

**Contract No. HY/2012/07
Tuen Mun - Chek Lap Kok Link -
Southern Connection Viaduct Section**

***Final Environmental Monitoring & Audit (EM&A)
Report***

22 December 2020

Environmental Resources Management
2507, 25/F One Harbourfront
18 Tak Fung Street
Hung Hom, Kowloon
Hong Kong
Telephone 2271 3000
Facsimile 2723 5660



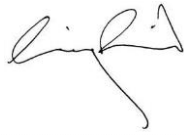



Contract No. HY/2012/07 Tuen Mun – Chek Lap Kok Link – Southern Connection Viaduct Section

**Environmental Resources
Management**

2507, 25/F One Harbourfront
18 Tak Fung Street
Hungghom, Kowloon
Hong Kong
Telephone: (852) 2271 3000
Facsimile: (852) 2723 5660
E-mail: post.hk@erm.com
http://www.erm.com

*Final Environmental Monitoring & Audit
(EM&A) Report*

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Client: Gammon		Project No: 0215660			
Summary: This document presents the Final EM&A Report for Tuen Mun – Chek Lap Kok Link Southern Connection Viaduct Section.		Date: 22 December 2020			
		Approved by:  <i>Mr Craig Reid</i> Partner			
		Certified by:  <i>Dr Jasmine Ng</i> ET Leader			
	Final EM&A Report	CW	JT	CAR	22/12/20
Revision	Description	By	Checked	Approved	Date
This report has been prepared by Environmental Resources Management the trading name of 'ERM Hong-Kong, Limited', with all reasonable skill, care and diligence within the terms of the Contract with the client, incorporating our General Terms and Conditions of Business and taking account of the resources devoted to it by agreement with the client. We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.		Distribution <input type="checkbox"/> Internal <input checked="" type="checkbox"/> Public <input type="checkbox"/> Confidential			
		 			

Ref.: HYDHZMBEEM00_0_8326L.20

30 December 2020

AECOM
Supervising Officer's Representative's Office
780 Cheung Tung Road, Lantau, N.T.

By Fax (3691 2899) and Post

Attention: Mr. Daniel Ip

Dear Mr. Ip,

**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/2012/07 TM-CLKL Southern Connection Viaduct
Section
Final EM&A Report**

Reference is made to the Environmental Team's submission of the Final EM&A Report certified by the ET Leader and provided to us via email on 22 December 2020.

We are pleased to inform you that we have no adverse comments on the captioned submission.

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

Yours sincerely,



Manson Yeung
Independent Environmental Checker
Tuen Mun – Chek Lap Kok Link

c.c.	HyD	Mr. Patrick Ng	(By Fax: 3188 6614)
	HyD	Mr. Francis Chan	(By Fax: 3188 6614)
	AECOM	Mr. Conrad Ng	(By Fax: 3922 9797)
	ERM	Dr. Jasmine Ng	(By Fax: 2723 5660)
	Gammon	Mr. Roy Leung	(By Fax: 3520 0486)

Internal: DY, YH, ENPO Site

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EXECUTIVE SUMMARY

Under *Contract No. HY/2012/07*, Gammon Construction Limited (GCL) is commissioned by the Highways Department (HyD) to undertake the design and construction of the Southern Connection Viaduct Section of the Tuen Mun – Chek Lap Kok Link Project (TM-CLK Link Project) while AECOM Asia Company Limited was appointed by HyD as the Supervising Officer. For implementation of the environmental monitoring and audit (EM&A) programme under the Contract, ERM-Hong Kong, Limited (ERM) has been appointed as the Environmental Team (ET). Ramboll Hong Kong Ltd. was employed by the HyD as the Independent Environmental Checker (IEC) and Environmental Project Office (ENPO) in accordance with *Environmental Permit No. EP-354/2009/A*. Further applications for variation of environmental permit (VEP), *EP-354/2009/B*, *EP-354/2009/C* and *EP-354/2009/D*, were granted on 28 January 2014, 10 December 2014 and 13 March 2015, respectively.

The southern landfall of TM-CLK Link lies alongside the Hong Kong - Zhuhai - Macao Bridge Hong Kong Boundary Crossing Facilities (HKBCF) where a reclamation area is constructed by *Contract No. HY/2010/02* under *Environmental Permit No. EP-353/2009/K* and *EP-354/2009/D*. Upon the agreement and confirmation between the Supervising Officer Representatives and Contractors of *HY/2010/02* and *HY/2012/07* in September 2015, part of the reclamation area for southern landfall under *EP-353/2009/K* and *EP-354/2009/D* was handed-over to *Contract No. HY/2012/07*. Another part of the southern landfall area under *EP-354/2009/D* was handed-over to *Contract No. HY/2012/07* after completion of reclamation works by *Contract No. HY/2010/02* in June 2016.

The construction phase of the Contract commenced on 31 October 2013. The impact monitoring of the EM&A programme, including air quality, noise, water quality and marine ecological monitoring as well as environmental site inspections, commenced on 31 October 2013.

Construction works were substantially completed on 31 July 2019. Notifications of temporary suspension of air quality monitoring and noise monitoring have been approved by EPD on 28 August 2019.

Marine works were substantially completed on 21 August 2019. Notification of temporary suspension of water quality monitoring has been approved by EPD on 30 August 2019.

Termination proposal for construction EM&A programme was approved by EPD on 16 March 2020. The construction phase EM&A programme of the Contract has been terminated since 16 March 2020.

This is the Final EM&A Report presenting the EM&A works carried out during the period from 31 October 2013 to 16 March 2020 for the Southern Connection Viaduct Section in accordance with the Updated EM&A Manual of the TM-CLK Link Project.

Major activities undertaken during the course of this Contract included:

Marine-based Works

- Survey towers erection;
- Filling platform at seawall;
- Installation and uninstallation of marine piling platform;
- Construction of rock fill platform;
- Marine piling;
- Construction and installation of pile caps;
- Marine ground investigation (GI) and laboratory testing;
- Additional marine GI and laboratory testing;
- Installation of pier head, pier head segment and deck segment;
- Launching gantry assembly and launching gantry operation;
- Pier construction;
- Construction of marine section of berth at Southern Landfall;
- Construction of underslung truss scheme (no additional seabed will be occupied other than those assumed in the approved EIA Report); and
- Reinstatement of seawall at seafront.

Land-based Works

- Tree survey, felling and transplanting;
- Channel re-construction at Area 1;
- Site formation of workshop at Area 1;
- Site offices erection at Area 5;
- Construct temporary road at CEDD track for piling;
- Temporary access bridge;
- Fence installation and relocation at Area 2, Viaducts A, B, C & D;
- Satellite container offices erection along seawall;
- Land piling at Viaducts B, C & D;
- Launching gantry operation;
- Construction and installation of pile caps;
- Construction of pile cap superstructure;
- Installation of pier head, pier head segment and deck segments;
- Land piling;
- Pier construction;
- Pre-drilling works;
- Piling platform installation at Viaducts B, C, D & E;
- Additional land GI, trial pits & lab testing;
- Re-alignment of Cheung Tung Road;
- Relocation of MTR fence;
- Utility surveys;
- Slope works;
- Drainage works;
- Construction of land section of berth at Southern Landfall;
- Road works along North Lantau Highway;
- Asphalt paving;
- Construction of sign gantries, light poles and street furniture;
- Parapet and barriers installation;

- Abutment construction; and
- Landscaping works at NLH/CTR and HKBCF.

A summary of monitoring and audit activities conducted during the course of this Contract is listed below:

24-hour TSP monitoring	399 sessions at ASR9A/ ASR8A 391 sessions at ASR9C/ ASR8 / ASR9
1-hour TSP monitoring	402 sessions at ASR9A/ ASR8A 392 sessions at ASR9C/ ASR8 / ASR9
Noise monitoring	400 sessions at NSR1/ NSR1A
Water quality monitoring	883 sessions
Dolphin monitoring	152 sessions
Joint environmental site inspection	330 sessions
Post-translocation coral monitoring	4 sessions
Bored piling monitoring	1 session
Post-construction water quality monitoring	12 sessions

Breaches of Action and Limit Levels for Air Quality

2 Limit Level exceedances of 1-hour TSP and 2 Action Level exceedances of 24-hour TSP were recorded for air quality monitoring during the impact monitoring period.

Breaches of Action and Limit Levels for Noise

No exceedance of Action and Limit Levels was recorded for construction noise monitoring during the impact monitoring period.

Breaches of Action and Limit Levels for Water Quality

18 Action Level and 1 Limit Level exceedances of Suspended Solids (SS), 1 Action Level and 1 Limit Level exceedances of Turbidity and 253 Action Level and 25 Limit Level exceedances of Dissolved Oxygen (DO) were recorded for water quality monitoring during the impact monitoring period.

Impact Dolphin Monitoring

11 Action Level and 19 Limit Level exceedances were recorded for dolphin monitoring during the impact monitoring period.

Post-Translocation Coral Monitoring

No exceedance of Action and Limit Levels was recorded for post-translocation coral monitoring. The results were detailed in the *First to Fourth Quarterly Post- Translocation Coral Monitoring Report* and were submitted under separate covers.

Bored Piling Monitoring

Action and Limit Level Exceedances were recorded in the Underwater Noise and Acoustic Behavioural Monitoring. The results were detailed in the *Impact Monitoring Report for Underwater Noise and Dolphin Acoustic Behavioural Monitoring* and *Impact Monitoring Report for Land-based Dolphin Behavioural and Movement Monitoring* submitted under separate covers.

Environmental Complaints, Non-compliance & Summons

14 environmental complaints were recorded during the impact monitoring period. There was no notification of summons or successful prosecution recorded.

According to the findings of the Northwest New Territories (NWNT) Traffic and Infrastructure Review conducted by the Transport Department, Tuen Mun Road, Ting Kau Bridge, Lantau Link and North Lantau Highway would be operating beyond capacity after 2016. This forecast has been based on the estimated increase in cross boundary traffic, developments in the Northwest New Territories (NWNT), and possible developments in North Lantau, including the Airport developments, the Lantau Logistics Park (LLP) and the Hong Kong – Zhuhai – Macao Bridge (HZMB). In order to cope with the anticipated traffic demand, two new road sections between NWNT and North Lantau – Tuen Mun – Chek Lap Kok Link (TM-CLKL) and Tuen Mun Western Bypass (TMWB) are proposed.

An Environmental Impact Assessment (EIA) of TM-CLKL (the Project) was prepared in accordance with the EIA Study Brief (No. *ESB-175/2007*) and the *Technical Memorandum of the Environmental Impact Assessment Process (EIAO-TM)*. The EIA Report was submitted under the Environmental Impact Assessment Ordinance (EIAO) in August 2009. Subsequent to the approval of the EIA Report (EIAO Register Number: *AEIAR-146/2009*), an Environmental Permit (EP-354/2009) for TM-CLKL was granted by the Director of Environmental Protection (DEP) on 4 November 2009, and EP variation (*EP-354/2009/A*) was issued on 8 December 2010.

Under *Contract No. HY/2012/07*, Gammon Construction Limited (GCL) is commissioned by the Highways Department (HyD) to undertake the design and construction of the Southern Connection Viaduct Section of TM-CLKL (“the Contract”) while AECOM Asia Company Limited was appointed by HyD as the Supervising Officer. For implementation of the environmental monitoring and audit (EM&A) programme under the Contract, ERM-Hong Kong, Limited (ERM) has been appointed as the Environmental Team (ET). Ramboll Hong Kong Ltd. was employed by HyD as the Independent Environmental Checker (IEC) and Environmental Project Office (ENPO) in accordance with *Environmental Permit No. EP-354/2009/A*. Further applications for variation of environmental permit (VEP), *EP-354/2009/B*, *EP-354/2009/C* and *EP-354/2009/D*, were granted on 28 January 2014, 10 December 2014 and 13 March 2015, respectively.

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HY/2012/07 after completion of reclamation works by *Contract No. HY/2010/02* in June 2016.

The construction phase of the Contract commenced on 31 October 2013. The impact monitoring phase of the EM&A programme, including air quality, noise, water quality and marine ecological monitoring as well environmental site inspections, commenced on 31 October 2013.

Termination proposal for construction EM&A programme was approved by EPD on 16 March 2020. The construction phase EM&A programme of the Contract has been terminated since 16 March 2020.

The general layout plan of the Contract components is presented in *Figures 1.1 & 1.2a to l*.

1.2 SCOPE OF THIS REPORT

This is the Final EM&A Report under the Contract No. *HY/2012/07 Tuen Mun – Chek Lap Kok Link – Southern Connection Viaduct Section*. This report presents a summary of the environmental monitoring and audit works from 31 October 2013 to 16 March 2020.

1.3 ORGANIZATION STRUCTURE

The organization structure of the Contract is shown in *Appendix A*. The key personnel contact names and contact details are summarized in *Table 1.1* below.

Table 1.1 *Contact Information of Key Personnel*

Party	Position	Name	Telephone	Fax
HyD (Highways Department)	Project Coordinator	Stanley Chan	2762 3406	3188 6614
	Senior Engineer	Steven Shum	2762 4133	3188 6614
SOR (AECOM Asia Company Limited)	Chief Resident Engineer	Daniel Ip	3553 3800	2492 2057
	Resident Engineer	Chan Wah Fu	2293 6434	3691 2899
ENPO / IEC (Ramboll Hong Kong Ltd.)	ENPO Leader	Y.H. Hui	3465 2850	3465 2899
	IEC	Manson Yeung	9700 6767	3465 2899
	Environmental Officer	Roy Leung	3520 0387	3520 0486
	24-hour Complaint Hotline		9738 4332	
ET (ERM-HK)	ET Leader	Dr. Jasmine Ng	2271 3311	2723 5660

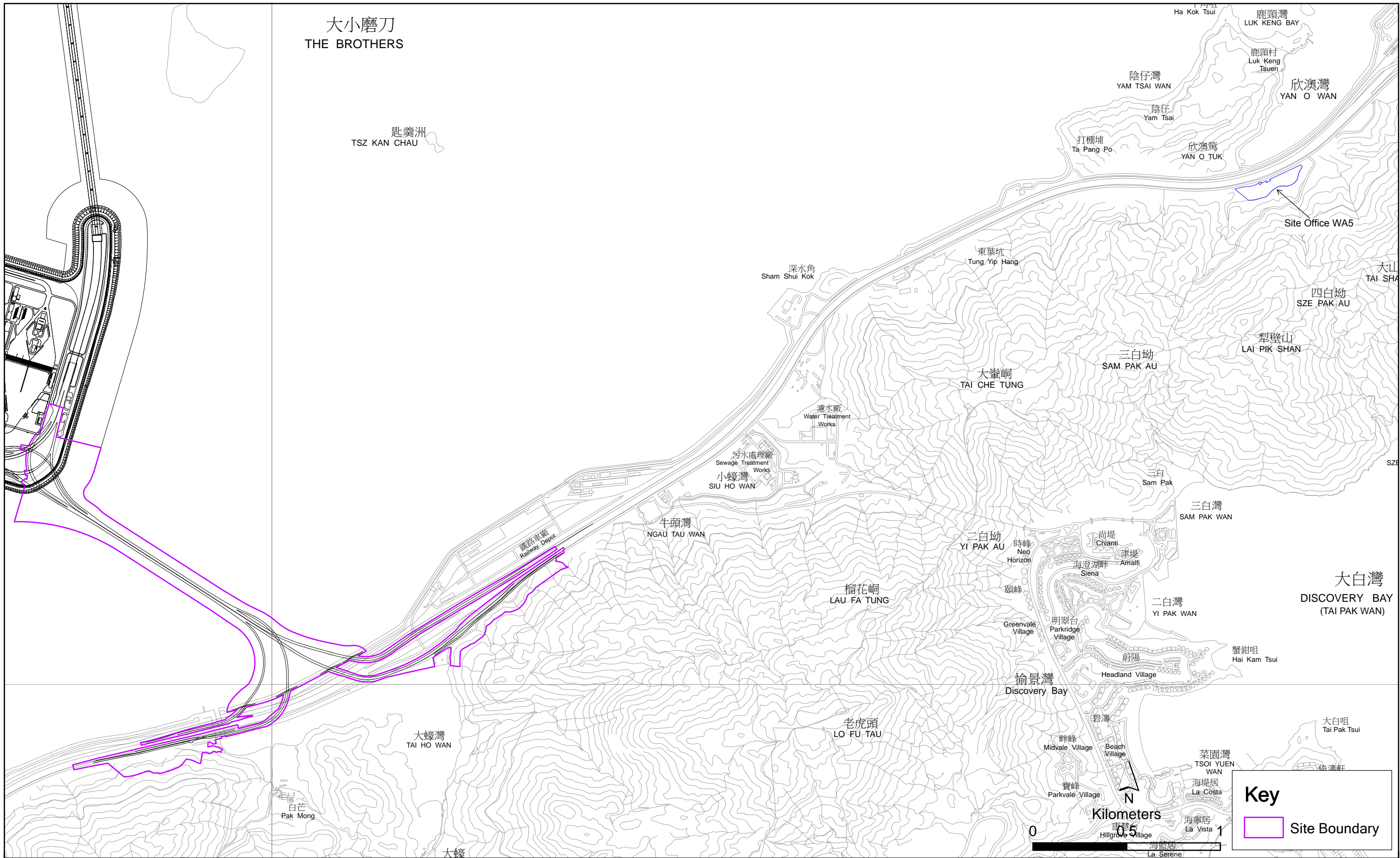
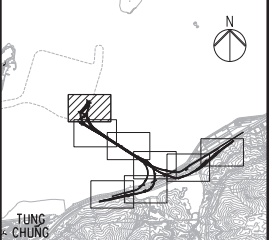


Figure 1.1

General Layout Plan of the Project

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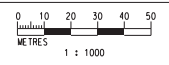


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 - ⊕ BOREHOLE BY GIU DATA EXCLUDING VC
 - ⊕ BOREHOLE BY GCL CONTRACT HY/2012/04
 - ⊕ BOREHOLE BY GCL CONTRACT NL8/97
 - ⊕ BOREHOLE BY GCL CONTRACT HY/2009/23
 - ⊕ TRIAL PIT BY GCL CONTRACT HY/2012/04
 - SLOPE STRIPPING BY GCL CONTRACT HY/2012/04
 - PROPOSED G.I.-STATIONS :
 - ⊕ PBH01 PROPOSED BOREHOLE
 - ⊕ TP01 PROPOSED TRIAL PIT
 - ⊕ CH01 PROPOSED COREHOLE
 - SS01 SS02 PROPOSED SLOPE STRIPPING

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C	SUBMISSION	RC	09/13				

Drawn RL	Date 07/13	Client 路政署 HIGHWAYS DEPARTMENT 香港路政署 Hong Kong - Zuhai - Macao Bridge Hong Kong Project Management Office
Checked DS	Approved DOP	Supervising Officer AECOM
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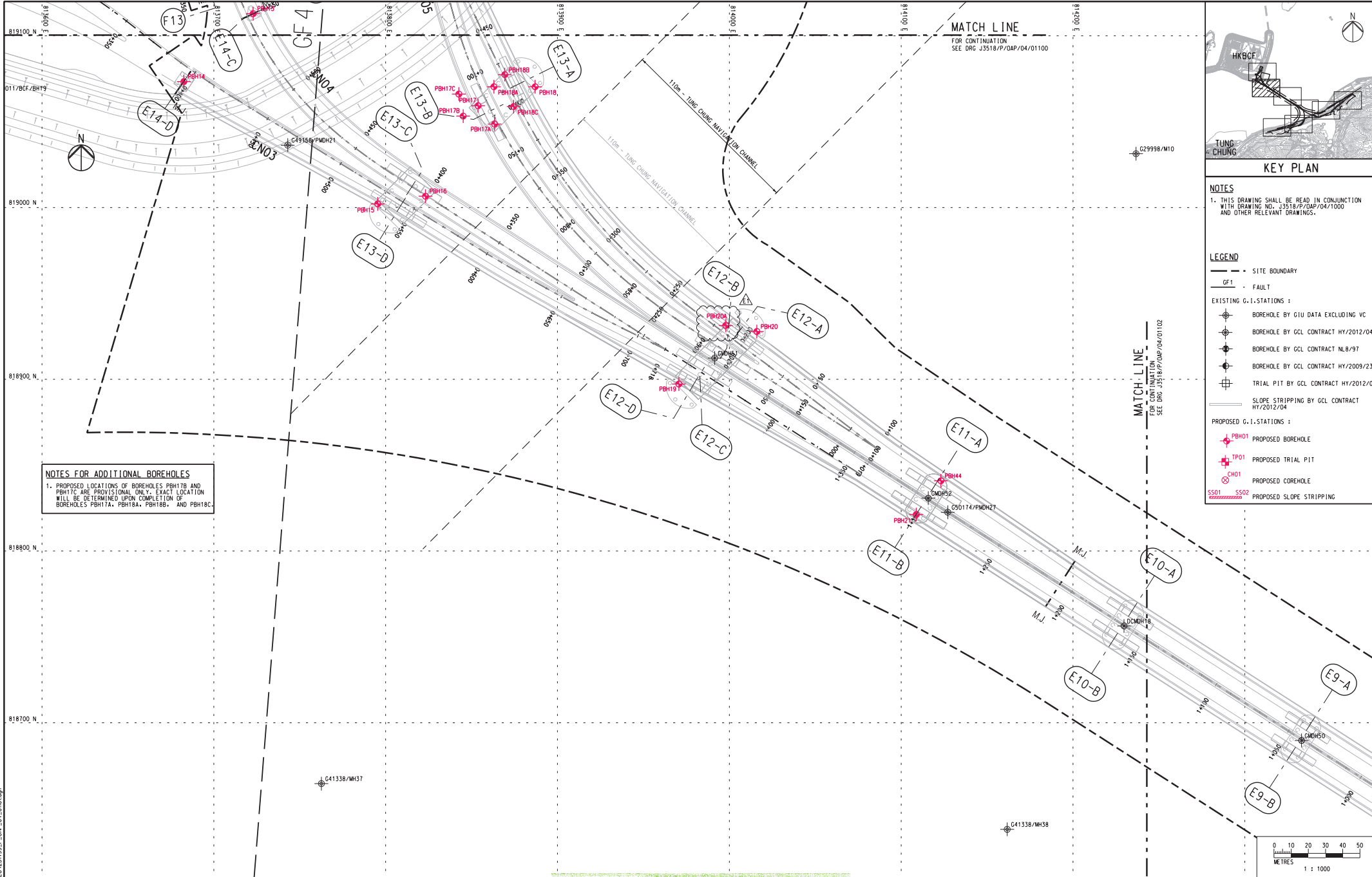
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Tuen Mun - Chek Lap Kok Link
Southern Connection Viaduct Section

Originator
ARUP

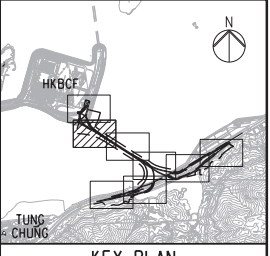
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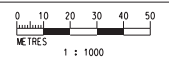
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KEY PLAN

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 - ⊙ BOREHOLE BY GCL CONTRACT HY/2009/23
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 - PROPOSED G.I. STATIONS:
 - ⊙ PBH01 PROPOSED BOREHOLE
 - ⊙ TP01 PROPOSED TRIAL PIT
 - ⊙ CH01 PROPOSED COREHOLE
 - SS01 SS02 PROPOSED SLOPE STRIPPING



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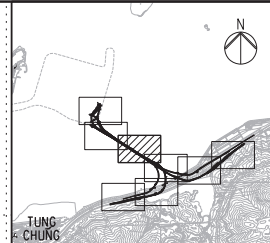
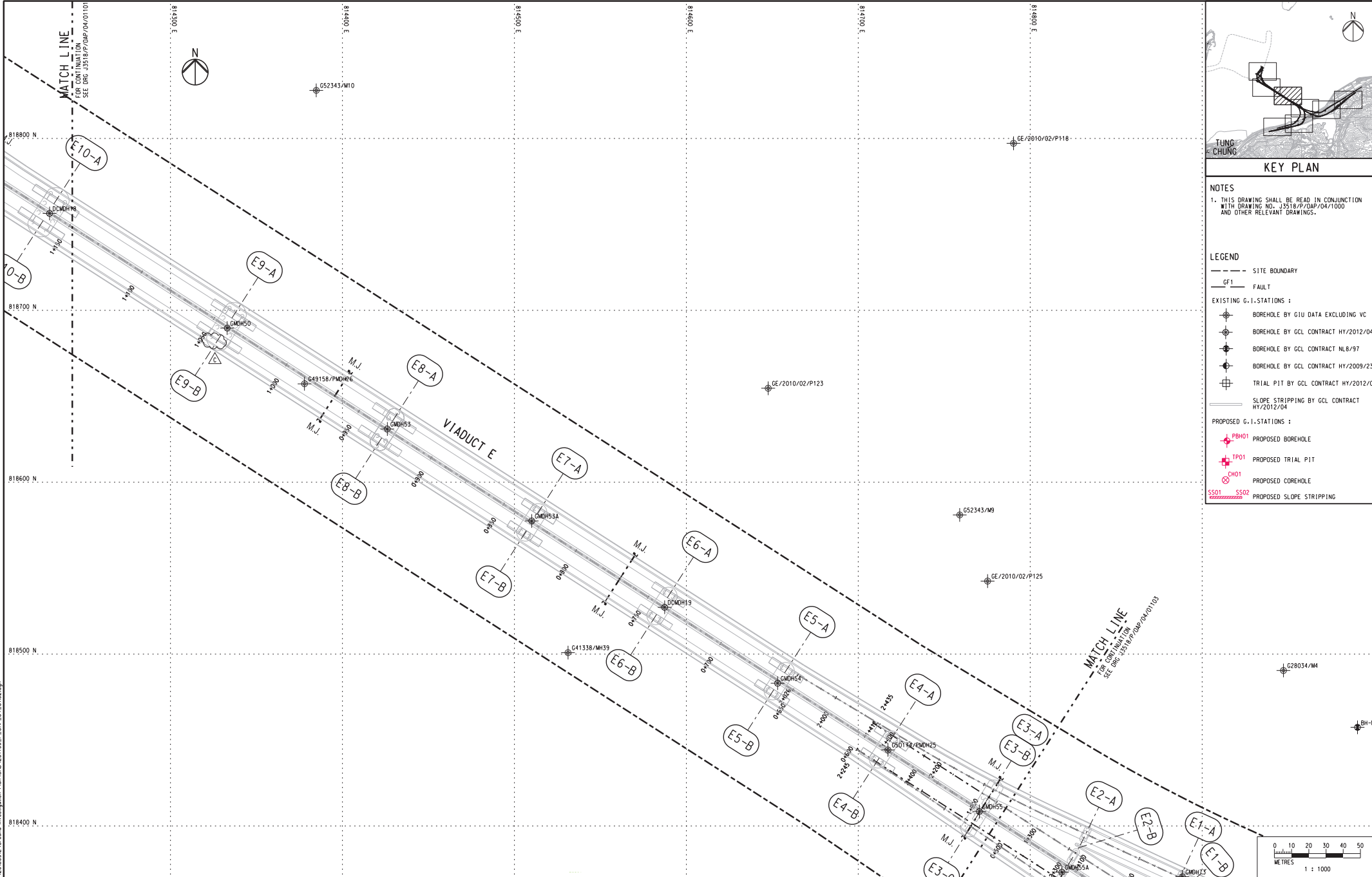
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DS	DOP	AECOM	GAMMON

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 Contract No. HY/2012/07
 Tuen Mun - Chek Lap Kok Link
 Southern Connection Viaduct Section

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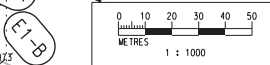
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 - ⊕ CH01 PROPOSED COREHOLE
 - SS01 SS02 PROPOSED SLOPE STRIPPING



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 港珠澳大桥香港工程管理有限公司
 Hong Kong Project Management Office

Supervising Officer: **AECOM**

Project Title: Contract No. HY/2012/07
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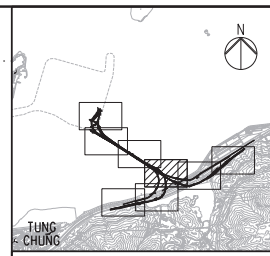
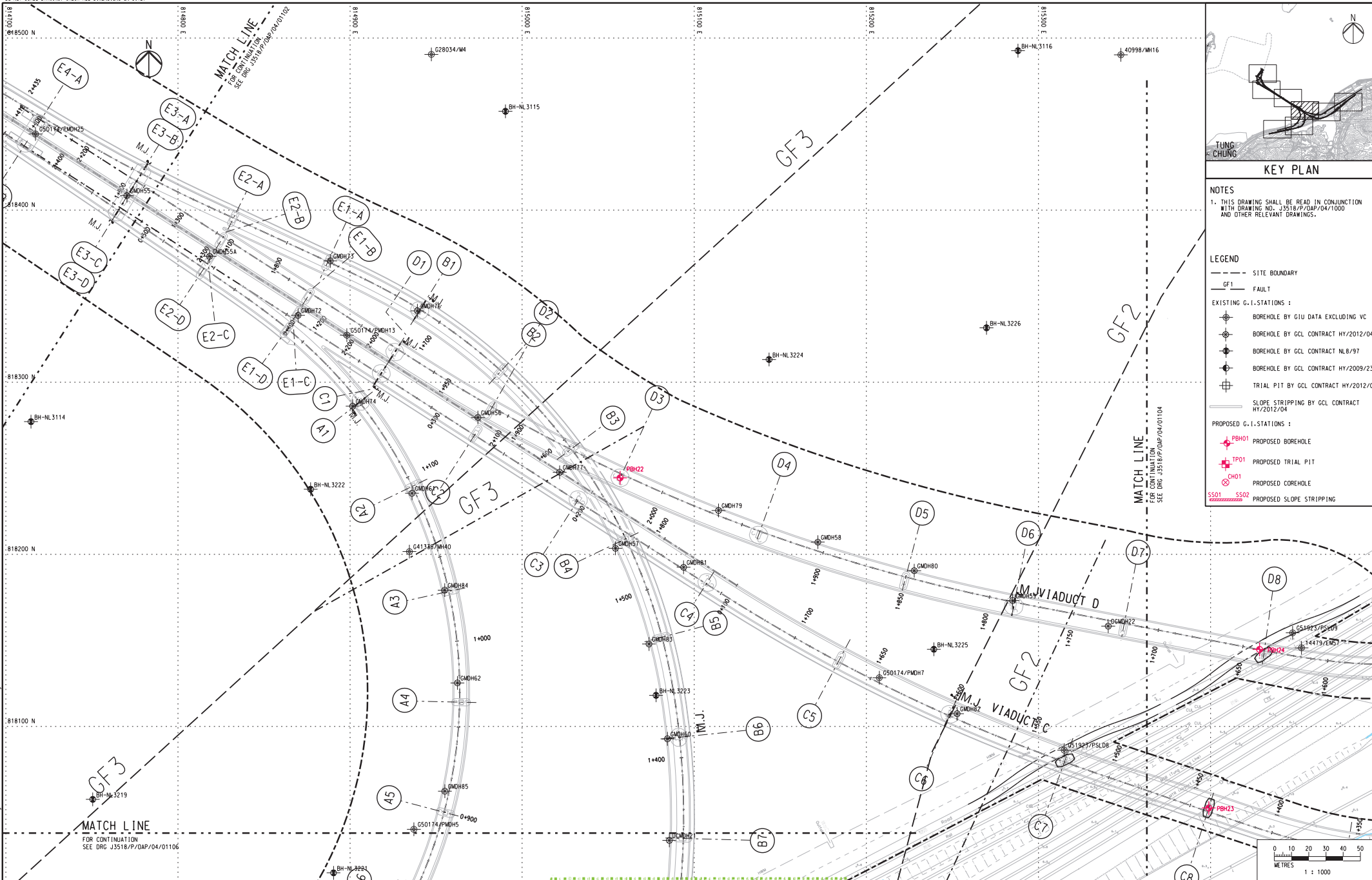
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Originator: **ARUP**

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 - PROPOSED G.I. STATIONS :
 - ⊕ PBH01 PROPOSED BOREHOLE
 - ⊕ TP01 PROPOSED TRIAL PIT
 - ⊕ CH01 PROPOSED COREHOLE
 - SS01 SS02 PROPOSED SLOPE STRIPPING



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C	SUBMISSION	RC	09/13				

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Client

Supervising Officer

Project Title

Contract No. HY/2012/07
 Tuen Mun - Chek Lap Kok Link
 Southern Connection Viaduct Section

Contractor

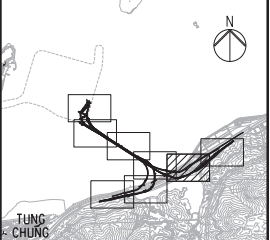
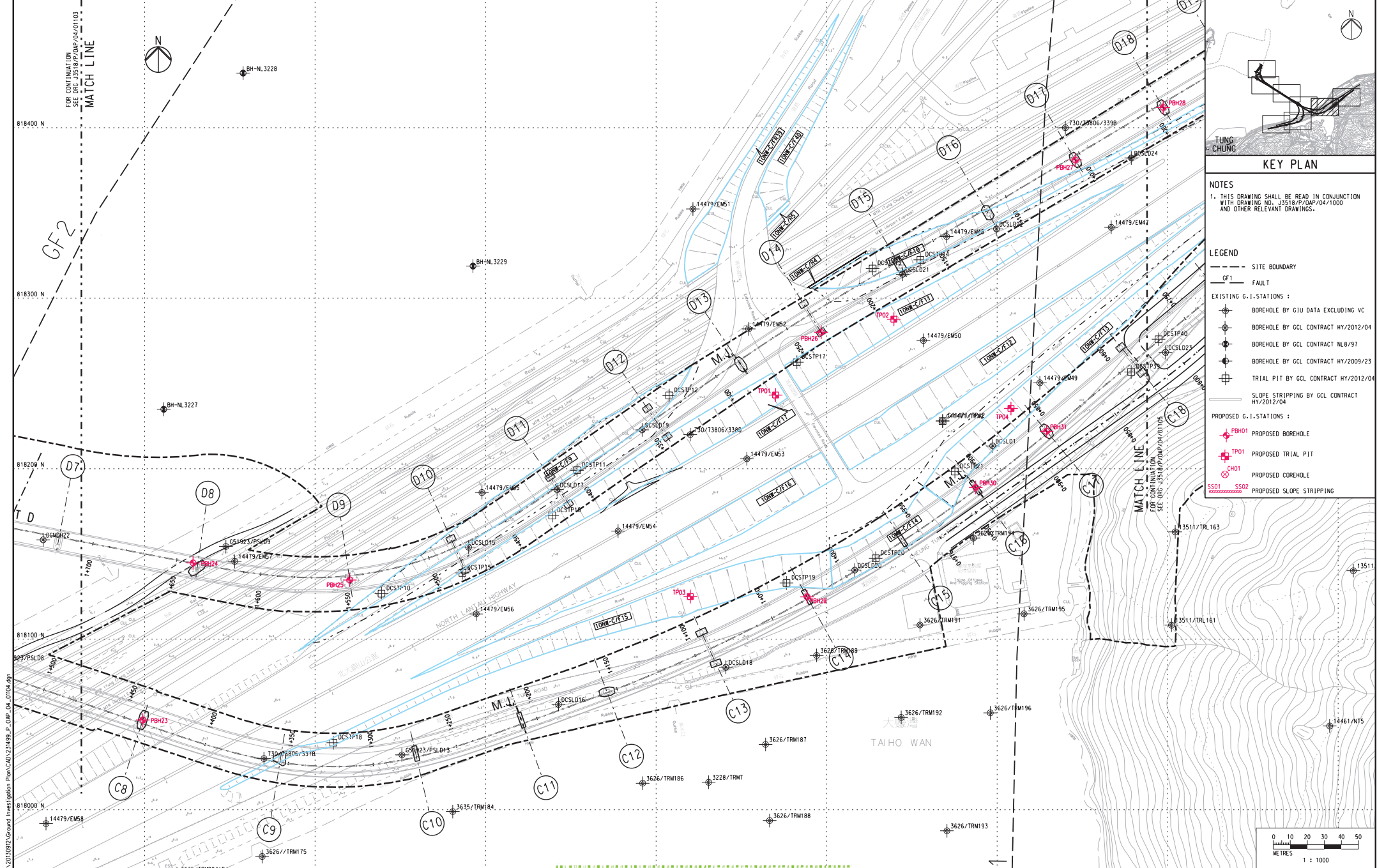
Originator

Drawing title

Figure 1.2e

Drawing no. J3518/P/OAP/04/01103 Rev. C

DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.



KEY PLAN

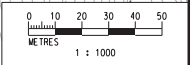
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- LEGEND**
- SITE BOUNDARY
 - GF1- FAULT
 - EXISTING G.I. STATIONS :
 - ⊕ BOREHOLE BY GIU DATA EXCLUDING VC
 - ⊕ BOREHOLE BY GCL CONTRACT HY/2012/04
 - ⊕ BOREHOLE BY GCL CONTRACT NL6/97
 - ⊕ BOREHOLE BY GCL CONTRACT HY/2009/23
 - ⊕ TRIAL PIT BY GCL CONTRACT HY/2012/04
 - PROPOSED G.I. STATIONS :
 - ⊕ PBH01 PROPOSED BOREHOLE
 - ⊕ TP01 PROPOSED TRIAL PIT
 - ⊕ CH01 PROPOSED COREHOLE
 - SS01 SS02 PROPOSED SLOPE STRIPPING

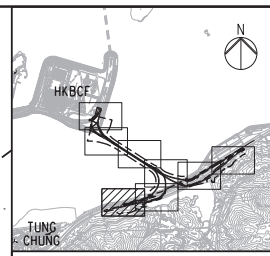
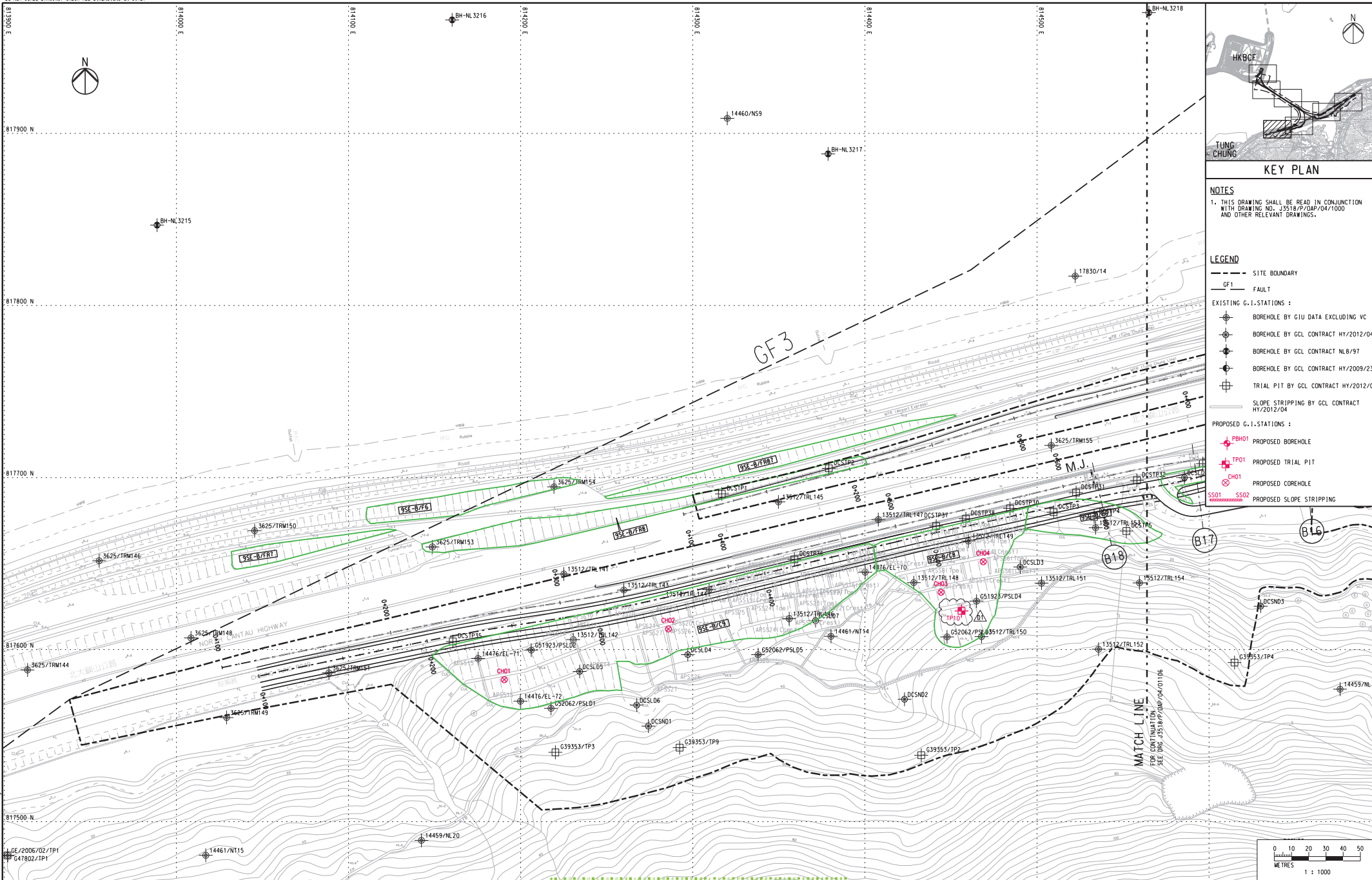
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Rev	Description	By	Date	Rev	Description	By	Date	Drawn	Date	Client	Project Title	Drawing title	
A	SUBMISSION	RC	07/13					RL	07/13	路政署 HIGHWAYS DEPARTMENT 港珠澳大桥香港工程指挥部 Hong Kong - Zhuhai - Macao Bridge Hong Kong Project Management Office	Contract No. HY/2012/07 Tuen Mun - Chek Lap Kok Link Southern Connection Viaduct Section	Figure 1.2f	
B	SUBMISSION	RC	07/13				Checked	Approved					
C	SUBMISSION	RC	09/13				DS	DOP					
								Scale					
								1:1000 @ A1 / 1:2000 @ A3					

Supervising Officer AECOM		Contractor Gammon		Originator ARUP	
Drawing no. J3518/P/OAP/04/01104 Rev. C					



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KEY PLAN

NOTES
 1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NO. J3518/P/OAP/04/1000 AND OTHER RELEVANT DRAWINGS.

- LEGEND**
- SITE BOUNDARY
 - GF1 FAULT
 - EXISTING G.I. STATIONS :
 - ⊕ BOREHOLE BY GIU DATA EXCLUDING VC
 - ⊕ BOREHOLE BY GCL CONTRACT HY/2012/04
 - ⊕ BOREHOLE BY GCL CONTRACT NL6/97
 - ⊕ BOREHOLE BY GCL CONTRACT HY/2009/23
 - ⊕ TRIAL PIT BY GCL CONTRACT HY/2012/04
 - SLOPE STRIPPING BY GCL CONTRACT HY/2012/04
 - PROPOSED G.I. STATIONS :
 - ⊕ PBH01 PROPOSED BOREHOLE
 - ⊕ TP01 PROPOSED TRIAL PIT
 - ⊕ CH01 PROPOSED COREHOLE
 - SS01 SS02 PROPOSED SLOPE STRIPPING

Printed by : 07/11/2013
 File name : J:\3518\p\oap\04\1000\dwg

1. 2006/02/TP1
 2. 2006/02/TP1

Rev	Description	By	Date	Rev	Description	By	Date	Drawn	Date	Client
A	SUBMISSION	RC	07/13					RL	07/13	路政署 HIGHWAYS DEPARTMENT 港珠澳大桥香港工程管理局 Hong Kong - Zhuhai - Macao Bridge Hong Kong Project Management Office
B	SUBMISSION	RC	07/13					Checked	Approved	
C	SUBMISSION	RC	09/13					DS	DOP	
D1	FOR INTERNAL REVIEW	RC	11/13					Scale	1:1000 @ A1 / 1:2000 @ A3	

Supervising Officer

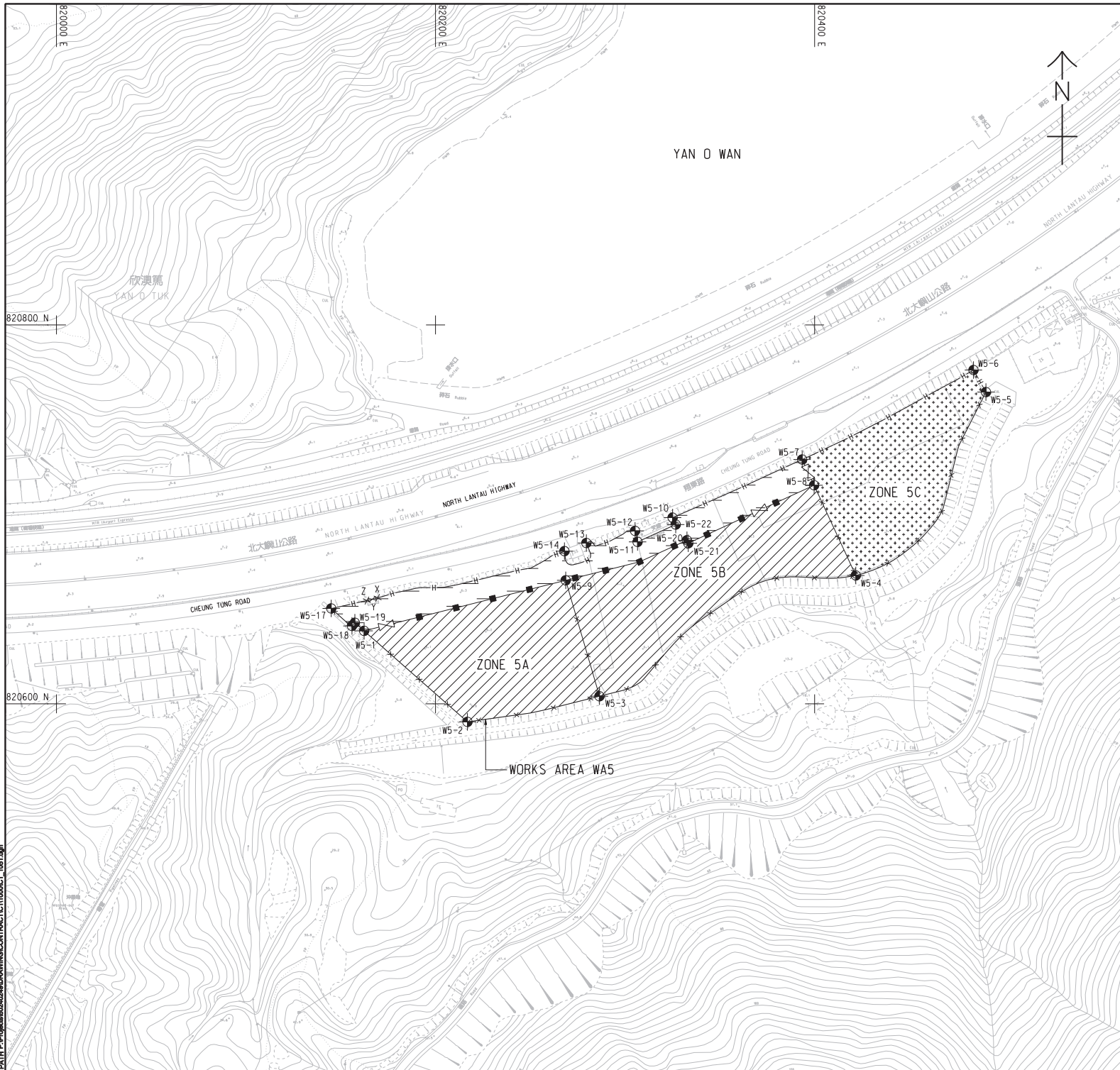
Contractor

Project Title
 Contract No. HY/2012/07
 Tuen Mun - Chek Lap Kok Link
 Southern Connection Viaduct Section

Originator

Drawing title
Figure 1.2g

Drawing no. J3518/P/OAP/04/01107 **Rev.** D1



NOTES:

- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE WORKS AREA KEY PLAN IN SHEET NO. 60240249/C1/1000.
- THE SETTING OUT INFORMATION AND WORKS AREA CONDITIONS SHOWN IN THIS DRAWING ARE FOR REFERENCE ONLY. THE WORKS AREA BOUNDARY SHALL BE IN ACCORDANCE WITH THE ENGINEERING CONDITIONS FOR TEMPORARY GOVERNMENT LAND ALLOCATION NO. T15 619. IN CASE OF DISCREPANCY BETWEEN THE BOUNDARY SHOWN ON THIS DRAWING AND THE BOUNDARY INDICATED ON THE ENGINEERING CONDITIONS, THE LATTER SHALL PREVAIL.
- DEMARCATION OF THE WORKS AREA SHALL BE DETERMINED ON SITE.
- REFER TO HIGHWAYS DEPARTMENT STANDARD DRAWING NOS. H6110 AND H6111 FOR DETAILS OF HOARDING.
- REFER TO HIGHWAYS DEPARTMENT STANDARD DRAWING NOS. H6121 AND H6122 FOR DETAILS OF CHAIN LINK FENCE.
- REFER TO HIGHWAYS DEPARTMENT STANDARD DRAWING NO. H6121 FOR DETAILS OF GATE.
- CHAIN LINK FENCE SHALL BE ERRECTED ALONG THE WORKS AREA BOUNDARY. THE ALIGNMENT AND EXTENT OF CHAIN LINK FENCE SHOWN ARE INDICATIVE ONLY AND SHALL BE CONFIRMED BY THE SUPERVISING OFFICER.
- THE LOCATION AND WIDTH OF GATE SHOWN ARE INDICATIVE ONLY AND SHALL BE CONFIRMED BY THE SUPERVISING OFFICER.
- NO STRUCTURES SHALL BE ERRECTED OTHER THAN SUCH STRUCTURES NOT EXCEEDING TWO STOREYS IN HEIGHT, WHICH ARE APPROVED BY THE DISTRICT LANDS OFFICER AS BEING APPROPRIATE FOR THE USE OF THE SITE AS A WORKS AREA.
- THE TENTATIVE OCCUPATION PERIOD SHALL BE REFERRED TO EMPLOYER'S REQUIREMENTS PART 2 AND PART 14 SECTION 1 CLAUSE 1.45A.
- THE WORKS AREAS SHOWN ON THIS DRAWING ARE TO BE SHARE-USED AMONG THE CONTRACTS OF TM-CLK RELATED CONTRACTS. THE AREAS HATCHED WITH [diagonal lines] ARE TENTATIVELY ALLOCATED FOR THE USE OF THIS CONTRACT.
- THE COMMON AREA SHALL BE CONCRETE PAVED BY THE CONTRACTOR.

