish |
|---|---|---|---|---|
| **ML02L/R 75mx8 - Stage 4 of Works** | | | | |
| **Pier P9L/R** | | | | |
| **Site Investigation** | | | | |
| WW1730 | Site investigation for bored pile P9 | 12 | 07/02/14 A | 20/02/14 A |
| **Pier P10L/R** | | | | |
| **Site Investigation** | | | | |
| WW1810 | Site investigation for bored pile P10 | 12 | 22/01/14 A | 07/02/14 A |
| **Pier P12L/R** | | | | |
| **Site Investigation** | | | | |
| WW1970 | Site investigation for bored pile P12 | 12 | 04/01/14 A | 17/01/14 A |
| **Pier P14L/R** | | | | |
| **Foundation - Bored Pile** | | | | |
| WW2149 | Construct bored piles P14 - 6 nos. | 43 | 17/11/13 A | 26/02/14 A |
| **ML03L/R 109.661m+150mx3+109.661m Navigation Channel - Stage 4 of Works** | | | | |
| **Pier P16L/R (M.J.)** | | | | |
| **Temporary Works** | | | | |
| NC1000 | Install temporary working platform for bored pile P16 (for friction pile) | 12 | 28/01/14 A | 13/02/14 A |
| **Site Investigation** | | | | |
| NC1010 | Site investigation for bored pile P16 | 34 | 30/11/13 A | 11/01/14 A |
| **Foundation - Bored Pile** | | | | |
| NC1035 | Construct the test pile for P16 - 1 nos. | 60 | 11/01/14 A | 30/01/14 A |
| **Pier P17L/R** | | | | |
| **Temporary Works** | | | | |
| NC1120 | Install temporary working platform for bored pile P17 (Platform only) | 12 | 03/12/13 A | 16/12/13 A |
| **Pier P18L/R** | | | | |
| **Temporary Works** | | | | |
| NC1240 | Install temporary working platform for bored pile P18 (Platform only) | 12 | 07/02/14 A | 20/02/14 A |
| **Foundation - Bored Pile** | | | | |
| NC1280 | Construct bored piles P18 - 16 nos. (Bridge+uptream dolphin) | 99 | 21/12/13 A | 30/04/14 |
| **Pier P19L/R** | | | | |
| **Temporary Works** | | | | |
| NC1390 | Remove the temporary working platform P19 (Platform only) | 6 | 03/01/14 A | 04/03/14 A |
| **Foundation - Bored Pile** | | | | |
| NC1400 | Construct bored piles P19 - 16 nos. (Bridge+uptream dolphin) | 87 | 19/09/13 A | 26/02/14 A |
| **ML04L/R 74.5mx8 - Stage 4 of Works** | | | | |
| **Pier P21L/R (M.J.)** | | | | |
| **Site Investigation** | | | | |
| WW5005 | Site investigation for bored pile P21 | 24 | 30/11/13 A | 30/12/13 A |

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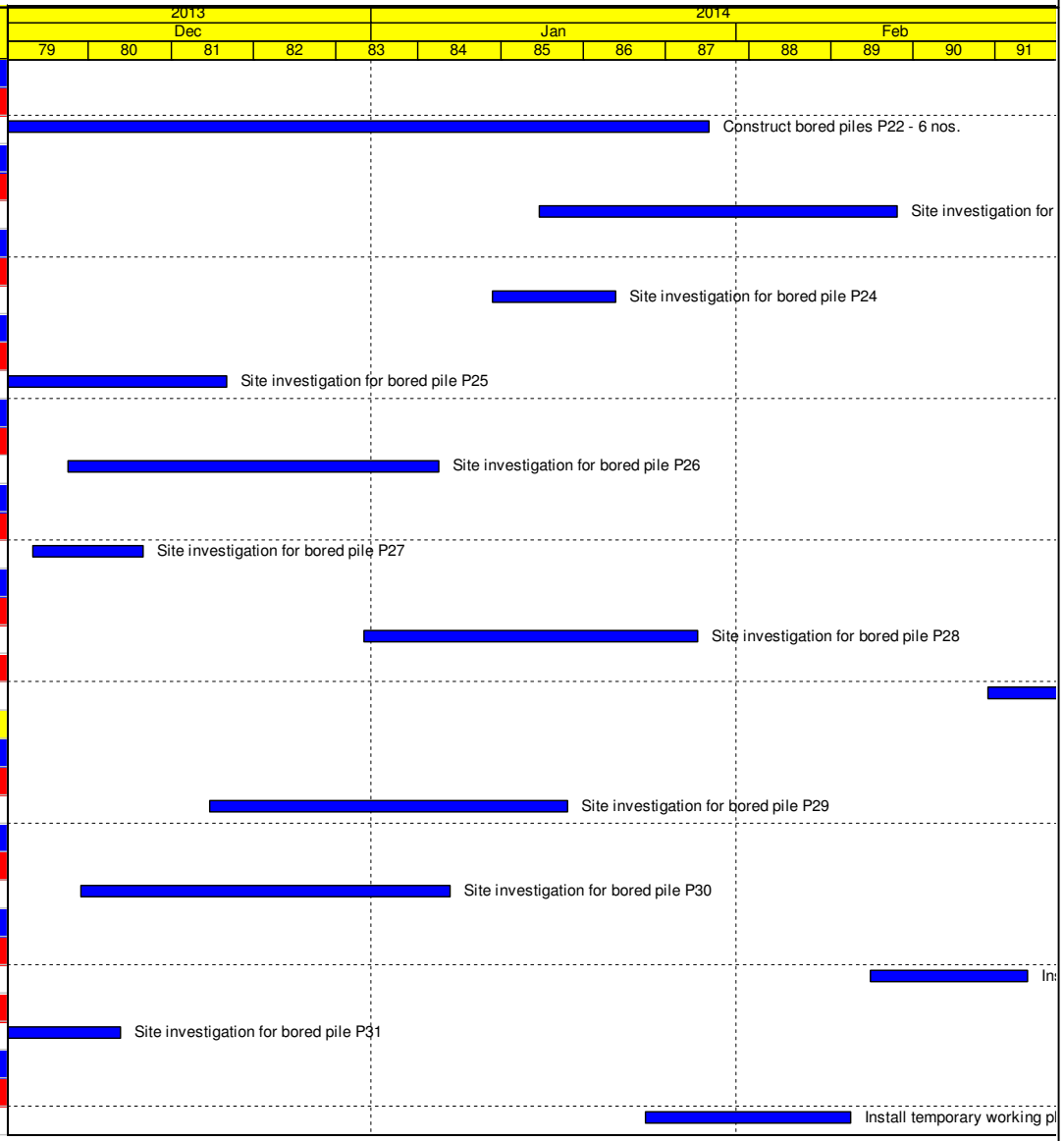
Dragages - China Harbour - VSL Joint Venture 寶嘉 - 中國港灣 - 威勝利聯營

| Activity ID | Activity Name | Original Duration | Start | Finish |
|---|---|---|---|---|
| **Pier P22L/R** | | | | |
| **Foundation - Bored Pile** | | | | |
| WW5030 | Construct bored piles P22 - 6 nos. | 42 | 19/11/13 A | 29/01/14 A |
| **Pier P23L/R** | | | | |
| **Site Investigation** | | | | |
| WW5090 | Site investigation for bored pile P23 | 24 | 15/01/14 A | 14/02/14 A |
| **Pier P24L/R** | | | | |
| **Site Investigation** | | | | |
| WW5170 | Site investigation for bored pile P24 | 9 | 11/01/14 A | 21/01/14 A |
| **Pier P25L/R** | | | | |
| **Site Investigation** | | | | |
| WW5250 | Site investigation for bored pile P25 | 24 | 22/11/13 A | 19/12/13 A |
| **Pier P26L/R** | | | | |
| **Site Investigation** | | | | |
| WW5330 | Site investigation for bored pile P26 | 24 | 06/12/13 A | 06/01/14 A |
| **Pier P27L/R** | | | | |
| **Site Investigation** | | | | |
| WW5410 | Site investigation for bored pile P27 | 9 | 03/12/13 A | 12/12/13 A |
| **Pier P28L/R** | | | | |
| **Site Investigation** | | | | |
| WW5490 | Site investigation for bored pile P28 | 24 | 31/12/13 A | 28/01/14 A |
| **Foundation - Bored Pile** | | | | |
| WW5509 | Construct bored piles P28 - 6 nos. | 37 | 22/02/14 A | 04/04/14 |
| **ML05L/R 74.5mx8 - Stage 4 of Works** | | | | |
| **Pier P29L/R (M.J.)** | | | | |
| **Site Investigation** | | | | |
| WW5570 | Site investigation for bored pile P29 | 24 | 18/12/13 A | 17/01/14 A |
| **Pier P30L/R** | | | | |
| **Site Investigation** | | | | |
| WW5650 | Site investigation for bored pile P30 | 24 | 07/12/13 A | 07/01/14 A |
| **Pier P31L/R** | | | | |
| **Temporary Works** | | | | |
| WW5720 | Install temporary working platform for bored pile P31 (Platform only) | 12 | 12/02/14 A | 25/02/14 A |
| **Site Investigation** | | | | |
| WW5730 | Site investigation for bored pile P31 | 9 | 30/11/13 A | 10/12/13 A |
| **Pier P32L/R** | | | | |
| **Temporary Works** | | | | |
| WW5800 | Install temporary working platform for bored pile P32 (Platform only) | 12 | 24/01/14 A | 10/02/14 A |

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Dragages - China Harbour - VSL Joint Venture 寶嘉 - 中國港灣 - 威勝利聯營

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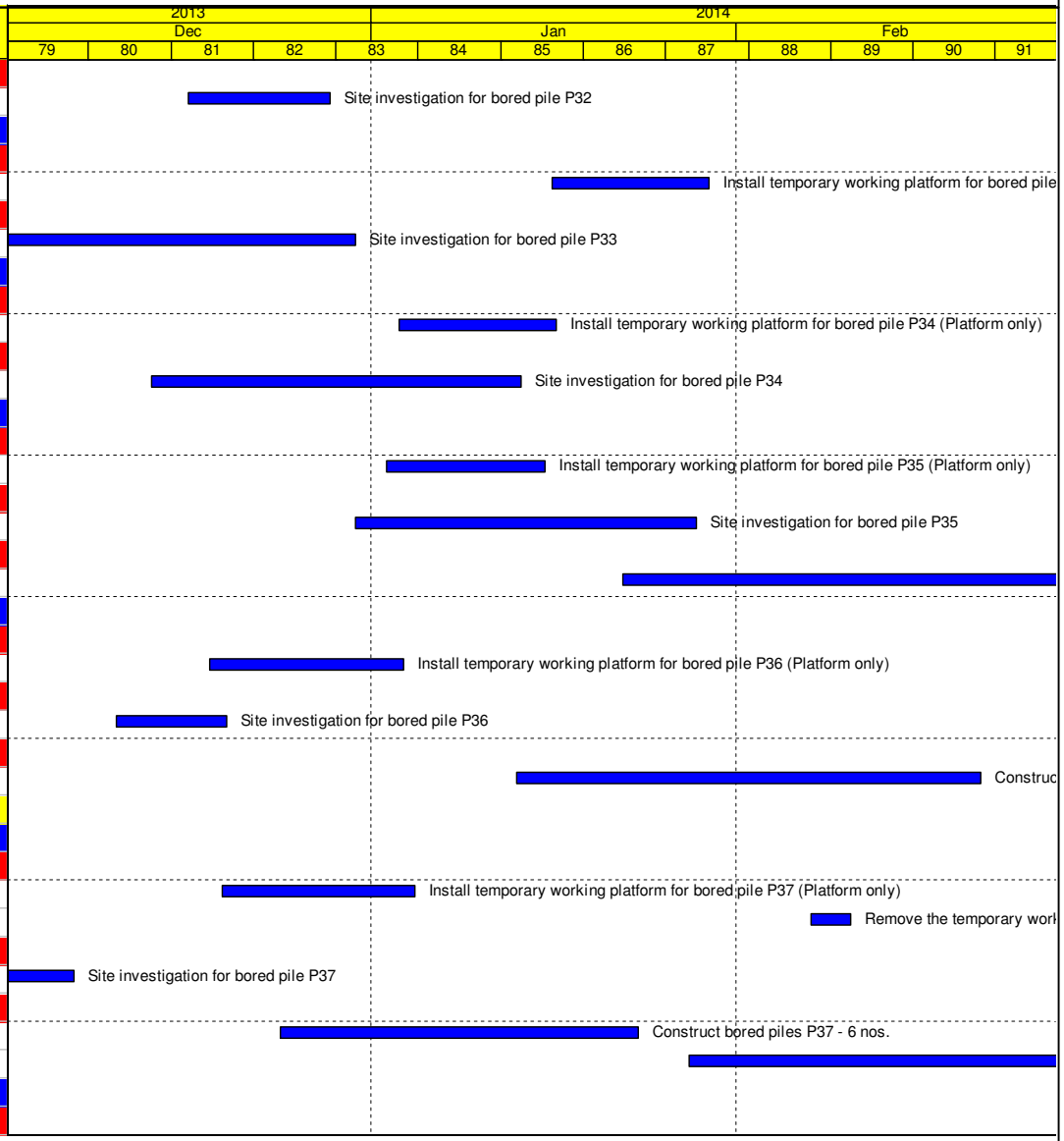
|---|---|---|---|---|
| **Site Investigation** | | | | |
| WW5810 | Site investigation for bored pile P32 | 9 | 16/12/13 A | 28/12/13 A |
| **Pier P33L/R** | | | | |
| **Temporary Works** | | | | |
| WW5880 | Install temporary working platform for bored pile P33 (Platform only) | 12 | 16/01/14 A | 29/01/14 A |
| **Site Investigation** | | | | |
| WW5890 | Site investigation for bored pile P33 | 24 | 30/11/13 A | 30/12/13 A |
| **Pier P34L/R** | | | | |
| **Temporary Works** | | | | |
| WW5960 | Install temporary working platform for bored pile P34 (Platform only) | 12 | 03/01/14 A | 16/01/14 A |
| **Site Investigation** | | | | |
| WW5970 | Site investigation for bored pile P34 | 24 | 13/12/13 A | 13/01/14 A |
| **Pier P35L/R** | | | | |
| **Temporary Works** | | | | |
| WW6040 | Install temporary working platform for bored pile P35 (Platform only) | 12 | 02/01/14 A | 15/01/14 A |
| **Site Investigation** | | | | |
| WW6050 | Site investigation for bored pile P35 | 24 | 30/12/13 A | 28/01/14 A |
| **Foundation - Bored Pile** | | | | |
| WW6070 | Construct bored piles P35 - 6 nos. | 39 | 22/01/14 A | 11/03/14 A |
| **Pier P36L/R** | | | | |
| **Temporary Works** | | | | |
| WW6120 | Install temporary working platform for bored pile P36 (Platform only) | 12 | 18/12/13 A | 03/01/14 A |
| **Site Investigation** | | | | |
| WW6130 | Site investigation for bored pile P36 | 9 | 10/12/13 A | 19/12/13 A |
| **Foundation - Bored Pile** | | | | |
| WW6150 | Construct bored piles P36 - 6 nos. | 31 | 13/01/14 A | 21/02/14 A |
| **ML06L/R 74.5mx8 - Stage 4 of Works** | | | | |
| **Pier P37L/R (M.J.)** | | | | |
| **Temporary Works** | | | | |
| WW6200 | Install temporary working platform for bored pile P37 (Platform only) | 12 | 19/12/13 A | 04/01/14 A |
| WW6220 | Remove the temporary working platform P37 (Platform only) | 4 | 07/02/14 A | 10/02/14 A |
| **Site Investigation** | | | | |
| WW6210 | Site investigation for bored pile P37 | 24 | 09/11/13 A | 06/12/13 A |
| **Foundation - Bored Pile** | | | | |
| WW6230 | Construct bored piles P37 - 6 nos. | 24 | 24/12/13 A | 23/01/14 A |
| WW6240 | Pile testing P37 | 28 | 28/01/14 A | 18/04/14 |
| **Pier 38L/R** | | | | |
| **Temporary Works** | | | | |

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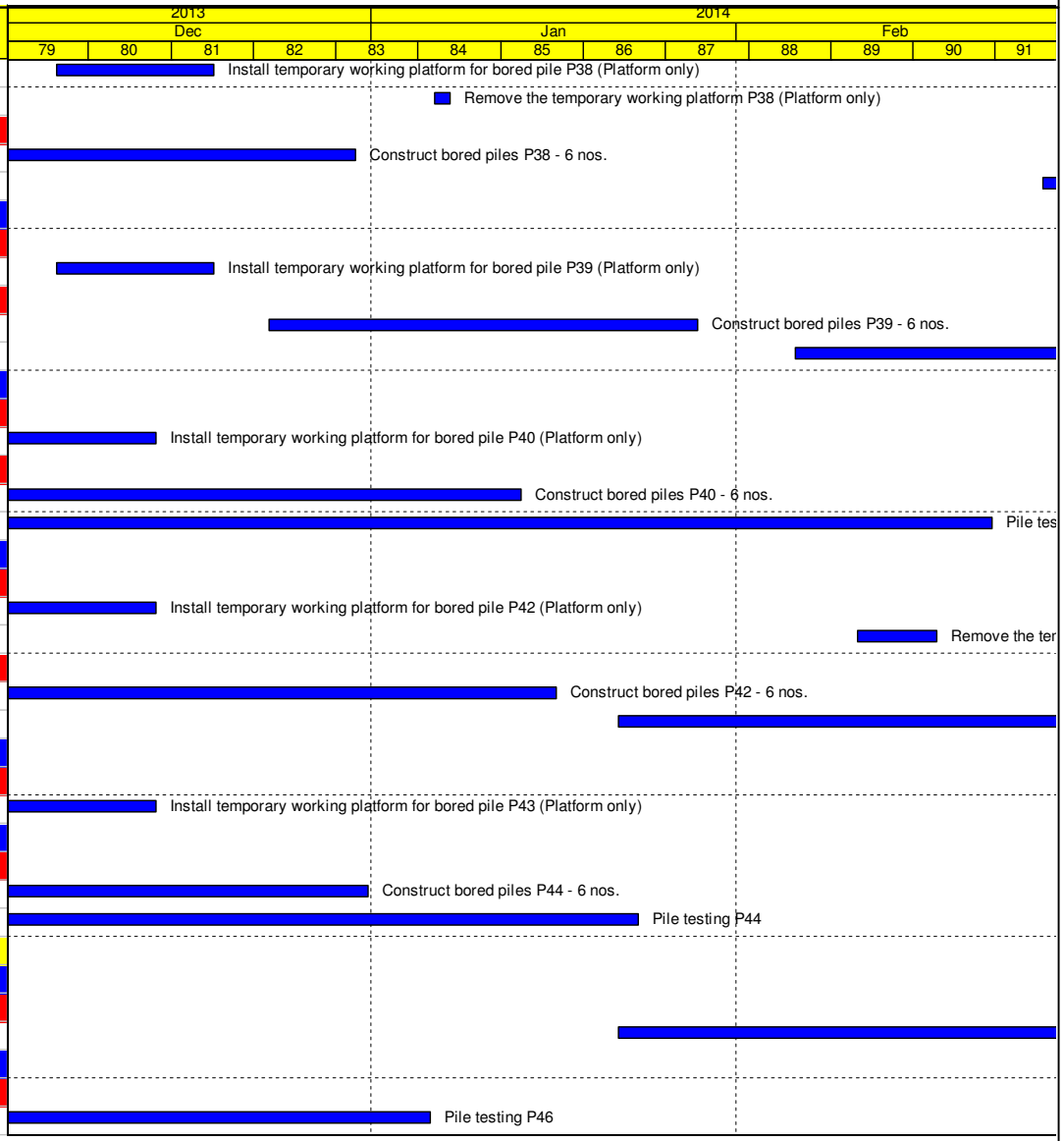
Dragages - China Harbour - VSL Joint Venture 寶嘉 - 中國港灣 - 威勝利聯營

| Activity ID | Activity Name | Original Duration | Start | Finish |
|---|---|---|---|---|
| WW6280 | Install temporary working platform for bored pile P38 (Platform only) | 12 | 05/12/13 A | 18/12/13 A |
| WW6300 | Remove the temporary working platform P38 (Platform only) | 4 | 06/01/14 A | 07/01/14 A |
| **Foundation - Bored Pile** | | | | |
| WW6310 | Construct bored piles P38 - 6 nos. | 25 | 29/11/13 A | 30/12/13 A |
| WW6320 | Pile testing P38 | 28 | 27/02/14 A | 28/03/14 |
| **Pier 39L/R** | | | | |
| **Temporary Works** | | | | |
| WW6360 | Install temporary working platform for bored pile P39 (Platform only) | 12 | 05/12/13 A | 18/12/13 A |
| **Foundation - Bored Pile** | | | | |
| WW6390 | Construct bored piles P39 - 6 nos. | 29 | 23/12/13 A | 28/01/14 A |
| WW6400 | Pile testing P39 | 28 | 06/02/14 A | 22/03/14 A |
| **Pier 40L/R** | | | | |
| **Temporary Works** | | | | |
| WW6440 | Install temporary working platform for bored pile P40 (Platform only) | 12 | 30/11/13 A | 13/12/13 A |
| **Foundation - Bored Pile** | | | | |
| WW6470 | Construct bored piles P40 - 6 nos. | 27 | 10/10/13 A | 13/01/14 A |
| WW6480 | Pile testing P40 | 28 | 26/11/13 A | 22/02/14 A |
| **Pier 42L/R** | | | | |
| **Temporary Works** | | | | |
| WW6600 | Install temporary working platform for bored pile P42 (Platform only) | 12 | 30/11/13 A | 13/12/13 A |
| WW6620 | Remove the temporary working platform P42 (Platform only) | 4 | 11/02/14 A | 18/02/14 A |
| **Foundation - Bored Pile** | | | | |
| WW6630 | Construct bored piles P42 - 6 nos. | 26 | 11/11/13 A | 16/01/14 A |
| WW6640 | Pile testing P42 | 28 | 22/01/14 A | 21/03/14 A |
| **Pier 43L/R** | | | | |
| **Temporary Works** | | | | |
| WW6680 | Install temporary working platform for bored pile P43 (Platform only) | 12 | 30/11/13 A | 13/12/13 A |
| **Pier 44L/R** | | | | |
| **Foundation - Bored Pile** | | | | |
| WW6790 | Construct bored piles P44 - 6 nos. | 22 | 05/10/13 A | 31/12/13 A |
| WW6800 | Pile testing P44 | 28 | 15/11/13 A | 23/01/14 A |
| **ML07L/R 73.396mx8 - Stage 4 of Works** | | | | |
| **Pier P45L/R (M.J.)** | | | | |
| **Foundation - Bored Pile** | | | | |
| WW6880 | Pile testing P45 | 28 | 22/01/14 A | 15/03/14 A |
| **Pier P46L/R** | | | | |
| **Foundation - Bored Pile** | | | | |
| WW6960 | Pile testing P46 | 28 | 26/10/13 A | 06/01/14 A |

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Dragages - China Harbour - VSL Joint Venture 寶嘉 - 中國港灣 - 威勝利聯營

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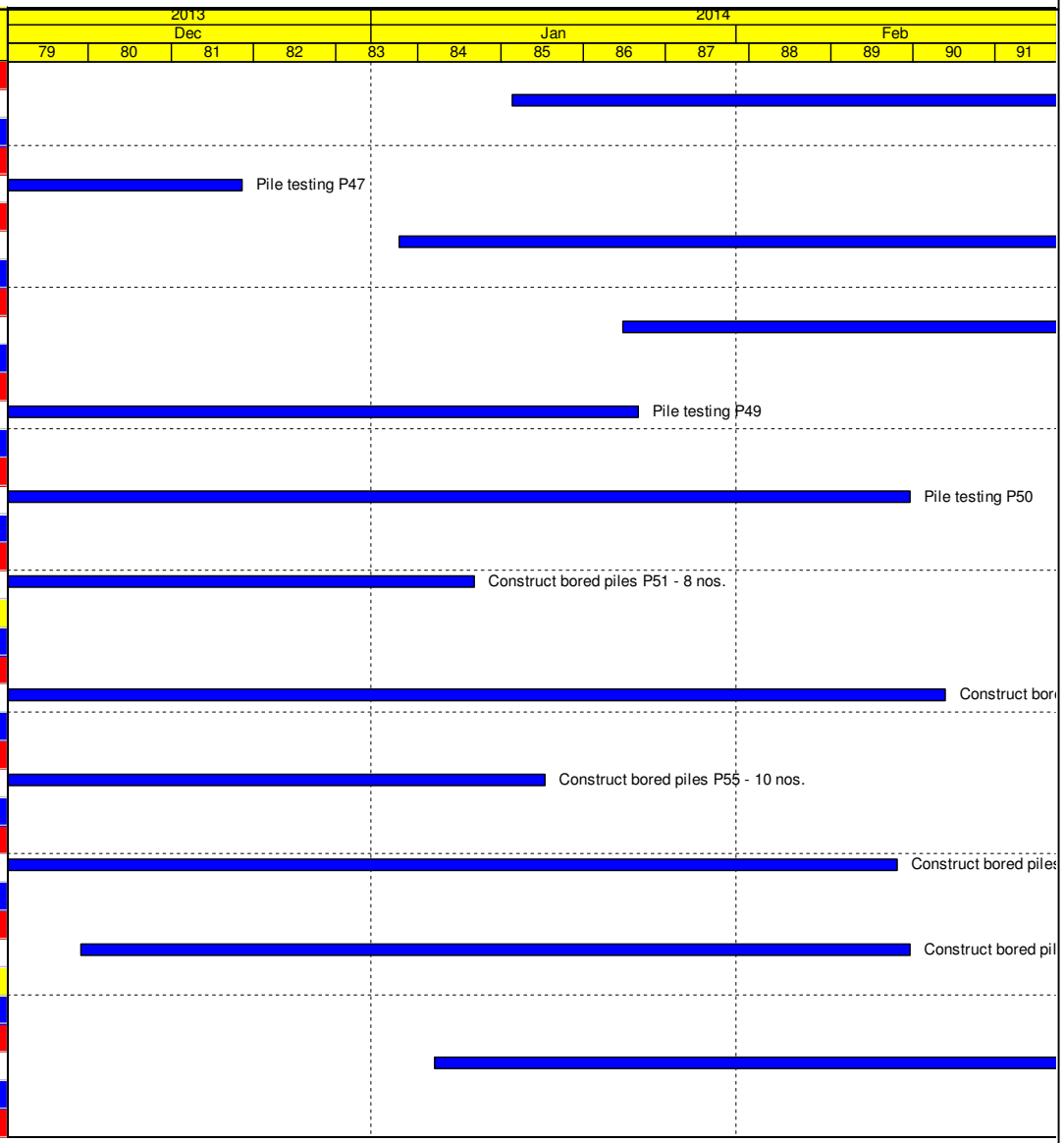
|---|---|---|---|---|
| | **Pile Cap Construction** | | | |
| WW6970 | Construct pile cap P46 - 2 nos. (Learning) | 40 | 13/01/14 A | 15/04/14 |
| | **Pier P47L/R** | | | |
| | **Foundation - Bored Pile** | | | |
| WW7040 | Pile testing P47 | 28 | 03/10/13 A | 21/12/13 A |
| | **Pile Cap Construction** | | | |
| WW7050 | Construct pile cap P47 - 2 nos. (Learning) | 40 | 03/01/14 A | 10/03/14 A |
| | **Pier P48L/R** | | | |
| | **Pile Cap Construction** | | | |
| WW7130 | Construct pile cap P48 - 2 nos. | 30 | 22/01/14 A | 28/03/14 |
| | **Pier P49L/R** | | | |
| | **Foundation - Bored Pile** | | | |
| WW7200 | Pile testing P49 | 28 | 07/09/13 A | 23/01/14 A |
| | **Pier P50L/R** | | | |
| | **Foundation - Bored Pile** | | | |
| WW7280 | Pile testing P50 | 29 | 06/08/13 A | 15/02/14 A |
| | **Pier P51L/R** | | | |
| | **Foundation - Bored Pile** | | | |
| WW7340 | Construct bored piles P51 - 8 nos. | 24 | 07/10/13 A | 09/01/14 A |
| | **ML08L/R 70mx6 - Stage 4 of Works** | | | |
| | **Pier P54L/R** | | | |
| | **Foundation - Bored Pile** | | | |
| WW7560 | Construct bored piles P54 - 10 nos. | 50 | 05/08/13 A | 18/02/14 A |
| | **Pier P55L/R** | | | |
| | **Foundation - Bored Pile** | | | |
| WW7640 | Construct bored piles P55 - 10 nos. | 43 | 14/11/13 A | 15/01/14 A |
| | **Pier P56L/R** | | | |
| | **Foundation - Bored Pile** | | | |
| WW7720 | Construct bored piles P56 - 12 nos. | 60 | 21/11/13 A | 14/02/14 A |
| | **Pier P57L/R** | | | |
| | **Foundation - Bored Pile** | | | |
| WW7800 | Construct bored piles P57- 10 nos. | 44 | 07/12/13 A | 15/02/14 A |
| | **ML09L/R 73.396Mx8 - Stage 4 of Works** | | | |
| | **Pier P59L/R (M.J.)** | | | |
| | **Foundation - Bored Pile** | | | |
| WW7960 | Construct bored piles P59 - 10 nos. | 76 | 06/01/14 A | 12/03/14 A |
| | **Pier P61L/R** | | | |
| | **Foundation - Bored Pile** | | | |

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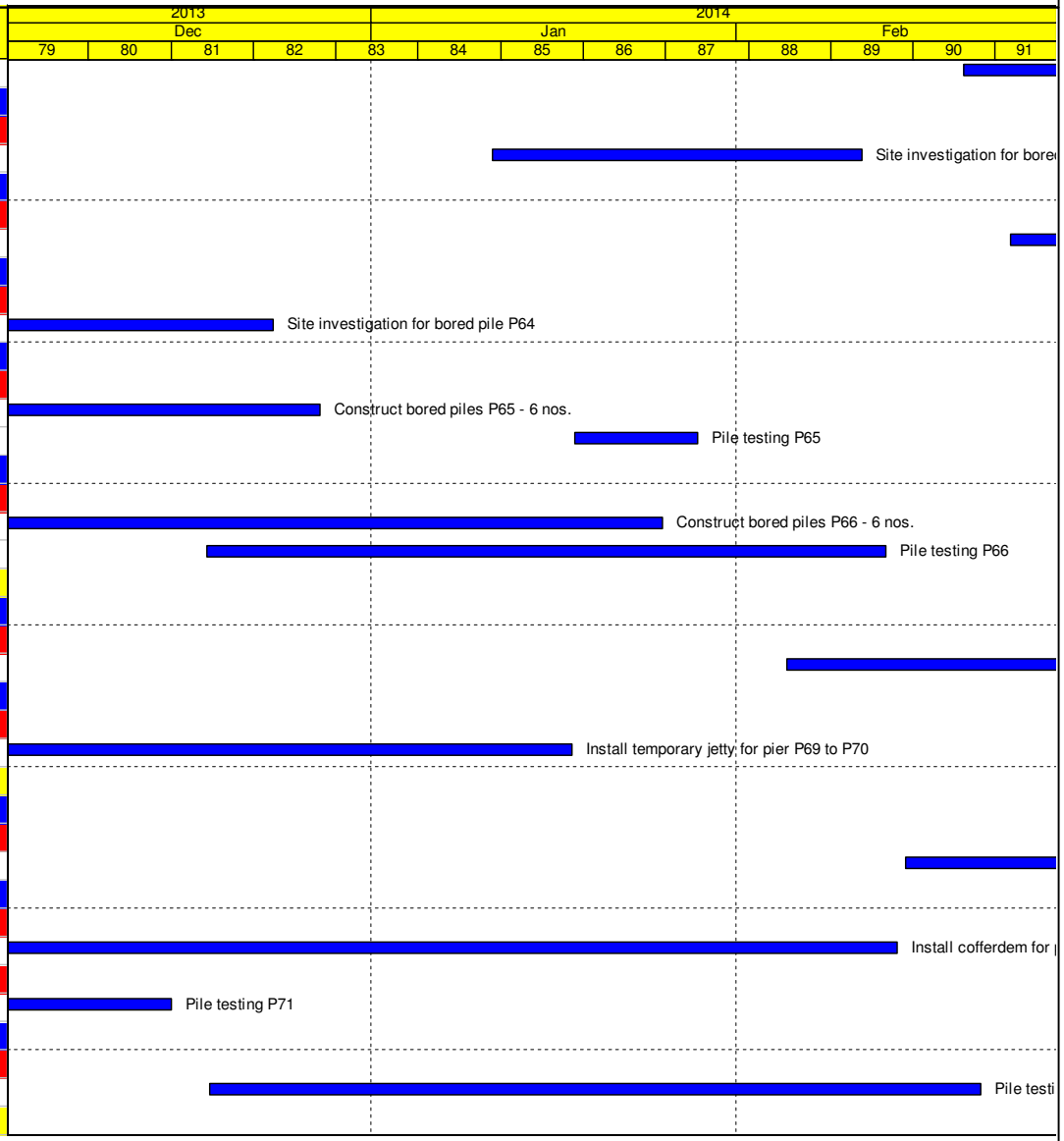
Dragages - China Harbour - VSL Joint Venture 寶嘉 - 中國港灣 - 威勝利聯營

| Activity ID | Activity Name | Original Duration | Start | Finish |
|---|---|---|---|---|
| WW8110 | Construct bored piles P61 - 8 nos. | 33 | 20/02/14 A | 11/03/14 A |
| **Pier P62L/R** | | | | |
| **Site Investigation** | | | | |
| WW8160 | Site investigation for bored pile P62 | 24 | 11/01/14 A | 11/02/14 A |
| **Pier P63L/R** | | | | |
| **Site Investigation** | | | | |
| WW8260 | Site investigation for bored pile P63 | 24 | 24/02/14 A | 22/03/14 A |
| **Pier P64L/R** | | | | |
| **Site Investigation** | | | | |
| WW8340 | Site investigation for bored pile P64 | 24 | 26/11/13 A | 23/12/13 A |
| **Pier P65L/R** | | | | |
| **Foundation - Bored Pile** | | | | |
| WW8440 | Construct bored piles P65 - 6 nos. | 22 | 25/10/13 A | 27/12/13 A |
| WW8450 | Pile testing P65 | 28 | 18/01/14 A | 28/01/14 A |
| **Pier P66L/R** | | | | |
| **Foundation - Bored Pile** | | | | |
| WW8520 | Construct bored piles P66 - 6 nos. | 24 | 27/11/13 A | 25/01/14 A |
| WW8530 | Pile testing P66 | 28 | 18/12/13 A | 13/02/14 A |
| **ML10L/R 115m+180m+115m - Stage 4 of Works** | | | | |
| **Pier P68L/R** | | | | |
| **Temporary Works** | | | | |
| AC1010 | Install temporary jetty for pier P68 | 44 | 05/02/14 A | 07/05/14 |
| **Pier P69L/R** | | | | |
| **Temporary Works** | | | | |
| AC1120 | Install temporary jetty for pier P69 to P70 | 40 | 12/08/13 A | 18/01/14 A |
| **ML11L/R 109m+165mx2+109m - Stage 4 of Works** | | | | |
| **Pier P70L/R (M.J.)** | | | | |
| **Foundation - Bored Pile** | | | | |
| AC1190 | Construct bored piles P70 - 6 nos. | 34 | 15/02/14 A | 03/04/14 |
| **Pier P71L/R** | | | | |
| **Temporary Works** | | | | |
| AC1240 | Install cofferdem for pile cap construction - P71 - 2 nos. | 60 | 30/11/13 A | 14/02/14 A |
| **Foundation - Bored Pile** | | | | |
| AC1280 | Pile testing P71 | 28 | 22/10/13 A | 15/12/13 A |
| **Pier P73L/R** | | | | |
| **Foundation - Bored Pile** | | | | |
| AC1460 | Pile testing P73 | 28 | 18/12/13 A | 21/02/14 A |
| **ML12L/R 109m+165mx2+109m - Stage 4 of Works** | | | | |

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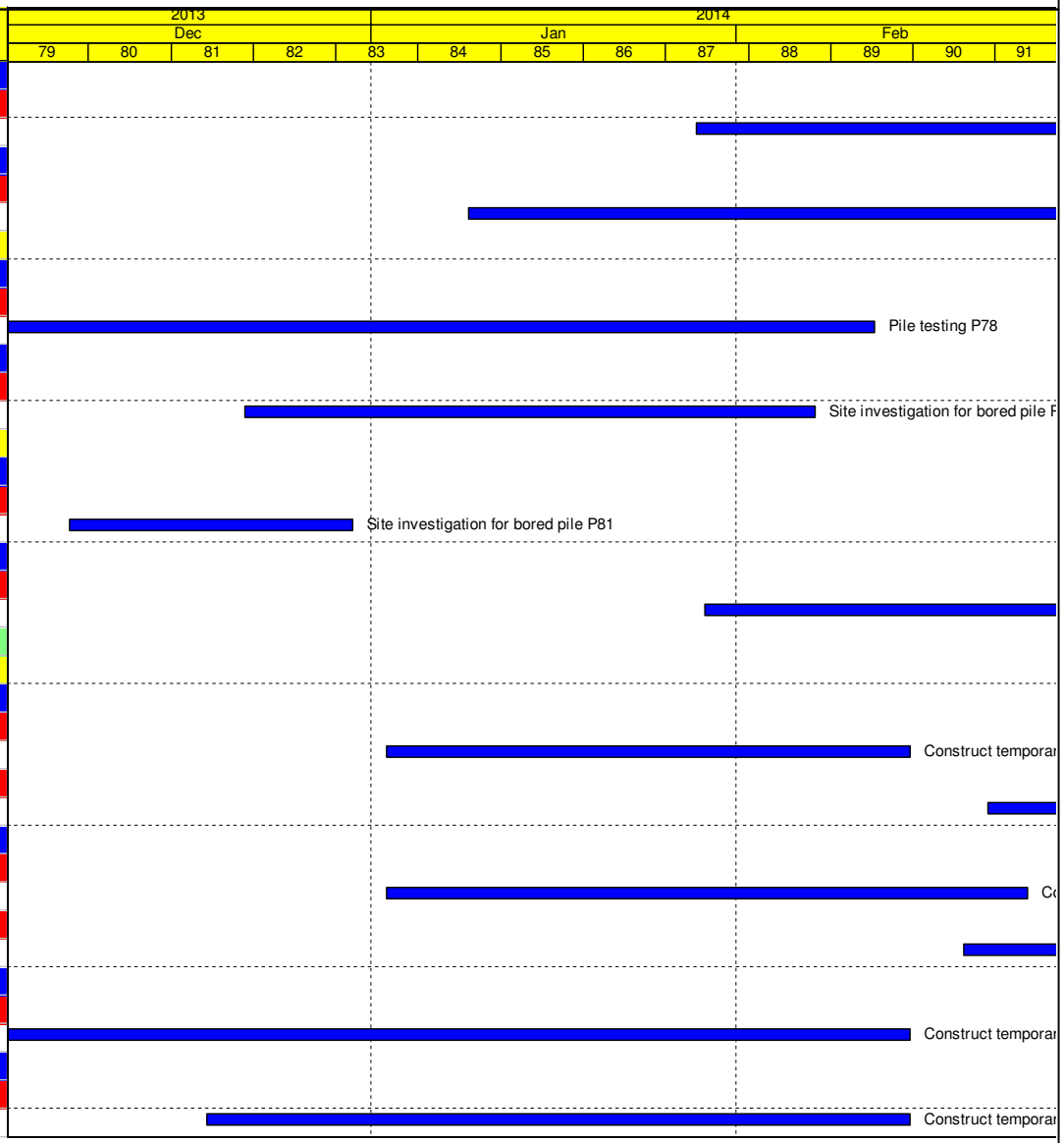
Dragages - China Harbour - VSL Joint Venture 寶嘉 - 中國港灣 - 威勝利聯營

| Activity ID | Activity Name | Original Duration | Start | Finish |
|---|---|---|---|---|
| **Pier P74L/R (M.J.)** | | | | |
| **Temporary Works** | | | | |
| AC1500 | Install cofferdem for pile cap construction - P74 - 2 nos. | 45 | 28/01/14 A | 25/03/14 A |
| **Pier P76L/R** | | | | |
| **Foundation - Bored Pile** | | | | |
| AC1720 | Construct bored piles P76 - 8 nos. | 37 | 09/01/14 A | 12/05/14 |
| **ML13L/R 115m+180m+115m - Stage 4 of Works** | | | | |
| **Pier P78L/R (M.J.)** | | | | |
| **Foundation - Bored Pile** | | | | |
| AC1900 | Pile testing P78 | 28 | 16/08/13 A | 12/02/14 A |
| **Pier P80L/R** | | | | |
| **Site Investigation** | | | | |
| AC2030 | Site investigation for bored pile P80 | 36 | 21/12/13 A | 07/02/14 A |
| **ML14L/R 115m+180m+100.561m - Stage 4 of Works** | | | | |
| **Pier P81L/R (M.J.)** | | | | |
| **Site Investigation** | | | | |
| AC2035 | Site investigation for bored pile P81 | 18 | 06/12/13 A | 30/12/13 A |
| **Pier P82L/R** | | | | |
| **Site Investigation** | | | | |
| AC2210 | Site investigation for bored pile P82 | 30 | 29/01/14 A | 07/03/14 A |
| **Viaduct between Landing Point on Airport Island and Scenic Hill** | | | | |
| **ML15L/R 43m+65mx6+37m - Stage 5 of Works** | | | | |
| **Pier P84L/R (M.J.)** | | | | |
| **Temporary Works** | | | | |
| AI0999 | Construct temporary piling platform for bored pile P84 | 36 | 02/01/14 A | 15/02/14 A |
| **Foundation - Bored Pile** | | | | |
| AI1030 | Construct bored piles P84 - 6 nos. | 60 | 22/02/14 A | 09/07/14 |
| **Pier P85L/R** | | | | |
| **Temporary Works** | | | | |
| AI1090 | Construct temporary piling platform for bored pile P85 | 40 | 02/01/14 A | 25/02/14 A |
| **Foundation - Bored Pile** | | | | |
| AI1110 | Construct bored piles P85 - 2 nos. | 27 | 20/02/14 A | 24/07/14 |
| **Pier P86L/R** | | | | |
| **Temporary Works** | | | | |
| AI1160 | Construct temporary piling platform for bored pile P86 | 40 | 11/11/13 A | 15/02/14 A |
| **Pier P87L/R** | | | | |
| **Temporary Works** | | | | |
| AI1230 | Construct temporary piling platform for bored pile P87 | 40 | 18/12/13 A | 15/02/14 A |




