Ref.: HYDHZMBEEM00_0_7420L.19.doc

30 May 2019

By Fax (3468 2076) and By Post

AECOM Asia Co. Ltd.
The PRE's Office
550 Cheung Tung Road, Lantau
Hong Kong

Attention: Mr. Simon Cheung

Dear Sir,

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/2013/01
HZMB HKBCF – Passenger Clearance Building
Quarterly EM&A Report No. 14 for December 2017 to February 2018

Reference is made to the Environmental Team's submission of Quarterly EM&A Report No. 14 for December 2017 to February 2018 (Revision 4) certified by the ET Leader (ET's ref.: "5126871/19.10/OC152/KC/RL" dated 30 May 2019) and provided to us via e-mail on 30 May 2019.

We are pleased to inform you that we have no adverse comments on the captioned Quarterly EM&A Report for December 2017 to February 2018.

Thank you very much for your attention and please feel free to contact the undersigned should you require further information.

Yours faithfully,
For and on behalf of
Ramboll Hong Kong Limited

Ray Yan
Independent Environmental Checker

c.c.	HyD	Mr. Cheng Pan	(By Fax: 3188 6614)
	HyD	Ms. Iris Ng	(By Fax: 3188 6614)
	Atkins	Mr. Keith Chau	(By Fax: 2890 6343)
	LCWJV	Mr. Owen Leung	(By Fax: 3621 0180)

Internal: DY, YH, DF, HW, ENPO Site

Ramboll Hong Kong Limited 英環香港有限公司
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Your ref.
Our ref. 5126871/19.10/OC152/KC/RL
Date: 30 May 2019

By Post and e-mail (Stephen.Tsang@lcwjv.com)

Leighton – Chun Wo Joint Venture
39/F Sun Hung Kai Centre
30 Harbour Road
Hong Kong

Attn: Mr. Stephen Tsang

Dear Mr. Tsang,

Contract No. HY/2013/01
Hong Kong – Zhuhai – Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building
Certification of Quarterly EM&A Report No. 14

Atkins China Limited certifies, in the capacity of Environmental Team Leader, that Quarterly EM&A Report No. 14 (Revision 4) conforms the requirements provided in Condition 16.4 of the Environmental Monitoring and Audit Manual for HKBCF (Version 1.0).

Yours faithfully,
for and on behalf of
Atkins China Limited

Keith Chau
Environmental Team Leader

cc.
1. AECOM – Mr. Malcolm Sage (By Fax.: 3468 2076)
2. IEC / ENPO – Mr. Ray Yan & Mr. Y.H. Hui (By Fax.: 3465 2899)

路政署
HIGHWAYS DEPARTMENT
港珠澳大橋香港工程管理處
Hong Kong - Zhuhai - Macao Bridge
Hong Kong Project Management Office

Contract No. HY/2013/01

Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Quarterly EM&A Report No. 14
(Covering the Period from 1 December 2017 to 28 February 2018)

20 May 2019

Revision 4

Main Contractor

LEIGHTON 禮頓
俊和 CHUN WO
Leighton - Chun Wo Joint Venture

Environmental Team

ATKINS
Member of the SNC-Lavalin Group

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Executive Summary

This Quarterly Environmental Monitoring and Audit (EM&A) Report is prepared for Contract HY/2013/01 Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities (HKBCF) – Passenger Clearance Building (hereafter referred to as "the Contract") (includes the construction works of Contract No. HY/2013/06 Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Automatic Vehicle Clearance Support System within Contract No. HY/2013/01 works area) for the Highways Department of Hong Kong Special Administrative Region (HKSAR). The Contract was awarded to Leighton – Chun Wo Joint Venture (construction works of Contract No. HY/2013/06 was awarded to ATAL Technologies Limited within Contract No. HY/2013/01 works area) (hereafter referred to as "the Contractor") and Atkins China Limited was appointed as the Environmental Team (ET) by the Contractor

The Contract is part of Hong Kong – Zhuhai – Macao Bridge HKBCF which is a "Designated Project", under Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (Cap 499) and Environmental Impact Assessment (EIA) Report (Register No. AEIAR-145/2009) was prepared for the Project. The current Environmental Permit (EP) No. EP-353/2009/K for HKBCF was issued on 11 April 2016. These documents are available through the EIA Ordinance Register. Site preparation works of the Contract started on 26 September 2014 and the construction works of the Contract commenced on 6 October 2014. The construction works of the Contract No. HY/2013/06 within Contract No. HY/2013/01 works area commenced on 20 February 2018.

Atkins China Limited has been appointed by the Contractor to implement the Environmental Monitoring & Audit (EM&A) programme for the Contract in accordance with the Updated EM&A Manual for HKBCF (Version1.0) and will be providing environmental team services to the Contract.

This is the fourteenth Quarterly EM&A Report for the Contract which summaries findings of the EM&A works during the reporting period from 1 December 2017 to 28 February 2018. (includes the construction works of Contract No. HY/2013/06 within Contract No. HY/2013/01 works area)

Environmental Monitoring and Audit Progress

The EM&A programme was undertaken in accordance with the Updated EM&A Manual for HKBCF (Version 1.0). The air quality, noise, water quality and dolphin monitoring works under Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works were suspended from 1 September 2017. The ET of Contract No. HY/2013/01 is required and continues the same implementation of environmental monitoring commencing on 1 September 2017. It should be noted that the air quality monitoring station (AMS6) is covered by Contract No. HY/2011/03 Hong Kong-Zhuhai Macao Bridge Hong Kong Link Road – Section between Scenic Hill and HKBCF.

A summary of the monitoring activities during the reporting period are listed below:

Monitoring Items	Date		
	December 2017	January 2018	February 2018
1-hour TSP Monitoring	1, 5, 7, 11, 13 ,15, 19, 21, 22, 27 and 28	2, 3, 8, 9, 12, 15, 18, 19, 24, 25, 30 and 31	5, 6, 9, 12, 14, 15, 20, 21, 23 and 27
24-hour TSP Monitoring	4, 5, 6, 8, 11, 12, 14, 18, 20, 21, 23, 28 and 29	2, 3, 6, 8, 11, 12, 17, 18, 23, 24, 29 and 30	2, 6, 8, 9, 14, 15, 20, 21, 26 and 27
Noise Monitoring	5, 7, 11, 13, 19, 21, 27 and 28	2, 3, 10, 12, 16, 18, 22, 26 and 30	1, 5, 7, 13, 15, 20, 21, 26 and 27
Water Quality Monitoring	4, 6, 8, 11, 13, 15, 18, 20, 22, 25, 27 and 29	1, 3, 5, 8, 10, 12, 15, 17, 19, 22, 24, 26, 29 and 31	2, 5, 7, 9, 12, 14, 17, 19, 21, 23, 26 and 28
Chinese White Dolphin Monitoring	1, 7, 14 and 19	9, 11, 19 and 26	1, 6, 13 and 26

Environmental Site Inspection	6, 13, 20 and 27	3, 10, 17, 24 and 31	7, 14, 21 and 28
			21 and 28 February 2018 for Contract No. HY/2013/06 within Contract No. HY/2013/01 works area

Breaches of Action and Limit Levels:

A summary of environmental exceedances for the reporting period are listed below:

Environmental Monitoring	Parameters	Action Level (AL)			Limit Level (LL)		
		Dec 2017	Jan 2018	Feb 2018	Dec 2017	Jan 2018	Feb 2018
Air Quality	1-hr TSP	-	-	-	-	-	-
	24-hr TSP	1	2	-	-	-	-
Noise	$L_{eq\ (30\ min)}$	-	-	-	-	-	-
Water Quality	Suspended solids level (SS)	16	1	2	-	-	-
	Turbidity level	-	-	-	-	-	-
	Dissolved oxygen level (DO)	-	-	-	-	-	-
Dolphin Monitoring	Quarterly Analysis	-			1		
Total		22			1		

All exceedances were not related to Contract No. HY/2013/01.