LEGEND:

- WORKS AREA UNDER THIS CONTRACT
- COMMON AREA (MAINTAINED UNDER THIS CONTRACT) TO BE SHARE-USED WITH OTHER CONTRACTS
- WORKS AREA FOR THIS CONTRACT TO BE EARLY HANDED OVER BY THE CONTRACTOR.
- HOARDING AND GATE (TO BE ERRECTED AND MAINTAINED UNDER THIS CONTRACT)
- CHAIN LINK FENCE AND GATE (TO BE ERRECTED AND MAINTAINED BY OTHERS)
- CHAIN LINK FENCE AND GATE (TO BE ERRECTED AND MAINTAINED UNDER THIS CONTRACT)

SETTING OUT COORDINATES OF WORKS AREA W5

POINT	COORDINATES	
	EASTING	NORTHING
W5-1	820162.308	820638.492
W5-2	820216.839	820590.455
W5-3	820286.496	820603.985
W5-4	820421.757	820667.742
W5-5	820490.425	820764.554
W5-6	820483.839	820776.180
W5-7	820393.451	820728.958
W5-8	820399.746	820715.343
W5-9	820268.674	820665.173
W5-10	820325.075	820698.276
W5-11	820306.587	820685.458
W5-12	820305.269	820691.287
W5-13	820279.580	820684.863
W5-14	820268.027	820680.572
X	820169.407	820655.859
Y	820166.601	820655.172
Z	820163.794	820654.484
W5-17	820144.957	820650.334
W5-18	820155.899	820641.093
W5-19	820157.432	820642.788
W5-20	820332.642	820686.314
W5-21	820333.350	820684.738
W5-22	820326.723	820694.608

AECOM

PROJECT NO.
60240249

TUEN MUN - CHEK LAP KOK LINK

CONTRACT TITLE
TUEN MUN - CHEK LAP KOK LINK - SOUTHERN CONNECTION VIADUCT SECTION

CLIENT
路政署
HIGHWAYS DEPARTMENT
香港路政署工程管理部
Hong Kong - Zhuhai - Hainan Bridge
Hong Kong Project Management Office

CONSULTANT
AECOM Asia Company Ltd.
www.aecom.com

SUB-CONSULTANTS
九利建築師

ISSUE/REVISION

NO.	DATE	DESCRIPTION	CHK.
1	OCT. 12	TENDER DRAWING	C.W.

SCALE
A1:1:1000

DIMENSION UNIT
METRES

Figure 1.2h

PROJECT NO.
60240249

CONTRACT NO.
HY/2012/07

SHEET TITLE
WORKS AREA AND HOARDING PLAN

SHEET NUMBER
60240249/C1/1051

STATUS
TENDER DRAWING

KEY PLAN

DATE
OCT. 12

DESCRIPTION
TENDER DRAWING

CHK.
C.W.

SCALE
A1:1:1000

DIMENSION UNIT
METRES

PROJECT NO.
60240249

CONTRACT NO.
HY/2012/07

SHEET TITLE
WORKS AREA AND HOARDING PLAN

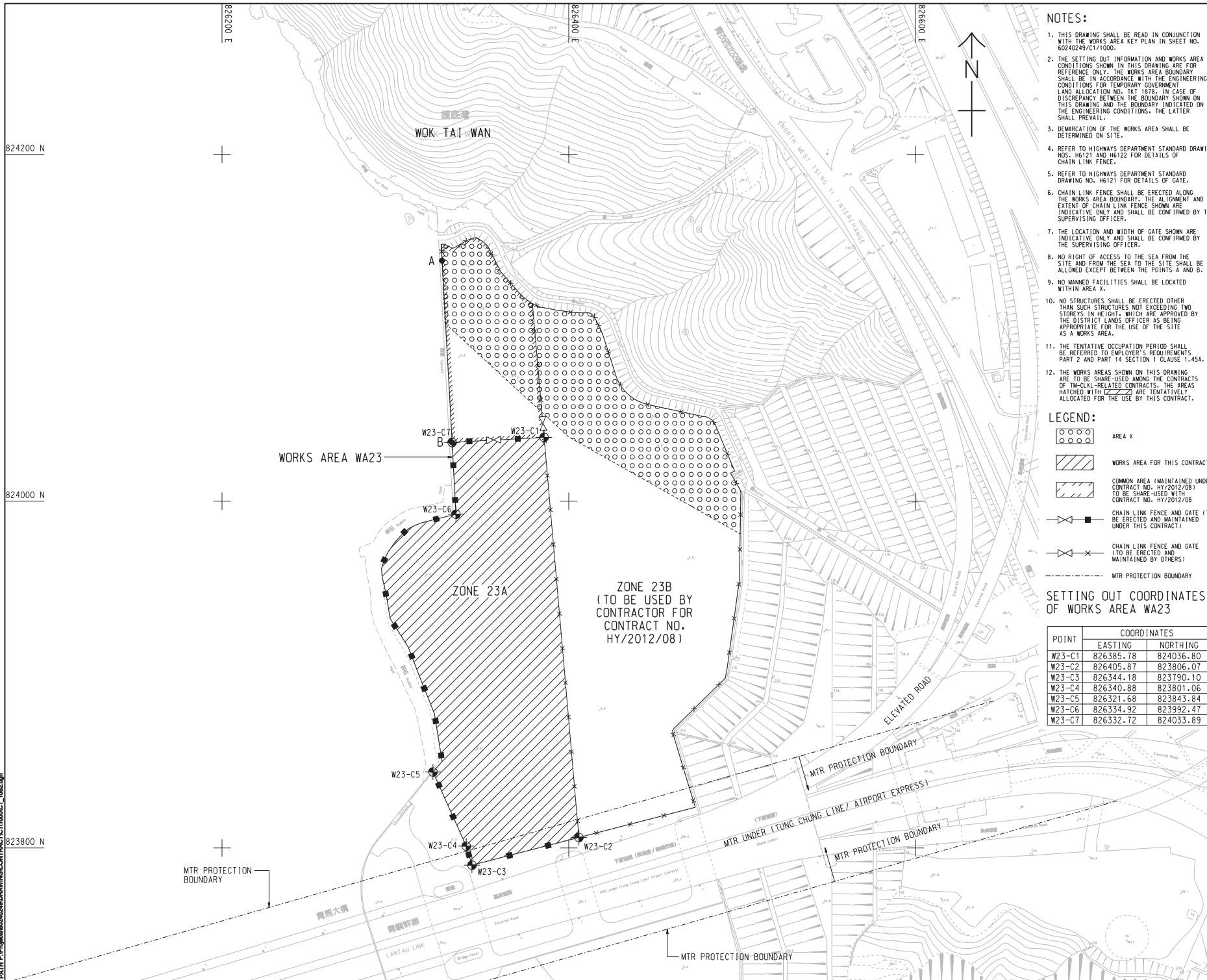
SHEET NUMBER
60240249/C1/1051

STATUS
TENDER DRAWING

DATE
OCT. 12

DESCRIPTION
TENDER DRAWING

CHK.
C.W.



NOTES:

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE WORKS AREA KEY PLAN IN SHEET NO. 60240249/CT1/000.
2. THE SETTING OUT INFORMATION AND WORKS AREA CONDITIONS SHOWN IN THIS DRAWING ARE FOR REFERENCE ONLY. THE WORKS AREA BOUNDARY SHALL BE IN ACCORDANCE WITH THE ENGINEERING CONDITIONS FOR TEMPORARY GOVERNMENT LAND ALLOCATION NO. TKT 1879. IN CASE OF DISCREPANCY BETWEEN THE BOUNDARY SHOWN ON THIS DRAWING AND THE BOUNDARY INDICATED ON THE ENGINEERING CONDITIONS, THE LATTER SHALL PREVAIL.
3. DEMARCATION OF THE WORKS AREA SHALL BE DETERMINED ON SITE.
4. REFER TO HIGHWAYS DEPARTMENT STANDARD DRAWING NOS. H6121 AND H6122 FOR DETAILS OF CHAIN LINK FENCE.
5. REFER TO HIGHWAYS DEPARTMENT STANDARD DRAWING NO. H6121 FOR DETAILS OF GATE.
6. CHAIN LINK FENCE SHALL BE ERECTED ALONG THE WORKS AREA BOUNDARY. THE ALIGNMENT AND EXTENT OF CHAIN LINK FENCE SHOWN ARE INDICATIVE ONLY AND SHALL BE CONFIRMED BY THE SUPERVISING OFFICER.
7. THE LOCATION AND WIDTH OF GATE SHOWN ARE INDICATIVE ONLY AND SHALL BE CONFIRMED BY THE SUPERVISING OFFICER.
8. NO RIGHT OF ACCESS TO THE SEA FROM THE SITE AND FROM THE SEA TO THE SITE SHALL BE ALLOWED EXCEPT BETWEEN THE POINTS A AND B.
9. NO MANNED FACILITIES SHALL BE LOCATED WITHIN AREA X.
10. NO STRUCTURES SHALL BE ERECTED OTHER THAN SUCH STRUCTURES NOT EXCEEDING TWO STOREYS IN HEIGHT, WHICH ARE APPROVED BY THE DISTRICT LANDS OFFICER AS BEING APPROPRIATE FOR THE USE OF THE SITE AS A WORKS AREA.
11. THE TENTATIVE OCCUPATION PERIOD SHALL BE REFERRED TO EMPLOYER'S REQUIREMENTS PART 2 AND PART 14 SECTION 1 CLAUSE 1.45A.
12. THE WORKS AREAS SHOWN ON THIS DRAWING ARE TO BE SHARED AMONG THE CONTRACTS OF TM-CLKL-RELATED CONTRACTS. THE AREAS HATCHED WITH [diagonal lines] ARE TENTATIVELY ALLOCATED FOR THE USE BY THIS CONTRACT.

LEGEND:

- [Circle with dot symbol] AREA X
- [Diagonal line hatch symbol] WORKS AREA FOR THIS CONTRACT
- [Cross-hatch symbol] COMMON AREA (MAINTAINED UNDER CONTRACT NO. HY/2012/08) TO BE SHARED WITH CONTRACT NO. HY/2012/08
- [Chain link symbol] CHAIN LINK FENCE AND GATE (TO BE ERECTED AND MAINTAINED UNDER THIS CONTRACT)
- [Chain link with gate symbol] CHAIN LINK FENCE AND GATE (TO BE SHARED AND MAINTAINED BY OTHERS)
- [Dashed line symbol] MTR PROTECTION BOUNDARY

SETTING OUT COORDINATES OF WORKS AREA WA23

POINT	COORDINATES	
	EASTING	NORTHING
W23-C1	826385.78	824036.80
W23-C2	826405.87	823806.07
W23-C3	826344.18	823790.10
W23-C4	826340.88	823801.06
W23-C5	826321.68	823843.84
W23-C6	826354.92	823992.47
W23-C7	826332.72	824033.89

AECOM

PROJECT NO.
60240249

TUEN MUN - CHEK LAP KOK LINK

CONTRACT TITLE
TUEN MUN - CHEK LAP KOK LINK - SOUTHERN CONNECTION VIADUCT SECTION

CLIENT
路政署 HIGHWAYS DEPARTMENT
港務大樓香港路政署管理處
Hong Kong + Zhuhai + Hainan Bridge
Hong Kong Project Management Office

CONSULTANT
AECOM Asia Company Ltd.
www.aecom.com

SUB-CONSULTANTS
[Symbol] [Symbol]

ISSUE/REVISION

NO.	DATE	DESCRIPTION	CHK.
1	OCT. 12	TENDER DRAWING	CWN

STATUS
[Symbol]

SCALE
A1 1:1000

DIMENSION UNIT
METRES

KEY PLAN
[Symbol]

Figure 1.2i

PROJECT NO.
60240249

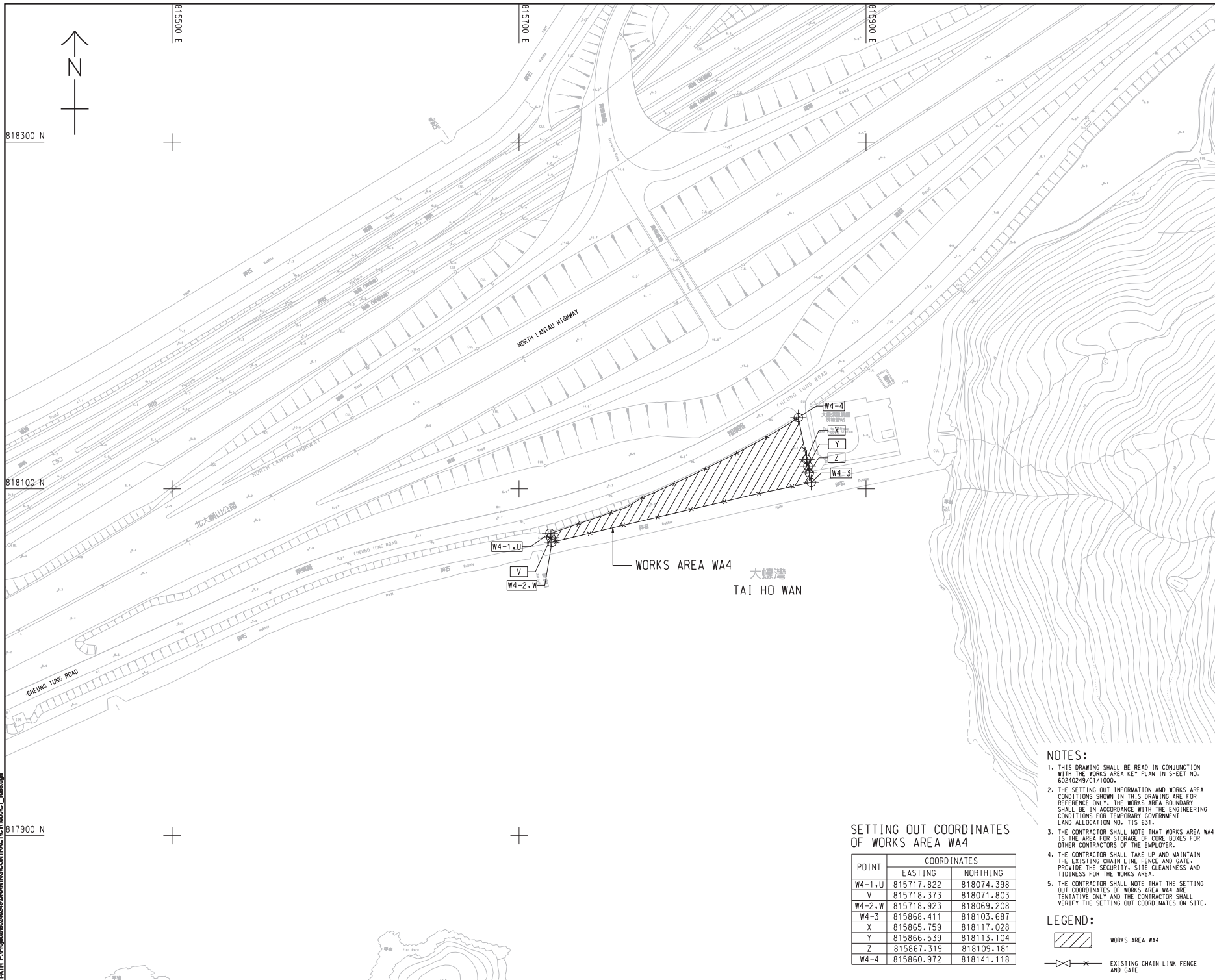
CONTRACT NO.
HY/2012/07

SHEET TITLE
WORKS AREA AND HOARDING PLAN

SHEET NUMBER
60240249/CT1/052

SHEET 2 OF 2

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WORKS AREA WA4
 大蠔灣
 TAI HO WAN

SETTING OUT COORDINATES OF WORKS AREA WA4

POINT	COORDINATES	
	EASTING	NORTHING
W4-1,U	815717.822	818074.398
V	815718.373	818071.803
W4-2,W	815718.923	818069.208
W4-3	815868.411	818103.687
X	815865.759	818117.028
Y	815866.539	818113.104
Z	815867.319	818109.181
W4-4	815860.972	818141.118

- NOTES:**
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE WORKS AREA KEY PLAN IN SHEET NO. 60240249/C1/100.
 - THE SETTING OUT INFORMATION AND WORKS AREA CONDITIONS SHOWN IN THIS DRAWING ARE FOR REFERENCE ONLY. THE WORKS AREA BOUNDARY SHALL BE IN ACCORDANCE WITH THE ENGINEERING CONDITIONS FOR TEMPORARY GOVERNMENT LAND ALLOCATION NO. T15 631.
 - THE CONTRACTOR SHALL NOTE THAT WORKS AREA WA4 IS THE AREA FOR STORAGE OF CORE BOXES FOR OTHER CONTRACTORS OF THE EMPLOYER.
 - THE CONTRACTOR SHALL TAKE UP AND MAINTAIN THE EXISTING CHAIN LINK FENCE AND GATE. PROVIDE THE SECURITY, SITE CLEANLINESS AND TIDINESS FOR THE WORKS AREA.
 - THE CONTRACTOR SHALL NOTE THAT THE SETTING OUT COORDINATES OF WORKS AREA WA4 ARE TENTATIVE ONLY AND THE CONTRACTOR SHALL VERIFY THE SETTING OUT COORDINATES ON SITE.

LEGEND:

WORKS AREA WA4

EXISTING CHAIN LINK FENCE AND GATE

AECOM

PROJECT
 TUEN MUN - CHEK LAP KOK LINK

CONTRACT TITLE
 TUEN MUN - CHEK LAP KOK LINK - SOUTHERN CONNECTION VIADUCT SECTION

CLIENT
 路政署 DEPARTMENT OF HIGHWAYS
 港務局 港務工程管理局
 Hong Kong + Zhuhai + Hainan Bridge
 Hong Kong Project Management Office

CONSULTANT
 AECOM Asia Company Ltd.
 www.aecom.com

SUB-CONSULTANTS

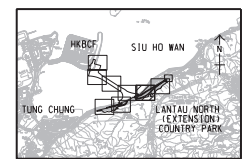
Figure 1.2j

ISSUE/REVISION

NO.	DATE	DESCRIPTION	CHK.
1	NOV. 12	TENDER ADDENDUM NO. 1	C/W

SCALE
 A1 : 1000

DIMENSION UNIT
 METRES



PROJECT NO.
 60240249

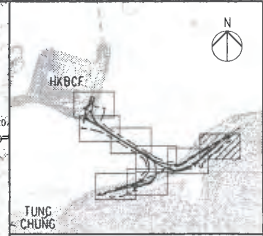
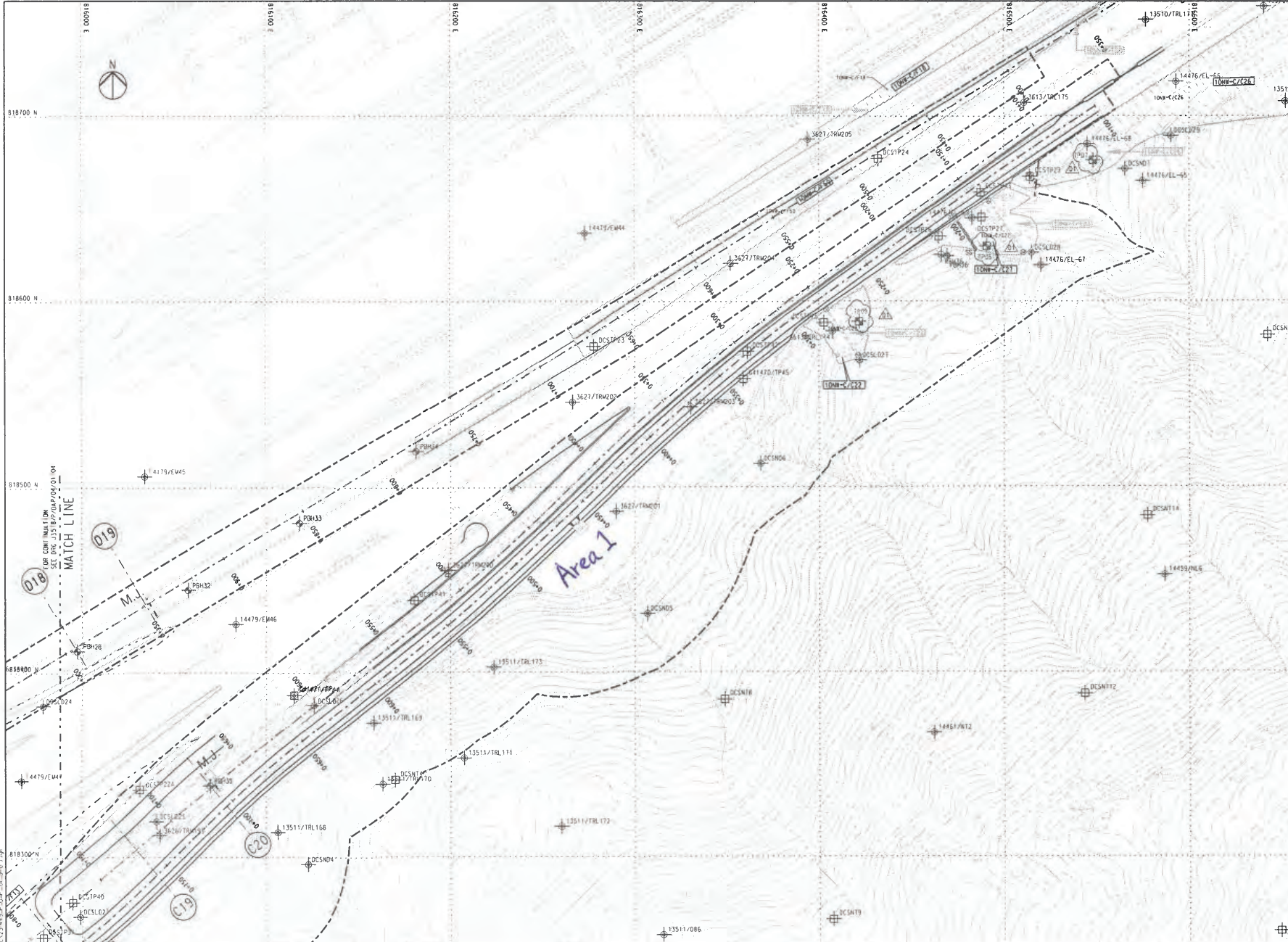
CONTRACT NO.
 HY/2012/07

SHEET TITLE
 WORKS AREA WA4

SHEET NUMBER
 60240249/C1/1053

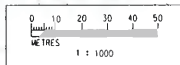
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NOTES
 THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NO. J3518/P/OAP/04/1000 AND OTHER RELEVANT DRAWINGS.

- LEGEND**
- SITE BOUNDARY
 - GF1 FAULT
- EXISTING G.I. STATIONS :
- ⊕ BOREHOLE BY GIU DATA EXCLUDING VC
 - ⊕ BOREHOLE BY GCL CONTRACT HY/2012/04
 - ⊕ BOREHOLE BY GCL CONTRACT N6.8/97
 - ⊕ BOREHOLE BY GCL CONTRACT HY/2009/23
 - ⊕ TRIAL PIT BY GCL CONTRACT HY/2012/04
 - ⊕ SLOPE STRIPPING BY GCL CONTRACT HY/2012/04
- PROPOSED G.I. STATIONS :
- ⊕ B-0 PROPOSED BOREHOLE
 - ⊕ T-0 PROPOSED TRIAL PIT
 - ⊕ C-01 PROPOSED COREHOLE
 - ⊕ S502 PROPOSED SLOPE STRIPPING

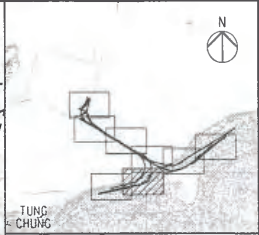
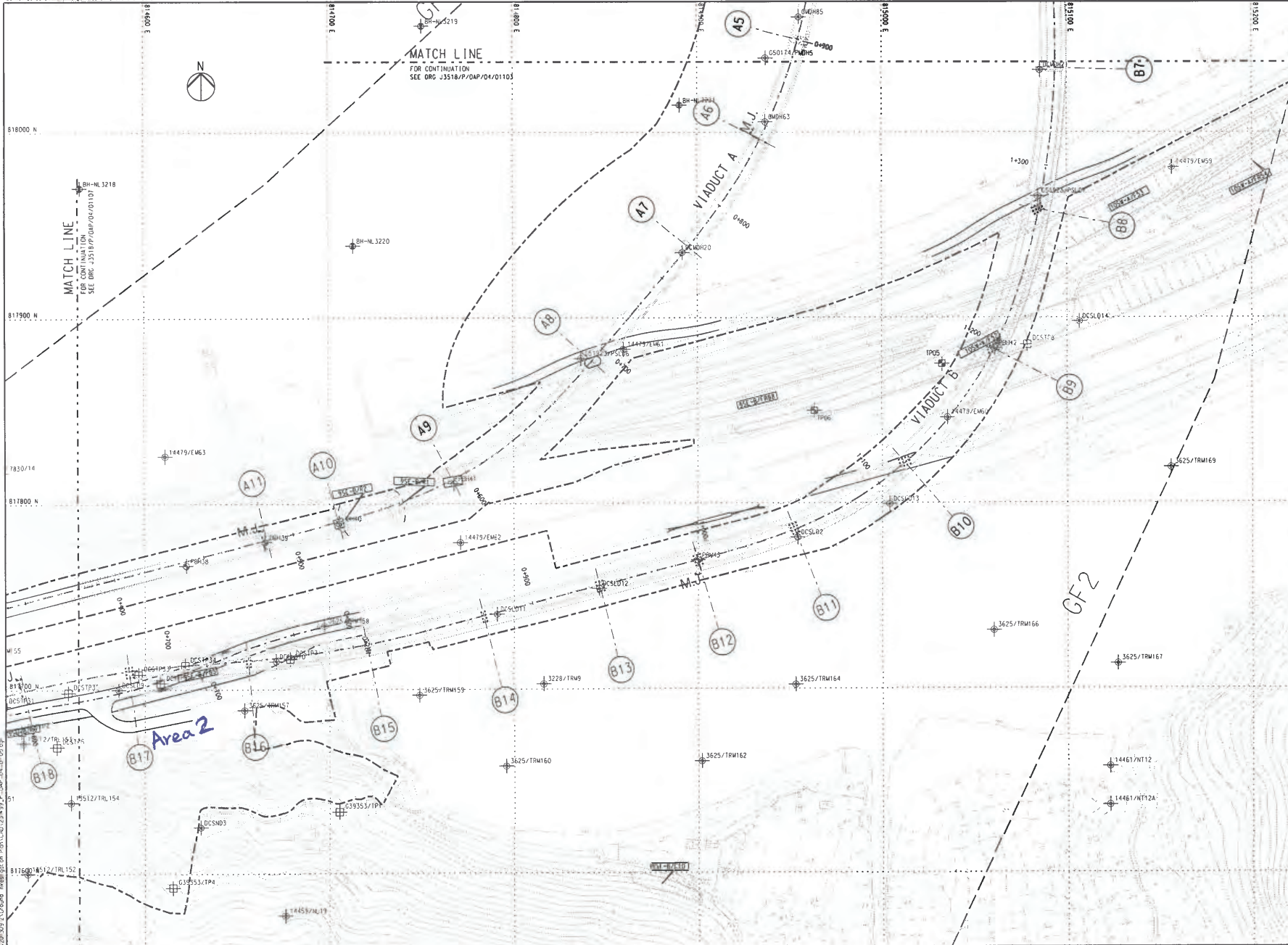


Rev	Description	By	Date	Rev	Description	By	Date
01	FOR CONSTRUCTION	RL	31/7/13				
02	FOR CONSTRUCTION	RL	27/7/13				
03	FOR CONSTRUCTION	RL	29/7/13				
04	FOR INTERNAL REVIEW	RL	19/7/12				

Drawn	Date	Client
RL	07/13	路政署 HIGHWAYS DEPARTMENT 港珠澳大桥香港工程指挥部 Hong Kong - Zhuhai - Macao Bridge Hong Kong Project Management Office
Checked	Approved	
DS	DOP	
Scale	1:1000 @ A1 / 1:2000 @ A3	

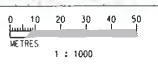
	Project Title Contract No. HY/2012/07 Tuen Mun - Chek Lap Kok Link Southern Connection Viaduct Section
	Drawing title Figure 1.2k
Supervising Officer 	Contractor
Originator 	Drawing no. J3518/P/OAP/04/01105 Rev. D1

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NOTES
 1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NO. J3518/P/OAP/04/1000 AND OTHER RELEVANT DRAWINGS.

- LEGEND**
- SITE BOUNDARY
 - GF1- FAULT
 - EXISTING G.I. STATIONS :
 - ⊕ BOREHOLE BY GIU DATA EXCLUDING VC
 - ⊕ BOREHOLE BY GCL CONTRACT HY/2012/04
 - ⊕ BOREHOLE BY GCL CONTRACT NL8/97
 - ⊕ BOREHOLE BY GCL CONTRACT HY/2009/23
 - ⊕ TRIAL PIT BY GCL CONTRACT HY/2012/04
 - ⊕ SLOPE STRIPPING BY GCL CONTRACT HY/2012/04
 - PROPOSED G.I. STATIONS :
 - ⊕ PROPOSED BOREHOLE
 - ⊕ PROPOSED TRIAL PIT
 - ⊕ PROPOSED COREHOLE
 - ⊕ PROPOSED SLOPE STRIPPING



Rev	Description	By	Date	Rev	Description	By	Date
A	SUBMISSION	RL	07/13				
B	SUBMISSION	RL	07/13				
C	SUBMISSION	RL	07/13				

Client: **路政署 HIGHWAYS DEPARTMENT**
 港珠澳大橋香港工程管理有限公司
 Hong Kong - Zhuhai - Macao Bridge
 Hong Kong Project Management Office

Supervising Officer: **AZCOM**

Project Title: **Contract No. HY/2012/07**
Tuen Mun - Chek Lap Kok Link
Southern Connection Viaduct Section

Contractor: **GAMMON**

Originator: **ARUP**

Drawing Title: **Figure 1.2I**

Drawing no. **J3518/P/OAP/04/01106** Rev **C**

Plotted by: RL/RL
 P:\2012\3518\04\01106\04\01106.dwg
 Plot Date: 07/13

As informed by the Contractor, details of the major works undertaken during the course of this Contract are listed below:

Marine-based Works

- Survey towers erection;
- Filling platform at seawall;
- Installation and uninstallation of marine piling platform;
- Construction of rock fill platform;
- Marine piling;
- Construction and installation of pile caps;
- Marine ground investigation (GI) and laboratory testing;
- Additional marine GI and laboratory testing;
- Installation of pier head, pier head segment and deck segment;
- Launching gantry assembly and launching gantry operation;
- Pier construction;
- Construction of marine section of berth at Southern Landfall;
- Construction of underslung truss scheme (no additional seabed will be occupied other than those assumed in the approved EIA Report); and
- Reinstatement of seawall at seafront

Land-based Works

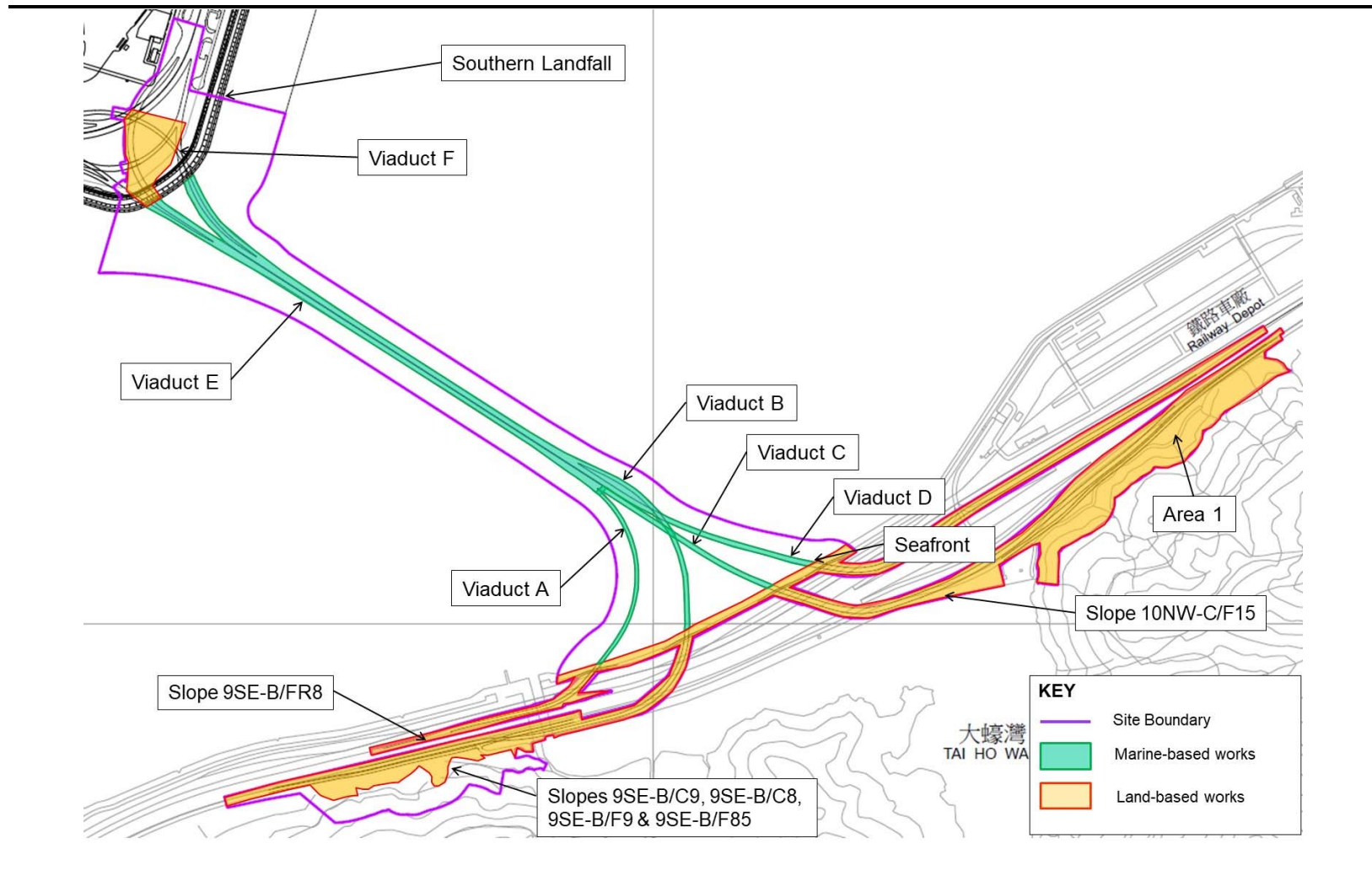
- Tree survey, felling and transplanting;
- Channel re-construction at Area 1;
- Site formation of workshop at Area 1;
- Site offices erection at Area 5;
- Construct temporary road at CEDD track for piling;
- Temporary access bridge;
- Fence installation and relocation at Area 2, Viaducts A, B, C & D;
- Satellite container offices erection along seawall;
- Land piling at Viaducts B, C & D;
- Launching gantry operation;
- Construction and installation of pile caps;
- Construction of pile cap superstructure of Viaduct B;
- Installation of pier head, pier head segment and deck segments;
- Land piling;
- Pier construction;
- Pre-drilling works;
- Piling platform installation at Viaducts B, C, D & E;
- Additional land GI, trial pits & lab testing;
- Re-alignment of Cheung Tung Road;
- Relocation of MTR fence;
- Utility surveys;
- Slope works;
- Drainage works;
- Construction of land section of berth at Southern Landfall;
- Road works along North Lantau Highway;

- Asphalt paving;
- Construction of sign gantries, light poles and street furniture;
- Parapet and barriers installation;
- Abutment construction;
- Landscaping works at NLH/CTR; and
- Landscaping works at HKBCF

The locations of the construction activities are shown in *Figure 1.3*. The Environmental Sensitive Receivers in the vicinity of the Project are shown in *Figure 1.4*.

The environmental mitigation measures implementation schedule is presented in *Appendix B*.

Figure 1.3 Locations of Construction Activities during the course of the Contract



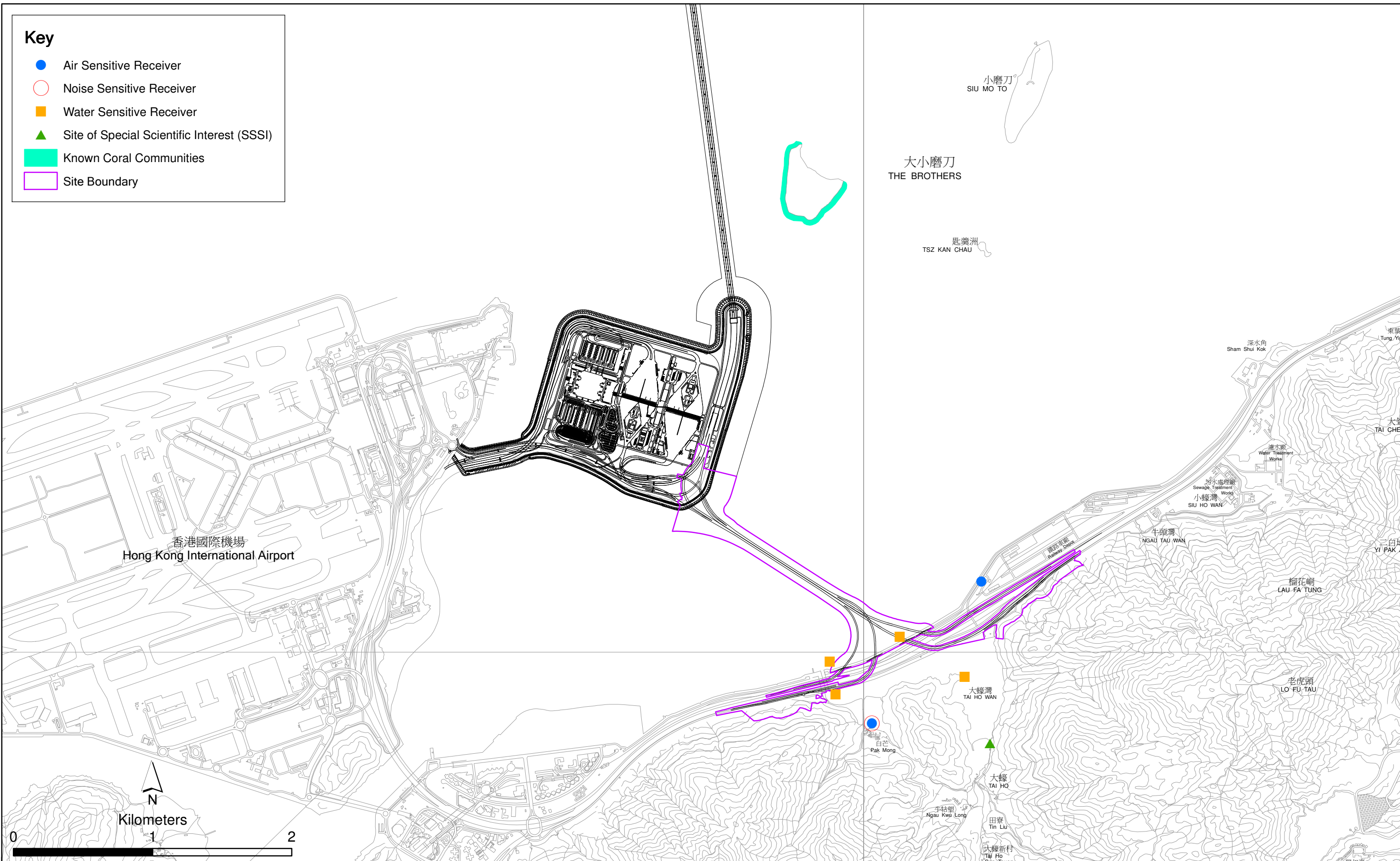


Figure 1.4

Environmental Sensitive Receivers in the Vicinity of Contract No. HY/2012/07
Tuen Mun - Chek Lap Kok Link - Southern Connection Viaduct Section

1.5

SUMMARY OF EM&A PROGRAMME REQUIREMENTS

The EM&A programme required environmental monitoring for air quality, noise, water quality and marine ecology as well as environmental site inspections for air quality, noise, water quality, waste management, marine ecology and landscape and visual impacts. The EM&A requirements and related findings for each component are described in the following sections, which include:

- Monitoring parameters;
- Action and Limit levels for all environmental parameters;
- Event Action Plan;
- Tested environmental impact hypotheses;
- Environmental mitigation measures, as recommended in the approved EIA Report; and
- Environmental requirement in contract documents.

2 *EM&A RESULTS*

The EM&A programme required environmental monitoring for air quality, noise, water quality and marine ecology as well as environmental site inspections for air quality, noise, water quality, waste management, marine ecology and landscape and visual impacts. The EM&A requirements and related findings for each component are summarized in the following sections.

2.1 *AIR QUALITY*

The baseline air quality monitoring undertaken by the Hong Kong - Zhuhai - Macao Bridge Hong Kong Projects (HZMB) during October 2011 included the two monitoring stations ASR9A and ASR9C for this Project. Thus, the baseline monitoring results and Action/ Limit Level presented in HZMB Baseline Monitoring Report ⁽¹⁾ are adopted for this Project.

2.1.1 *Monitoring Requirements and Equipment*

In accordance with the Updated EM&A Manual, impact 1-hour TSP monitoring was conducted three (3) times in every six (6) days and impact 24-hour TSP monitoring was carried out once in every six (6) days when the highest dust impact was expected.

The air quality monitoring locations for the Contract is listed in *Table 2.1* and is shown in *Figure 2.1a* and *2.1b*.

Details of the equipment deployed in air quality monitoring are provided in *Table 2.2*.

⁽¹⁾ Agreement No. CE 35/2011 (EP) Baseline Environmental Monitoring for Hong Kong - Zhuhai - Macao Bridge Hong Kong Projects - Investigation. Baseline Environmental Monitoring Report (Version C). Submitted on 8 March 2012 and subsequently approved by EPD

Key

- Original Monitoring Station
- Alternative Monitoring Station
- Site Boundary

AQMS	X	Y
ASR9A	815847.40	818508.64
ASR9C	816399.52	818946.65
ASR8	815059.45	817488.99
ASR8A	815856.14	818118.14

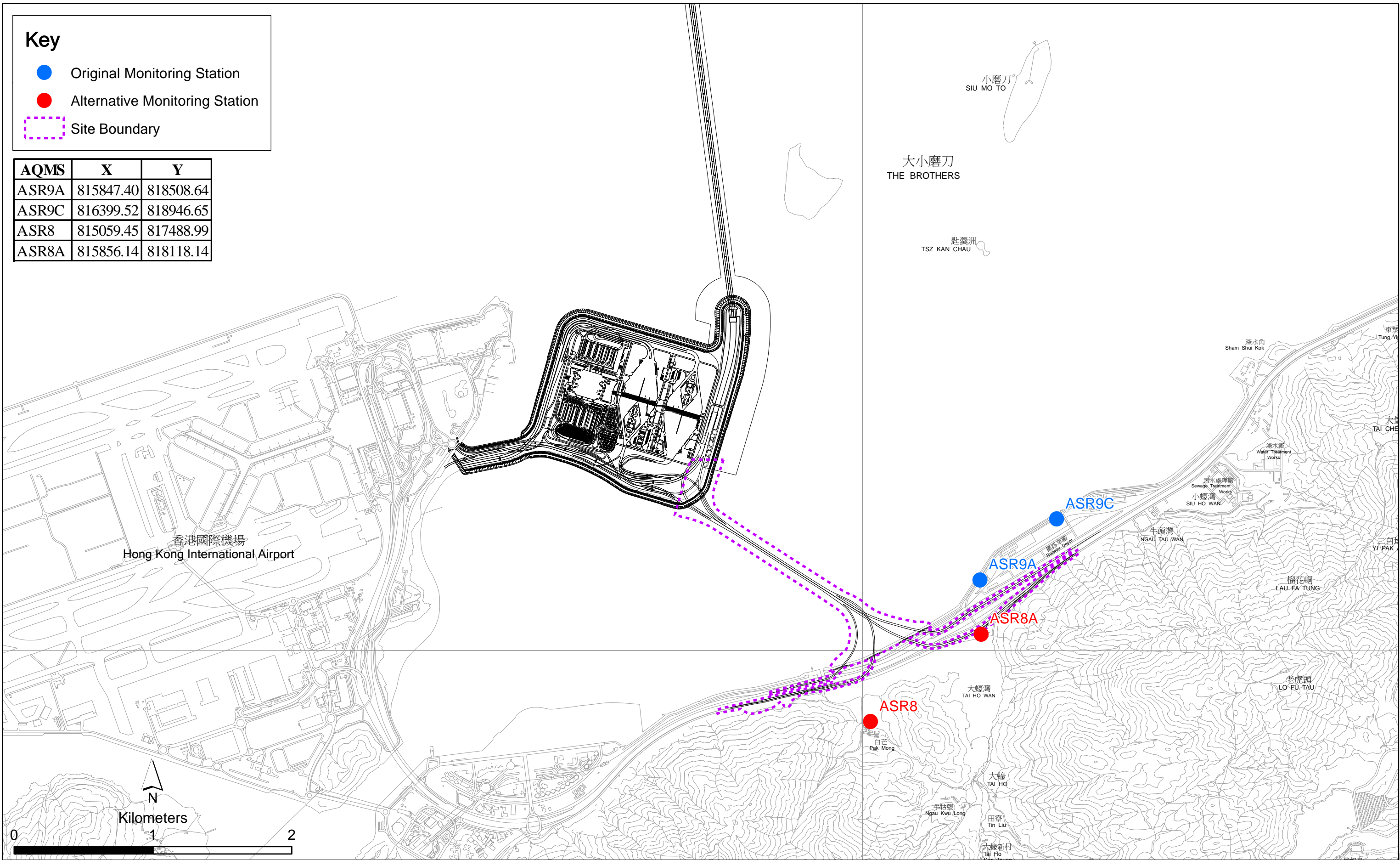


Figure 2.1a

Locations of Air Quality Monitoring Stations

Key

- Alternative Air Monitoring Station
- Site Boundary

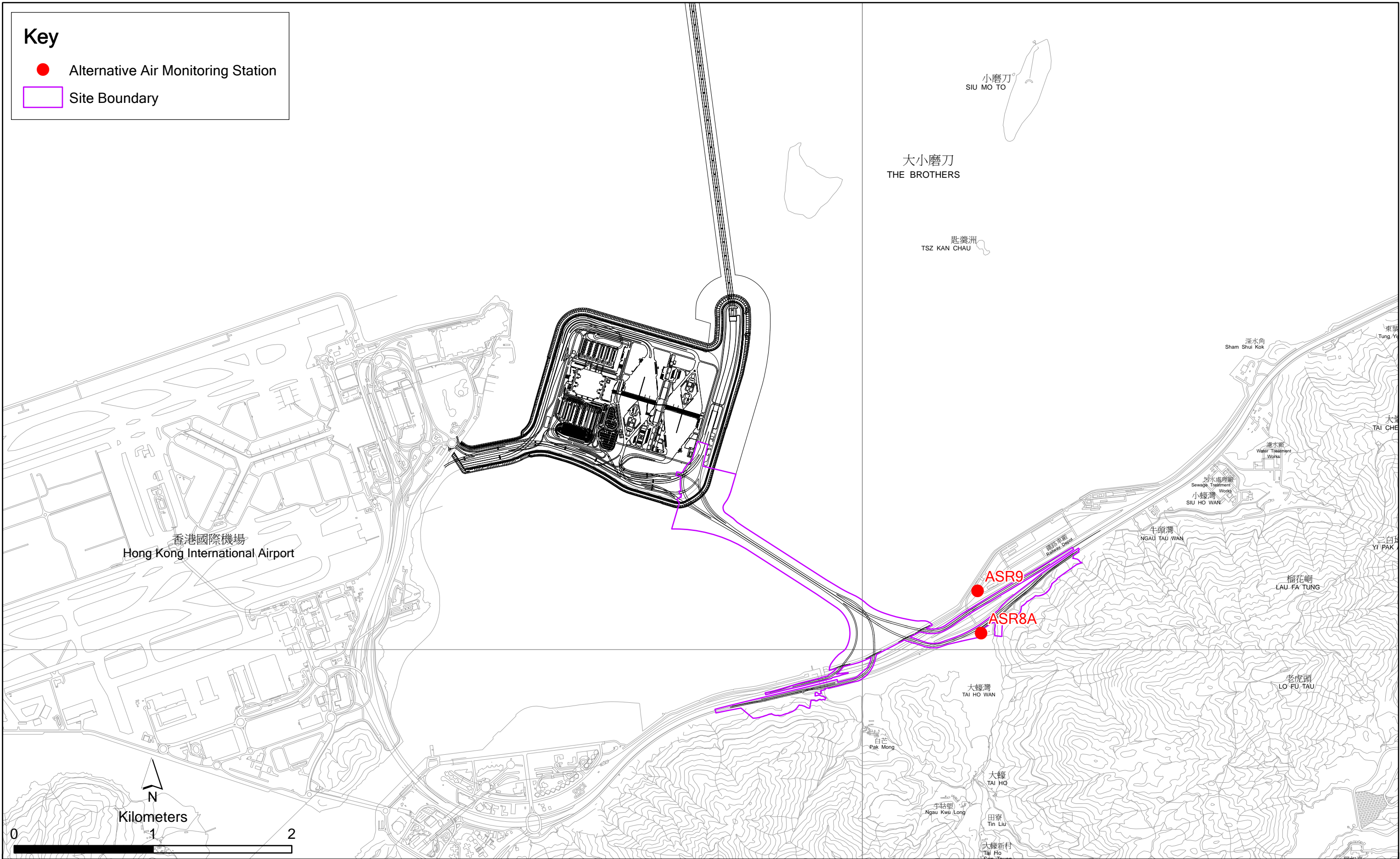


Figure 2.1b

Locations of Air Quality Monitoring Stations

Table 2.1 *Locations of Impact Air Quality Monitoring Stations and Monitoring Dates during the Impact Monitoring Period*

Monitoring Station	Monitoring Period	Location	Description	Parameters & Frequency
ASR9A ⁽¹⁾	From 1 to 11 November 2013	Siu Ho Wan MTR Depot	On ground near security office	• 1-hour Total Suspended
ASR8A	From 15 November 2013 to 31 October 2019	Area 4	On ground at the Area 4	• Particulates (1-hour TSP, µg/m ³), 3 times per day every 6 days
ASR9C ⁽¹⁾	From 1 to 11 November 2013	Siu Ho Wan MTR Depot	On ground near staff canteen	• 24-hour Total Suspended
ASR8 ⁽²⁾	From 15 November 2013 to 2 December 2014	Pak Mong Village Watch Tower	Rooftop of the premise	• Particulates (24-hour TSP, µg/m ³), daily for 24-hour every 6 days
ASR9	From 4 December 2014 to 31 October 2019	Entrance of MTRC Depot	On ground at the entrance	

Note:

- (1) Air Quality Monitoring Stations ASR9A and ASR9C proposed in accordance with the Updated EM&A were relocated to ASR8A and ASR8 respectively since 15 November 2013.
- (2) Air Quality Monitoring Station ASR8 was relocated to ASR9 since 4 December 2014.