Actual Work
Remaining Work
Critical Remaining Work
◆ Milestone

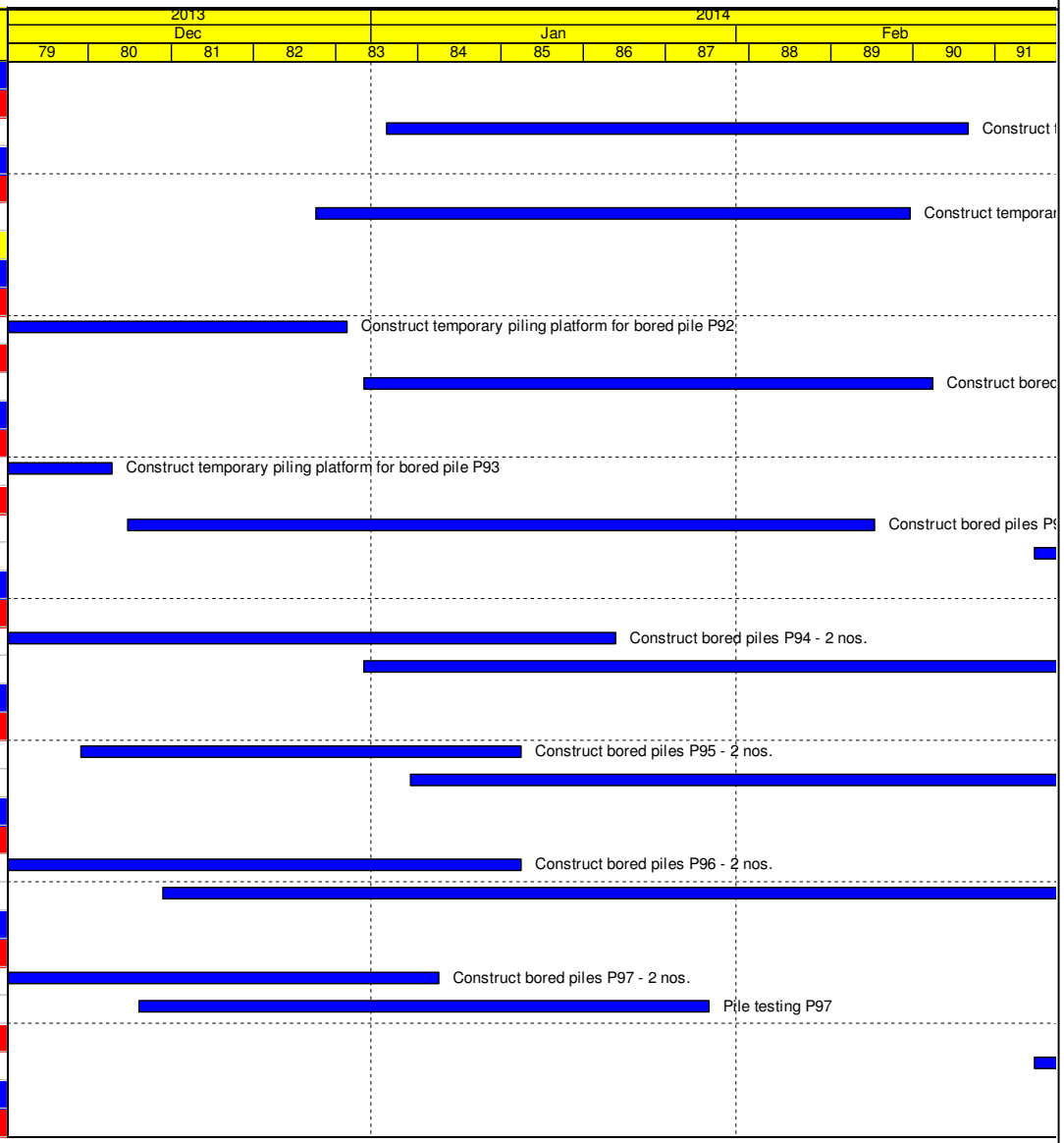
**3 months programme (Dec 13 to Feb 14)**



| Date | Revision | Checked | Approved |
|---|---|---|---|
| 23/06/14 | programme based on Mar 14 submitted 3MRP | Tim | |
| | | | |
| | | | |

Dragages - China Harbour - VSL Joint Venture 寶嘉 - 中國港灣 - 威勝利聯營

| Activity ID | Activity Name | Original Duration | Start | Finish |
|---|---|---|---|---|
| **Pier P88L/R** | | | | |
| **Temporary Works** | | | | |
| AI1300 | Construct temporary piling platform for bored pile P88 | 40 | 02/01/14 A | 20/02/14 A |
| **Pier P89L/R** | | | | |
| **Temporary Works** | | | | |
| AI1370 | Construct temporary piling platform for bored pile P89 | 40 | 27/12/13 A | 15/02/14 A |
| **MI16L/R 37m+65mx5+43m - Stage 5 of Works** | | | | |
| **Pier P92L/R (M.J.)** | | | | |
| **Temporary Works** | | | | |
| AI1580 | Construct temporary piling platform for bored pile P92 | 40 | 30/11/13 A | 30/12/13 A |
| **Foundation - Bored Pile** | | | | |
| AI1600 | Construct bored piles P92 - 2 nos. | 17 | 31/12/13 A | 17/02/14 A |
| **Pier P93L/R** | | | | |
| **Temporary Works** | | | | |
| AI1650 | Construct temporary piling platform for bored pile P93 | 40 | 10/11/13 A | 10/12/13 A |
| **Foundation - Bored Pile** | | | | |
| AI1670 | Construct bored piles P93 - 2 nos. | 23 | 11/12/13 A | 12/02/14 A |
| AI1680 | Pile testing P93 | 28 | 26/02/14 A | 06/03/14 A |
| **Pier P94L/R** | | | | |
| **Foundation - Bored Pile** | | | | |
| AI1740 | Construct bored piles P94 - 2 nos. | 33 | 29/11/13 A | 21/01/14 A |
| AI1750 | Pile testing P94 | 28 | 31/12/13 A | 03/03/14 A |
| **Pier P95L/R** | | | | |
| **Foundation - Bored Pile** | | | | |
| AI1810 | Construct bored piles P95 - 2 nos. | 29 | 07/12/13 A | 13/01/14 A |
| AI1820 | Pile testing P95 | 28 | 04/01/14 A | 03/03/14 A |
| **Pier P96L/R** | | | | |
| **Foundation - Bored Pile** | | | | |
| AI1880 | Construct bored piles P96 - 2 nos. | 27 | 23/11/13 A | 13/01/14 A |
| AI1890 | Pile testing P96 | 28 | 14/12/13 A | 03/03/14 A |
| **Pier P97L/R** | | | | |
| **Foundation - Bored Pile** | | | | |
| AI1950 | Construct bored piles P97 - 2 nos. | 21 | 05/11/13 A | 06/01/14 A |
| AI1960 | Pile testing P97 | 28 | 12/12/13 A | 29/01/14 A |
| **Column Construction** | | | | |
| AI1980 | Construct column P97 - 2 nos. | 38 | 26/02/14 A | 20/08/14 |
| **Pier P98L/R** | | | | |
| **Foundation - Bored Pile** | | | | |




Actual Work
Remaining Work
Critical Remaining Work
Milestone

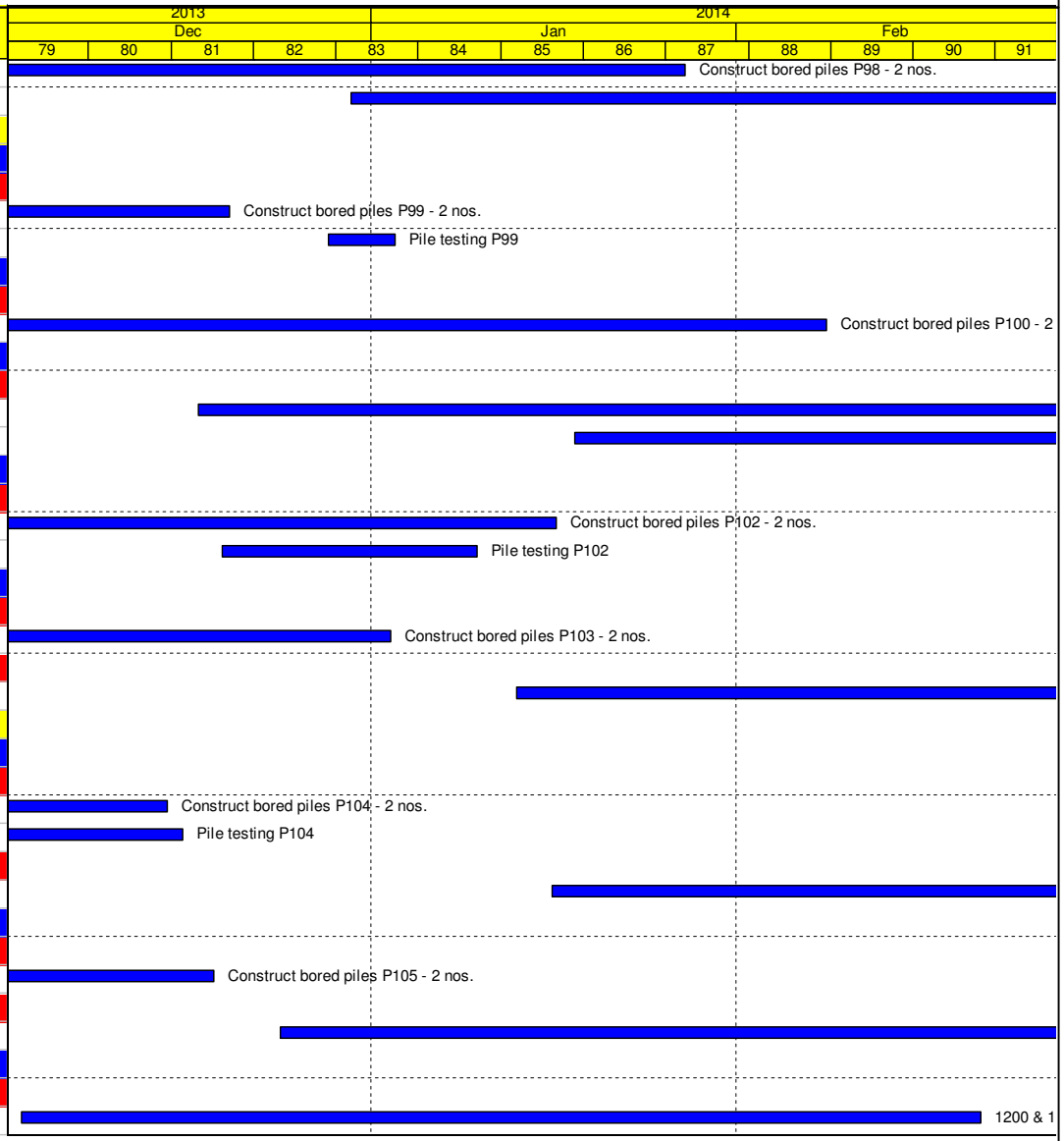
**3 months programme (Dec 13 to Feb 14)**



| Date | Revision | Checked | Approved |
|---|---|---|---|
| 23/06/14 | programme based on Mar 14 submitted 3MRP | Tim | |
| | | | |
| | | | |

Dragages - China Harbour - VSL Joint Venture 寶嘉 - 中國港灣 - 威勝利聯營

| Activity ID | Activity Name | Original Duration | Start | Finish |
|---|---|---|---|---|
| AI2020 | Construct bored piles P98 - 2 nos. | 34 | 21/11/13 A | 27/01/14 A |
| AI2030 | Pile testing P98 | 28 | 30/12/13 A | 03/03/14 A |
| **ML17L/R 43m+65mx3+47m - Stage 5 of Works** | | | | |
| **Pier P99L/R (M.J.)** | | | | |
| **Foundation - Bored Pile** | | | | |
| AI2090 | Construct bored piles P99 - 2 nos. | 14 | 01/11/13 A | 20/12/13 A |
| AI2100 | Pile testing P99 | 28 | 28/12/13 A | 03/01/14 A |
| **Pier P100L/R** | | | | |
| **Foundation - Bored Pile** | | | | |
| AI2160 | Construct bored piles P100 - 2 nos. | 33 | 26/10/13 A | 08/02/14 A |
| **Pier P101L/R** | | | | |
| **Foundation - Bored Pile** | | | | |
| AI2230 | Construct bored piles P101 - 2 nos. | 36 | 17/12/13 A | 17/03/14 A |
| AI2240 | Pile testing P101 | 28 | 18/01/14 A | 01/04/14 |
| **Pier P102L/R** | | | | |
| **Foundation - Bored Pile** | | | | |
| AI2300 | Construct bored piles P102 - 2 nos. | 37 | 15/10/13 A | 16/01/14 A |
| AI2310 | Pile testing P102 | 28 | 19/12/13 A | 10/01/14 A |
| **Pier P103L/R** | | | | |
| **Foundation - Bored Pile** | | | | |
| AI2370 | Construct bored piles P103 - 2 nos. | 34 | 17/08/13 A | 02/01/14 A |
| **Column Construction** | | | | |
| AI2400 | Construct column P103 - 2 nos. | 44 | 13/01/14 A | 23/05/14 |
| **ML18L/R 47m+55mx5+35m - Stage 5 of Works** | | | | |
| **Pier P104L/R (M.J.)** | | | | |
| **Foundation - Bored Pile** | | | | |
| AI2440 | Construct bored piles P104 - 2 nos. | 21 | 27/08/13 A | 14/12/13 A |
| AI2450 | Pile testing P104 | 28 | 26/10/13 A | 16/12/13 A |
| **Column Construction** | | | | |
| AI2470 | Construct column P104 - 2 nos. | 66 | 16/01/14 A | 20/05/14 |
| **Pier P105L/R** | | | | |
| **Foundation - Bored Pile** | | | | |
| AI2510 | Construct bored piles P105 - 2 nos. | 24 | 05/08/13 A | 18/12/13 A |
| **Column Construction** | | | | |
| AI2540 | Construct column P105 - 2 nos. | 66 | 24/12/13 A | 09/05/14 |
| **Pier P106L/R** | | | | |
| **Utilities Diversion** | | | | |
| AI3510 | 1200 & 1350mm Drainage diversion for P106 to P108 | 60 | 02/12/13 A | 21/02/14 A |




Actual Work ◆ Milestone

Remaining Work

Critical Remaining Work

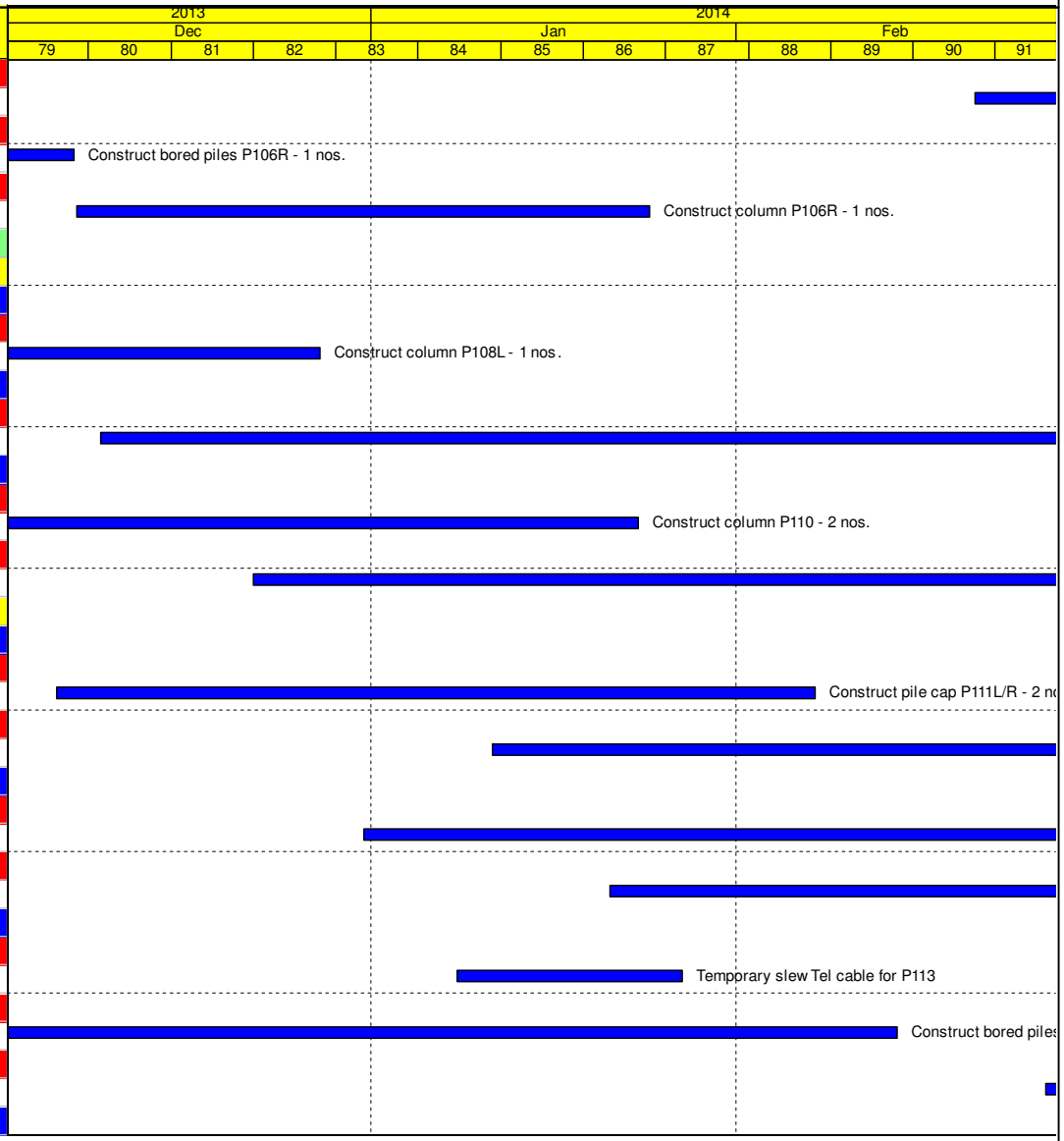
**3 months programme (Dec 13 to Feb 14)**



| Date | Revision | Checked | Approved |
|---|---|---|---|
| 23/06/14 | programme based on Mar 14 submitted 3MRP | Tim | |
| | | | |
| | | | |

Dragages - China Harbour - VSL Joint Venture 寶嘉 - 中國港灣 - 威勝利聯營

| Activity ID | Activity Name | Original Duration | Start | Finish |
|---|---|---|---|---|
| | **Site Investigation** | | | |
| AI3190 | Site investigation for bored pile P106L | 10 | 21/02/14 A | 04/03/14 A |
| | **Foundation - Bored Pile** | | | |
| AI2590 | Construct bored piles P106R - 1 nos. | 19 | 03/09/13 A | 06/12/13 A |
| | **Column Construction** | | | |
| AI2620 | Construct column P106R - 1 nos. | 22 | 07/12/13 A | 24/01/14 A |
| | **Land Viaduct P108 to P114** | | | |
| | **ML18L/R 47m+55mx5+35m - Stage 5 of Works** | | | |
| | **Pier P108L/R** | | | |
| | **Column Construction** | | | |
| AI2750 | Construct column P108L - 1 nos. | 22 | 18/10/13 A | 27/12/13 A |
| | **Pier P109L/R** | | | |
| | **In-situ Portal/T-pier Construction** | | | |
| AI2810 | In-situ portal P109 - 1 nos. (Learning) | 80 | 09/12/13 A | 25/04/14 |
| | **Pier P110L/R** | | | |
| | **Column Construction** | | | |
| AI2860 | Construct column P110 - 2 nos. | 44 | 17/10/13 A | 23/01/14 A |
| | **In-situ Portal/T-pier Construction** | | | |
| AI2870 | In-situ portal P110 - 1 nos. (Learning) | 80 | 22/12/13 A | 25/04/14 |
| | **ML19L/C/R 40m+65mx2 Stage 5 of Works** | | | |
| | **Pier P111L/C/R** | | | |
| | **Pile Cap Construction** | | | |
| AI2910 | Construct pile cap P111L/R - 2 nos. | 50 | 05/12/13 A | 07/02/14 A |
| | **Column Construction** | | | |
| AI2920 | Construct column P111L/R - 2 nos. | 36 | 11/01/14 A | 04/04/14 |
| | **Pier P112L/C/R** | | | |
| | **Pile Cap Construction** | | | |
| AI2970 | Construct pile cap P112 - 2 nos. | 50 | 31/12/13 A | 03/03/14 A |
| | **Column Construction** | | | |
| AI2980 | Construct column P112L/R - 2 nos. | 32 | 21/01/14 A | 01/03/14 A |
| | **Pier P113 L/C/R** | | | |
| | **Utilities Diversion** | | | |
| AI3570 | Temporary slew Tel cable for P113 | 16 | 08/01/14 A | 27/01/14 A |
| | **Foundation - Bored Pile** | | | |
| AI3010 | Construct bored piles P113 - 6 nos. | 34 | 13/09/13 A | 14/02/14 A |
| | **Column Construction** | | | |
| AI3030 | Construct column P113L/C/R - 3 nos. | 54 | 27/02/14 A | 09/05/14 |
| | **Pier P114 L/C/R** | | | |




Actual Work
Remaining Work
Critical Remaining Work
◆ Milestone

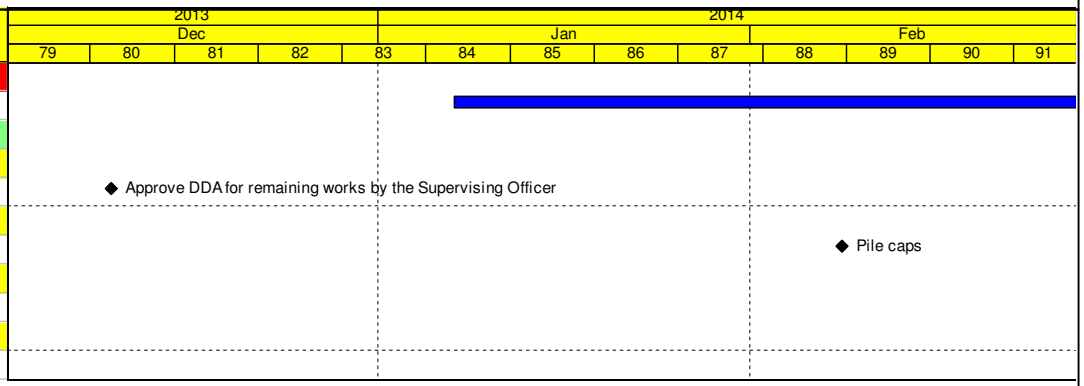
**3 months programme (Dec 13 to Feb 14)**



| Date | Revision | Checked | Approved |
|---|---|---|---|
| 23/06/14 | programme based on Mar 14 submitted 3MRP | Tim | |
| | | | |
| | | | |

Dragages - China Harbour - VSL Joint Venture 寶嘉 - 中國港灣 - 威勝利聯營

| Activity ID | Activity Name | Original Duration | Start | Finish |
|---|---|---|---|---|
| **Foundation - Bored Pile** | | | | |
| AI3060 | Construct bored piles P114 - 2 nos. | 18 | 07/01/14 A | 03/03/14 A |
| **Milestones schedule** | | | | |
| **Design and Design Checking of the Works** | | | | |
| CC2-1210 | Approve DDA for remaining works by the Supervising Officer | 0 | | 09/12/13 A |
| **Interface Piers at chainage 4+200.000 approximate** | | | | |
| CC31-1010 | Pile caps | 0 | | 08/02/14 A |
| **Marine Viaduct at chainage 4+260.000 to 11+800.000 approximate** | | | | |
| CC33-1060 | Pile caps | 666 | 03/01/14 A | 05/01/16 |
| **Land Viaduct** | | | | |
| CC42-1060 | Bridge deck | 476 | 09/12/13 A | 16/05/15 |




Actual Work
Remaining Work
Critical Remaining Work
◆ Milestone

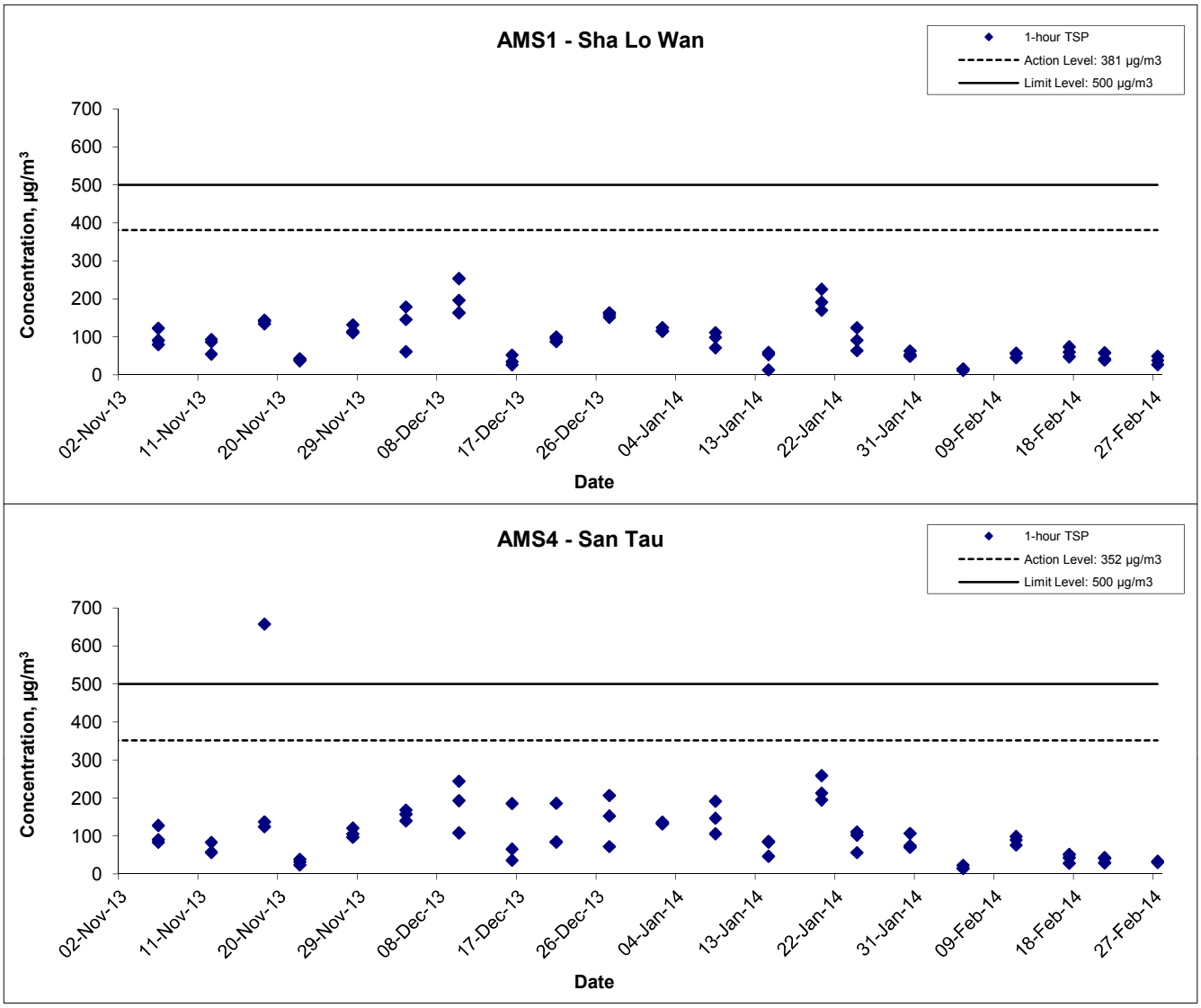
**3 months programme (Dec 13 to Feb 14)**



| Date | Revision | Checked | Approved |
|---|---|---|---|
| 23/06/14 | programme based on Mar 14 submitted 3MRP | Tim | |
| | | | |
| | | | |

# APPENDIX B
# GRAPHICAL PRESENTATION OF 1-HOUR TSP MONITORING RESULTS

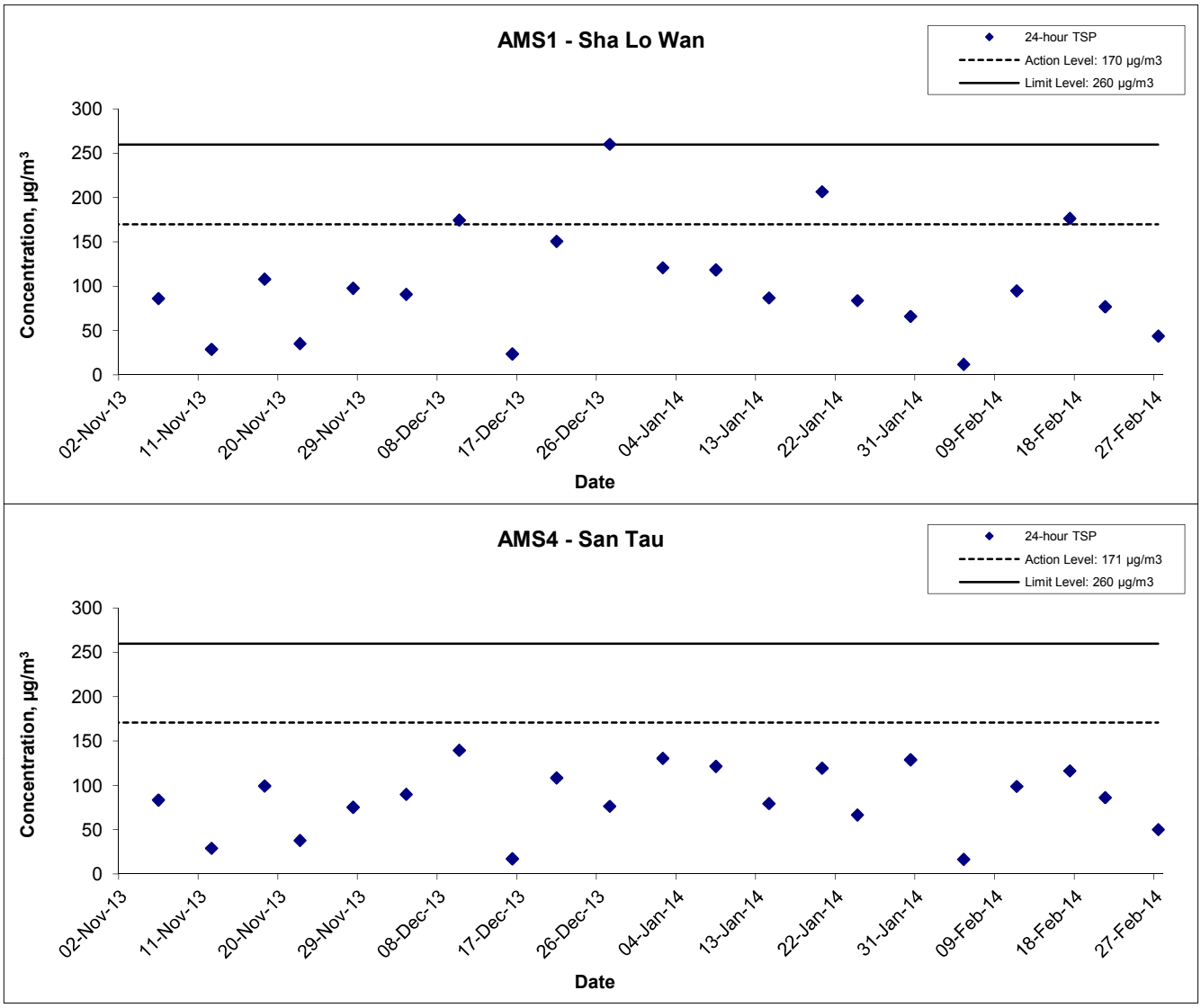
## 1-hour TSP Concentration Levels




| | | | |
|---|---|---|---|
| Title: Contract No. HY/2011/09<br>Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill<br>Graphical Presentation of 1-hour TSP Monitoring Results | Scale: N.T.S | Project No.: MA12014 | CINOTECH |
| | Date: Feb 14 | Appendix: B | |

**APPENDIX C**
**GRAPHICAL PRESENTATION OF 24-HOUR TSP MONITORING RESULTS**

## 24-hour TSP Concentration Levels

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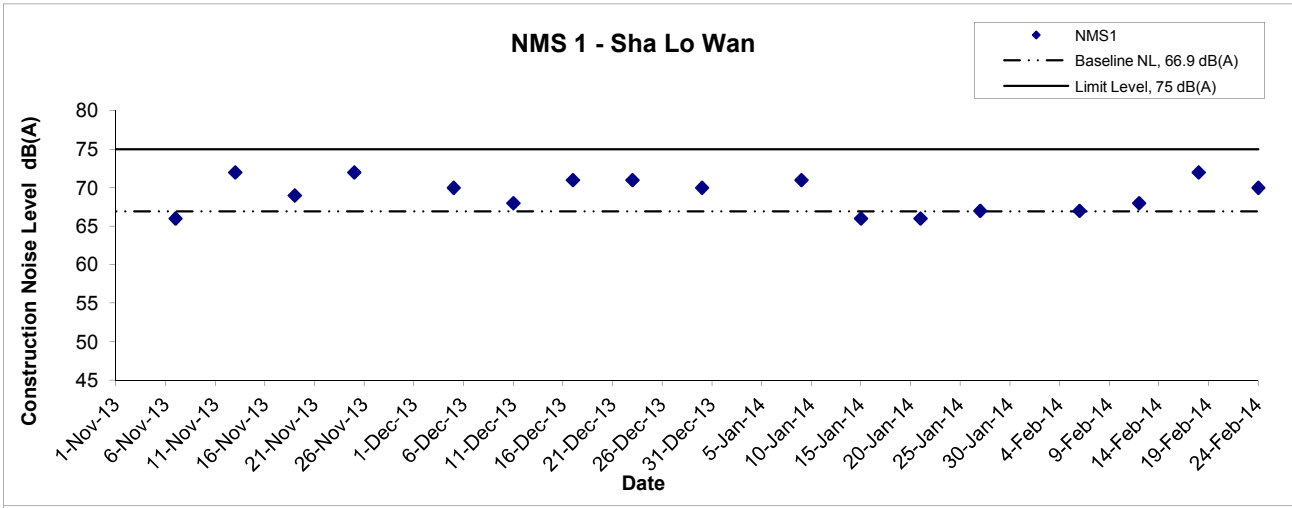
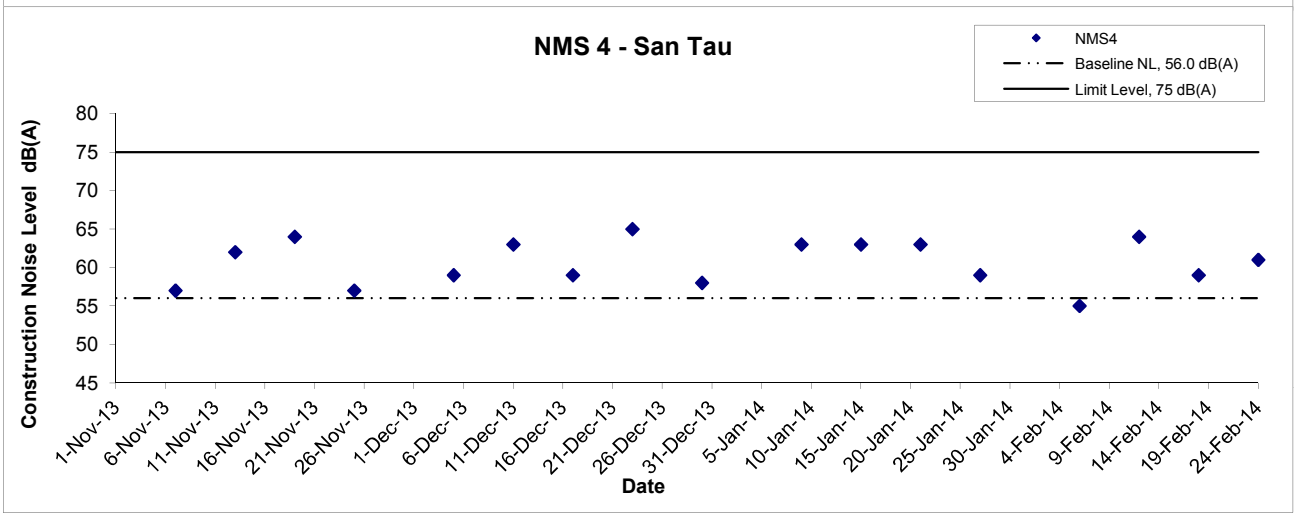
|---|---|---|---|
| Title: Contract No. HY/2011/09<br>Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill<br>Graphical Presentation of 24-hour TSP Monitoring Results | Scale: N.T.S | Project No.: MA12014 | CINOTECH |
| | Date: Feb 14 | Appendix: C | |

**APPENDIX D**
**GRAPHICAL PRESENTATION OF NOISE MONITORING RESULTS**

# Noise Levels

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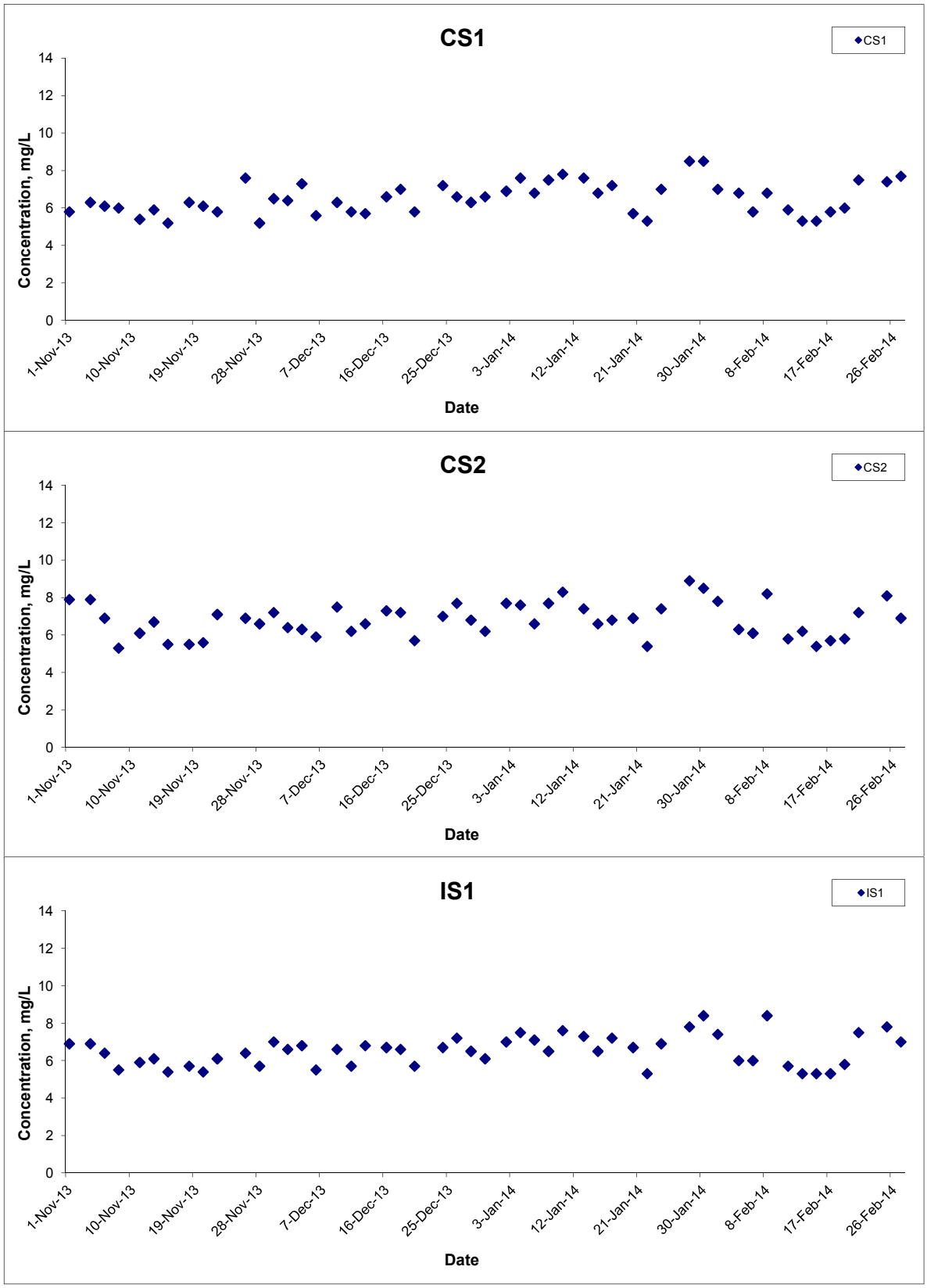
|---|---|---|---|---|
| Title | Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge<br>Hong Kong Link Road-Section between<br>HKSAR Boundary and Scenic Hill<br>Graphical Presentation of Construction Noise Monitoring Results | Scale: N.T.S<br>Date: Feb 14 | Project No.: MA12014<br>Appendix: D | CINOTECH |