Implementation of Environmental Measures

Site inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures for the Project. Potential environmental impacts due to the construction activities were monitored and reviewed.

Complaint Log

There was no complaint received in relation to the environmental impact during the reporting period.

Notifications of Summons and Successful Prosecutions

There was no notification of summon or prosecution received during this reporting period.

Reporting Change

Proposal for alternation of water quality monitoring stations for HZMB HKBCF was justified by the ET Leader for Contract No. HY/2013/01 on 8 November 2017; verified by the IEC on 13 November 2017; and submitted to EPD on 29 November 2017, and it was approved by EPD on 22 December 2017.

Monitoring Stations	Original Co-ordinates	Approved alternative stations	Proposed Co-ordinates
SR3	N816456 E810525	SR3(N)	N816591 E810689
SR10A	N823495 E823741	SR10A(N)	N823484 E823644
SR10B(N)	N823187 E823683	SR10B(N2)	N823159 E823689

A proposal of re-location of Air Quality Monitoring (AQM) station, AMS7, for HZMB HKBCF Project was justified by the ET Leader for Contract No. HY/2013/01 on 22 January 2018; verified by the IEC on 24 January 2018 and submitted to EPD on 30 January 2018, and AQM station has been carrying out at the alternative AQM station, AMS7B, with EPD's consent since 6 February 2018.

According to information from Contractor of Contract No. HY/2013/01, the construction works of the Contract No. HY/2013/06 within Contract No. HY/2013/01 works area has been commenced on 20 February 2018.

1 Introduction

1.1 Basic Project Information

1.1.1 This Quarterly Environmental Monitoring and Audit (EM&A) Report is prepared for Contract HY/2013/01 Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Passenger Clearance Building (hereafter referred to as "the Contract") (includes the construction works of Contract No. HY/2013/06 Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Automatic Vehicle Clearance Support System within Contract No. HY/2013/01 works area) for the Highways Department of Hong Kong Special Administrative Region. The Contract was awarded to Leighton – Chun Wo Joint Venture (construction works of Contract No. HY/2013/06 was awarded to ATAL Technologies Limited within Contract No. HY/2013/01 works area) (hereafter referred to as "the Contractor") and Atkins China Limited was appointed as the Environmental Team (ET) by the Contractor.

1.1.2 The Contract is part of Hong Kong – Zhuhai – Macao Bridge Hong Kong Boundary Crossing Facilities (HKBCF) which is a "Designated Project", under Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (Cap 499). An Environmental Impact Assessment (EIA) Report (Register No. AEIAR-145/2009) was prepared for the Project. The current Environmental Permit (EP) No. EP-353/2009/K for HKBCF was issued on 11 April 2016. These documents are available through the EIA Ordinance Register. Site preparation work of the Contract started on 26 September 2014 and the construction works of the Contract commenced on 6 October 2014. The construction works of the Contract No. HY/2013/06 within Contract No. HY/2013/01 works area commenced on 20 February 2018. The works areas of the Contract are shown in **Appendix A**.

1.1.3 This is the fourteenth Quarterly EM&A Report for the Contract which summarizes the audit findings of the EM&A programme during the reporting period from 1 December 2017 to 28 February 2018.

1.2 Project Organisation

1.2.1 The project organization structure and lines of communication with respect to the on-site environmental management structure is shown in **Appendix B**. The key personnel contact names and numbers are summarized in **Table 1.1**.

Table 1.1 Contact Information of Key Personnel

Party	Position	Name	Telephone	Fax
For Contract No. HY/2013/01				
Engineer or Engineer's Representative (AECOM Asia Co. Ltd.)	Chief Resident Engineer	Michael Tovey/ Malcolm Sage(i)	3958 7339 / 3958 7330	3468 2076
Environmental Project Office / Independent Environmental Checker (Ramboll Hong Kong Limited)(iii)	Environmental Project Office Leader	Y. H. Hui	3465 2888	3465 2899
	Independent Environmental Checker	Raymond Dai	3465 2888	3465 2899
Contractor (Leighton – Chun Wo Joint Venture)	Project Manager	Owen Leung	9232 5750	3621 0180
	Environmental Officer	Michael Lee Stephen Tsang(ii)	6461 8635 9686 0787	3621 0180

Environmental Team (Atkins China Limited)	Environmental Team Leader	Keith Chau	2972 1721	2890 6343
24 hours complaint hotline	---	---	3958 7300	---
For Contract No. HY/2013/06 within Contract No. HY/2013/01 works area				
Engineer or Engineer's Representative (AECOM Asia Co. Ltd.)	Chief Registered Architect	Malcolm Sage	3958 7330	3468 2076
Environmental Project Office / Independent Environmental Checker (Ramboll Hong Kong Limited)(iii)	Environmental Project Office Leader	Y. H. Hui	3465 2888	3465 2899
	Independent Environmental Checker	Raymond Dai	3465 2888	3465 2899
Contractor (ATAL Technologies Limited)	Site Agent	Mr. Eric Yim	2565 3355	3162 5217
	Environmental Officer	Mr. W. Li	2565 3137	3162 5217
Environmental Team (Atkins China Limited)	Environmental Team Leader	Keith Chau	2972 1721	2890 6343
24 hours complaint hotline	---	---	6509 0375	

Remark (i): CRE has been changed to Malcolm Sage since February 2018.
(ii): Environmental Officer has been changed to Stephen Tsang in the reporting quarter.
(iii): The company name for Ramboll Environ Hong Kong Limited has been re-branded as Ramboll Hong Kong Limited since 3 January 2018.

1.3 Construction Programme

1.3.1 A copy of the Contractor's construction programme is provided in **Appendix C**.

1.4 Construction Works Undertaken During the Reporting Period

1.4.1 A summary of the construction activities undertaken during this reporting period is shown below:

For Contract No. HY/2013/01

Land-Based Work

- Wet trade works of Toilets
- Dry trade works of Toilets
- Kiosk/Booth installation
- TPIDC Inspections
- Paving
- Planting Tree
- Glazing Works
- Testing and commissioning works
- Lift/Escalator EMSD Inspection
- Fit-out lift cars

- General cleaning
- Defect rectification
- Landscape works

Marine-based work

No marine based construction work was undertaken in the reporting month.

For Contract No. HY/2013/06 within Contractor No. HY/2013/01 works area

- Conduit installation and Cabling at ELV & Sever Room and Zone E PCB
- System Testing & Commissioning at ELV & Server Room, Zone E PCB

2 EM&A Requirement

2.1 Summary of EM&A Requirements

2.1.1 The EM&A programme was undertaken in accordance with the Updated EM&A Manual for HKBCF (Version 1). The air quality, noise, water quality and dolphin monitoring works under Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works were suspended from 1 September 2017. The ET of Contract No. HY/2013/01 is required and continues the same implementation of environmental monitoring commencing on 1 September 2017. It should be noted that the air quality monitoring station (AMS 6) is covered by Contract No. HY/2011/03 Hong Kong-Zhuhai Macao Bridge Hong Kong Link Road – Section between Scenic Hill and HKBCF.