Table 2.2 *Air Quality Monitoring Equipment*

Equipment	Brand and Model
High Volume Sampler (1-hour TSP and 24-hour TSP)	Tisch Environmental Mass Flow Controlled Total Suspended Particulate (TSP) High Volume Sampler (Model No. TE-5170)
Wind Sensor	Global Water (Wind Speed Sensor: WE550; Wind Direction Sensor: WE570)
Wind Anemometer for calibration	Lutron (Model No. AM-4201)

2.1.2 *Action & Limit Levels*

The Action and Limit Levels of the air quality monitoring are provided in *Appendix C*.

2.1.3 *Monitoring Schedule for the Impact Monitoring Period*

During the period of impact monitoring, impact 1-hour TSP monitoring and impact 24-hour TSP monitoring were carried out in accordance with the Updated EM&A Manual except for the following occasions summarised in *Table 2.3* below:

Table 2.3 *Change on Monitoring Schedule throughout the Impact Monitoring Period*

Date	Occasions
26/11/2014	Air Quality Monitoring at ASR8 was suspended due to rejection of access to the monitoring station.
2/12/2014	Air Quality Monitoring at ASR8 was suspended due to rejection of access to the monitoring station.
20/10/2016	Air Quality Monitoring on 20 October 2016 was postponed to 26 October 2016 due to adverse weather conditions.
22/8/2017	Air Quality Monitoring for 24-hour TSP at ASR8A and ASR9 was canceled due to adverse weather conditions.
25/2/2019	Air quality monitoring of 24-hour TSP monitoring at ASR9 was failed due to power shortage and a make-up 24-hour TSP monitoring at ASR9 was conducted on 26 February 2019.
28/2/2019	Air quality monitoring of 24-hour TSP monitoring at ASR8A was failed due to power shortage.
22/7/2019	Air quality monitoring of 1-hour and 24-hour TSP at ASR9 was cancelled due to power shortage.
25/7/2019	Air quality monitoring of 1-hour and 24-hour TSP at ASR9 was cancelled due to power shortage.
31/7/2019	Air quality monitoring of 1-hour and 24-hour TSP at ASR9 was cancelled due to power shortage and air quality monitoring of 24-hour TSP at ASR8A was cancelled due to adverse weather.

2.1.4 *Results and Observations*

The major dust sources during the impact monitoring period included construction activities under the Contract as well as nearby traffic emissions.

A total of 399 monitoring events for 1-hour TSP and 402 monitoring events for 24-hour TSP were undertaken at ASR9A/ASR8A; while a total of 391 monitoring events for 1-hour TSP and 392 monitoring events for 24-hour TSP were undertaken at ASR9C/ASR8/ASR9 during the impact monitoring period.

Comparison of EM&A results with baseline monitoring and EIA predictions for 1-hour TSP and 24-hour TSP are summarized in *Tables 2.3 and 2.4* and present graphically in *Appendix D*. The detailed impact monitoring data and meteorological information were reported in the *First to Seventieth Monthly EM&A Reports*.

Table 2.3 *Summary of Average Levels of TSP Level of Baseline Monitoring and the Impact Monitoring Period (in $\mu\text{g}/\text{m}^3$)*

Monitoring Station	Average Baseline Monitoring	Average Impact Monitoring					
		Oct 2013 - Oct 2014	Nov 2014 - Oct 2015	Nov 2015 - Oct 2016	Nov 2016 - Oct 2017	Nov 2017 - Oct 2018	Nov 2018 - Aug 2019
ASR9C/ ASR8/ ASR9 (1-hr TSP)	220	106	103	88	107	90	85
ASR9C/ ASR8/ ASR9 (24-hr TSP)	75	67	71	64	59	57	60
ASR9A/ ASR8A (1-hr TSP)	222	99	87	83	76	80	70
ASR9A/ ASR8A (24-hr TSP)	74	64	60	57	50	59	45

Note:

- (1) Baseline monitoring results of ASR9A and ASR9C are applied to ASR8A and ASR8/ASR9 respectively.
- (2) Notification of temporary suspension of air quality monitoring has been approved by EPD on 28 August 2019. No air quality monitoring was scheduled since 28 August 2019.

Table 2.4 Comparison of Impacts on Air Quality (in $\mu\text{g}/\text{m}^3$) between EIA Prediction, Baseline Monitoring and the Impact Monitoring Period (in $\mu\text{g}/\text{m}^3$)

Monitoring Station	EIA Predicted Maximum	Maximum Baseline Monitoring	Maximum Impact Monitoring					
			Oct 2013 - Oct 2014	Nov 2014 - Oct 2015	Nov 2015 - Oct 2016	Nov 2016 - Oct 2017	Nov 2017 - Oct 2018	Nov 2018 - Aug 2019
ASR9C/ ASR8/ ASR9 (1-hr TSP)	205 ⁽¹⁾ / 240	462	361	241	205	263	680	752
ASR9C/ ASR8/ ASR9 (24-hr TSP)	83 ⁽¹⁾ / 108	113	205	133	114	96	172	152
ASR9A/ ASR8A (1-hr TSP)	293 / 205 ⁽¹⁾	464	306	298	259	200	346	300
ASR9A/ ASR8A (24-hr TSP)	105 / 83 ⁽¹⁾	128	210	104	112	102	151	104

Note:

- (1) EIA prediction of maximum of ASR8 is presented for reference.
- (2) Scenario 1 of EIA prediction is adopted, in which north and south reclamations of TMCLKL were included in the modelling.
- (3) Baseline monitoring results of ASR9A and ASR9C are applied to ASR8A and ASR8/ASR9 respectively.
- (4) Notification of temporary suspension of air quality monitoring has been approved by EPD on 28 August 2019. No air quality monitoring was scheduled since 28 August 2019.

Maximum 1-hour TSP and 24-hour TSP levels in the impact monitoring period were comparable to the baseline range, in which most of the impact and baseline TSP levels were higher than the levels predicted in the EIA Report. The average 1-hour TSP and 24-hour TSP levels measured in the impact monitoring period were lower than the corresponding TSP levels measured in the baseline monitoring at all stations and thus suggested that no noticeable deterioration of air quality was caused by the construction activities of this Contract during the impact monitoring period.

2 Limit Level exceedances of 1-hour TSP and 2 Action Level exceedances of 24-hour TSP were recorded for air quality monitoring during the impact monitoring period. Summary of the exceedances is reported in *Table 2.5*.

Actions were taken in accordance with the Event Action Plan as presented in *Appendix G*. The exceedances were considered not related to this Contract upon further investigation. Detailed investigation reports on exceedances were presented in *Second, Fifty-second and Sixty-eighth Monthly EM&A Reports*.

Table 2.5 *Summary of Action Level and Limit Level Exceedance of 1-hour TSP and 24-hour TSP*

Period	Station	Parameter	Number of Action Level Exceedance(s)	Number of Limit Level Exceedance(s)
December 2013	ASR8A	24-hour TSP	1	-
December 2013	ASR8	24-hour TSP	1	-
February 2018	ASR9	1-hour TSP	-	1
June 2019	ASR9	1-hour TSP	-	1

2.2 NOISE MONITORING

The baseline noise monitoring undertaken by the HZMB Projects during the period of 18 October to 1 November 2011 included the monitoring station NSR1 for this Project. Thus, the baseline monitoring results and Action/Limit Level presented in *HZMB Baseline Monitoring Report* ⁽¹⁾ are adopted for this Project.

2.2.1 Monitoring Requirements and Equipment

In accordance with the Updated EM&A Manual, impact noise monitoring was conducted once per week during the construction phase of the Contract.

The noise monitoring station for the Contract is listed in *Table 2.6* and is shown in *Figure 2.2a* and *2.2b*.

Noise monitoring was performed by sound level meter in compliance with the International Electrotechnical Commission Publications (IEC) 651:1979 (Type

⁽¹⁾ Agreement No. CE 35/2011 (EP) Baseline Environmental Monitoring for Hong Kong - Zhuhai - Macao Bridge Hong Kong Projects - Investigation. Baseline Environmental Monitoring Report (Version C). Submitted on 8 March 2012 and subsequently approved by EPD

Key

- Noise Monitoring Station
- Site Boundary

NMS	X	Y
NSR1	815059.45	817488.99

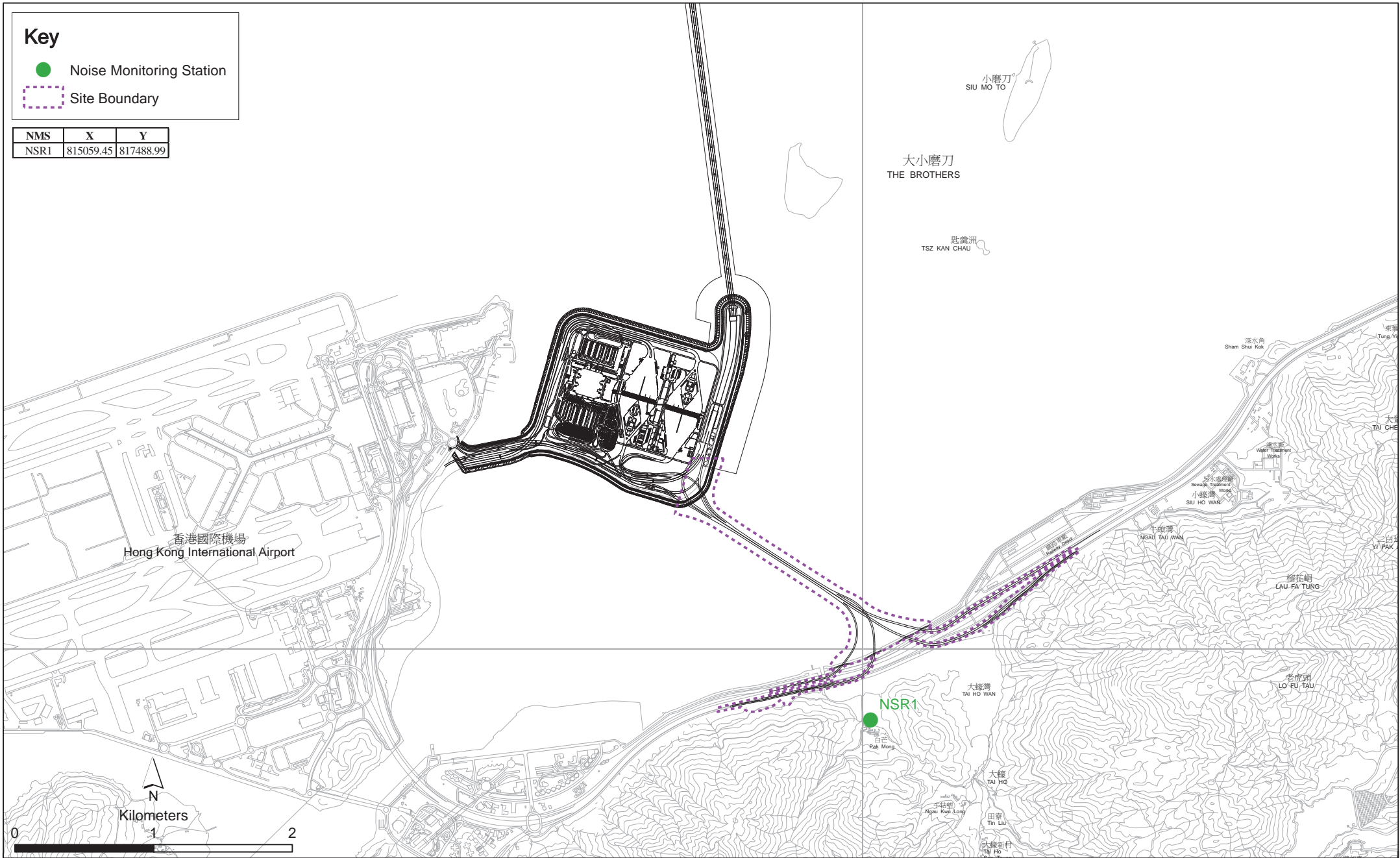


Figure 2.2a

Locations of Noise Monitoring Stations

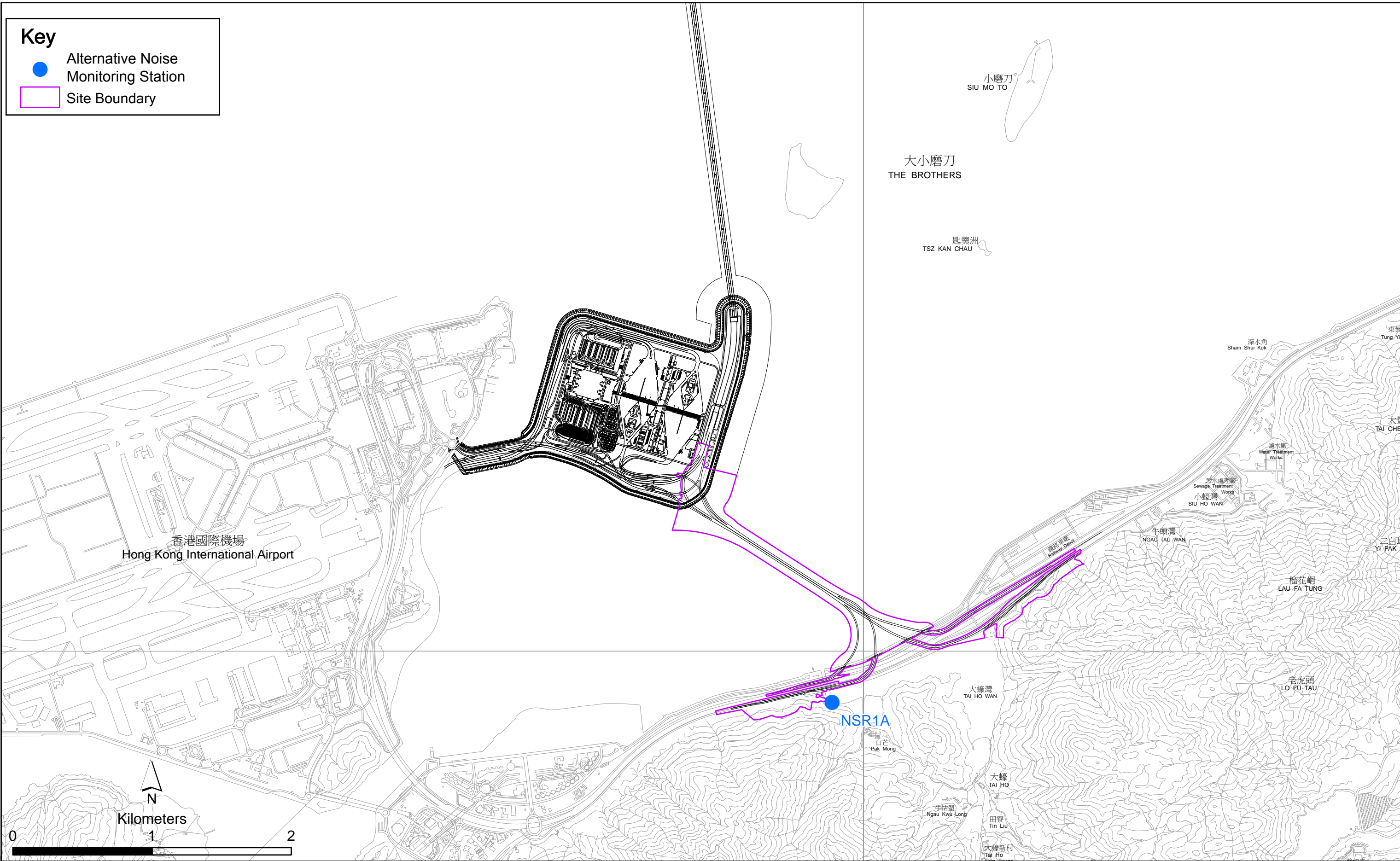


Figure 2.2b

Location of Noise Monitoring Station

1) and 804:1985 (Type 1) specifications at the designated monitoring station. Details of the equipment deployed in noise monitoring are provided in *Table 2.7*.

Table 2.6 *Location of Impact Noise Monitoring Station and Monitoring Dates during the Impact Monitoring Period*

Monitoring Station	Monitoring Period	Location	Parameters & Frequency
NSR1 ⁽¹⁾	From 31 October 2013 to 3 December 2014	Pak Mong Village Watch Tower	<ul style="list-style-type: none"> 30-mins measurement at each monitoring station between 0700 and 1900 on normal weekdays (Monday to Saturday). L_{eq}, L_{10} and L_{90} would be recorded.
NSR1A	From 4 December 2014 to 28 August 2019	Entrance of Pak Mong Village	

Note:

(1) Noise Monitoring Station NSR1 at Pak Mong Village was relocated to NSR1A since 4 December 2014. Same baseline and Action/Limit Level for noise monitoring from NSR1 was applied.

Table 2.7 *Noise Monitoring Equipment*

Equipment	Brand and Model
Integrated Sound Level Meter	Rion NL-31; Rion NL-52
Acoustic Calibrator	Rion NC-73

2.2.2 *Action and Limit Levels*

The Action and Limit levels of the noise monitoring are provided in *Appendix C*.

2.2.3 *Monitoring Schedule for the Impact Monitoring Period*

During the period of impact monitoring, noise monitoring was carried out in accordance with the Updated EM&A Manual except for the following occasions summarised in *Table 2.8* below

Table 2.8 *Change on Monitoring Schedule throughout the Impact Monitoring Period*

Date	Remarks
26/11/2014	Noise monitoring at NSR1 was cancelled due to rejection of access to the monitoring station.
26/10/2016	Noise Monitoring on 20 October 2016 was postponed to 26 October 2016 due to adverse weather conditions.

2.2.4 *Results and Observations*

Major noise sources during the noise monitoring included construction activities, adjacent maintenance works, and nearby traffic noise and aircraft noise.

A total of 400 monitoring events were undertaken in the impact monitoring period. No Action Level and Limit Level exceedance was recorded at the monitoring stations in the monitoring period, thus no action was required to be taken in accordance with the Event Action Plan (*Appendix G*).

Comparison of EM&A results with baseline monitoring and EIA predictions for noise level are summarized in *Tables 2.9* and *2.10* and present graphically in *Appendix E*. The detailed impact monitoring results were reported in the *First to Seventieth Monthly EM&A Reports*.

Table 2.9 *Summary of Average Levels of Noise Level of Baseline Monitoring and the Impact Monitoring Period (in dB(A))*

Monitoring Station	Average Baseline Monitoring	Average Impact Monitoring					
		Oct 2013 - Oct 2014	Nov 2014 - Oct 2015	Nov 2015 - Oct 2016	Nov 2016 - Oct 2017	Nov 2017 - Oct 2018	Nov 2018 - Aug 2019
NSR1	56.8	58	59.5	59.6	62	64	63

Note:

(1) EIA maximum noise level was predicted in SPL. Baseline and impact monitoring were measured in Leq_(30min).

Table 2.10 Comparison of Impacts on Noise (in dB (A)) between EIA Prediction and the Impact Monitoring Period (in dB(A))

Monitoring Station	EIA Predicted Maximum	Maximum Impact Monitoring					
		Oct 2013 - Oct 2014	Nov 2014 - Oct 2015	Nov 2015 - Oct 2016	Nov 2016 - Oct 2017	Nov 2017 - Oct 2018	Nov 2018 - Aug 2019
NSR1	74	60	62	63	67	70	66

Note:

- (1) EIA maximum noise level was predicted in SPL. Baseline and impact monitoring were measured in $Leq_{(30min)}$.
- (2) Notification of temporary suspension of noise monitoring has been approved by EPD on 28 August 2019. No construction noise monitoring was scheduled since 28 August 2019.

In general, the average impact noise monitoring results recorded in the impact monitoring period were within the range of the predicted noise levels in the EIA Report and thus suggested that no unacceptable level of construction noise generated from the Contract during the impact monitoring period.

2.3 WATER QUALITY MONITORING

The baseline water quality monitoring undertaken by the HZMB Projects between 6 and 31 October 2011 included all monitoring stations except SR4a for the Project. Thus, the baseline monitoring results except for station SR4a and Action/Limit Level presented in HZMB Baseline Monitoring Report ⁽¹⁾ are adopted for this Project. Baseline water quality monitoring was conducted at station SR4a from 29 August to 24 September 2013.

Results of water quality monitoring for the period between June and July 2017 were adopted from the published EM&A data of *Contract No. HY/2010/02*

(1) Agreement No. CE 35/2011 (EP) Baseline Environmental Monitoring for Hong Kong - Zhuhai - Macao Bridge Hong Kong Projects - Investigation. Baseline Environmental Monitoring Report (Version C). Submitted on 8 March 2012 and subsequently approved by EPD.

Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Reclamation Works ⁽¹⁾⁽²⁾.

Results of water quality monitoring in July and August 2019 were adopted from the published EM&A data of *Contract No. HY/2012/08 Tuen Mun-Chek Lap Kok Link – Northern Connection Sub-sea Tunnel Section* ⁽³⁾.

2.3.1 Monitoring Requirements and Equipment

In accordance with the Updated EM&A Manual, impact water quality monitoring was undertaken three (3) days per week during mid-ebb and mid-flood tides in the construction period at seven water quality monitoring stations.

The water quality monitoring stations for the Contract are provided in *Table 2.11* and is shown in *Figure 2.3a* and *2.3b*.

Details of the equipment deployed in water quality monitoring are provided in *Table 2.12*.

According to the Updated EM&A Manual, a post-construction water quality monitoring was carried out upon completion of all marine-based construction activities. Post-construction water quality monitoring was undertaken three (3) days per week for at least 4 weeks. The proposal for post-construction water quality monitoring was approved by EPD on 19 November 2019. Post-construction water quality monitoring commenced on 27 November 2019 and completed on 23 December 2019.

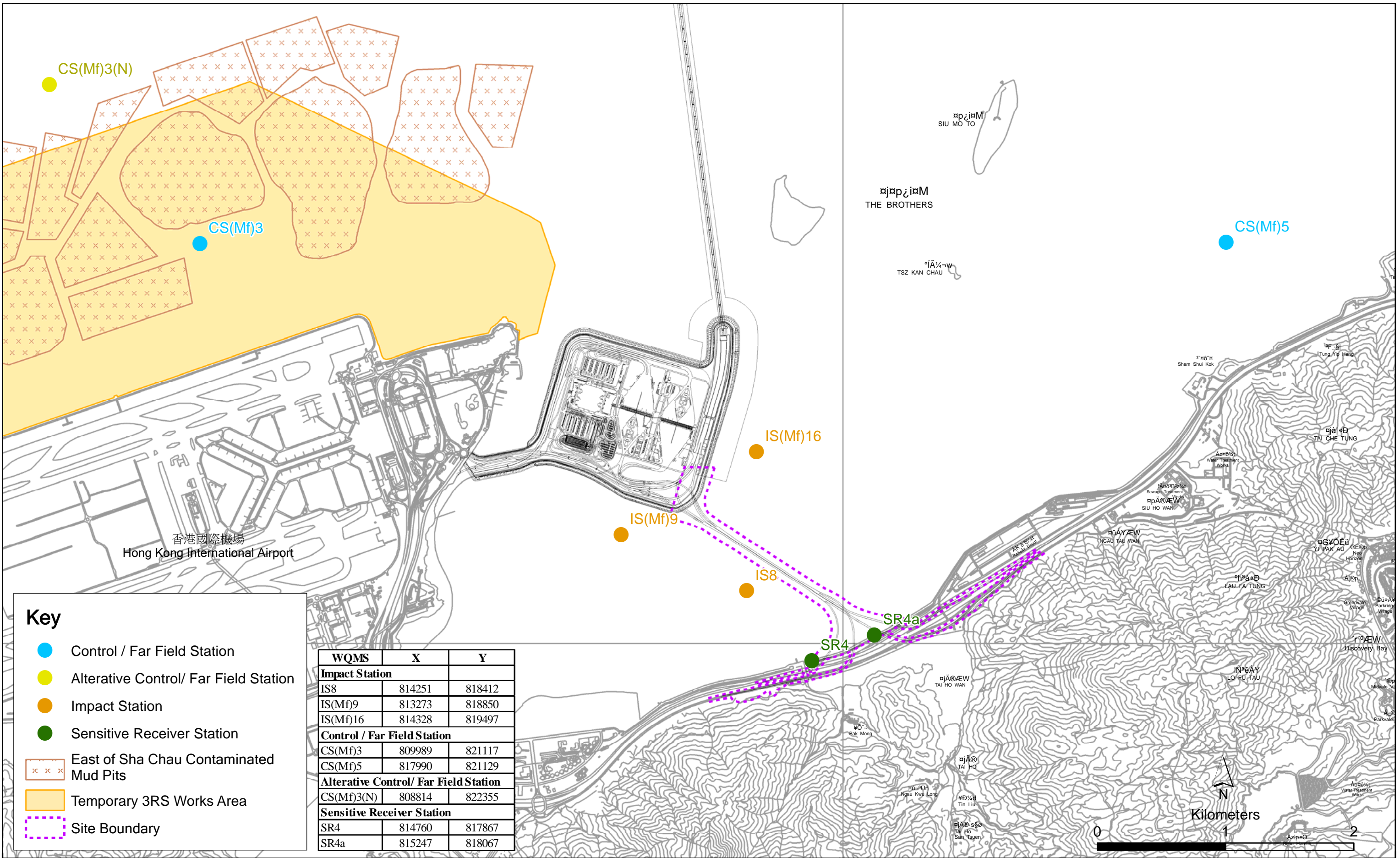
(1) Published EM&A data for impact water quality monitoring by *Contract No. HY/2010/02* are available at:

<http://www.hzmbenpo.com/>

(2) Technical issues have been observed from impact monitoring of the Contract and thus published information is adopted from *Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Reclamation Works*.

(3) Published EM&A data for impact water quality monitoring by *Contract No. HY/2012/08* are available at:

<http://www.hzmbenpo.com/>



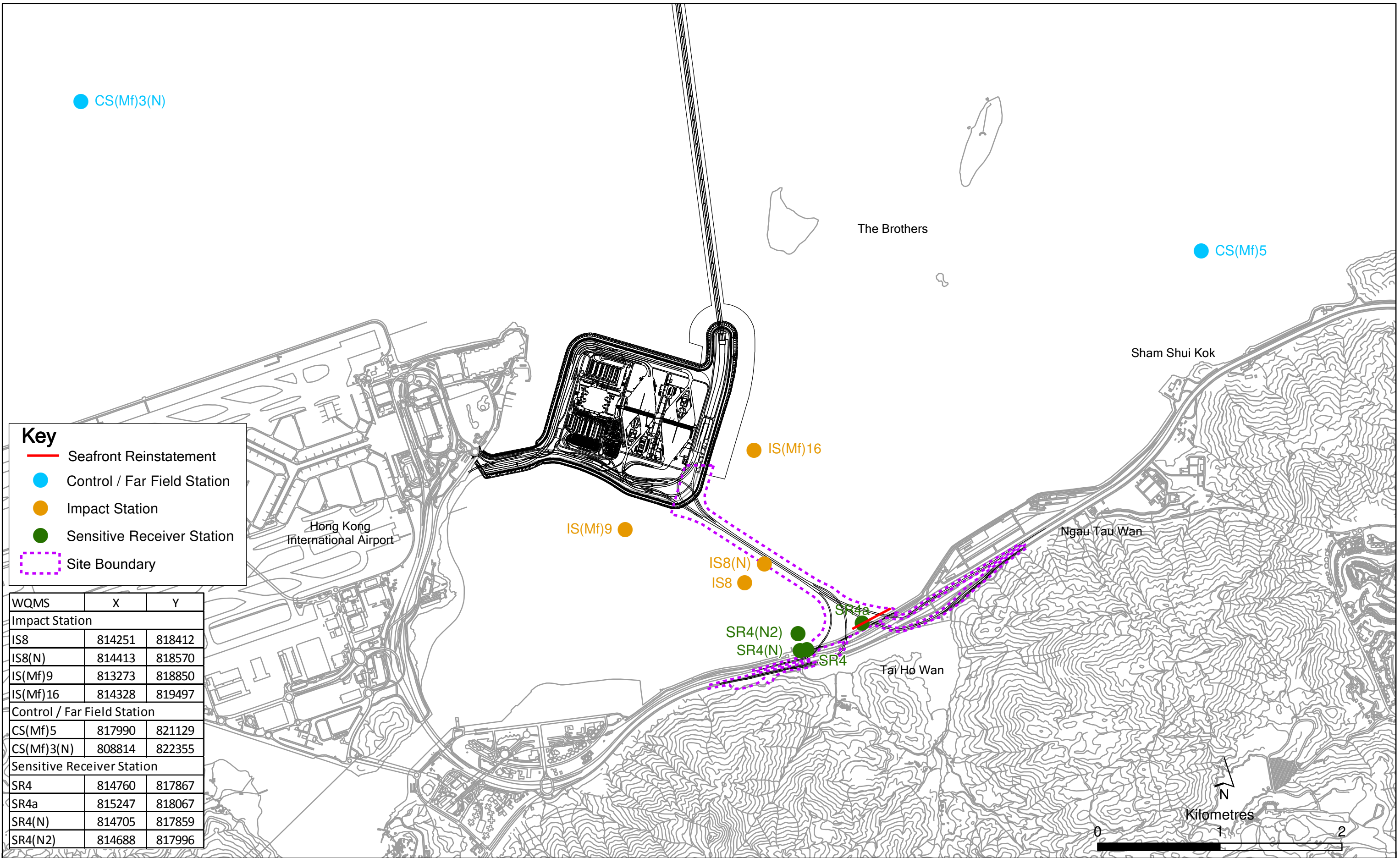


Figure 2.3b

Locations of Water Quality Monitoring Stations

Operational phase water quality monitoring was undertaken by *Contract No. HY/2012/08 Tuen Mun-Chek Lap Kok Link – Northern Connection Sub-sea Tunnel Section.*

Table 2.11 *Locations of Water Quality Monitoring Stations and the Corresponding Monitoring Requirements*

Station ID	Type	Coordinates		Parameters, unit	Depth	Frequency
		Easting	Northing			
IS(Mf)9	Impact Station (Close to HKBCF construction site)	813273	818850	<ul style="list-style-type: none"> • Temperature(°C) • pH(pH unit) • Turbidity (NTU) • Water depth (m) • Salinity (ppt) • Dissolved Oxygen (DO) (mg/L and % of saturation) • Suspended Solid (SS) (mg/L) 	3 water depths: 1m below sea surface, mid-depth and above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.	Impact monitoring: 3 days per week, at mid-flood and mid-ebb tides during construction period of the Contract.
IS(Mf)16	Impact Station (Close to HKBCF construction site)	814328	819497			
IS8 ⁽²⁾	Impact Station(Close to HKBCF construction site)	814251	818412			
IS8(N)	Impact Station(Close to HKBCF construction site)	814413	818570			
SR4 ⁽³⁾	Sensitive receiver (Tai Ho Inlet)	814760	817867			
SR4(N) ⁽⁴⁾	Sensitive receiver (Tai Ho)	814705	817859			
SR4(N2)	Sensitive receiver (Tai Ho)	815688	817996			

Station ID	Type	Coordinates		Parameters, unit	Depth	Frequency
		Easting	Northing			
SR4a	Sensitive receiver	815247	818067			
CS(Mf)3 ⁽⁵⁾	Control Station	809989	821117			
CS(Mf)3(N)	Control Station	808814	822355			
CS(Mf)5	Control Station	817990	821129			

Notes:

(1) In addition to the parameters presented monitoring location/position, time, water depth, sampling depth, tidal stages, weather conditions and any special phenomena or works underway nearby were also recorded.

(2) Water Quality Monitoring Station IS8 was relocated to IS8(N) since 12 June 2019.

(3) Water Quality Monitoring Station SR4 was relocated to SR4(N) since 2 March 2018.

(4) Water Quality Monitoring Station SR4(N) was relocated to SR4(N2) since 12 June 2019.

(5) Water Quality Monitoring Station CS(Mf)3 was relocated to CS(Mf)3(N) since 2 May 2017.

(6) Results of water quality monitoring for the period between June and July 2017 were adopted from the published EM&A data of *Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Reclamation Works*. Station SR4a is not covered by HY/2010/02. Data from Station SR4(N) is considered representative of those from SR4a since they are located 50m from each other and coral colonies, which is the sensitive receiver concerned at SR4a, are also presented along the seawall nearby SR4(N).

(7) Results of water quality monitoring in July and August 2019 were adopted from the published EM&A data of *Contract No. HY/2012/08 Tuen Mun-Chek Lap Kok Link – Northern Connection Sub-sea Tunnel Section*.

Table 2.12 Water Quality Monitoring Equipment

Equipment	Brand and Model
DO, Temperature meter and Salinity	YSI Pro2030
Turbidimeter	HACH Model 2100Q
pH meter	HANNA HI8314/ Thermo Scientific Orion 2 Star

Equipment	Brand and Model
Positioning Equipment	Koden913MK2 with KBG-3 DGPS antenna / Furuno GP-170
Water Depth Detector	Speedtech Instrument SM-5 / Lowrance Mark 5x / Garmin Striker 4
Water Sampler	Kemmerer 1520 (1520-C25) 2.2L with messenger / WildCo Vertical Alpha Bottles 1120-2.2L / 1120-3.2L Aquatic Research Instrument Vertical/Horizontal Point Water Sampler 2.2L / 3.0L
Multi-parameters (Dissolved Oxygen, Salinity, Turbidity, Temperature, pH)	YSI ProDSS / YSI 6920 V2/ YSI 6920 V2 Sonde

Notes:

(1) Water quality monitoring equipment used for water quality monitoring for the period between June and July 2017 could be referred to the published Monthly EM&A Reports of *Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Reclamation Works*. Available at <http://www.hzmbenpo.com/>

(2) Water quality monitoring equipment used for water quality monitoring for the period between July and August 2019 could be referred to the published Monthly EM&A Reports of *Contract No. HY/2012/08 Tuen Mun-Chek Lap Kok Link – Northern Connection Sub-sea Tunnel Section*. Available at <http://www.hzmbenpo.com/>

2.3.2 *Action & Limit Levels*

The Action and Limit Levels of the water quality monitoring are provided in *Appendix C*.

2.3.3 *Monitoring Schedule for the Impact Monitoring Period*

During the period of impact monitoring, impact water quality monitoring was carried out in accordance with the Updated EM&A Manual except for the following occasions summarised in *Table 2.13* below

Table 2.5 *Change on Monitoring Schedule throughout the Impact Monitoring Period*

Date	Remarks
19/2/2015	Water quality monitoring was cancelled due to suspension of marine works.
21/2/2015	Water quality monitoring was cancelled due to suspension of marine works.
7/7/2015	Water quality monitoring was cancelled due to adverse weather.
3/10/2015	Water quality monitoring was cancelled due to adverse weather.
9/2/2016	Water quality monitoring was cancelled due to suspension of marine works during holiday.
2/8/2016	Water quality monitoring was canceled due to adverse weather conditions
18/10/2016	Water quality monitoring was canceled due to adverse weather conditions
28/1/2017	Water quality monitoring was cancelled due to suspension of marine works during holiday.
31/1/2017	Water quality monitoring was cancelled due to suspension of marine works during holiday.
4/4/2017	Water quality monitoring was cancelled due to suspension of marine works during holiday.
23/8/2017	Water quality monitoring was canceled due to adverse weather conditions.
4/9/2017	Water quality monitoring was canceled due to adverse weather conditions.
8/1/2018	Water quality monitoring at IS(Mf)9 and CS(Mf)3(N) during mid-flood tide and all monitoring stations during mid-ebb tide was cancelled due to adverse weather.
5/3/2018	Water quality monitoring during mid-flood tide at all water quality monitoring stations, except CS(Mf)5, was cancelled due to adverse weather.
6/6/2018	Water quality monitoring during mid-flood tide at all water quality monitoring stations, except CS(Mf)5, was cancelled due to adverse weather.
8/6/2018	Water quality monitoring was canceled due to adverse weather conditions.
18/7/2018	Water quality monitoring was canceled due to adverse weather conditions.
12/9/2018	Water quality monitoring during mid-ebb tide was canceled due to adverse weather conditions.
17/9/2018	Water quality monitoring was canceled due to adverse weather conditions.
17/2/2018	Water quality monitoring was cancelled due to suspension of marine works during holiday.

Date	Remarks
19/2/2018	Water quality monitoring was cancelled due to suspension of marine works during holiday.
1/10/2018	Water quality monitoring was cancelled due to suspension of marine works during holiday.
17/10/2018	Water quality monitoring was cancelled due to suspension of marine works during holiday.
26/12/2018	Water quality monitoring was cancelled due to suspension of marine works during site closure.
4/2/2019	Water quality monitoring was cancelled due to suspension of marine works during site closure.
6/2/2019	Water quality monitoring was cancelled due to suspension of marine works during site closure.
8/2/2019	Water quality monitoring was cancelled due to suspension of marine works during site closure.
5/4/2019	Water quality monitoring was cancelled due to suspension of marine works during site closure.
1/5/2019	Water quality monitoring was cancelled due to suspension of marine works during site closure.
7/6/2019	Water quality monitoring was cancelled due to suspension of marine works during holiday.

2.3.4 ***Results and Observations***

A total of 883 monitoring events for impact water quality monitoring events and 12 monitoring events for post-construction water quality monitoring were undertaken during the impact monitoring period.

Comparison of EM&A results with baseline monitoring are summarized in *Tables 2.14 to 2.18*. The detailed impact water quality monitoring data was reported in the *First to Seventieth Monthly EM&A Reports* and detailed statistical analysis was represented in the *First to Sixth Annual EM&A Reports*.

Table 2.6 Summary of Averages Level of Surface DO Level of Baseline Monitoring and Impact Monitoring Period (in mg/L)

Monitoring Station	Tide	Average Baseline Monitoring	Average Impact Monitoring						Post Construction Monitoring
			Oct 2013 - Oct 2014	Nov 2014 - Oct 2015	Nov 2015 - Oct 2016	Nov 2016 - Oct 2017	Nov 2017 - Oct 2018	Nov 2018 - Aug 2019	
IS(Mf)16	Mid-ebb	6.3	6.4	6.8	6.7	6.7	7.0	6.9	7.0
	Mid-flood	6.3	6.4	6.9	6.8	6.8	7.1	7.0	7.0
IS(Mf)9	Mid-ebb	6.6	6.4	6.8	6.7	6.9	7.4	7.2	7.0
	Mid-flood	6.5	6.5	6.9	6.7	7.0	7.0	7.0	7.0
IS8/IS8(N)	Mid-ebb	6.4	6.4	6.8	6.6	6.8	7.3	7.1	7.0
	Mid-flood	6.4	6.4	6.9	6.7	6.8	7.1	7.0	7.0
SR4/SR4(N)/SR4(N2)	Mid-ebb	6.1	6.3	6.8	6.6	6.6	7.0	6.8	6.9
	Mid-flood	6.3	6.4	6.9	6.7	6.8	7.0	7.0	7.0
SR4a	Mid-ebb	5.5	6.4	6.8	6.6	6.8	6.9	6.9	7.0
	Mid-flood	5.5	6.4	6.9	6.7	6.8	7.0	7.0	7.0

Note:

(1) Notification of temporary suspension of water quality monitoring has been approved by EPD on 30 August 2019. No impact water quality monitoring was scheduled since 30 August 2019.

(2) The post-construction water quality monitoring commenced on 27 November 2019 and completed on 23 December 2019.

Table 2.7 Summary of Averages Level of Middle DO Level of Baseline Monitoring and Impact Monitoring Period (in mg/L)

Monitoring Station	Tide	Average Baseline Monitoring ⁽³⁾	Average Impact Monitoring ⁽³⁾						Post Construction Monitoring ⁽³⁾
			Oct 2013 - Oct 2014	Nov 2014 - Oct 2015	Nov 2015 - Oct 2016	Nov 2016 - Oct 2017	Nov 2017 - Oct 2018	Nov 2018 - Aug 2019	
IS(Mf)16	Mid-ebb	6.3	6.2	6.7	6.6	6.6	6.9	6.7	-
	Mid-flood	6.1	6.3	6.8	6.6	6.8	6.5	-	-
IS(Mf)9	Mid-ebb	-	-	-	-	-	7.2	7.1	7.0
	Mid-flood	6.2	-	-	-	7.3	7.6	7.2	7.0
IS8/IS8(N)	Mid-ebb	-	-	-	-	-	7.4	-	-
	Mid-flood	-	-	-	-	-	-	7.9	-
SR4/ SR4(N)/ SR4(N2)	Mid-ebb	-	-	-	-	-	5.1	-	-
	Mid-flood	-	-	-	-	-	-	-	-

Note:

- (1) Notification of temporary suspension of water quality monitoring has been approved by EPD on 30 August 2019. No impact water quality monitoring was scheduled since 30 August 2019.
- (2) The post-construction water quality monitoring commenced on 27 November 2019 and completed on 23 December 2019.
- (3) In-situ monitoring was taken according to the requirement specified in the EM&A Manual, i.e. 3 water depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth was less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.

Table 8 Summary of Averages Level of Bottom DO Level of Baseline Monitoring and Impact Monitoring Period (in mg/L)

Monitoring Station	Tide	Average Baseline Monitoring	Average Impact Monitoring						Post Construction Monitoring
			Oct 2013 - Oct 2014	Nov 2014 - Oct 2015	Nov 2015 - Oct 2016	Nov 2016 - Oct 2017	Nov 2017 - Oct 2018	Nov 2018 - Aug 2019	
IS(Mf)16	Mid-ebb	5.9	6.1	6.5	6.4	6.5	6.6	6.7	7.0
	Mid-flood	6.0	6.1	6.6	6.5	6.6	5.9	5.6	6.9
IS(Mf)9	Mid-ebb	6.6	6.2	6.7	6.5	6.8	7.2	7.0	7.0
	Mid-flood	6.7	6.3	6.7	6.6	6.9	5.9	6.1	7.0
IS8/IS8(N)	Mid-ebb	6.2	6.1	6.7	6.5	6.7	6.9	6.8	7.0
	Mid-flood	6.3	6.2	6.8	6.6	6.8	6.1	6.0	7.0
SR4/SR4(N)/SR4(N2)	Mid-ebb	6.0	6.2	6.7	6.5	6.6	6.8	6.6	6.9
	Mid-flood	6.2	6.3	6.7	6.5	6.7	6.2	5.7	7.0
SR4a	Mid-ebb	5.3	6.2	6.7	6.5	6.6	6.5	6.6	7.0
	Mid-flood	5.2	6.2	6.8	6.6	6.8	5.7	5.6	6.9

Note:

(1) Notification of temporary suspension of water quality monitoring has been approved by EPD on 30 August 2019. No impact water quality monitoring was scheduled since 30 August 2019.

(2) The post-construction water quality monitoring commenced on 27 November 2019 and completed on 23 December 2019.

Table 2.17 Summary of Averages Level of Depth-Averaged Turbidity Level of Baseline Monitoring and Impact Monitoring Period

Monitoring Station	Tide	Average Baseline Monitoring	Average Impact Monitoring						Post Construction Monitoring
			Oct 2013 - Oct 2014	Nov 2014 - Oct 2015	Nov 2015 - Oct 2016	Nov 2016 - Oct 2017	Nov 2017 - Oct 2018	Nov 2018 - Aug 2019	
IS(Mf)16	Mid-ebb	8.9	5.8	10.5	9.4	7.3	6.1	6.4	9.3
	Mid-flood	11.3	5.8	10.1	9.1	7.5	6.9	7.0	9.0
IS(Mf)9	Mid-ebb	8.2	5.9	10.4	9.2	7.3	6.8	6.1	7.2
	Mid-flood	10.2	5.8	10.1	8.9	7.8	8.3	6.9	10.0
IS8/IS8(N)	Mid-ebb	8.4	5.9	10.4	9.1	8.1	8.1	7.2	7.3
	Mid-flood	11.9	5.9	10.1	8.9	9.1	9.0	6.5	7.4
SR4/SR4(N)/SR4(N2)	Mid-ebb	8.9	5.9	10.4	9.1	8.0	7.6	6.6	6.6
	Mid-flood	10.3	5.9	10.2	8.8	8.2	8.7	6.1	6.7
SR4a	Mid-ebb	8.9	5.8	10.3	9.1	8.3	8.1	5.8	5.6
	Mid-flood	7.8	5.8	10.0	8.9	8.5	8.6	5.9	6.9

Note:

(1) Notification of temporary suspension of water quality monitoring has been approved by EPD on 30 August 2019. No impact water quality monitoring was scheduled since 30 August 2019.

(2) The post-construction water quality monitoring commenced on 27 November 2019 and completed on 23 December 2019.

Table 2.18 Summary of Averages Level of Depth-Averaged SS Level of Baseline Monitoring and Impact Monitoring Period

Monitoring Station	Tide	Average Baseline Monitoring	Average Impact Monitoring						Post Construction Monitoring
			Oct 2013 - Oct 2014	Nov 2014 - Oct 2015	Nov 2015 - Oct 2016	Nov 2016 - Oct 2017	Nov 2017 - Oct 2018	Nov 2018 - Aug 2019	
IS(Mf)16	Mid-ebb	11.3	6.3	14.3	13.0	9.2	6.9	6.9	9.6
	Mid-flood	10.4	6.1	13.8	12.6	9.0	7.6	6.8	10.9
IS(Mf)9	Mid-ebb	10.9	6.3	14.1	12.8	9.1	7.0	6.5	10.0
	Mid-flood	14.7	6.2	13.7	12.4	9.5	8.8	6.9	11.2
IS8/IS8(N)	Mid-ebb	11.3	6.1	14.2	12.7	9.2	7.9	7.5	9.7
	Mid-flood	13.5	6.2	13.9	12.3	10.2	9.8	6.9	9.9
SR4/SR4(N)/SR4(N2)	Mid-ebb	11.1	6.3	14.2	12.6	9.5	7.9	6.9	9.7
	Mid-flood	12.2	6.2	13.9	12.3	10.3	9.7	6.8	10.0
SR4a	Mid-ebb	9.1	6.2	14.1	12.7	10.2	7.9	6.3	8.5
	Mid-flood	9.8	6.1	13.7	12.3	10.7	9.9	6.2	9.7

Note:

(1) Notification of temporary suspension of water quality monitoring has been approved by EPD on 30 August 2019. No impact water quality monitoring was scheduled since 30 August 2019.