# APPENDIX E
# GRAPHICAL PRESENTATION OF WATER QUALITY MONITORING RESULTS

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

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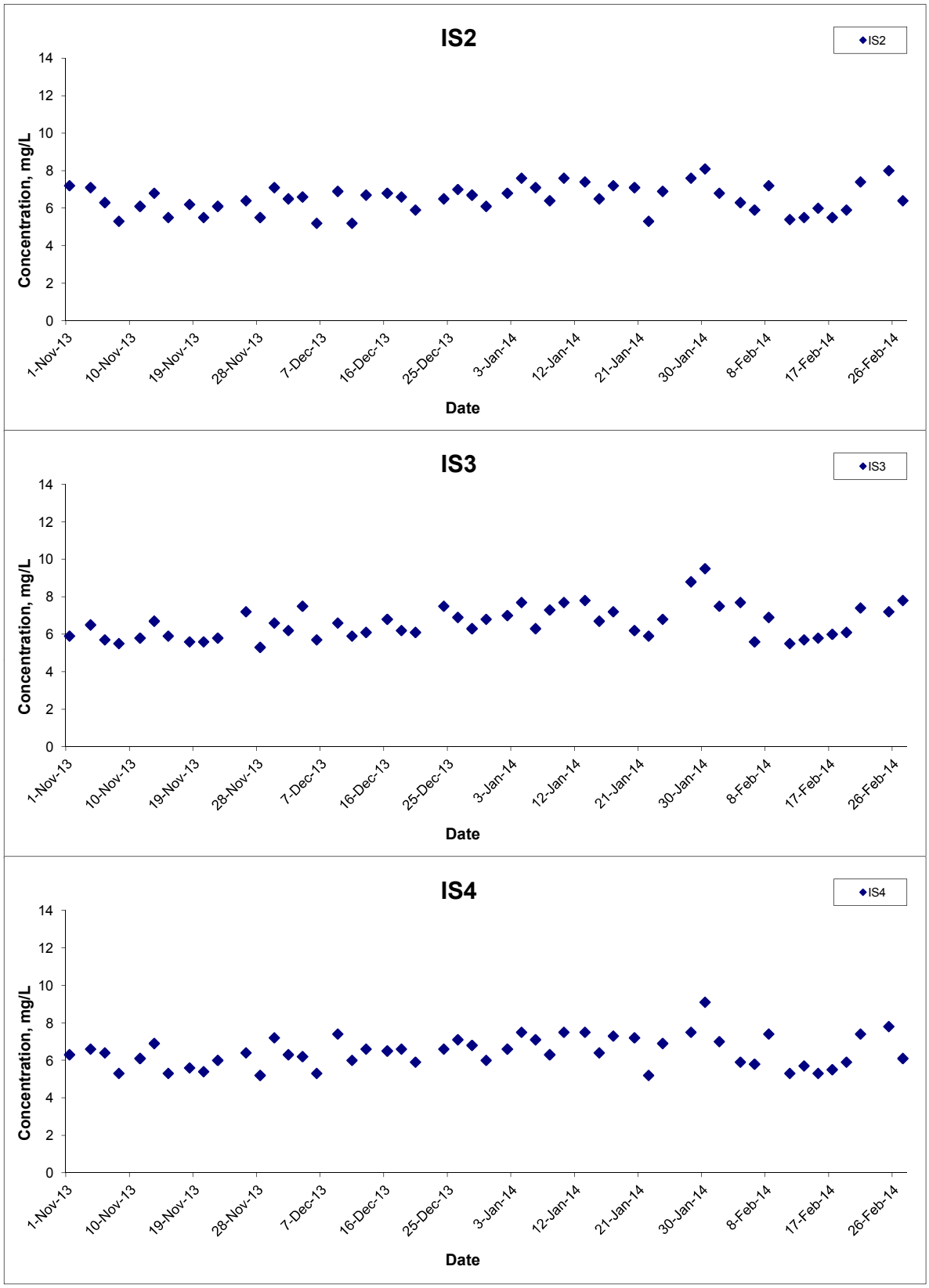
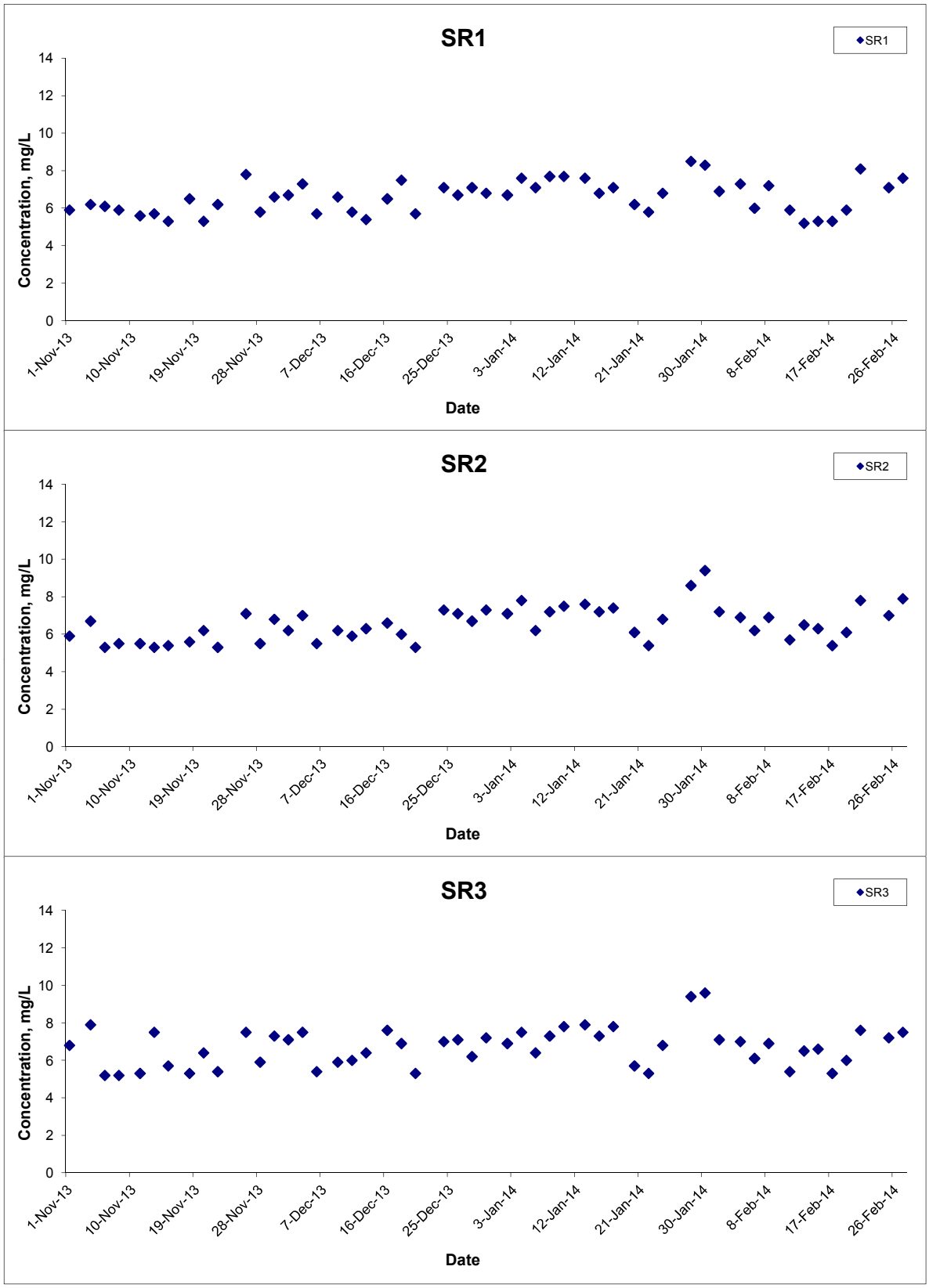
|---|---|---|---|---|
| Title | Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill<br>Graphical Presentation of Water Quality Monitoring Results | Scale: N.T.S | Project No.: MA12014 | CINOTECH |
| | | Date: Feb 14 | Appendix: E | |

## 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<br>Graphical Presentation of Water Quality Monitoring Results | Scale: N.T.S | Project No.: MA12014 | CINOTECH |
| | | Date: Feb 14 | Appendix: E | |

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

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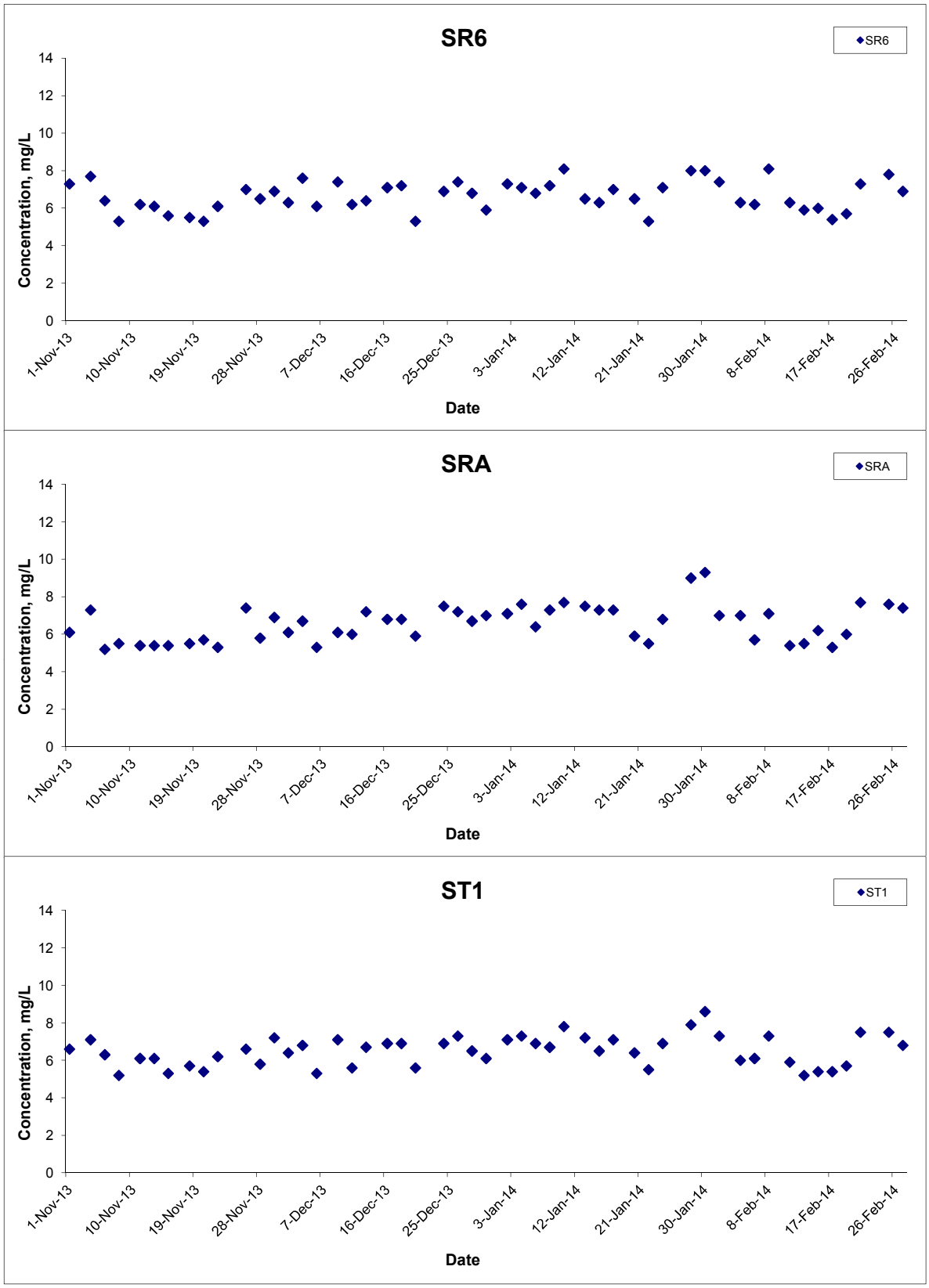
|---|---|---|---|---|
| Title | Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill<br>Graphical Presentation of Water Quality Monitoring Results | Scale: N.T.S | Project No.: MA12014 | CINOTECH |
| | | Date: Feb 14 | Appendix: E | |

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

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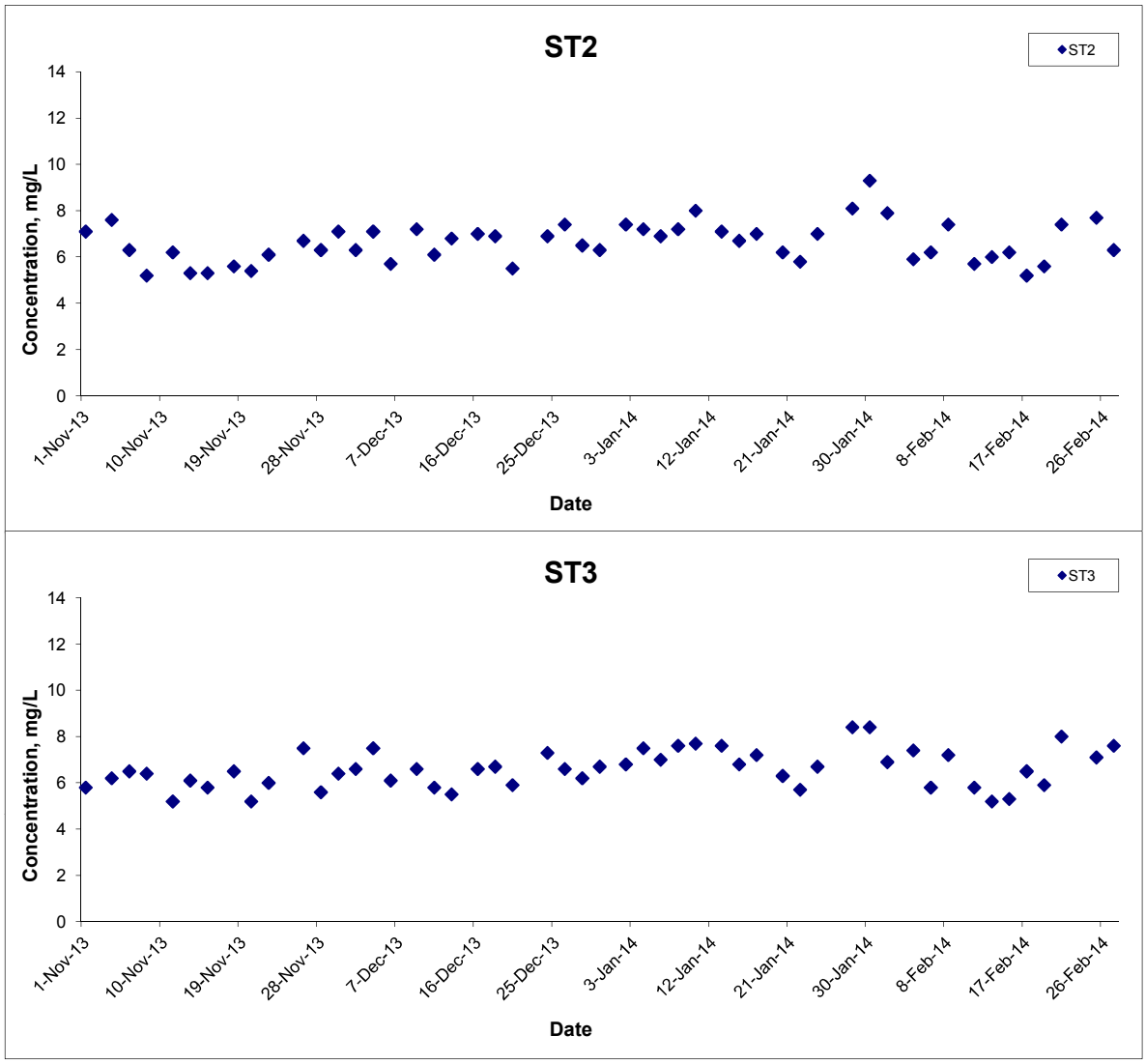
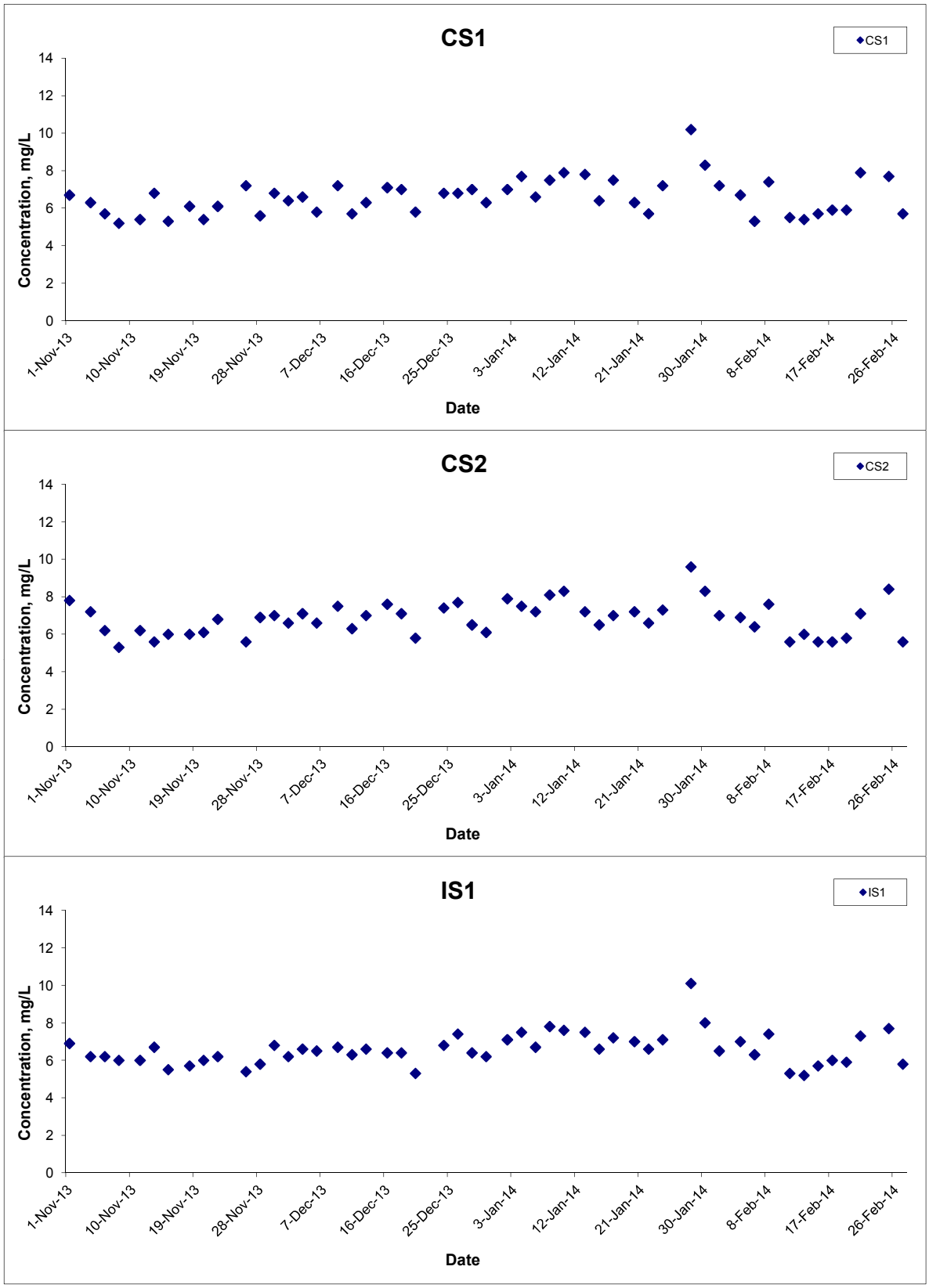
|---|---|---|---|---|
| Title | Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill<br>Graphical Presentation of Water Quality Monitoring Results | Scale: N.T.S | Project No.: MA12014 | CINOTECH |
| | | Date: Feb 14 | Appendix: E | |

## 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<br>Graphical Presentation of Water Quality Monitoring Results | Scale: N.T.S<br>Date: Feb 14 | Project No.: MA12014<br>Appendix: E | CINOTECH |

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

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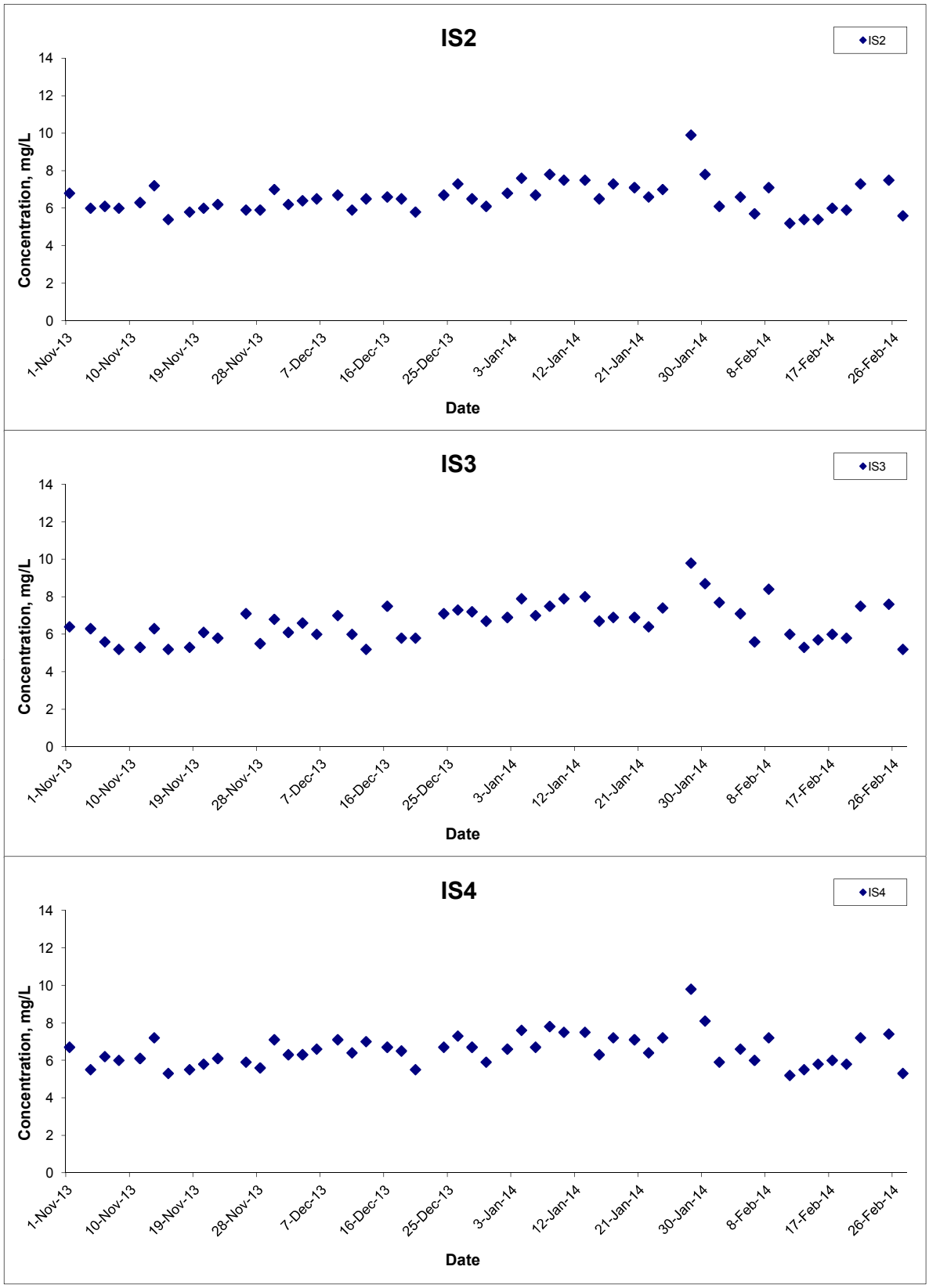
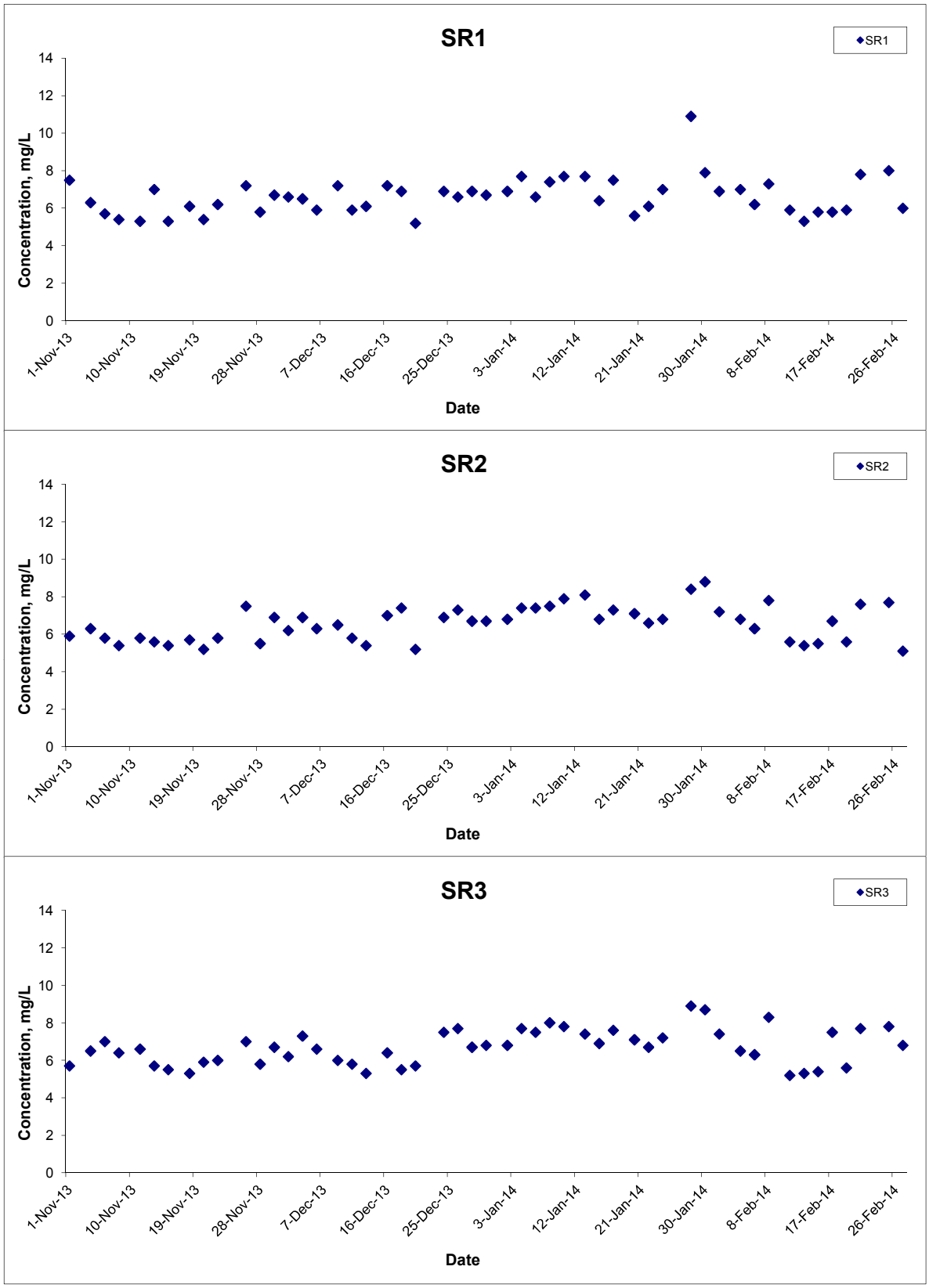
|---|---|---|---|---|
| Title | Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill<br>Graphical Presentation of Water Quality Monitoring Results | Scale: N.T.S | Project No.: MA12014 | CINOTECH |
| | | Date: Feb 14 | Appendix: E | |

## 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<br>Graphical Presentation of Water Quality Monitoring Results | Scale: N.T.S | Project No.: MA12014 | CINOTECH |
| | | Date: Feb 14 | Appendix: E | |

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

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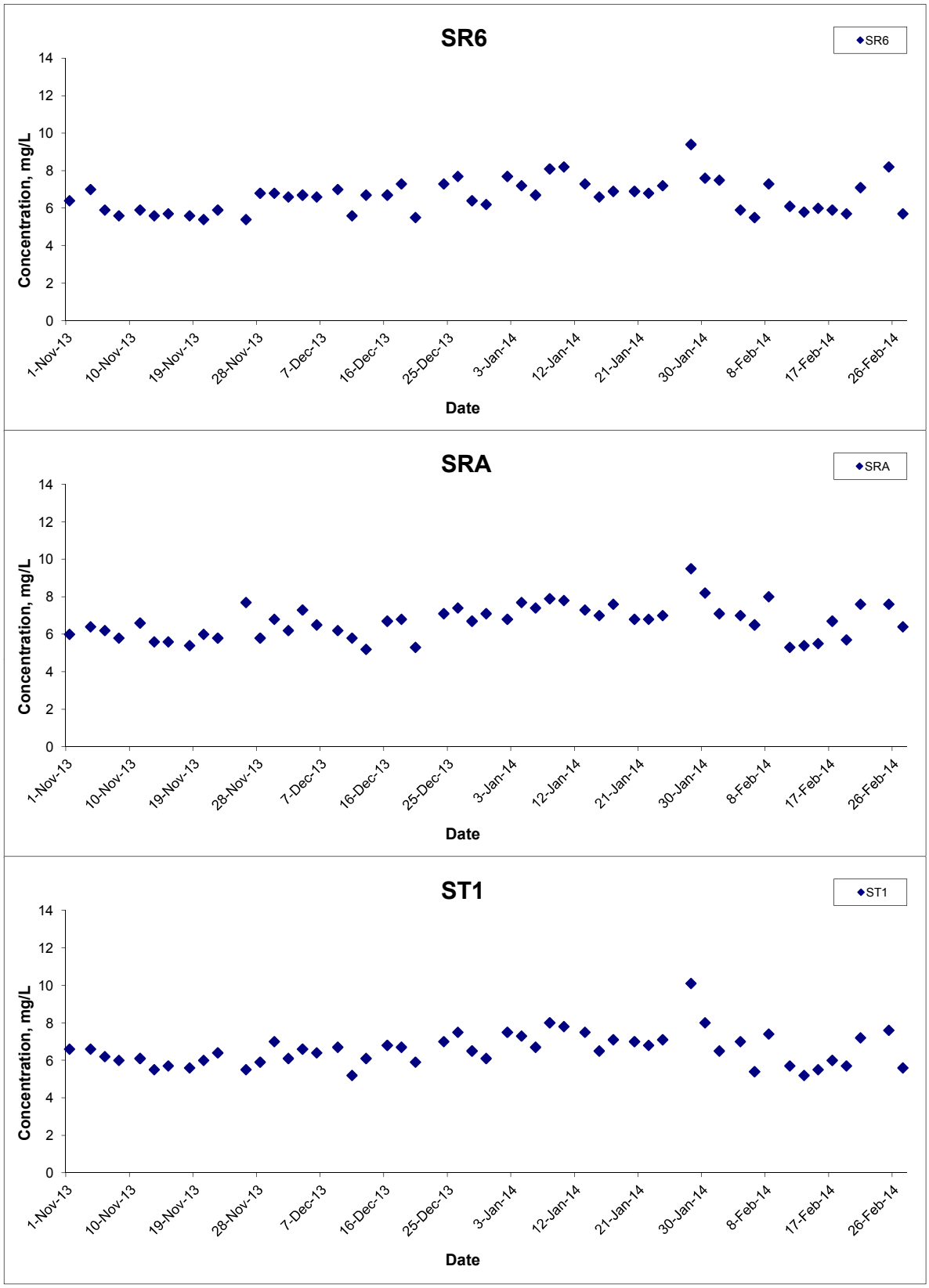
|---|---|---|---|---|
| Title | Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill<br>Graphical Presentation of Water Quality Monitoring Results | Scale: N.T.S | Project No.: MA12014 | CINOTECH |
| | | Date: Feb 14 | Appendix: E | |

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

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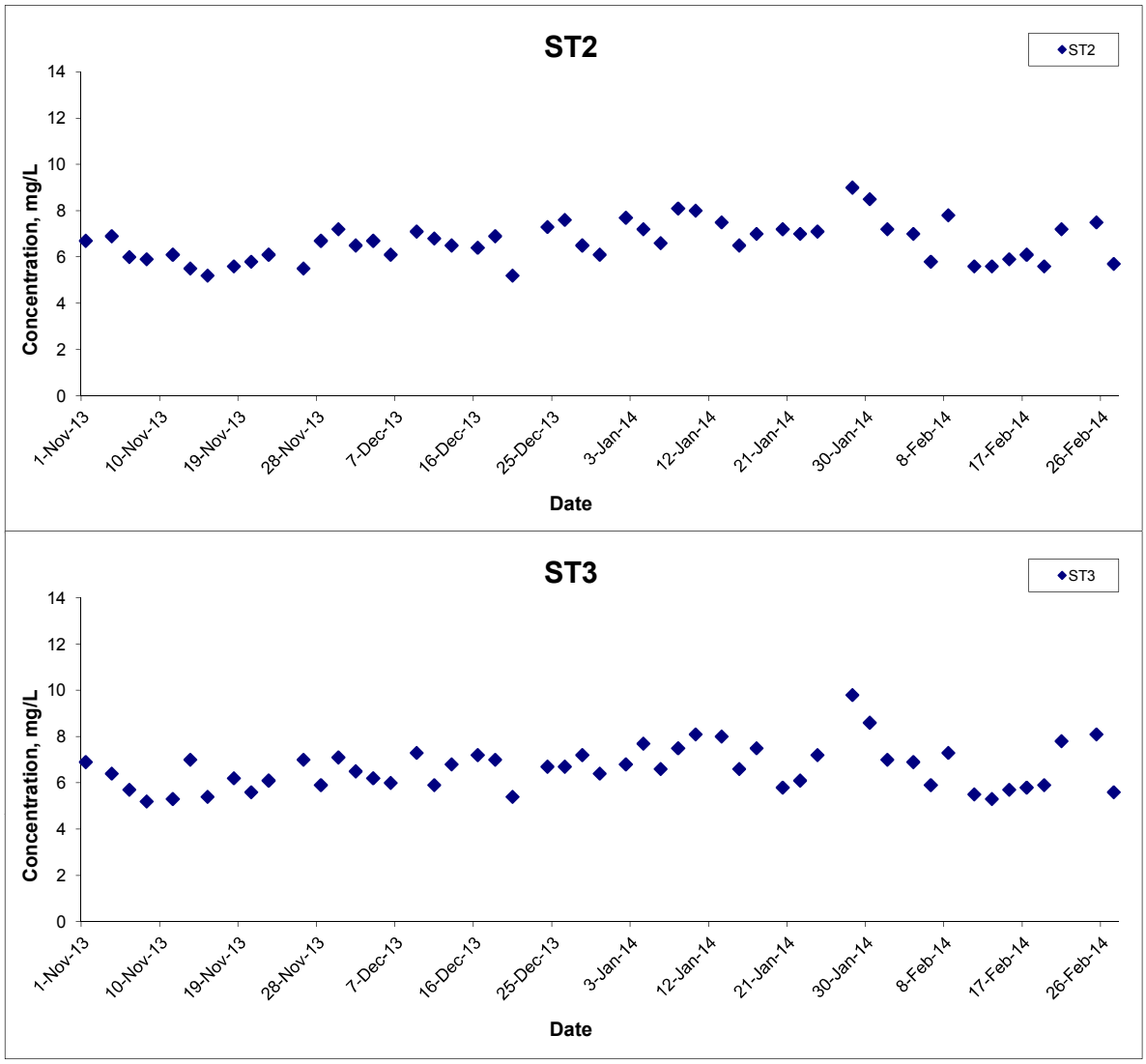
|---|---|---|---|---|
| Title | Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill<br>Graphical Presentation of Water Quality Monitoring Results | Scale: N.T.S | Project No.: MA12014 | CINOTECH |
| | | Date: Feb 14 | Appendix: E | |

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

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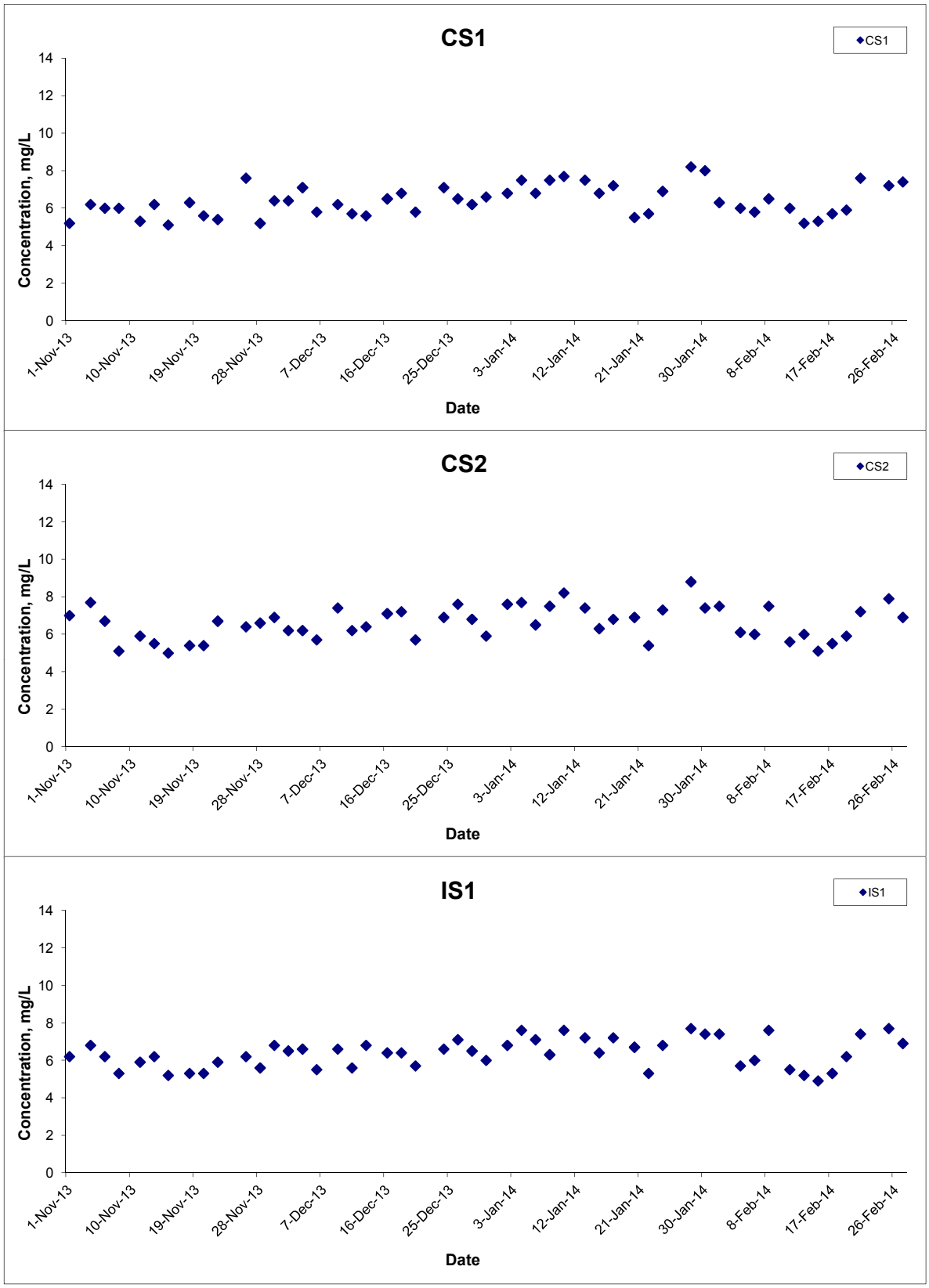
## Dissolved Oxygen (Bottom) at Mid-Ebb Tide

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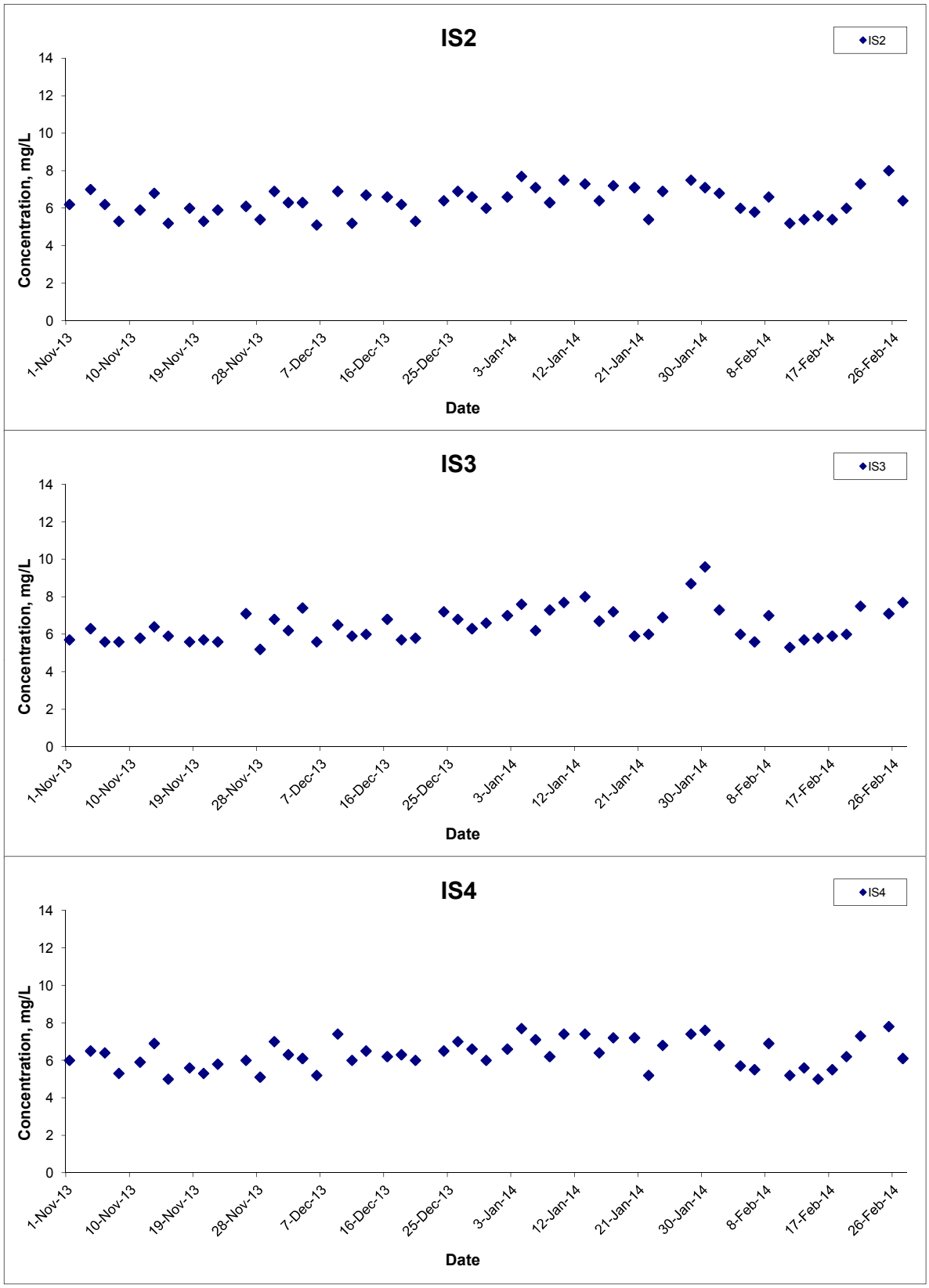
| | | Date: Feb 14 | Appendix: E | |