2.1.2 The permission to carry out impact air quality monitoring work at AMS7 (Hong Kong SkyCity Marriott Hotel) was not granted after 31 January 2015. The impact air quality monitoring location (AMS7) was relocated to a nearby air sensitive receiver, Chu Kong Air-Sea Union Transportation Co. Ltd. (AMS7A), from 5 February 2015 to 30 December 2015. The alternative location at Chu Kong Air-Sea Union Transportation Co. Ltd. was approved by EPD on 5 February 2015. However, AMS7A was relocated back to its original location (AMS7-Hong Kong SkyCity Marriott Hotel) on 30 December 2015. The relocation of air quality monitoring location, AMS7A, back to AMS7 was approved by EPD on 21 December 2015. The baseline and action/limit level for air quality as derived from the baseline monitoring data recorded at Hong Kong SkyCity Marriott Hotel (AMS7) was adopted for the air quality monitoring location. As the permission to carry out air quality monitoring at Hong Kong SkyCity Marriott Hotel was not granted after the end of January 2018, as such, a proposal for the monitoring location relocated to 3RS Site Office(AMS7B) was justified by the ET Leader for Contract No. HY/2013/01 on 22 January 2018; verified by the IEC on 24 January 2018; and submitted to EPD on 30 January 2018, and the AQM has been carrying out at AMS7B with EPD's consent since 6 February 2018.

2.1.3 A summary of air and noise monitoring locations are presented in **Table 2.1**. The location of air quality and noise monitoring stations are shown as in **Figure 2.1** and **Figure 2.2**, respectively.

Table 2.1 Summary of Impact EM&A Requirements

Environmental Monitoring	ID	Location Description
Air Quality	AMS2(1)	Tung Chung Development Pier
	AMS3B(1)	Site Boundary of Site Office Area at Work Area WA2
	AMS6(1)	Dragonair/CNAC (Group) Building
	AMS7/AMS7B(1)(2)	Hong Kong SkyCity Marriott Hotel / 3RS Site Office
Noise	NMS2(3)	Seaview Crescent
	NMS3B(3)(4)	Site Boundary of Site Office Area at Works Area WA2

Remarks:

(1) The ET of this Contract should conduct impact air quality monitoring at the Air Monitoring Station listed in the table as part of EM&A programme according to the latest notification from ENPO when the monitoring station(s) is/are no longer covered by another ET of the HZMB project.

(2) The original monitoring location was at Hong Kong SkyCity Marriott Hotel (AMS7). As the permission to carry out air quality monitoring at Hong Kong SkyCity Marriott Hotel was not granted after 31 January 2015, the monitoring location was relocated to Chu Kong Air-Sea Union Transportation Co. Ltd. (AMS7A) from 5 February 2015 to 30 December 2015. The alternative monitoring location at Chu Kong Air-Sea Union Transportation Co. Ltd. was approved by EPD on 5 February 2015. However, AMS7A was relocated back to its original location (AMS7-Hong Kong SkyCity Marriott Hotel) on 30 December 2015. The relocation of air quality monitoring location, AMS7A, back to AMS7 was approved by EPD on 21 December 2015. As the permission to carry out air quality monitoring at Hong Kong SkyCity Marriott Hotel was not granted after the end of January 2018, as such, a proposal for the monitoring location relocated to 3RS Site Office(AMS7B) was justified by the ET Leader for Contract No. HY/2013/01 on 22 January 2018; verified by the IEC on 24 January 2018; and

submitted to EPD on 30 January 2018, and the AQM has been carrying out at AMS7B with EPD's consent since 6 February 2018.

(3) The ET of this Contract should conduct impact noise monitoring at the NMS listed in the table as part of EM&A programme according to the latest notification from ENPO when the monitoring station(s) is/are no longer covered by another ET of the HZMB project.

(4) The Action and Limit Levels for schools will be applied for this alternative monitoring location.

2.1.4 The water quality works under Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works were suspended from 1 September 2017. The ET of Contract No. HY/2013/01 is required and continues the same implementation of environmental monitoring commencing on 1 September 2017. A total of twenty-one stations (nine Impact Stations (IS), seven Sensitive Receiver Stations (SR) and five Control/Far Field Stations (CS)) are covered by the current EM&A programme.

2.1.5 The water quality monitoring stations at CS(Mf)3 (Coordinate: 809989E, 821117N), IS10 (Coordinate: 812577E, 820670N) and SR5 (811489E, 820455N) have been occupied by the marine work of a designated project - Expansion of Hong Kong International Airport into a Three-Runway System (3RS Project). The alternative water quality monitoring station at CS(Mf)3(N) (Coordinate: 808814E, 822355N), IS10(N) (Coordinate: 812942E, 820881N) and SR5(N) (812569E, 8201475N) were justified and verified by the ET Leader for Contract No. HY/2010/02 and the IEC respectively on 24 March 2017 and it was approved by EPD on 12 May 2017.

2.1.6 **Table 2.2** and **Figures 2.3a and 2.3b** show the locations of water quality monitoring stations.

Table 2.2 Impact Water Quality Monitoring Stations

Station	Description	East	North
IS5	Impact Station (Close to HKBCF construction site)	811579	817106
IS(Mf)6	Impact Station (Close to HKBCF construction site)	812101	817873
IS7	Impact Station (Close to HKBCF construction site)	812244	818777
IS8	Impact Station (Close to HKBCF construction site)	814251	818412
IS(Mf)9	Impact Station (Close to HKBCF construction site)	813273	818850
IS10	Impact Station (Close to HKBCF construction site)	812577	820670
IS10(N)*	Impact Station (Close to HKBCF construction site)	812942	820881
IS(Mf)11	Impact Station (Close to HKBCF construction site)	813562	820716
IS(Mf)16	Impact Station (Close to HKBCF construction site)	814328	819497
IS17	Impact Station (Close to HKBCF construction site)	814539	820391
SR3(N) ^	Sensitive receivers (San Tau SSSI)	810689	816591
SR4(N)	Sensitive receivers (Tai Ho)	814705	817859
SR5	Sensitive receivers (Artificial Reef in NE Airport)	811489	820455
SR5(N)*	Sensitive receiver (Artificial Reef in NE Airport)	812569	821475
SR6	Sensitive receivers (Sha Chau and Lung Kwu Chau Marine Park)	805837	821818
SR7	Sensitive receivers (Tai Mo Do)	814293	821431
SR10A(N) ^	Sensitive receivers (Ma Wan FCZ) 1	823644	823484
SR10B(N2) ^	Sensitive receivers (Ma Wan FCZ) 2	823689	823159

CS(Mf)3	Control Station	809989	821117
CS(Mf)3(N)*	Control Station	808814	822355
CS(Mf)5	Control Station	817990	821129
CS4	Control Station	810025	824004
CS6	Control Station	817028	823992
CSA	Control Station	818103	823064

Remarks:
* Alternative water quality monitoring stations at CS(Mf)3(N), SR5(N) and IS10(N) were justified and verified by the ET Leader for Contract No. HY/2010/02 and the IEC respectively on 24 March 2017 and it was approved by EPD on 12 May 2017.
^ Alternative water quality monitoring stations at SR3, SR10A and SR10B(N) were justified by the ET Leader on 8 November 2017 and verified by IEC on 13 November 2017; and submitted to EPD on 29 November 2017 and it was approved by EPD on 22 December 2017.