(2) The post-construction water quality monitoring commenced on 27 November 2019 and completed on 23 December 2019.

18 Action Level and 1 Limit Level exceedances of SS, 1 Action Level and 1 Limit Level exceedances of Turbidity and 253 Action Level and 25 Limit Level exceedances of DO were recorded for water quality monitoring during the impact monitoring period. Summary of the exceedances is reported in *Table 2.19*. Actions were taken in accordance with the Event Action Plan as presented in *Appendix G*. The exceedances were considered not related to this Contract upon further investigation. Detailed investigation reports on exceedances were presented in *First, Nineteenth, Forty-sixth to Fifty-third, Fifty-fifth to Fifty-ninth, Sixty-seventh, Sixty-ninth and Seventieth Monthly EM&A Reports*.

Table 2.9 ***Summary of Action Level and Limit Level Exceedance of Water Quality Monitoring***

Period	Station	Parameter	Number of Action Level Exceedance(s)	Number of Limit Level Exceedance(s)
November 2013	SR4a	SS	1	-
May 2015	SR4a	SS	1	-
August 2017	CS(Mf)3(N)	DO(S&M)	1	1
	CS(Mf)3(N)	DO(B)	5	4
	CS(Mf)5	DO(S&M)	7	2
	CS(Mf)5	DO(B)	7	7
	IS(Mf)16	DO(S&M)	2	-
	IS(Mf)16	DO(B)	4	-
	IS(Mf)9	DO(B)	1	-
	SR4a	DO(B)	3	-
September 2017	IS8	SS	1	-
	CS(Mf)3(N)	DO(S&M)	11	-
	CS(Mf)3(N)	DO(B)	5	-
	CS(Mf)5	DO(S&M)	12	-
	CS(Mf)5	DO(B)	17	-
	IS(Mf)16	DO(S&M)	3	-
	IS(Mf)16	DO(B)	7	-
	IS(Mf)9	DO(S&M)	3	-
	IS(Mf)9	DO(B)	2	-
	IS8	DO(S&M)	3	-
	IS8	DO(B)	2	-
	SR4	DO(S&M)	5	-
	SR4	DO(B)	2	-
	SR4a	DO(S&M)	7	-
	SR4a	DO(B)	7	-
	IS8	SS	1	-
	IS8	Turbidity	-	1
October 2017	SR4	SS	1	-
	SR4a	SS	1	-
	CS(Mf)5	DO(S&M)	1	-
November 2017	CS(Mf)5	DO(B)	4	-
	IS(Mf)9	SS	1	-
	IS(Mf)9	SS	2	-
December 2017	SR4	SS	1	-
	SR4a	SS	1	-
	IS8	SS	2	-
January 2018	SR4a	SS	1	-
February 2018	SR4a	SS	1	-
March 2018	IS8	SS	1	-
May 2018	IS8	DO(B)	1	-
June 2018	SR4a	DO(B)	2	-
	SR4a	Turbidity	1	-
July 2018	IS(Mf)16	DO(B)	1	-
	IS8	DO(B)	1	-
	SR4a	DO(B)	2	1
	SR4a	SS	-	1
August 2018	IS(Mf)16	DO(S&M)	3	-
	IS(Mf)16	DO(B)	4	-
	IS(Mf)9	DO(S&M)	1	-
	IS(Mf)9	DO(B)	2	-

	IS8	DO(S&M)	-	1
	IS8	DO(B)	3	-
	SR4(N)	DO(S&M)	5	-
	SR4(N)	DO(B)	5	-
	SR4a	DO(S&M)	3	-
	SR4a	DO(B)	5	1
September 2018	IS(Mf)16	DO(S&M)	5	1
	IS(Mf)16	DO(B)	7	-
	IS(Mf)9	DO(S&M)	5	-
	IS(Mf)9	DO(B)	3	-
	IS8	DO(S&M)	5	-
	IS8	DO(B)	3	1
	SR4(N)	DO(S&M)	7	-
	SR4(N)	DO(B)	5	1
	SR4a	DO(S&M)	1	2
	SR4a	DO(B)	7	-
May 2019	IS8	SS	1	-
	SR4(N)	SS	1	-
July 2019	IS(Mf)16	DO(S&M)	1	-
	IS(Mf)16	DO(B)	4	1
	IS(Mf)9	DO(B)	1	-
	IS8(N)	DO(B)	2	1
	SR4(N2)	DO(S&M)	1	-
	SR4(N2)	DO(B)	7	-
	SR4a	DO(S&M)	1	-
	SR4a	DO(B)	6	-
August 2019	IS(Mf)16	DO(S&M)	2	-
	IS(Mf)16	DO(B)	2	-
	IS(Mf)9	DO(S&M)	1	-
	IS8(N)	DO(S&M)	2	-
	IS8(N)	DO(B)	2	-
	SR4(N2)	DO(S&M)	4	-
	SR4(N2)	DO(B)	1	1
	SR4a	DO(S&M)	3	-
	SR4a	DO(B)	6	-

In general, DO, turbidity and suspended solids levels were varied across the impact monitoring period and these variations were however not consistent throughout the impact monitoring period.

According to the EIA prediction, no SS exceedance was anticipated from this Project at the water sensitive receivers nearby the vicinity of Contract (WSR 22a, WSR 22b and WSR 22c). Although exceedances on depth-averaged SS were recorded in the impact monitoring period, the exceedances were considered not related to this Contract upon further investigation. The impact monitoring results were considered influenced by fluctuation of background regional water quality instead of indicating any unacceptable impacts from this Contract.

During the post-construction water quality monitoring, no non-compliance of the water quality limit for DO, turbidity and suspended solids levels was recorded.

2.4 DOLPHIN MONITORING

2.4.1 Monitoring Requirements

Impact dolphin monitoring is required to be conducted by a qualified dolphin specialist team to evaluate whether there have been any effects on the Indo-Pacific humpback dolphin *Sousa chinensis* (i.e. Chinese White Dolphin) from the Contract. In order to fulfil the EM&A requirements and make good use of available resources, the impact line transect dolphin monitoring data was collected by HyD's Contract No. HY/2011/03 Hong Kong-Zhuhai-Macao Bridge, Hong Kong Link Road - Section between Scenic Hill and Hong Kong Boundary Crossing Facilities between November 2013 and September 2019 and Contract No. HY/2012/08 TMCLKL Northern Connection Sub-Sea Tunnel Section between October 2019 and February 2020.

Operational phase dolphin monitoring was undertaken by Contract No. HY/2012/08 Tuen Mun-Chek Lap Kok Link – Northern Connection Sub-sea Tunnel Section.

2.4.2 Monitoring Equipment

Table 2.20 summarizes the equipment used for the impact dolphin monitoring.

Table 2.20 *Dolphin Monitoring Equipment*

Equipment	Model
Global Positioning System (GPS)	Garmin 18X-PC Geo One Phottix
Camera	Nikon D90 300m 2.8D fixed focus Nikon D90 20-300m zoom lens
Laser Binoculars	Infinitor LRF 1000
Marine Binocular	Bushell 7 x 50 marine binocular with compass and reticules
Vessel for Monitoring	65 foot single engine motor vessel with viewing platform 4.5m above water level

2.4.3 *Monitoring Parameter, Frequencies & Duration*

The dolphin monitoring covered all transect lines in Northeast Lantau (NEL) and the Northwest Lantau (NWL) survey areas twice per month throughout the entire construction period. The monitoring data were compatible with, and should be made available for, long-term studies of small cetacean ecology in Hong Kong. In order to provide a suitable long-term dataset for comparison, identical methodology and line transects employed in baseline dolphin monitoring was followed in the impact dolphin monitoring.

2.4.4 *Monitoring Location*

The impact dolphin monitoring was carried out in the NEL and NWL along the line transect as depicted in *Figure 2.4*. The co-ordinates of all transect lines are shown in *Table 2.21* below.

Table 2.21 *Impact Dolphin Monitoring Line Transect Co-ordinates*

Line No.		Easting	Northing	Line No.		Easting	Northing
1	Start Point	804671	815456 ⁽¹⁾	13	Start Point	816506	819480
1	End Point	804671	831404	13	End Point	816506	824859
2	Start Point	805476 ⁽¹⁾	820800 ⁽¹⁾	14	Start Point	817537	820220
2	End Point	805476 ⁽¹⁾	826654	14	End Point	817537	824613

Line No.		Easting	Northing	Line No.		Easting	Northing
3	Start Point	806464	821150 ⁽¹⁾	15	Start Point	818568	820735
3	End Point	806464	822911	15	End Point	818568	824433
4	Start Point	807518	821500 ⁽¹⁾	16	Start Point	819532	821420
4	End Point	807518	829230	16	End Point	819532	824209
5	Start Point	808504	821850 ⁽¹⁾	17	Start Point	820451	822125
5	End Point	808504	828602	17	End Point	820451	823671
6	Start Point	809490	822150 ⁽¹⁾	18	Start Point	821504	822371
6	End Point	809490	825352	18	End Point	821504	823761
7	Start Point	810499	822000 ⁽¹⁾	19	Start Point	822513	823268
7	End Point	810499	824613	19	End Point	822513	824321
8	Start Point	811508	821123 ⁽¹⁾	20	Start Point	823477	823402
8	End Point	811508	824254	20	End Point	823477	824613
9	Start Point	812516	821303 ⁽¹⁾	21	Start Point	805476	827081
9	End Point	812516	824254	21	End Point	805476	830562
10	Start Point	813525	821176 ⁽¹⁾	22	Start Point	806464	824033
10	End Point	813525	824657	22	End Point	806464	829598
11	Start Point	814556	818853 ⁽¹⁾	23	Start Point	814559	821739
11	End Point	814556	820992	23	End Point	814559	824768
12	Start Point	815542	818807	24	Start Point	805476 ⁽¹⁾	815900 ⁽¹⁾
12	End Point	815542	824882	24	End Point	805476 ⁽¹⁾	819100 ⁽¹⁾

Note: (1) Proposal on the changes of transect lines for dolphin monitoring was approved by EPD on

28 July 2017 (Reference number: (19) in EP2/G/A/129 Pt. 8).

2.4.5 *Action & Limit Levels*

The Action and Limit levels of dolphin impact monitoring are shown in *Appendix C*. The Event Action Plan is presented in *Appendix H*.

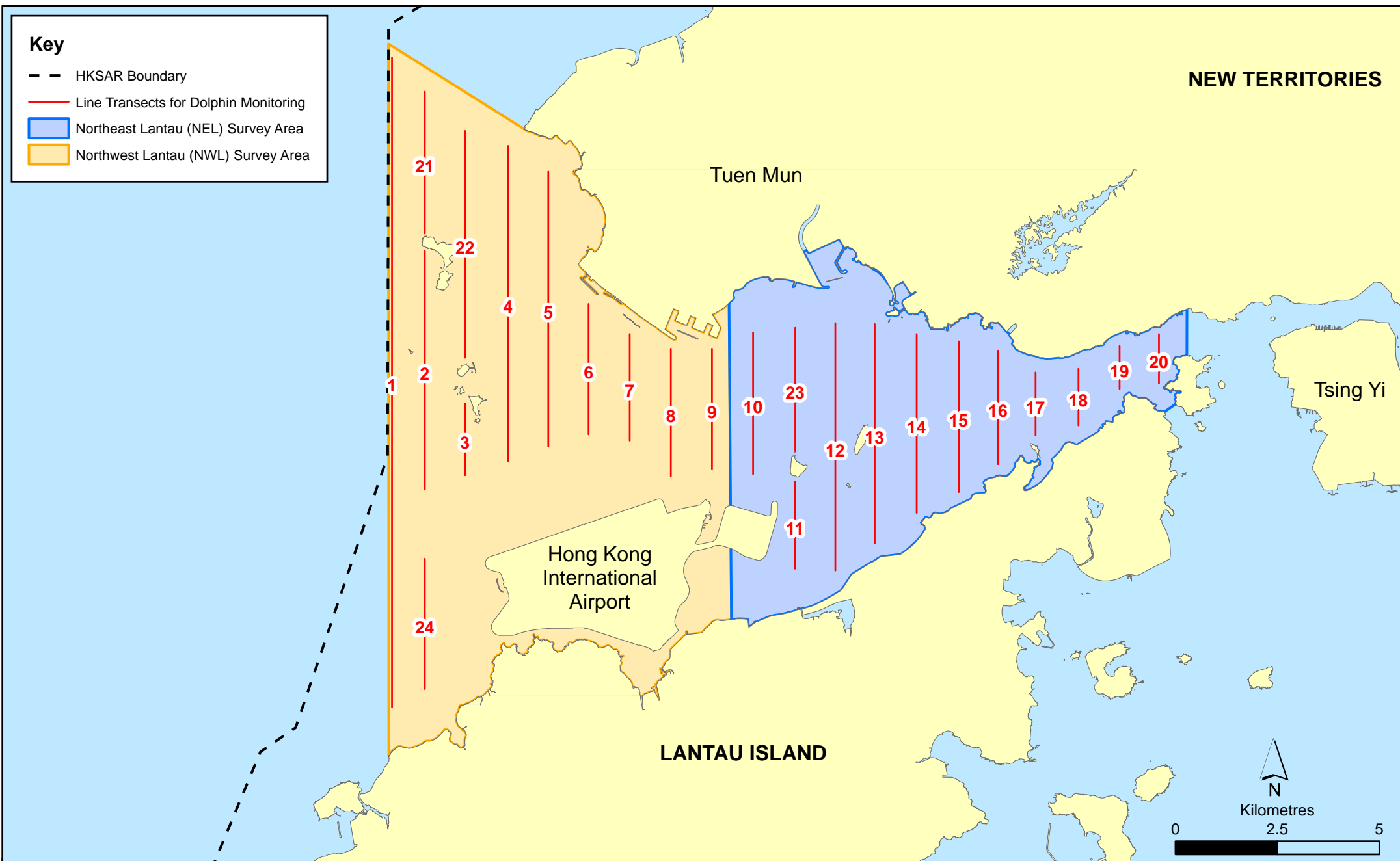


Figure 2.4

Layout of Transect Lines of Dolphin Monitoring in Northwest and Northeast Lantau Areas

Note: Proposal on the changes of transect lines for dolphin monitoring was approved by EPD on 28 July 2017 (Reference number: (19) in EP2/G/A/129 Pt. 8)

2.4.6 *Monitoring Schedule for the Impact Monitoring Period*

The dolphin monitoring schedules for the impact monitoring period are provided in the *First to Seventy-Sixth Monthly EM&A Reports*.

2.4.7 *Results & Observations*

A total of 152 monitoring events for dolphin monitoring events were undertaken during the impact monitoring period.

Summary of the average encounter rates of Chinese White Dolphins in NEL and NWL survey areas and comparison of average dolphin group size are shown in *Tables 2.22 and 2.23*.

Table 2.22 *Average Dolphin Encounter Rates*

	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)	
	Northeast Lantau	Northwest Lantau	Northeast Lantau	Northwest Lantau
Impact Phase (2018- 19)	0.00	1.42 ± 1.80	0.00	3.62 ± 4.93
Impact Phase (2017- 18)	0.00	2.68 ± 3.04	0.00	9.02 ± 14.63
Impact Phase (2016- 17)	0.00	2.35 ± 2.62	0.00	8.57 ± 11.05
Impact Phase (2015- 16)	0.00	2.10 ± 1.83	0.00	8.54 ± 8.53
Impact Phase (2014- 15)	0.11 ± 0.54	2.54 ± 2.49	0.11 ± 0.54	11.64 ± 14.04
Impact Phase (2013- 14)	0.22 ± 0.74	6.93 ± 4.08	0.76 ± 2.59	26.31 ± 17.56
Transitional Phase (2012- 13)	1.70 ± 2.26	7.68 ± 4.36	4.75 ± 7.61	27.51 ± 18.06

Baseline Phase (2011-12)	6.05 ± 5.04	7.75 ± 5.69	19.91 ± 21.30	29.57 ± 26.96
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Comparison of average daily dolphin encounter rates from six years of impact monitoring phases (November 2013 - October 2019), transitional phase (November 2012 - October 2013) and baseline phase monitoring periods (February 2011 - January 2012). (± denotes the standard deviation of the value)

Table 2.23 Comparison of Average Dolphin Group Size

	Average Dolphin Group Size		
	Overall	Northeast Lantau	Northwest Lantau
Impact Phase (2018-19)	2.52 ± 1.45 (n = 27)	0.00	2.52 ± 1.45 (n = 27)
Impact Phase (2017-18)	3.12 ± 2.86 (n = 42)	0.00	3.12 ± 2.86 (n = 42)
Impact Phase (2016-17)	3.51 ± 2.68 (n = 43)	0.00	3.51 ± 2.68 (n = 43)
Impact Phase (2015-16)	3.73 ± 3.14 (n = 45)	1.00 (n = 1)	3.80 ± 3.14 (n = 44)
Impact Phase (2014-15)	4.24 ± 3.15 (n = 54)	1.00 (n = 1)	4.30 ± 3.15 (n = 53)
Impact Phase (2013-14)	3.76 ± 2.57 (n = 136)	5.00 ± 2.71 (n = 4)	3.73 ± 2.57 (n = 132)
Transitional Phase (2012-13)	3.37 ± 2.98 (n = 186)	2.64 ± 2.38 (n = 22)	3.47 ± 3.05 (n = 164)
Baseline Phase (2011-12)	3.32 ± 2.86 (n = 288)	2.80 ± 2.35 (n = 79)	3.52 ± 3.01 (n = 209)

Comparison of average dolphin group size from six years of impact monitoring phases (November 2013 - October 2019), transitional phase (November 2012 - October 2013) and baseline phase monitoring periods (February 2011 - January 2012). (± denotes the standard deviation of the value)

11 Action Level and 19 Limit Level exceedances were recorded for dolphin monitoring during the impact monitoring period. Detailed investigation reports on exceedances were presented in *First to Twenty-fifth Quarterly EM&A Reports*.

According to the baseline results of the approved EIA Report, the dolphin groups were largely sighted near waters around Lung Kwu Chau and Sha Chau. There was no dolphin sighted along the alignment of this Contract. Dolphins are observed heavily utilized area around Lung Kwu Chau and less frequently in the North Lantau region where the works area of this Contract is situated. The monitoring results in the impact

monitoring period are considered to be in line with the EIA predictions, and the review of monitoring data suggested that no unacceptable impacts was noted from the marine works under this Contract.

2.4.8 *Marine Mammal Exclusion Zone Monitoring*

Daily marine mammal exclusion zone monitoring was undertaken between November 2013 and June 2019 during the period of marine works under this Contract. No marine works were undertaken since July 2019, therefore, daily 250 m marine mammal exclusion zone monitoring was not undertaken since July 2019.

Passive Acoustic Monitoring (PAM) was undertaken between September 2014 and September 2015 as marine piling works was carried out outside the daylight hours.

During the exclusion zone monitoring, one sighting of the Indo-Pacific humpback dolphin *Sousa chinensis* within the 250 m marine mammal exclusion zone of the landing platform workfront nearby Viaduct D was recorded on 23 January 2014 by the marine mammal observer during the daylight hours, and the marine construction work was subsequently suspended. The *Dolphin Intrusion Report* is presented in the *Appendix K* of the *Third Monthly EM&A Report*.

2.5 *BORED PILING MONITORING*

Baseline bored piling monitoring, including land-based theodolite tracking, underwater noise monitoring and acoustic behavioural monitoring, were undertaken from September to October 2013 by qualified dolphin specialist. Detailed baseline monitoring results and Action/ Limit Level are presented in the Baseline Monitoring Report ⁽¹⁾ under this Contract.

Impact monitoring of bored piling monitoring was conducted from 3 March to 25 April 2014. Schedule of bored piling monitoring are detailed in the *Fifth*

⁽¹⁾ Agreement No. CE 48/2011 (EP) Baseline Environmental Monitoring for Tuen Mun-Chek Lap Kok Link Southern Connection Viaduct Section. Baseline Environmental Monitoring Report. Submitted on 19 February 2014 and subsequently accepted with no comment by EPD.

and *Sixth Monthly EM&A Reports*. Due to rare occurrence of dolphin in the study area, no impact associated from bored piling works could be identified. Action and Limit Level Exceedances were however recorded in the Underwater Noise and Acoustic Behavioural Monitoring. Actions were taken according to the Event Action Plan (*Appendix G*). The detailed results of impact bored piling monitoring are presented in the *Impact Monitoring Report for Underwater Noise and Dolphin Acoustic Behavioural Monitoring* and *Impact Monitoring Report for Land-based Dolphin Behavioural and Movement Monitoring* submitted under separate covers.

2.6 **POST-TRANSLOCATION CORAL MONITORING**

4 events of Post-Translocation Coral Monitoring were conducted on 17 January, 16 April, 24 July and 23 October 2014 and no exceedance of Action nor Limit Levels was recorded. The results were detailed in the *First to Fourth Quarterly Post-Translocation Coral Monitoring Reports*. The findings indicated that no Action or Limit Levels exceedances was recorded for coral monitoring as increase in percentage of partial mortality was not detected for both the tagged translocated and natural coral colonies when comparing to the pre-translocation dataset.

The result is in a line with the EIA prediction as the impact on coral was predicted minor.

2.7 **EM&A SITE INSPECTION**

Site inspections were carried out on weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures under the Contract. A total of 330 site inspections were carried out in the impact monitoring period. Key observations were summarized in the section of *EM&A Site Inspection* in the *First to Seventy-seventh Monthly EM&A Reports*. The Contractor has rectified all of the observations identified during environmental site inspections in the impact monitoring period.

2.8 WASTE MANAGEMENT STATUS

Wastes generated during the impact monitoring period include construction wastes (inert and non-inert), imported fill, recyclable materials, chemical waste and marine sediments. The summary of waste generation amount is presented in *Appendix H*.

Waste monitoring and audit programme has been undertaken during the impact monitoring period. Wastes arising from this Contract have been managed in accordance with the recommendations in the EIA Report, the EM&A Manual, the Waste Management Plan and other relevant statutory requirements.

2.9 ENVIRONMENTAL LICENSES AND PERMITS

A summary of the environmental licenses and permits for this Contract is presented in *Table 2.24* below.

Table 2.24 Summary of Environmental Licenses and Permits

License/ Permit	License or Permit No.	Date of Issue	Date of Expiry	License/ Permit Holder	Remarks
Environmental Permit	EP-354/2009/A	08-Dec-10	NA	HyD	Tuen Mun- Chek Lap Kok Link
Environmental Permit	EP-354/2009/B	28-Jan-14	NA	HyD	Tuen Mun- Chek Lap Kok Link
Environmental Permit	EP-354/2009/C	10-Dec-14	N/A	HyD	Tuen Mun- Chek Lap Kok Link (superseded by EP-354/2009/D in March 2015)
Environmental Permit	EP-354/2009/D	13-Mar-15	N/A	HyD	Tuen Mun- Chek Lap Kok Link
Environmental Permit	EP-353/2009/I	17-Jul-15	N/A	HyD	Hong Kong Boundary Crossing Facilities (effective from September 2015)
Environmental Permit	EP-353/2009/K	11-Apr-16	N/A	HyD	Hong Kong Boundary Crossing Facilities
Chemical Waste Registration	5213-951-G2380-17	12-Jun-14	N/A	GCL	Viaducts A, B, C, D & E
Chemical Waste Registration	5213-961-G2380-13	10-Oct-13	N/A	GCL	Chemical waste produced in Contract HY/2012/07 (Area 1 adjacent to Cheng Tung Road, Siu Ho Wan)
Chemical Waste Registration	5213-961-G2380-14	10-Oct-13	N/A	GCL	Chemical waste produced in Contract HY/2012/07 (Area 2 adjacent to Cheung Tung Road, Pak Mong Village)
Chemical Waste Registration	5213-974-G2588-03	04-Nov-13	N/A	GCL	Chemical waste produced in Contract HY/2012/07 (WA5 adjacent to Cheung Tung Road, Yam O)
Construction Dust Notification	361571	05-Jul-13	N/A	GCL	-
Construction Dust Notification	362093	17-Jul-13	N/A	GCL	For Area 23
Construction Waste Disposal Account	7017735	10-Jul-13	N/A	GCL	-

License/ Permit	License or Permit No.	Date of Issue	Date of Expiry	License/ Permit Holder	Remarks
Construction Waste Disposal Account	7019470	03-Mar-14	Vessel CHIT Account	GCL	Vessel CHIT Account
Waste Water Discharge License	WT00019017-2014	13-May-14	31-May-19	GCL	Discharge for marine portion
Waste Water Discharge License	WT00019018-2014	13-May-14	31-May-19	GCL	Discharge for land portion
Dumping Permit/ Loading Permit (Type 1 – Open Sea Disposal)	(4) in EP/MD/14-075	25-Sep-13	N/A	GCL	-
Marine Dumping Permit	EP/MD/14-075	28-Jan-14	27-Jul-14	GCL	For dumping Type I Sediment
Marine Dumping Permit	EP/MD/15-203	28-Jan-15	27-Jul-15	GCL	For dumping Type I sediment
Marine Dumping Permit	EP/MD/15-257	02-Apr-15	07-Oct-15	GCL	For dumping Type I sediment
Marine Dumping Permit	EP/MD/16-102	13-Oct-15	16-Apr-16	GCL	For dumping Type I sediment
Marine Dumping Permit	EP/MD/16-138	10-Dec-15	13-Jun-16	GCL	For dumping Type I sediment
Marine Dumping Permit	EP/MD/17-037	14-Jun-16	13-Dec-16	GCL	For dumping Type I sediment
Marine Dumping Permit	EP/MD/17-115	20-Oct-16	31-Dec-16	GCL	For dumping Type I sediment
Marine Dumping Permit	EP/MD/17-153	01-Jan-17	30-Jun-17	GCL	For dumping Type I sediment
Marine Dumping Permit	EP/MD/18-031	01-Jul-17	31-Dec-17	GCL	For dumping Type I sediment
Marine Dumping Permit	EP/MD/14-155	01-Apr-14	30-Apr-14	GCL	For dumping Type I (Dedicated Site) and Type II Sediment
Marine Dumping Permit	EP/MD/15-028	01-Jun-14	30-Jun-14	GCL	For dumping Type I (Dedicated Site) and Type II sediment
Marine Dumping Permit	EP/MD/15-066	28-Jul-14	27-Jan-15	GCL	For dumping Type I sediment
Marine Dumping Permit	EP/MD/15-065	01-Aug-14	31-Aug-14	GCL	For dumping Type I (Dedicated Site) and Type II sediment
Marine Dumping Permit	EP/MD/15-098	01-Sep-14	30-Sep-14	GCL	For dumping Type I (Dedicated Site) and Type II sediment
Marine Dumping Permit	EP/MD/15-120	01-Oct-14	31-Oct-14	GCL	For dumping Type I (Dedicated Site) and Type II sediment
Marine Dumping Permit	EP/MD/15-161	25-Nov-14	31-Dec-14	GCL	For dumping Type I (Dedicated Site) and Type II sediment
Marine Dumping Permit	EP/MD/15-186	01-Jan-15	31-Jan-15	GCL	For dumping Type I (Dedicated Site) and Type II sediment

License/ Permit	License or Permit No.	Date of Issue	Date of Expiry	License/ Permit Holder	Remarks
Marine Dumping Permit	EP/MD/15-234	27-Feb-15	31-Mar-15	GCL	For dumping Type I (Dedicated Site) and Type II sediment
Marine Dumping Permit	EP/MD/15-248	27-Mar-15	26-Apr-15	GCL	For dumping Type I (Dedicated Site) and Type II sediment
Marine Dumping Permit	EP/MD/16-002	17-Apr-15	26-May-15	GCL	For dumping Type I (Dedicated Site) and Type II sediment
Marine Dumping Permit	EP/MD/16-020	22-May-15	26-Jun-15	GCL	For dumping Type I (Dedicated Site) and Type II sediment
Marine Dumping Permit	EP/MD/16-049	22-Jul-15	26-Aug-15	GCL	For dumping Type I (Dedicated Site) and Type II sediment
Marine Dumping Permit	EP/MD/16-071	19-Aug-15	26-Sep-15	GCL	For dumping Type I (Dedicated Site) and Type II sediment
Marine Dumping Permit	EP/MD/16-089	22-Sep-15	26-Oct-15	GCL	For dumping Type I (Dedicated Site) and Type II sediment
Marine Dumping Permit	EP/MD/16-112	22-Oct-15	29-Nov-15	GCL	For dumping Type I (Dedicated Site) and Type II sediment
Marine Dumping Permit	EP/MD/16-134	27-Nov-15	29-Dec-15	GCL	For dumping Type I (Dedicated Site) and Type II sediment
Marine Dumping Permit	EP/MD/16-147	18-Dec-15	29-Jan-16	GCL	For dumping Type I (Dedicated Site) and Type II sediment
Marine Dumping Permit	EP/MD/16-166	25-Jan-16	29-Feb-16	GCL	For dumping Type I (Dedicated Site) and Type II sediment
Marine Dumping Permit	EP/MD/16-186	26-Feb-16	31-Mar-16	GCL	For dumping Type I (Dedicated Site) and Type II sediment
Marine Dumping Permit	EP/MD/16-203	29-Mar-16	30-Apr-16	GCL	For dumping Type I (Dedicated Site) and Type II sediment
Marine Dumping Permit	EP/MD/17-028	31-May-16	30-Jun-16	GCL	For dumping Type I (Dedicated Site) and Type II sediment
Marine Dumping Permit	EP/MD/17-047	22-Jun-16	31-Jul-16	GCL	For dumping Type I (Dedicated Site) and Type II sediment

License/ Permit	License or Permit No.	Date of Issue	Date of Expiry	License/ Permit Holder	Remarks
Marine Dumping Permit	EP/MD/17-066	19-Jul-16	31-Aug-16	GCL	For dumping Type I (Dedicated Site) and Type II sediment
Marine Dumping Permit	EP/MD/17-084	22-Aug-16	30-Sep-16	GCL	For dumping Type I (Dedicated Site) and Type II sediment
Marine Dumping Permit	EP/MD/17-102	28-Sep-16	31-Oct-16	GCL	For dumping Type I (Dedicated Site) and Type II sediment
Marine Dumping Permit	EP/MD/17-141	24-Nov-16	31-Dec-16	GCL	For dumping Type I (Dedicated Site) and Type II sediment
Marine Dumping Permit	EP/MD/17-154	01-Jan-17	31-Jan-17	GCL	For dumping Type I (Dedicated Site) and Type II sediment
Marine Dumping Permit	EP/MD/17-168	01-Feb-17	28-Feb-17	GCL	For dumping Type I (Dedicated Site) and Type II sediment
Marine Dumping Permit	EP/MD/17-185	1-Mar-17	31-Mar-17	GCL	For dumping Type I (Dedicated Site) and Type II sediment
Marine Dumping Permit	EP/MD/17-196	01-Jul-17	31-Jul-17	GCL	For dumping Type II sediment
Marine Dumping Permit	EP/MD/18-047	1-Aug-17	31-Aug-17	GCL	For dumping Type I (Dedicated Site) and Type II sediment
Marine Dumping Permit	EP/MD/18-061	16-Sep-17	15-Oct-17	GCL	For dumping Type I (Dedicated Site) and Type II sediment
Construction Dust Notification	361571	05-Jul-13	N/A	GCL	-
Construction Dust Notification	362093	17-Jul-13	N/A	GCL	For Area 23
Construction Noise Permit	GW-RW0660-13	27-Sep-13	02-Feb-14	GCL	For night works and works in general holidays
Construction Noise Permit	GW-RS1129-13	31-Oct-13	30-Apr-14	GCL	For night works and works in general holidays
Construction Noise Permit	GW-RS1186-13	23-Oct-13	24-Dec-13	GCL	For night works and works in general holidays
Construction Noise Permit	GW-RS1187-13	24-Oct-13	28-Feb-14	GCL	For night works and works in general holidays
Construction Noise Permit	GW-RS1423-13	11-Dec-13	30-Apr-14	GCL	Renewal for marine portion

License/ Permit	License or Permit No.	Date of Issue	Date of Expiry	License/ Permit Holder	Remarks
Construction Noise Permit	GW-RS1413-13	17-Dec-13	26-Mar-14	GCL	For loading and unloading on NLH near viaduct A & B
Construction Noise Permit	GW-RW0925-13	19-Dec-13	17-Apr-14	GCL	Renewal of WA5 site office erection
Construction Noise Permit	GW-RS0034-14	14-Jan-14	29-Mar-14	GCL	For night works and works in general holiday
Construction Noise Permit	GW-RW0123-14	27-Feb-14	27-Aug-14	GCL	For night works and works in general holiday
Construction Noise Permit	GW-RS0236-14	27-Mar-14	14-May-14	GCL	For loading & unloading on NLH near Viaducts A & B
Construction Noise Permit	GW-RS0226-14	30-Mar-14	29-Sep-14	GCL	For loading & unloading on NLH near Viaduct D
Construction Noise Permit	GW-RS0280-14	31-Mar-14	31-May-14	GCL	For excavation at Pier B9
Construction Noise Permit	GW-RS0331-14	04-Apr-14	06-Jul-14	GCL	Broad permit for works at seafront & marine piers
Construction Noise Permit	GW-RS0338-14	04-Apr-14	03-Jun-14	GCL	For bored piling works between Pier E13 and HKBCF
Construction Noise Permit	GW-RS0299-14	07-Apr-14	05-Jul-14	GCL	Pier B8 at CEDD Access Road
Construction Noise Permit	GW-RS0419-14	15-May-14	13-Nov-14	GCL	For loading & unloading on NLH near Viaducts A & B
Construction Noise Permit	GW-RS0646-14	27-Jun-14	26-Oct-14	GCL	Broad Permit for Works at Seafront & Marine Piers & Pier B9
Construction Noise Permit	GW-RS0647-14	28-Jun-14	26-Oct-14	GCL	Pier C7 & D8 at CEDD Access Road
Construction Noise Permit	GW-RS0700-14	21-Jul-14	31-Dec-14	GCL	For loading & unloading on NLH near Viaduct A & B
Construction Noise Permit	GW-RS0792-14	31-Jul-14	24-Dec-14	GCL	Broad Permit for Works at Seafront & Marine Piers & Pier B9
Construction Noise Permit	GW-RS0854-15	12-Aug-14	15-Feb-16	GCL	Pre-casted pile cap shell installation at E10-E13
Construction Noise Permit	GW-RW0640-14	28-Aug-14	27-Feb-15	GCL	General works at WA5
Construction Noise Permit	GW-RS0942-14	11-Sep-14	14-Mar-15	GCL	For plant mobilization using tractor

License/ Permit	License or Permit No.	Date of Issue	Date of Expiry	License/ Permit Holder	Remarks
Construction Noise Permit	GW-RS1032-14	25-Sep-14	28-Mar-15	GCL	For load unload at NLH near Viaduct D
Construction Noise Permit	GW-RS1129-14	17-Oct-14	31-Dec-14	GCL	For safety fences at Pier D9
Construction Noise Permit	GW-RS1130-14	20-Oct-14	22-Apr-15	GCL	For plant mobilization using tractor
Construction Noise Permit	GW-RS1135-14	17-Oct-14	15-Dec-14	GCL	For TTA Case 60-2 Ch.1.3E-3.6E
Construction Noise Permit	GW-RS1188-14	30-Oct-14	31-Dec-14	GCL	For TTA Cases 50 Airport Road-5.3
Construction Noise Permit	GW-RS1225-14	31-Oct-14	02-May-15	GCL	For Broad Permit
Construction Noise Permit	GW-RS1383-14	15-Dec-14	28-Feb-15	GCL	TTA Case 060-12 Ch.1.0-4.2
Construction Noise Permit	GW-RS1386-14	15-Dec-14	15-Mar-15	GCL	TTA Case 009 Ch.2.3E-4.2E
Construction Noise Permit	GW-RS1403-14	15-Dec-14	28-Feb-15	GCL	TTA Case 050 Series Airport Rd to NLH Ch.5.3
Construction Noise Permit	GW-RS0078-15	28-Jan-15	29-Jul-15	GCL	For plant mobilization using tractor with trailer
Construction Noise Permit	GW-RS0084-15	28-Jan-15	30-Apr-15	GCL	Pier B8 formwork erection
Construction Noise Permit	GW-RS0137-15	12-Feb-15	15-Aug-15	GCL	Pre-casted pile cap shell installation at E10-E13
Construction Noise Permit	GW-RS0206-15	24-Feb-15	30-Apr-15	GCL	B9-B16 Pier Head Segments Erection
Construction Noise Permit	GW-RW0093-15	26-Feb-15	26-Aug-15	GCL	General works at WA5
Construction Noise Permit	GW-RS0212-15	02-Mar-15	04-Jun-15	GCL	Pier A8A9 Safety Fence Erection
Construction Noise Permit	GW-RS0225-15	13-Mar-15	12-May-15	GCL	TTA Case 009 Ch.2.1E-4.2E
Construction Noise Permit	GW-RS0266-15	20-Mar-15	30-Apr-15	GCL	B8 Pier Head Segment Erection and Formwork Installation
Construction Noise Permit	GW-RS0307-15	27-Mar-15	27-Sep-15	GCL	For Load unload at NLH near Viaduct D
Construction Noise Permit	GW-RS0326-15	30-Mar-15	31-May-15	GCL	B9-B16 Pier Head Segments Erection
Construction Noise Permit	GW-RS1406-15	30-Mar-15	31-May-15	GCL	B9-B16 Pier Head Segments Erection
Construction Noise Permit	GW-RS0470-14	29-Apr-15	28-Oct-15	GCL	For Broad Permit
Construction Noise Permit	GW-RS0489-15	08-May-15	07-Aug-15	GCL	B8 Pier Head Temp Works Lifting

License/ Permit	License or Permit No.	Date of Issue	Date of Expiry	License/ Permit Holder	Remarks
Construction Noise Permit	GW-RS0491-15	08-May-15	30-Jun-15	GCL	TTA Case 009 Ch.2.1E-4.2E
Construction Noise Permit	GW-RS0539-15	14-May-15	31-Jul-15	GCL	B9-B16 Pier Head Segments Erection
Construction Noise Permit	GW-RS0691-15	23-Jun-15	22-Dec-15	GCL	For Broad Permit
Construction Noise Permit	GW-RW0695-15	30-Jun-15	30-Nov-15	GCL	Segment Erection between B6-B11 by LG1
Construction Noise Permit	GW-RS0769-15	15-Jul-15	30-Sep-15	GCL	TTA Case 009 Ch.2.1E-4.2E
Construction Noise Permit	GW-RS0809-15	29-Jul-15	29-Jan-16	GCL	For plant mobilization using tractor with trailer
Construction Noise Permit	GW-RS0855-15	12-Aug-15	11-Feb-16	GCL	Pier construction at C7, D8, D9
Construction Noise Permit	GW-RW0861-15	13-Aug-15	30-Sep-15	GCL	Portal beam installation at Pier D14
Construction Noise Permit	GW-RW0422-15	21-Aug-15	25-Jan-16	GCL	General works at WA5
Construction Noise Permit	GW-RS0911-15	27-Aug-15	26-Feb-16	GCL	Broad Permit for Seg. Launching at Land Portion
Construction Noise Permit	GW-RS1054-15	30-Sep-15	29-Mar-16	GCL	For Load unload at NLH near Viaduct D
Construction Noise Permit	GW-RS1086-15	07-Oct-15	15-Dec-15	GCL	TTA Case 009 Ch.2.1E-4.2E
Construction Noise Permit	GW-RS1144-15	20-Oct-15	19-Feb-16	GCL	For Broad Permit
Construction Noise Permit	GW-RS1046-15	04-Jan-16	31-Jan-16	GCL	Erection of GT324, GT326-GT328 sign gantry leg
Construction Noise Permit	GW-RW0045-16	27-Jan-16	25-Jul-16	GCL	General works at WA5
Construction Noise Permit	GW-RS0080-16	01-Feb-16	30-Apr-16	GCL	For Broad Permit
Construction Noise Permit	GW-RS0056-16	01-Feb-16	31-Mar-16	GCL	Broad Permit for Segment Launching at Land Portion
Construction Noise Permit	GW-RS0109-16	05-Feb-16	14-Aug-16	GCL	Pre-casted pile cap shell installation at E10-E13
Construction Noise Permit	GW-RS0279-16	29-Mar-16	30-May-16	GCL	Broad Permit for Segment Launching at Land Portion
Construction Noise Permit	GW-RS0383-16	20-Apr-16	19-Oct-16	GCL	For Broad Permit
Construction Noise Permit	GW-RW0504-16	25-May-16	31-Aug-16	GCL	Broad Permit for Segment Launching at Land Portion

License/ Permit	License or Permit No.	Date of Issue	Date of Expiry	License/ Permit Holder	Remarks
Construction Noise Permit	GW-RW0339-16	17-Jun-16	19-Dec-16	GCL	General works at WA5
Construction Noise Permit	GW-RW0707-16	11-Jul-16	30-Sep-16	GCL	Broad Permit for Segment Launching at Land Portion
Construction Noise Permit	GW-RS0718-16	13-Jul-16	13-Jan-17	GCL	Pre-casted pile cap shell installation at E10-E13
Construction Noise Permit	GW-RS0958-16	15-Sep-16	30-Nov-16	GCL	Broad Permit for Segment Launching at Land Portion
Construction Noise Permit	GW-RS1044-16	14-Oct-16	13-Apr-17	GCL	Pre-casted pile cap shell installation at E8-E13
Construction Noise Permit	GW-RS1045-16	14-Oct-16	13-Apr-17	GCL	For Broad Permit
Construction Noise Permit	GW-RS1159-16	24-Nov-16	28-Feb-17	GCL	Broad Permit for Segment Launching at Land Portion
Construction Noise Permit	GW-RS1158-16	24-Nov-16	31-Dec-16	GCL	Contingency plan for DN1000 works at Tung Chung Seafront Road
Construction Noise Permit	GW-RS1309-16	20-Dec-16	19-Jun-17	GCL	Broad Permit for Whole Site Areas
Construction Noise Permit	GW-RS0082-17	15-Feb-17	31-Mar-17	GCL	Water Pipe Works at Tung Chung
Construction Noise Permit	GW-RS0157-17	28-Feb-17	31-May-17	GCL	Broad Permit for Segment Launching at Land Portion
Construction Noise Permit	GW-RS0295-17	13-Apr-17	12-Oct-17	GCL	Pre-casted pile cap shell installation at E8-E13
Construction Noise Permit	GW-RS0408-17	11-May-17	30-Sep-17	GCL	Pre-casted pile cap shell installation at E8-E13
Construction Noise Permit	GW-RS0456-17	31-May-17	31-Jul-17	GCL	Broad Permit for Segment Launching at Land Portion
Construction Noise Permit	PP-RS0010-17	12-Jun-17	15-Sep-17	GCL	Percussive piling at Portion A
Construction Noise Permit	GW-RW0294-17	19-Jun-17	18-Dec-17	GCL	General works at WA5
Construction Noise Permit	GW-RS0540-17	20-Jun-17	15-Dec-17	GCL	Broad Permit for Whole Site Areas
Construction Noise Permit	GW-RS0639-17	31-Jul-17	29-Sep-17	GCL	Broad Permit for Segment Launching at Land Portion

License/ Permit	License or Permit No.	Date of Issue	Date of Expiry	License/ Permit Holder	Remarks
Construction Noise Permit	GW-RS0668-17	7-Aug-17	6-Feb-18	GCL	Pre-casted pile cap shell installation at E8-E13
Construction Noise Permit	GW-RS0688-17	17-Aug-17	31-Aug-17	GCL	Contingency plan for DN800T works at Tung Chung Seafront Road
Construction Noise Permit	GW-RS0829-17	29-Sep-17	30-Nov-17	GCL	Broad Permit for Segment Launching at Land Portion
Construction Noise Permit	GW-RS0954-17	5-Nov-17	30-Nov-17	GCL	Contingency plan for DN800T works at Tung Chung Seafront Road
Construction Noise Permit	GW-RS1025-17	30-Nov-17	31-Dec-17	GCL	Broad Permit for Segment Launching at Land Portion
Construction Noise Permit	GW-RS1112-17	14-Dec-17	31-Mar-18	GCL	Broad Permit for Whole Site Areas
Construction Noise Permit	GW-RW0650-17	19-Dec-17	18-Jun-18	GCL	General works at WA5
Construction Noise Permit	GW-RS1153-17	31-Dec-17	31-Mar-18	GCL	Broad Permit for Segment Launching at Land Portion
Construction Noise Permit	GW-RS0064-18	1-Feb-18	29-Jul-18	GCL	Pre-casted pile cap shell installation at E8-E13
Construction Noise Permit	GW-RS0201-18	12-Mar-18	30-Apr-18	GCL	Broad Permit for Segment Launching at Land Portion
Construction Noise Permit	GW-RS0244-18	30-Mar-18	29-Sep-18	GCL	Broad Permit for Whole Site Areas
Construction Noise Permit	GW-RS0328-18	30-Apr-18	29-Jun-18	GCL	Broad Permit for Segment Launching at Land Portion
Construction Noise Permit	GW-RS0411-18	26-May-18	31-May-18	GCL	Street Lamp Replacement at East Coast Road
Construction Noise Permit	GW-RS0426-18	11-Jun-18	31-Jul-18	GCL	Broad Permit for Segment Launching at Land Portion
Construction Noise Permit	GW-RW0235-18	21-Jun-18	18-Dec-18	GCL	General works at WA5
Construction Noise Permit	GW-RS0657-18	1-Aug-18	31-Oct-18	GCL	Cover Traffic Sign at Tung Chung

License/ Permit	License or Permit No.	Date of Issue	Date of Expiry	License/ Permit Holder	Remarks
Construction Noise Permit	GW-RS0658-18	1-Aug-18	22-Aug-18	GCL	East Coast Road Street Light Repairing
Construction Noise Permit	GW-RS0654-18	1-Aug-18	30-Sep-18	GCL	Broad Permit for Segment Launching at Land Portion
Construction Noise Permit	GW-RS0752-18	28-Aug-18	31-Oct-18	GCL	Traffic Light Installation
Construction Noise Permit	GW-RS0909-18	16-Oct-18	30-Nov-18	GCL	Road milling and paving at Airport Road
Construction Noise Permit	GW-RS0911-18	12-Oct-18	30-Oct-18	GCL	Broad Permit for Segment Launching at Land Portion
Construction Noise Permit	GW-RS0235-18	23-Jan-19	13-Jun-19	GCL	General works at WA5
Construction Noise Permit	GW-RW0012-19	23-Jan-19	13-Jun-19	GCL	General works at WA5
Construction Noise Permit	GW-RW0266-19	21-Jun-19	13-Dec-19	GCL	General works at WA5
Construction Noise Permit	GW-RS0740-18	20-Aug-18	16-Feb-19	GCL	Broad Permit for Whole Site Areas
Construction Noise Permit	GW-RS0909-18	16-Oct-18	30-Nov-18	GCL	Road milling and paving at Airport Road
Construction Noise Permit	GW-RS1009-18	07-Nov-18	30-Nov-18	GCL	Chung Tung Road Street Light Removal
Construction Noise Permit	GW-RS1085-18	28-Nov-18	31-Dec-18	GCL	Maintenance of Traffic Sign in Tung Chung
Construction Noise Permit	GW-RS1118-18	6-Dec-18	31-Dec-18	GCL	Fencing Removal at Seafront
Construction Noise Permit	GW-RW012-19	23-Jan-19	13-Jun-19	GCL	Broad Permit for Whole Site Areas
Construction Noise Permit	GW-RS0149-19	19-Feb-19	15-July-19	GCL	Broad Permit for Whole Site Areas
Construction Noise Permit	GW-RS0507-19	13-Jun-19	11-Dec-19	GCL	Broad Permit for Whole Site Areas
Construction Noise Permit	GW-RS0728-19	16-Aug-19	25-Oct-19	GCL	Defect repairing at under-bridge of Viaduct A, B, C and D
Construction Noise Permit	GW-RS0977-19	7-Nov-19	16-Dec-19	GCL	Defect Repairing at under-bridge of Viaduct A, B, C and D
Construction Noise Permit	GW-RS1067-19	2-Dec-19	31-Dec-19	GCL	Resurfacing Works at Pak Mong
Construction Noise Permit	GW-RS1108-19	12-Dec-19	11-Jun-20	GCL	Broad Permit for Whole Site Areas
Construction Noise Permit	GW-RW0592-19	18-Dec-19	13-Jun-20	GCL	General works at WA5

License/ Permit	License or Permit No.	Date of Issue	Date of Expiry	License/ Permit Holder	Remarks
Construction Noise Permit	GW-RS1214-19	16-Jan-20	14-Feb-20	GCL	Defect Repairing at under-bridge of Viaduct B and C
Construction Noise Permit	GW-RS0153-20	19-Mar-20	31-Mar-20	GCL	Defect Repairing at under-bridge of Viaduct B and C

2.10 *IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES*

A summary of the Environmental Mitigation and Enhancement Measure Implementation Schedules (EMIS) is presented in *Appendix B*. The necessary mitigation measures were implemented properly for this Contract.

2.11 *SUMMARY OF EXCEEDANCES OF THE ENVIRONMENTAL QUALITY PERFORMANCE LIMIT*

Impact air quality monitoring, construction noise monitoring, impact water quality and post-construction water quality monitoring, dolphin monitoring, post-translocation coral monitoring and bored piling monitoring were conducted for this Contract in accordance with the updated EM&A Manual.