## Dissolved Oxygen (Bottom) at Mid-Ebb Tide

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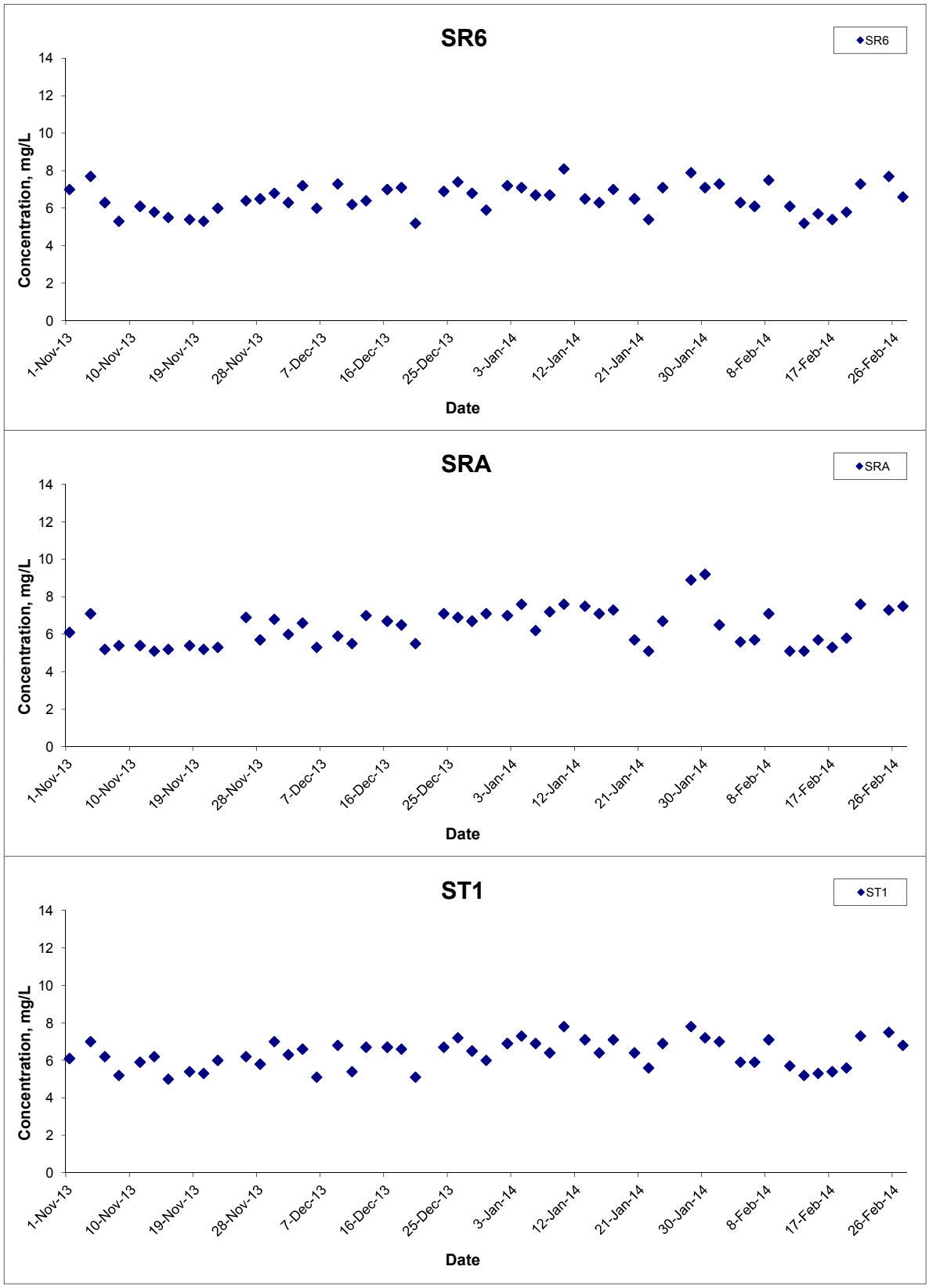
| | | Date: Feb 14 | Appendix: E | |

# Dissolved Oxygen (Bottom) at Mid-Ebb Tide

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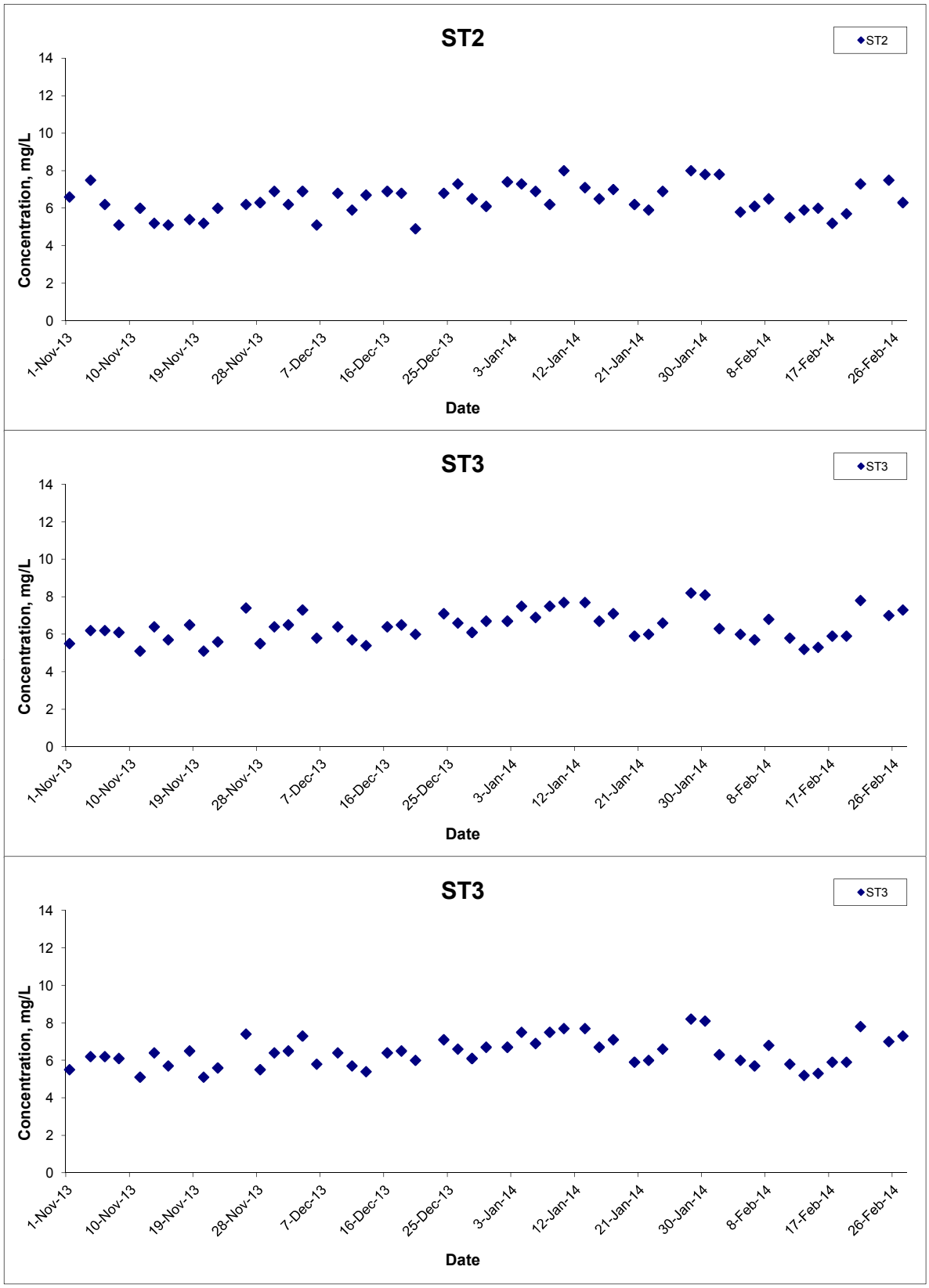
| | | Date: Feb 14 | Appendix: E | |

# Dissolved Oxygen (Bottom) at Mid-Ebb Tide

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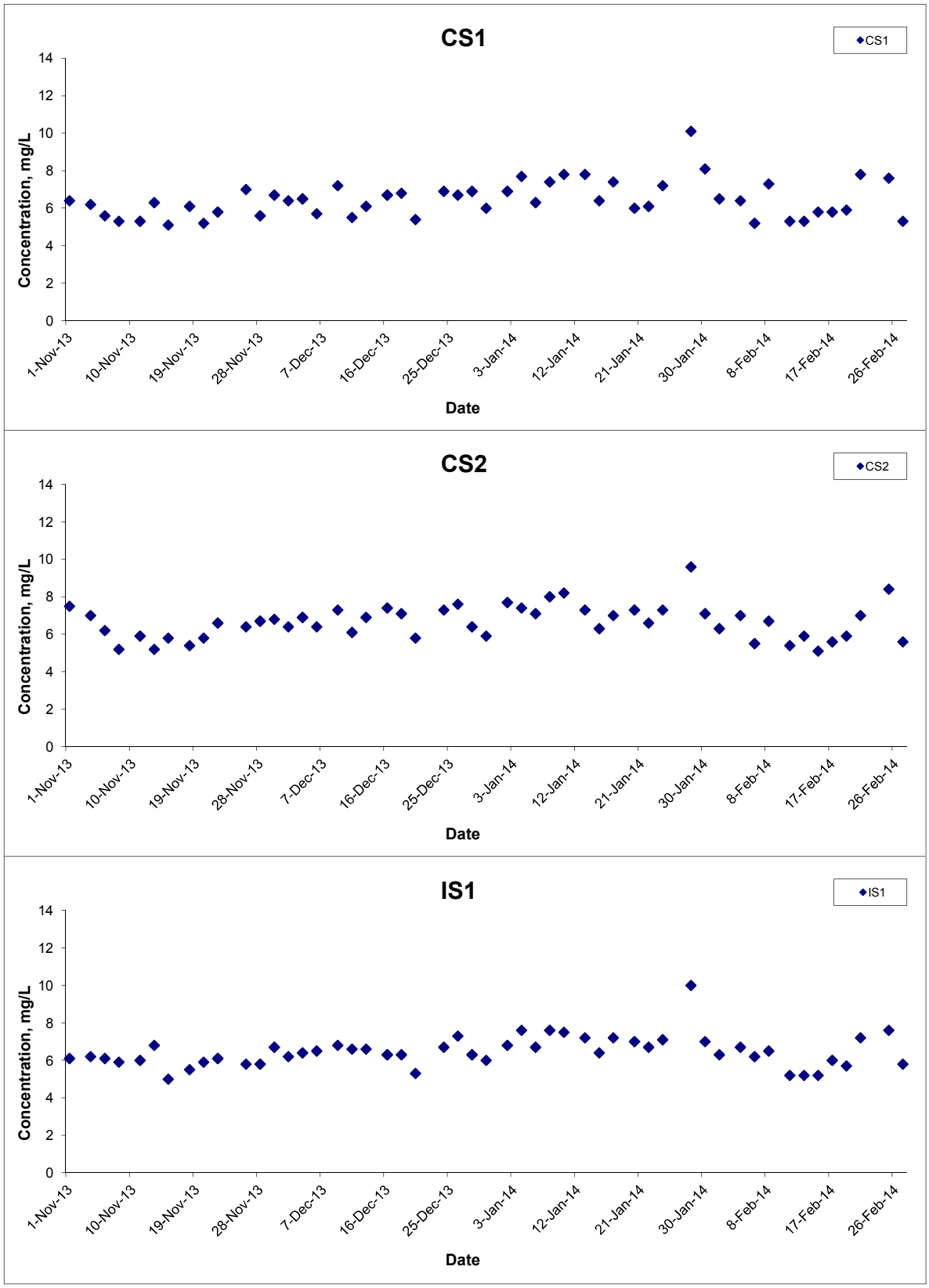
# Dissolved Oxygen (Bottom) at Mid-Flood Tide

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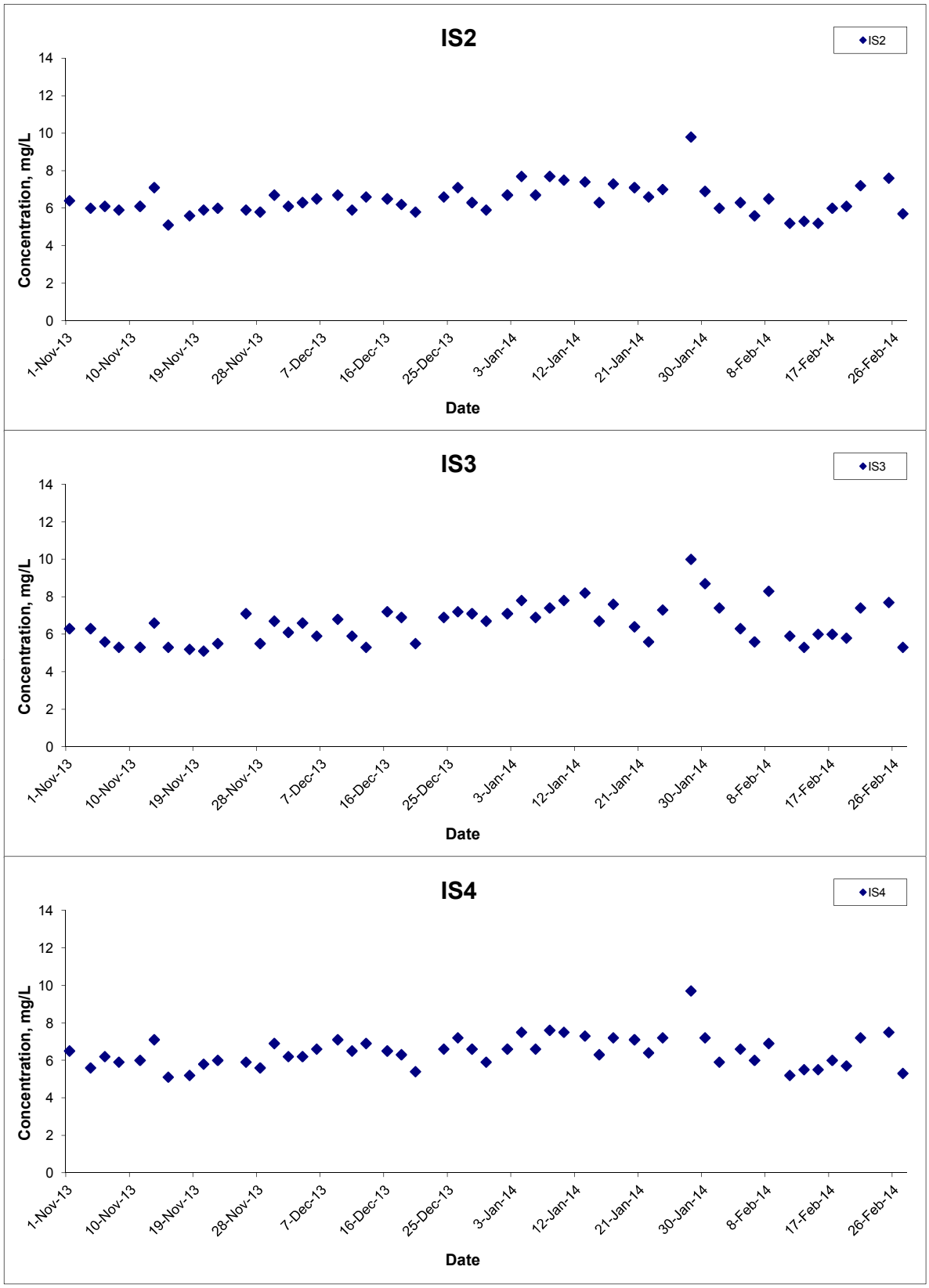


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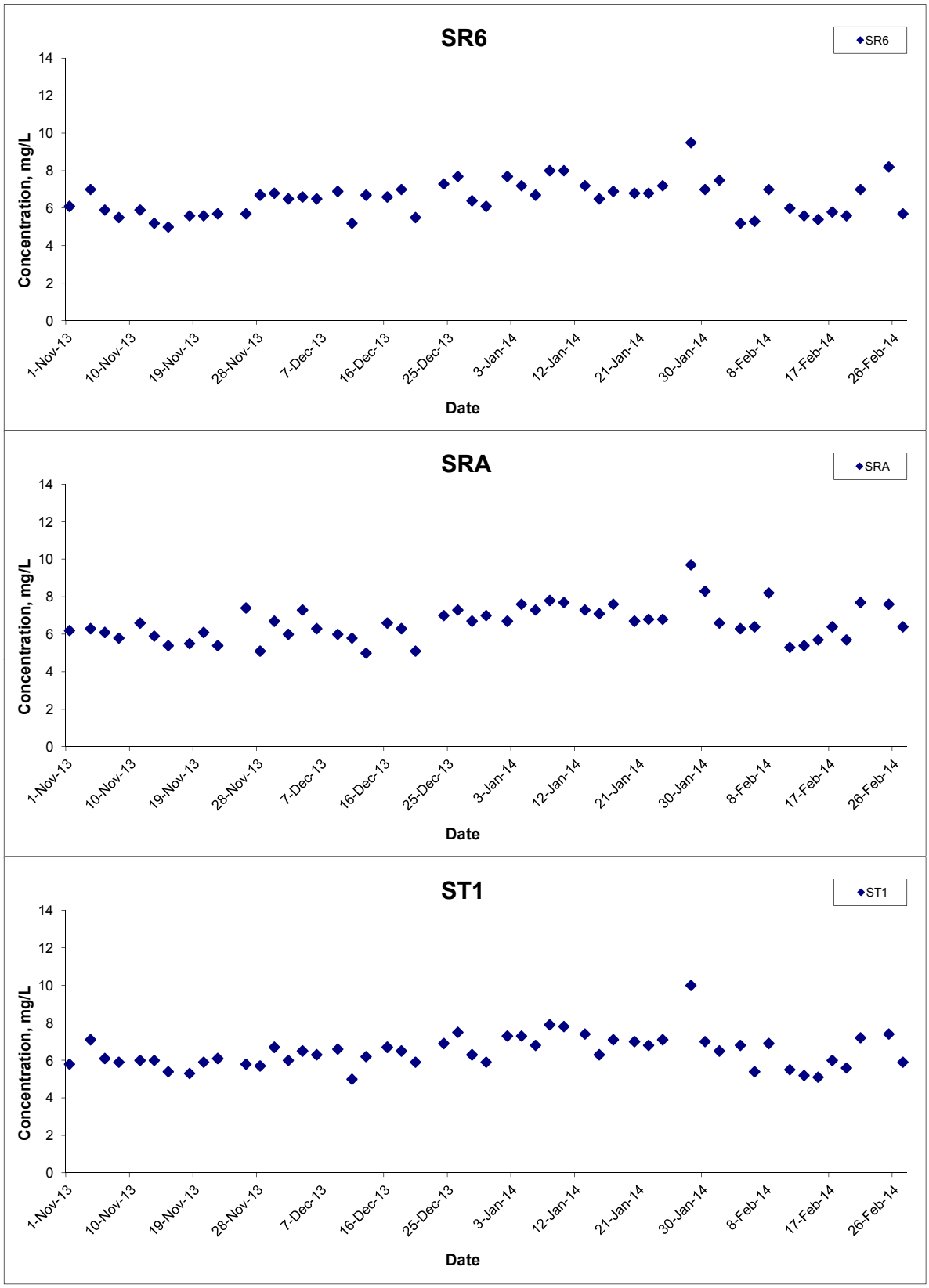


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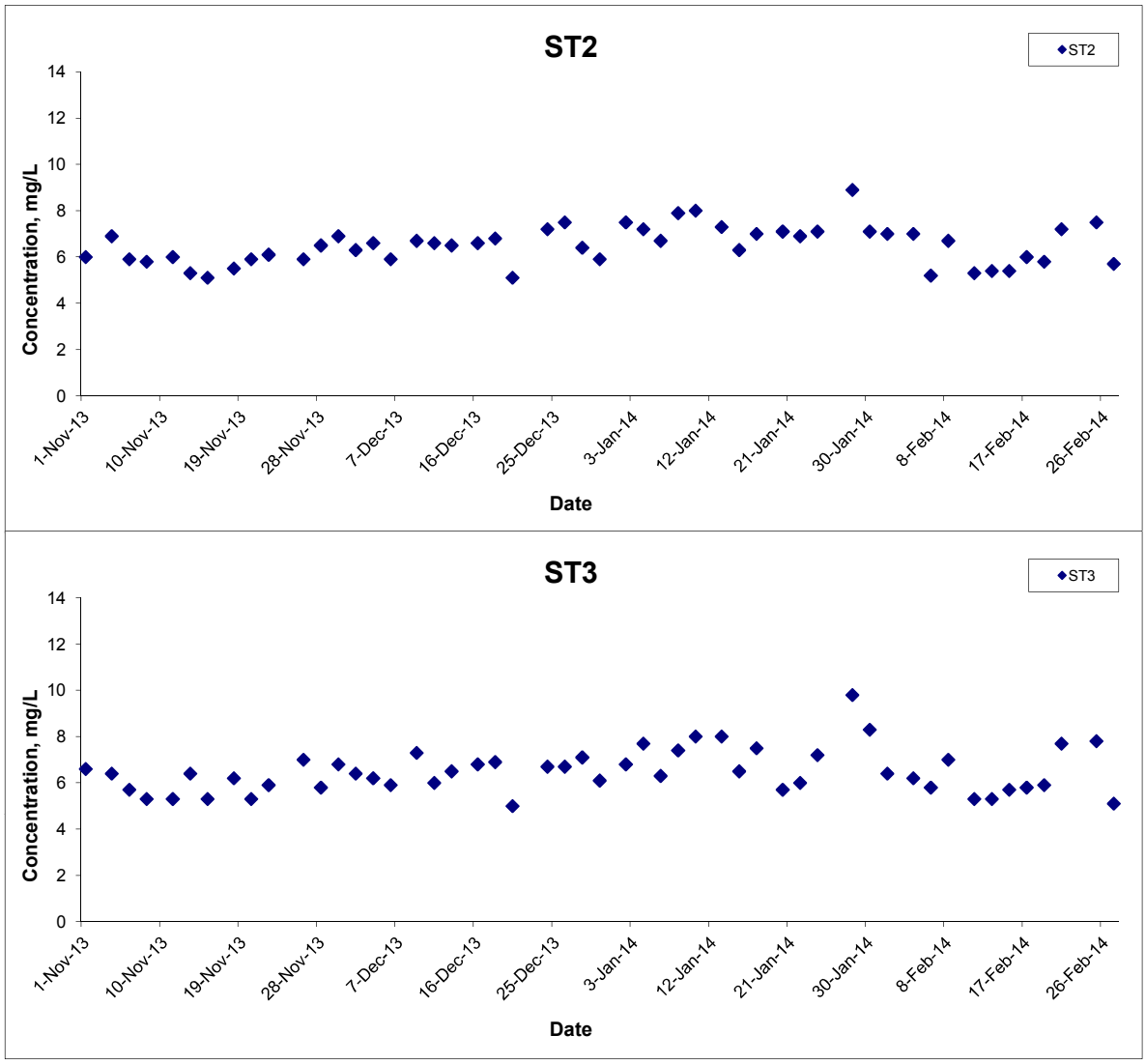


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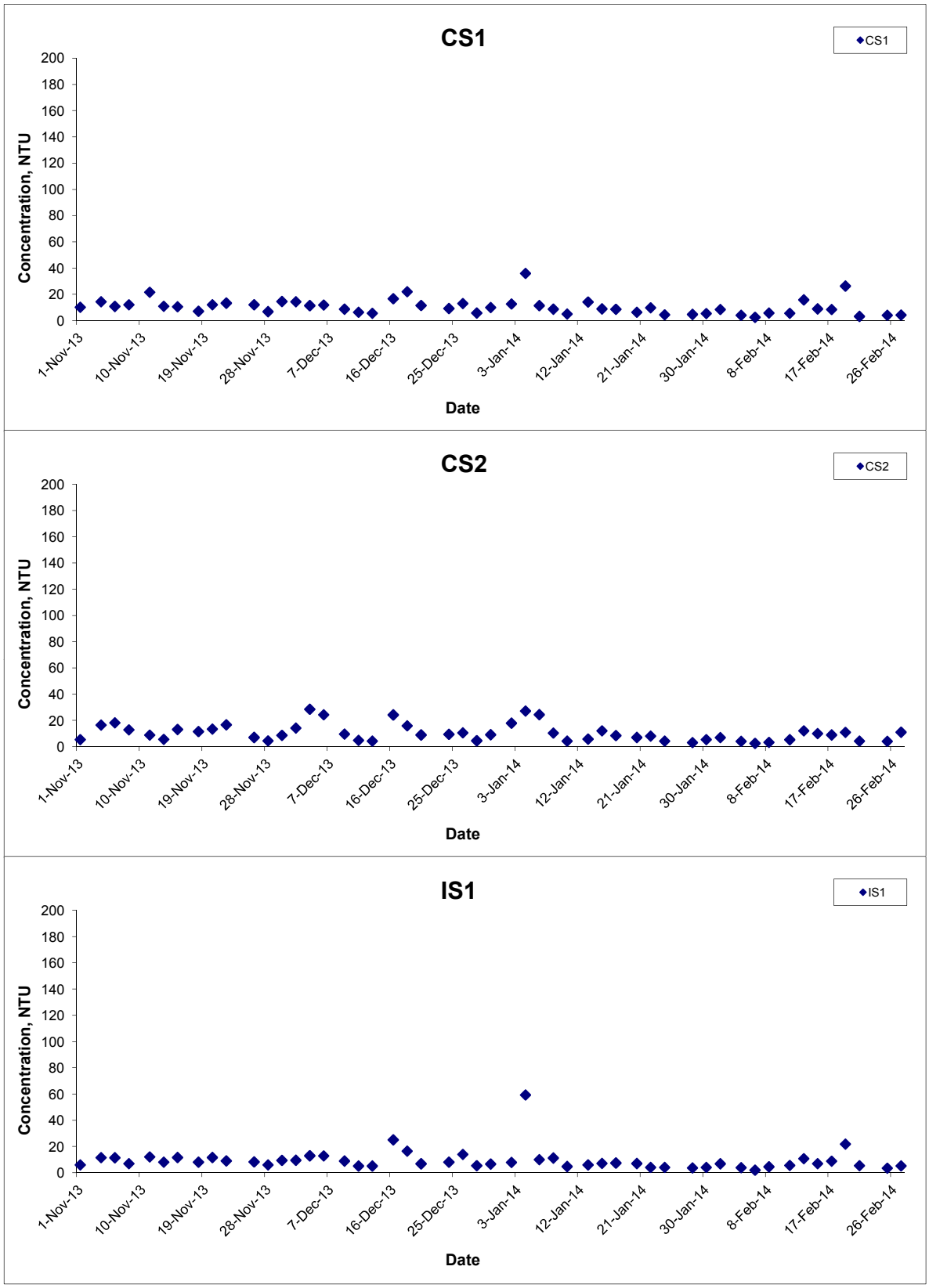
# Turbidity (Depth-averaged) at Mid-Ebb Tide

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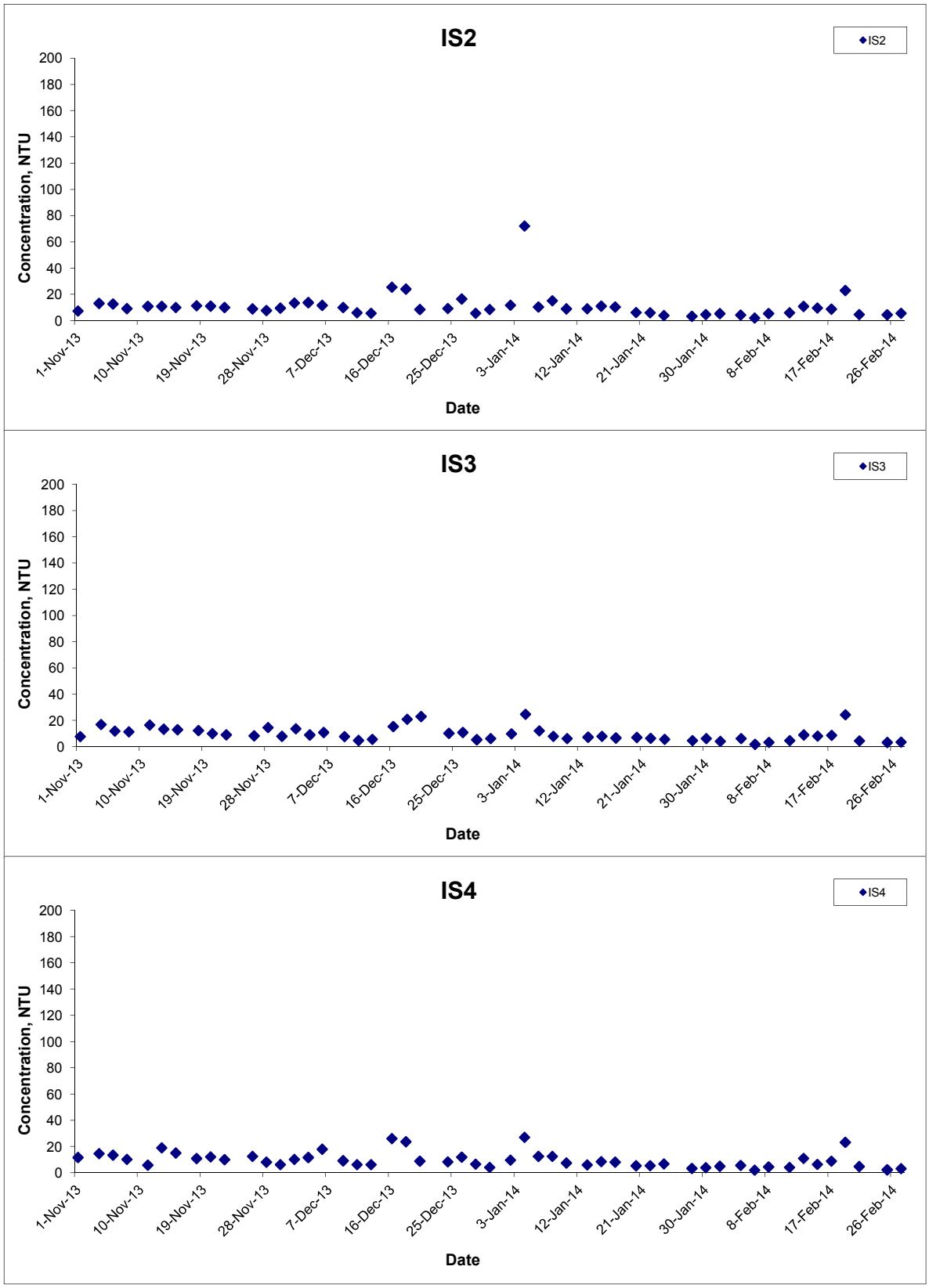
# Turbidity (Depth-averaged) at Mid-Ebb Tide

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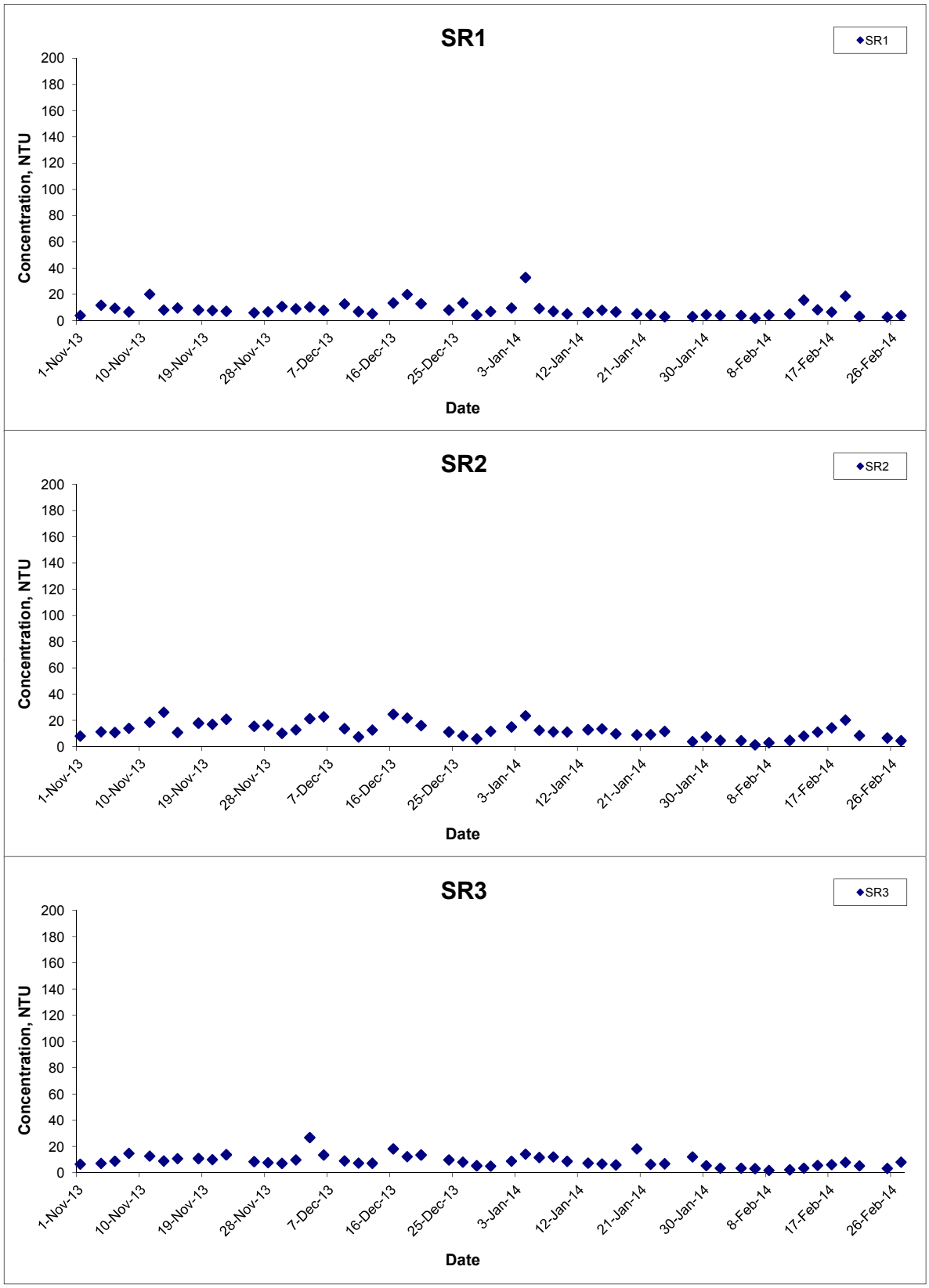
# Turbidity (Depth-averaged) at Mid-Ebb Tide

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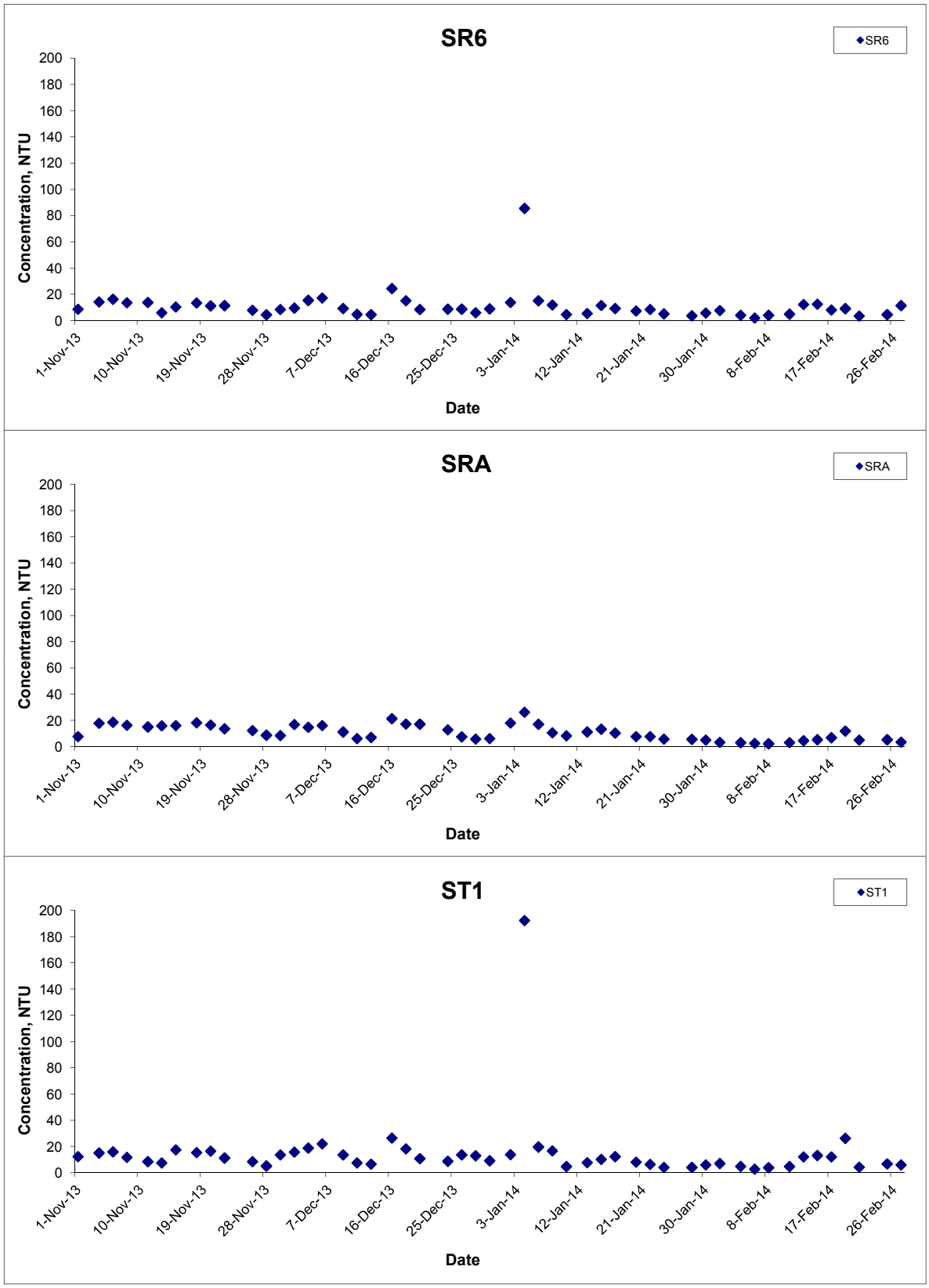
# Turbidity (Depth-averaged) at Mid-Ebb Tide

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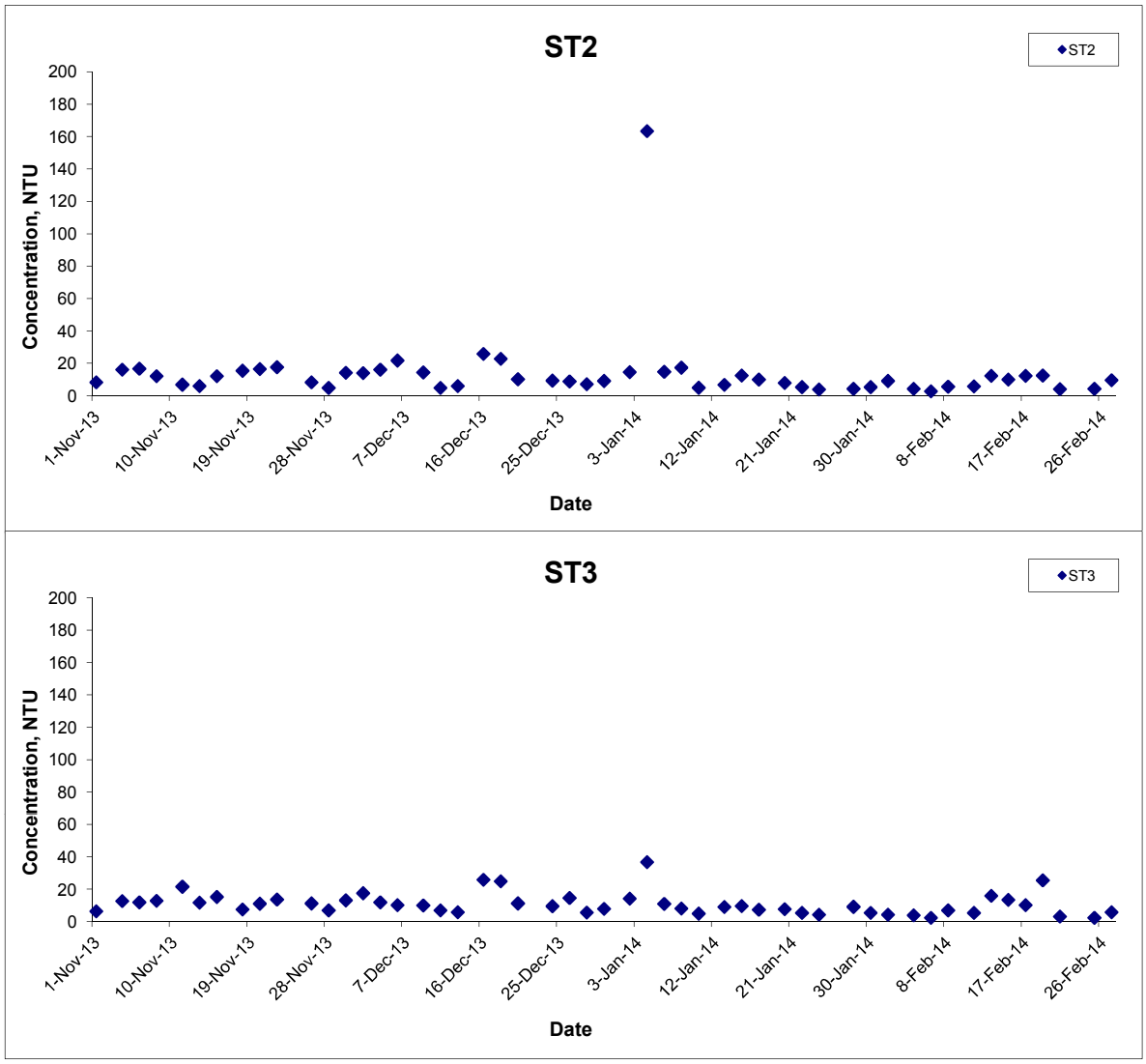
# Turbidity (Depth-averaged) at Mid-Ebb Tide