2.1.7 The dolphin monitoring works under Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works were suspended from 1 September 2017. The ET of Contract No. HY/2013/01 is required and continues the same implementation of environmental monitoring commencing on 1 September 2017.

2.1.8 The dolphin monitoring should adopt line-transect vessel survey method. The survey follows pre-set and fixed transect lines in the two areas defined by AFCD as: Northeast Lantau survey area; and Northwest Lantau survey area. The change of transect lines 2, 3, 4, 5, 6 and 7 and new vessel-based transect line 24 for dolphin monitoring have been proposed due to the marine work of a designated project - Expansion of Hong Kong International Airport into a Three-Runway System (3RS Project). It was justified and verified by the ET Leader for Contract No. HY/2010/02 and the IEC respectively on 24 March 2017 and it was approved by EPD on 12 May 2017.

2.1.9 The co-ordinates for the transect lines showing the transect lines have been obtained from AFCD and are shown in **Table 2.3** and **Figure 2.4** shows the layout map.

Table 2.3 Impact Dolphin Monitoring Line Transect Co-ordinates

Transect ID	HK Grid System	
	East	North
1*	804671	815456
	804671	831404
2	805476	820800
	805476	826654
3	806464	821150
	806464	822911
4	807518	821500
	807518	829230
5	808504	821850
	808504	828602
6	809490	822150
	809490	825352
7	810499	822000
	810499	824613
8*	811508	821123
	811508	824254
9*	812516	821303
	812516	824254
10*	813525	820827
	813525	824657
11#	814556	818853
	814556	820992

12	815542	818807
	815542	824882
13	816506	819480
	816506	824859
14	817537	820220
	817537	824613
15	818568	820735
	818568	824433
16	819532	821420
	819532	824209
17	820451	822125
	820451	823671
18	821504	822371
	821504	823761
19	822513	823268
	822513	824321
20	823477	823402
	823477	824613
21	805476	827081
	805476	830562
22	806464	824033
	806464	829598
23	814559	821739
	814559	824768
24	805476	815900
	805476	819100

Remarks:

(a) * Due to the presence of deployed silt curtain systems at the site boundaries of the Contract, some of the transect lines shown in Figure 5.1 could not be fully surveyed during the regular survey. Transect 10 is reduced from 6.4km to approximately 3.6km in length due to the HKBCF construction site. Therefore the total transect length for both NEL and NWL combined is reduced to approximately 108km

(b) # Coordinates for transect lines 1, 8, 9 and 11 have been updated in respect to the Proposal for Alteration of Transect Line for Dolphin Monitoring approved by EPD on 19 August 2015.

(c) The change of transect lines 2, 3, 4, 5, 6 and 7 and new vessel-based transect line 24 for dolphin monitoring have been proposed due to the marine work of a designated project-Expansion of Hong Kong International Airport into a Three-Runway System (3RS Project). It was justified and verified by the ET Leader for Contract No. HY/2010/02 and the IEC respectively on 24 March 2017 and it was approved by EPD on 12May 2017.

(d) Due to marine work ofthe Expansion of Hong Kong International Airport into a Three-Runway System (3RS Project), original transect lines of dolphin monitoring 2, 3, 4, 5, 6 and 7 are enclosed by works boundary of 3RS Project. Alternative dolphin monitoring transect lines 2, 3,4, 5, 6, 7 and 24 are adopted starting from 17 May 2017 to replace the original transect lines.

2.2 Monitoring Requirements

2.2.1 The monitoring requirements, monitoring equipment, monitoring parameters, frequency and duration, monitoring methodology, monitoring schedule, meteorological information is detailed in the monthly EM&A Reports for Contract No. HY/2013/01.

2.3 Action and Limit Levels

2.3.1 The Action and Limit Level for 1-hr TSP and 24-hr TSP are provided in **Table 2.4** and **Table 2.5**, respectively.

Table 2.4 Action and Limit Levels for 1-hour TSP

Monitoring Station	Action Level, µg/m³	Limit Level, µg/m³
AMS2 – Tung Chung Development Pier	374	500
AMS3B - Site Boundary of Site Office at Work Area WA2	368	
AMS6 – Dragonair/CNAC (Group) Building (HKIA)	360	
AMS7/ AMS7B – Hong Kong SkyCity Marriott Hotel/ 3RS Site Office	370	

Table 2.5 Action and Limit Levels for 24-hour TSP

Monitoring Station	Action Level, µg/m³	Limit Level, µg/m³
AMS2 – Tung Chung Development Pier	176	260
AMS3B - Site Boundary of Site Office at Work Area WA2	167	
AMS6 – Dragonair/CNAC (Group) Building (HKIA)	173	
AMS7/ AMS7B – Hong Kong SkyCity Marriott Hotel / 3RS Site Office	183	

2.3.2 The Action and Limit Levels for construction noise are defined in **Table 2.6**.

Table 2.6 Action and Limit Level for Construction Noise

Parameter	Action Level	Limit Level
07:00 – 19:00 hours on normal weekdays	When one documented complaint is received	75/70/65 dB(A)*

Notes :
If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the Noise Control Authority have to be followed.
* Reduce to 70 dB(A) for schools and 65 dB(A) during school examination period. The Action and limit Levels for schools will be applied for NMS3B. Daytime noise Limit Level of 70 dB(A) applies to education institutions, while 65 dB(A) applies during the school examination period.

2.3.3 The Action and Limit Levels for water quality are provided in **Table 2.7**.

Table 2.7 Action and Limit Levels for Water Quality

Parameters	Action	Limit
DO in mg L^{-1} (Surface, Middle & Bottom)	Surface and Middle 5.0 Bottom 4.7	Surface and Middle 4 .2 (except 5 mg/L for FCZ) Bottom 3.6
SS in mg L^{-1} (depth-averaged) at all monitoring stations and control stations	23.5 and 120% of upstream control station's SS at the same tide of the same day*	34.4 and 130% of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes*
Turbidity in NTU (depth-averaged)	27.5 and 120% of upstream control station's turbidity at the same tide of the same day*	47.0 and 130% of upstream control station's turbidity at the same tide of the same day*

* Remarks: Reference is made to EPD approval of adjustment of water quality assessment criteria issued and became effective on 18 February 2013.

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

2.3.4 The Action and Limit Levels for Chinese White Dolphin Monitoring are provided in **Table 2.8** and **Table 2.9**, respectively.

Table 2.8 Action and Limit Levels for Chinese White Dolphin Monitoring - Approach to Define Action Level (AL) and Limit Level (LL)

	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)]	

Table 2.9 Derived Value of Action Level (AL) and Limit Level (LL) for Chinese White Dolphin Monitoring

	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)]	

2.4 Event Action Plans

2.4.1 The Event Actions Plans for air quality, noise, water quality and dolphin monitoring are provided in **Appendix D.**

2.5 Mitigation Measures

2.5.1 Environmental mitigation measures for the Contract were recommended in the approved EIA Report. **Appendix E** lists the recommended mitigation measures and the implementation status.

3 Environmental Monitoring and Audit

3.1 Air Quality Monitoring Results

3.1.1 In accordance with the Contract Specific EM&A Manual, impact 1-hour Total Suspended Particulates (TSP) monitoring was conducted for at least three times every 6 days, while impact 24-hour TSP monitoring was carried out for at least once every 6 days at the 4 monitoring stations (AMS2, AMS3B, AMS6 and AMS7 / AMS7B).