2 Limit Level exceedances of 1-hour TSP and 2 Action Level exceedances of 24-hour TSP were recorded for air quality monitoring in the impact monitoring period.

No exceedance of Action and Limit Levels was recorded for construction noise monitoring during the impact monitoring period.

18 Action Level and 1 Limit Level exceedances of Suspended Solids (SS), 1 Action Level and 1 Limit Level exceedances of Turbidity and 253 Action Level and 25 Limit Level exceedances of Dissolved Oxygen (DO) were recorded for water quality monitoring during the impact monitoring period.

11 Action Level and 19 Limit Level exceedances were recorded for dolphin monitoring during the impact monitoring period.

Actions were taken in accordance with the Event Action Plan as presented in *Appendix H*.

2.12 *SUMMARY OF COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS*

The Environmental Complaint Handling Procedure is provided in *Figure 2.5*.



Figure 2.5

Environmental Complaint Handling Procedure

There was no notification of summons or prosecution recorded in the impact monitoring period.

A total of 14 environmental complaints were received in the impact monitoring period. Investigations were conducted for the environmental complaints in accordance with the complaint handling process as stated in the Complaint Management Plan. Environmental complaints in the impact monitoring period are summarized in *Table 2.25* below.

Table 2.25 *Summary of Environmental Complaints*

	Complaint(s)	Investigation/Follow up action(s)
1	Complaint was referred by EPD in June 2015 with regard to the dust emission from trucks.	The complaints were handled in accordance with Environmental Complaint Handling Procedure and considered not related to this Contract upon further investigation.
2	Complaint was referred by EPD in October 2015 with regard to potential noise from nighttime works.	The complaints were handled in accordance with Environmental Complaint Handling Procedure and considered not related to this Contract upon further investigation.
3	Complaint was referred by EPD in June 2015 regarding to the dust emission from dump trucks.	The complaints were followed up in accordance with the complaint handling procedure. Proper mitigation measures were recommended to the Contractor to minimize the corresponding impacts.
4	Complaint was referred by EPD in October 2015 regarding to potential noise from nighttime works.	The complaints were followed up in accordance with the complaint handling procedure. Proper mitigation measures were recommended to the Contractor to minimize the corresponding impacts.
5	Complaint received from EPD on 22 September 2016 regarding effluent discharge from flat top barge.	Upon investigation, there was no adequate evidence to conclude that the complaint case was related to this Project.

6	Complaint received from EPD regarding muddy plume caused by a barge's propeller wash near Tung Chung New Development Ferry Pier on 9 November 2016.	Upon investigation, there were no adequate evidences to conclude that the complaint cases were related to this Project.
7	Complaint received from EPD regarding hammering noise nuisance generated during midnights on 13 December 2016.	Upon investigation, there were no adequate evidences to conclude that the complaint cases were related to this Project.
8	Complaint received from EPD regarding constructional vessels and silt curtain found within the boundary of Brothers Marine Park on 13 January 2017.	Upon investigation, there were no adequate evidences to conclude that the complaint cases were related to this Project.
9	Complaint received from EPD regarding noise nuisance and muddy water from construction sites of Hong Kong Boundary Crossing Facilities of Hong Kong-Zhuhai-Macao Bridge related Hong Kong projects on 28 March 2017.	Upon investigation, there were no adequate evidences to conclude that the complaint cases were related to this Project.
10	Complaint received from EPD regarding construction dust nuisance near site exit of Hong Kong Boundary Crossing Facilities of Hong Kong-Zhuhai-Macao Bridge related Hong Kong projects was received on 31 May 2017.	Upon investigation, there were no adequate evidences to conclude that the complaint cases were related to this Contract.
11	A complaint was received by EPD regarding construction dust nuisance at Hong Kong Boundary Crossing Facilities (HKBCF) of Hong Kong-Zhuhai-Macao Bridge (HZMB) Projects on 24 November 2017.	Upon investigation, there were no adequate evidences to conclude that the complaint cases were related to this Contract.

12	A complaint was received by EPD regarding a suspected sighting of dolphin near the viaduct at Tai Ho Wan and construction materials failing from the nearby elevated structures on 29 January 2018.	Upon investigation, there were no adequate evidences to conclude that the complaint cases were related to this Contract.
13	A complaint was received from 1823 regarding discharge of muddy water nearby HKBCF on 13 June 2018.	Upon investigation, there were no adequate evidences to conclude that the complaint cases were related to this Contract.
14	A complaint was received from 1823 regarding construction noise nuisance nearby the Kowloon-boundary lane of the North Lantau Highway on 16 June 2018.	Upon investigation, there were no adequate evidences to conclude that the complaint cases were related to this Contract.

Statistics on complaints, notifications of summons, successful prosecutions are summarised in *Annex J*.

CONCLUSION AND RECOMMENDATIONS

The construction phase EM&A programme for the Contract commenced on 31 October 2013 and was terminated since 16 March 2020.

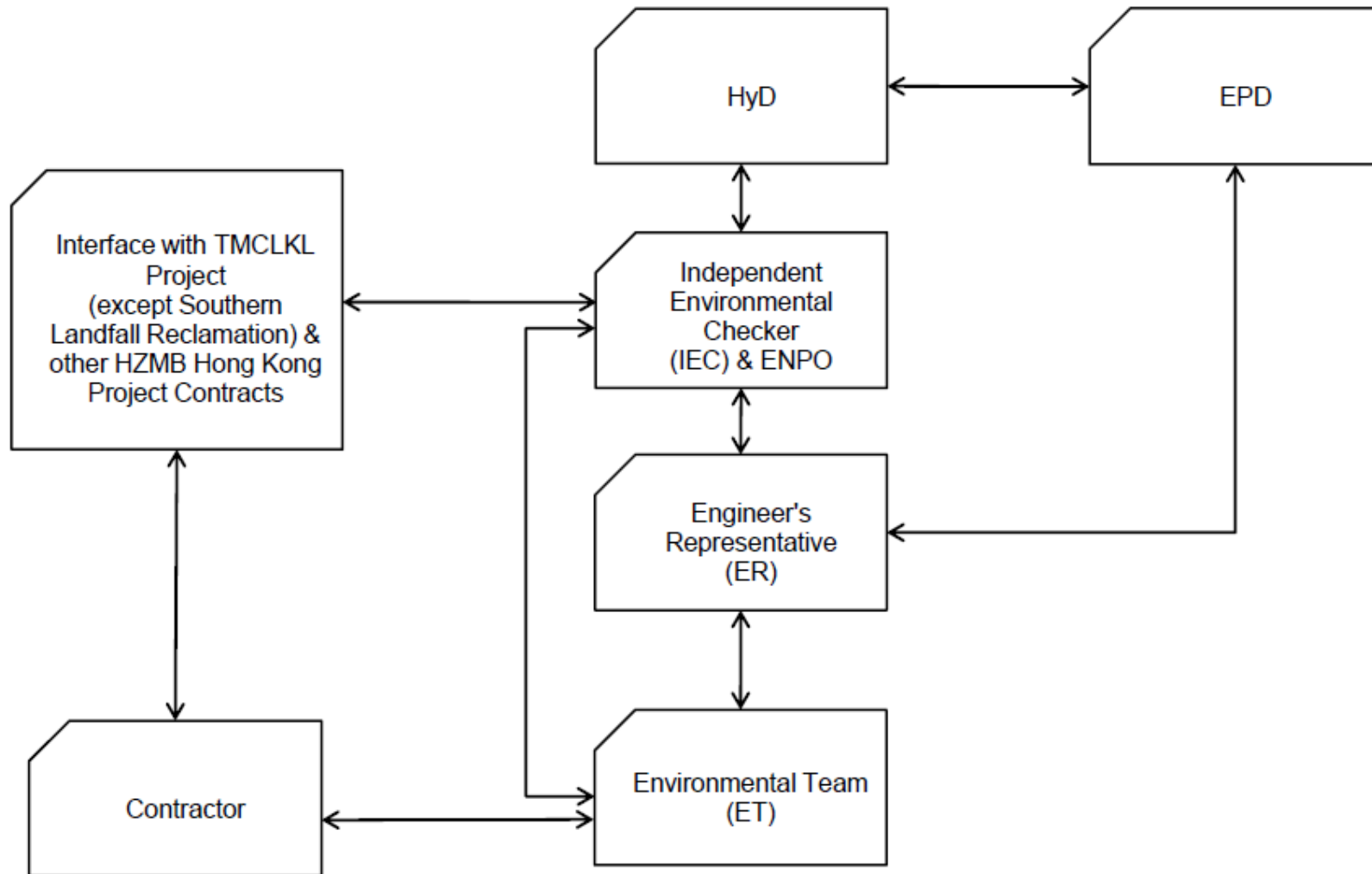
This is the Final EM&A Report under the Contract No. *HY/2012/07* presents a summary of the environmental monitoring and audit works from 31 October 2013 to 16 March 2020, in accordance with the Updated EM&A Manual and the requirements of the Environmental Permits.

The review of monitoring data suggested that the construction works under this Contract have proceeded in an environmentally acceptable manner in the impact monitoring period. In general, the monitoring results were in line with EIA predictions.

The EM&A programme was considered as adequate and effective in monitoring impacts arising from the Contract.

Appendix A

Project Organization for Environmental Works



↔ Line of Communication

Appendix B

Environmental Mitigation and Enhancement Measure Implementation Schedules

(Adopted from: CINOTECH (2011) Agreement No. CE35/2011 EP Baseline Environmental Monitoring for Hong Kong-Zhuhai-Macao Bridge Tuen Mun-Chek Lap Kok Link - Investigation. Updated EM&A Manual for Tuen Mun-Chek Lap Kok Link)

*Contract No. HY/2012/07
Tuen Mun – Chek Lap Kok Link
Southern Connection Viaduct Section
Environmental Mitigation and Enhancement Measure Implementation Schedule*

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status
						D	C	O	
AIR QUALITY									
4.8.1	3.8	An effective watering programme of eight daily watering with complete coverage, is estimated to reduce by 50%. This is recommended for all areas in order to reduce dust levels to a minimum;	All areas / throughout construction period	Contractor	TMEIA Avoid smoke impacts and disturbance		Y		✓
4.8.1	3.8	The Contractor shall, to the satisfaction of the Engineer, install effective dust suppression measures and take such other measures as may be necessary to ensure that at the Site boundary and any nearby sensitive receiver, dust levels are kept to acceptable levels.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.8.1	3.8	The Contractor shall not burn debris or other materials on the works areas.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.8.1	3.8	In hot, dry or windy weather, the watering programme shall maintain all exposed road surfaces and dust sources wet.	All unpaved haul roads / throughout construction period in hot, dry or windy weather	Contractor	TMEIA Avoid smoke impacts and disturbance		Y		✓
4.8.1	3.8	Where breaking of oversize rock/concrete is required, watering shall be implemented to control dust. Water spray shall be used during the handling of fill material at the site and at active cuts, excavation and fill sites where dust is likely to be created.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.8.1	3.8	Open dropping heights for excavated materials shall be controlled to a maximum height of 2m to minimise the fugitive dust arising from unloading.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.8.1	3.8	During transportation by truck, materials shall not be loaded to a level higher than the side and tail boards, and shall be dampened or covered before transport.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status
						D	C	O	
4.8.1	3.8	Materials having the potential to create dust shall not be loaded to a level higher than the side and tail boards, and shall be covered by a clean tarpaulin. The tarpaulin shall be properly secured and shall extend at least 300mm over the edges of the side and tail boards.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.8.1	3.8	No earth, mud, debris, dust and the like shall be deposited on public roads. Wheel washing facility shall be usable prior to any earthworks excavation activity on the site.	All site exits / throughout construction period	Contractor	TMEIA Avoid dust		Y		✓
4.8.1	3.8	Areas of exposed soil shall be minimised to areas in which works have been completed shall be restored as soon as is practicable.	All exposed surfaces / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.8.1	3.8	All stockpiles of aggregate or spoil shall be enclosed or covered and water applied in dry or windy condition.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.11	Section 3	EM&A in the form of 1 hour and 24 hour dust monitoring and site audit	All representative existing ASRs / throughout construction period	Contractor	EM&A Manual		Y		✓
NOISE									
5.11	Section 4	Noise monitoring	All existing representative sensitive receivers / during North Lantau Viaduct construction	Contractor	EM&A Manual		Y		✓
WATER QUALITY									
<i>General Marine Works</i>									
6.10	-	Bored piling to be undertaken within a metal casing.	Marine viaducts of TM-CLKL and HKLR/ bored piling	Contractor	TM-EIAO		Y		✓
6.10	-	Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material.	All areas/ throughout construction period	Contractor	Marine Fill Committee Guidelines. DASO permit conditions.		Y		✓

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status
						D	C	O	
6.10	-	Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes.	All areas/ throughout construction period	Contractor	Marine Fill Committee Guidelines. DASO permit conditions.		Y		✓
6.10	-	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.	All areas/ throughout construction period	Contractor	Marine Fill Committee Guidelines. DASO permit conditions.		Y		✓
6.10	-	Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved	All areas/ throughout construction period	Contractor	Marine Fill Committee Guidelines. DASO permit conditions.		Y		✓
6.10	-	Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action;	All areas/ throughout construction period	Contractor	Marine Fill Committee Guidelines. DASO permit conditions.		Y		✓
6.10	-	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.	All areas/ throughout construction period	Contractor	Marine Fill Committee Guidelines. DASO permit conditions.		Y		✓
6.10	-	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.	All areas/ throughout construction period	Contractor	Marine Fill Committee Guidelines. DASO permit conditions.		Y		✓
<i>Temporary Staging work</i>									
	5.2	Regular inspection for the accumulation of floating refuse and collection of floating refuse if required	During temporary staging works	Contractor			Y		✓
	5.2	Provision of temporary drainage system on the temporary staging for collection of construction site runoff to allow appropriate treatment before discharge into the sea	During temporary staging works	Contractor			Y		✓
	5.2	Wastewater generated from construction works such as bored / drilling water will be collected, treated, neutralized and de-silted through silt trap or sedimentation tank before disposal	During temporary staging works	Contractor			Y		✓
	5.2	One additional water quality monitoring station is	During temporary	Contractor			Y		✓

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status
						D	C	O	
		proposed at station SR4a In case elevated SS or turbidity is identified during the water quality monitoring, the source of pollution will be tracked down and be removed as soon as possible. In case depletion of dissolved oxygen is identified, artificial aeration will be arranged at the monitoring station SR4a,	staging works						
<i>Land Works</i>									
6.10	-	Wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	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 soaks away shall be avoided.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	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 storm water to such silt removal facilities. Catch pits and perimeter channels should be constructed in advance of site formation works and earthworks.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Temporary access roads should be surfaced with crushed stone or gravel.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status
						D	C	O	
6.10	-	Open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	5.8	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.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	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.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Wheel wash overflow shall be directed to silt removal facilities before being discharged to the storm drain.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Section of construction road between the wheel washing bay and the public road should be surfaced with crushed stone or coarse gravel.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Wastewater generated from concreting, plastering, internal decoration, cleaning work and other similar activities, shall be screened to remove large objects.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	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 offsite disposal.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	The Contractor shall prepare an oil / chemical cleanup plan and ensure that leakages or spillages are contained and cleaned up immediately.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Waste oil should be collected and stored for recycling or disposal, in accordance with the Waste Disposal Ordinance.	All areas/ throughout construction period	Contractor	TM-EIAO Waste Disposal Ordinance		Y		✓

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status
						D	C	O	
6.10	-	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.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Roadside gullies to trap silt and grit shall be provided prior to discharging the stormwater into the marine environment. The sumps will be maintained and cleaned at regular intervals.	Roadside/design and operation	Design Consultant/ Contractor	TM-EIAO	Y		Y	✓
6.10	Section 5	All construction works shall be subject to routine audit to ensure implementation of all EIA recommendations and good working practice.	All areas/ throughout construction period	Contractor	EM&A Manual		Y		✓
<i>Water Quality Monitoring</i>									
6.10	Section 5	Water quality monitoring shall be undertaken for suspended solids, turbidity, and dissolved oxygen. Nutrients and metal parameters shall also be measured for Mf sediment operations (only HKBCF and HKLR required handling of Mf sediment) during baseline, backfilling and post construction period. One year operation phase water quality monitoring at designated stations	Designated monitoring stations as defined in EM&A Manual, Section 5/ Before, through-out marine construction period, post construction and monthly operational phase water quality monitoring for a year.	Contractor	EM&A Manual		Y	Y	✓
ECOLOGY									
8.14	6.3	Specification for and implement pre, during and post construction dolphin abundance monitoring.	All Areas/Detailed Design/ during construction works/post construction	Design Consultant/ Contractor	TMEIA	Y	Y	Y	✓
8.14	6.3	Specification for bored piling monitoring	Detailed Design	Design Consultant	TMEIA	Y			✓
8.14	6.3	Implement any recommendations of the bored piling monitoring	Southern marine viaduct/Throughout	Contractor	TMEIA		Y		✓

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status
						D	C	O	
			construction during bored piling						
8.14	6.3,6.5	Avoidance of peak CWD calving season in May and June for driving of metal caissons during bored piling works	Southern marine viaduct/ May and June during bored piling	Contractor	TMEIA		Y		n/a
8.14	6.3,6.5	Specification and implementation of 250m dolphin exclusion zone.	All marine bored piling and temporary staging works areas/Detailed Design/during all marine bored piling and temporary staging works	Design Consultant/ Contractor	TMEIA	Y	Y		✓
8.15	6.3, 6.5	Specification and deployment of an artificial reef of an area of 3,600m ² in an area where fishing activities are prohibited.	Area of prohibited fishing activities/Detailed Design/towards end of construction period	TM-CLKL/ HKBCF Design Consultant/ TM-CLKL/ HKBCF Contractor	TMEIA	Y		Y	AFCD
8.14	6.3, 6.5	Specification and implementation of marine vessel control specifications	All areas/Detailed Design/during construction works	Design Consultant/ Contractor	TMEIA	Y	Y		✓
8.14	6.3, 6.5	Design and implementation of acoustic decoupling methods for marine bored piling and the whole lifespan of temporary staging works.	All areas/ Detailed Design/during marine bored piling and temporary staging works	Design Consultant/ Contractor	TMEIA	Y	Y		✓
8.15	6.3, 6.4	Pre-construction phase survey and coral translocation	Tai Ho Wan (donor site) and Yam Tsui Wan (receptor site) /Detailed Design/Prior to construction	Design Consultant/ Contractor	TMEIA	Y	Y		n/a
8.15	6.5	Audit coral translocation success	Yam Tsui Wan (receptor site)/Post translocation	Contractor	TMEIA		Y		✓
7.13	6.5	Undertaken gabion wall works in Stream NL1 in the dry season	North Lantau slope works/dry	Contractor	TMEIA		Y		✓

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status
						D	C	O	
			season/construction phase						
7.13	6.5	The loss of habitat shall be supplemented by enhancement planting in accordance with the landscape mitigation schedule.	All areas / As soon as accessible	Contractor	TMEIA		Y		AFCD/LCSD
7.13	6.5	Spoil heaps shall be covered at all times.	All areas / Throughout construction period	Contractor	TMEIA		Y		✓
7.13	6.5	Avoid damage and disturbance to the remaining and surrounding natural habitat	All areas / Throughout construction period	Contractor	TMEIA		Y		✓
7.13	6.5	Placement of equipment in designated areas within the existing disturbed land	All areas / Throughout construction period	Contractor	TMEIA		Y		✓
7.13	6.5	Disturbed areas to be reinstated immediately after completion of the works.	All areas / Throughout construction period	Contractor	TMEIA		Y		✓
7.13	6.5	Construction activities should be restricted to the proposed works boundary	All areas / Throughout construction period	Contractor	TMEIA		Y		✓
LANDSCAPE AND VISUAL									
10.9	7.6	Round angle, patterned finishes, and oval shaped pier were considered in the viaduct design, and further details will be developed under ACABAS submission (DM3)	All areas/detailed design	Design Consultant	TMEIA		Y		n/a
10.9	7.6	Details of the street furniture will be developed in the detailed design stage (DM4)	All areas/detailed design	Design Consultant	TMEIA		Y		n/a
10.9	7.6	Aesthetic design of the viaduct, retaining wall and other structures will be developed under ACABAS submission (DM5)	All areas/detailed design	Design Consultant	TMEIA		Y		n/a
10.9	7.6	Existing trees on boundary of the Project Area shall be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor's works areas. (Tree	All areas/detailed design/ during construction	Design Consultant/ Contractor	TMEIA		Y	Y	✓

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status
						D	C	O	
		protection measures will be detailed at Tree Removal Application stage) (CM1)							
10.9	7.6	Trees unavoidably affected by the works shall be transplanted where practical. Trees will be transplanted straight to their final receptor site and not held in a temporary nursery. A detailed Tree Transplanting Specification shall be provided in the Contract Specification. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the project programme (CM2)	All areas/ detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		✓
10.9	7.6	Hillside and roadside screen planting to proposed roads, associated structures and slope works (CM3).	All areas/ detailed design/ during construction/ post construction	Design Consultant/	TMEIA	Y	Y		✓
10.9	7.6	Hydroseeding or sheeting of soil stockpiles with visually unobtrusive material (in earth tone) (CM4)	All areas/ detailed design/ during construction/ post construction	Design Consultant/ Contractor	TMEIA	Y	Y		✓
10.9	7.6	Screening of construction works by hoardings around works area in visually unobtrusive colours, to screen works (CM5)	All areas/ detailed design/ during construction/ post construction	Design Consultant/ Contractor	TMEIA	Y	Y		✓
10.9	7.6	Control night-time lighting and glare by hooding all lights (CM6)	All areas/ detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		✓
10.9	7.6	Ensure no run-off into water body adjacent to the Project Area (CM7)	All areas/ detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		✓
10.9	7.6	Avoidance of excessive height and bulk of buildings and structures (CM8)	All areas/ detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		✓
10.9	7.6	Recycle/Reuse all felled trees and vegetation, e.g. mulching (CM9)	All areas/ detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		n/a No felled trees

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status
						D	C	O	
									or vegetation suitable for recycle
10.9	7.6	Compensatory tree planting shall be provided to the satisfaction of relevant Government departments. Required numbers and locations of compensatory trees shall be determined and agreed separately with Government during the Tree Felling Application process under ETWBTC 3/2006 (CM10).	All areas/detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		✓
10.9	7.6	Re-vegetation of affected woodland/shrubland with native species (OM1)	All areas/detailed design/ during construction/ during operation	Design Consultant/ Contractor	TMEIA	Y	Y	Y	AFCD/HyD/ L CSD
10.9	7.6	Tall buffer screen tree / shrub / climber planting should be incorporated to soften hard engineering structures and facilities (OM2)	All areas/detailed design/ during construction/ during operation	Design Consultant/ Contractor	TMEIA	Y	Y	Y	HyD/LCSD
10.9	7.6	Streetscape elements (e.g. paving, signage, street furniture, lighting etc.) shall be sensitively designed in a manner that responds to the local context, and minimises potential negative landscape and visual impacts. Lighting units should be directional and minimise unnecessary light spill (OM3)	All areas/detailed design/ during construction / during operation	Design Consultant/ Contractor	TMEIA	Y	Y	Y	HyD/LCSD
10.9	7.6	Structure, ornamental tree / shrub / climber planting should be provided along roadside amenity strips, central dividers and newly formed slopes to enhance the townscape quality and further greenery enhancement (OM4)	All areas/detailed design/ during construction / during operation	Design Consultant/ Contractor	TMEIA	Y	Y	Y	HyD/LCSD
10.9	7.6	Aesthetically pleasing design (visually unobtrusive and non-reflective) as regard to the form, material and finishes	All areas/detailed design/ during construction / during operation	Design Consultant/ Contractor	TMEIA	Y	Y	Y	HyD
WASTE									

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status
						D	C	O	
12.6		The Contractor shall identify a coordinator for the management of waste.	Contract mobilisation	Contractor	TMEIA		Y		✓
12.6		The Contractor shall prepare and implement a Waste Management Plan which specifies procedures such as a ticketing system, to facilitate tracking of loads and to ensure that illegal disposal of wastes does not occur, and protocols for the maintenance of records of the quantities of wastes generated, recycled and disposed. A recording system for the amount of waste generated, recycled and disposed (locations) should be established.	Contract mobilisation	Contractor	TMEIA, Works Branch Technical Circular No. 5/99 for the Trip-ticket System for Disposal of Construction and Demolition Material		Y		✓
12.6		The Contractor shall apply for and obtain the appropriate licenses for the disposal of public fill, chemical waste and effluent discharges.	Contract mobilisation	Contractor	TMEIA, Land (Miscellaneous Provisions) Ordinance (Cap 28); Waste Disposal Ordinance (Cap 354); Dumping at Sea Ordinance (Cap 466); Water Pollution Control Ordinance.		Y		✓
12.6	8.1	Training shall be provided to workers about the concepts of site cleanliness and appropriate waste management procedures including waste reduction, reuse and recycling.	Contract Mobilisation	Contractor	TMEIA		Y		✓
12.6	8.1	The extent of cutting operation should be optimised where possible. Earth retaining structures and bored pile walls should be proposed to minimise the extent of cutting.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Rock armour from the existing seawall should be reused on the new sloping seawall as far as possible	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	The site and surroundings shall be kept tidy and litter free.	All areas / throughout construction period	Contractor	TMEIA		Y		✓

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status
						D	C	O	
12.6	8.1	No waste shall be burnt on site.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Provisions to be made in contract documents to allow and promote the use of recycled aggregates where appropriate.	Detailed Design	Design Consultant	TMEIA	Y			✓
12.6	8.1	The Contractor shall be prohibited from disposing of C&D materials at any sensitive locations. The Contractor should propose the final disposal sites in the EMP and WMP for approval before implementation.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Stockpiled material shall be covered by tarpaulin and /or watered as appropriate to prevent windblown dust/ surface run off.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Excavated material in trucks shall be covered by tarpaulins to reduce the potential for spillage and dust generation.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Wheel washing facilities shall be used by all trucks leaving the site to prevent transfer of mud onto public roads.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Standard formwork or pre-fabrication should be used as far as practicable so as to minimise the C&D materials arising. The use of more durable formwork/plastic facing for construction works should be considered. The use of wooden hoardings should be avoided and metal hoarding should be used to facilitate recycling. Purchasing of construction materials should avoid over-ordering and wastage.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	The Contractor should recycle as many C&D materials (this is a waste section) as possible on-site. The public fill and C&D waste should be segregated and stored in separate containers or skips to facilitate the reuse or recycling of materials and proper disposal. Where practicable, the concrete and	All areas / throughout construction period	Contractor	TMEIA		Y		✓

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status
						D	C	O	
		masonry should be crushed and used as fill materials. Steel reinforcement bar should be collected for use by scrap steel mills. Different areas of the sites should be considered for segregation and storage activities.							
12.6	8.1	All falsework will be steel instead of wood.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	<p>Chemical waste producers should register with the EPD. Chemical waste should be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes as follows:</p> <ul style="list-style-type: none"> - suitable for the substance to be held, resistant to corrosion, maintained in good conditions and securely closed; - Having a capacity of <450L unless the specifications have been approved by the EPD; and - Displaying a label in English and Chinese according to the instructions prescribed in Schedule 2 of the Regulations. Clearly labelled and used solely for the storage of chemical wastes; - Enclosed with at least 3 sides; - Impermeable floor and bund with capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in the area, whichever is greatest; - Adequate ventilation; - Sufficiently covered to prevent rainfall entering (water collected within the bund must be tested and disposed of as chemical waste, if necessary); and - Incompatible materials are adequately separated. 	All areas / throughout construction period	Contractor	TMEIA		Y		✓

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status
						D	C	O	
12.6	8.1	Waste oils, chemicals or solvents shall not be disposed of to drain,	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Adequate numbers of portable toilets should be provided for on-site workers. Portable toilets should be maintained in reasonable states, which will not deter the workers from utilizing them.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Night soil should be regularly collected by licensed collectors.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	General refuse arising on-site should be stored in enclosed bins or compaction units separately from C&D and chemical wastes. Sufficient dustbins shall be provided for storage of waste as required under the Public Cleansing and Prevention of Nuisances By-laws. In addition, general refuse shall be cleared daily and shall be disposed of to the nearest licensed landfill or refuse transfer station. Burning of refuse on construction sites is prohibited.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	All waste containers shall be in a secure area on hard standing.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Training shall be provided to workers about the concepts of site cleanliness and appropriate waste management procedure, including waste reduction, reuse and recycling.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Office wastes can be reduced by recycling of paper if such volume is sufficiently large to warrant collection. Participation in a local collection scheme by the Contractor should be advocated. Waste separation facilities for paper, aluminum cans, plastic bottles, etc. should be provided on-site.	Site Offices/ throughout construction period	Contractor	TMEIA		Y		✓
12.6	Section 8	EM&A of waste handling, storage, transportation,	All areas /	Contractor	EM&A Manual		Y		✓

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status
						D	C	O	
		disposal procedures and documentation through the site audit programme shall be undertaken.	throughout construction period						
CULTURAL HERITAGE									
11.8	Section 9	EM&A in the form of audit of the mitigation measures	All areas / throughout construction period	Highways Department	EIAO-TM		Y		✓

Notes:
Legend: D=Design, C=Construction, O=Operation
Note: Funding Agent for all mitigation measures will be the Highways Department of the Hong Kong SAR Government

Remark:

- ✓ Compliance of Mitigation Measures
- <> Compliance of Mitigation but need improvement
- x Non-compliance of Mitigation Measures
- ▲ Non-compliance of Mitigation Measures but rectified by Contractor
- Δ Deficiency of Mitigation Measures but rectified by Contractor
- N/A Not Applicable in Reporting Period

Appendix C

Summary of Action and Limit Levels

Table C1 *Action and Limit Levels for 1-hour and 24-hour TSP*

Parameters	Action	Limit
24 Hour TSP Level in $\mu\text{g}/\text{m}^3$	ASR9A/ASR8A = 178 ASR9C/ASR8/ASR9 = 178	260
1 Hour TSP Level in $\mu\text{g}/\text{m}^3$	ASR9A/ASR8A = 394 ASR9C/ASR8/ASR9 = 393	500

Table C2 *Action and Limit Levels for Construction Noise (0700-1900 hrs of normal weekdays)*

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

Table C3 *Action and Limit Levels for Water Quality*

Parameter	Action Level#	Limit Level#
DO in mg/L ^(a)	<u>Surface and Middle</u> 5.0 mg/L	<u>Surface and Middle</u> 4.2 mg/L
	<u>Bottom</u> 4.7 mg/L	<u>Bottom</u> 3.6 mg/L
Turbidity in NTU (Depth-averaged ^{(b), (c)})	120% of upstream control station at the same tide of the same day and 95%-ile of baseline data, i.e., 27.5 NTU	130% of upstream control station at the same tide of the same day and 99%-ile of baseline data, i.e., 47.0 NTU
SS in mg/L (Depth-averaged ^{(b), (c)})	120% of upstream control station at the same tide of the same day and 95%-ile of baseline data, i.e., 23.5 mg/L	130% of upstream control station at the same tide of the same day and 10mg/L for WSD Seawater Intakes at Tuen Mun and 99%-ile of baseline data, i.e., 34.4 mg/L

Notes:

Baseline data: data from HKZMB Baseline Water Quality Monitoring between 6 and 31 October 2011.

- (a) For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
- (b) "Depth-averaged" is calculated by taking the arithmetic means of reading of all three depths
- (c) For turbidity and SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
- (d) All figures given in the table are used for reference only, and EPD may amend the figures whenever it is considered as necessary

Parameter	Action Level#	Limit Level#
(e)	The 1%-ile of baseline data for surface and middle DO is 4.2 mg/L, whilst for bottom DO is 3.6 mg/L.	

Table C4 *Action and Limit Levels for Impact Dolphin Monitoring*

	North Lantau Social Cluster	
	NEL	NWL
Action Level	STG < 70% of baseline & ANI < 70% of baseline	STG < 70% of baseline & ANI < 70% of baseline
Limit Level	[STG < 40% of baseline & ANI < 40% of baseline] and STG < 40% of baseline & ANI < 40% of baseline	

Notes:

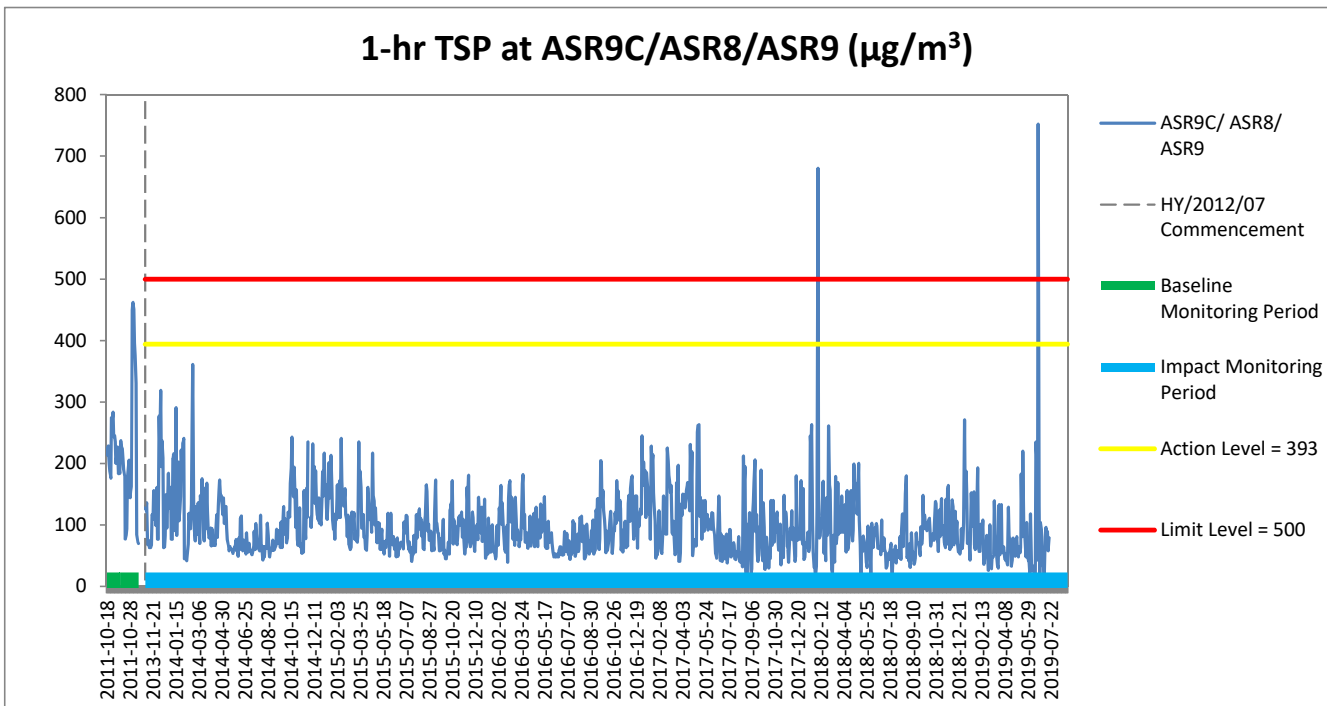
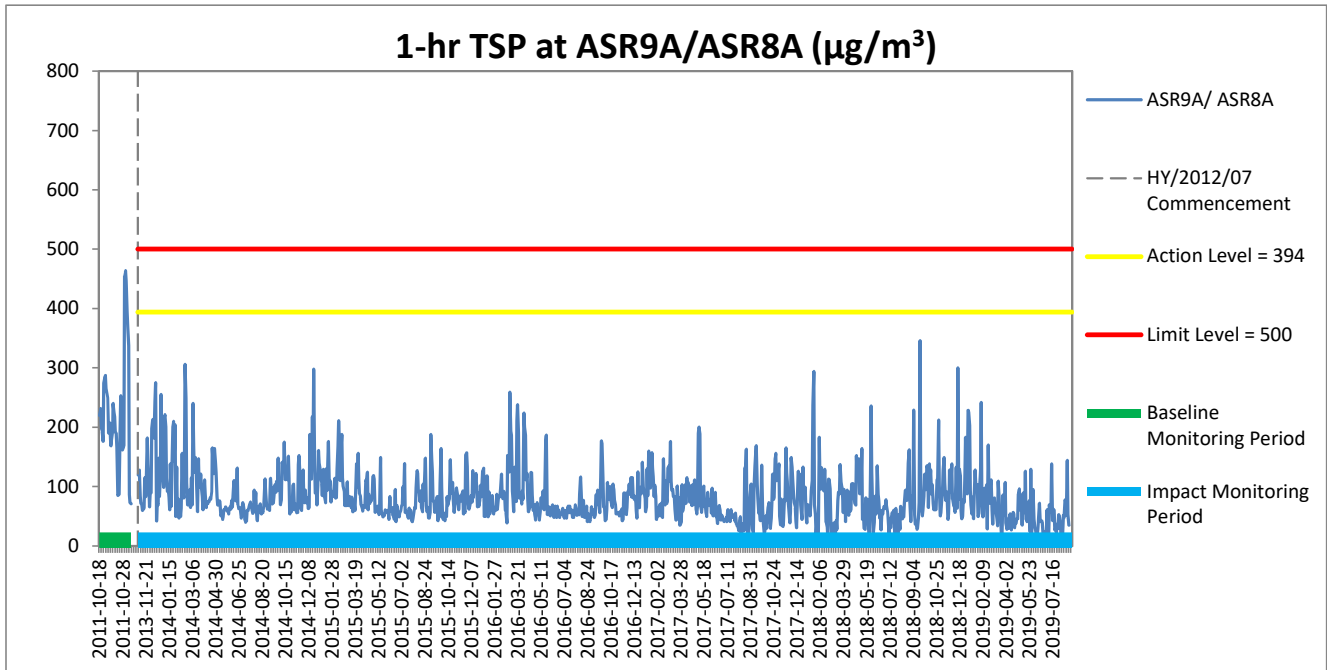
1. STG means quarterly encounter rate of number of dolphin sightings, which is **6.00 in NEL** and **9.85 in NWL** during the baseline monitoring period
2. ANI means quarterly encounter rate of total number of dolphins, which is **22.19 in NEL** and **44.66 in NWL** during the baseline monitoring period
3. For North Lantau Social Cluster, AL will be trigger if NEL or NWL fall below the criteria; LL will be triggered if both NEL and NWL fall below the criteria.

Table C5 *Derived Value of Action Level (AL) and Limit Level (LL)*

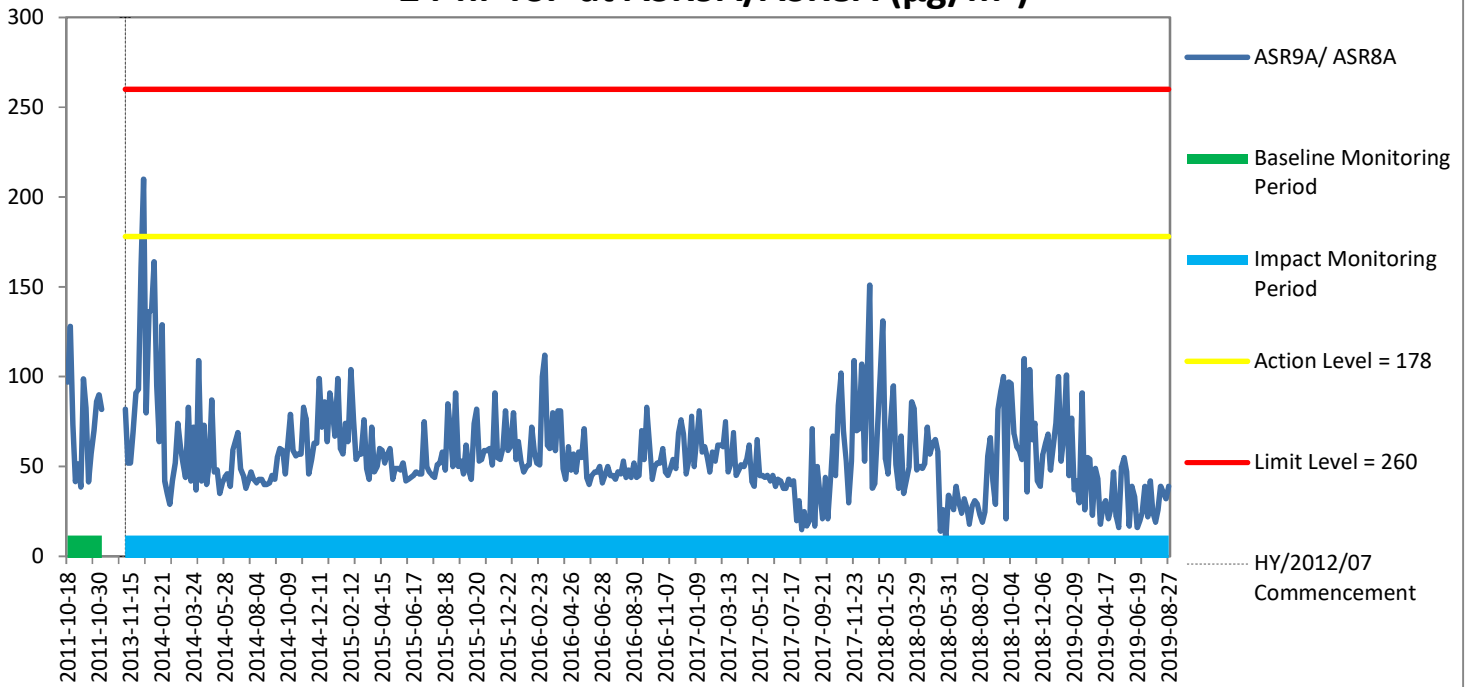
	North Lantau Social Cluster	
	NEL	NWL
Action Level	STG < 4.2 & ANI < 15.5	STG < 6.9 & ANI < 31.3
Limit Level	[STG < 2.4 & ANI < 8.9] and [STG < 3.9 & ANI < 17.9]	

Appendix D

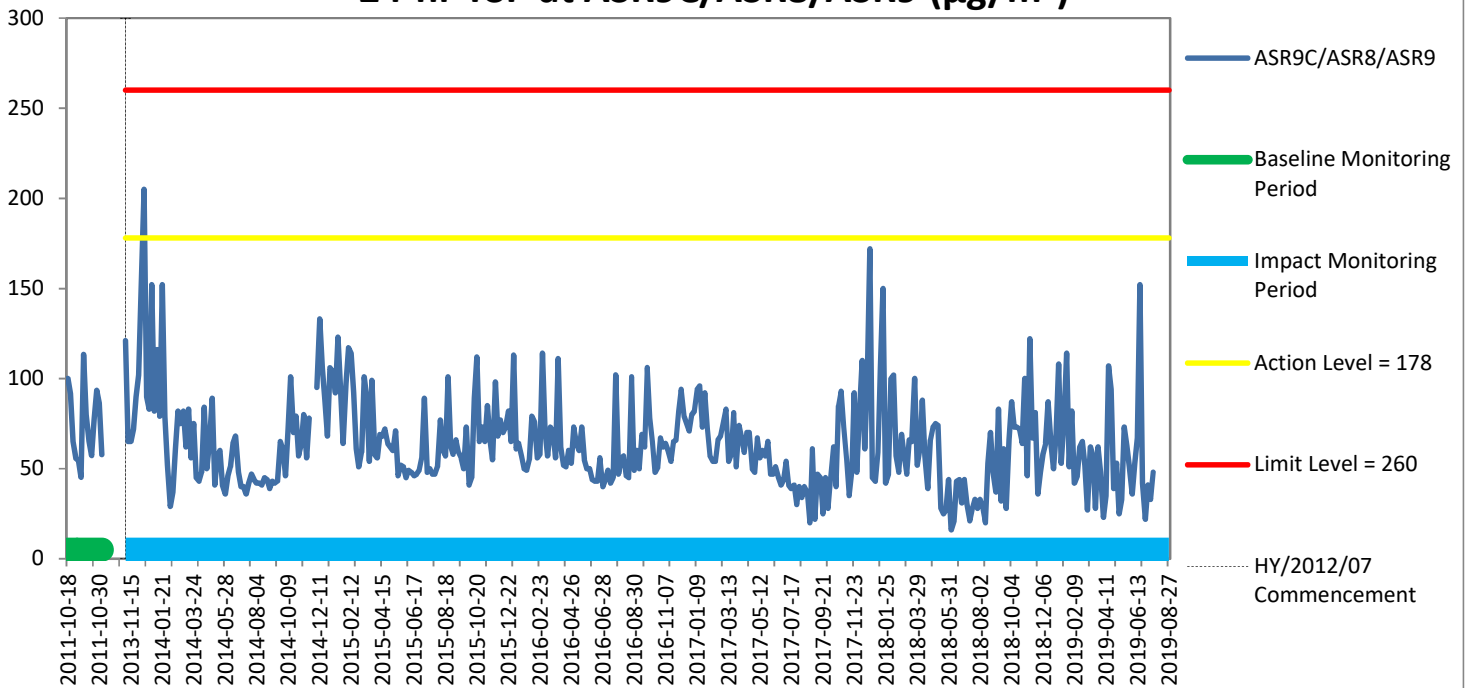
Impact Air Quality
Monitoring Graphical
Presentation



24-hr TSP at ASR9A/ASR8A ($\mu\text{g}/\text{m}^3$)

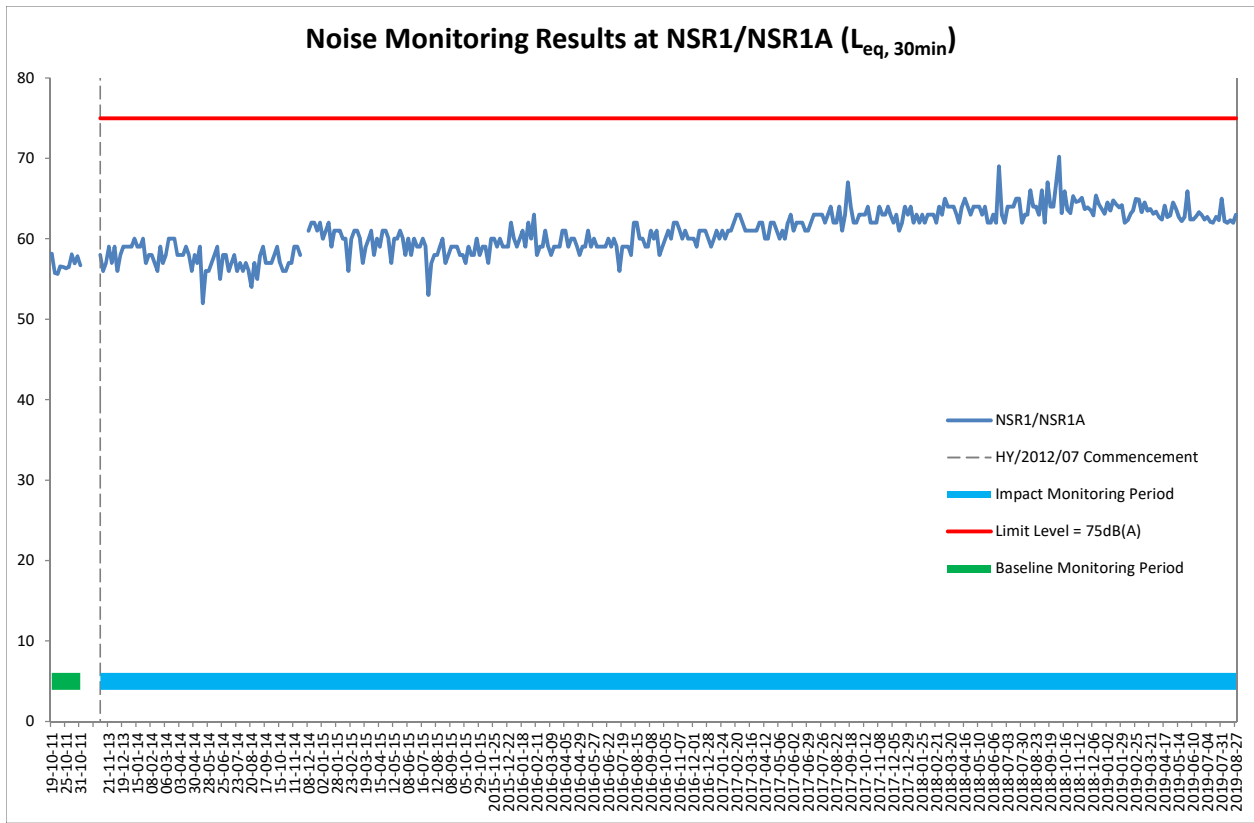


24-hr TSP at ASR9C/ASR8/ASR9 ($\mu\text{g}/\text{m}^3$)



Appendix E

Impact Noise Monitoring Graphical Presentation



Appendix F

Impact Water Quality
Monitoring Graphical
Presentation

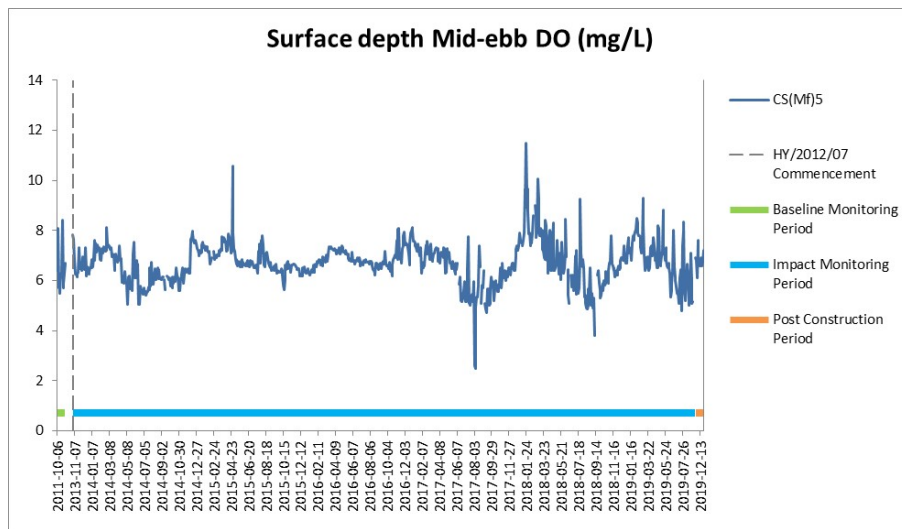
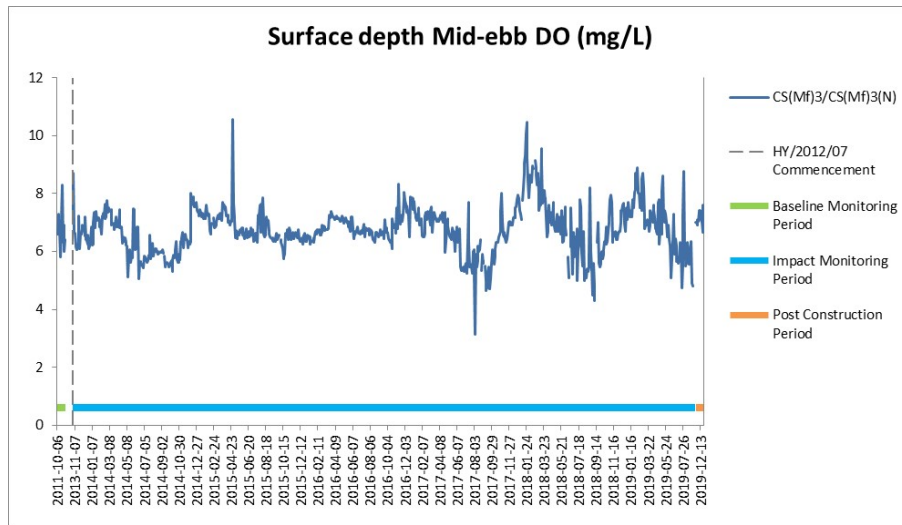


Figure F1 Impact Monitoring – Mean Level of Dissolved Oxygen (mg/L) in surface waters during mid-ebb tide between 6 October 2011 and 23 December 2019 at CS(Mf)3/CS(Mf)3(N) and CS(Mf)5.