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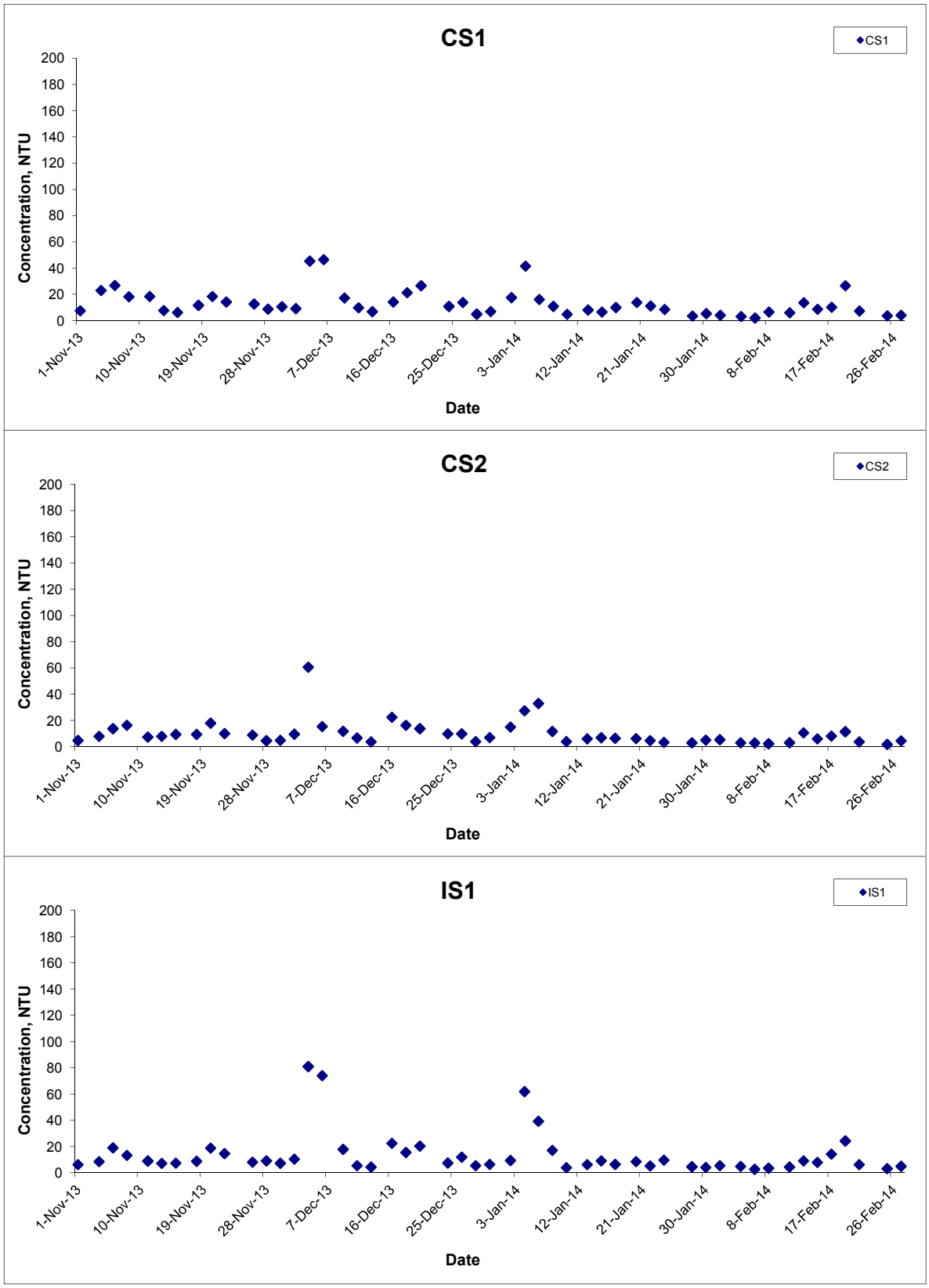
# Turbidity (Depth-averaged) at Mid-Flood Tide

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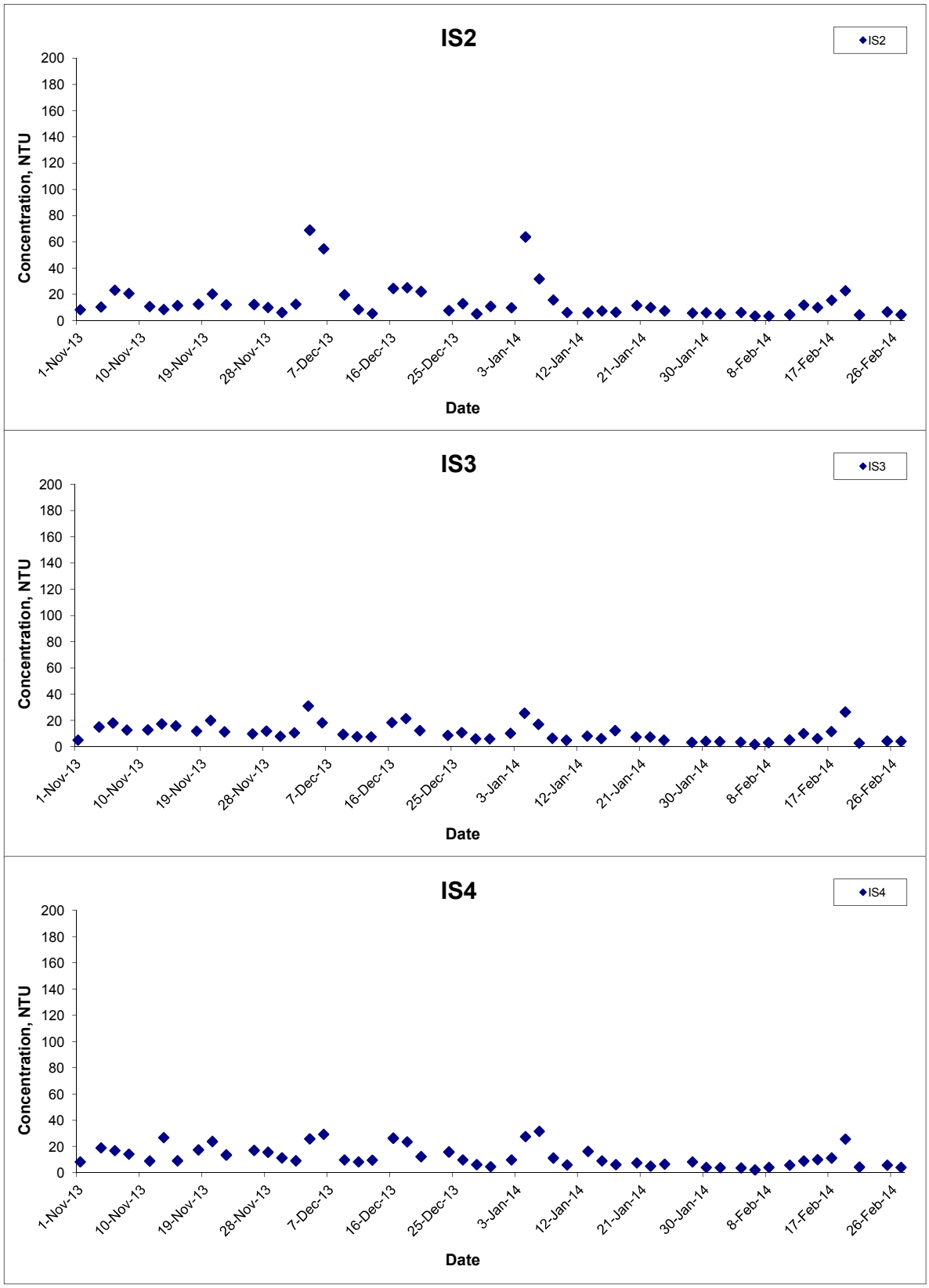
| | | Date: Feb 14 | Appendix: E | |

# Turbidity (Depth-averaged) at Mid-Flood Tide

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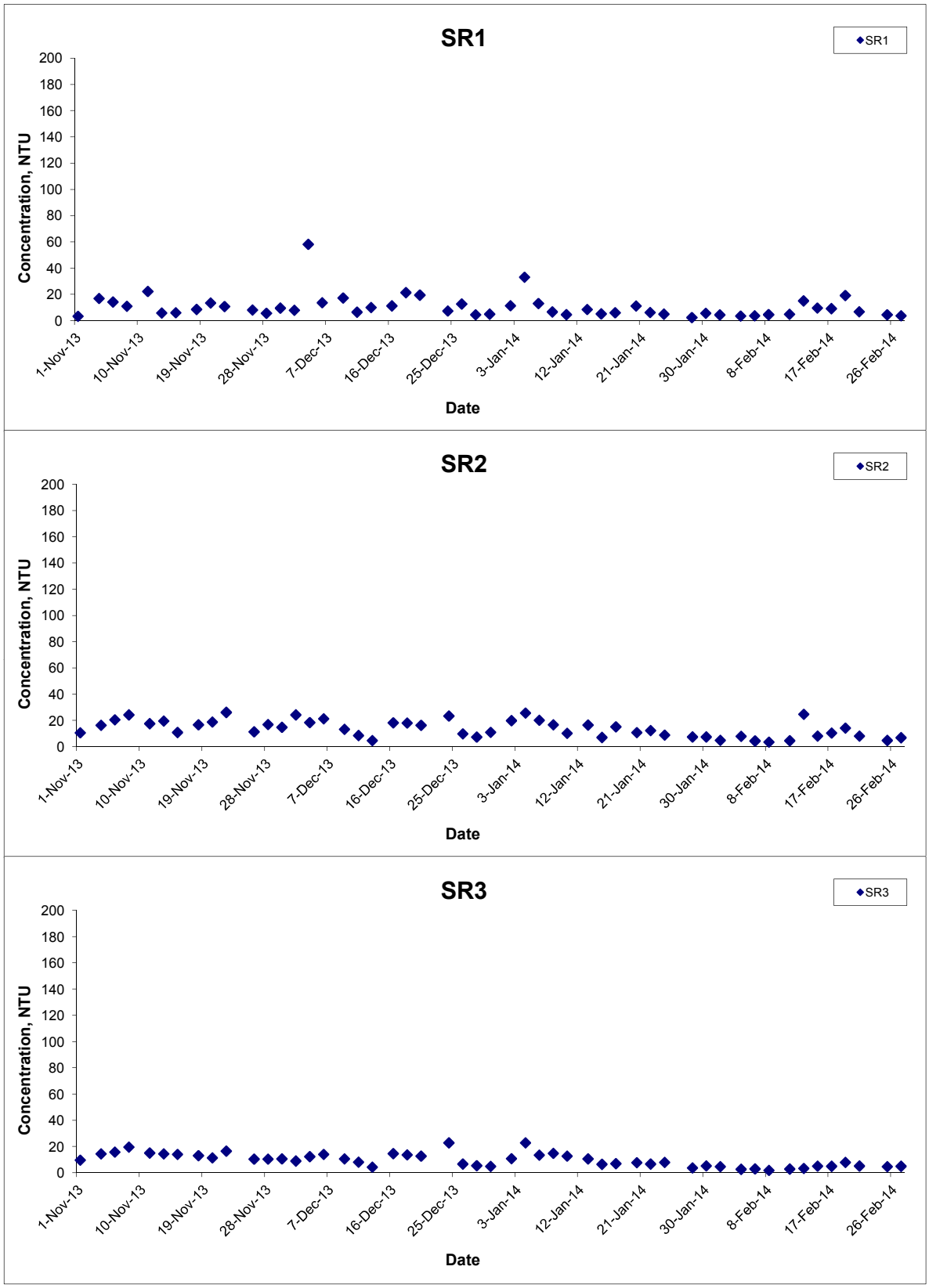
# Turbidity (Depth-averaged) at Mid-Flood Tide

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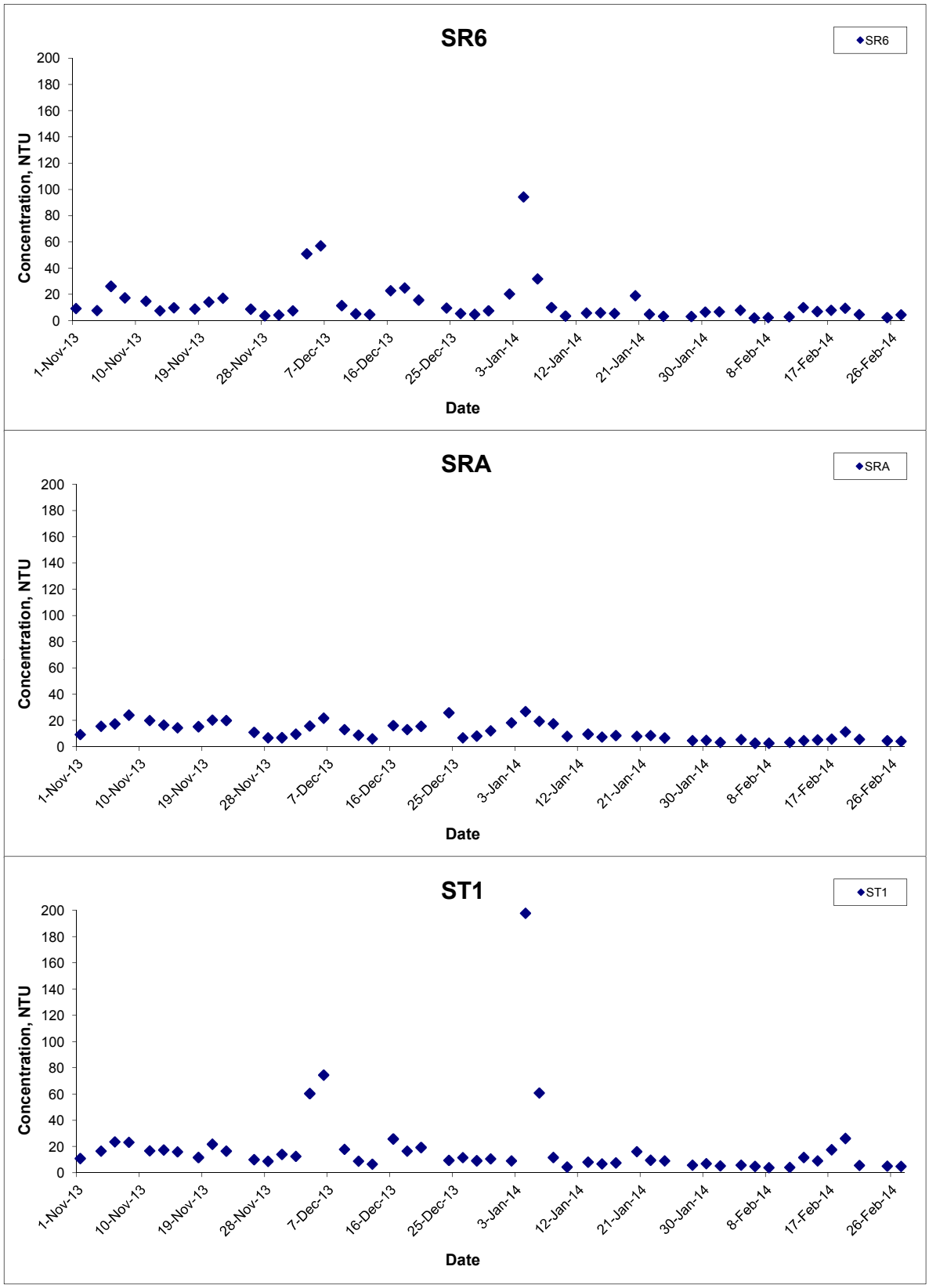
# Turbidity (Depth-averaged) at Mid-Flood Tide

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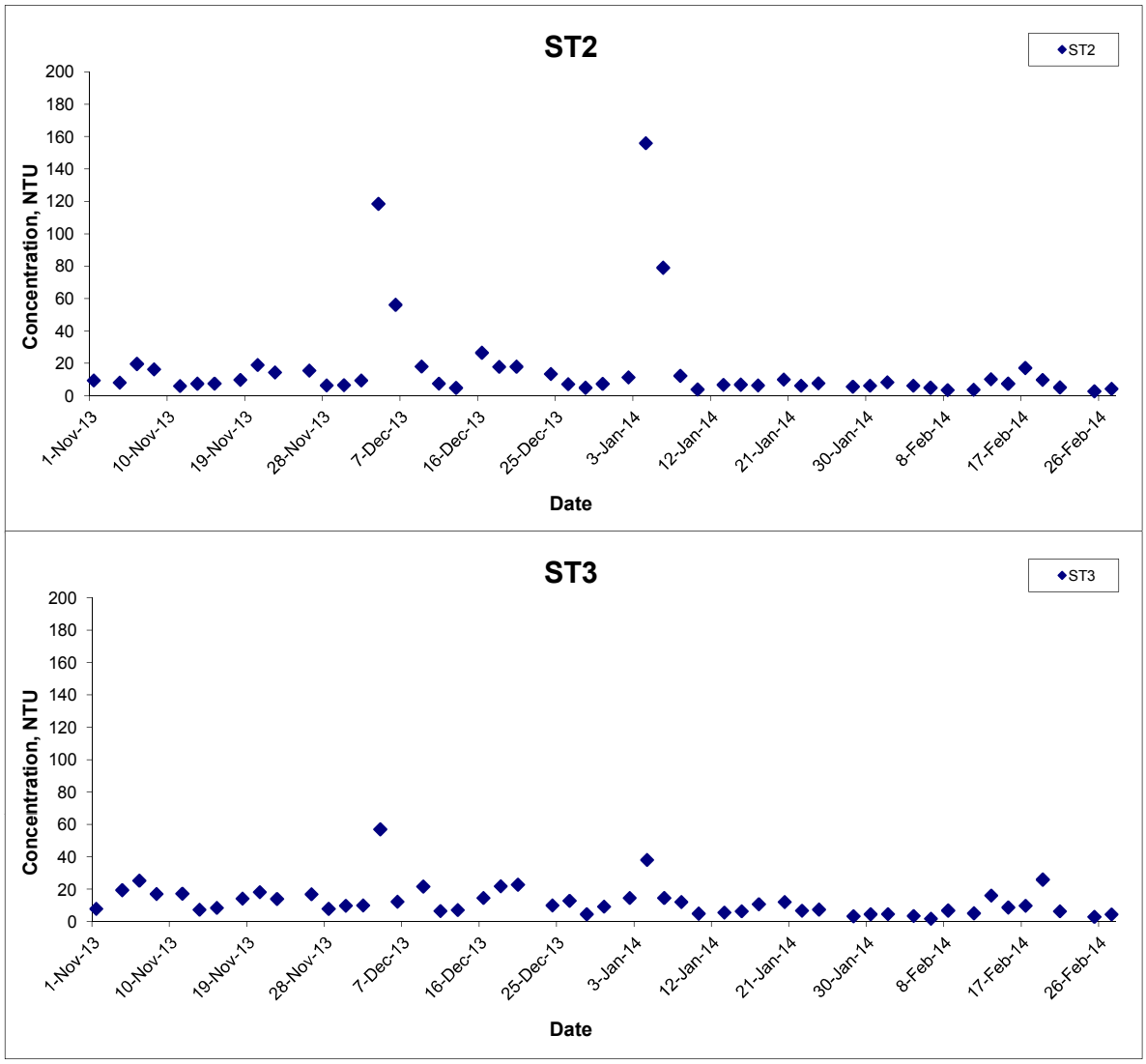
## Turbidity (Depth-averaged) at Mid-Flood Tide

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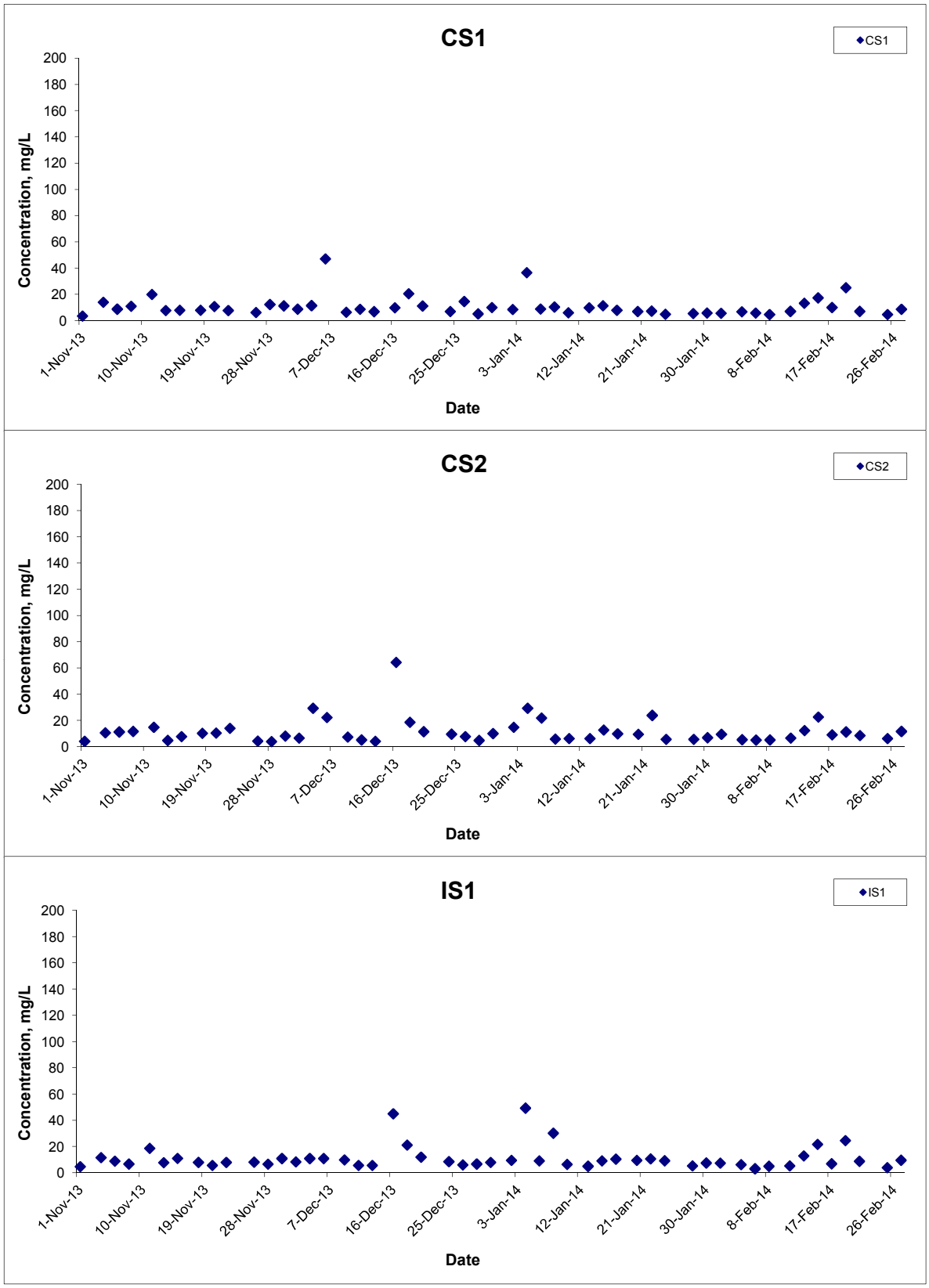
## Suspended Solids (Depth-averaged) at Mid-Ebb Tide

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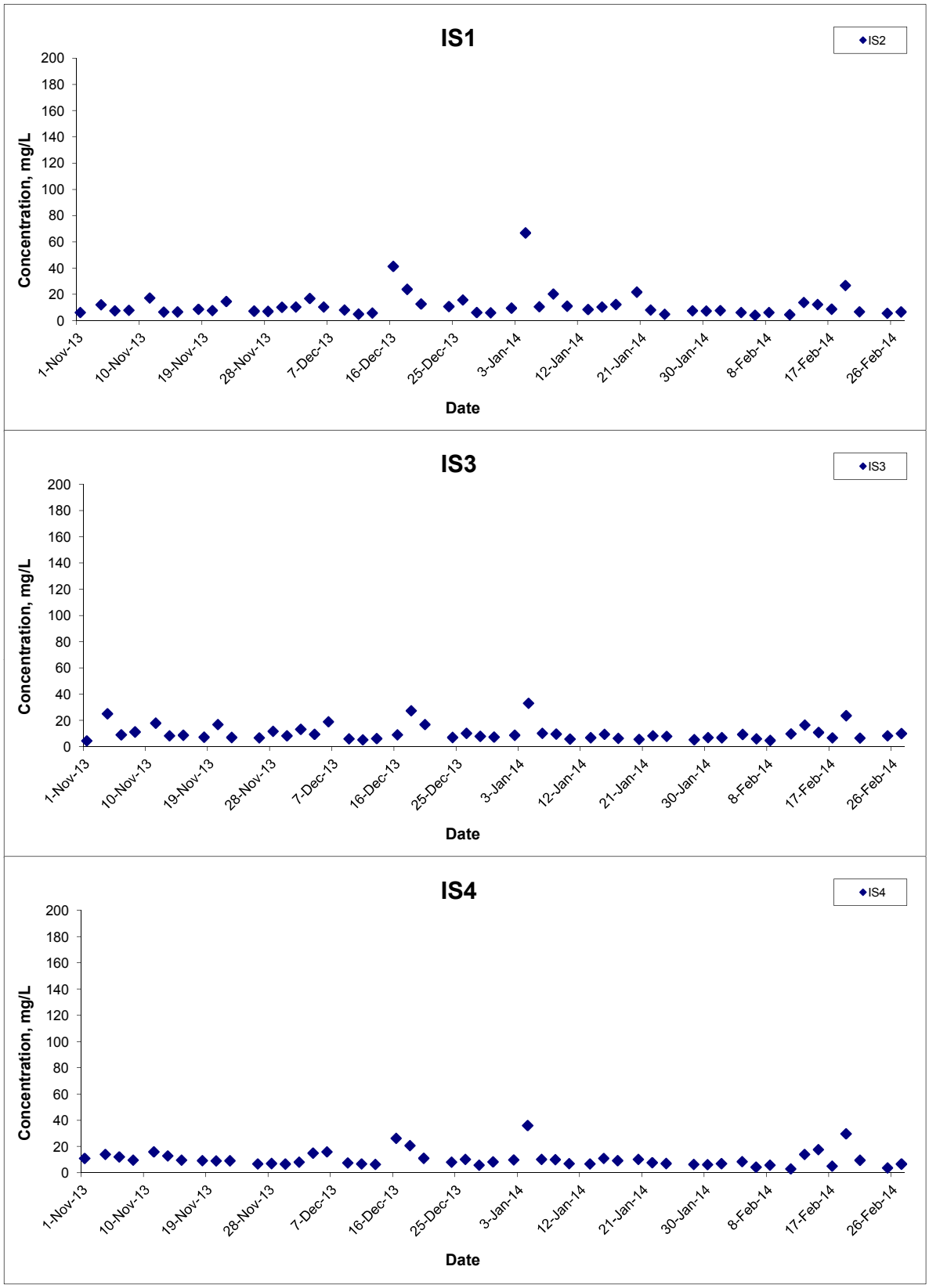
## Suspended Solids (Depth-averaged) at Mid-Ebb Tide

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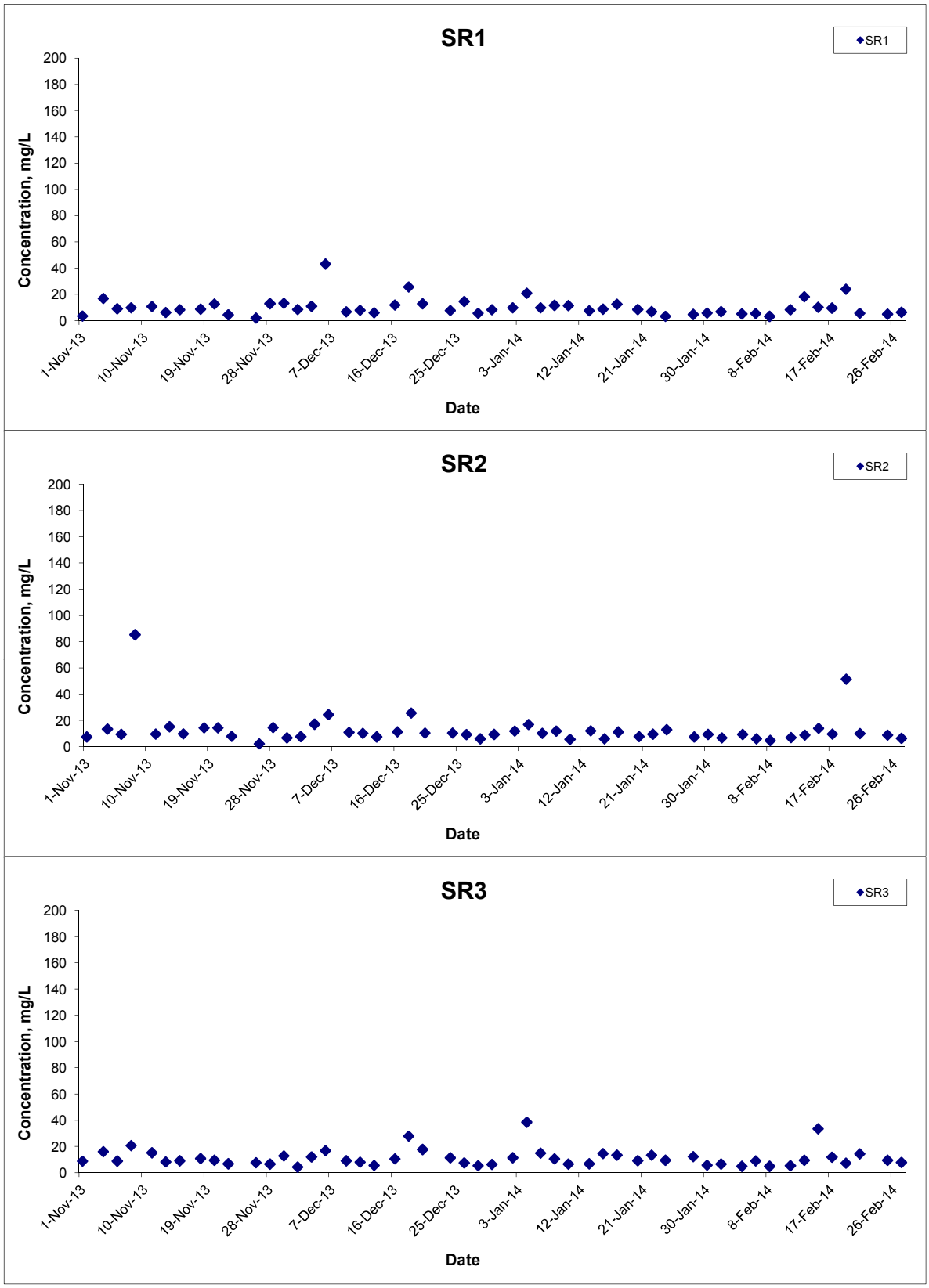
# Suspended Solids (Depth-averaged) at Mid-Ebb Tide

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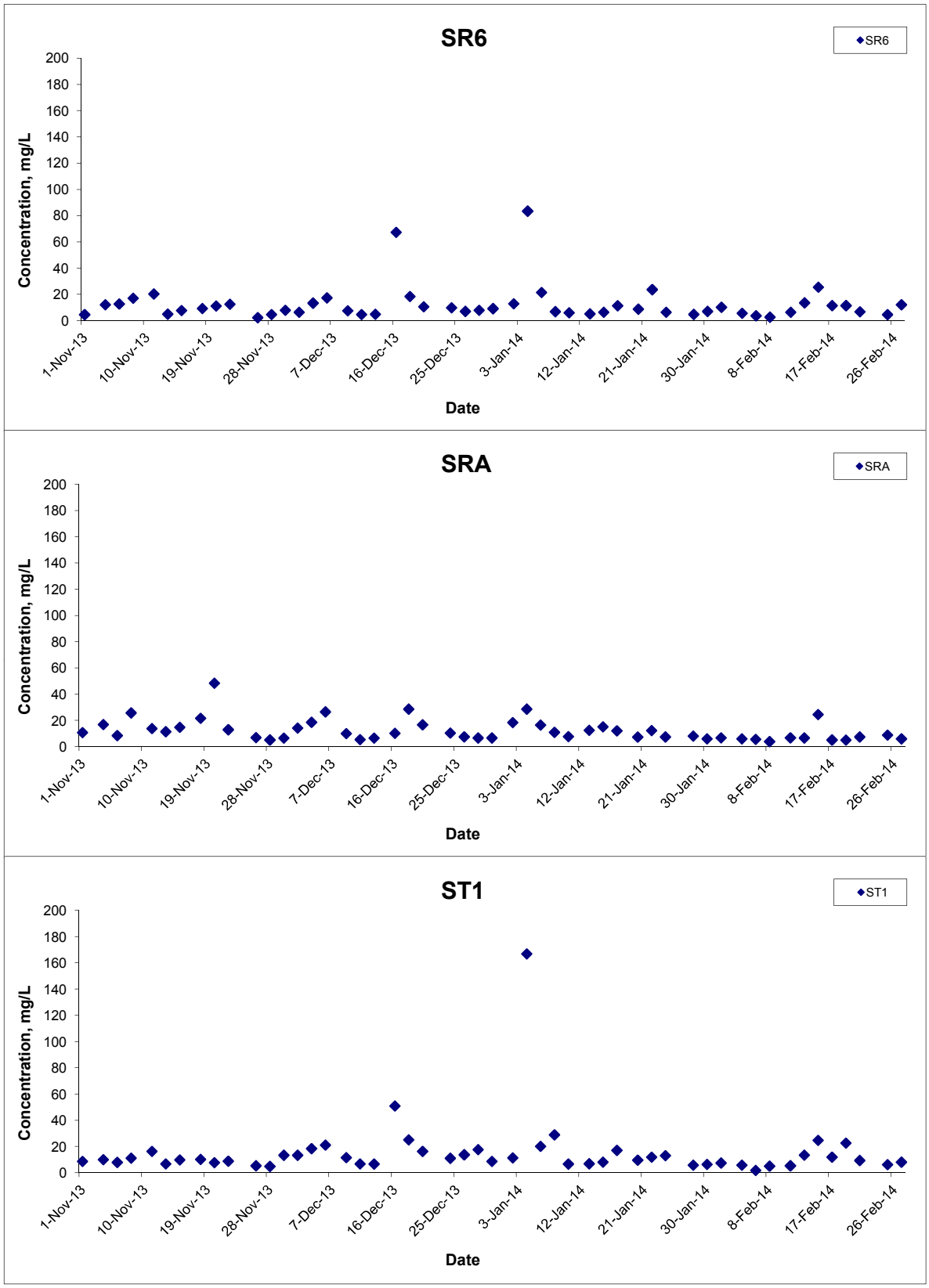
# Suspended Solids (Depth-averaged) at Mid-Ebb Tide

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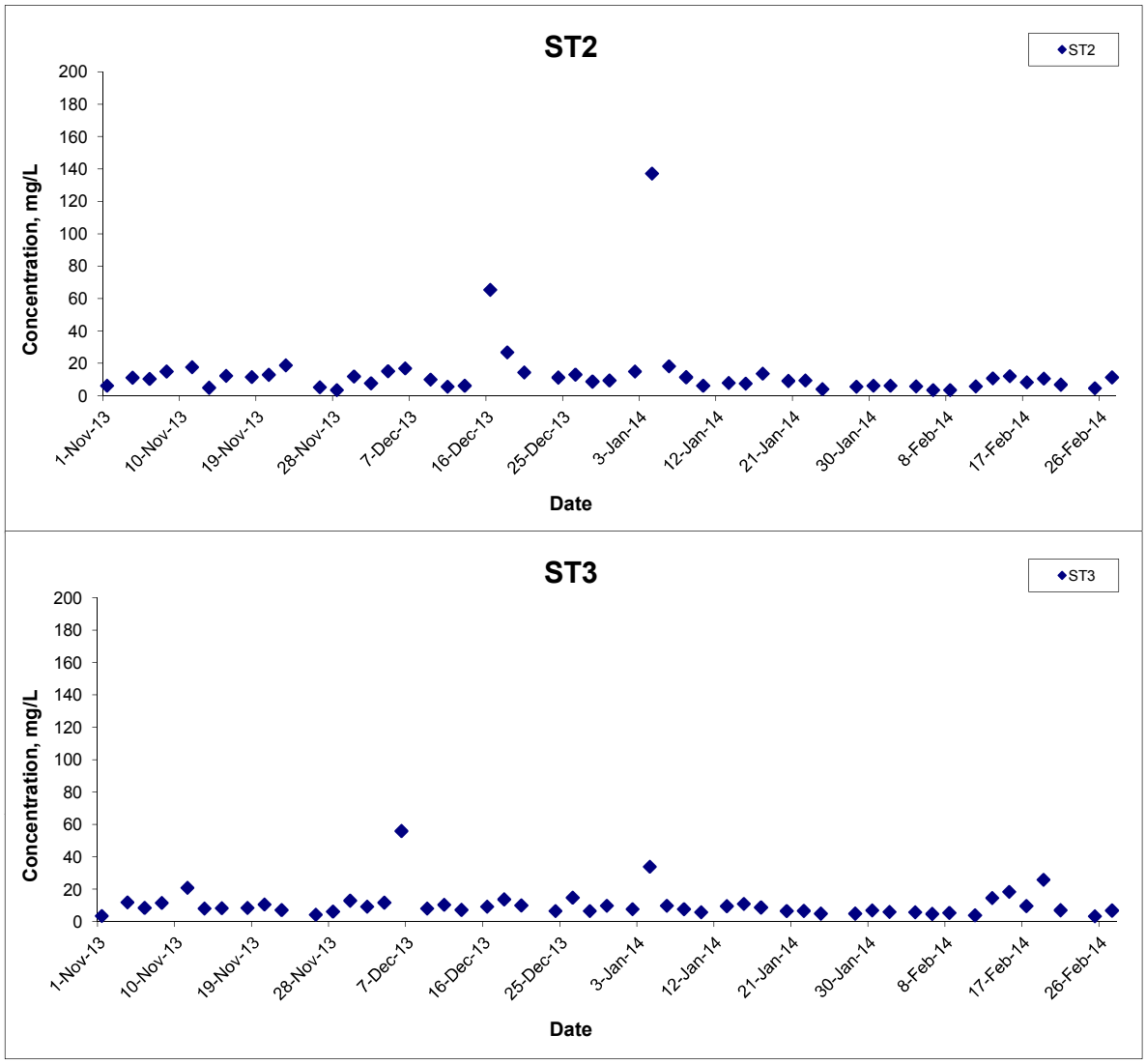
## Suspended Solids (Depth-averaged) at Mid-Ebb Tide

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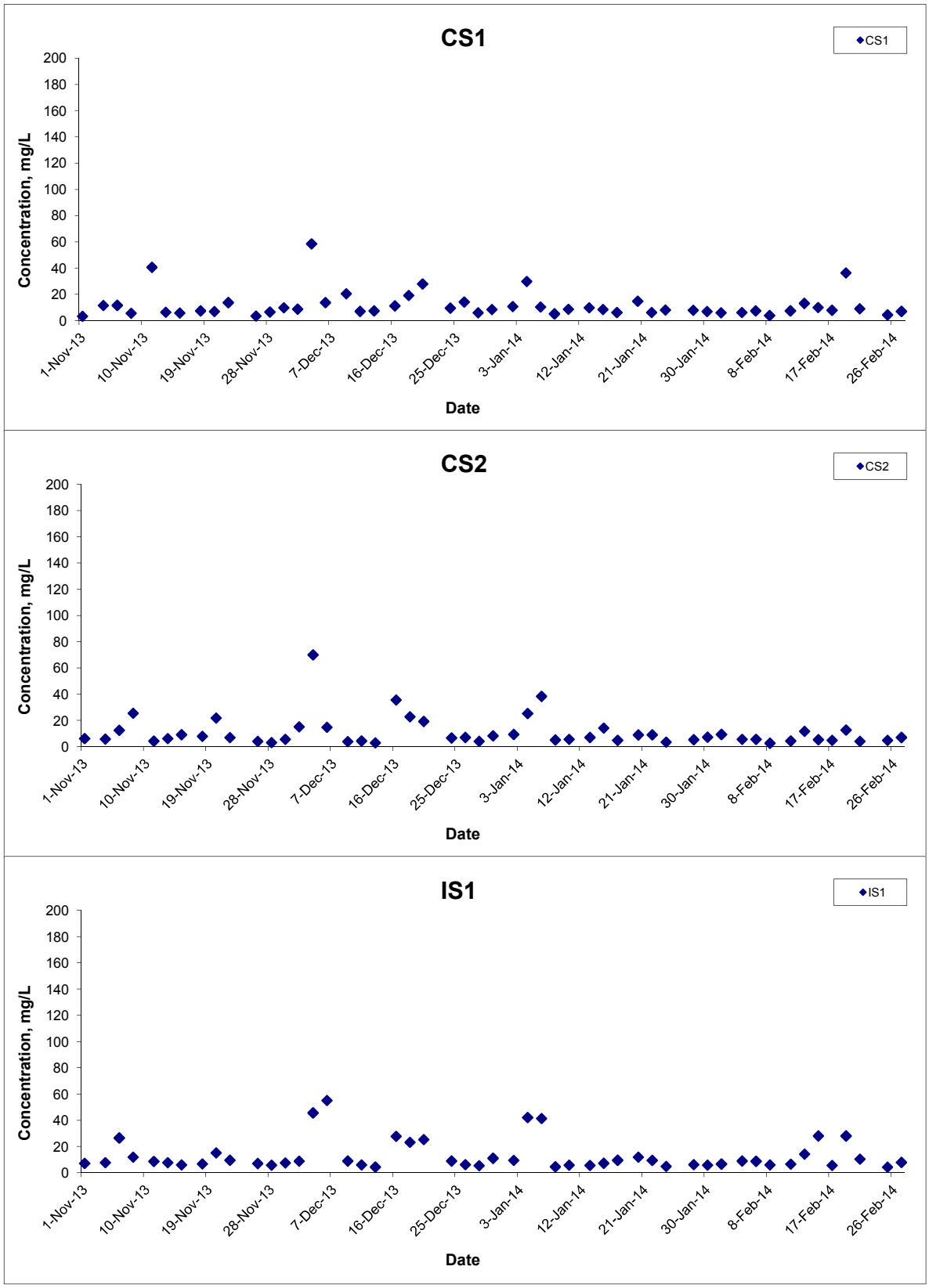
| | | Date Feb 14 | Appendix E | |

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

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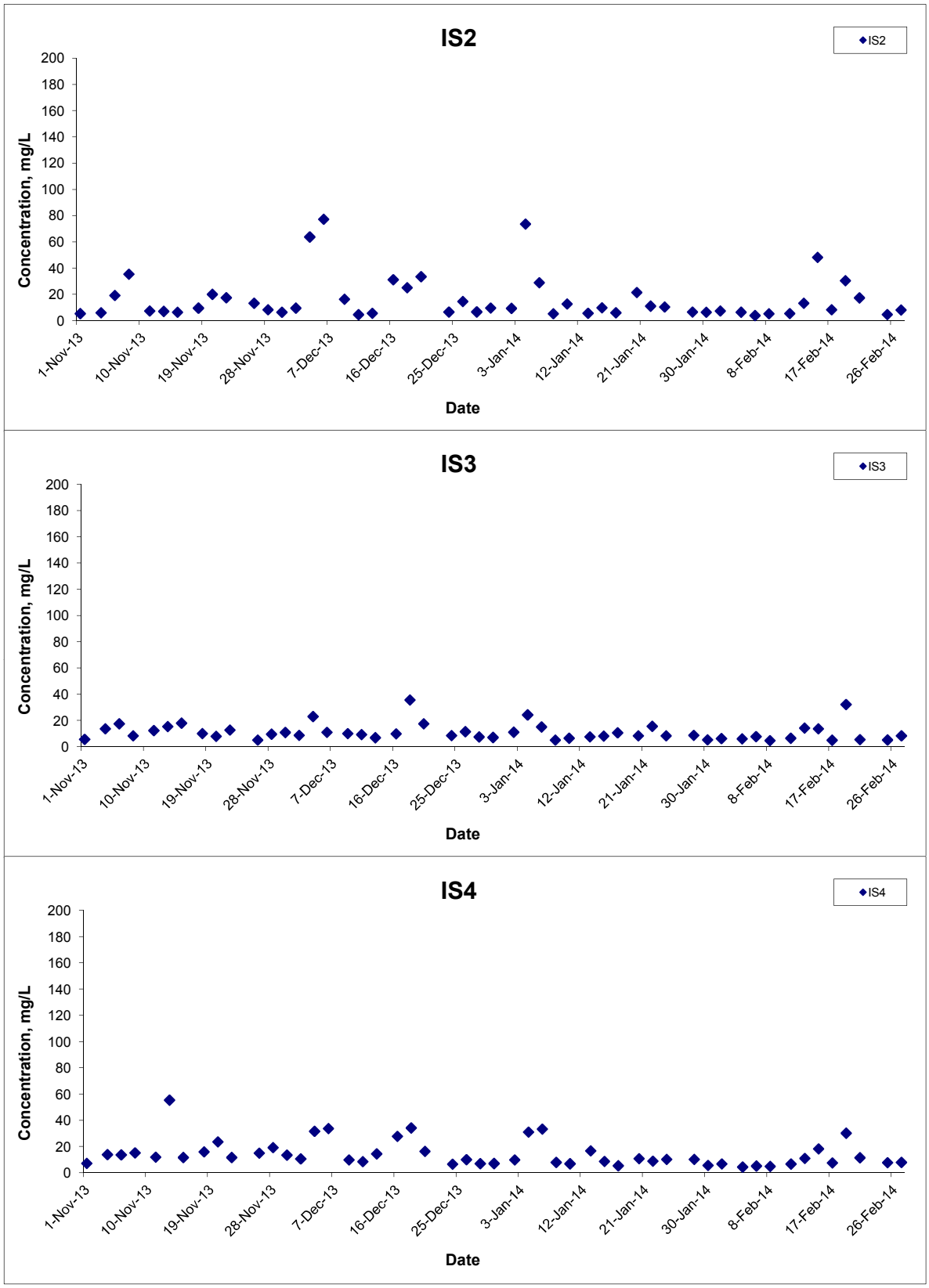
# Suspended Solids (Depth-averaged) at Mid-Flood Tide