3.1.2 The weather was sunny and bright, only traces of rainfall were recorded in December, and became cold, windy and dry from middle of December till to end of February 2018. Construction works during the quarterly period are shown in Section 1.4.1. The major dust source in the reporting period included construction activities from the Project, as well as traffic emission.

3.1.3 The graphical plots of the monitoring results are presented in **Appendix F**. No specific trend of the monitoring results or existence of persistent pollution source was noted.

3.1.4 Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 shall be referred to the monthly EM&A Reports (for December 2017 to February 2018) prepared by Contract No. HY/2011/03.

3.1.5 The number of exceedances recorded during the reporting period are presented in the **Table 3.1**.

Table 3.1 Summary of number of exceedances for 1-hr and 24-hr TSP Monitoring

Monitoring Station	December 2017		January 2018		February 2018	
	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level
AMS2	-	-	1 (24-hr TSP)	-	-	-
AMS3B	1 (24-hr TSP)	-	1 (24-hr TSP)	-	-	-
AMS7 / AMS7B	-	-	-	-	-	-

Table 3.2 Summary of 1-hour TSP Monitoring Results Obtained During the Reporting Period

Reporting month	Monitoring Station	Average (µg/m3)	Range (µg/m3)	Action Level (µg/m3)	Limit Level (µg/m3)
December 2017	AMS2	49	15 - 90	374	500
	AMS3B	39	21 - 59	368	
	AMS7	114	18 - 335	370	
January 2018	AMS2	57	13 - 113	374	500
	AMS3B	58	14 - 105	368	
	AMS7	46	12 - 132	370	
February 2018	AMS2	48	32 - 71	374	500
	AMS3B	47	24 - 80	368	
	AMS7	74	21 - 255	370	

Table 3.3 Summary of 24-hour TSP Monitoring Results Obtained During the Reporting Period

Reporting month	Monitoring Station	Average (µg/m3)	Range (µg/m3)	Action Level (µg/m3)	Limit Level (µg/m3)
December 2017	AMS2	120	73 - 164	176	260
	AMS3B	125	77- 182	167	
	AMS7	124	110 - 141	183	
January 2018	AMS2	85	16 - 184	176	260
	AMS3B	89	13- 183	167	
	AMS7	88	36 - 136	183	
February 2018	AMS2	80	65 - 99	176	260
	AMS3B	78	56- 90	167	
	AMS7	120	81 - 172	183	

3.1.6 No Action and Limit Level exceedances of 1-hour TSP were recorded at AMS2, AMS3B and AMS7/ AMS7B during the reporting period.

3.1.7 No Action and Limit Level exceedances of 24-hour TSP were recorded at AMS7/ AMS7B during the reporting period.

3.1.8 No Limit Level exceedances of 24-hour TSP were recorded at AMS2 and AMS3B during the reporting period. Two Action Level exceedances of 24-hour TSP were recorded at AMS3B on 23 December 2017 and 17 January 2018. And one Action Level exceedance of 24-hour TSP was recorded at AMS2 on 17 January 2018. For detail of investigation, please refer to **Appendix K**.

3.1.9 Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 shall be referred to the monthly EM&A report prepared by Contract No. HY/2011/03.

3.2 Noise Monitoring Results

3.2.1 In accordance with the Contract Specific EM&A Manual, impact noise monitoring was conducted for at least once per week during the construction phase of the Contract.

3.2.2 The graphical plots of the monitoring results are presented in **Appendix F**. No specific trend of the monitoring results or existence of persistent pollution source was noted.

3.2.3 The number of exceedances recorded during the reporting period are presented in the **Table 3.4**.

Table 3.4 Summary of number of exceedances for Impact Noise Monitoring

Monitoring Station	December 2017		January 2018		February 2018	
	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level
NMS2	-	-	-	-	-	-
NMS3B(*)	-	-	-	-	-	-

Remark: (*) The Limit Level for schools will be applied for NMS3B. Daytime noise Limit Level of 70 dB(A) applies to education institutions, while 65 dB(A) applies during the school examination period.

Table 3.5 Summary of Noise Monitoring Result Obtained During Reporting Period

Reporting month	Monitoring Station	Average, dB(A) $L_{eq\ (30\ mins)}$	Range, dB(A) $L_{eq\ (30\ mins)}$	Limit Level, dB(A) $L_{eq\ (30\ mins)}$
December 2017	NMS2	66	65 - 67	75
	NMS3B(*)	68	67 - 70	70/65
January 2018	NMS2	66	64 - 68	75
	NMS3B(*)	67	66 - 67	70/65
February 2018	NMS2	66	64 - 67	75
	NMS3B(*)	66	62 - 68	70/65

Remark: (*) The Limit Level for schools will be applied for NMS3B. Daytime noise Limit Level of 70 dB(A) applies to education institutions, while 65 dB(A) applies during the school examination period.

3.2.4 No Action and Limit Level exceedances of Noise monitoring were recorded at NMS2 and NMS3B during the reporting period.

3.2.5 The event and action plan is provided in **Appendix D.**

3.3 Water Quality Monitoring Results

3.3.1 Impact water quality monitoring was carried out to ensure that any deterioration of water quality was detected, and that timely action was taken to rectify the situation. For impact water quality monitoring, measurement were taken in accordance with the Contract Specific EM&A Manual.

3.3.2 The graphical plots of the monitoring results are presented in **Appendix F**.

3.3.3 For impact water quality monitoring, number of exceedances recorded for reporting period at each impact station are summarised in **Table 3.6**.

Table 3.6 Summary of Water Quality Exceedances

Station	Exceedance Level	DO (S&M)		DO (Bottom)		Turbidity		SS	
		Ebb	Flood	Ebb	Flood	Ebb	Flood	Ebb	Flood
IS5	Action Level								
	Limit Level								
IS(Mf)6	Action Level								
	Limit Level								
IS7	Action Level								
	Limit Level								
IS8	Action Level							2017-12-13	2017-12-06; 2017-12-08
	Limit Level								
IS(Mf)9	Action Level							2017-12-11	2017-12-06
	Limit Level								
IS10(N)	Action Level								
	Limit Level								
IS(Mf)11	Action Level								
	Limit Level								
IS(Mf)16	Action Level								
	Limit Level								
IS17	Action Level								
	Limit Level								
SR3/ SR3(N) (^)	Action Level								
	Limit Level								
SR4(N)	Action Level								2017-12-08
	Limit Level								
SR5(N)	Action Level								2017-12-06
	Limit Level								
SR6	Action Level							2017-12-04; 2017-12-08; 2017-12-22;	2017-12-06; 2017-12-20; 2017-12-22;

Station	Exceedance Level	DO (S&M)		DO (Bottom)		Turbidity		SS	
		Ebb	Flood	Ebb	Flood	Ebb	Flood	Ebb	Flood
								2018-01-31	2018-02-02
	Limit Level								
SR7	Action Level								2017-12-04; 2018-02-02
	Limit Level								
SR10A/ SR10A(N) (^)	Action Level								2017-12-08
	Limit Level								
SR10B(N)/ SR10B(N2)(^)	Action Level								2017-12-04
	Limit Level								
Total	Action Level	0	0	0	0	0	0	6	13
		19							
	Limit Level	0	0	0	0	0	0	0	0
		0							

Remark: (^) Alternative water quality monitoring stations at SR3, SR10A and SR10B(N) were justified and justified by the ET Leader on 8 November 2017 and the IEC verified on 13 December 2017 and it was approved by EPD on 22 December 2017.