(Weather condition varied between sunny to rainy during the course of the Project.) Overall monitoring results were not affected by weather conditions. In-situ monitoring is taken according to the requirement specified in the EM&A Manual, i.e. 3 water depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.

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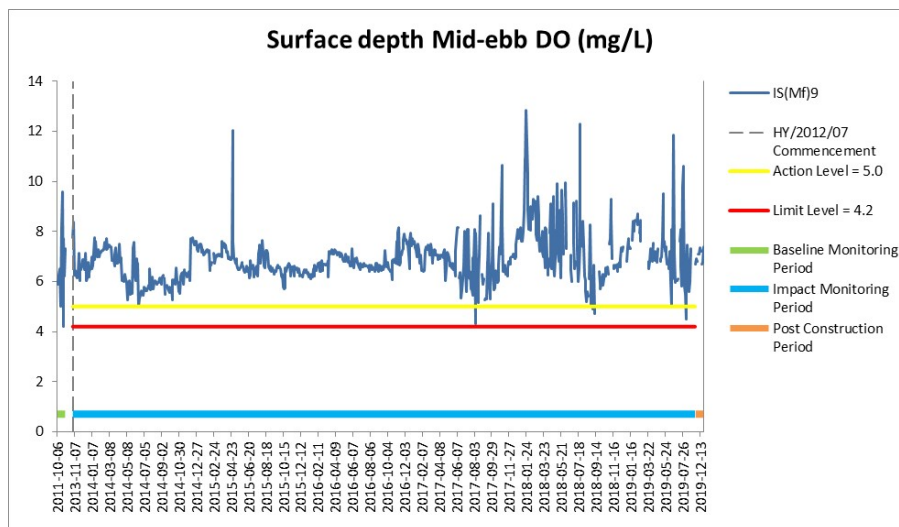
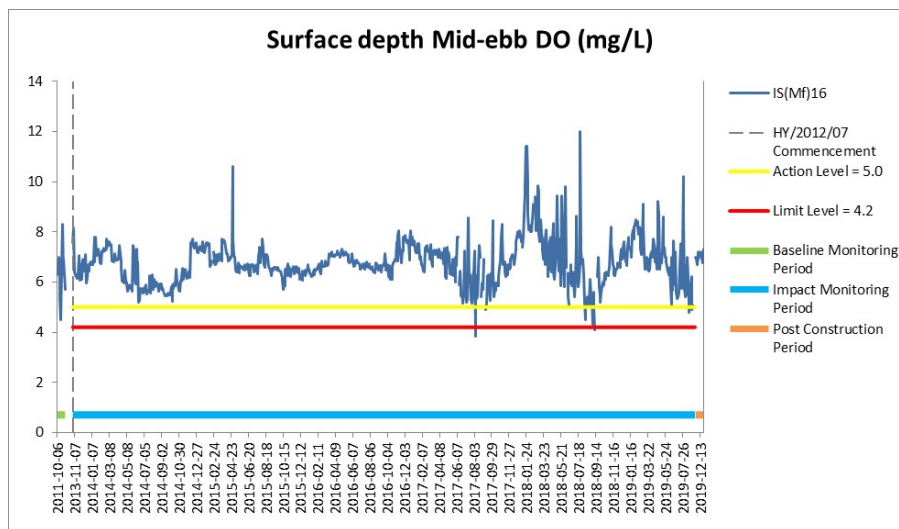


Figure F2 Impact Monitoring – Mean Level of Dissolved Oxygen (mg/L) in surface waters during mid-ebb tide between 6 October 2011 and 23 December 2019 at IS(Mf)16 and IS(Mf)9.

(Weather condition varied between sunny to rainy during the course of the Project.)
 Overall monitoring results were not affected by weather conditions. In-situ monitoring is taken according to the requirement specified in the EM&A Manual, i.e. 3 water depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.

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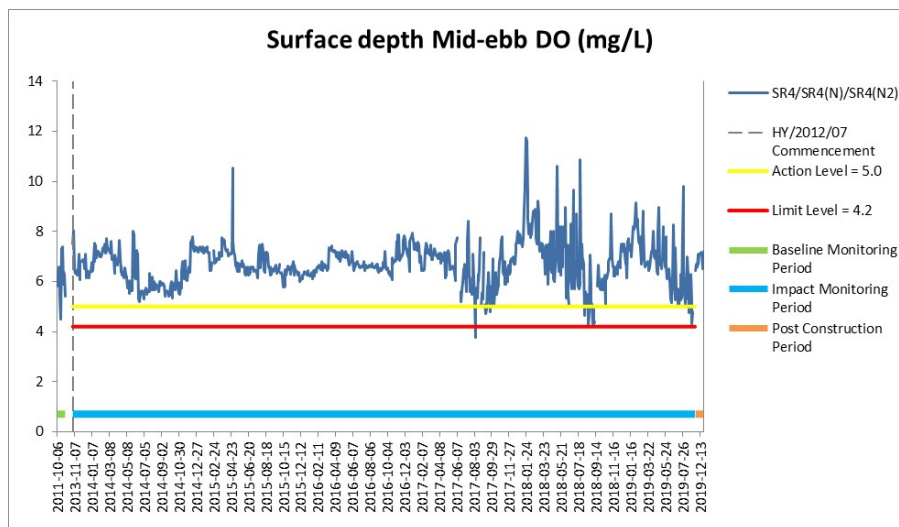
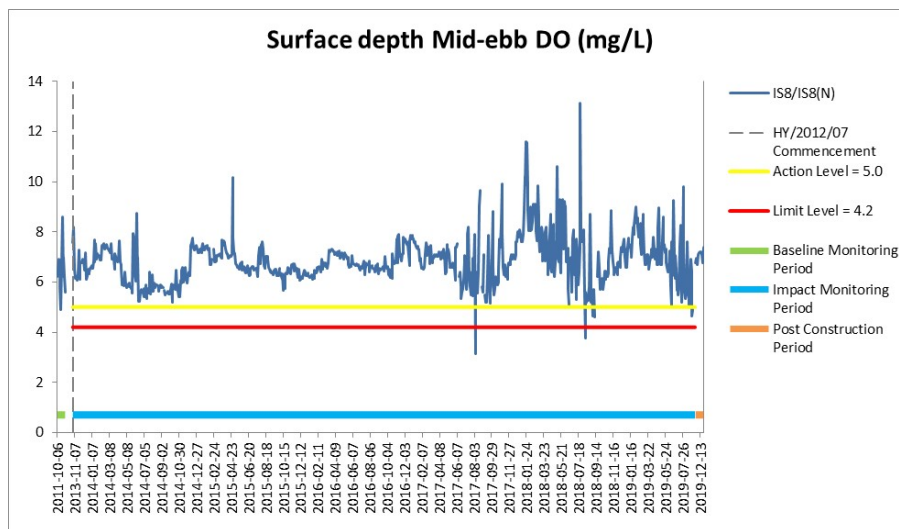


Figure F3 Impact Monitoring – Mean Level of Dissolved Oxygen (mg/L) in surface waters during mid-ebb tide between 6 October 2011 and 23 December 2019 at IS8/IS8(N) and SR4/SR4(N)/SR4(N2). *(Weather condition varied between sunny to rainy during the course of the Project.) Overall monitoring results were not affected by weather conditions. In-situ monitoring is taken according to the requirement specified in the EM&A Manual, i.e. 3 water depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.*

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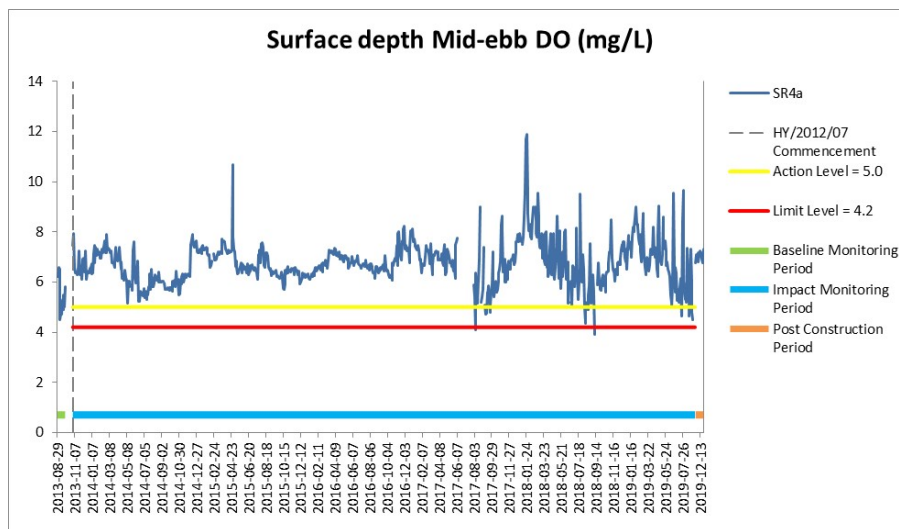


Figure F4 Impact Monitoring – Mean Level of Dissolved Oxygen (mg/L) in surface waters during mid-ebb tide between 29 August 2013 and 23 December 2019 at SR4a.

(Weather condition varied between sunny to rainy during the course of the Project.) Overall monitoring results were not affected by weather conditions. In-situ monitoring is taken according to the requirement specified in the EM&A Manual, i.e. 3 water depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.

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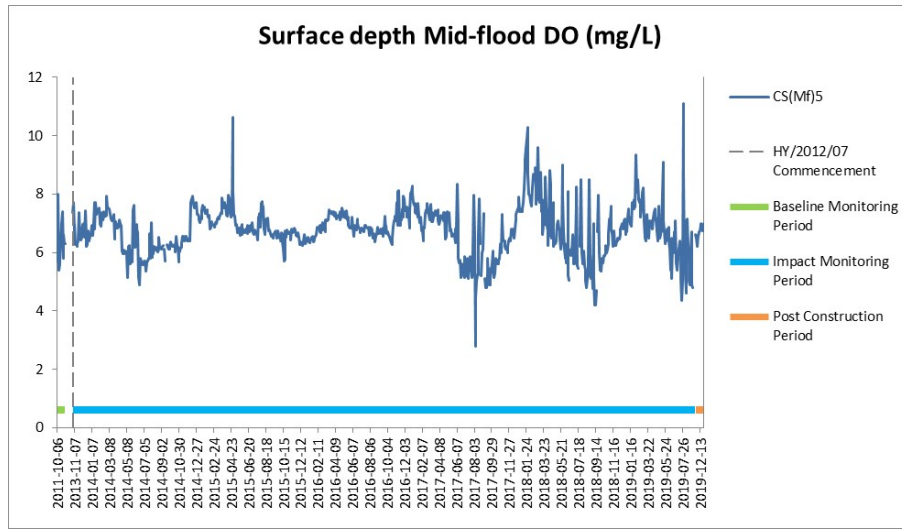
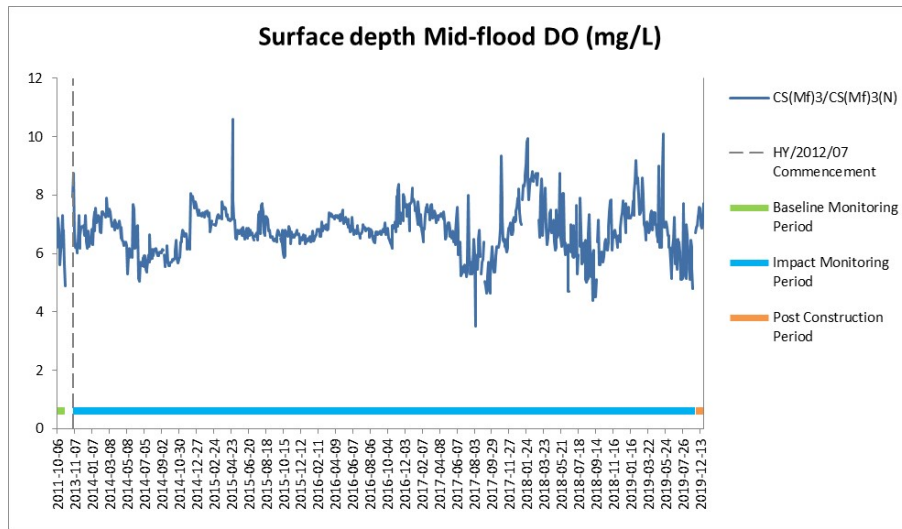


Figure F5 Impact Monitoring – Mean Level of Dissolved Oxygen (mg/L) in surface waters during mid-flood tide between 6 October 2011 and 23 December 2019 at CS(Mf)3/CS(Mf)3(N) and CS(Mf)5.

(Weather condition varied between sunny to rainy during the course of the Project.)

Overall monitoring results were not affected by weather conditions. In-situ monitoring is taken according to the requirement specified in the EM&A Manual, i.e. 3 water depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.

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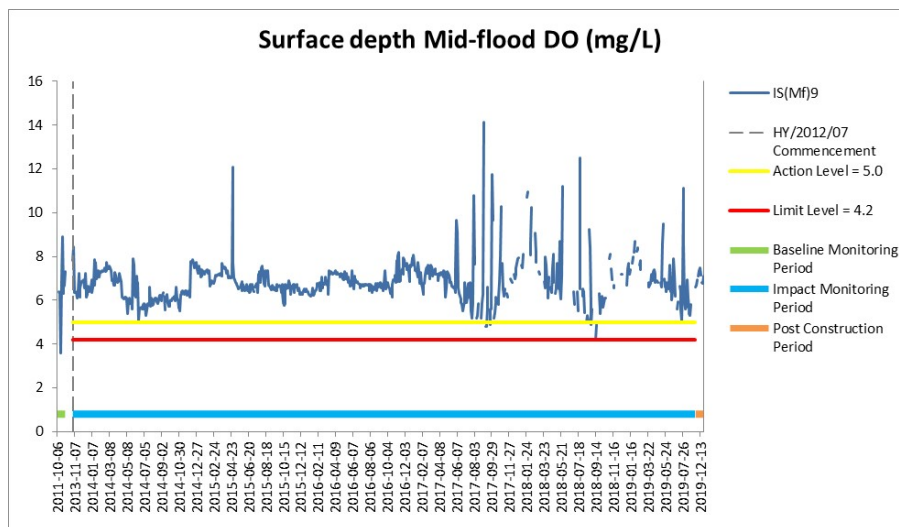
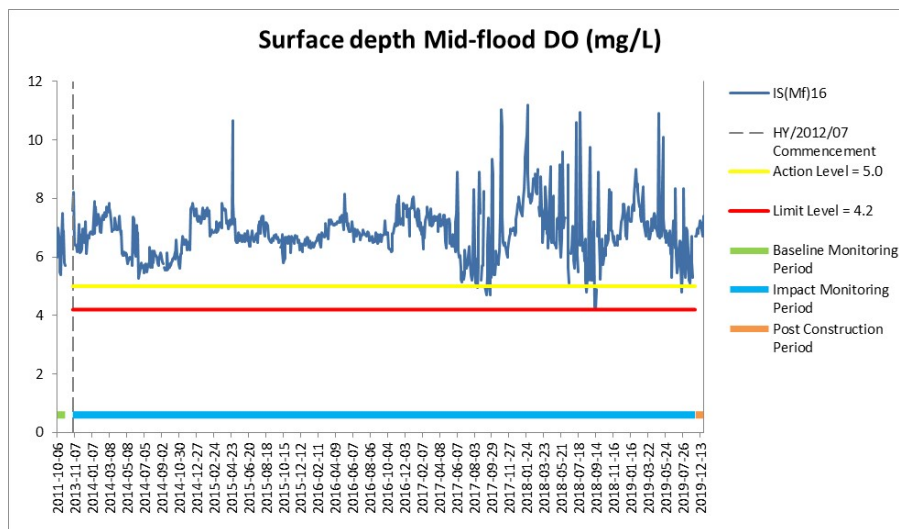


Figure F6 Impact Monitoring – Mean Level of Dissolved Oxygen (mg/L) in surface waters during mid-flood tide between 6 October 2011 and 23 December 2019 at IS(Mf)16 and IS(Mf)9.

(Weather condition varied between sunny to rainy during the course of the Project.) Overall monitoring results were not affected by weather conditions. In-situ monitoring is taken according to the requirement specified in the EM&A Manual, i.e. 3 water depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.

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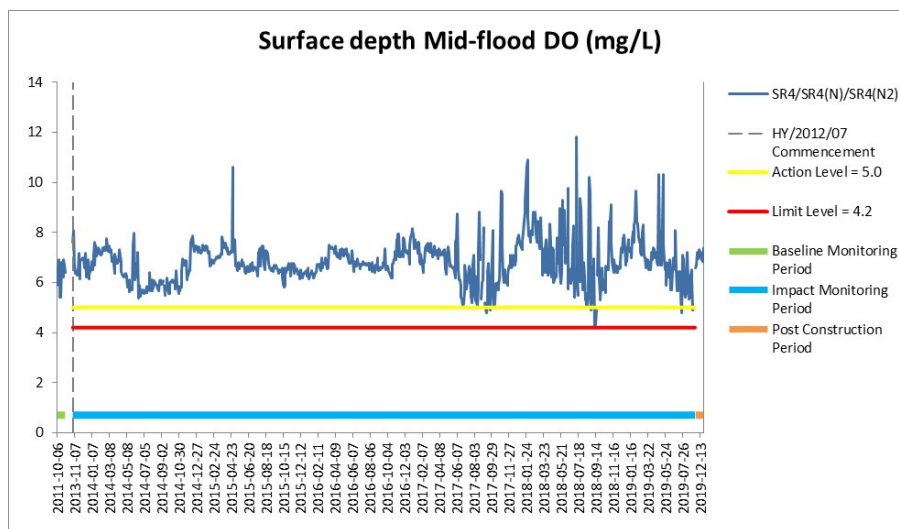
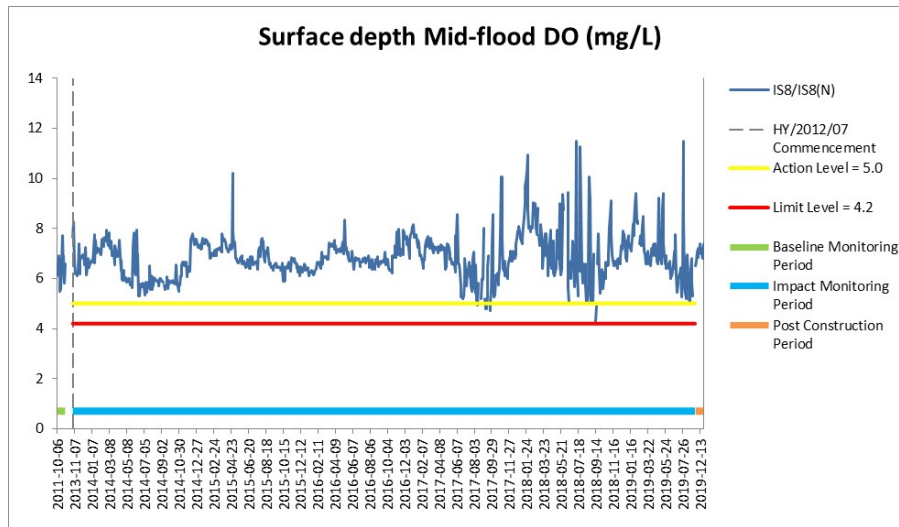


Figure F7 Impact Monitoring – Mean Level of Dissolved Oxygen (mg/L) in surface waters during mid-flood tide between 6 October 2011 and 23 December 2019 at IS8/IS8(N) and SR4/SR4(N)/SR4(N2).

(Weather condition varied between sunny to rainy during the course of the Project.)

Overall monitoring results were not affected by weather conditions. In-situ monitoring is taken according to the requirement specified in the EM&A Manual, i.e. 3 water depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.

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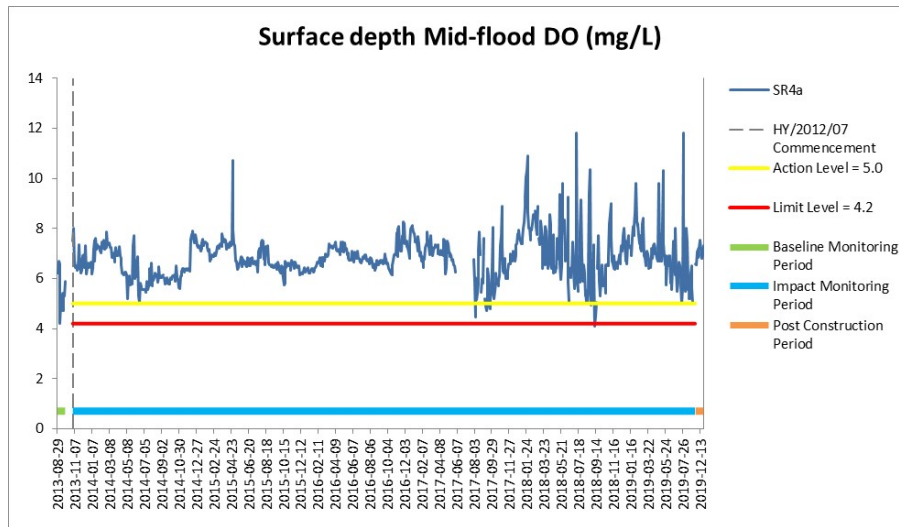


Figure F8 Impact Monitoring – Mean Level of Dissolved Oxygen (mg/L) in surface waters during mid-flood tide between 29 August 2013 and 23 December 2019 at SR4a.

(Weather condition varied between sunny to rainy during the course of the Project.)
Overall monitoring results were not affected by weather conditions. In-situ monitoring is taken according to the requirement specified in the EM&A Manual, i.e. 3 water depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.

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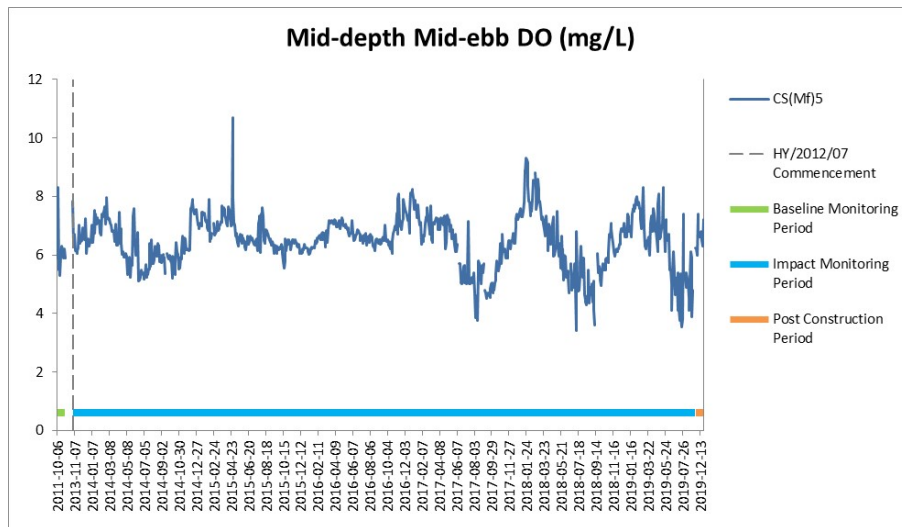
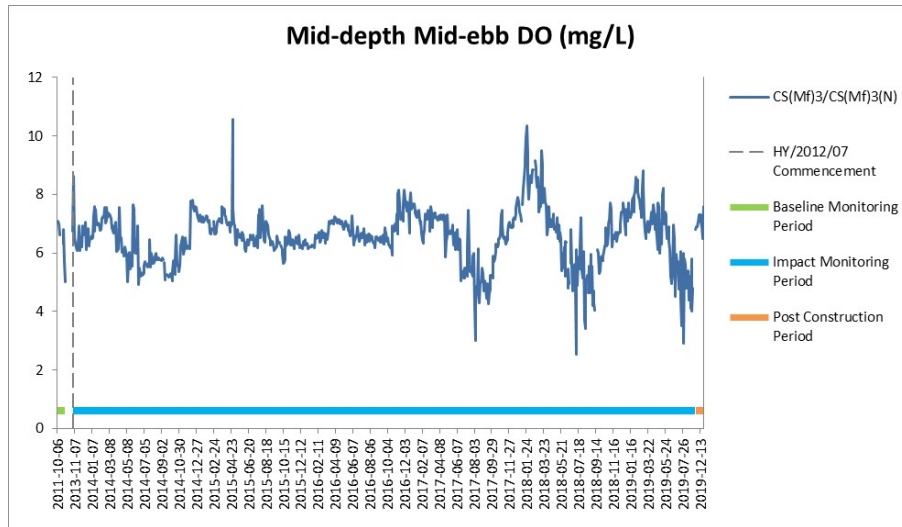


Figure F9 Impact Monitoring – Mean Level of Dissolved Oxygen (mg/L) in mid-depth waters during mid-ebb tide between 6 October 2011 and 23 December 2019 at CS(Mf)3(N) and CS(Mf)5.

(Weather condition varied between sunny to rainy during the course of the Project.) Overall monitoring results were not affected by weather conditions. In-situ monitoring is taken according to the requirement specified in the EM&A Manual, i.e. 3 water depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.

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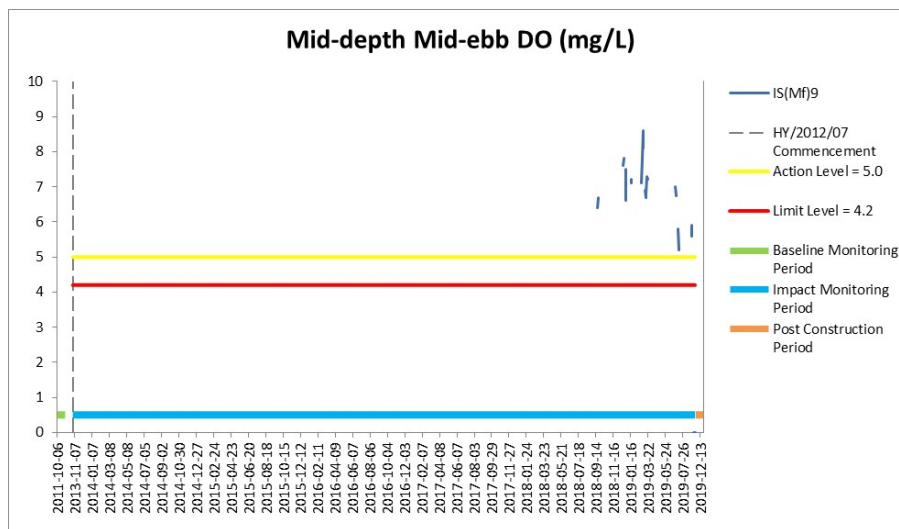
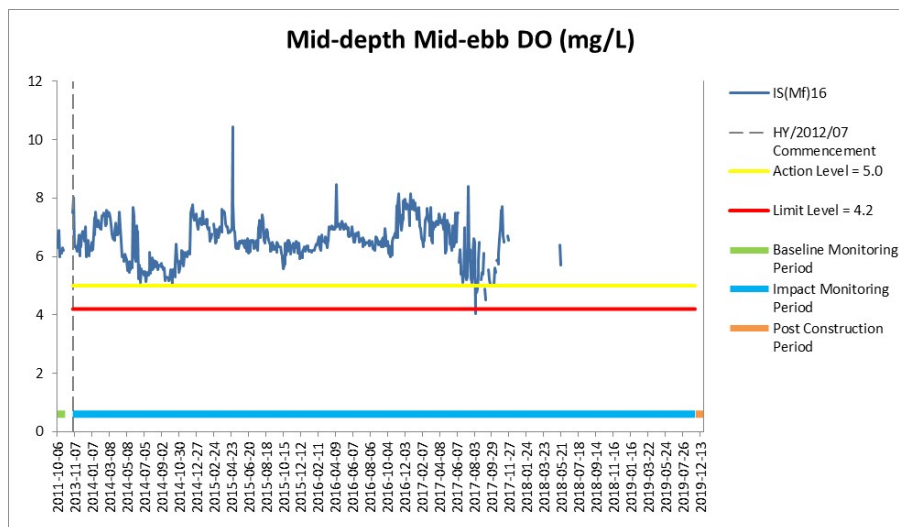


Figure F10 Impact Monitoring – Mean Level of Dissolved Oxygen (mg/L) in mid-depth waters during mid-ebb tide between 6 October 2011 and 23 December 2019 at IS(Mf)16 and IS(Mf)9.

(Weather condition varied between sunny to rainy during the course of the Project.) Overall monitoring results were not affected by weather conditions. In-situ monitoring is taken according to the requirement specified in the EM&A Manual, i.e. 3 water depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.

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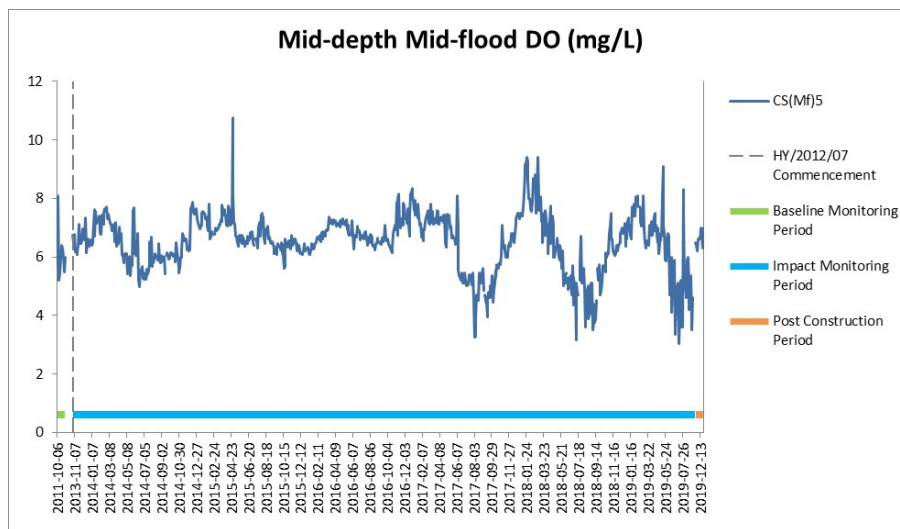
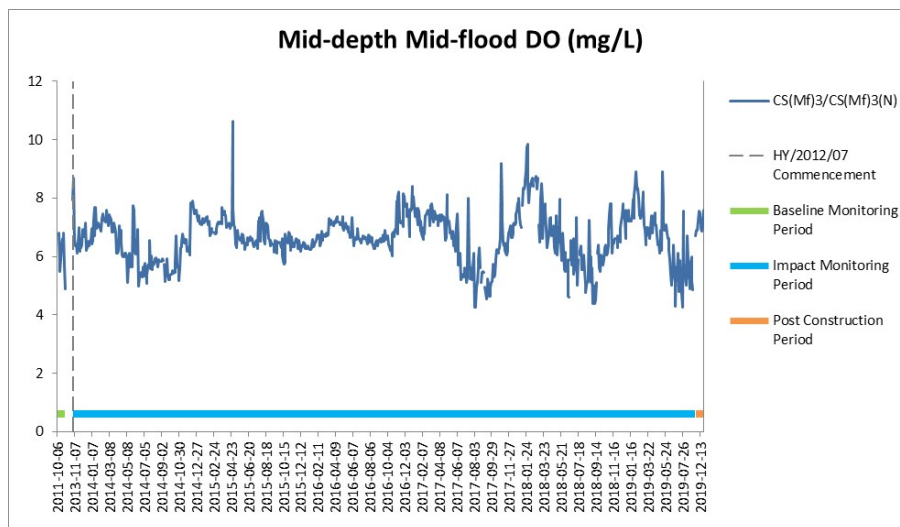


Figure F11 Impact Monitoring – Mean Level of Dissolved Oxygen (mg/L) in mid-depth waters during mid-flood tide between 6 October 2011 and 23 December 2019 at CS(Mf)3(N) and CS(Mf)5.

(Weather condition varied between sunny to rainy during the course of the Project.) Overall monitoring results were not affected by weather conditions. In-situ monitoring is taken according to the requirement specified in the EM&A Manual, i.e. 3 water depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.

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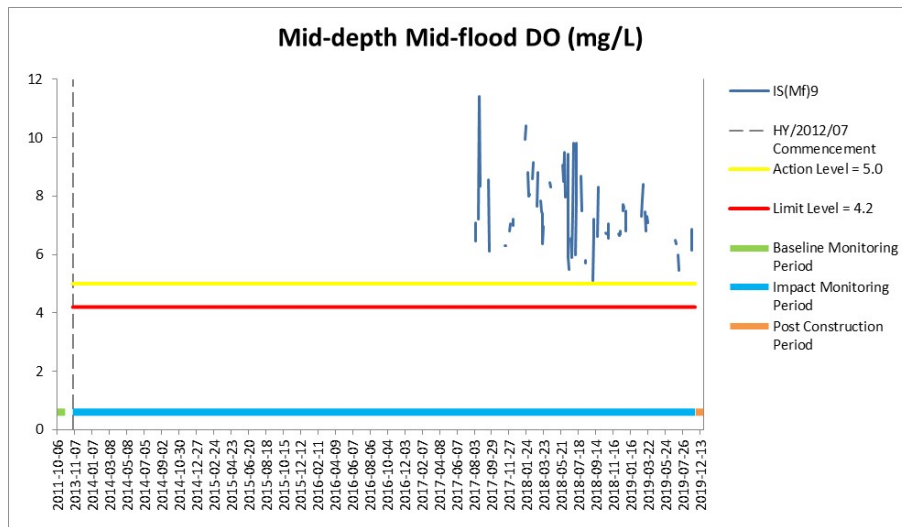
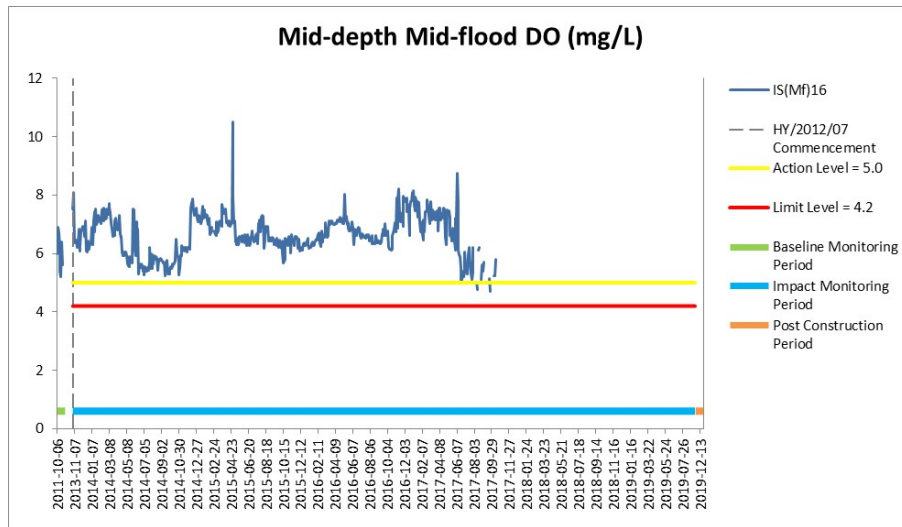


Figure F12 Impact Monitoring – Mean Level of Dissolved Oxygen (mg/L) in mid-depth waters during mid-flood tide between 6 October 2011 and 23 December 2019 at IS(Mf)16 and IS(Mf)9.

(Weather condition varied between sunny to rainy during the course of the Project.)

Overall monitoring results were not affected by weather conditions. In-situ monitoring is taken according to the requirement specified in the EM&A Manual, i.e. 3 water depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.

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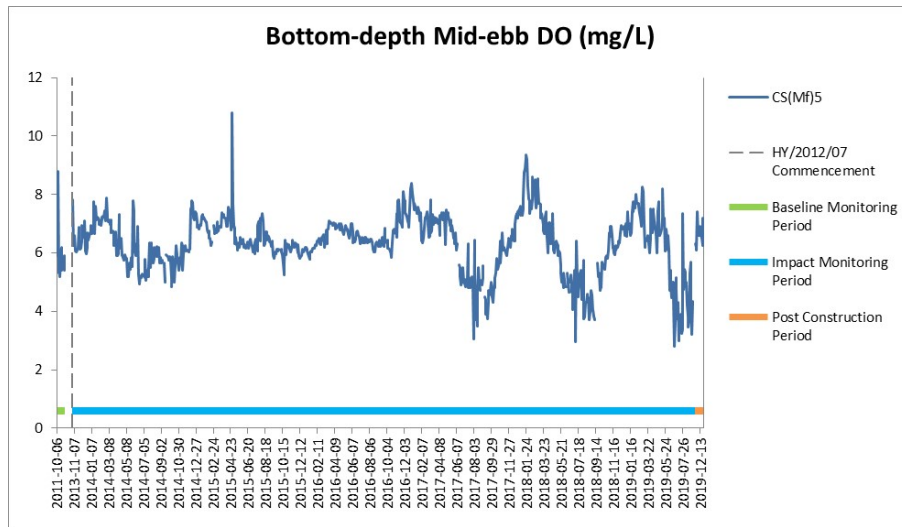
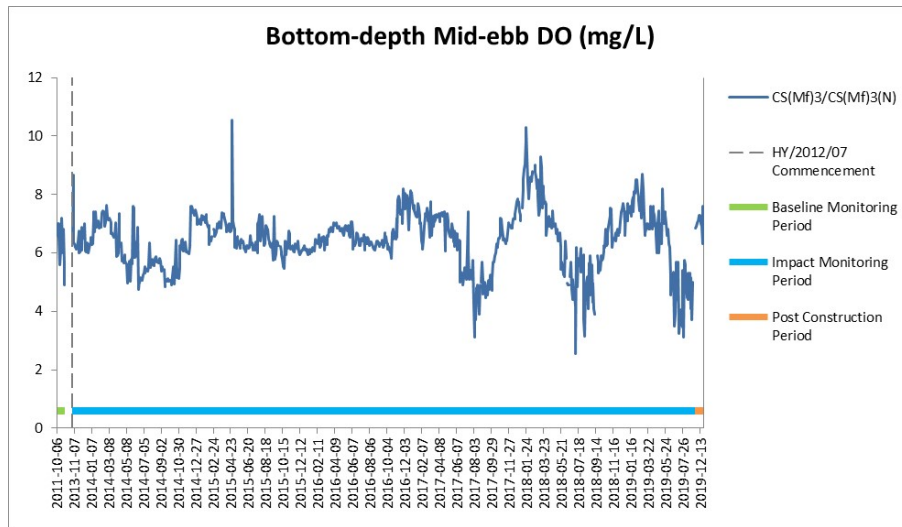


Figure F13 Impact Monitoring – Mean Level of Dissolved Oxygen (mg/L) in bottom waters during mid-ebb tide between 6 October 2011 and 23 December 2019 at CS(Mf)3/CS(Mf)3(N) and CS(Mf)5.

(Weather condition varied between sunny to rainy during the course of the Project.)

Overall monitoring results were not affected by weather conditions. In-situ monitoring is taken according to the requirement specified in the EM&A Manual, i.e. 3 water depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.

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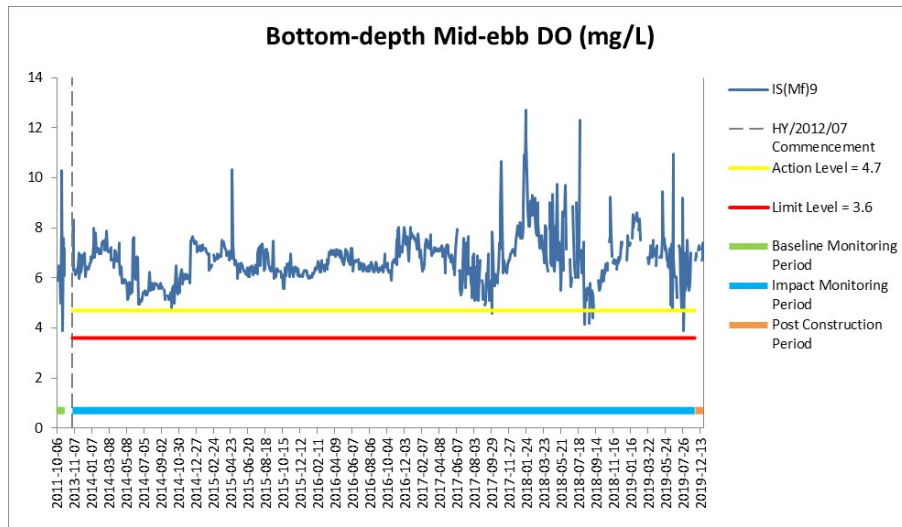
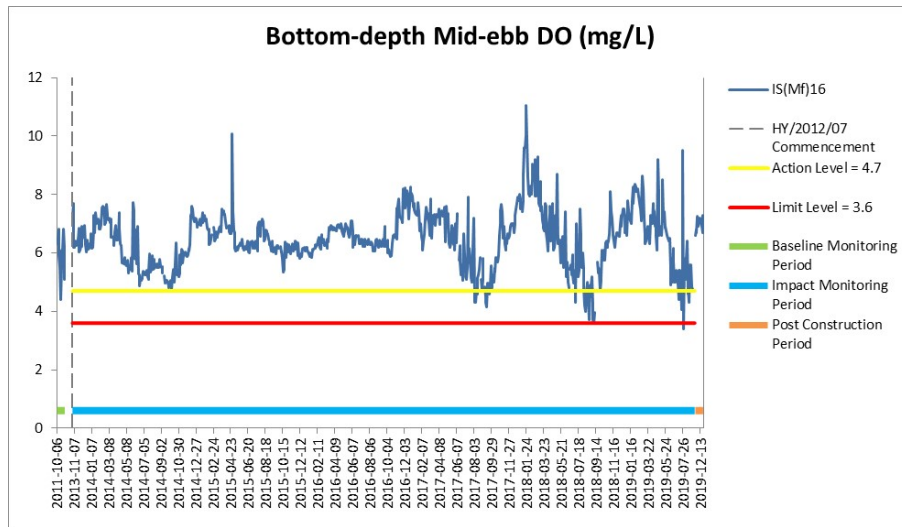


Figure F14 Impact Monitoring – Mean Level of Dissolved Oxygen (mg/L) in bottom waters during mid-ebb tide between 6 October 2011 and 23 December 2019 at IS(Mf)16 and IS(Mf)9.

(Weather condition varied between sunny to rainy during the course of the Project.)

Overall monitoring results were not affected by weather conditions. In-situ monitoring is taken according to the requirement specified in the EM&A Manual, i.e. 3 water depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.

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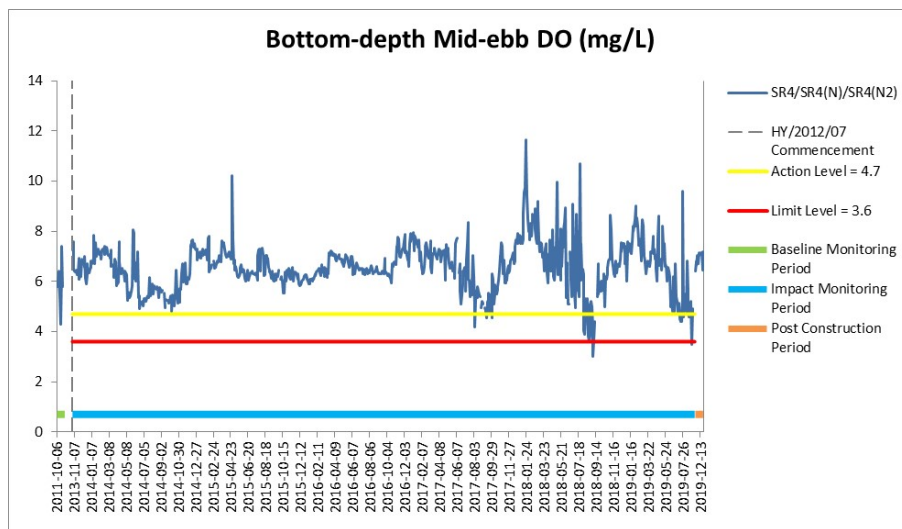
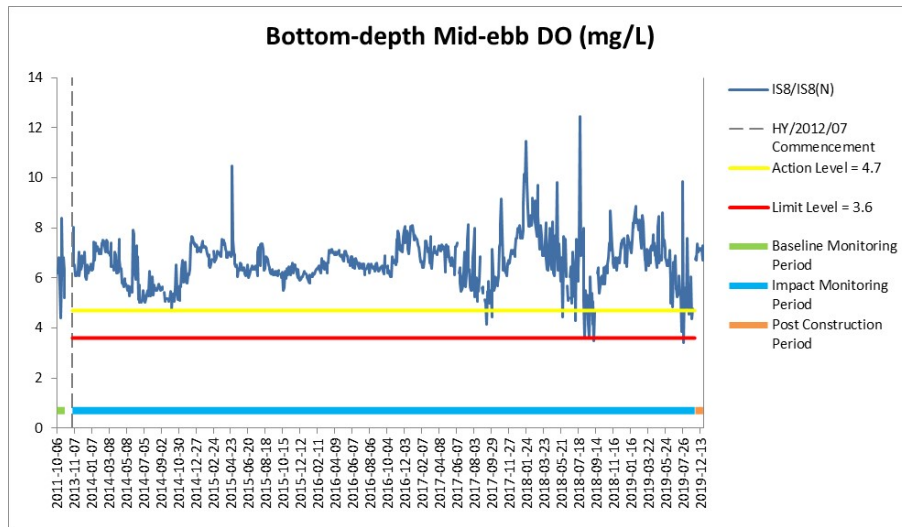


Figure F15 Impact Monitoring - Mean Level of Dissolved Oxygen (mg/L) in bottom waters during mid-ebb tide between 6 October 2011 and 23 December 2019 at IS8/IS8(N) and SR4/SR4(N)/SR4(N2).

(Weather condition varied between sunny to rainy during the course of the Project.)

Overall monitoring results were not affected by weather conditions. In-situ monitoring is taken according to the requirement specified in the EM&A Manual, i.e. 3 water depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.