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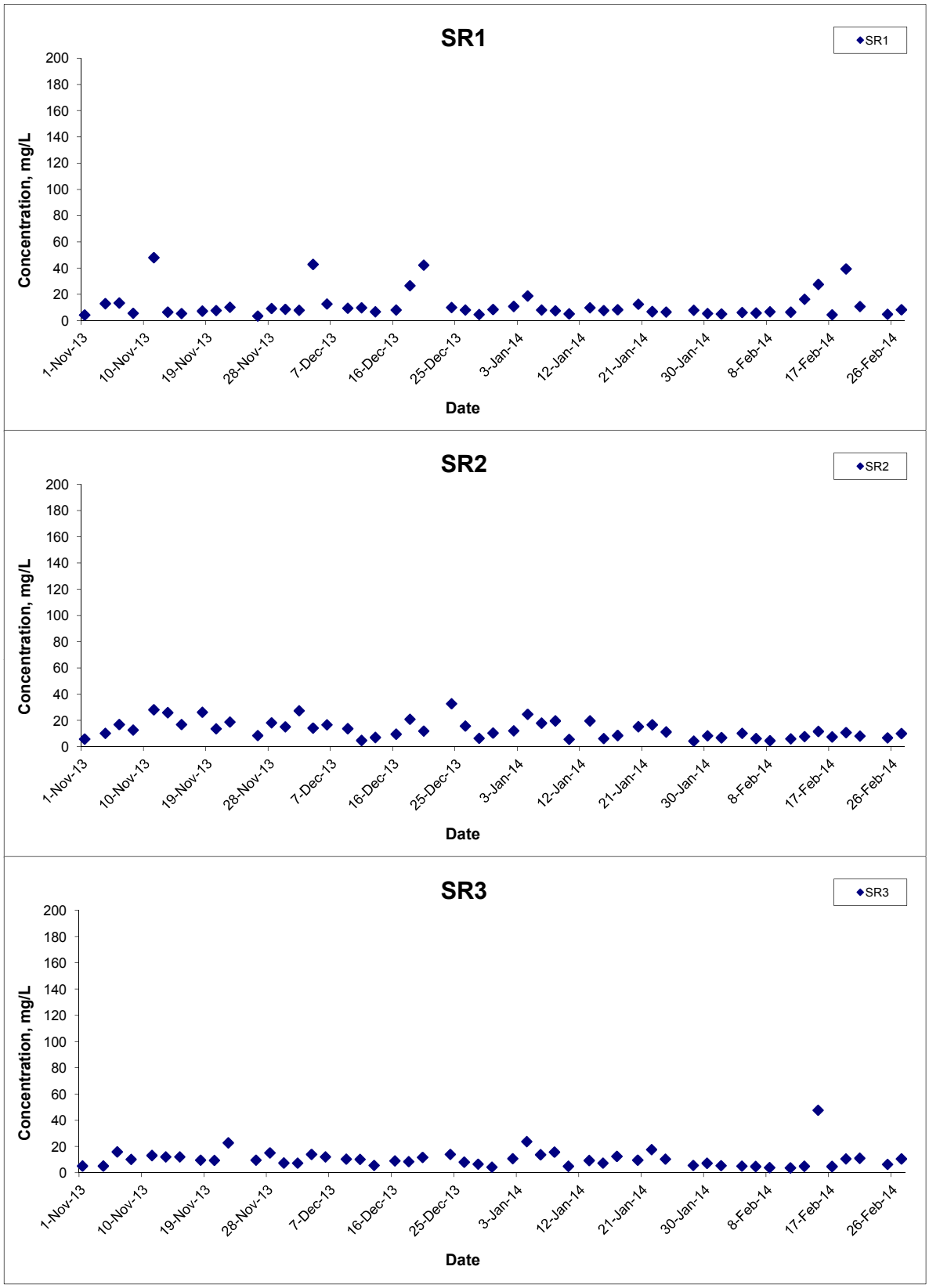


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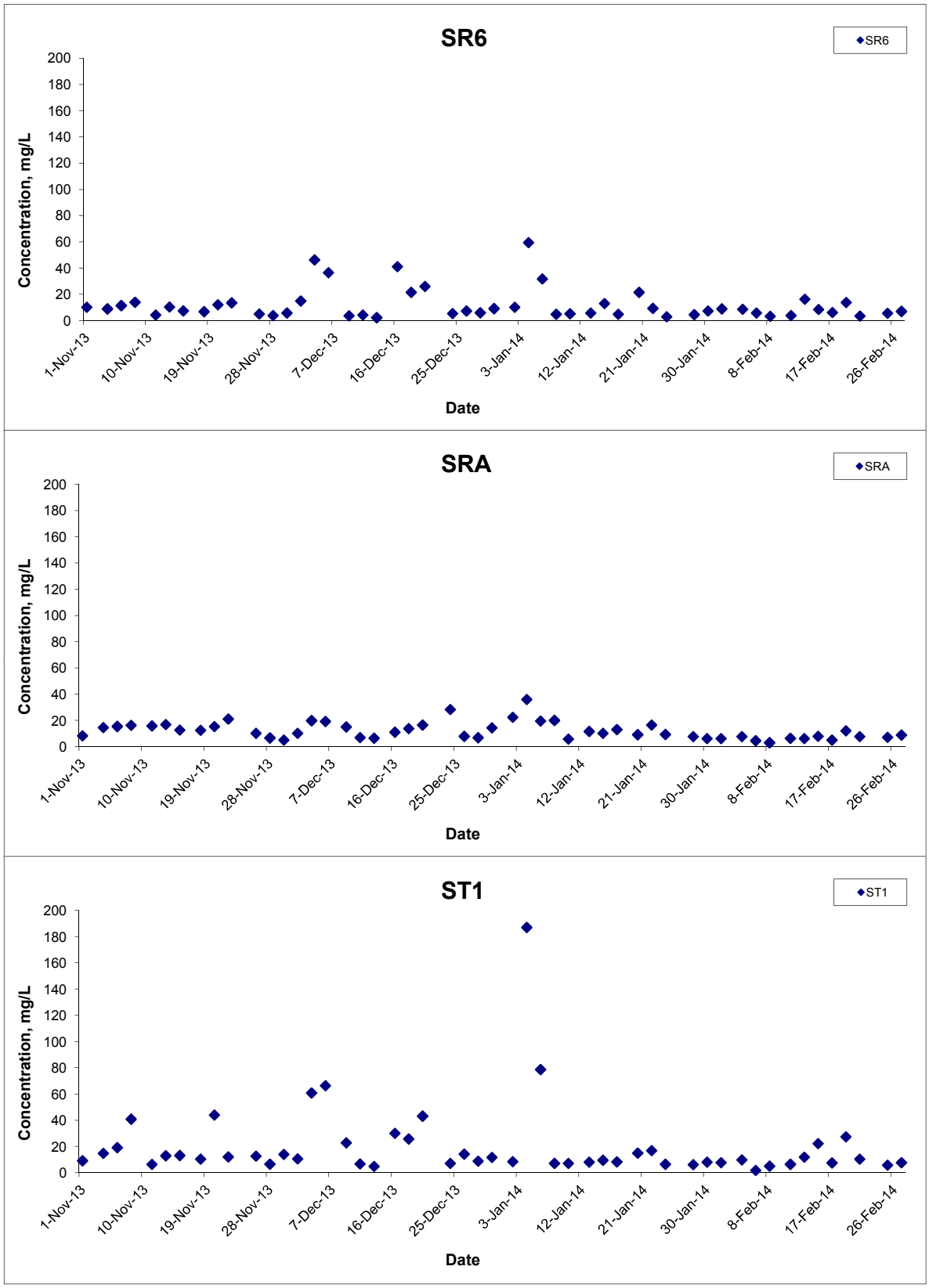
## Suspended Solids (Depth-averaged) at Mid-Flood Tide

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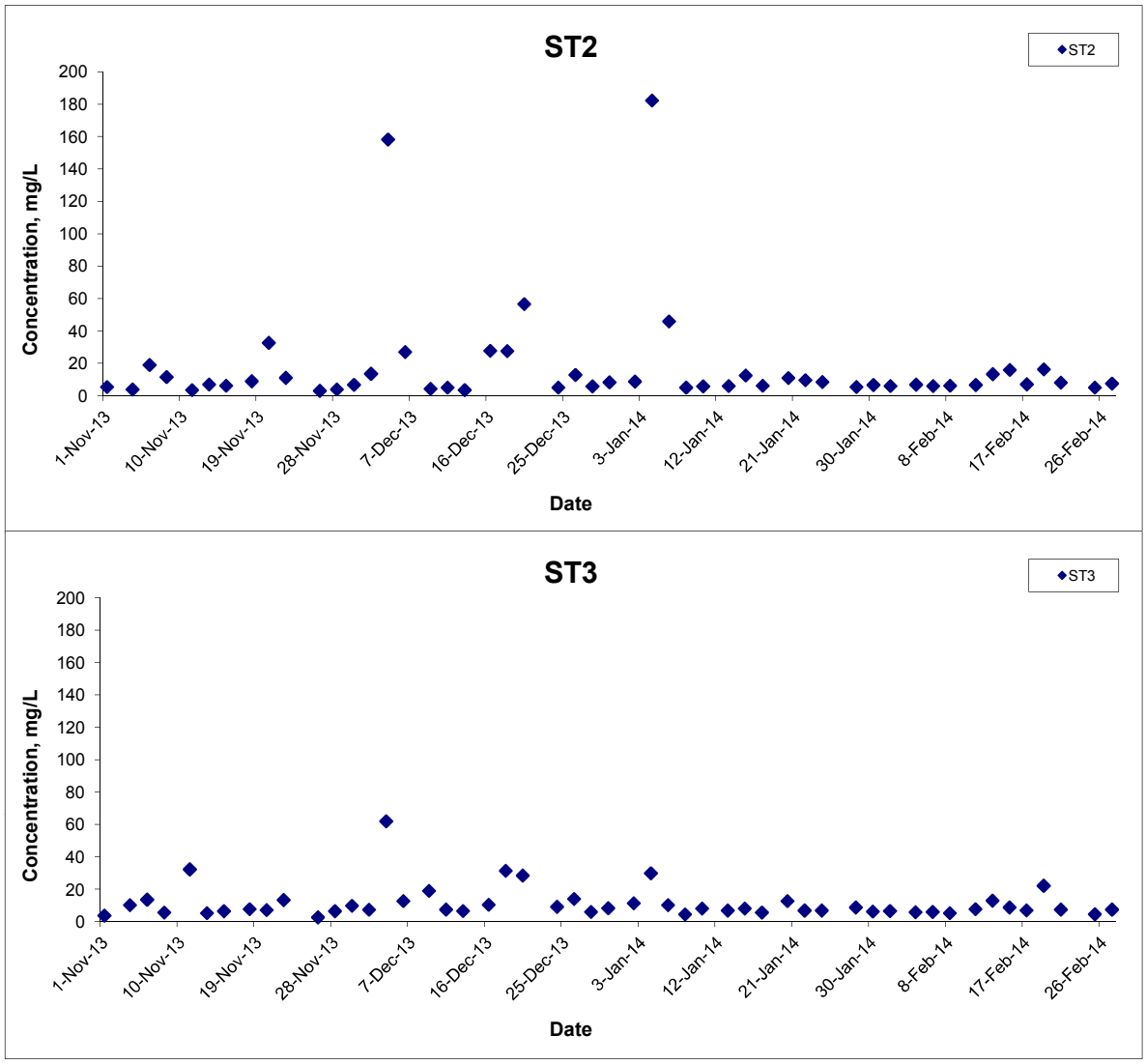
## Suspended Solids (Depth-averaged) at Mid-Flood Tide

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| | | Date: Feb 14 | Appendix: E | |

**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

*Quarterly Progress Report (December 2013 – February 2014)*

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

31 March 2014

## 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. In 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 fourth 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 2013 to February 2014.

## 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 2013 – February 2014).

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 2013 to February 2014, 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 192.30 km of survey effort was collected, with 86.2% 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 125.70 km, while the effort on secondary lines was 66.60 km. 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.

3.1.3. During the six sets of monitoring surveys in December 2013 to February 2014, a total of 36 groups of 145 Chinese White Dolphins were sighted. All except six sightings were made during on-effort search. Twenty-three on-effort sightings were made on primary lines, while another seven on-effort sightings were made on secondary lines. 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 2013 to February 2014 is shown in Figure 1. The dolphin groups were evenly distributed throughout the WL survey area, with higher concentrations near Kai Kung Shan. The only areas where dolphins were rarely sighted included the northern end of the survey area as well as the waters between Tai O and Yi O (Figure 1).

3.2.2. Sighting distribution of dolphins in the present quarter was quite different from

the one during the baseline period, with fewer dolphins being sighted in the northern portion of the survey area and the offshore area near the western boundary in the present impact monitoring quarter (Figure 1).

3.2.3. Notably, only one sighting was made along the HKLR09 alignment in WL survey area during the present quarter (Figure 1). In fact, when pooling the data from HKLR03 monitoring surveys in the same winter quarter of 2013-14, dolphins appeared to have avoided the HKLR09 alignment in the present quarter as compared to the baseline monitoring period (Figure 2). There appeared to be a general shift in dolphin distribution further south of the WL survey area in the present quarter, and they rarely occurred at the juncture between NWL and WL survey areas (Figure 2). As noted in Section 3.4, the few dolphin groups sighted in the vicinity of HKLR09 alignment were mainly small groups of dolphins.

3.2.4. As the dolphins may be affected by the intensive bored piling works along the HKLR09 alignment and avoided this area as indicated in individual range use (Section 3.9), this should be a growing concern, even though the overall encounter rate in WL in the present quarter was similar to the baseline monitoring period. Such shift in dolphin distribution and range use should be continuously monitored in the upcoming quarters of impact phase monitoring surveys.

*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 2013 to February 2014 were also compared with the ones deduced from the baseline monitoring period (September – November 2011) (Table 3).

3.3.2. In WL survey area, the average dolphin encounter rates in the present three-month study period was either slightly higher (in STG) or similar to (in ANI) the ones recorded in the three-month baseline period respectively (Table 3), indicating the dolphin usage during this impact phase monitoring period in this survey area did not show any obvious change when compared to the baseline phase.

Table 2. Dolphin encounter rates (sightings per 100 km of survey effort) during the impact monitoring period (December 2013 to February 2014)

| 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 3, 2013) | 9.7 | 67.6 |
| | Set 2 (December 20, 2013) | 20.1 | 50.4 |
| | Set 3 (January 3, 2014) | 18.8 | 32.9 |
| | Set 4 (January 24, 2014) | 10.5 | 21.1 |
| | Set 5 (February 24, 2014) | 29.4 | 135.1 |
| | Set 6 (February 26, 2014) | 19.6 | 53.8 |

Table 3. Comparison of average dolphin encounter rates from impact monitoring period (December 2013 to February 2014) and baseline monitoring period (September-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 2013 - February 2014 | September-November 2011 | December 2013 - February 2014 | September-November 2011 |
| **West Lantau** | 18.01 ± 7.24 | 16.43 ± 7.70 | 60.12 ± 40.18 | 60.50 ± 38.47 |

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 (fourth quarter of the impact phase), the p-value for the differences in average dolphin encounter rates of STG and ANI were 0.723 and 0.987 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 four quarters of the impact phase), and the p-value for the differences in average dolphin encounter rates of STG and ANI were 0.784 and 0.969 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.

3.3.5. To facilitate the comparison with the AFCD long-term monitoring results, the encounter rates were also calculated for the present quarter (December 2013 to February 2014) using both primary and secondary survey effort. The encounter rates of sightings (STG) and dolphins (ANI) in WL were 15.7 sightings and 58.5 dolphins per 100 km of survey effort respectively.

*3.4. Group size*

3.4.1. Group size of Chinese White Dolphins ranged from 1-17 individuals per group in WL survey area between December 2013 to February 2014. 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.

Table 4. Comparison of average dolphin group sizes from impact monitoring period (December 2013 to February 2014) and baseline monitoring period (September-November 2011)

| | **Average Dolphin Group Size** | |
|---|---|---|
| | **December 2013 to February 2014** | **September – November 2011** |
| **West Lantau** | 4.03 ± 3.71 (n = 36) | 3.63 ± 2.97 (n = 46) |

3.4.2. The average dolphin group sizes in the WL region during December 2013 to February 2014 was higher than the ones recorded in the three-month baseline period (Table 4). More than half of the dolphin groups were composed of 1-2 dolphins, but there were also 13 groups with more than 5 animals per group, and three groups with more than 10 animals per group. Some of the larger groups were associated with operating purse-seiners.

3.4.3. Distribution of dolphins with these 13 larger groups during December 2013 to February 2014 is shown in Figure 3. These groups were mostly sighted between Kai Kung Shan and Peaked Hill, which were further away from the HKLR09 alignment. This was quite different from the baseline period, when some of the larger dolphin groups also occurred near Tai O Peninsula closer to the bridge alignment (Figure 3).

*3.5. Habitat use*

3.5.1. From December 2013 to February 2014, the most heavily utilized habitats by the dolphins mainly concentrated near Tai O Peninsula, Kai Kung Shan, Peaked Hill and Fan Lau (Figures 4a & 4b). However, it should be noted 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 dolphin densities were much lower between the HKLR09 alignment and Tai O Peninsula during the present impact phase monitoring period (Figure 5), as in previous monitoring periods. This further indicated that the habitat use of dolphins in the vicinity of the bridge alignment may have been affected by the construction works, and their usage of WL waters have shifted southward as a result. Such shift in dolphin habitat use away from the bridge construction area should be continuously monitored in the upcoming quarters.

*3.6. Mother-calf pairs*

3.6.1. During the three-month impact phase monitoring period, only five unspotted juveniles (UJ) were sighted in WL survey area. These young calves comprised only 3.4% of all animals sighted, which was much lower to the percentage recorded during the baseline monitoring period (6.6%). As anthropogenic activities within the dolphin habitat can be more disturbing to the mother-calf pairs, and there were signs that dolphins were affected by the bridge construction activities (see previous sections), it is possible that the mother-calf pairs have diminished their usage of WL survey areas in the present quarter as a result of the HKLR09 construction works.

3.6.2. The occurrence of these young calves were scattered between Kai Kung Shan and Peaked Hill, which was in stark contrast to the baseline period when calf occurrence was more frequent near Tai O Peninsula (Figure 6). When they occurred in WL survey area, it appeared that they have avoided the HKLR09 alignment and only limited their usage to the southern portion of WL survey area.

*3.7. Activities and associations with fishing boats*

3.7.1. A total of five dolphin sightings were associated with feeding activities during the three-month impact monitoring period, comprising of 13.8% of the total number of dolphin sightings. This percentage was similar to the percentage recorded during the baseline period (13.0%). Only one of the 36 sightings was associated with socializing activity.

3.7.2. Distribution of dolphins engaged in the feeding and socializing activities during

the three-month study period is shown in Figure 7. The sightings associated with feeding activities were scattered between the bridge alignment and Kai Kung Shan, with no particular concentration. This distribution pattern was similar to the baseline period, when most feeding activities were concentrated in the middle portion of the survey area between Tai O Peninsula and Kai Kung Shan (Figure 7). The lone sighting associated with socializing activity was located near Kai Kung Shan.

3.7.3. During the three-month period, three dolphin groups were associated with operating purse-seiners, while one group of two dolphins was associated with an operating gill-netter, together comprising of 11.1% of all dolphin groups. This was much higher than the percentage recorded in the baseline period (6.5%).

*3.8. Summary of photo-identification works*

3.8.1. From December 2013 to February 2014, over 2,000 digital photographs of Chinese White Dolphins were taken during the impact phase monitoring surveys for the photo-identification work.

3.8.2. In total, 42 individuals sighted 73 times altogether were identified (see summary table in Appendix III and photographs of identified individuals in Appendix IV). Most identified individuals were sighted only once or twice during the three-month period, but five individuals (NL128, WL93, WL109, WL152 and WL180) were sighted thrice, while two individuals (WL91 and WL25) were sighted four and six times respectively.

3.8.3. Notably, four of these 42 individuals were also sighted in North Lantau waters during the HKLR03 monitoring surveys in the same three-month period.

3.8.4. During the three-month period, four recognizable females, including NL33, NL188, NL264 and WL171, were sighted to be accompanied with her calf during her re-sighting. Notably, the first three individuals spent most of their time in North Lantau waters in the past, and therefore only a very small number of dolphins that focused their range use in West Lantau waters were mother-calf pairs, similar to the results in previous monitoring quarters.

*3.9. Individual range use*

3.9.1. Ranging patterns of the 42 individuals identified during the three-month study period were determined by fixed kernel method, and are shown in Appendix V.

3.9.2. Among these 42 individuals, six of them (NL33, NL188, NL226, NL264, NL288 and NL296) occurred primarily in North Lantau and ventured into West Lantau during the three-month period, while two other individuals (NL156 and WL179) split their time between North and West Lantau waters. The other 34 individuals centered their range use in West Lantau waters (Appendix V).

3.9.3. For those that regularly occurred in North Lantau waters, they have extended their range use from there to West Lantau waters, which could be a result of a range shift from North Lantau waters. Such range shifts should be continuously monitored in the upcoming quarters to determine whether these range shifts are consistent for North Lantau individuals.

3.9.4. On the other hand, for those that primarily used West Lantau waters as their home ranges, it was apparent that almost all of them utilized the southern part of their ranges, but rarely in the northern part of West Lantau, especially around the HKLR09 alignment where they frequently occurred in the past. It is possible that their range use in West Lantau waters have been affected by the HKLR09 construction activities, which have resulted in fine-scale range shift further south near Kai Kung Shan, Peaked Hill and Fan Lau instead of around Shum Wat and Tai O Peninsula. It will be crucial to examined whether such shift is temporary in nature or not, 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. However, there is some apparent fine-scale change in dolphin occurrence in West Lantau survey area, with dolphins mostly utilizing the southern part of their ranges but not in the northern portion where HKLR09 construction activities occur.

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

## 5. References

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Jefferson, T. A. 2000. Population biology of the Indo-Pacific hump-backed dolphin in Hong Kong waters. Wildlife Monographs 144:1-65.

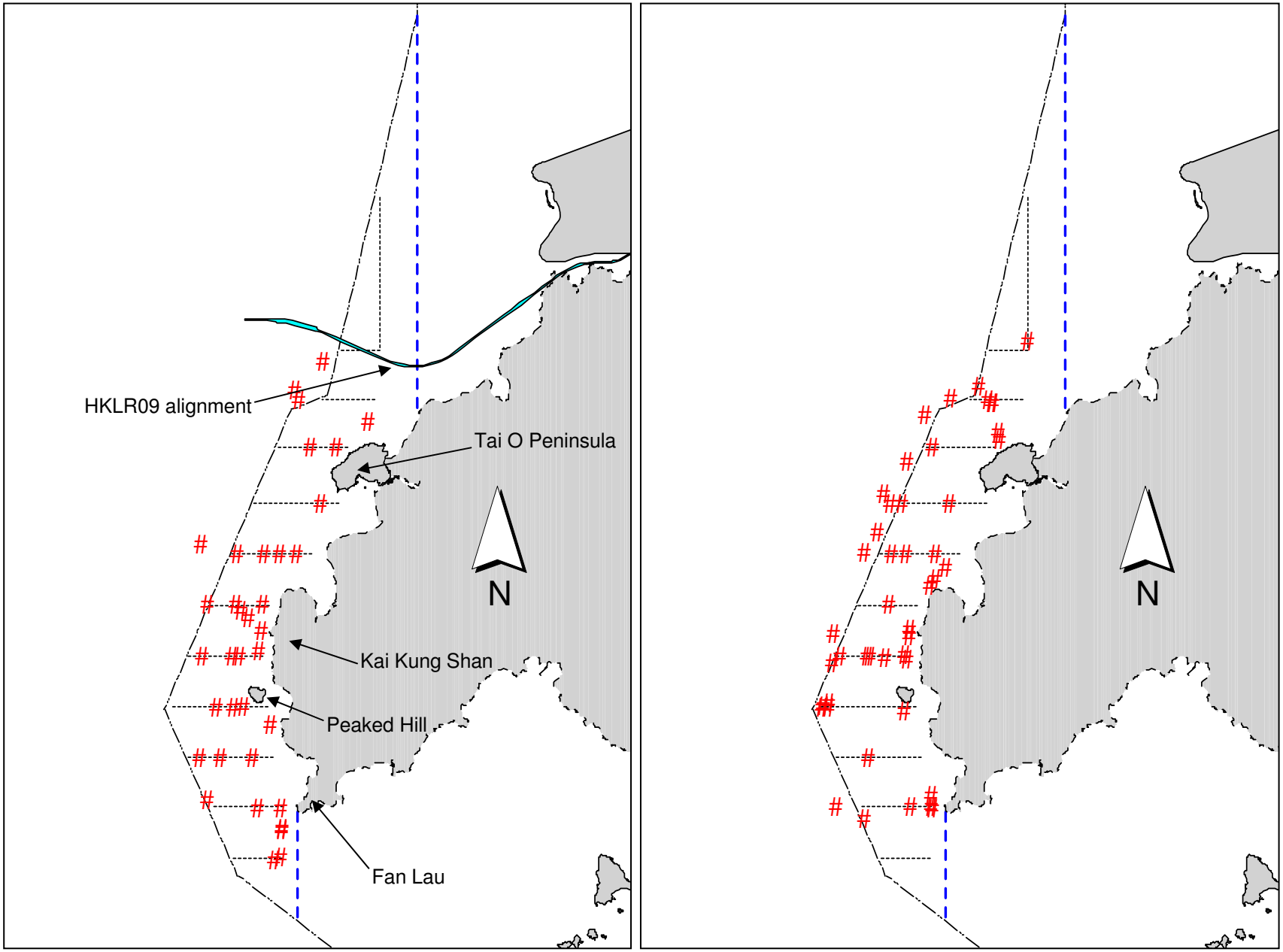



Figure 1. Distribution of Chinese white dolphin sightings in West Lantau during HKLR09 impact phase (left: December 2013 – February 2014) and baseline monitoring surveys (right: September – November 2011)

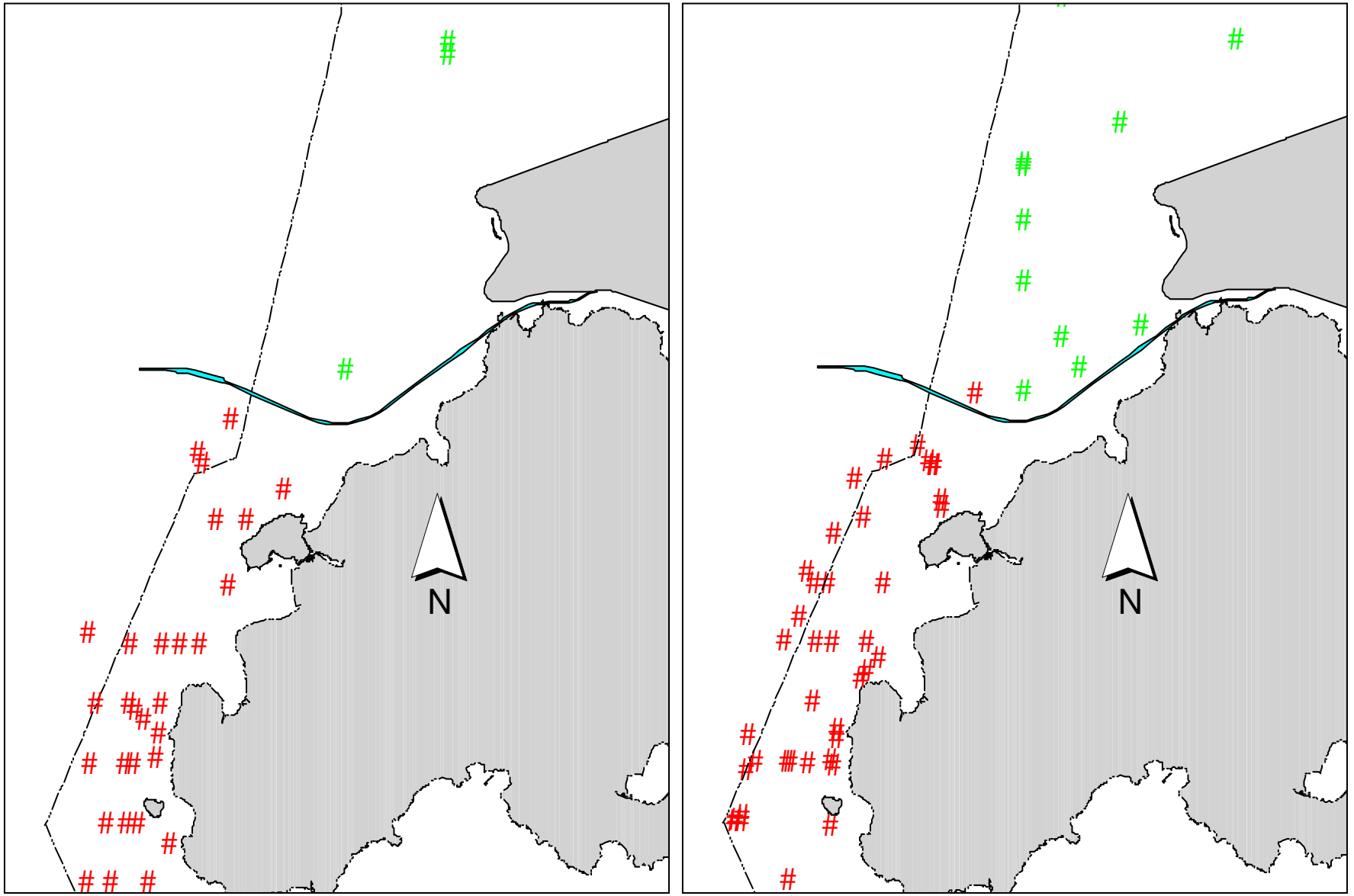



Figure 2. Distribution of Chinese white dolphin sightings from HKLR03 (in green) and HKLR09 surveys (in red) near the HKLR09 alignment during impact phase (left: December 2013 – February 2014) and baseline monitoring surveys (right: September – November 2011)

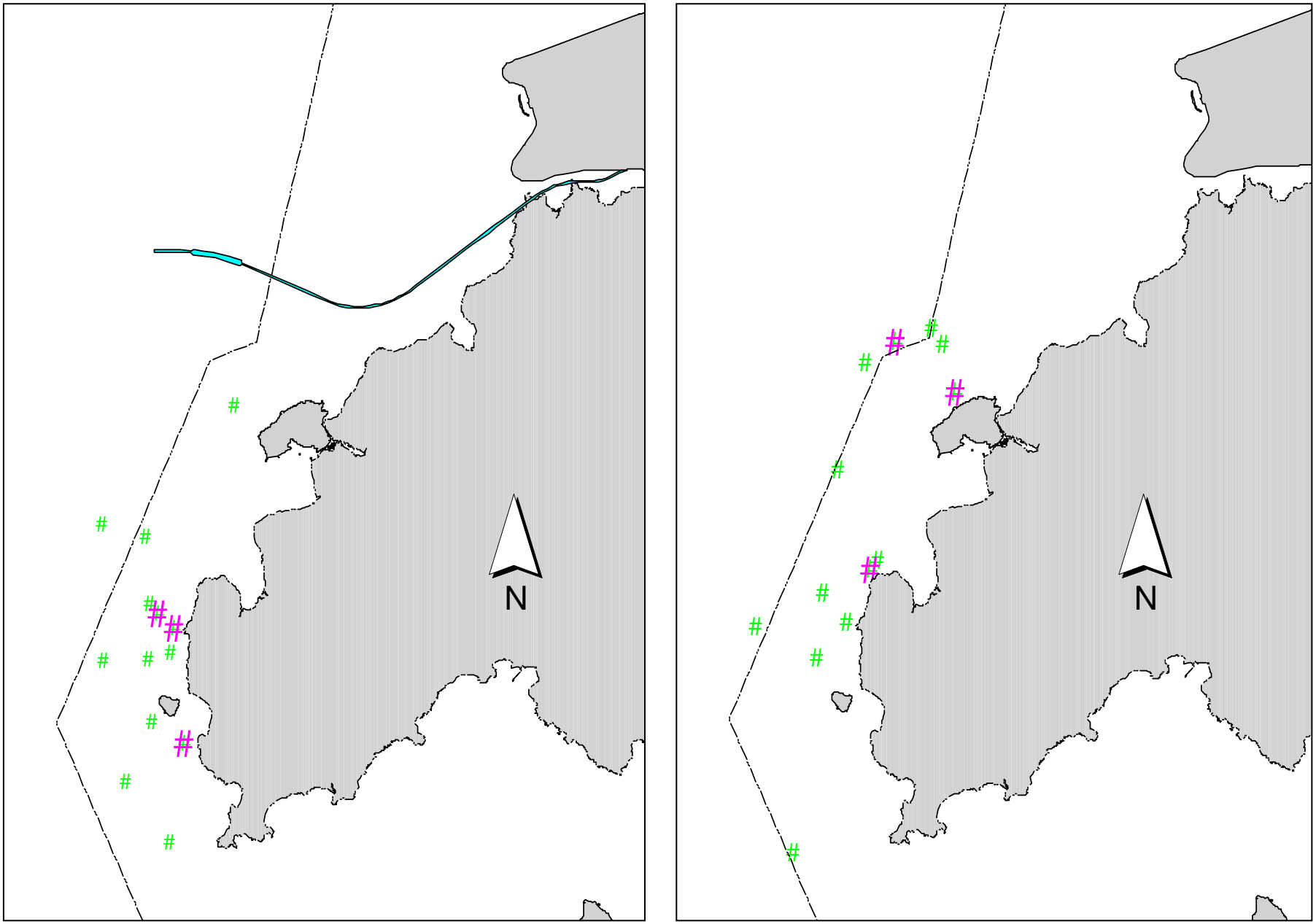



Figure 3. Distribution of Chinese white dolphins with larger group sizes during HKLR09 impact phase (left: December 2013 – February 2014) and baseline monitoring surveys (right: September – November 2011) (green dots: group sizes of 5 or more; purple dots: group sizes of 10 or more)

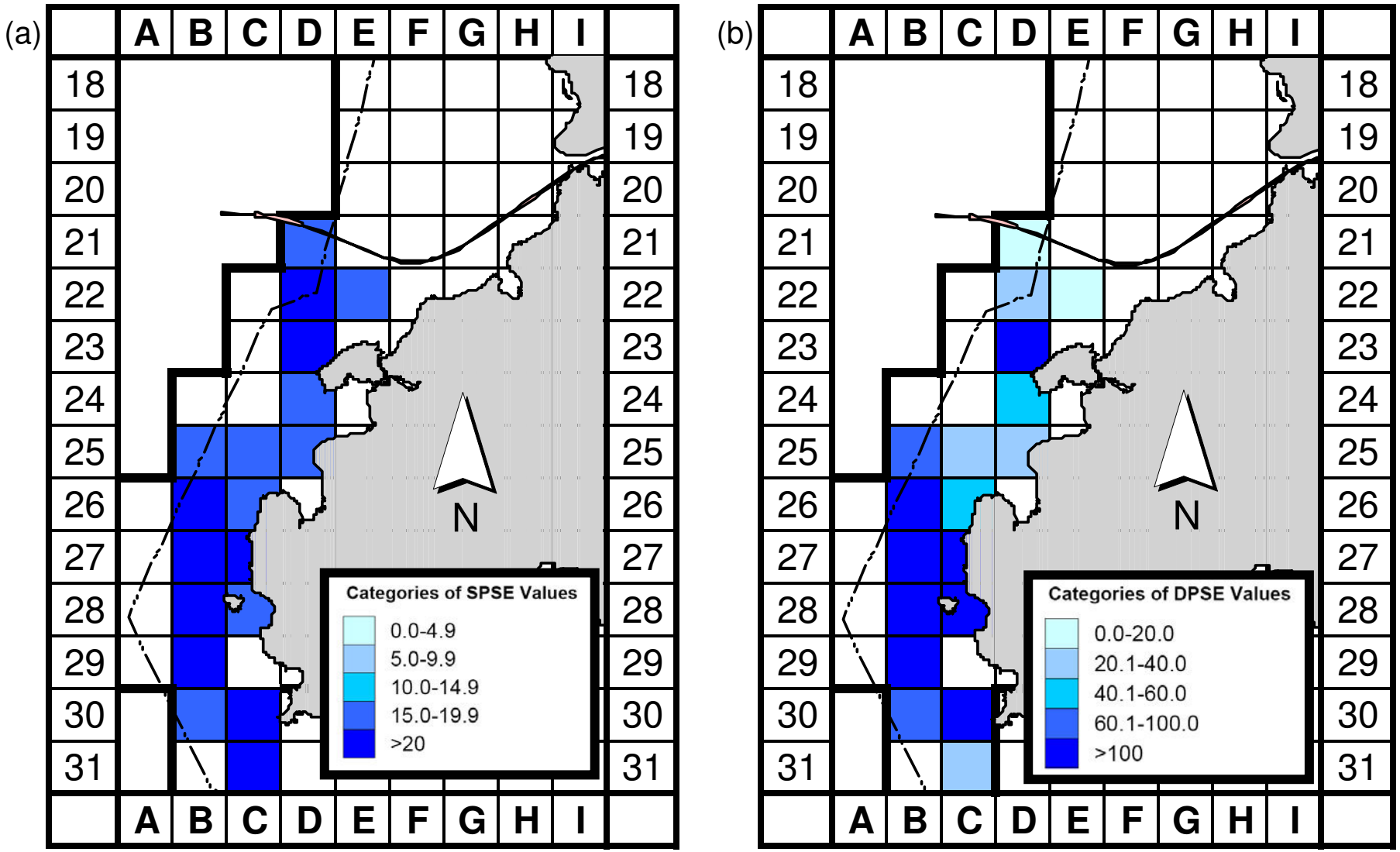



Figure 4a. Sighting density of Chinese white dolphins with corrected survey effort per $km^2$ in West Lantau survey area, using data collected during HKLR09 impact monitoring period (Dec 13-Feb 14) (SPSE = no. of on-effort sightings per 100 units of survey effort)

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 13-Feb 14) (DPSE = no. of dolphins per 100 units of survey effort)

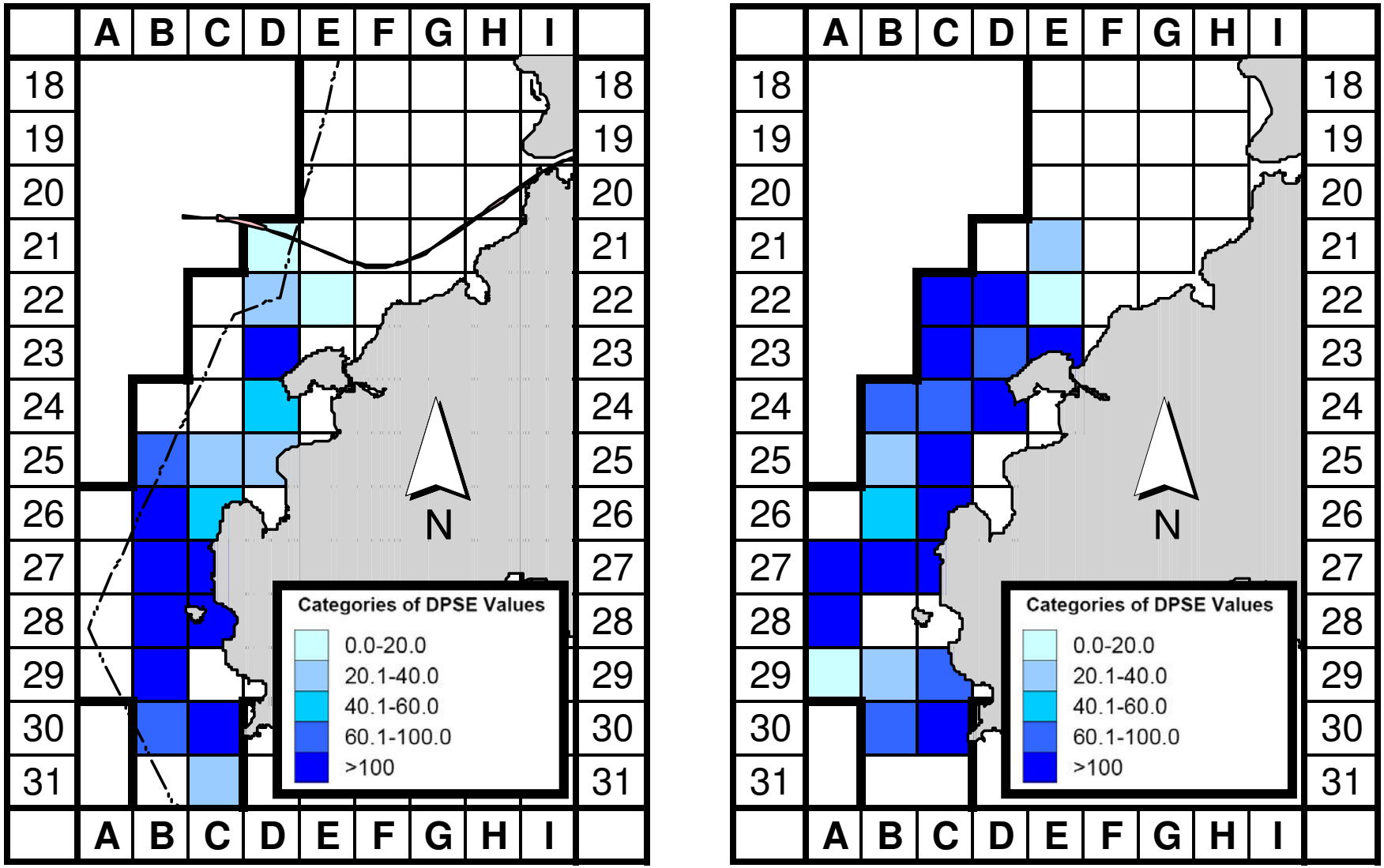



Figure 5. Comparison of density of Chinese white dolphins with corrected survey effort per $km^2$ in West Lantau survey area between the impact monitoring period (December 2013-February 2014; left) and baseline monitoring period (September-November 2011; right) (DPSE = no. of dolphins per 100 units of survey effort)