3.3.4 For water quality monitoring during the reporting period, no Action Level and Limit Level exceedance was recorded for dissolved oxygen and turbidity during mid-ebb tide and mid-flood tide.

3.3.5 For water quality monitoring during the reporting period, 6 Action Level and no Limit Level exceedances were recorded for suspended solid during mid-ebb tide. 13 Action Level and no Limit Level exceedances were recorded for suspended solid during mid-flood tide.

3.3.6 As confirmed by the Contractor, no marine transportation and marine-based work was conducted when water quality monitoring was conducted in December 2017, January and February 2018. Therefore, it is concluded that the exceedances were not related the Contract. The detailed investigation results of these exceedances recorded are shown in **Appendix K.**

3.4 Dolphins Monitoring Results

Data Analysis

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

3.4.2 Encounter rate analysis – Encounter rates of Chinese white dolphins (number of on-effort sightings per 100 km of survey effort, and total number of dolphins sighted on-effort per 100 km of survey effort) were calculated in NEL and NWL survey areas in relation to the amount of survey effort conducted during each month of monitoring survey. Dolphin encounter rates

were calculated in two ways for comparisons with the HZMB baseline monitoring results as well as to AFCD long-term marine mammal monitoring results.

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

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

3.4.5 Quantitative grid analysis on habitat use – To conduct quantitative grid analysis of habitat use, positions of on-effort sightings of Chinese White Dolphins collected during the quarterly impact phase monitoring period were plotted onto 1-km^2 grids among NWL and NEL survey areas on GIS. Sighting densities (number of on-effort sightings per km^2) and dolphin densities (total number of dolphins from on-effort sightings per km^2) were then calculated for each 1 km by 1 km grid with the aid of GIS. Sighting density grids and dolphin density grids were then further normalized with the amount of survey effort conducted within each grid. The total amount of survey effort spent on each grid was calculated by examining the survey coverage on each line-transect survey to determine how many times the grid was surveyed during the study period. For example, when the survey boat traversed through a specific grid 50 times, 50 units of survey effort were counted for that grid. With the amount of survey effort calculated for each grid, the sighting density and dolphin density of each grid were then normalized (i.e. divided by the unit of survey effort).

3.4.6 The newly-derived unit for sighting density was termed SPSE, representing the number of on-effort sightings per 100 units of survey effort. In addition, the derived unit for actual dolphin density was termed DPSE, representing the number of dolphins per 100 units of survey effort. Among the 1-km^2 grids that were partially covered by land, the percentage of sea area was calculated using GIS tools, and their SPSE and DPSE values were adjusted accordingly. The following formulae were used to estimate SPSE and DPSE in each 1-km2 grid within the study area:

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

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

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

3.4.8 Ranging pattern analysis – Location data of individual dolphins that occurred during the 3-month impact phase monitoring period were obtained from the dolphin sighting database and photo-identification catalogue. To deduce home ranges for individual dolphins using the fixed kernel methods, the program Animal Movement Analyst Extension, was loaded as an extension with ArcView© 3.1 along with another extension Spatial Analyst 2.0. Using the fixed kernel method, the program calculated kernel density estimates based on all sighting

positions, and provided an active interface to display kernel density plots. The kernel estimator then calculated and displayed the overall ranging area at 95% UD level.

Summary of Survey Effort and Dolphin Sightings

3.4.9 During the period of December 2017 to February 2018, six sets of systematic line-transect vessel surveys were conducted for the HKBCF project to cover all transect lines in NWL and NEL survey areas twice per month.

3.4.10 From these surveys, a total of 790.6 km of survey effort was collected, with 93.5% of the total survey effort being conducted under favourable weather conditions (i.e. Beaufort Sea State 3 or below with good visibility). Among the two areas, 299.5 km and 491.1 km of survey effort were conducted in NEL and NWL survey areas respectively.

3.4.11 The total survey effort conducted on primary lines was 578.6 km, while the effort on secondary lines was 212.0 km. Survey effort conducted on both primary and secondary lines were considered as on-effort survey data. A summary table of the survey effort is shown in **Annex I** of **Appendix L**.

3.4.12 During the six sets of monitoring surveys in December 2017 to February 2018, 20 groups of 73 Chinese White Dolphins were sighted, with the summary table of the dolphin sightings shown in **Annex II** of **Appendix L**. All except one dolphin sighting were made during on-effort search, while 16 of the 19 on-effort dolphin sightings were made on primary lines. In addition, almost all dolphin groups were sighted in NWL, while an exceptionally rare sighting was also made in NEL.

Distribution

3.4.13 Distribution of dolphin sightings made during monitoring surveys in December 2017 to February 2018 is shown in **Figure 1** of **Appendix L**. The majority of the sightings were concentrated at the northwestern end (mainly to the north of Lung Kwu Chau) and southwestern end (near HKLR09 alignment and to the west of the airport platform) of the North Lantau region (**Figure 1** of **Appendix L**). Other sightings were sparsely distributed near Pillar Point, Black Point, Sha Chau and to the northeast of the airport. The lone sighting made in NEL was located near Siu Ho Wan.

3.4.14 In general, the dolphins were mostly absent from the central and eastern portions of North Lantau waters, similar to the consistent findings of HKLR03 surveys in recent years (**Figure 1** of **Appendix L**).

3.4.15 One dolphin sighting was made in the proximity of the HKBCF reclamation site, while several groups were also sighted near the HKLR09 alignment. On the contrary, other dolphin sightings were located far away from the HKLR03 reclamation site as well as the alignment and Tuen Mun-Chek Lap Kok Link (TMCLKL). (**Figure 1** of **Appendix L**)

3.4.16 Sighting distribution of dolphins during the present impact phase monitoring period (December 2017 to February 2018) was very different from the one during the baseline monitoring period (**Figure 1** of **Appendix L**). In the present quarter, dolphins have mostly disappeared from the NEL region, which was in stark contrast to their frequent occurrence around the Brothers Islands, near Shum Shui Kok and in the vicinity of HKBCF reclamation site during the baseline period (**Figure 1** of **Appendix L**). Seasonal distributions of dolphins during baseline and impact periods can be referred to those presented in the corresponding quarterly EM&A summary report prepared under Contract No. HY/2011/03.

3.4.17 On the other hand, dolphin occurrence in NWL waters was also noticeably different between the baseline and impact phase periods. During the present impact monitoring period, dolphins were infrequently sighted here, and mainly at the northwestern and southwestern ends of the area, which was in stark contrast with their frequent occurrences throughout the entire survey area during the baseline period (**Figure 1** of **Appendix L**).

Encounter Rate

3.4.18 During the present three-month study period, the encounter rates of Chinese White Dolphins deduced from the survey effort and on-effort sighting data from the primary transect lines under

favourable conditions (Beaufort 3 or below) for each set of the surveys in NEL and NWL are shown in **Table 3.7**. The average encounter rates deduced from the six sets of surveys were also compared with the ones deduced from the baseline monitoring period (September – November 2011) (**Table 3.8**).