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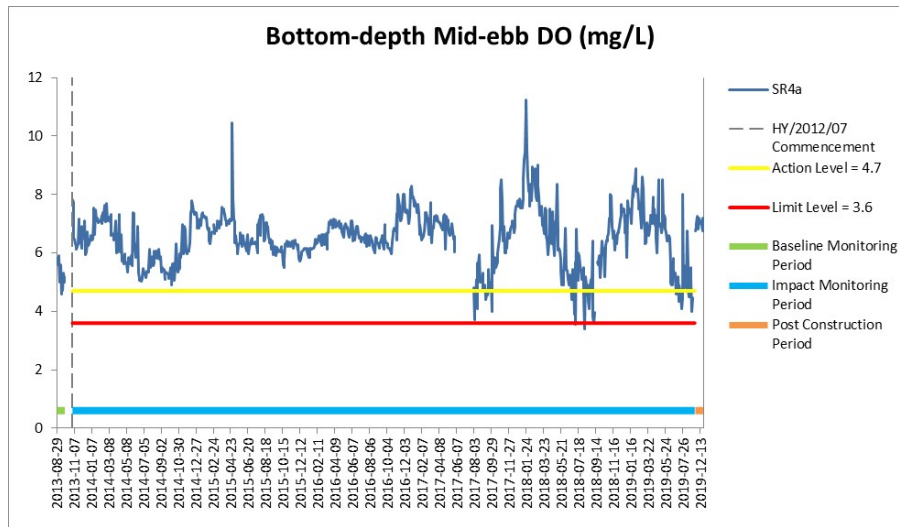


Figure F16 Impact Monitoring – Mean Level of Dissolved Oxygen (mg/L) in bottom waters during mid-ebb tide between 29 August 2013 and 23 December 2019 at SR4a.

(Weather condition varied between sunny to rainy during the course of the Project.)
 Overall monitoring results were not affected by weather conditions. In-situ monitoring is taken according to the requirement specified in the EM&A Manual, i.e. 3 water depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.

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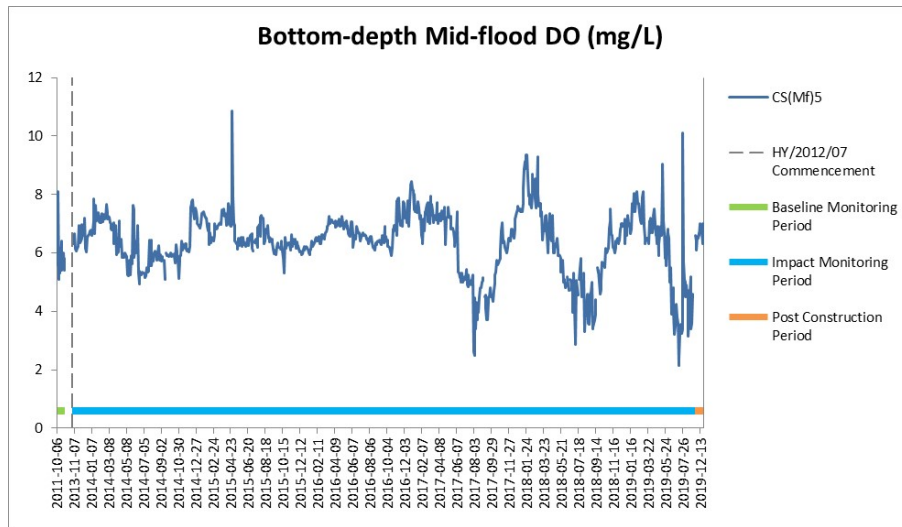
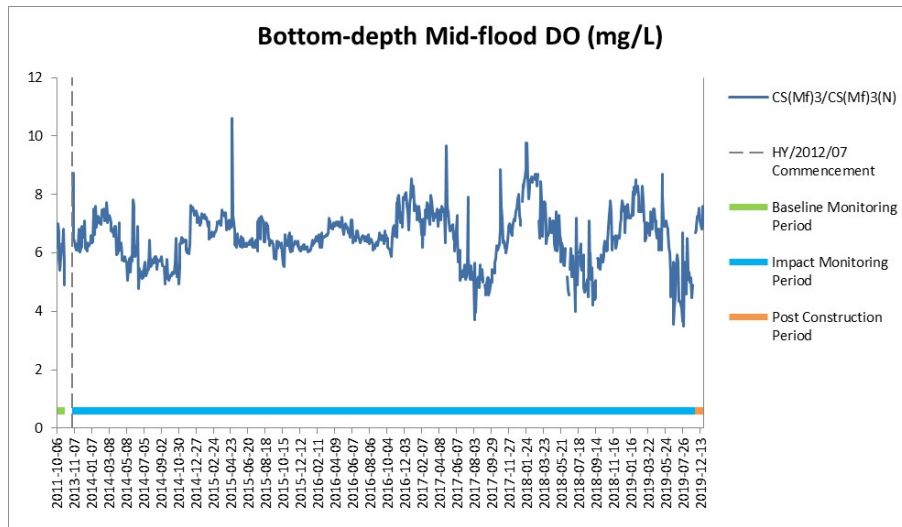


Figure F17 Impact Monitoring – Mean Level of Dissolved Oxygen (mg/L) in bottom waters during mid-flood tide between 6 October 2011 and 23 December 2019 at CS(Mf)3/CS(Mf)3(N) and CS(Mf)5.

(Weather condition varied between sunny to rainy during the course of the Project.)

Overall monitoring results were not affected by weather conditions. In-situ monitoring is taken according to the requirement specified in the EM&A Manual, i.e. 3 water depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.

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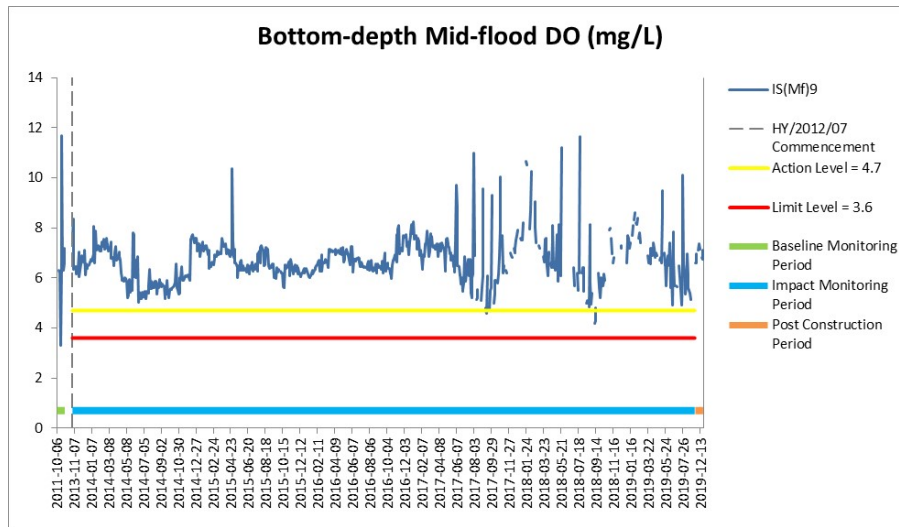
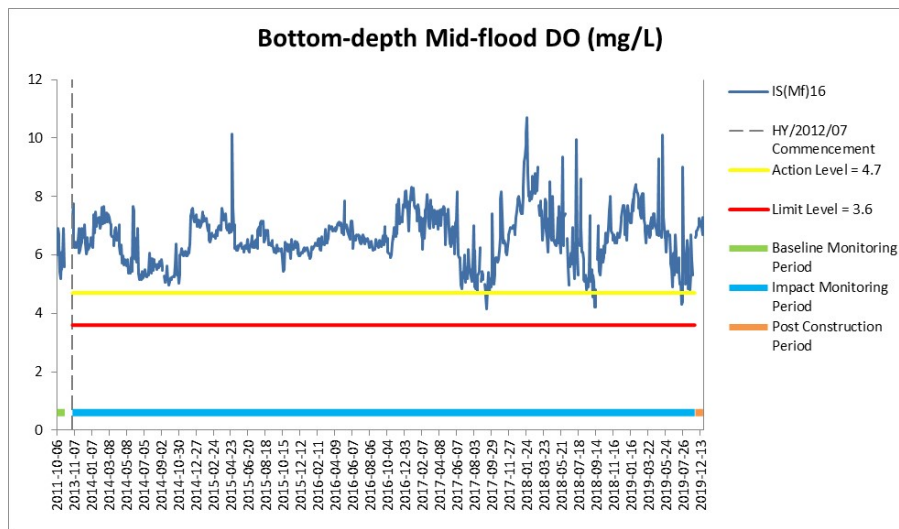


Figure F18 Impact Monitoring – Mean Level of Dissolved Oxygen (mg/L) in bottom waters during mid-flood tide between 6 October 2011 and 23 December 2019 at IS(Mf)16 and IS(Mf)9.

(Weather condition varied between sunny to rainy during the course of the Project.)

Overall monitoring results were not affected by weather conditions. In-situ monitoring is taken according to the requirement specified in the EM&A Manual, i.e. 3 water depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.

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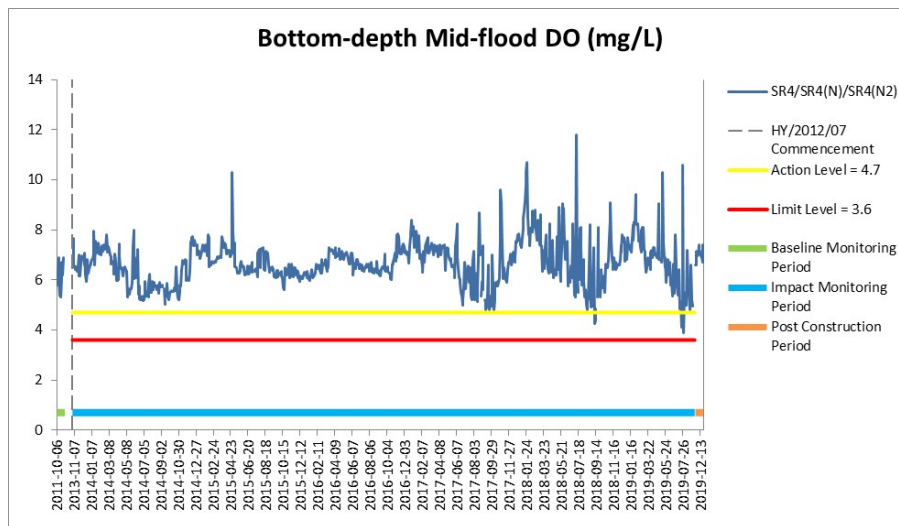
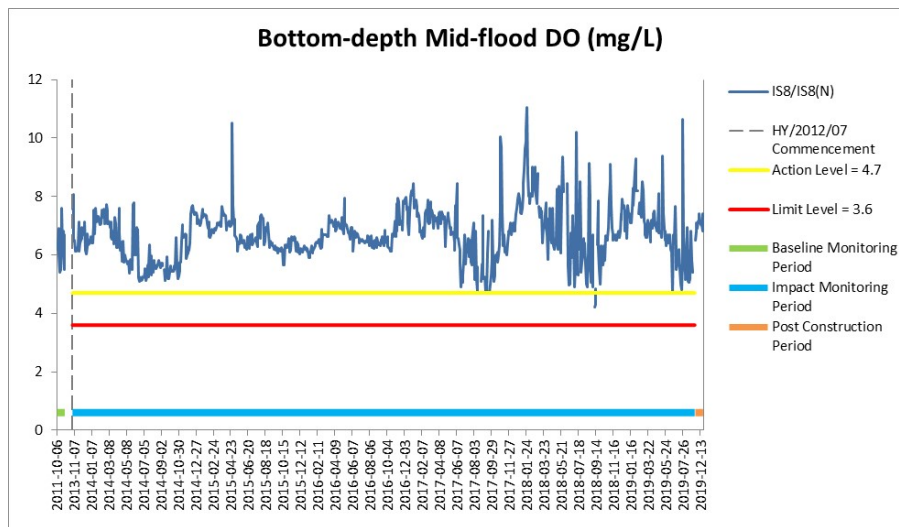


Figure F19 Impact Monitoring – Mean Level of Dissolved Oxygen (mg/L) in bottom waters during mid-flood tide between 6 October 2011 and 23 December 2019 at IS8/IS8(N) and SR4/SR4(N)/SR4(N2).

(Weather condition varied between sunny to rainy during the course of the Project.)

Overall monitoring results were not affected by weather conditions. In-situ monitoring is taken according to the requirement specified in the EM&A Manual, i.e. 3 depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.

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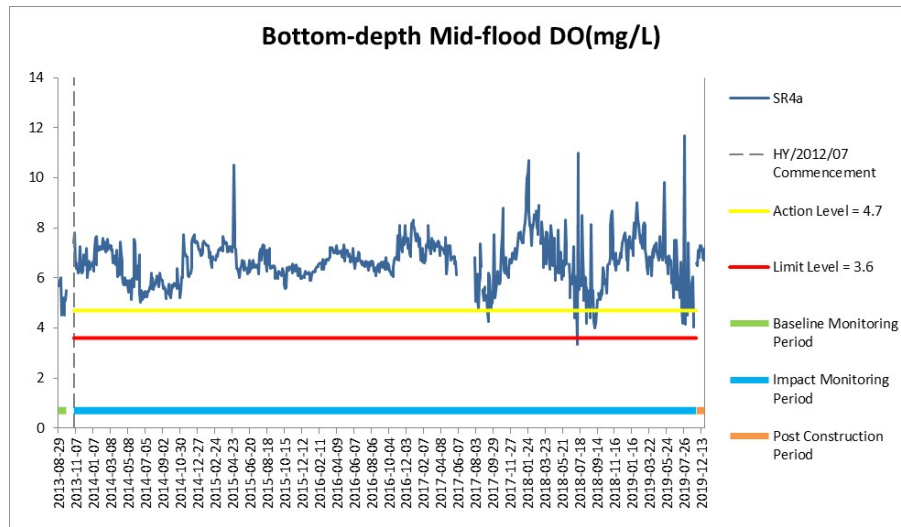


Figure F20 Impact Monitoring - Mean Level of Dissolved Oxygen (mg/L) in bottom waters during mid-flood tide between 29 August 2013 and 23 December 2019 at SR4a.

(Weather condition varied between sunny to rainy during the course of the Project.) Overall monitoring results were not affected by weather conditions. In-situ monitoring is taken according to the requirement specified in the EM&A Manual, i.e. 3 water depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.

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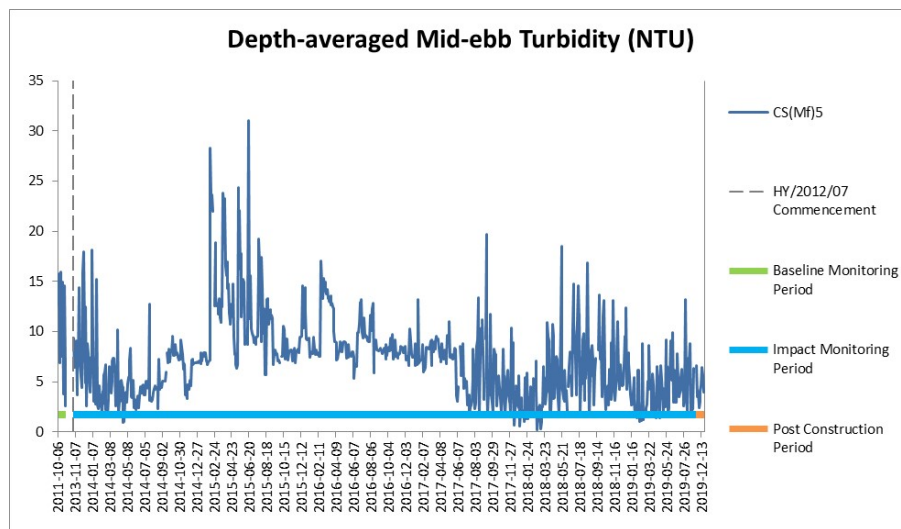
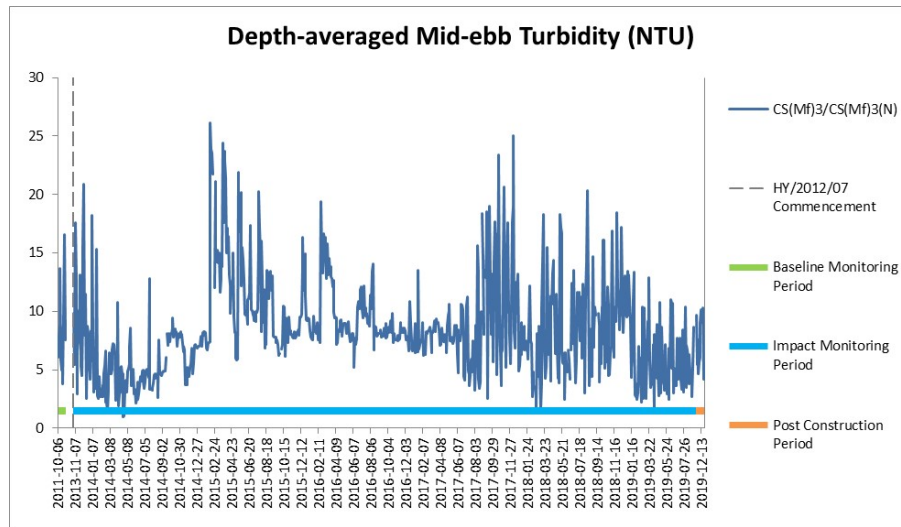


Figure F21 Impact Monitoring - Mean Level of depth-averaged Turbidity (NTU) during mid-ebb tide between 6 October 2011 and 23 December 2019 at CS(Mf)3/CS(Mf)3(N) and CS(Mf)5.

(Weather condition varied between sunny to rainy during the course of the Project.) Overall monitoring results were not affected by weather conditions. In-situ monitoring is taken according to the requirement specified in the EM&A Manual, i.e. 3 water depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.

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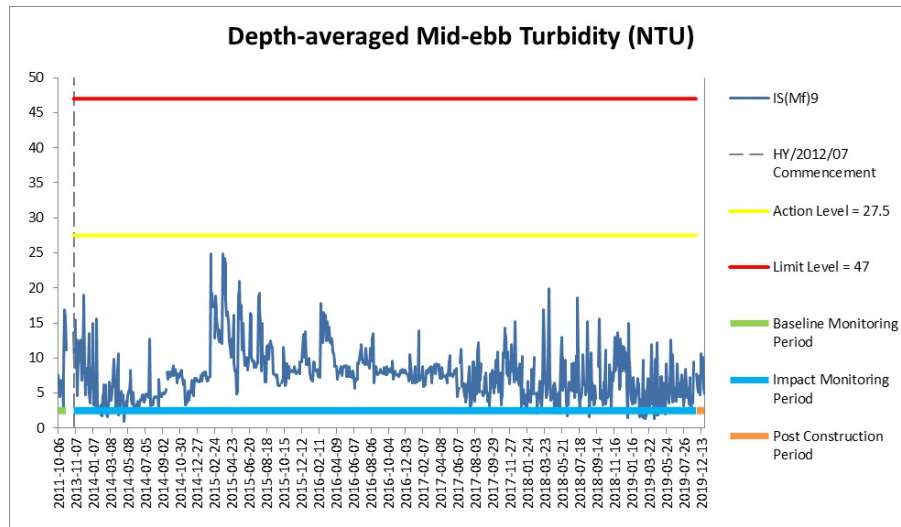
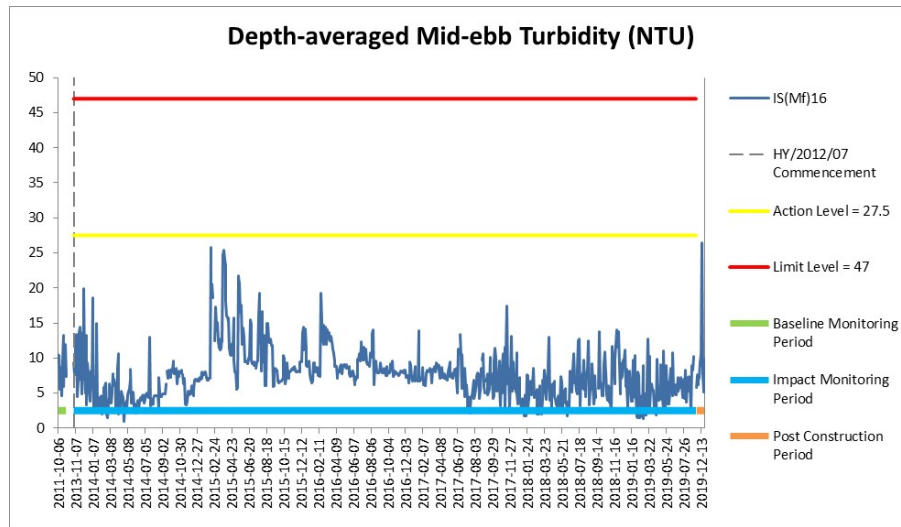


Figure F22 Impact Monitoring – Mean Level of depth-averaged Turbidity (NTU) during mid-ebb tide between 6 October 2011 and 23 December 2019 at IS(Mf)16 and IS(Mf)9.

(Weather condition varied between sunny to rainy during the course of the Project.)

Overall monitoring results were not affected by weather conditions. In-situ monitoring is taken according to the requirement specified in the EM&A Manual, i.e. 3 water depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.

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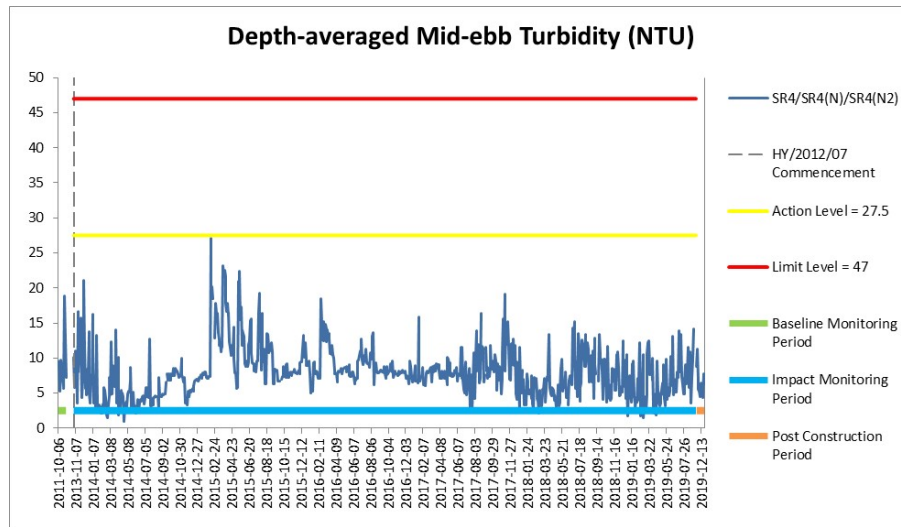
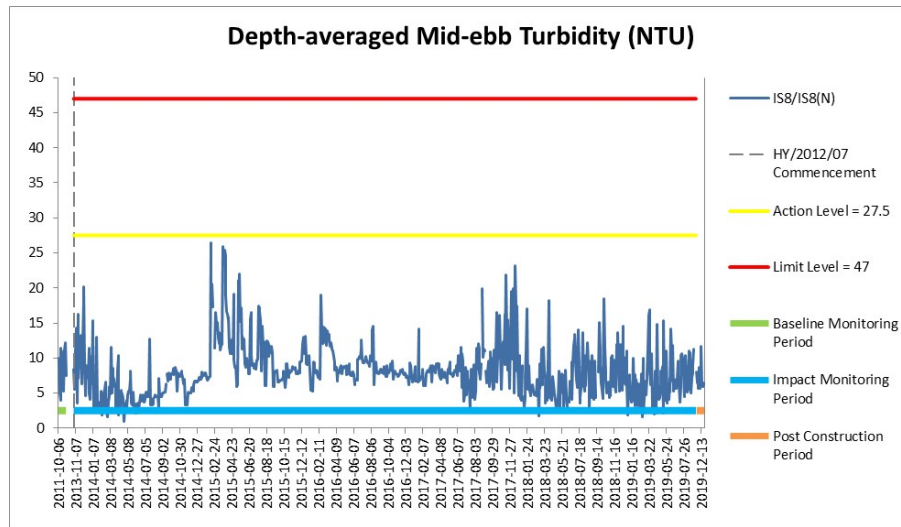


Figure F23 Impact Monitoring – Mean Level of depth-averaged Turbidity (NTU) during mid-ebb tide between 6 October 2011 and 23 December 2019 at IS8/IS8(N) and SR4/SR4(N)/SR4(N2).

(Weather condition varied between sunny to rainy during the course of the Project.) Overall monitoring results were not affected by weather conditions. In-situ monitoring is taken according to the requirement specified in the EM&A Manual, i.e. 3 water depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.

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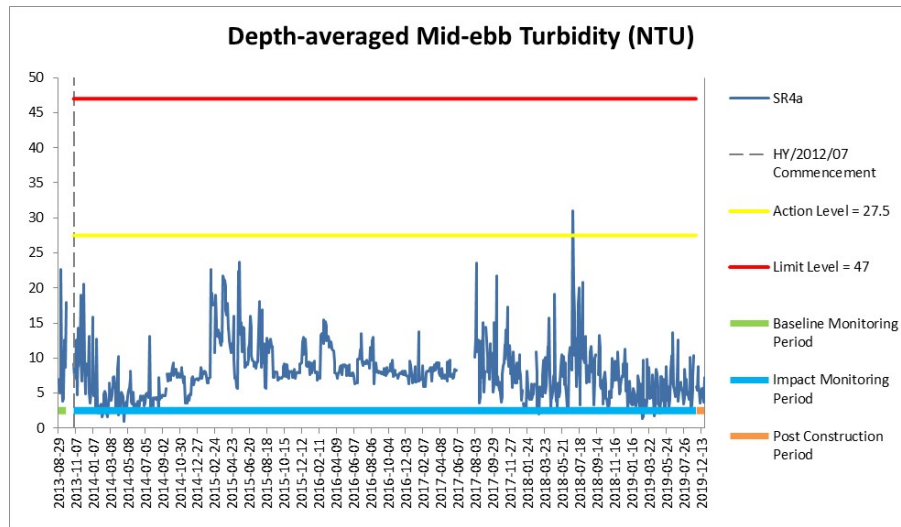


Figure F24 Impact Monitoring – Mean Level of depth-averaged Turbidity (NTU) during mid-ebb tide between 29 August 2013 and 23 December 2019 at SR4a.

(Weather condition varied between sunny to rainy during the course of the Project.) Overall monitoring results were not affected by weather conditions. In-situ monitoring is taken according to the requirement specified in the EM&A Manual, i.e. 3 water depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.

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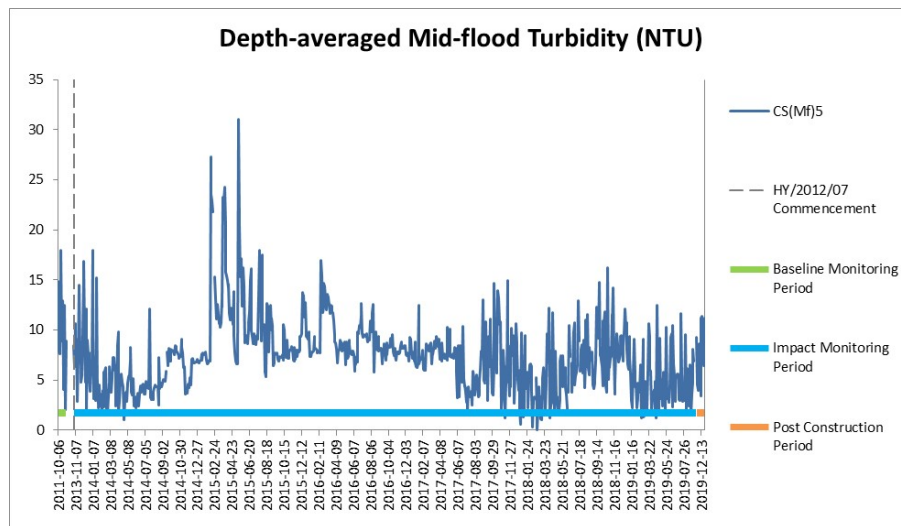
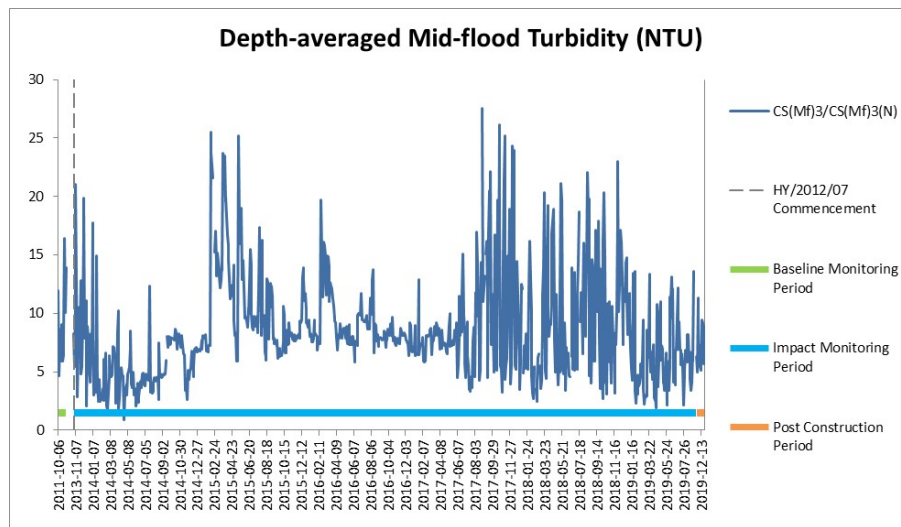


Figure F25 Impact Monitoring – Mean Level of depth-averaged Turbidity (NTU) during mid-flood tide between 6 October 2011 and 23 December 2019 at CS(Mf)3/CS(Mf)3(N) and CS(Mf)5.

(Weather condition varied between sunny to rainy during the course of the Project.) Overall monitoring results were not affected by weather conditions. In-situ monitoring is taken according to the requirement specified in the EM&A Manual, i.e. 3 water depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.

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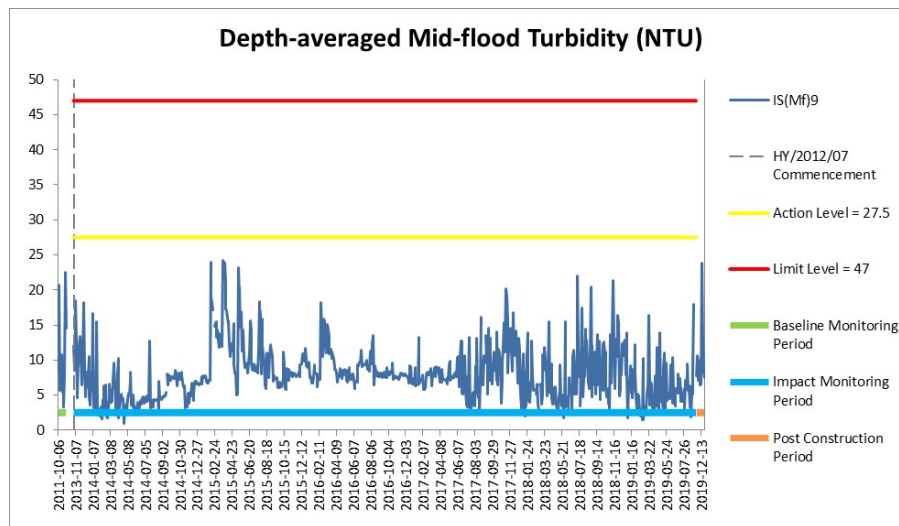
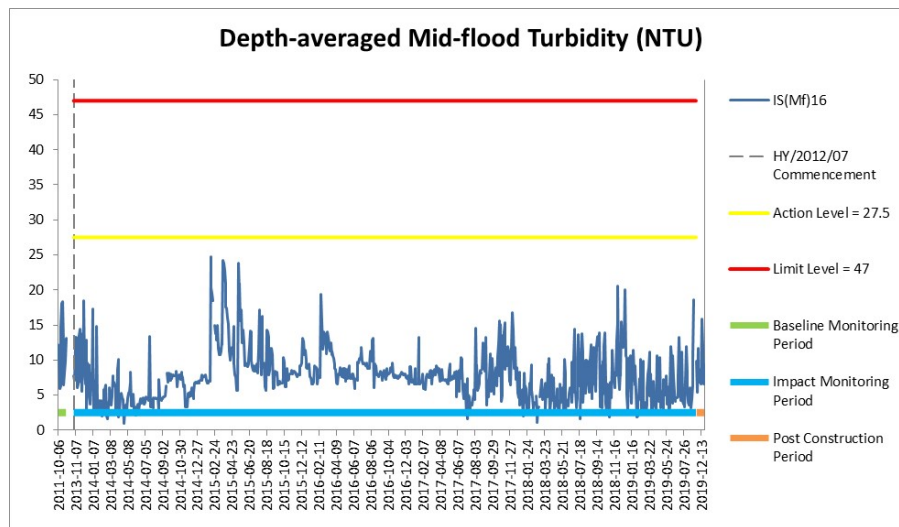


Figure F26 Impact Monitoring – Mean Level of depth-averaged Turbidity (NTU) during mid-flood tide between 6 October 2011 and 23 December 2019 at IS(Mf)16 and IS(Mf)9.

(Weather condition varied between sunny to rainy during the course of the Project.) Overall monitoring results were not affected by weather conditions. In-situ monitoring is taken according to the requirement specified in the EM&A Manual, i.e. 3 water depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.

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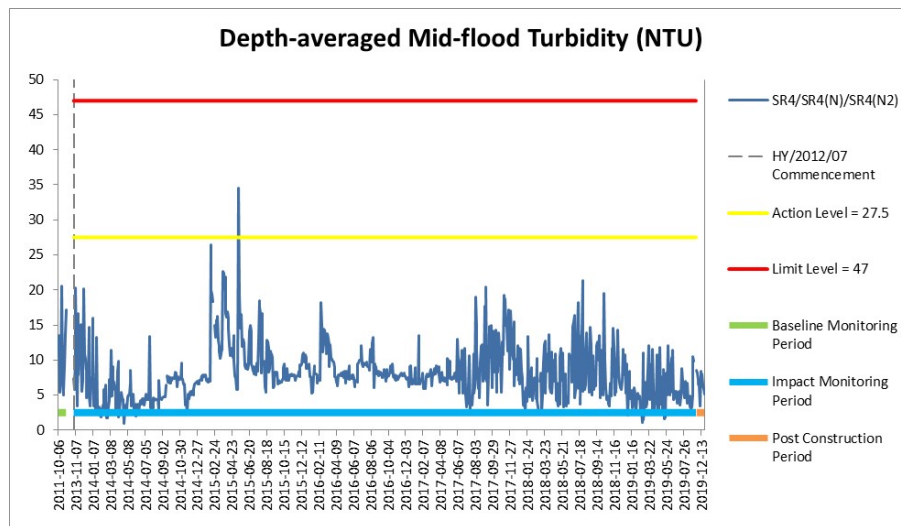
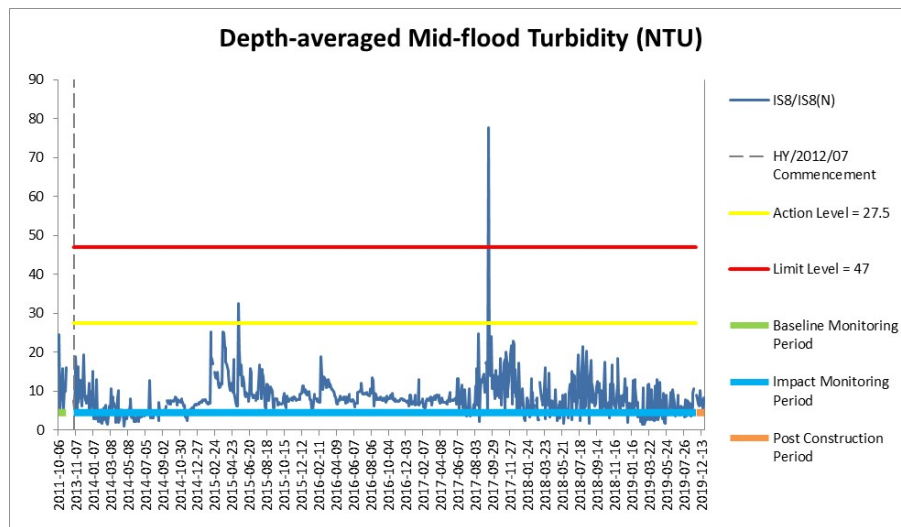


Figure F27 Impact Monitoring – Mean Level of depth-averaged Turbidity (NTU) during mid-flood tide between 6 October 2011 and 23 December 2019 at IS8/IS8(N) and SR4/SR4(N)/SR4(N2).

(Weather condition varied between sunny to rainy during the course of the Project.) Overall monitoring results were not affected by weather conditions. In-situ monitoring is taken according to the requirement specified in the EM&A Manual, i.e. 3 water depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.

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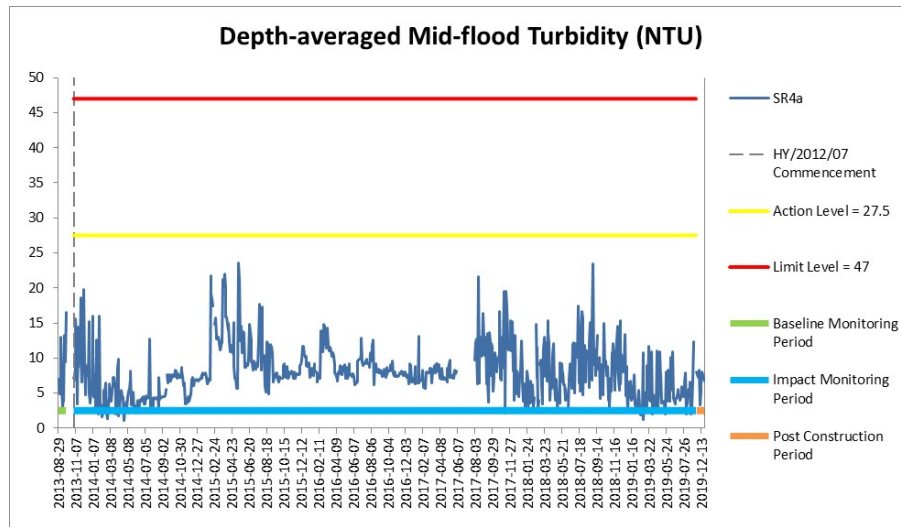


Figure F28 Impact Monitoring - Mean Level of depth-averaged Turbidity (NTU) during mid-flood tide between 29 August 2013 and 23 December 2019 at SR4a.

*(Weather condition varied between sunny to rainy during the course of the Project.)
 Overall monitoring results were not affected by weather conditions. In-situ monitoring is taken according to the requirement specified in the EM&A Manual, i.e. 3 water depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.*

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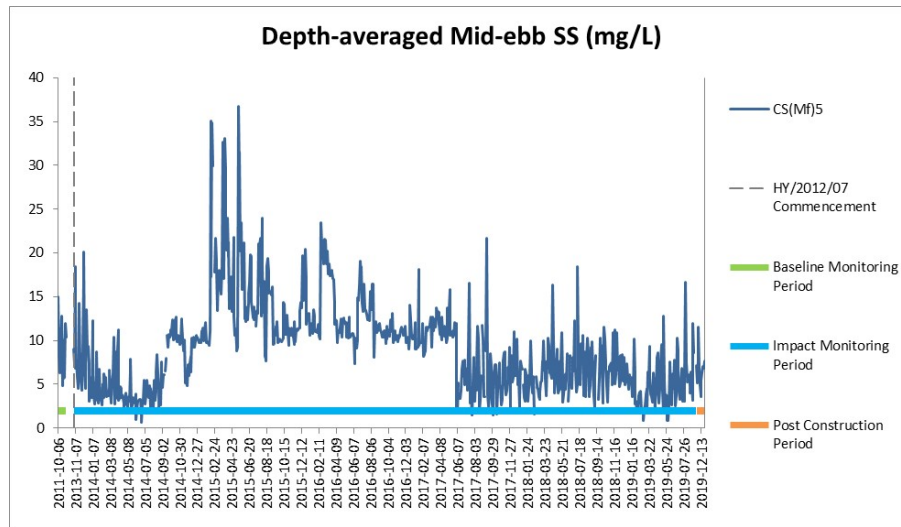
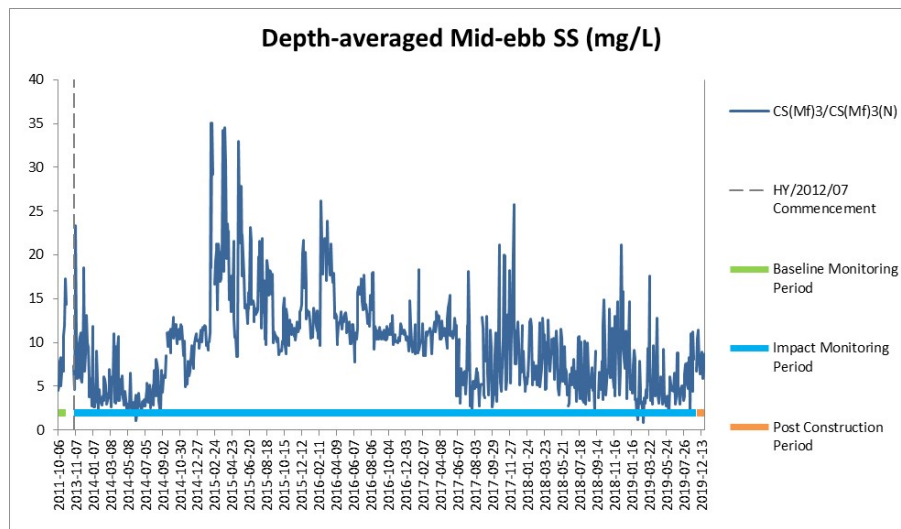


Figure F29 Impact Monitoring – Mean Level of depth-averaged Suspended Solids (mg/L) during mid-ebb tide between 6 October 2011 and 23 December 2019 at CS(Mf)3/CS(Mf)3(N) and CS(Mf)5.

(Weather condition varied between sunny to rainy during the course of the Project.)

Overall monitoring results were not affected by weather conditions. In-situ monitoring is taken according to the requirement specified in the EM&A Manual, i.e. 3 water depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.

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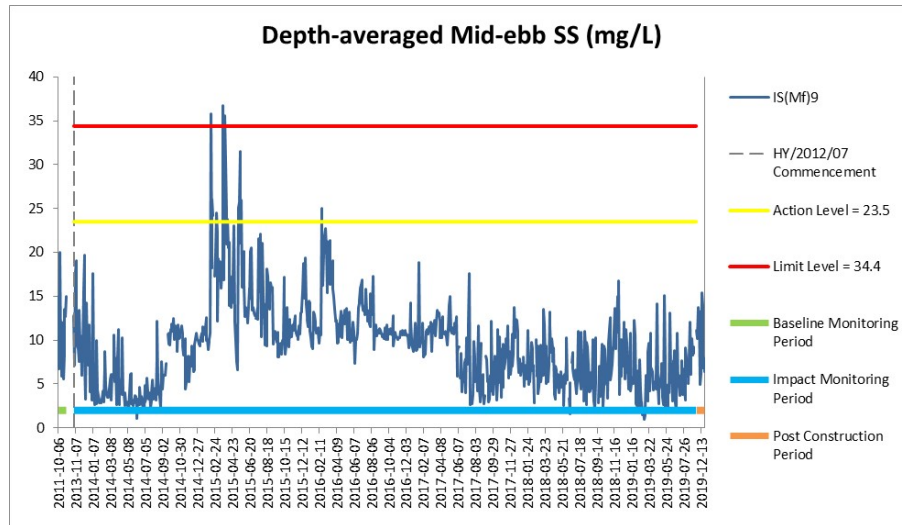
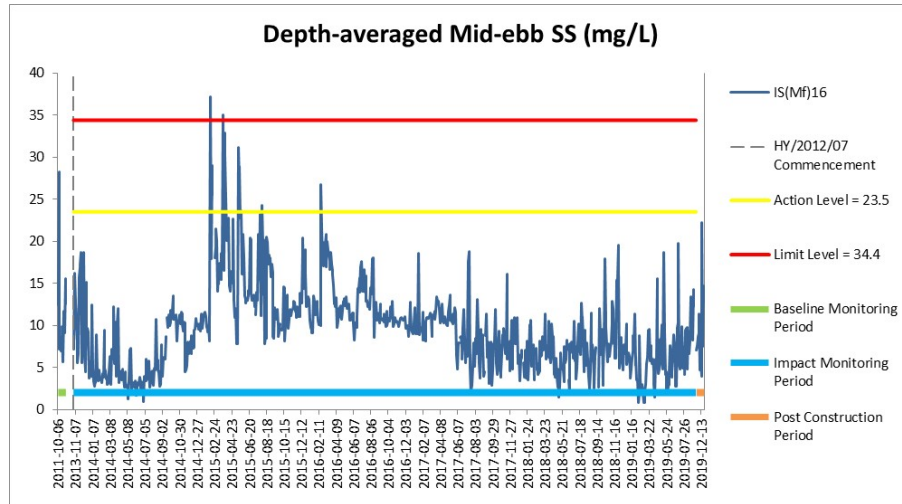


Figure F30 Impact Monitoring - Mean Level of depth-averaged Suspended Solids (mg/L) during mid-ebb tide between 6 October 2011 and 23 December 2019 at IS(Mf)16 and IS(Mf)9.

(Weather condition varied between sunny to rainy during the course of the Project.) Overall monitoring results were not affected by weather conditions. In-situ monitoring is taken according to the requirement specified in the EM&A Manual, i.e. 3 water depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.

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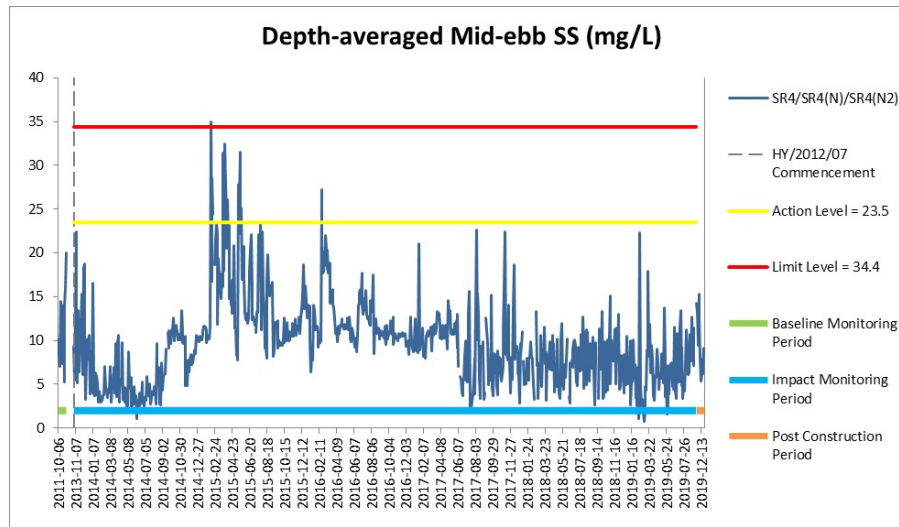
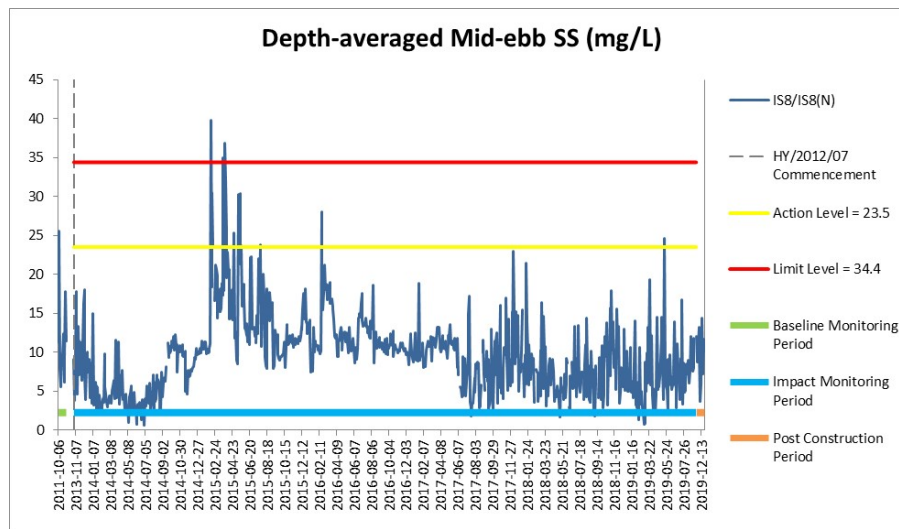


Figure F31 Impact Monitoring – Mean Level of depth-averaged Suspended Solids (mg/L) during mid-ebb tide between 6 October 2011 and 23 December 2019 at IS8/IS8(N) and SR4/SR4(N)/SR4(N2).

(Weather condition varied between sunny to rainy during the course of the Project.)

Overall monitoring results were not affected by weather conditions. In-situ monitoring is taken according to the requirement specified in the EM&A Manual, i.e. 3 water depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.

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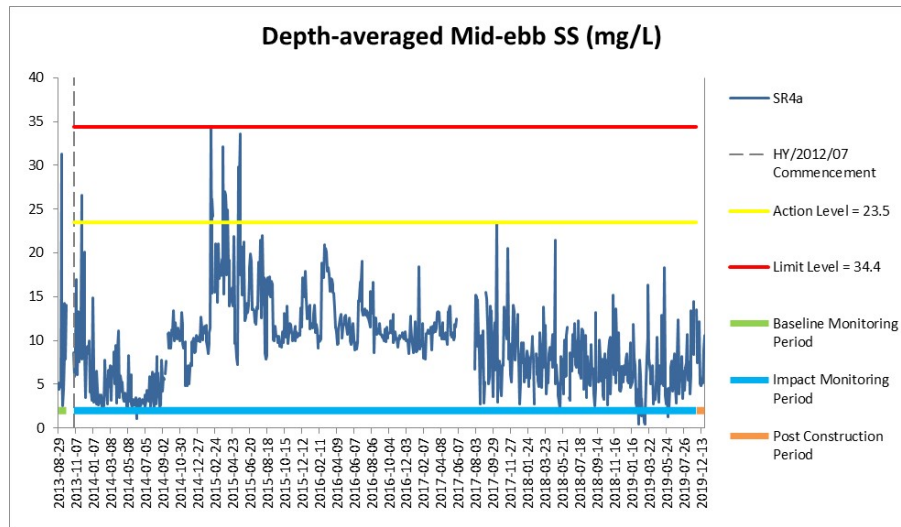


Figure F32 Impact Monitoring - Mean Level of depth-averaged Suspended Solids (mg/L) during mid-ebb tide between 29 August 2013 and 23 December 2019 at SR4a.