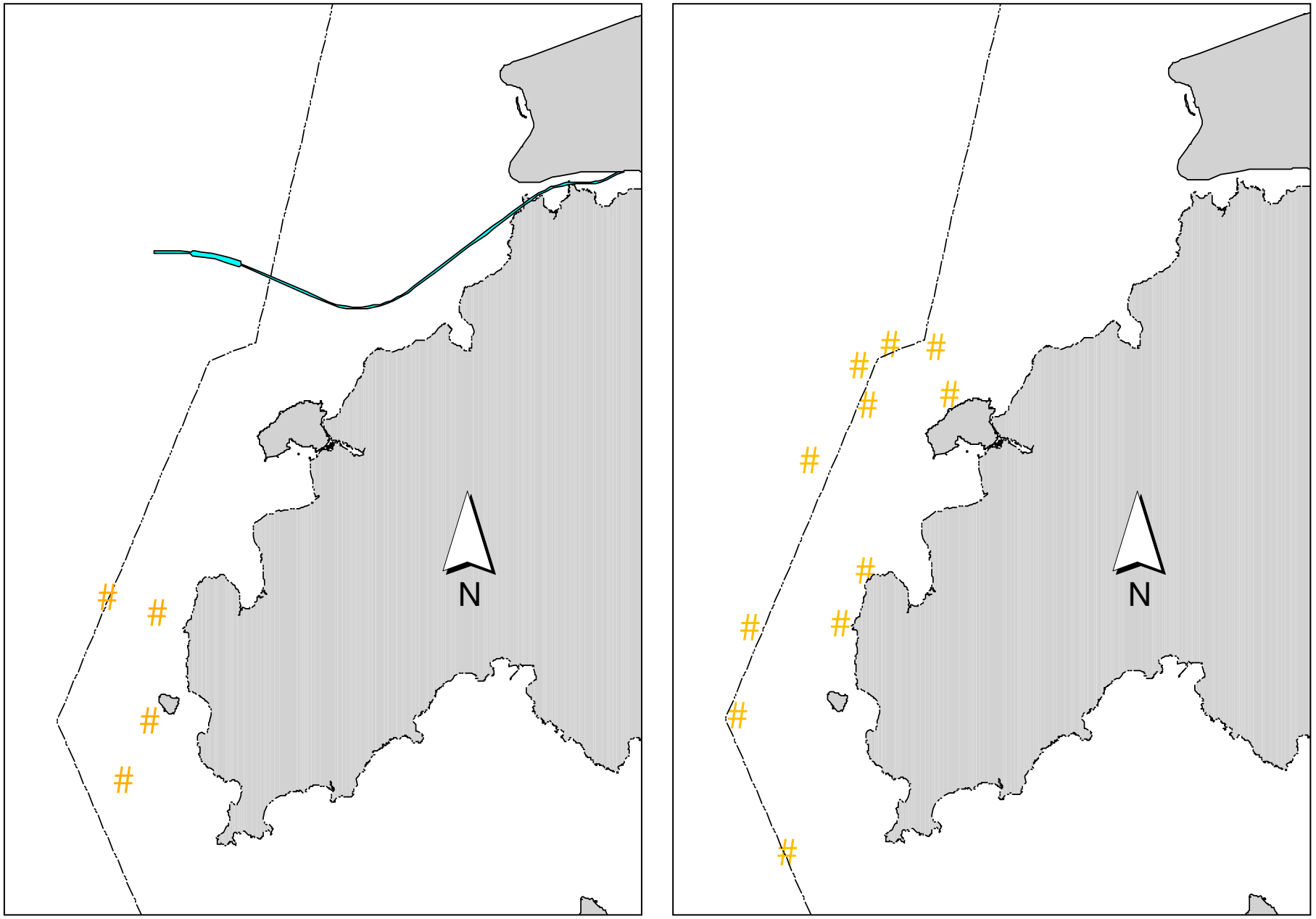



Figure 6. Distribution of young calves of Chinese white dolphins during HKLR09 impact phase (left: December 2013 – February 2014) and baseline monitoring surveys (right: September – November 2011)

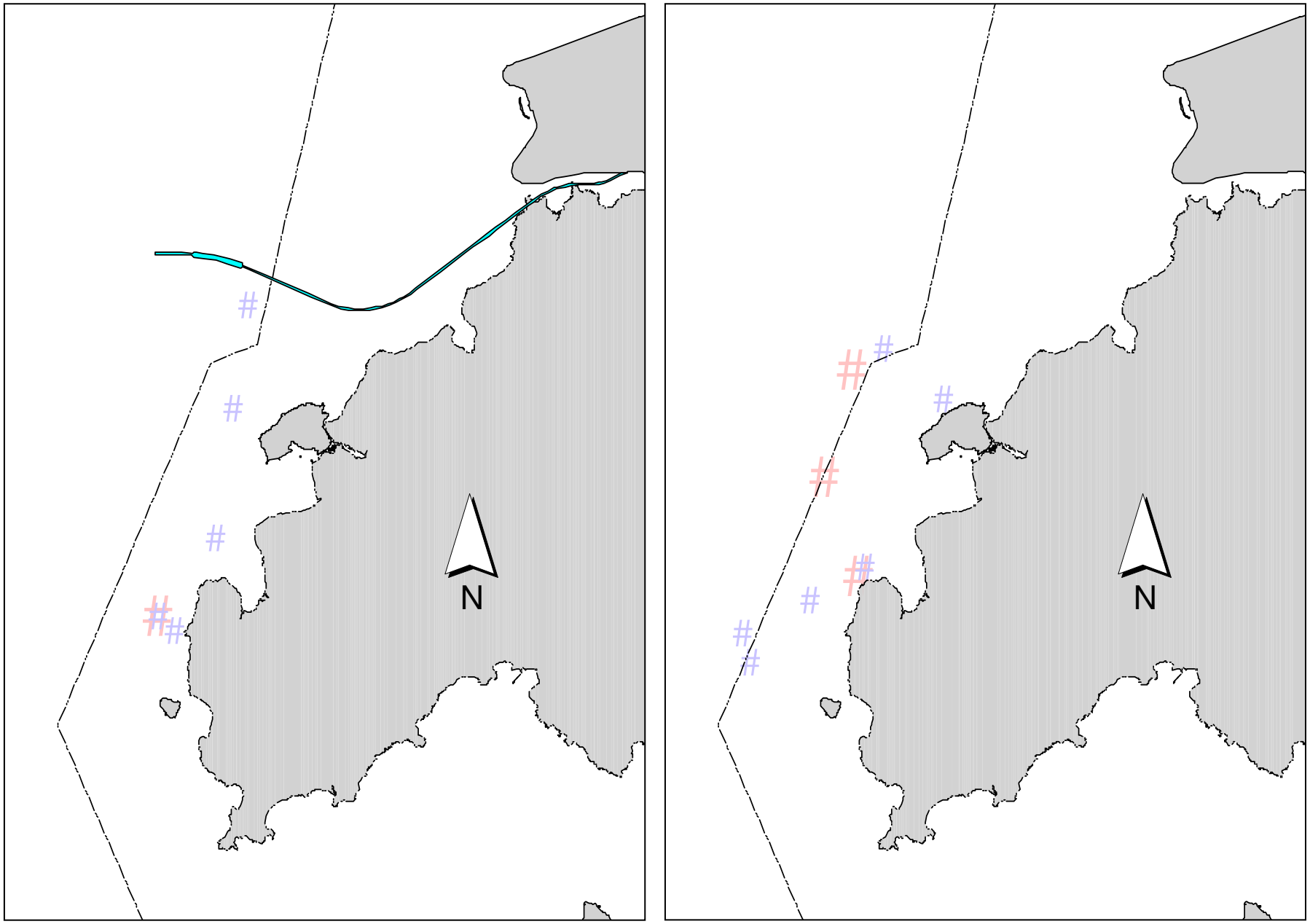



Figure 7. Distribution of Chinese white dolphins engaged in feeding (purple dots) and socializing (pink dots) activities during HKLR09 impact phase (left: December 2013 – February 2014) and baseline monitoring surveys (right: September – November 2011)

## Appendix I. HKLR09 Survey Effort Database (December 2013 - February 2014)

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

| DATE | AREA | BEAU | EFFORT | SEASON | VESSEL | TYPE | P/S |
|---|---|---|---|---|---|---|---|
| 3-Dec-13 | W LANTAU | 2 | 6.10 | WINTER | STANDARD31516 | HKLR | P |
| 3-Dec-13 | W LANTAU | 3 | 14.60 | WINTER | STANDARD31516 | HKLR | P |
| 3-Dec-13 | W LANTAU | 2 | 3.20 | WINTER | STANDARD31516 | HKLR | S |
| 3-Dec-13 | W LANTAU | 3 | 7.90 | WINTER | STANDARD31516 | HKLR | S |
| 20-Dec-13 | W LANTAU | 3 | 9.90 | WINTER | STANDARD31516 | HKLR | P |
| 20-Dec-13 | W LANTAU | 4 | 7.80 | WINTER | STANDARD31516 | HKLR | P |
| 20-Dec-13 | W LANTAU | 5 | 3.30 | WINTER | STANDARD31516 | HKLR | P |
| 20-Dec-13 | W LANTAU | 3 | 5.30 | WINTER | STANDARD31516 | HKLR | S |
| 20-Dec-13 | W LANTAU | 4 | 3.80 | WINTER | STANDARD31516 | HKLR | S |
| 20-Dec-13 | W LANTAU | 5 | 2.10 | WINTER | STANDARD31516 | HKLR | S |
| 3-Jan-14 | W LANTAU | 1 | 3.10 | WINTER | STANDARD31516 | HKLR | P |
| 3-Jan-14 | W LANTAU | 2 | 18.20 | WINTER | STANDARD31516 | HKLR | P |
| 3-Jan-14 | W LANTAU | 1 | 1.60 | WINTER | STANDARD31516 | HKLR | S |
| 3-Jan-14 | W LANTAU | 2 | 9.30 | WINTER | STANDARD31516 | HKLR | S |
| 24-Jan-14 | W LANTAU | 2 | 8.50 | WINTER | STANDARD31516 | HKLR | P |
| 24-Jan-14 | W LANTAU | 3 | 10.40 | WINTER | STANDARD31516 | HKLR | P |
| 24-Jan-14 | W LANTAU | 4 | 1.90 | WINTER | STANDARD31516 | HKLR | P |
| 24-Jan-14 | W LANTAU | 2 | 6.90 | WINTER | STANDARD31516 | HKLR | S |
| 24-Jan-14 | W LANTAU | 3 | 3.00 | WINTER | STANDARD31516 | HKLR | S |
| 24-Jan-14 | W LANTAU | 4 | 2.20 | WINTER | STANDARD31516 | HKLR | S |
| 24-Feb-14 | W LANTAU | 2 | 9.18 | WINTER | STANDARD31516 | HKLR | P |
| 24-Feb-14 | W LANTAU | 3 | 7.85 | WINTER | STANDARD31516 | HKLR | P |
| 24-Feb-14 | W LANTAU | 4 | 3.07 | WINTER | STANDARD31516 | HKLR | P |
| 24-Feb-14 | W LANTAU | 5 | 1.25 | WINTER | STANDARD31516 | HKLR | P |
| 24-Feb-14 | W LANTAU | 2 | 8.22 | WINTER | STANDARD31516 | HKLR | S |
| 24-Feb-14 | W LANTAU | 3 | 1.08 | WINTER | STANDARD31516 | HKLR | S |
| 24-Feb-14 | W LANTAU | 4 | 0.28 | WINTER | STANDARD31516 | HKLR | S |
| 24-Feb-14 | W LANTAU | 5 | 0.86 | WINTER | STANDARD31516 | HKLR | S |
| 26-Feb-14 | W LANTAU | 1 | 13.95 | WINTER | STANDARD31516 | HKLR | P |
| 26-Feb-14 | W LANTAU | 2 | 6.50 | WINTER | STANDARD31516 | HKLR | P |
| 26-Feb-14 | W LANTAU | 1 | 8.59 | WINTER | STANDARD31516 | HKLR | S |
| 26-Feb-14 | W LANTAU | 2 | 2.30 | WINTER | STANDARD31516 | HKLR | S |

## Appendix II. HKLR09 Chinese White Dolphin Sighting Database (December 2013 - February 2014)

(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-13 | 1 | 1156 | 6 | W LANTAU | 3 | 395 | ON | HKLR | 811458 | 800808 | WINTER | NONE | P |
| 3-Dec-13 | 2 | 1209 | 5 | W LANTAU | 3 | ND | OFF | HKLR | 811648 | 800045 | WINTER | NONE | |
| 3-Dec-13 | 3 | 1318 | 8 | W LANTAU | 2 | 345 | ON | HKLR | 806463 | 801229 | WINTER | NONE | P |
| 3-Dec-13 | 4 | 1343 | 4 | W LANTAU | 2 | ND | OFF | HKLR | 806019 | 801734 | WINTER | NONE | |
| 20-Dec-13 | 1 | 1125 | 1 | W LANTAU | 4 | 15 | ON | HKLR | 805476 | 801712 | WINTER | NONE | P |
| 20-Dec-13 | 2 | 1251 | 3 | W LANTAU | 3 | 260 | ON | HKLR | 812451 | 802542 | WINTER | NONE | P |
| 20-Dec-13 | 3 | 1316 | 2 | W LANTAU | 3 | 145 | ON | HKLR | 813569 | 802864 | WINTER | NONE | P |
| 3-Jan-14 | 1 | 1127 | 1 | W LANTAU | 1 | 51 | ON | HKLR | 814076 | 803556 | WINTER | NONE | S |
| 3-Jan-14 | 2 | 1219 | 4 | W LANTAU | 2 | 151 | ON | HKLR | 810463 | 800177 | WINTER | NONE | P |
| 3-Jan-14 | 3 | 1312 | 1 | W LANTAU | 2 | 74 | ON | HKLR | 809432 | 800690 | WINTER | NONE | P |
| 3-Jan-14 | 4 | 1327 | 1 | W LANTAU | 2 | 311 | ON | HKLR | 808447 | 800378 | WINTER | NONE | P |
| 3-Jan-14 | 5 | 1331 | 1 | W LANTAU | 2 | 34 | ON | HKLR | 808446 | 800718 | WINTER | NONE | P |
| 3-Jan-14 | 6 | 1406 | 2 | W LANTAU | 2 | 562 | ON | HKLR | 806063 | 801734 | WINTER | NONE | S |
| 24-Jan-14 | 1 | 1104 | 1 | W LANTAU | 3 | 95 | ON | HKLR | 815252 | 802600 | WINTER | NONE | S |
| 24-Jan-14 | 2 | 1220 | 2 | W LANTAU | 2 | 185 | ON | HKLR | 811477 | 802045 | WINTER | GILLNET | P |
| 24-Jan-14 | 3 | 1228 | 2 | W LANTAU | 2 | 11 | ON | HKLR | 811456 | 801694 | WINTER | NONE | P |
| 24-Jan-14 | 4 | 1301 | 5 | W LANTAU | 2 | 267 | ON | HKLR | 809541 | 801247 | WINTER | NONE | S |
| 24-Jan-14 | 5 | 1339 | 1 | W LANTAU | 3 | ND | OFF | HKLR | 807438 | 801108 | WINTER | NONE | |
| 24-Jan-14 | 6 | 1406 | 1 | W LANTAU | 4 | 4 | ON | HKLR | 805432 | 801567 | WINTER | NONE | P |
| 24-Feb-14 | 1 | 1152 | 4 | W LANTAU | 4 | 30 | ON | HKLR | 806609 | 800168 | WINTER | NONE | P |
| 24-Feb-14 | 2 | 1201 | 8 | W LANTAU | 4 | 414 | ON | HKLR | 807461 | 800458 | WINTER | NONE | P |
| 24-Feb-14 | 3 | 1218 | 13 | W LANTAU | 3 | 490 | ON | HKLR | 808090 | 801491 | WINTER | NONE | S |
| 24-Feb-14 | 4 | 1246 | 6 | W LANTAU | 2 | 588 | ON | HKLR | 809433 | 800081 | WINTER | NONE | P |
| 24-Feb-14 | 5 | 1300 | 8 | W LANTAU | 2 | 180 | ON | HKLR | 809443 | 800855 | WINTER | NONE | P |
| 24-Feb-14 | 6 | 1316 | 3 | W LANTAU | 2 | 715 | ON | HKLR | 810460 | 801331 | WINTER | NONE | P |
| 24-Feb-14 | 7 | 1335 | 2 | W LANTAU | 3 | ND | OFF | HKLR | 811457 | 801354 | WINTER | NONE | |
| 24-Feb-14 | 8 | 1415 | 5 | W LANTAU | 2 | 522 | ON | HKLR | 813570 | 802338 | WINTER | PURSE SEINE | P |
| 24-Feb-14 | 9 | 1437 | 1 | W LANTAU | 3 | 143 | ON | HKLR | 814501 | 802083 | WINTER | NONE | P |
| 26-Feb-14 | 1 | 1041 | 1 | W LANTAU | 2 | 166 | ON | HKLR | 814700 | 802011 | WINTER | NONE | S |
| 26-Feb-14 | 2 | 1219 | 3 | W LANTAU | 1 | 28 | ON | HKLR | 810462 | 800764 | WINTER | NONE | P |
| 26-Feb-14 | 3 | 1226 | 17 | W LANTAU | 1 | ND | OFF | HKLR | 810195 | 801052 | WINTER | PURSE SEINE | |
| 26-Feb-14 | 4 | 1252 | 5 | W LANTAU | 1 | ND | OFF | HKLR | 810351 | 800877 | WINTER | NONE | |
| 26-Feb-14 | 5 | 1258 | 10 | W LANTAU | 1 | 143 | ON | HKLR | 809962 | 801320 | WINTER | PURSE SEINE | S |

**Appendix II. (cont'd)**

| DATE | STG # | TIME | HRD SZ | AREA | BEAU | PSD | EFFORT | TYPE | NORTHING | EASTING | SEASON | BOAT ASSOC. | P/S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 26-Feb-14 | 6 | 1318 | 6 | W LANTAU | 1 | 154 | ON | HKLR | 808435 | 800925 | WINTER | NONE | P |
| 26-Feb-14 | 7 | 1338 | 1 | W LANTAU | 1 | 204 | ON | HKLR | 807440 | 800015 | WINTER | NONE | P |
| 26-Feb-14 | 8 | 1355 | 1 | W LANTAU | 1 | 59 | ON | HKLR | 806462 | 801704 | WINTER | NONE | P |

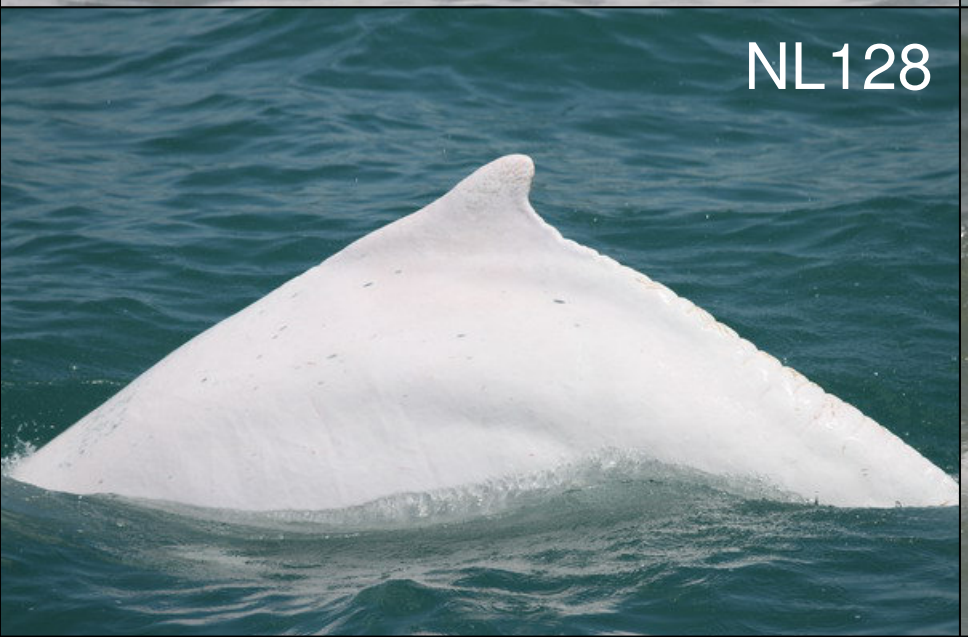
## Appendix III. Individual dolphins identified during HKLR09 monitoring surveys in December 2013 - February 2014

| ID# | DATE | STG# | AREA |
|---|---|---|---|
| CH38 | 24/01/14 | 4 | W LANTAU |
| NL33 | 26/02/14 | 3 | W LANTAU |
| NL128 | 24/02/14 | 3 | W LANTAU |
| | 24/02/14 | 8 | W LANTAU |
| | 26/02/14 | 3 | W LANTAU |
| NL156 | 20/12/13 | 2 | W LANTAU |
| NL188 | 26/02/14 | 6 | W LANTAU |
| NL206 | 03/12/13 | 4 | W LANTAU |
| NL226 | 26/02/14 | 3 | W LANTAU |
| NL264 | 24/02/14 | 3 | W LANTAU |
| NL288 | 24/02/14 | 3 | W LANTAU |
| NL296 | 24/02/14 | 3 | W LANTAU |
| SL05 | 03/12/13 | 3 | W LANTAU |
| | 24/01/14 | 4 | W LANTAU |
| SL35 | 26/02/14 | 8 | W LANTAU |
| SL44 | 26/02/14 | 2 | W LANTAU |
| | 26/02/14 | 3 | W LANTAU |
| WL25 | 03/12/13 | 3 | W LANTAU |
| | 20/12/13 | 2 | W LANTAU |
| | 24/02/14 | 5 | W LANTAU |
| | 24/02/14 | 8 | W LANTAU |
| | 26/02/14 | 2 | W LANTAU |
| | 26/02/14 | 3 | W LANTAU |
| WL29 | 24/02/14 | 3 | W LANTAU |
| WL42 | 24/01/14 | 4 | W LANTAU |
| | 26/02/14 | 3 | W LANTAU |
| WL47 | 24/02/14 | 3 | W LANTAU |
| WL50 | 03/12/13 | 1 | W LANTAU |
| | 26/02/14 | 6 | W LANTAU |
| WL61 | 03/12/13 | 1 | W LANTAU |
| WL62 | 26/02/14 | 3 | W LANTAU |
| WL72 | 26/02/14 | 6 | W LANTAU |
| WL74 | 26/02/14 | 3 | W LANTAU |
| WL86 | 24/02/14 | 4 | W LANTAU |
| | 26/02/14 | 6 | W LANTAU |

| ID# | DATE | STG# | AREA |
|---|---|---|---|
| WL91 | 03/12/13 | 3 | W LANTAU |
| | 24/02/14 | 2 | W LANTAU |
| | 26/02/14 | 2 | W LANTAU |
| | 26/02/14 | 3 | W LANTAU |
| WL93 | 24/02/14 | 3 | W LANTAU |
| | 24/02/14 | 8 | W LANTAU |
| | 26/02/14 | 3 | W LANTAU |
| WL109 | 03/12/13 | 1 | W LANTAU |
| | 24/02/14 | 5 | W LANTAU |
| | 26/02/14 | 3 | W LANTAU |
| WL116 | 03/12/13 | 4 | W LANTAU |
| WL123 | 03/12/13 | 3 | W LANTAU |
| | 24/02/14 | 2 | W LANTAU |
| WL131 | 03/01/14 | 3 | W LANTAU |
| | 03/01/14 | 5 | W LANTAU |
| WL132 | 03/12/13 | 3 | W LANTAU |
| | 24/02/14 | 2 | W LANTAU |
| WL137 | 24/02/14 | 1 | W LANTAU |
| | 26/02/14 | 3 | W LANTAU |
| WL142 | 03/12/13 | 4 | W LANTAU |
| WL152 | 03/12/13 | 1 | W LANTAU |
| | 03/12/13 | 2 | W LANTAU |
| | 24/02/14 | 2 | W LANTAU |
| WL163 | 03/01/14 | 2 | W LANTAU |
| WL165 | 24/02/14 | 3 | W LANTAU |
| | 26/02/14 | 6 | W LANTAU |
| WL171 | 24/02/14 | 2 | W LANTAU |
| | 26/02/14 | 3 | W LANTAU |
| WL179 | 26/02/14 | 3 | W LANTAU |
| WL180 | 03/12/13 | 1 | W LANTAU |
| | 03/12/13 | 2 | W LANTAU |
| | 24/02/14 | 2 | W LANTAU |
| WL210 | 24/02/14 | 3 | W LANTAU |
| WL215 | 24/02/14 | 1 | W LANTAU |
| | 26/02/14 | 3 | W LANTAU |
| WL220 | 24/02/14 | 2 | W LANTAU |
| WL221 | 03/01/14 | 1 | W LANTAU |
| | 24/02/14 | 3 | W LANTAU |

Appendix IV. Forty-two individual dolphins that were identified during December 2013 to February 2014 under HKLR09 impact phase monitoring surveys






Appendix IV. (cont'd)




Appendix IV. (cont'd)




Appendix IV. (cont'd)




Appendix IV. (cont'd)

Appendix IV. (cont'd)

Appendix IV. (cont'd)




Appendix IV. (cont'd)



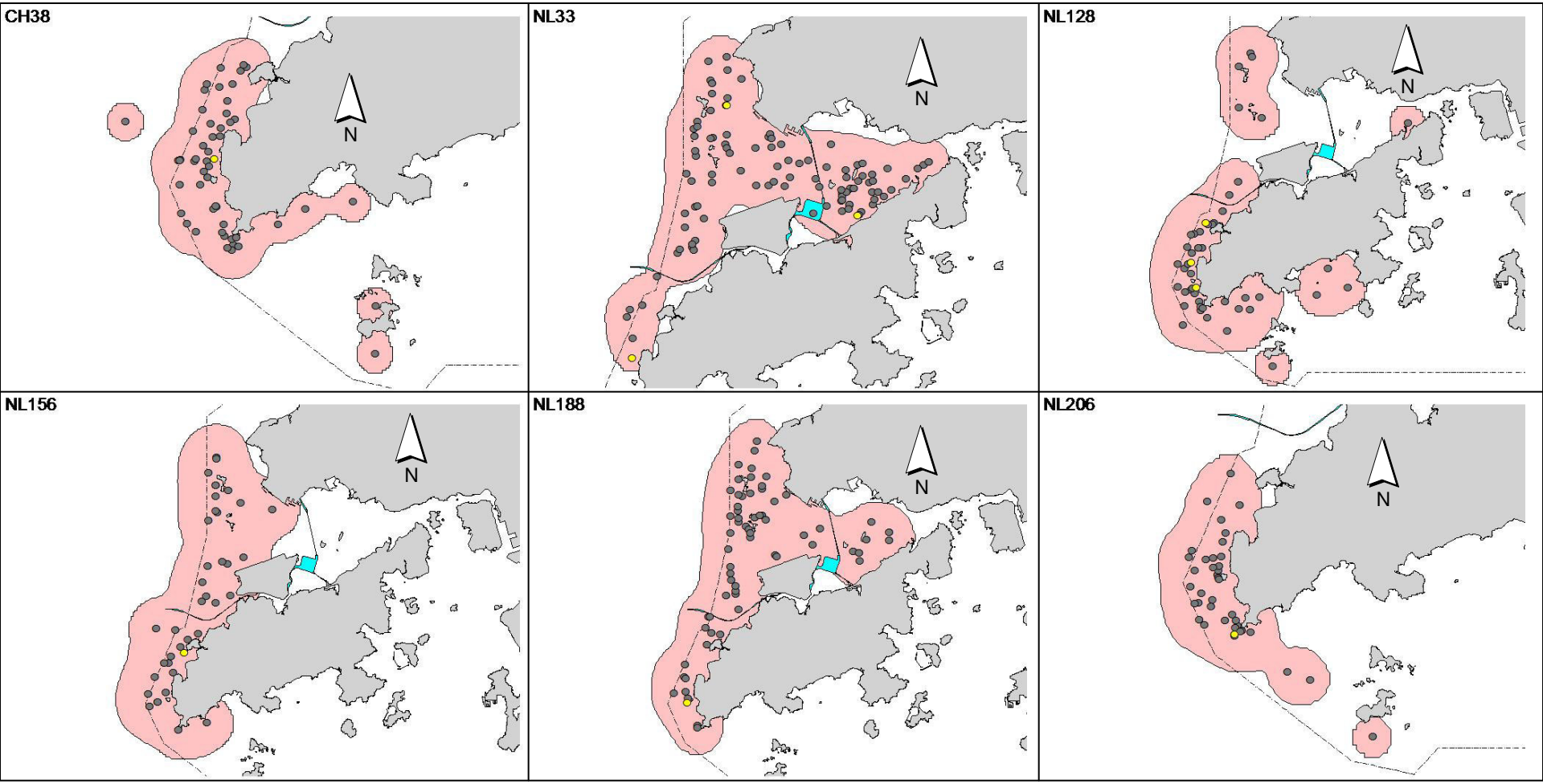

Appendix IV. (cont'd)

Appendix IV. (cont'd)

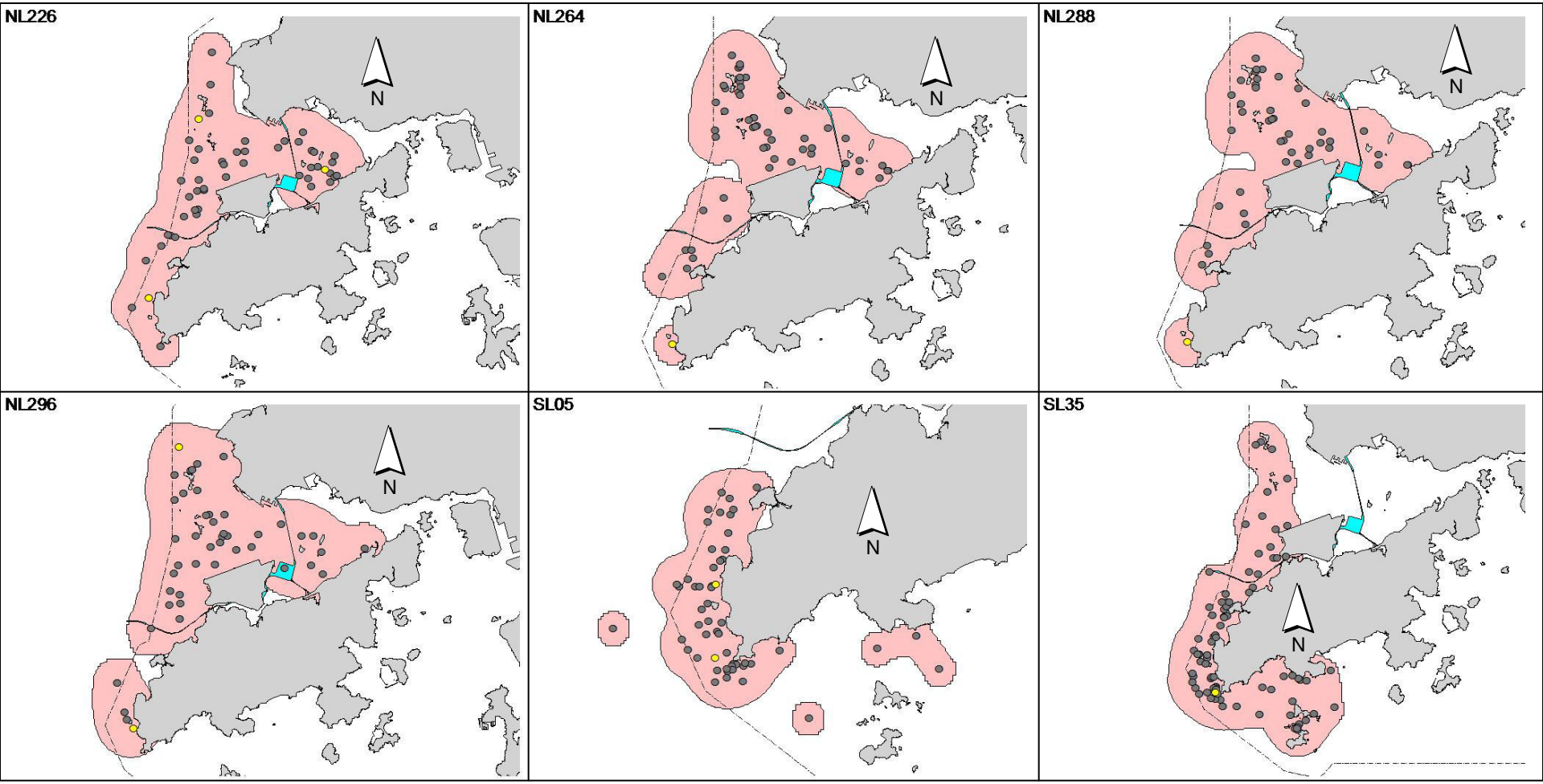



Appendix IV. (cont'd)

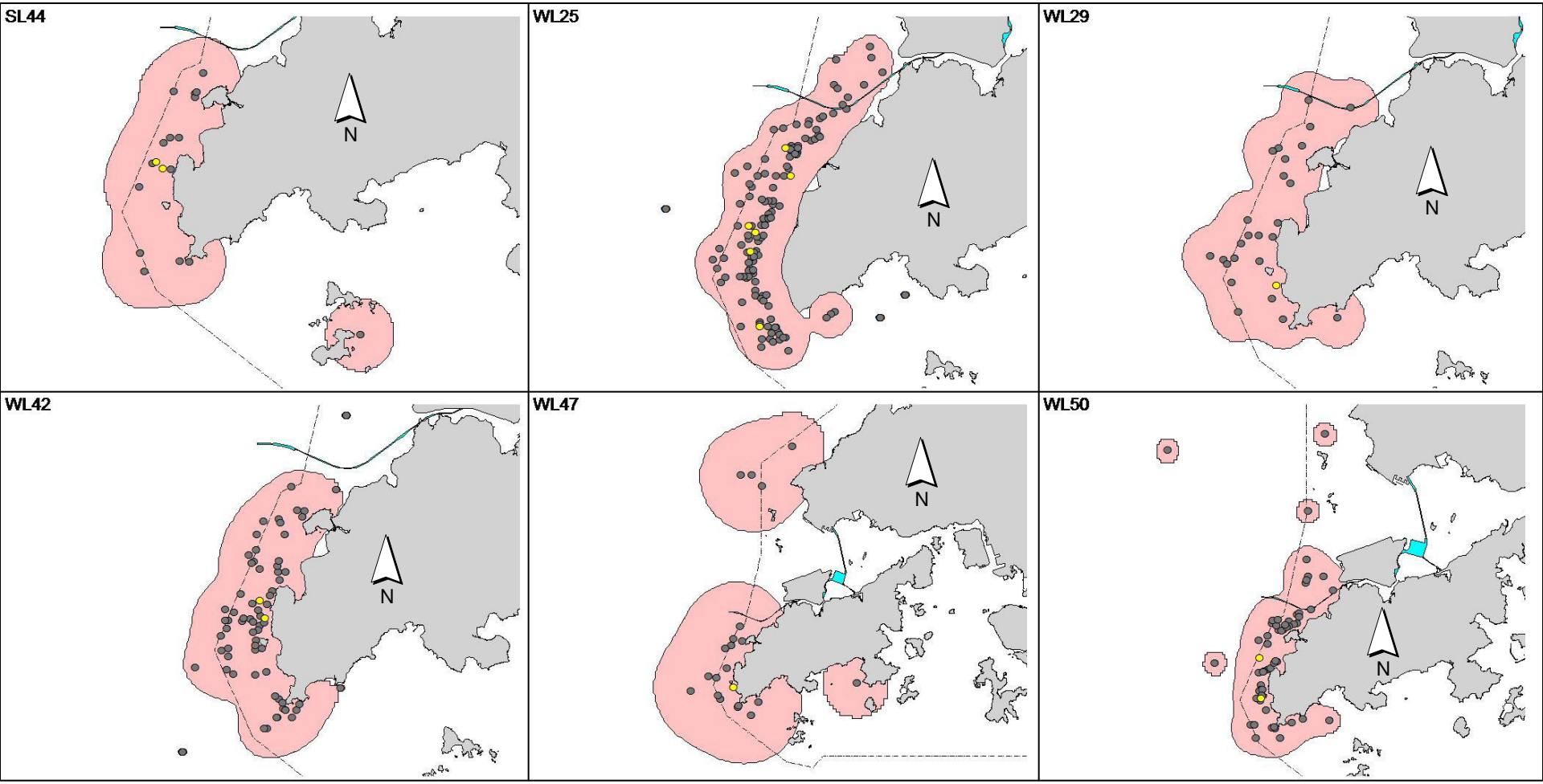
Appendix V. Ranging patterns (95% kernel ranges) of 42 individual dolphins that were sighted during HKLR09 impact phase monitoring period (note: yellow dots indicates sightings made in December 2013 – February 2014)



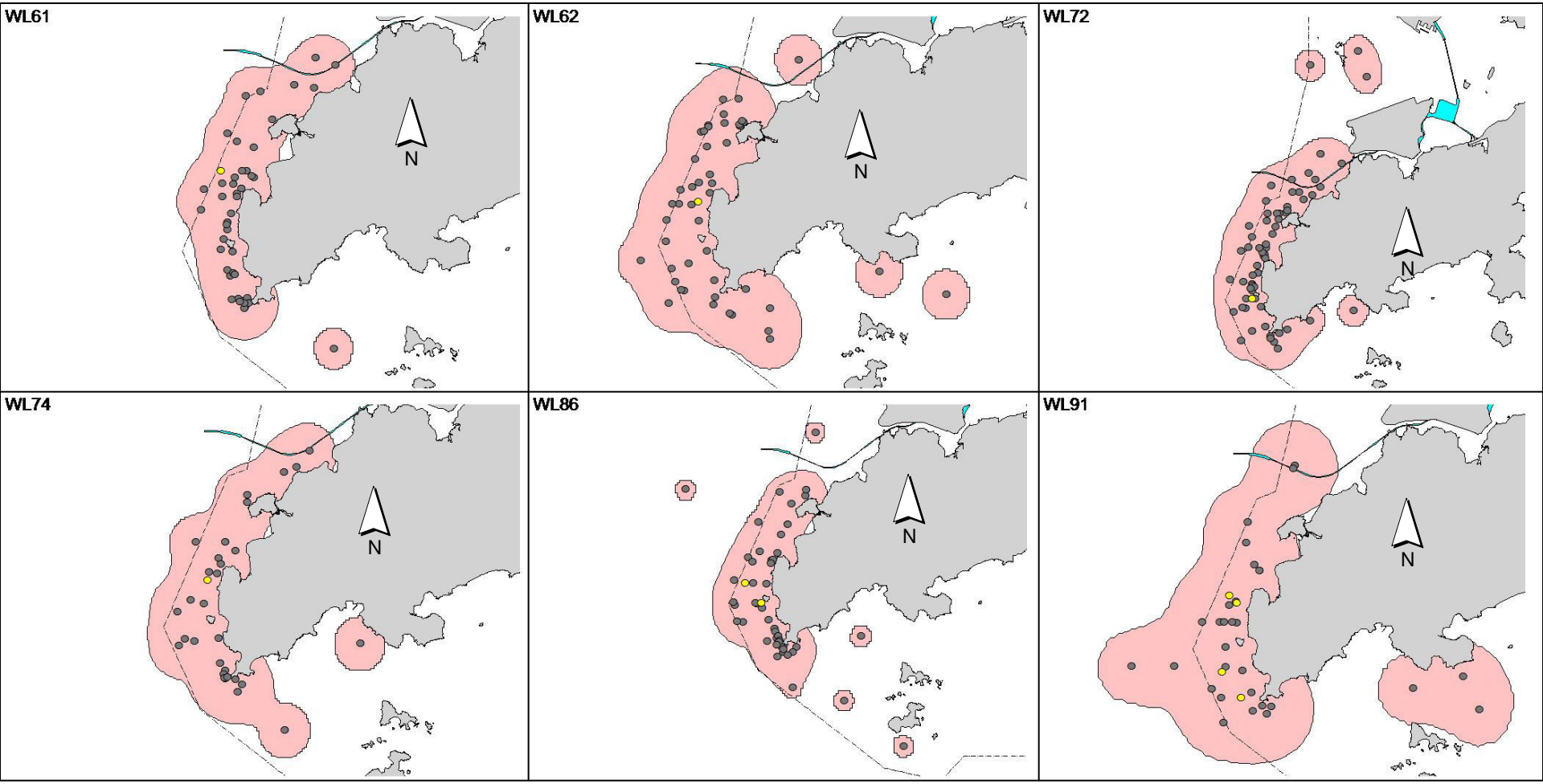
Appendix V. (cont'd)