3.4.19 To facilitate the comparison with the AFCD long-term monitoring results, the encounter rates were also calculated for the present quarter using both primary and secondary survey effort. The encounter rates of sightings (STG) and dolphins (ANI) in NWL were 3.6 sightings and 13.9 dolphins per 100 km of survey effort respectively, while the encounter rates of sightings (STG) and dolphins (ANI) in NEL were 0.3 and 1.7 respectively for this quarter.

Table 3.7 Dolphin Encounter Rates (Sightings Per 100 km of Survey Effort) During Reporting Period (December 2017 to February 2018)

Survey Area	Dolphin Monitoring	Encounter rate (STG) (no. of on-effort dolphin sightings per 100 km of survey effort)	Encounter rate (ANI) (no. of dolphins from all on-effort sightings per 100 km of survey effort)
		Primary Lines Only	Primary Lines Only
Northeast Lantau	Set 1 (1 & 7 Dec 2017)	0.0	0.0
	Set 2 (14 & 19 Dec 2017)	0.0	0.0
	Set 3 (9 & 11 Jan 2018)	0.0	0.0
	Set 4 (19 & 26 Jan 2018)	0.0	0.0
	Set 5 (1 & 6 Feb 2018)	3.1	15.7
	Set 6 (13 & 26 Feb 2018)	0.0	0.0
Northwest Lantau	Set 1 (1 & 7 Dec 2017)	1.6	14.6
	Set 2 (14 & 19 Dec 2017)	0.0	0.0
	Set 3 (9 & 11 Jan 2018)	2.0	9.8
	Set 4 (19 & 26 Jan 2018)	5.1	20.3
	Set 5 (1 & 6 Feb 2018)	4.3	6.5
	Set 6 (13 & 26 Feb 2018)	9.8	34.3

Remark: Due to boat availability issue, the dolphin monitoring on 4 January 2018 was rescheduled to 9 January 2018. Due to the boat drivers are not available due to CNY holiday issue, the dolphin monitoring on 21 February 2018 was rescheduled to 26 February 2018.

Table 3.8 Comparison of Average Dolphin Encounter Rates From Impact Monitoring Period (December 2017 to February 2018) and Baseline Monitoring Period (September to November 2011)

Survey Area	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)	
	Reporting Period	Baseline Monitoring Period	Reporting Period	Baseline Monitoring Period

Northeast Lantau	0.5 ± 1.3	6.0 ± 5.1	2.6 ± 6.4	22.2 ± 26.9
Northwest Lantau	3.8 ± 3.5	9.9 ± 5.9	14.3 ± 12.0	44.7 ± 29.9

Notes:
1) The encounter rates deduced from the baseline monitoring period have been recalculated based only on the survey effort and on-effort sighting data made along the primary transect lines under favourable conditions.
2) ± denotes the standard deviation of the average encounter rates.

3.4.20 Comparison of average dolphin encounter rates (**Table 3.9**) in Northeast Lantau survey area from the same winter quarters of HKLR03 and HKBCF impact monitoring period (December 2017-February 2018) and baseline monitoring period (September-November 2011) (Note: encounter rates deduced from the baseline monitoring period have been recalculated based only on survey effort and on-effort sighting data made along the primary transect lines under favourable conditions; ± denotes the standard deviation of the average encounter rates)

Table 3.9 Comparison of Average Dolphin Encounter Rates in Northeast Lantau Survey Area from All Quarters of Impact Monitoring Period and Baseline Monitoring Period (September to November 2011)

	Encounter rate (STG) (no. of on-effort dolphin sightings per 100 km of survey effort)	Encounter rate (ANI) (no. of dolphins from all on-effort sightings per 100 km of survey effort)
September-November 2011 (Baseline)	**6.0 ± 5.1**	**22.2 ± 26.8**
December 2012-February 2013 (HKLR03 Impact (*))	3.1 ± 3.2	6.3 ± 8.6
December 2013-February 2014 (HKLR03 Impact (*))	0.5 ± 1.1	1.3 ± 3.3
December 2014-February 2015 (HKLR03 Impact (*))	0.0	0.0
December 2015-February 2016 (HKLR03 Impact (*))	0.0	0.0
December 2016-February 2017 (HKLR03 Impact (*))	0.0	0.0
December 2017-February 2018 (HKBCF Impact)	**0.5 ± 1.3**	**2.6 ± 6.4**

Notes:
1) The encounter rates deduced from the baseline monitoring period have been recalculated based only on survey effort and on-effort sighting data made along the primary transect lines under favourable conditions.
2) ± denotes the standard deviation of the average encounter rates.3)
(*) As explained in Section 1.5 of Appendix L, the previous monitoring data from Contract No. HY/2011/03 (i.e. HKLR03) were adopted for comparison with the baseline and present HKBCF impact monitoring period.

3.4.21 On the other hand, the average dolphin encounter rates (STG and ANI) in NWL during the present impact phase monitoring period (reductions of 61.4% and 68.1% respectively) were only small fractions of the ones recorded during the three-month baseline period, indicating a noticeable decline in dolphin usage of this survey area during the present impact phase period (**Table 3.10**).

3.4.22 During the same winter quarters, dolphin encounter rates in NWL during winter 2017-2018 was almost identical to the previous winter period in 2016 - 2017, higher than the ones in 2014-15 and 2015-16, but much lower than the ones in 2012-2013 and 2013-2014 (**Table 3.10**). Such temporal trend should be closely monitored in the upcoming monitoring quarters whether the

dolphin occurrence would continue to increase as almost all marine construction activities of HKBCF works have been completed in coming months.

Table 3.10 Comparison of Average Dolphin Encounter Rates in Northwest Lantau Survey Area from all winter quarters of Impact Monitoring Period and Baseline Monitoring Period (September to November 2011)

Monitoring Period	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)
September-November 2011 (Baseline)	**9.9 ± 5.9**	**44.7 ± 29.9**
December 2012-February 2013 (HKLR03 Impact (*))	8.4 ± 5.0	35.9 ± 23.1
December 2013-February 2014 (HKLR03 Impact (*))	8.2 ± 2.2	32.6 ± 11.2
December 2014-February 2015 (HKLR03 Impact (*))	2.9 ± 2.7	11.3 ± 15.2
December 2015-February 2016 (HKLR03 Impact (*))	2.6 ± 1.5	11.0 ± 3.8
December 2016-February 2017 (HKLR03 Impact (*))	3.8 ± 3.8	14.5 ± 17.2
December 2017- February 2018 (HKBCF Impact)	**3.8 ± 3.5**	**14.3 ± 12.0**

Notes:
1) The encounter rates deduced from the baseline monitoring period have been recalculated based only on survey effort and on-effort sighting data made along the primary transect lines under favourable conditions.
2) ± denotes the standard deviation of the average encounter rates.
(*) As explained in Section 1.5 of Appendix L, the previous monitoring data from Contract No. HY/2011/03 (i.e. HKLR03) were adopted for comparison with the baseline and present HKBCF impact monitoring period.

3.4.23 A two-way ANOVA with repeated measures and unequal sample size was conducted to examine whether there were any significant differences in the average encounter rates between the baseline and impact monitoring periods. The two variables that were examined included the two periods (baseline and impact phases) and two locations (NEL and NWL).

3.4.24 For the comparison between the baseline period and the present quarter (1st quarter of the impact phase being assessed), the p-values for the differences in average dolphin encounter rates of STG and ANI were 0.0138 and 0.0475 respectively. If the alpha value is set at 0.05, significant differences were detected between the baseline and present quarters in both the average dolphin encounter rates of STG and ANI.