*(Weather condition varied between sunny to rainy during the course of the Project.)
Overall monitoring results were not affected by weather conditions. In-situ monitoring is taken according to the requirement specified in the EM&A Manual, i.e. 3 water depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.*

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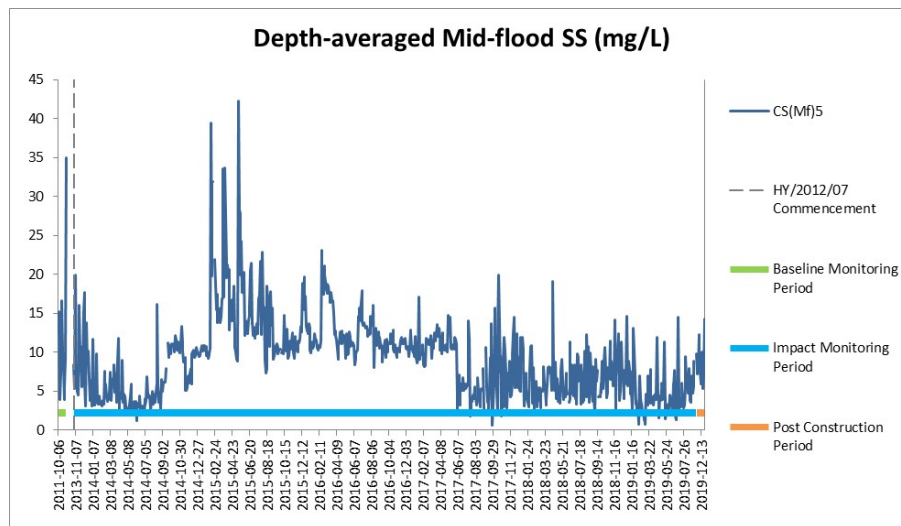
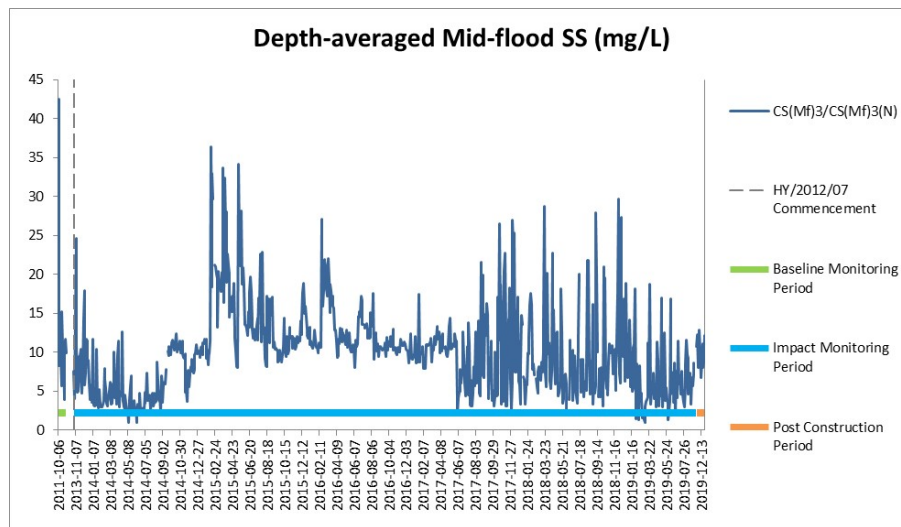


Figure F33 Impact Monitoring – Mean Level of depth-averaged Suspended Solids (mg/L) during mid-flood tide between 6 October 2011 and 23 December 2019 at CS(Mf)3/CS(Mf)3(N) and CS(Mf)5.

(Weather condition varied between sunny to rainy during the course of the Project.)

Overall monitoring results were not affected by weather conditions. In-situ monitoring is taken according to the requirement specified in the EM&A Manual, i.e. 3 water depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.

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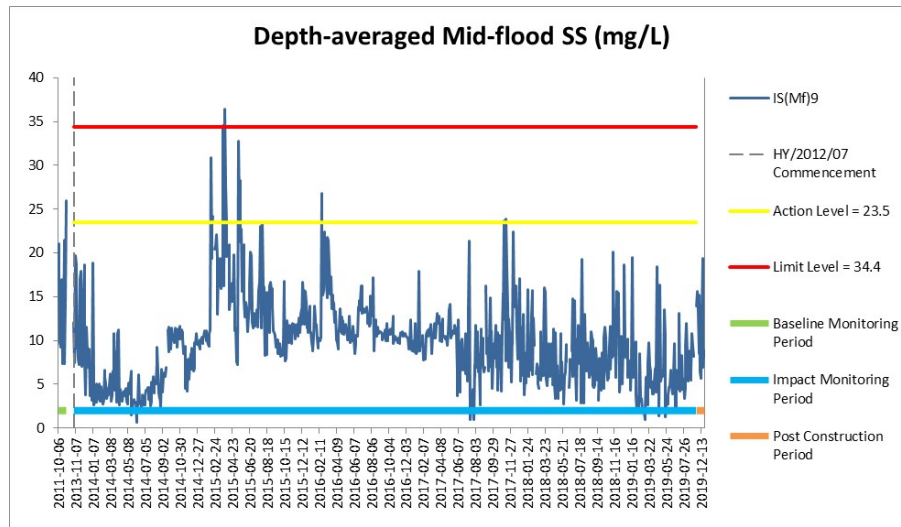
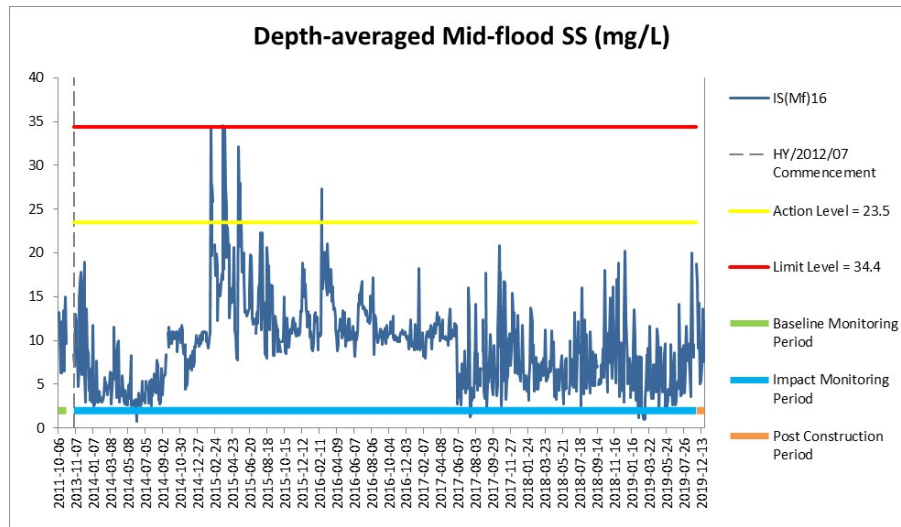


Figure F34 Impact Monitoring – Mean Level of depth-averaged Suspended Solids (mg/L) during mid-flood tide between 6 October 2011 and 23 December 2019 at IS(Mf)16 and IS(Mf)9 .

(Weather condition varied between sunny to rainy during the course of the Project.) Overall monitoring results were not affected by weather conditions. In-situ monitoring is taken according to the requirement specified in the EM&A Manual, i.e. 3 water depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.

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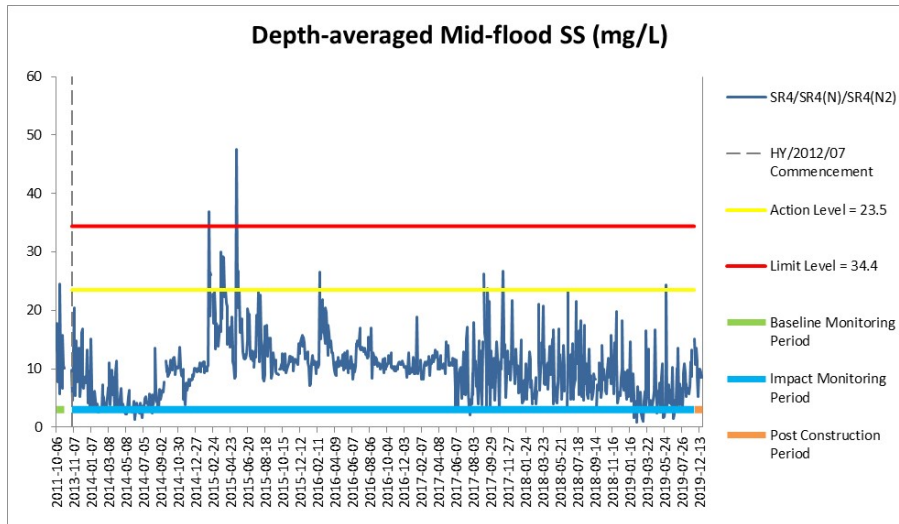
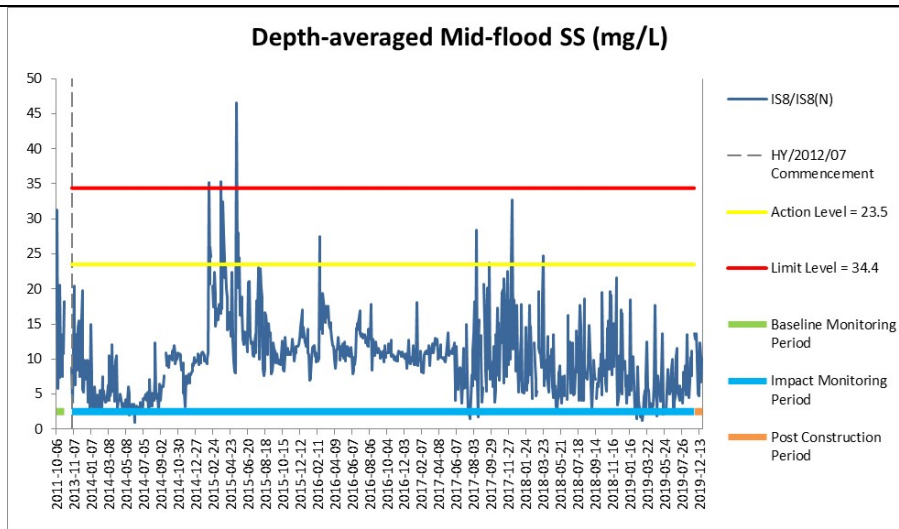


Figure F35 Impact Monitoring – Mean Level of depth-averaged Suspended Solids (mg/L) during mid-flood tide between 6 October 2011 and 23 December 2019 at IS8/IS8(N) and SR4/SR4(N)/SR4(N2). (Weather condition varied between sunny to rainy during the course of the Project.) Overall monitoring results were not affected by weather conditions. In-situ monitoring is taken according to the requirement specified in the EM&A Manual, i.e. 3 water depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.

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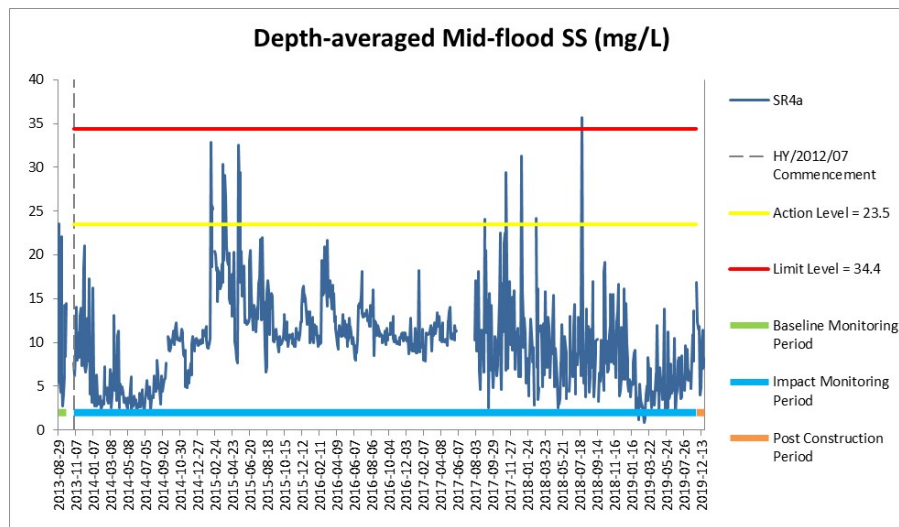


Figure F36 Impact Monitoring - Mean Level of depth-averaged Suspended Solids (mg/L) during mid-flood tide between 29 August 2013 and 23 December 2019 at SR4a.

(Weather condition varied between sunny to rainy during the course of the Project.) Overall monitoring results were not affected by weather conditions. In-situ monitoring is taken according to the requirement specified in the EM&A Manual, i.e. 3 water depth namely 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.

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Appendix G

Event Action Plan

Appendix G1 Event/ Action Plan for Air Quality

EVENT	ET ⁽¹⁾	ACTION		
		IEC ⁽¹⁾	SOR ⁽¹⁾	Contractor
Action Level				
1. Exceedance for one sample	<ol style="list-style-type: none"> 1. Identify the source. 2. Inform the IEC and the SOR. 3. Repeat measurement to confirm finding. 4. Increase monitoring frequency to daily. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by the ET. 2. Check Contractor's working method. 	<ol style="list-style-type: none"> 1. Notify Contractor. 	<ol style="list-style-type: none"> 1. Rectify any unacceptable practice 2. Amend working methods if appropriate
2. Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 1. Identify the source. 2. Inform the IEC and the SOR. 3. Repeat measurements to confirm findings. 4. Increase monitoring frequency to daily. 5. Discuss with the IEC and the Contractor on remedial actions required. 6. If exceedance continues, arrange meeting with the IEC and the SOR. 7. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by the ET. 2. Check the Contractor's working method. 3. Discuss with the ET and the Contractor on possible remedial measures. 4. Advise the SOR on the effectiveness of the proposed remedial measures. 5. Supervisor implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing. 2. Notify the Contractor. 3. Ensure remedial measures properly implemented. 	<ol style="list-style-type: none"> 1. Submit proposals for remedial actions to IEC within 3 working days of notification 2. Implement the agreed proposals 3. Amend proposal if appropriate

EVENT	ET ⁽¹⁾	ACTION		
		IEC ⁽¹⁾	SOR ⁽¹⁾	Contractor
Limit Level				
1. Exceedance for one sample	<ol style="list-style-type: none"> 1. Identify the source. 2. Inform the SOR and the DEP. 3. Repeat measurement to confirm finding. 4. Increase monitoring frequency to daily. 5. Assess effectiveness of Contractor's remedial actions and keep the IEC, the DEP and the SOR informed of the results. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by the ET. 2. Check Contractor's working method. 3. Discuss with the ET and the Contractor on possible remedial measures. 4. Advise the SOR on the effectiveness of the proposed remedial measures. 5. Supervisor implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing. 2. Notify the Contractor. 3. Ensure remedial measures are properly implemented. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to IEC within 3 working days of notification 3. Implement the agreed proposals 4. Amend proposal if appropriate
2. Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 1. Notify the IEC, the SOR, the DEP and the Contractor. 2. Identify the source. 3. Repeat measurements to confirm findings. 4. Increase monitoring frequency to daily. 5. Carry out analysis of the Contractor's working procedures to determine possible mitigation to be implemented. 6. Arrange meeting with the IEC and the SOR to discuss the remedial actions to be taken. 7. Assess effectiveness of the Contractor's remedial actions 	<ol style="list-style-type: none"> 1. Discuss amongst the SOR, ET and the Contractor on the potential remedial actions. 2. Review the Contractor's remedial actions whenever necessary to assure their effectiveness and advise the SOR accordingly. 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing. 2. Notify the Contractor. 3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented. 4. Ensure remedial measures are properly implemented. 5. If exceedance continues, consider what activity of the work is responsible and instruct the Contractor to stop that activity of work until the exceedance is abated. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance. 2. Submit proposals for remedial actions to IEC within 3 working days of notification. 3. Implement the agreed proposals. 4. Resubmit proposals if problem still not under control. 5. Stop the relevant activity of works as determined by the SOR until the exceedance is abated.

and keep the IEC, the DEP and
the SOR informed of the results.

8. If the exceedance stops, cease
additional monitoring.

Appendix G2 Event/ Action Plan for Construction Noise

ACTION					
EVENT	ET	IEC	SOR	Contractor	
Action Level	<ol style="list-style-type: none"> 1. Notify the IEC and the Contractor. 2. Carry out investigation. 3. Report the results of investigation to the IEC and the Contractor. 4. Discuss with the Contractor and formulate remedial measures. 5. Increase monitoring frequency to check mitigation effectiveness. 	<ol style="list-style-type: none"> 1. Review the analysed results submitted by the ET. 2. Review the proposed remedial measures by the Contractor and advise the SOR accordingly. 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing. 2. Notify the Contractor. 3. Require the Contractor to propose remedial measures for the analysed noise problem. 4. Ensure remedial measures are properly implemented. 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to IEC 2. Implement noise mitigation proposals 	
Limit Level	<ol style="list-style-type: none"> 1. Notify the IEC, the SOR, the DEP and the Contractor. 2. Identify the source. 3. Repeat measurement to confirm findings. 4. Increase monitoring frequency. 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented. 6. Inform the IEC, the SOR and the DEP the causes & actions taken for the exceedances. 7. Assess effectiveness of the Contractor's remedial actions and keep the IEC, the DEP and the SOR informed of the results. 8. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1. Discuss amongst the SOR, the ET and the Contractor on the potential remedial actions. 2. Review the Contractor's remedial actions whenever necessary to assure their effectiveness and advise the SOR accordingly. 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing. 2. Notify the Contractor. 3. Require the Contractor to propose remedial measures for the analysed noise problem. 4. Ensure remedial measures are properly implemented. 5. If exceedance continues, consider what activity of the work is responsible and instruct the Contractor to stop that activity of work until the exceedance is abated. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to IEC within 3 working days of notification 3. Implement the agreed proposals 4. Resubmit proposals if problem still not under control 5. Stop the relevant activity of works as determined by the SOR until the exceedance is abated. 	

Appendix G3 *Event/ Action Plan for Water Quality*

Event	ET Leader	IEC	SOR	Contractor
Action level being exceeded by one sampling day	<ol style="list-style-type: none"> Repeat in situ measurement on next day of exceedance to confirm findings; Identify source(s) of impact; Inform IEC, contractor and SOR; Check monitoring data, all plant, equipment and Contractor's working methods. 	<ol style="list-style-type: none"> Check monitoring data submitted by ET and Contractor's working methods. 	<ol style="list-style-type: none"> Confirm receipt of notification of non-compliance in writing; Notify Contractor. 	<ol style="list-style-type: none"> Inform the SOR and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Amend working methods if appropriate.
Action level being exceeded by two or more consecutive sampling days	<ol style="list-style-type: none"> Repeat measurement on next day of exceedance to confirm findings; Identify source(s) of impact; Inform IEC, contractor, SOR and EPD; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IEC, SOR and Contractor; Ensure mitigation measures are implemented; Increase the monitoring frequency to daily until no exceedance of Action level; 	<ol style="list-style-type: none"> Check monitoring data submitted by ET and Contractor's working method; Discuss with ET and Contractor on possible remedial actions; Review the proposed mitigation measures submitted by Contractor and advise the SOR accordingly; Supervise the implementation of mitigation measures. 	<ol style="list-style-type: none"> Discuss with IEC on the proposed mitigation measures; Ensure mitigation measures are properly implemented; Assess the effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> Inform the Supervising Officer and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Check all plant and equipment and consider changes of working methods; Submit proposal of additional mitigation measures to SOR within 3 working days of notification and discuss with ET, IEC and SOR; Implement the agreed mitigation measures.
Limit level being exceeded by one sampling day	<ol style="list-style-type: none"> Repeat measurement on next day of exceedance to confirm findings; 	<ol style="list-style-type: none"> Check monitoring data submitted by ET and Contractor's working method; 	<ol style="list-style-type: none"> Confirm receipt of notification of failure in writing; 	<ol style="list-style-type: none"> Inform the SOR and confirm notification of the non-compliance in writing;

Event	ET Leader	IEC	SOR	Contractor
	2. Identify source(s) of impact;		2. Discuss with IEC, ET and Contractor on the proposed mitigation measures;	2. Rectify unacceptable practice;
	3. Inform IEC, contractor, SOR and EPD;	2. Discuss with ET and Contractor on possible remedial actions;		3. Check all plant and equipment and consider changes of working methods;
	4. Check monitoring data, all plant, equipment and Contractor's working methods;	3. Review the proposed mitigation measures submitted by Contractor and advise the SOR accordingly.	3. Request Contractor to review the working methods.	4. Submit proposal of mitigation measures to SOR within 3 working days of notification and discuss with ET, IEC and SOR.
	5. Discuss mitigation measures with IEC, SOR and Contractor;			
Limit level being exceeded by two or more consecutive sampling days	1. Repeat measurement on next day of exceedance to confirm findings;	1. Check monitoring data submitted by ET and Contractor's working method;	1. Discuss with IEC, ET and Contractor on the proposed mitigation measures;	1. Take immediate action to avoid further exceedance;
	2. Identify source(s) of impact;			2. Submit proposal of mitigation measures to SOR within 3 working days of notification and discuss with ET, IEC and SOR;
	3. Inform IEC, contractor, SOR and EPD;	2. Discuss with ET and Contractor on possible remedial actions;	2. Request Contractor to critically review the working methods;	3. Implement the agreed mitigation measures;
	4. Check monitoring data, all plant, equipment and Contractor's working methods;	3. Review the Contractor's mitigation measures whenever necessary to assure their effectiveness and advise the SOR accordingly;	3. Make agreement on the mitigation measures to be implemented;	4. Resubmit proposals of mitigation measures if problem still not under control;
	5. Discuss mitigation measures with IEC, SOR and Contractor;		4. Ensure mitigation measures are properly implemented;	
	6. Ensure mitigation measures are implemented;	4. Supervise the implementation of mitigation measures.	6. 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.	5. 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.
	7. Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days;			

Appendix G4 Implementation of Event-Action Plan for Dolphin Monitoring

Event	ET Leader	IEC	SOR	Contractor
Action Level	<ol style="list-style-type: none"> 1. Repeat statistical data analysis to confirm findings; 2. Review all available and relevant data, including raw data and statistical analysis results of other parameters covered in the EM&A, to ascertain if differences are as a result of natural variation or previously observed seasonal differences; 3. Identify source(s) of impact; 4. Inform the IEC, SOR and Contractor; 5. Check monitoring data. 6. Review to ensure all the dolphin protective measures are fully and properly implemented and advise on additional measures if necessary. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET and Contractor; 2. Discuss monitoring results and findings with the ET and the Contractor. 	<ol style="list-style-type: none"> 1. Discuss monitoring with the IEC and any other measures proposed by the ET; 2. If SOR is satisfied with the proposal of any other measures, SOR to signify the agreement in writing on the measures to be implemented. 	<ol style="list-style-type: none"> 1. Inform the SOR and confirm notification of the non-compliance in writing; 2. Discuss with the ET and the IEC and propose measures to the IEC and the SOR; 3. Implement the agreed measures.

Event	ET Leader	IEC	SOR	Contractor
Limit Level	<ol style="list-style-type: none"> 1. Repeat statistical data analysis to confirm findings; 2. Review all available and relevant data, including raw data and statistical analysis results of other parameters covered in the EM&A, to ascertain if differences are as a result of natural variation or previously observed seasonal differences; 3. Identify source(s) of impact; 4. Inform the IEC, ER/SOR and Contractor of findings; 5. Check monitoring data; 6. Repeat review to ensure all the dolphin protective measures are fully and properly implemented and advise on additional measures if necessary; 7. If ET proves that the source of impact is caused by any of the construction activity by the works contract, ET to arrange a meeting to discuss with IEC, ER/SOR and Contractor the necessity of additional dolphin monitoring and/or any other potential mitigation measures (e.g., consider to modify the perimeter silt curtain or consider to control/temporarily stop relevant construction activity etc.) and submit to IEC a proposal of additional dolphin monitoring and/or mitigation measures where necessary. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET and Contractor; 2. Discuss monitoring results and findings with the ET and the Contractor; 3. Attend the meeting to discuss with ET, ER/SOR and Contractor the necessity of additional dolphin monitoring and any other potential mitigation measures; 4. Review proposals for additional monitoring and any other mitigation measures submitted by ET and Contractor and advise ER/SOR of the results and findings accordingly; 5. Supervise / Audit the implementation of additional monitoring and/or any other mitigation measures and advise ER/SOR the results and findings accordingly. 	<ol style="list-style-type: none"> 1. Attend the meeting to discuss with ET, IEC and Contractor the necessity of additional dolphin monitoring and any other potential mitigation measures; 2. If ER/SOR is satisfied with the proposals for additional dolphin monitoring and/or any other mitigation measures submitted by ET and Contractor and verified by IEC, ER/SOR to signify the agreement in writing on such proposals and any other mitigation measures; 3. Supervise the implementation of additional monitoring and/or any other mitigation measures. 	<ol style="list-style-type: none"> 1. Inform the ER/SOR and confirm notification of the non-compliance in writing; 2. Attend the meeting to discuss with ET, IEC and ER/SOR the necessity of additional dolphin monitoring and any other potential mitigation measures; 3. Jointly submit with ET to IEC a proposal of additional dolphin monitoring and/or any other mitigation measures when necessary; 4. Implement the agreed additional dolphin monitoring and/or any other mitigation measures.

Appendix G5 Event and Action Plan on Dolphin Acoustic Behaviour

EVENT	ACTION			
	ET Leader	IEC	SO	Contractor
<p><u>Action Level</u></p> <p>With the numerical values presented in <i>Table 5.7 of Baseline Monitoring Report</i>, when any of the response variable for dolphin acoustic behaviour recorded in the construction phase monitoring is 20% lower or higher than that recorded in the baseline monitoring (see <i>Table 5.8 of Baseline Monitoring Report</i>), or when there is a difference of 20% in dolphin acoustic signal detection at nighttime period at Site C1 only, the action level should be triggered</p>	<ol style="list-style-type: none"> 1. Repeat statistical data analysis to confirm findings; 2. Review all available and relevant data to ascertain if differences are as a result of natural variation or seasonal differences; 3. Identify source(s) of impact; 4. Inform the IEC, SO and Contractor; 5. Check monitoring data; 6. Carry out audit to ensure all dolphin protective measures are implemented fully and additional measures be proposed if necessary 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET and Contractor; 2. Discuss monitoring with the ET and the Contractor; 	<ol style="list-style-type: none"> 1. Discuss with the IEC the repeat monitoring and any other measures proposed by the ET; 2. Make agreement on measures to be implemented. 	<ol style="list-style-type: none"> 1. Inform the SO and confirm notification of the non-compliance in writing; 2. Discuss with the ET and the IEC and propose measures to the IEC and the SO; 3. Implement the agreed measures.

EVENT	ACTION			
	ET Leader	IEC	SO	Contractor
<p><u>Limit Level</u></p> <p>With the numerical values presented in Table 5.7 of <i>Baseline Monitoring Report</i>, when any of the response variable for dolphin acoustic behaviour recorded in the construction phase monitoring is 40% lower or higher than that recorded in the baseline monitoring (see Table 5.8 of <i>Baseline Monitoring Report</i>), or when there is a difference of 40% in dolphin acoustic signal detection at nighttime at Site C1 only, the limit level should be triggered</p>	<ol style="list-style-type: none"> 1. Repeat statistical data analysis to confirm findings; 2. Review all available and relevant data to ascertain if differences are as a result of natural variation or seasonal differences; 3. Identify source(s) of impact; 4. Inform the IEC, SO and Contractor; 5. Check monitoring data; 6. Carry out audit to ensure all dolphin protective measures are implemented fully and additional measures be proposed if necessary 7. Discuss additional dolphin monitoring and any other potential mitigation measures (eg consider to temporarily stop relevant portion of construction activity) with the IEC and Contractor. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET and Contractor; 2. Discuss monitoring with the ET and the Contractor; 3. Review proposals for additional monitoring and any other measures submitted by the Contractor and advise ER accordingly. 	<ol style="list-style-type: none"> 1. Discuss with the IEC the repeat monitoring and any other measures proposed by the ET; 2. Make agreement on measures to be implemented. 	<ol style="list-style-type: none"> 1. Inform the SO and confirm notification of the non-compliance in writing; 2. Discuss with the ET and the IEC and propose measures to the IEC and the SO; 3. Implement the agreed measures.

Abbreviations: ET – Environmental Team, IEC – Independent Environmental Checker, SO – Supervising Office, DEP – Director of Environmental Protection

Appendix H

Summary of Waste Flow Table

Contract No. : HY/2012/07
Tuen Mun Chek Lap Kok Link – Southern Connection Viaduct Section
Monthly Summary Waste Flow Table for 2013 (Year)

Month/Material	Actual Quantities of Inert C&D Materials Generation						Actual Quantities of C&D wastes Generation					Actual Quantities of Recyclables Generation			
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fills	Imported Fill	Marine Sediment, Cat. L	Marine Sediment, Cat. Mp	Marine Sediment, Cat. Mf	Chemical Waste	General Refuse	Metals	Felled trees	Paper/ cardboard packaging	Plastics
Unit	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000Kg)
Jan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Feb	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mar	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Apr	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
May	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jun	-	-	0	0	0	0	-	-	-	0	0	0	0	0	0
SUB-TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jul	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0
Aug	-	-	0	0	0	0	0	0	0	322.89	0	0	0	0	0
Sep	0.004	0.004	0	0	0.004	0	0	0	0	412.86	0	0	0	0	0
Oct	0.044	0.018	0	0	0.044	0	0	0	0	27.63	0	0	0	0	0
Nov	0.277	0.000	0.240	0	0.037	0	0	0	0	22.05	0	0	0	0	0
Dec	0.114	0.027	0.020	0	0.094	0	0	0	0	28.04	0	0.019	0	0	0
TOTAL	0.439	0.049	0.260	-	0.179	-	-	-	-	813.47	-	0.019	-	-	-

Notes :

- 1 - The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
- 2 - Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
- 3 - Broken concrete for recycling into aggregates.

Contract No. : HY/2012/07

Tuen Mun Chek Lap Kok Link – Southern Connection Viaduct Section

Monthly Summary Waste Flow Table for 2014 (Year)

Month\Material	Actual Quantities of Inert C&D Materials Generation						Actual Quantities of C&D wastes Generation					Actual Quantities of Recyclables Generation			
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fills	Imported Fill	Marine Sediment, Cat. L	Marine Sediment, Cat. Mp	Marine Sediment, Cat. Mf	Chemical Waste	General Refuse	Metals	Felled trees	Paper/ cardboard packaging	Plastics
Unit	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000Kg)
Jan	0.033	0.011	0.003	-	0.030	-	-	-	-	22.380	-	10.240	-	-	-
Feb	4.716	0.010	0.031	-	0.010	4.674	-	-	-	10.670	-	0.780	-	-	-
Mar	2.559	0.009	0.240	-	0.221	2.098	-	-	0.275	12.390	-	46.050	-	-	-
Apr	1.051	0.000	0.020	-	0.118	0.914	-	-	-	87.650	-	15.760	-	-	-
May	2.008	-	0.010	-	1.546	0.451	0.386	0.267	0.055	98.030	-	8.460	0.126	-	-
Jun	5.318	0.021	0.030	2.473	0.357	2.457	0.338	-	-	77.290	-	25.340	0.140	-	-
SUB-TOTAL	15.685	0.051	0.334	2.473	2.283	10.595	0.724	0.267	0.055	0.275	308.410	-	106.630	0.266	-
Jul	6.303	0.129	0.020	-	4.654	1.629	0.847	0.252	0.051	87.810	-	27.370	0.126	-	-
Aug	4.824	0.018	0.265	1.829	2.441	0.288	0.391	0.131	0.033	98.220	-	21.680	0.126	0.475	-
Sep	8.037	0.142	0.175	-	7.722	0.140	0.400	0.073	0.060	238.01	-	34.190	0.161	-	-
Oct	15.033	0.083	0.943	-	13.860	0.230	0.441	0.118	0.104	268.18	-	-	0.105	-	-
Nov	16.266	0.268	3.356	-	12.474	0.436	-	0.150	0.084	114.37	-	-	0.133	-	-
Dec	19.007	0.202	2.898	0.122	15.987	-	0.337	0.165	0.110	130.97	-	-	0.147	-	-
TOTAL	85.154	0.894	7.990	4.424	59.422	13.318	3.140	1.156	0.497	1.297	1,245.970	-	189.870	1.064	0.475

Notes :

- 1 - The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
- 2 - Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
- 3 - Broken concrete for recycling into aggregates.
- 4 - Assumed 5 kg per damaged water-filled barrier.
- 5 - Disposed as Public Fills includes Hard Rock and Large Broken Concrete.

Contract No. : HY/2012/07

**Tuen Mun Chek Lap Kok Link – Southern Connection Viaduct Section
Monthly Summary Waste Flow Table for 2015 (Year)**

Month\Material	Actual Quantities of Inert C&D Materials Generation						Actual Quantities of C&D wastes Generation						Actual Quantities of Recyclables Generation			
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fills	Imported Fill	Marine Sediment, Cat. L	Marine Sediment, Cat. Mp	Marine Sediment, Cat. Mf	Marine Sediment, Cat. H	Chemical Waste	General Refuse	Metals	Felled trees	Paper/ cardboard packaging	Plastics
Unit	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000Kg)	
Jan	13.578	0.081	0.990	-	12.474	0.115	0.178	0.229	0.258	-	132.170	-	61.380	0.091	-	
Feb	6.233	0.148	0.461	-	5.759	0.014	0.801	0.110	0.223	0.400	141.020	-	73.690	0.112	-	
Mar	10.149	0.220	0.473	-	9.600	0.077	0.618	0.073	0.149	-	120.940	-	9.140	0.203	-	
Apr	9.986	0.410	2.261	-	7.694	0.032	-	-	-	-	133.630	-	2.740	0.105	-	
May	8.870	0.177	0.779	-	8.091	-	0.550	-	-	-	107.920	-	13.070	0.042	-	
Jun	8.627	0.132	1.462	-	7.166	-	0.324	0.118	0.169	0.017	89.930	-	2.000	0.119	-	
SUB-TOTAL	57.444	1.168	6.424	-	50.782	0.238	2.471	0.530	0.799	0.417	725.610	-	162.020	0.672	-	
Jul	4.520	0.137	2.121	-	2.322	0.078	-	-	-	1.400	111.570	-	-	0.105	-	
Aug	1.992	0.203	0.352	-	1.265	0.375	-	-	-	1.200	87.760	-	-	0.133	-	
Sep	4.148	0.160	0.623	-	3.525	-	-	-	-	0.600	66.680	-	-	0.105	-	
Oct	2.286	0.317	0.651	-	1.635	-	-	-	-	-	102.080	-	-	0.084	-	
Nov	1.571	0.273	0.725	-	0.204	0.642	-	-	-	2.000	64.740	-	-	0.098	-	
Dec	0.714	0.216	0.516	-	0.198	-	-	-	-	-	66.000	-	-	-	-	
TOTAL	72.675	2.476	11.412	-	59.930	1.333	2.471	0.530	0.799	5.617	1,224.440	-	162.020	1.197	-	

Notes :

- 1 - The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
- 2 - Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
- 3 - Broken concrete for recycling into aggregates.
- 4 - Assumed 5 kg per damaged water-filled barrier.
- 5 - 'Reused in the Contract' and 'Disposed as Public Fills' include 'Hard Rock and Large Broken Concrete'.

Contract No. : HY/2012/07

Tuen Mun Chek Lap Kok Link – Southern Connection Viaduct Section

Monthly Summary Waste Flow Table for 2016 (Year)

Month/Material	Actual Quantities of Inert C&D Materials Generation						Actual Quantities of C&D wastes Generation						Actual Quantities of Recyclables Generation			
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fills	Imported Fill	Marine Sediment, Cat. L	Marine Sediment, Cat. Mp	Marine Sediment, Cat. Mf	Marine Sediment, Cat. H	Chemical Waste	General Refuse	Metals	Felled trees	Paper/ cardboard packaging	Plastics
Unit	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000Kg)
Jan	1.941	0.263	0.606	-	1.334	-	-	-	-	-	-	69.400	-	-	0.105	-
Feb	0.783	0.185	0.092	-	0.692	-	-	-	-	-	-	85.890	-	-	0.112	-
Mar	1.502	0.429	0.537	-	0.965	-	-	-	-	2.000	-	88.360	-	-	-	-
Apr	1.354	0.402	0.789	-	0.565	-	-	-	-	3.000	-	79.580	-	8.640	0.084	-
May	1.057	0.192	0.617	-	0.440	-	-	-	-	3.000	-	75.620	-	-	-	-
Jun	0.499	0.277	0.116	-	0.383	-	-	-	-	-	-	103.270	-	-	0.105	-
SUB-TOTAL	7.136	1.747	2.757	-	4.379	0.000	-	-	-	8.000	502.120	-	8.640	0.406	-	-
Jul	0.507	0.211	0.230	-	0.277	-	-	-	-	2.200	-	94.760	-	1.540	0.350	-
Aug	1.294	0.144	0.684	-	0.610	-	-	-	-	-	-	116.990	-	9.790	0.098	-
Sep	2.584	0.155	0.270	-	2.314	-	-	-	-	-	-	130.060	-	-	0.105	-
Oct	2.338	0.180	0.156	-	2.183	-	-	-	-	-	-	141.300	-	-	0.028	-
Nov	3.873	0.328	0.536	-	3.337	-	0.473	-	-	1.567	-	138.270	-	-	0.063	-
Dec	4.129	0.322	0.732	-	3.397	-	0.990	-	-	-	-	130.900	-	-	0.063	-
TOTAL	21.860	3.087	5.364	-	16.496	-	1.463	-	-	11.767	1,254.400	-	19.970	1.113	-	-

Notes :

- 1 - The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
- 2 - Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
- 3 - Broken concrete for recycling into aggregates.
- 4 - Assumed 5 kg per damaged water-filled barrier.
- 5 - Disposed as Public Fills includes Hard Rock and Large Broken Concrete.

Contract No. : HY/2012/07

Tuen Mun Chek Lap Kok Link – Southern Connection Viaduct Section

Monthly Summary Waste Flow Table for 2017 (Year)

Month/Material	Actual Quantities of Inert C&D Materials Generation						Actual Quantities of C&D wastes Generation						Actual Quantities of Recyclables Generation			
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fills	Imported Fill	Marine Sediment, Cat. L	Marine Sediment, Cat. Mp	Marine Sediment, Cat. Mf	Marine Sediment, Cat. H	Chemical Waste	General Refuse	Metals	Felled trees	Paper/ cardboard packaging	Plastics
	sub-total	sub-total	sub-total	sub-total	sub-total	sub-total									7kg/bag	5kg/number
Location																
Density (ton/m ³)																
ID no.											(web record)					
Unit	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000Kg)
Jan	4.591	0.717	0.474	-	4.118	-	-	-	-	3.521	99.840	-	-	0.140	-	-
Feb	5.034	1.585	0.166	-	4.869	-	0.857	-	-	-	127.720	-	-	0.091	-	-
Mar	6.575	0.937	0.498	-	6.077	-	0.771	-	-	6.000	87.910	-	-	0.077	-	-
Apr	5.467	0.791	1.058	-	4.409	-	-	-	-	-	130.680	-	5.170	0.063	-	-
May	4.960	0.537	0.826	-	4.134	-	0.672	-	-	-	171.870	-	-	0.056	-	-
Jun	4.491	0.567	0.098	-	4.394	-	-	-	-	-	148.600	-	-	0.063	-	-
SUB-TOTAL	31.118	5.133	3.118	-	28.000	0.000	2.300	-	-	9.521	766.620	-	5.170	0.490	-	-
Jul	5.618	0.426	0.696	0.002	4.921	-	1.056	-	-	0.800	159.980	-	-	0.091	-	-
Aug	3.897	0.232	-	-	3.897	-	-	-	-	-	159.230	-	-	0.056	-	-
Sep	3.142	0.676	-	-	3.142	-	1.517	1.047	0.127	-	185.420	-	18.030	0.070	-	-
Oct	3.239	0.385	0.559	-	2.680	-	-	-	-	-	172.690	-	-	0.063	-	-
Nov	3.354	0.814	0.023	-	3.331	-	-	-	-	5.400	159.650	-	5.840	0.028	-	-
Dec	3.054	0.755	0.160	0.004	2.890	-	-	-	-	2.400	181.710	-	15.580	0.056	-	-
TOTAL	53.422	8.422	4.555	0.006	48.861	-	4.873	1.047	-	0.127	18.121	1,785.300	-	44.620	0.854	-

Notes :

- 1 - The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
- 2 - Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
- 3 - Broken concrete for recycling into aggregates.
- 4 - Assumed 5 kg per damaged water-filled barrier.
- 5 - Disposed as Public Fills includes Hard Rock and Large Broken Concrete.

Contract No. : HY/2012/07

Tuen Mun Chek Lap Kok Link – Southern Connection Viaduct Section

Monthly Summary Waste Flow Table for 2018 (Year)

Month/Material	Actual Quantities of Inert C&D Materials Generation						Actual Quantities of C&D wastes Generation						Actual Quantities of Recyclables Generation			
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fills	Imported Fill	Marine Sediment, Cat. L	Marine Sediment, Cat. Mp	Marine Sediment, Cat. Mf	Marine Sediment, Cat. H	Chemical Waste	General Refuse	Metals	Felled trees	Paper/ cardboard packaging	Plastics
	sub-total	sub-total	sub-total	sub-total	sub-total	sub-total									7kg/bag	5kg/number
Location																
Density (ton/m ³)																
ID no.											(web record)					
Unit	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000Kg)
Jan	4.288	0.405	0.137	-	4.151	-	-	-	-	-	211.060	-	-	2.540	0.084	-
Feb	2.662	0.241	0.826	-	1.836	-	-	-	-	-	184.880	-	-	12.280	0.028	-
Mar	5.916	0.289	2.503	-	1.536	1.877	-	-	-	1.200	307.670	-	-	30.190	0.161	-
Apr	6.103	0.352	0.852	-	1.274	3.977	-	-	-	-	349.640	-	-	19.150	0.112	-
May	4.492	0.616	1.333	0.148	1.676	1.336	-	-	-	-	438.160	-	-	-	0.056	-
Jun	2.801	0.763	1.134	-	1.600	0.067	-	-	-	-	669.690	-	-	9.570	0.035	-
SUB-TOTAL	26.262	2.666	6.783	0.148	12.074	7.257	-	-	-	1.200	2161.100	-	-	73.730	0.476	-
Jul	1.361	0.555	0.208	-	0.973	0.181	-	-	-	-	639.210	-	-	13.260	0.056	-
Aug	2.369	0.357	0.104	0.085	0.726	1.455	-	-	-	1.200	508.670	-	-	-	-	-
Sep	1.866	0.700	-	-	1.866	-	-	-	-	4.000	419.480	-	-	4.930	0.056	-
Oct	3.182	1.956	0.059	-	3.123	-	-	-	-	4.800	365.740	-	-	-	0.056	-
Nov	5.090	1.592	-	-	5.090	-	-	-	-	2.600	406.980	-	-	-	-	-
Dec	8.079	1.077	-	-	8.079	-	-	-	-	-	346.730	-	-	-	0.077	-
TOTAL	48.209	8.902	7.153	0.233	31.931	8.893	-	-	-	13.800	4,847.910	-	-	91.920	0.721	-

Notes :

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- 2 - Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
- 3 - Broken concrete for recycling into aggregates.
- 4 - Assumed 5 kg per damaged water-filled barrier.
- 5 - Disposed as Public Fills includes Hard Rock and Large Broken Concrete.

Contract No. : HY/2012/07

**Tuen Mun Chek Lap Kok Link – Southern Connection Viaduct Section
Monthly Summary Waste Flow Table for 2019 (Year)**

Month/Material	Actual Quantities of Inert C&D Materials Generation						Actual Quantities of C&D wastes Generation						Actual Quantities of Recyclables Generation			
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fills	Imported Fill	Marine Sediment, Cat. L	Marine Sediment, Cat. Mp	Marine Sediment, Cat. Mf	Marine Sediment, Cat. H	Chemical Waste	General Refuse	Metals	Felled trees	Paper/ cardboard packaging	Plastics
Unit	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000Kg)
Jan	3.687	0.861	-	-	3.687	-	-	-	-	0.800	251.110	-	-	-	-	-
Feb	1.254	0.046	-	0.637	0.617	-	-	-	-	-	84.990	-	-	-	-	-
Mar	4.491	0.000	-	3.627	0.864	-	-	-	-	-	71.750	-	-	-	-	-
Apr	9.363	0.153	-	8.979	0.384	-	-	-	-	-	56.470	-	9.520	0.084	-	-
May	5.334	0.000	-	5.258	0.077	-	-	-	-	-	76.380	-	-	-	-	-
Jun	0.356	0.000	-	0.315	0.041	-	-	-	-	-	39.960	-	-	-	-	-
SUB-TOTAL	24.484	1.060	0.000	18.815	5.669	0.000	-	-	-	0.800	580.660	-	9.520	0.084	-	-
Jul	-	0.000	-	-	-	-	-	-	-	-	17.100	-	-	-	-	-
Aug	-	0.000	-	-	-	-	-	-	-	-	31.050	-	-	-	-	-
Sep	-	0.000	-	-	-	-	-	-	-	-	17.720	-	-	-	-	-
Oct	-	0.000	-	-	-	-	-	-	-	-	8.490	-	-	-	-	-
Nov	-	0.000	-	-	-	-	-	-	-	-	19.670	-	-	-	-	-
Dec	-	0.000	-	-	-	-	-	-	-	-	0.000	-	-	-	-	-
TOTAL	24.484	1.060	-	18.815	5.669	-	-	-	-	0.800	674.690	-	9.520	0.084	-	-

Notes :

- 1 - The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
- 2 - Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
- 3 - Broken concrete for recycling into aggregates.
- 4 - Assumed 5 kg per damaged water-filled barrier.
- 5 - Disposed as Public Fills includes Hard Rock and Large Broken Concrete.

Contract No. : HY/2012/07

Tuen Mun Chek Lap Kok Link – Southern Connection Viaduct Section

Monthly Summary Waste Flow Table for 2020 (Year)

Month\Material	Actual Quantities of Inert C&D Materials Generation								Actual Quantities of Recyclables Generation			
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fills	Imported Fill	Chemical Waste	General Refuse	Metals	Felled trees	Paper/ cardboard packaging	Plastics
Unit	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000Kg)
Jan	-	0.000	-	-	-	-	-	12.260	-	-	-	-
Feb	0.048	0.048	-	-	0.048	-	-	-	-	-	-	-
Mar	0.038	0.038	-	-	0.038	-	-	-	-	-	-	-
Apr	-	0.000	-	-	-	-	-	-	-	-	-	-
May	-	0.000	-	-	-	-	-	-	-	-	-	-
Jun	-	0.000	-	-	-	-	-	-	-	-	-	-
SUB-TOTAL	0.086	0.086	0.000	-	0.086	0.000	-	12.260	-	0.000	-	-
Jul	-	0.000	-	-	-	-	-	-	-	-	-	-
Aug	-	0.000	-	-	-	-	-	-	-	-	-	-
Sep	-	0.000	-	-	-	-	-	-	-	-	-	-
Oct	-	0.000	-	-	-	-	-	-	-	-	-	-
Nov	-	0.000	-	-	-	-	-	-	-	-	-	-
Dec	-	0.000	-	-	-	-	-	-	-	-	-	-
TOTAL	0.086	0.086	-	-	0.086	-	-	12.260	-	-	-	-

Notes :

- 1 - The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
- 2 - Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
- 3 - Broken concrete for recycling into aggregates.
- 4 - Assumed 5 kg per damaged water-filled barrier.
- 5 - Disposed as Public Fills includes Hard Rock and Large Broken Concrete.

Appendix I

Cumulative Statistics on
Exceedances, Complaints,
Notifications of Summons
and Successful Prosecutions

Appendix I1 Cumulative Statistics on Exceedances

		Total no. recorded since contract commencement
1-Hr TSP	Action	0
	Limit	2
24-Hr TSP	Action	2
	Limit	0
Noise	Action	0
	Limit	0
Water Quality		
• Dissolved Oxygen	Action	253
	Limit	25
• Turbidity	Action	1
	Limit	1
• Suspended Solids	Action	18
	Limit	1
Impact Dolphin Monitoring	Action	11
	Limit	19

Appendix I2 Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions

Reporting Period	Cumulative Statistics		
	Complaints	Notifications of Summons	Successful Prosecutions
Total No. received since contract commencement	14	0	0