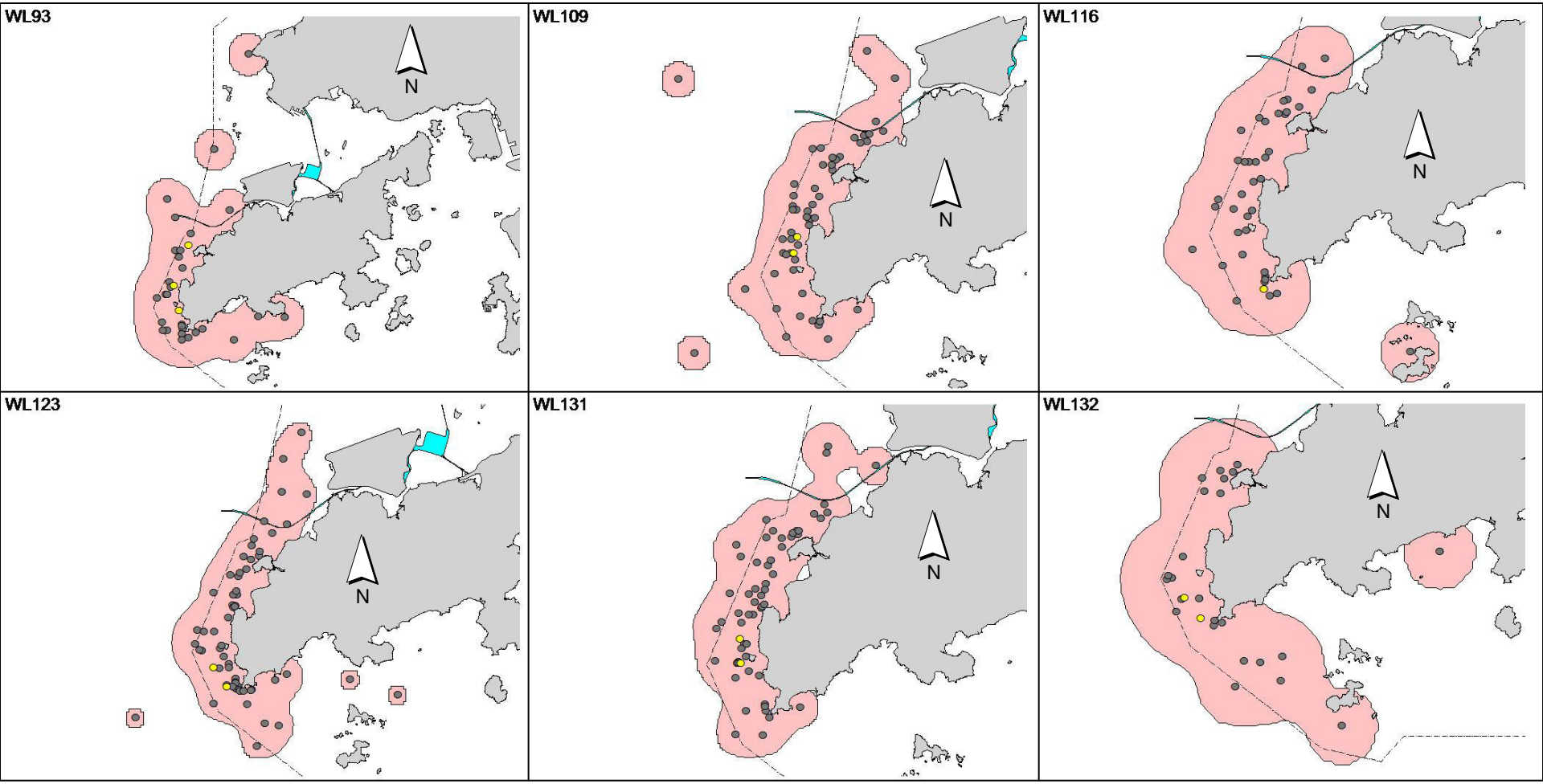
Appendix V. (cont'd)



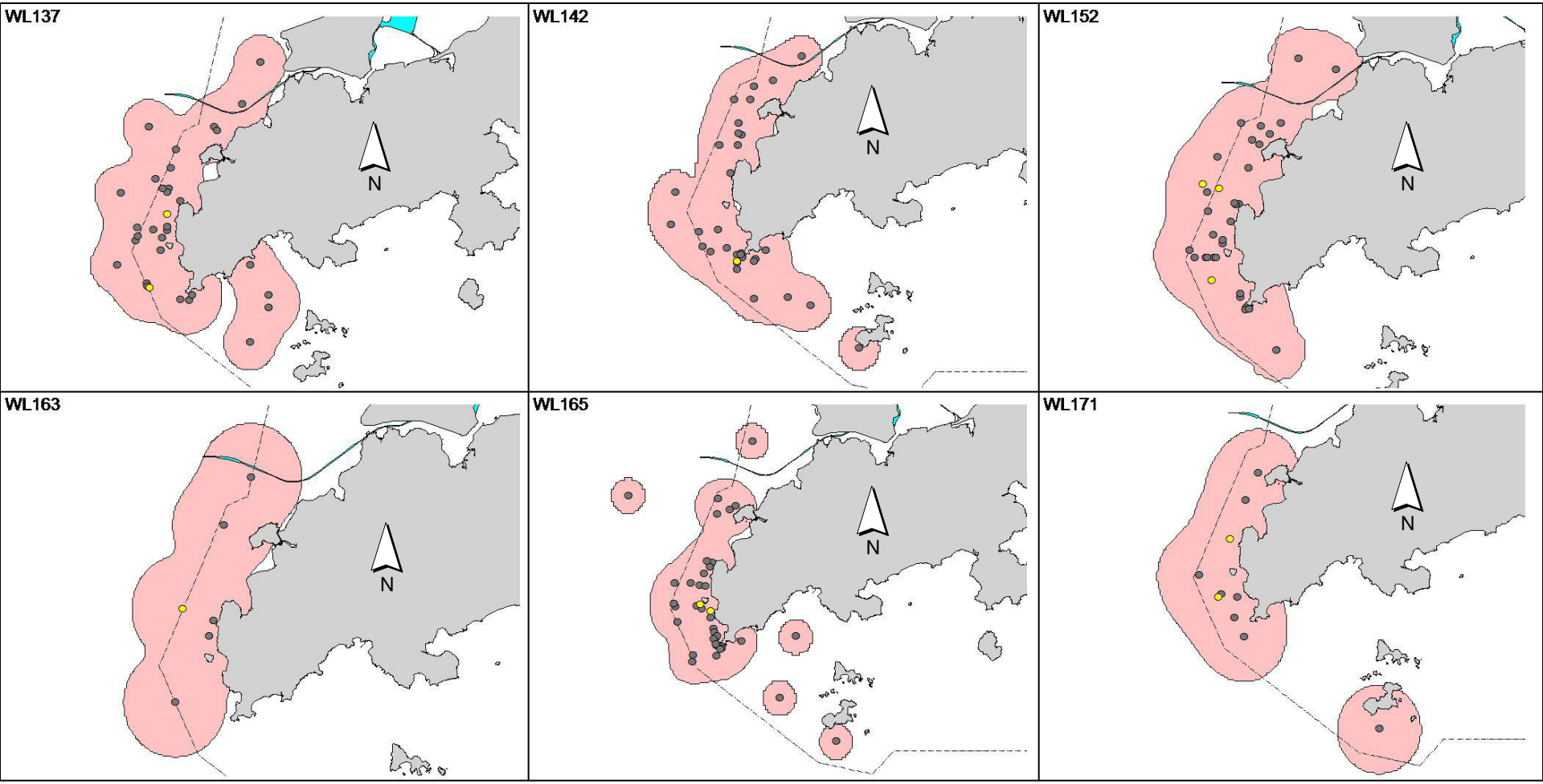
Appendix V. (cont'd)



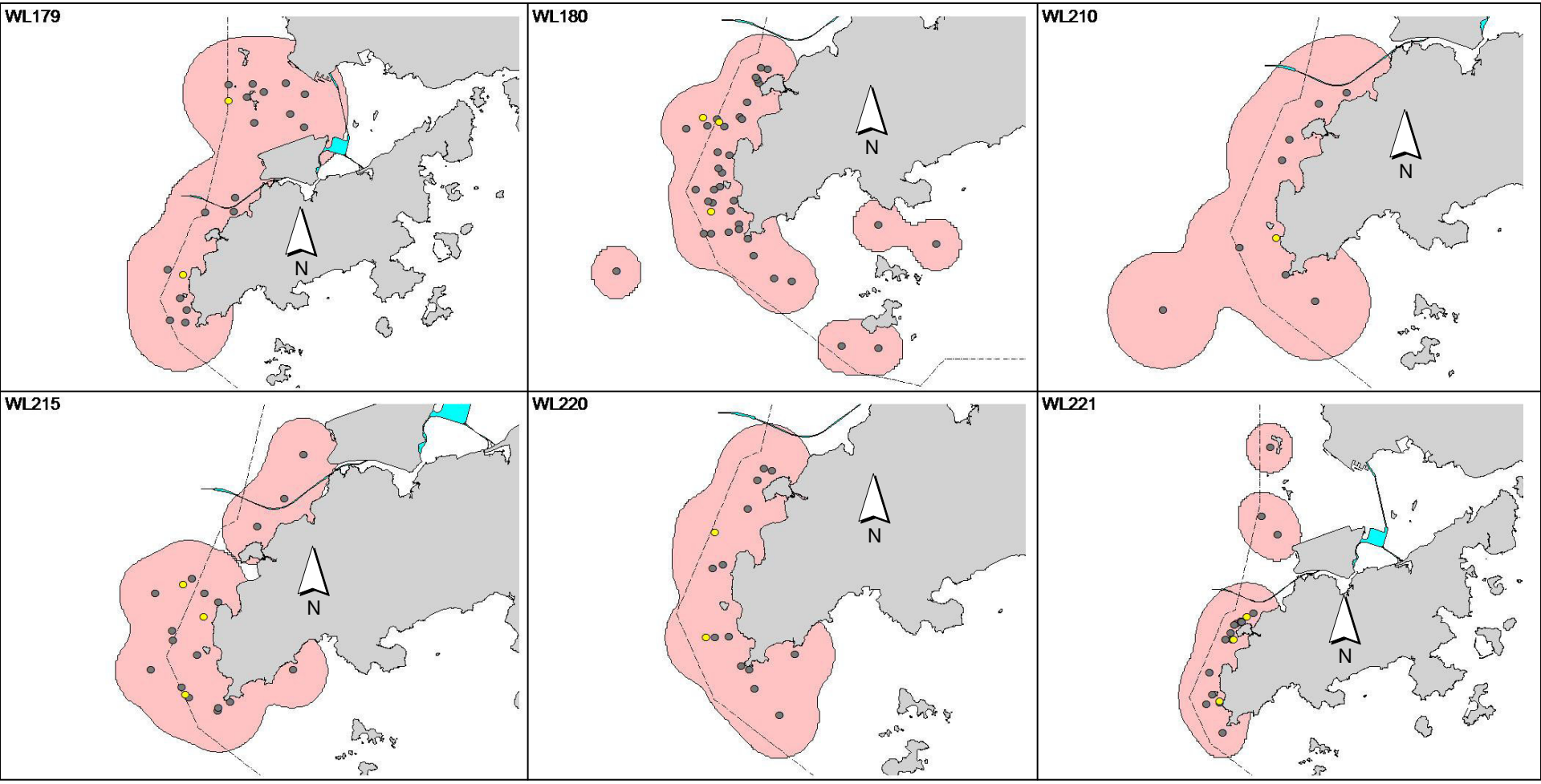
Appendix V. (cont'd)



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

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

| | | | | |
|---|---|---|---|---|
| | the remedial actions to be taken;<br>7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and SO informed of the results;<br>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;<br>2. Notify IEC and Contractor;<br>3. Report the results of investigation to the IEC, SO and Contractor;<br>4. Discuss with the Contractor and formulate remedial measures;<br>5. Increase monitoring frequency to check mitigation effectiveness. | 1. Review the analysed results submitted by the ET;<br>2. Review the proposed remedial measures by the Contractor and advise the SO accordingly;<br>3. Supervise the implementation of remedial measures. | 1. Confirm receipt of notification of failure in writing;<br>2. Notify Contractor;<br>3. Require Contractor to propose remedial measures for the analysed noise problem;<br>4. Ensure remedial measures are properly implemented | 1. Submit noise mitigation proposals to IEC;<br>2. Implement noise mitigation proposals. |
| Limit Level | 1. Identify source;<br>2. Inform IEC, SO, EPD and Contractor;<br>3. Repeat measurements to confirm findings;<br>4. Increase monitoring frequency;<br>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;<br>2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the SO accordingly;<br>3. Supervise the implementation of | 1. Confirm receipt of notification of failure in writing;<br>2. Notify Contractor;<br>3. Require Contractor to propose remedial measures for the analysed | 1. Take immediate action to avoid further exceedance;<br>2. Submit proposals for remedial actions to IEC within 3 working days of notification;<br>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;<br>7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and SO informed of the results;<br>8. If exceedance stops, cease additional monitoring. | remedial measures. | noise problem;<br>4. Ensure remedial measures properly implemented;<br>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;<br>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;<br>Identify source(s) of impact;<br>Inform IEC, contractor and SO;<br>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;<br>Notify Contractor. | Inform the SO and confirm notification of the non-compliance in writing;<br>Rectify unacceptable practice;<br>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;<br>Identify source(s) of impact;<br>Inform IEC, contractor, SO and EPD;<br>Check monitoring data, all plant, equipment and Contractor's working methods;<br>Ensure mitigation measures are implemented;<br>Increase the monitoring frequency to daily until no exceedance of Action level; | Check monitoring data submitted by ET and Contractor's working method;<br>Discuss with ET and Contractor on possible remedial actions;<br>Review the proposed mitigation measures submitted by Contractor and advise the SO accordingly;<br>Supervise the implementation of mitigation measures. | Discuss with IEC on the proposed mitigation measures;<br>Ensure mitigation measures are properly implemented;<br>Assess the effectiveness of the implemented mitigation measures. | Inform the Supervising Officer and confirm notification of the non-compliance in writing;<br>Rectify unacceptable practice;<br>Check all plant and equipment and consider changes of working methods;<br>Submit proposal of additional mitigation measures to SO within 3 working days of notification and discuss with ET, IEC and SO;<br>Implement the agreed mitigation measures. |
| Limit level being exceeded by one sampling day | Repeat measurement on next day of exceedance to confirm findings;<br>Identify source(s) of impact;<br>Inform IEC, contractor, SO and EPD;<br>Check monitoring data, all plant, equipment and Contractor's working methods;<br>Discuss mitigation measures with IEC, SO and Contractor; | Check monitoring data submitted by ET and Contractor's working method;<br>Discuss with ET and Contractor on possible remedial actions;<br>Review the proposed mitigation measures submitted by Contractor and advise the SO accordingly. | Confirm receipt of notification of failure in writing;<br>Discuss with IEC, ET and Contractor on the proposed mitigation measures;<br>Request Contractor to review the working methods. | Inform the SO and confirm notification of the non-compliance in writing;<br>Rectify unacceptable practice;<br>Check all plant and equipment and consider changes of working methods;<br>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;<br>Identify source(s) of impact;<br>Inform IEC, contractor, SO and EPD;<br>Check monitoring data, all plant, equipment and Contractor's working methods;<br>Discuss mitigation measures with IEC, SO and Contractor;<br>Ensure mitigation measures<br>are implemented; | Check monitoring data submitted by ET and Contractor's working method;<br>Discuss with ET and Contractor on possible remedial actions;<br>Review the Contractor's mitigation measures whenever necessary to assure their effectiveness and advise the SO accordingly;<br>Supervise the implementation of mitigation measures. | Discuss with IEC, ET and Contractor on the proposed mitigation measures;<br>Request Contractor to critically review the working methods;<br>Make agreement on the mitigation measures to be implemented;<br>Ensure mitigation measures are properly implemented;<br>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;<br>Submit proposal of mitigation measures to SO within 3 working days of notification and discuss with ET, IEC and SO;<br>Implement the agreed mitigation measures;<br>Resubmit proposals of mitigation measures if problem still not under control;<br>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.<br>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.<br>3. Identify source(s) of impact.<br>4. Inform the IEC, ER/SOR and Contractor,<br>5. Check monitoring data.<br>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.<br>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.<br>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.<br>2. Discuss with the ET and the IEC to propose measures to the IEC and the ER/SOR.<br>3. Implement the agreed measures. |

| Event | ET Leader | IEC | ER / SOR | Contractor |
|---|---|---|---|---|
| Limit Level | 1. Repeat statistical data analysis to confirm findings.<br>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.<br>3. Identify source(s) of impact.<br>4. Inform the IEC, ER/SOR and Contractor of findings,<br>5. Check monitoring data.<br>6. Repeat reviewing to ensure all the dolphin protective measure are fully and properly implemented and advise on additional measures if necessary.<br>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;<br>2. Discuss monitoring results and findings with the ET and the Contractor;<br>3. Attend the meeting to discuss with ET, ER/SOR and Contractor the necessity of additional dolphin monitoring and other potential mitigation measures.<br>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.<br>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.<br>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.<br>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;<br>2. Attend the meeting to discuss with ET, IEC and ER/SOR the necessity of additional dolphin monitoring and any other potential mitigation measures.<br>3. Jointly submit with ET to IEC a proposal of additional dolphin monitoring and/or any other mitigation measures when necessary.<br>4. Implement the agreed additional dolphin monitoring and/or any other mitigation measures. |

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| | 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:<br>• 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;<br>• Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads;<br>• A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones.<br>• 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;<br>• 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 | *<br>^<br>^<br>^<br>* |
| 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 |
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| | | 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;<br>• 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;<br>• 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;<br>• 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;<br>• 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;<br>• Any skip hoist for material transport should be totally enclosed by impervious sheeting;<br>• 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 | ^<br>^<br>*<br>N/A<br>^<br>^ |

| 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 |
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| 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;<br>• 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<br>• 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<br>^<br>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:<br>• 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 | 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 |
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| | | materials should be carried out in totally enclosed system;<br>• 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;<br>• Vents for all silos and cement/pulverised fuel ash (PFA) weighing scale should be fitted with fabric filtering system;<br>• The materials which may generate airborne dusty emissions should be wetted by water spray system;<br>• All receiving hoppers should be enclosed on three sides up to 3m above unloading point;<br>• All conveyor transfer points should be totally enclosed;<br>• All access and route roads within the premises should be paved and wetted; and<br>• 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 | | N/A<br>N/A<br>N/A<br>N/A<br>N/A<br>N/A<br>N/A |
| S5.5.2.7 | A7 | The following mitigation measures should be adopted to prevent fugitive dust emissions at barging point:<br>• All road surface within the barging facilities will be paved;<br>• Dust enclosures will be provided for the loading ramp;<br>• Vehicles will be required to pass through designated wheels wash facilities; and<br>• Continuous water spray at the loading points. | Control construction dust | Contractor | All construction sites | Construction stage | N/A<br>N/A<br>N/A<br>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 |
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| | | following:<br>• only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme;<br>• 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;<br>• plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs;<br>• silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works;<br>• mobile plant should be sited as far away from NSRs as possible and practicable;<br>• 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 | ^<br>^<br>^<br>^<br>^<br>^ |
| 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 |
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| | | 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*<br>The following mitigation measures should be implemented in handling the waste:<br>• Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement;<br>• Carry out on-site sorting;<br>• Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate;<br>• Adopt 'Selective Demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible;<br>• 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 | ^<br>^<br>^<br>^<br>^ |

| 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 |
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| | | the disposal of C&D materials are properly documented and verified; and<br>• 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.<br>• 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 | | | | | ^<br>^ |
| S8.3.9 - S8.3.11 | WM2 | *C&D Waste*<br>• 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.<br>• 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 | ^<br>* |

| 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 |
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| | | areas of the sites should be considered for such segregation and storage. | | | | | |
| S8.2.12-S8.3.15 | WM3 | <u>*Chemical Waste*</u><br>• 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.<br>• 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.<br>• 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.<br>• 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 | *<br>^<br>^<br>* |

| 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 |
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| | | 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*<br>• 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*<br>• General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes.<br>• 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.<br>• 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.<br>• 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 | ^<br>^<br>^<br>^ |

| 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 |
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| | | plastic bottles etc., should be provided.<br>• 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.<br>• Export for dredged spoils from NWWCZ avoiding exerting high demand on the disposal facilities in the NWWCZ and, hence, minimise potential cumulative impacts;<br>• For the marine viaducts of HKLR, the bored piling will be undertaken within a metal casing;<br>• where public fill is proposed for filling below -2.5mPD, the fine content in the public fill will be controlled to 25%;<br>• single layer silt curtains will be applied around all works;<br>• 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 | ^<br>^<br>^<br>N/A<br>^<br>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 |
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| | | taking account of the Contractor's proposed actual locations of his initial period of dredging work.<br>• silt curtain shall be fully maintained throughout the works.<br><br>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.<br>• trailer suction hopper dredgers shall not allow mud to overflow;<br>• use of Lean Material Overboard (LMOB) systems shall be prohibited;<br>• mechanical grabs shall be designed and maintained to avoid spillage and should seal tightly while being lifted;<br>• barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;<br>• any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;<br>• 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;<br>• excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;<br>• adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; | | | | | * <br><br><br><br><br><br><br>N/A<br><br>^<br><br>^<br><br>^<br><br>^<br><br>^<br><br>*<br><br>^ |

| 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 |
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| | | • 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<br>• 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. | | | | | ^<br><br>^ |
| S9.11.1.3 | W2 | *Land Works*<br>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:<br>• wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;<br>• 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;<br>• 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;<br>• 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 | *<br><br>N/A<br><br>*<br><br>* |

| 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 |
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| | | specifically at the onset of and after each rainstorm;<br>• temporary access roads should be surfaced with crushed stone or gravel;<br>• rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;<br>• measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;<br>• open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;<br>• 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;<br>• discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;<br>• 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;<br>• wheel wash overflow shall be directed to silt removal facilities before being discharged to the storm drain;<br>• the section of construction road between the wheel washing bay and the public road should be surfaced with crushed stone or coarse gravel; | | | | | ^<br>^<br>^<br>^<br>*<br>^<br>*<br>*<br>^ |

| 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 |
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| | | • wastewater generated from concreting, plastering, internal decoration, cleaning work and other similar activities, shall be screened to remove large objects;<br>• 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;<br>• the contractors shall prepare an oil / chemical cleanup plan and ensure that leakages or spillages are contained and cleaned up immediately;<br>• waste oil should be collected and stored for recycling or disposal, in accordance with the Waste Disposal Ordinance;<br>• 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<br>• surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system. | | | | | ^<br>N/A<br>^<br>^<br>^<br>^ |
| 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 |
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| | | • Reinstate works areas in Scenic Hill<br>• Avoid stream modification in Scenic Hill | Frog in Scenic Hill | | | | N/A<br>^ |
| S10.7 | E2 | • Use closed grab in dredging works.<br>• Install silt curtain during the construction.<br>• Limit dredging and works fronts.<br>• Good site practices<br>• Strict enforcement of no marine dumping.<br>• Site runoff control<br>• Spill response plan | Minimise marine water quality impacts | Contractor | Seawall, | During construction | ^<br>^<br>^<br>^<br>^<br>^<br>^ |
| 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;<br>• Dolphin watching plan | Minimize temporary marine habitat loss impact to dolphins | Contractor | Marine works | During marine works | ^<br>^ |
| S10.7 | E7 | • Decouple compressors and other equipment on working vessels<br>• Avoidance of percussive piling<br>• Marine underwater noise monitoring | Minimise marine noise impacts on dolphins | Contractor | Marine works | During marine works | ^<br>^<br>^ |

| 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 |
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| | | • 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<br>• Skipper training.<br>• Predefined and regular routes for working vessels; avoid Brothers Islands. | Minimise marine traffic disturbance on dolphins | Contractor | Marine traffic | During marine works | ^<br>^<br>^ |
| 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<br>• Limit dredging and works fronts.<br>• Good site practices<br>• Strict enforcement of no marine dumping<br>• Spill response plan | Minimise marine water quality impacts | Contractor | Seawall, | During construction | ^<br>^<br>^<br>^<br>^ |
| ***Landscape & Visual (Construction Phase)*** | | | | | | | |
| S14.3.3.3 | LV2 | Mitigate both Landscape and Visual Impacts<br>• 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.<br>• 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.<br>• G5. Vegetation reinstatement and upgrading to disturbed areas.<br>• G6. Maximize new tree, shrub and other vegetation planting to compensate tree felled and vegetation removed.<br>• G7. Provide planting area around peripheral of and within HKLR for tree screening buffer effect.<br>• G8. Plant salt tolerant native tree and shrubs etc along the planter strip at affected seawall.<br>• 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<br>N/A<br>N/A<br>N/A<br>N/A<br>N/A<br>N/A |
| S14.3.3.3 | LV3 | <u>Mitigate Visual Impacts</u><br>• V1.Minimize time for construction activities during construction period.<br>• 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. | | | | | ^<br>^ |

| 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.<br>2) Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures.<br>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 | ^<br>^<br>^ |

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**
**2nspection Information**

| | |
|---|---|
| Checklist Reference Number | 131203 |
| Date | 3 December 2013 (Tuesday) |
| Time | 9:30-11:25 |

| Ref. No. | Non-Compliance | Related Item No. |
|---|---|---|
| - | None identified | - |
| **Ref. No.** | **Remarks/Observations** | **Related Item No.** |
| | *A. Water Quality* | |
| 131203-R05 | • To remove the plant equipment which placed at near the sea at Portion A (P96). | B21 |
| 131203-R06 | • Provide mitigation measures to avoid the muddy water directly discharging to the gully at P92. | B16 |
| | | |
| | *B. Ecology* | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | *C. Air Quality* | |
| 131203-R03 | • Provide water spray for the breaking works at Portion C. | D14 |
| | | |
| | *D. Noise* | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | *E. Waste / Chemical Management* | |
| 131203-R01 | • Provide drip tray for the chemical containers at Portion C. | F3i. |
| 131203-R02 | • Clear the accumulated wastes at the waste skip at Portion C. | F4ii. |
| | | |
| | *F. Permits/Licences* | |
| 131203-R04 | • To replace the incomplete environmental permit at Portion C. | G5 |
| | | |
| | *G. Others* | |
| | • Follow-up on previous site audit session (Ref. No. 131129), all environmental deficiencies were improved/rectified by contractor during the site inspection. | |

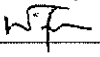
| | Name | Signature | Date |
|---|---|---|---|
| Recorded by | Ivy Tam |  | 3 December 2013 |
| Checked by | Dr. Priscilla Choy |  | 3 December 2013 |

**Weekly Site Inspection Record Summary**

**2nspection Information**

| | |
|---|---|
| Checklist Reference Number | 131210 |
| Date | 10 December 2013 (Tuesday) |
| Time | 9:00-11:30 |

| Ref. No. | Non-Compliance | Related Item No. |
|---|---|---|
| - | None identified | - |
| **Ref. No.** | **Remarks/Observations** | **Related Item No.** |
| | ***A. Water Quality*** | |
| 131210-R01 | • Clear the floating wastes insider the silt curtain at P19. | B21 |
| 131210-R02 | • Clear the silt and debris at the platform at P19. | B20 |
| | | |
| | ***B. Ecology*** | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | ***C. Air Quality*** | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | ***D. Noise*** | |
| 131210-R04 | • Provide acoustic decoupling measures for the generator at P42. | E7 |
| | | |
| | ***E. Waste / Chemical Management*** | |
| 131210-R03 | • To plug the hole of drip tray at P42. | F9 |
| 131210-R05 | • The empty chemical containers should be disposed separately as chemical waste at P47. | F2i. |
| | | |
| | ***F. Permits/Licences*** | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | ***G. Others*** | |
| | • Follow-up on previous site audit session (Ref. No. 131203), all environmental deficiencies were improved/rectified by contractor during the site inspection. | |

| | Name | Signature | Date |
|---|---|---|---|
| Recorded by | Ivy Tam |  | 10 December 2013 |
| Checked by | Dr. Priscilla Choy |  | 10 December 2013 |

*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**

**2nspection Information**

| | |
|---|---|
| Checklist Reference Number | 131217 |
| Date | 17 December 2013 (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*** | |
| 131217-R01 | • Insufficient wastewater treatment facilities during rainstorm was observed at Portion C. The Contractor was reminded to review the capacity of the de-silting tank to ensure the discharge is comply with discharge license. | B3iii. & iv. |
| 131217-R02 | • To remove the plant equipment which placed at near the sea at P98. | B21 |
| 131217-R04 | • Properly cover the stockpile of soil at Portion C. | B6 |
| | | |
| | ***B. Ecology*** | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | ***C. Air Quality*** | |
| 131217-R04 | • Properly cover the stockpile of soil at Portion C. | D7 |
| | | |
| | ***D. Noise*** | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | ***E. Waste / Chemical Management*** | |
| 131217-R03 | • Clear the oil spillage at near the temporary drain at Portion C. | F8 |
| | | |
| | ***F. Permits/Licences*** | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | ***G. Others*** | |
| | • Follow-up on previous site audit session (Ref. No. 131210), all environmental deficiencies were improved/rectified by contractor during the site inspection. | |

| | Name | Signature | Date |
|---|---|---|---|
| Recorded by | Ivy Tam | | 17 December 2013 |
| Checked by | Dr. Priscilla Choy | | 17 December 2013 |

*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**

**2nspection Information**

| | |
|---|---|
| Checklist Reference Number | 131224 |
| Date | 24 December 2013 (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* | |
| 131224-R01 | • To review the capacity of sedimentation tank at Portion C. | B3iii. & iv. |
| 131224-R02 | • To clear the wheel washing bay at Portion C. | B10iv. |
| 131224-R03 | • To direct the silty water to sedimentation facilities before discharging out at Portion C (site exit) and Portion A (P94). | B3 |
| | | |
| | *B. Ecology* | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | *C. Air Quality* | |
| 131224-R04 | • Properly cover the stockpiles of soil at Portion C. | D7 |
| | | |
| | *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. 131217), follow-up action is needed for the items, 131217-R01 and 131217-R04 which are renamed as 131224-R01 and 131224-R04 respectively. | |

| | Name | Signature | Date |
|---|---|---|---|
| Recorded by | Ivy Tam | | 24 December 2013 |
| Checked by | Dr. Priscilla Choy | | 24 December 2013 |

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*Hong Kong-Zhuhai-Macao Bridge*

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

**Weekly Site Inspection Record Summary**
**2nspection Information**

| | |
|---|---|
| Checklist Reference Number | 131231 |
| Date | 31 December 2013 (Tuesday) |
| Time | 13:30-15:15 |

| 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*** | |
| 131231-R01 | • Provide acoustic decoupling measures for the air compressor at P77. | E7 |
| | | |
| | ***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*** | |
| 131231-R02 | • To replace the damage banner which indicate the type of marine sediment of the barge (B22338Y).<br>• Follow-up on previous site audit session (Ref. No. 131224), follow-up action is needed for the items, 131224-R01. | |

| | Name | Signature | Date |
|---|---|---|---|
| Recorded by | Ivy Tam | | 31 December 2013 |
| Checked by | Dr. Priscilla Choy | | 31 December 2013 |

*Contract HY/2011/09*

*Hong Kong-Zhuhai-Macao Bridge*

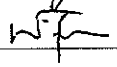
*Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill*

**Weekly Site Inspection Record Summary**

**2nspection Information**

| | |
|---|---|
| Checklist Reference Number | 140107 |
| Date | 7 January 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*** | |
| 140107-R01 | • Properly deploy the silt curtain at P104 to P107. | B25 |
| 140107-R04 | • To deploy the silt curtain during the cofferdam construction at P74. | B24 |
| | | |
| | ***B. Ecology*** | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | ***C. Air Quality*** | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | ***D. Noise*** | |
| 140107-R05 | • Provide acoustic decoupling measures for the generator at P74. | E7 |
| | | |
| | ***E. Waste / Chemical Management*** | |
| 140107-R02 | • Provide drip tray for the generator at P0. | F9 |
| 140107-R03 | • To seal the hole of the drip tray and clear the oil leakage at P0. | F9 |
| | | |
| | ***F. Permits/Licences*** | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | ***G. Others*** | |
| | • Follow-up on previous site audit session (Ref. No. 131231), all environmental deficiencies were improved/rectified by contractor during the site inspection. | |

| | Name | Signature | Date |
|---|---|---|---|
| Recorded by | Ivy Tam |  | 7 January 2014 |
| Checked by | Dr. Priscilla Choy |  | 7 January 2014 |

**Weekly Site Inspection Record Summary**

**2nspection Information**

| | |
|---|---|
| Checklist Reference Number | 140114 |
| Date | 14 January 2014 (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*** | |
| 140114-R02 | • Properly cover the waste skip to avoid the wastes blown by wind. | D7 |
| | | |
| | ***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*** | |
| 140114-R01 | • To replace the incomplete Construction Noise Permit at WA4. | G1 |
| | | |
| | ***G. Others*** | |
| | • Follow-up on previous site audit session (Ref. No. 140107), follow up action is need for the item 140107-R05. | |

| | Name | Signature | Date |
|---|---|---|---|
| Recorded by | Ivy Tam | | 14 January 2014 |
| Checked by | Dr. Priscilla Choy | | 14 January 2014 |

**Weekly Site Inspection Record Summary**

**2nspection Information**

| | |
|---|---|
| Checklist Reference Number | 140121 |
| Date | 21 January 2014 (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*** | |
| 140121-R03 | • Properly deploy the silt curtain at near P107. | B25 |
| 140121-R05 | • To remove the equipment away from the marine water at near P81. | B21 |
| | | |
| | ***B. Ecology*** | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | ***C. Air Quality*** | |
| 140121-R01 | • Properly cover the stockpiles of soil at Portion C. | D7 |
| | | |
| | ***D. Noise*** | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | ***E. Waste / Chemical Management*** | |
| 140121-R02 | • Clear the oil leakage at near the generator and threading machine at Portion C. | F8 |
| 140121-R04 | • Provide drip tray for the oil containers at P104. | F9 |
| | | |
| | ***F. Permits/Licences*** | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | ***G. Others*** | |
| | • Follow-up on previous site audit session (Ref. No. 140114), all environmental deficiencies were improved/rectified by contractor during the site inspection. Follow up action is need for the item 140107-R05. | |

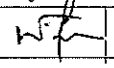
| | Name | Signature | Date |
|---|---|---|---|
| Recorded by | Ivy Tam | | 21 January 2014 |
| Checked by | Dr. Priscilla Choy | | 21 January 2014 |

**Weekly Site Inspection Record Summary**
**2nspection Information**

| | |
|---|---|
| Checklist Reference Number | 140128 |
| Date | 28 January 2014 (Tuesday) |
| Time | 13:30-15:00 |

| Ref. No. | Non-Compliance | Related Item No. |
|---|---|---|
| - | None identified | - |
| **Ref. No.** | **Remarks/Observations** | **Related Item No.** |
| | ***A. Water Quality*** | |
| 140128-R04 | • Properly deploy the silt curtain at near P107 and the gap at the silt curtain should be avoided. | B25 |
| | | |
| | ***B. Ecology*** | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | ***C. Air Quality*** | |
| 140128-R02 | • Properly cover the stockpiles of soil at Portion C. | D7 |
| | | |
| | ***D. Noise*** | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | ***E. Waste / Chemical Management*** | |
| 140128-R01 | • To remove the construction materials at near the trees at Portion C and Portion A (P103). | F7 |
| 140128-R03 | • Clear the oil leakage at near the threading machine at Portion C. | F8 |
| | | |
| | ***F. Permits/Licences*** | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | ***G. Others*** | |
| | • Follow-up on previous site audit session (Ref. No. 140121), Follow up action is need for the item 140121-R01, R02 and R03 which renamed as 140128-R02, R03 and R04 respectively. | |

.

| | Name | Signature | Date |
|---|---|---|---|
| Recorded by | Ivy Tam |  | 28 January 2014 |
| Checked by | Dr. Priscilla Choy |  | 28 January 2014 |

**Weekly Site Inspection Record Summary**

**2nspection Information**

| | |
|---|---|
| Checklist Reference Number | 140205 |
| Date | 5 February 2014 (Wednesday) |
| Time | 9:30-11:45 |

| Ref. No. | Non-Compliance | Related Item No. |
|---|---|---|
| - | None identified | - |
| **Ref. No.** | **Remarks/Observations** | **Related Item No.** |
| | ***A. Water Quality*** | |
| 140205-R04 | • To avoid the leakage of muddy water to the sea at P93. | B22 |
| | | |
| | ***B. Ecology*** | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | ***C. Air Quality*** | |
| 140205-R02 | • To cover the wastes skip at WA3. | D7 |
| | | |
| | ***D. Noise*** | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | ***E. Waste / Chemical Management*** | |
| 140205-R01 | • To improve the chemical waste storage area at WA3 in accordance with code of practice on the Packaging, labeling and storage of chemical wastes. | F2i. and 2iii. |
| 140205-R03 | • Clear and avoid the oil leakage at P101. | F8 |
| | | |
| | ***F. Permits/Licences*** | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | ***G. Others*** | |
| | • Follow-up on previous site audit session (Ref. No. 140128), all environmental deficiencies were improved/rectified by contractor during the site inspection. | |

| | Name | Signature | Date |
|---|---|---|---|
| Recorded by | Ivy Tam | | 5 February 2014 |
| Checked by | Dr. Priscilla Choy | | 5 February 2014 |

**Weekly Site Inspection Record Summary**

**2nspection Information**

| | |
|---|---|
| Checklist Reference Number | 140211 |
| Date | 11 February 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*** | |
| 140211-R02 | • To repair the silt curtain and clear the polystyrene granule at P57. | B21 & 25 |
| | | |
| | ***B. Ecology*** | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | ***C. Air Quality*** | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | ***D. Noise*** | |
| 140211-O01 | • Part of the noise barrier was damaged at P18. The Contractor was reminded to repair it before the commencement of construction works during the restricted hours. | E7 |
| | | |
| | ***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. 140205), all environmental deficiencies were improved/rectified by contractor during the site inspection. | |

.

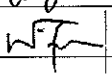
| | Name | Signature | Date |
|---|---|---|---|
| Recorded by | Ivy Tam |  | 11 February 2014 |
| Checked by | Dr. Priscilla Choy |  | 11 February 2014 |

**Weekly Site Inspection Record Summary**

**2nspection Information**

| | |
|---|---|
| Checklist Reference Number | 140218 |
| Date | 18 February 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*** | |
| 140218-R01 | • To repair the silt curtain at P36. | B25 |
| 140218-R02 | • Provide sand bag bund at the barge to avoid leaking muddy water to the sea at P36. | B20 |
| 140218-R03 | • Clear the leakage of muddy water at near the silo at P36. | B22 |
| | | |
| | ***B. Ecology*** | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | ***C. Air Quality*** | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | ***D. Noise*** | |
| 140218-R04 | • To repair the noise barrier at the silo at P36. | E7 |
| | | |
| | ***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. 140211), all environmental deficiencies were improved/rectified by contractor during the site inspection. | |

| | Name | Signature | Date |
|---|---|---|---|
| Recorded by | Ivy Tam |  | 18 February 2014 |
| Checked by | Dr. Priscilla Choy |  | 18 February 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**

**2nspection Information**

| | |
|---|---|
| Checklist Reference Number | 140228 |
| Date | 28 February 2014 (Friday) |
| Time | 13:30-15:00 |

| Ref. No. | Non-Compliance | Related Item No. |
|---|---|---|
| - | None identified | - |
| **Ref. No.** | **Remarks/Observations** | **Related Item No.** |
| | ***A. Water Quality*** | |
| 140228-R01 | • Clear the sand materials at the platform at P70. | B20 |
| | | |
| | ***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. 140218), all environmental deficiencies were improved/rectified by contractor during the site inspection. | |

| | Name | Signature | Date |
|---|---|---|---|
| Recorded by | Ivy Tam | | 28 February 2014 |
| Checked by | Dr. Priscilla Choy | | 28 February 2014 |

# 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 2014 (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 | 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 | 2.592 | 0.000 | 0.124 | 0.449 | 2.020 | 0.000 | 0.000 | 0.272 | 0.000 | 0.000 | 0.169 |
| Feb | 2.152 | 0.000 | To be updated | 0.682 | 1.470 | 0.000 | 0.000 | 0.756 | 0.000 | 0.000 | 0.117 |
| Mar | | | | | | | | | | | |
| Apr | | | | | | | | | | | |
| May | | | | | | | | | | | |
| Jun | | | | | | | | | | | |
| Sub-Total | 4.744 | 0.000 | 0.124 | 1.131 | 3.490 | 0.000 | 0.000 | 1.028 | 0.000 | 0.000 | 0.286 |
| Jul | | | | | | | | | | | |
| Aug | | | | | | | | | | | |
| Sep | | | | | | | | | | | |
| Oct | | | | | | | | | | | |
| Nov | | | | | | | | | | | |
| Dec | | | | | | | | | | | |
| Total | 4.744 | 0.000 | 0.124 | 1.131 | 3.490 | 0.000 | 0.000 | 1.028 | 0.000 | 0.000 | 0.286 |

| 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 $m^3$) |
| 24.000 | 121.054 | 0.000 | 121.054 | 2.000 | 22.000 | 0.000 | 9.681 | 0.000 | 64.224 | 2.940 |

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 8.0$m^3$.

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

(10) The forcast of C&D materials to be generated from the Contract is sourced from the works program in September 2013.

(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.

# 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 | 4 | 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 | 10 | 18 | 0 | 0 |
| | Suspended Solids (SS) | 40 | 27 | 0 | 0 |

**(D) Exceedance Report for Line-transect Vessel Surveys**
**(NIL in the reporting period)**

**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.<br>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.<br>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.<br>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 | 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 | Closed |

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| | | | WA6 at around 13:00 on 1 May 2013 (Wednesday). | 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. | |
| 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:-<br>• To place wooden planks or rubber | Closed |

| | | | | | |
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| | | | | mats on ground for loading and unloading heavy or metal objects; and<br>• To deploy professional personnel to supervise the works. | |
| 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 April 2013 (Com-2013-04-001).<br><br>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. | After receiving the complaint, additional site inspection was conducted at near Tung Chung New Development Pier on 30 May 2013 to investigate whether oil 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.<br>The following mitigation measures have been implemented by DCVJV:<br>• 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.<br>• Provide training to the vessel skippers for prevention of pollution | Closed |

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| | | | | from ships.<br>• 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 operation of concrete lorry mixers during evening and night-time period at Southeast Quay of Chek Lap Kok. | 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.<br><br>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.<br><br>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.<br><br>On 30 July 2013, no tug boat and concrete lorry mixers were observed during the inspection. | Closed |

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| | | | | 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.<br><br>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 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.<br><br>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. | |

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|---|---|---|---|---|---|
| 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:-<br>• Dust generation works was conducted by the other Contractor at South East Quay<br>• Proper watering of haul road to avoid dust generation during vehicle / plant equipment movement.<br>• Vehicle washing facilities provided at every site exit at CLK South Road and South Perimeter Road.<br>• No dark smoke was observed emitting from the plant equipments.<br><br>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 | Closed |

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| | | | | 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.<br><br>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.<br><br>Nevertheless, the Contractor was advised to strictly 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.<br><br>In addition, the following environmental mitigation measures were recommended: | Closed |

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| | | | | • Review and adjust the lighting directions of the barge, under safety consideration, to avoid potential visual impacts to residents in vicinities;<br>• To ensure the equipment are maintaining in good operation condition; and<br>• 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 mitigation measures.<br><br>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):- | Closed |

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|---|---|---|---|---|---|
| | | | | 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.<br>2) No heavy smoke was observed emitting from plants / equipment during the site inspection on 21 January 2014.<br>3) The vehicles and equipments were switched off while not in use.<br>4) All plant and equipment were well maintained and in good operating condition.<br>5) Air quality mitigation measures has been properly implemented by the Contractor on site to prevent dust nuisance from the construction activities. | |