3.4.25 As indicated in both dolphin distribution patterns and encounter rates, dolphin usage has been significantly reduced in both NEL and NWL survey areas during the present quarterly period, and such low occurrence of dolphins has also been consistently documented in past HZMB dolphin monitoring studies.

3.4.26 The decline in dolphin usage of North Lantau region raises serious concern, as the timing of the decline in dolphin usage in North Lantau waters coincided well with the construction schedule of the HZMB-related projects (Hung 2017). Apparently, there was very little sign of recovery of dolphin usage even though most of the marine works associated with the HZMB construction have been completed, and therefore continuous dolphin monitoring would remain critical in coming months.

Group Size

3.4.27 Group size of Chinese White Dolphins ranged from one to nine individuals per group in North Lantau region during December 2017 to February 2018. The average dolphin group sizes

from these three months were compared with the ones deduced from the baseline period in September to November 2011, as shown in **Table 3.11**.

Table 3.11 Comparison of Average Dolphin Group Sizes between Reporting Period (December 2017 to February 2018) and Baseline Monitoring Period (September to November 2011)

Survey Area	Average Dolphin Group Size	
	Reporting Period	Baseline Monitoring Period
Overall	3.7 ± 2.4 (n = 20)	3.7 ± 3.1 (n = 66)
Northeast Lantau	5.0 (n=1)	3.2 ± 2.2 (n = 17)
Northwest Lantau	3.6 ± 2.5 (n = 19)	3.9 ± 3.4 (n = 49)

Note:

1) ± denotes the standard deviation of the average group size.

3.4.28 The average dolphin group size in NWL waters during December 2017 to February 2018 was slightly lower than the one recorded during the three-month baseline period, but it should also be noted that the sample size of six dolphin groups in the present quarter was small when compared to the 66 groups sighted during the baseline period (**Table 3.9**).

3.4.29 On the other hand, even the group size of the lone dolphin sighting recorded in NEL (five animals) was higher than the average recorded during the three-month period, but it was only based on the sample size of one (**Table 3.9**).

3.4.30 Overall, it should be noted that 12 of the 20 dolphin groups sighted during the present quarter were composed of 1-3 individuals only. On the other hand, the other eight groups were medium-sized, with four groups dolphins with five animals per group, three groups with seven animals per group, and one group with nine animals (**Annex II of Appendix L**).

3.4.31 Distribution of the large dolphin groups (i.e. five individuals or more per group) during the present quarter is shown in **Figure 3 of Appendix L**, with comparison to the one in baseline period. Four of the medium-sized groups were located to the north of Lung Kwu Chau, while the other four were distributed near Sha Chau, Pillar Point, to the northeast of airport, and near Siu Ho Wan (**Figure 2 of Appendix L**). Such distribution pattern was very different from the baseline period, when the larger dolphin groups were frequently sighted and evenly distributed in NWL waters, with a few also sighted in NEL waters (**Figure 2 of Appendix L**).

Habitat Use

3.4.32 From December 2017 to February 2018, the grids that recorded high dolphin densities were located to the north of Lung Kwu Chau, near Sha Chau and Pillar Point, to the northeast of airport platform, and near Siu Ho Wan (**Figures 3a and 3b of Appendix L**). Notably, the two grids overlapped with the HKLR09 alignment as well as the few grids to the west of the airport platform only recorded low to very low densities of dolphins in the present quarterly period (**Figures 3a and 3b of Appendix L**).

3.4.33 However, it should be emphasized that the amount of survey effort collected in each grid during the three-month period was fairly low (6-12 units of survey effort for most grids), and therefore the habitat use pattern derived from the three-month dataset should be treated with caution. A more complete picture of dolphin habitat use pattern should be examined when more survey effort for each grid will be collected throughout the impact phase monitoring programme.

3.4.34 When compared with the habitat use patterns during the baseline period, dolphin usage in NEL and NWL has drastically diminished in both areas during the present impact monitoring period (**Figure 4 of Appendix L**). During the baseline period, many grids between Siu Mo To and Shum Shui Kok in NEL recorded moderately high to high dolphin densities, which was in stark

contrast to the near-complete absence of dolphins there during the present impact phase period (**Figure 4 of Appendix L**).

3.4.35 The density patterns were also very different in NWL between the baseline and impact phase monitoring periods, with high dolphin usage throughout the area during the baseline period. In contrast, only several grids with high dolphin densities were located to the north of Lung Kwu Chau, near Sha Chau and Pillar Point during the present impact phase period (**Figure 4 of Appendix L**).

Mother-calf Pairs

3.4.36 During the present quarterly period, only one unspotted juvenile was sighted with its mother in the North Lantau region. This rare sighting of young calf was located near Sha Chau (**Figure 5 of Appendix L**).

3.4.37 The rare occurrence of young calves in the present quarter was very different from their regular occurrence in North Lantau waters during the baseline period (**Figure 5 of Appendix L**). This should be of a serious concern, and the occurrence of young calves in North Lantau waters should be of closely monitored in the upcoming quarters.

Activities and Associations with Fishing Boats

3.4.38 During the three-month study period, two of the 20 dolphin groups (i.e. the large group located just to the west of Lung Kwu Chau; (**Figure 5 of Appendix L**) were engaged in feeding activity, which were located near Sha Chau and to the northeast of the airport platform. However, the rest of the groups were not engaged in socializing, traveling or milling/resting activity during the three-month study period.

3.4.39 When compared to the baseline period, distribution of various dolphin activities during the present impact phase monitoring period was drastically different with very rare occurrence of such activities in the present quarter (**Figure 6 of Appendix L**).

3.4.40 Notably, none of the 20 groups was associated with any operating fishing vessel during the present impact phase period.

Summary Photo-identification works

3.4.41 From December 2017 to February 2018, over 2,500 digital photographs of Chinese White Dolphins were taken during the impact phase monitoring surveys for the photo-identification work.

3.4.42 In total, 26 individuals sighted 52 times altogether were identified (see summary table in **Annex III of Appendix L** and photographs of identified individuals in **Annex IV of Appendix L.** The majority of the re-sightings were made in NWL, while there were five re-sighted of five individual dolphins (NL37, N1120, NL123, NL136 and NL226) made in NEL from the rare sighting made in February 2018.

3.4.43 Among the 26 individuals, 15 of them were re-sighted only once, while six individuals were re-sighted 2-3 times and five individuals were re-sighted 4-7 times during the three-month period (**Annex III of Appendix L**).

3.4.44 Notably, eight of these 26 individuals (i.e. CH34, NL123, NL136, NL182, NL226, NL261, NL272 and NL296) were also sighted in NWL during the HKLR03 monitoring surveys conducted concurrently in the same three-month period. However, none of the individuals was sighted in West Lantau waters during the HKLR09 monitoring surveys from December 2017 to February 2018.

Individual range use

3.4.45 Ranging patterns of the 26 individuals identified during the three-month study period were determined by fixed kernel method, and are shown in **Annex V of Appendix L**.

3.4.46 The major identified dolphins sighted in the present quarter were utilizing NWL waters only, but five individuals have also spanned their range across to NEL waters, where many of them have

utilized as their core areas in the past (**Annex V of Appendix L**). This is still stark contrary to the extensive movements between NEL and NWL survey areas observed in the earlier impact monitoring quarters as well as the baseline period.

3.4.47 On the other hand, none of the individuals have extended their range use to WL during the present quarter.

3.4.48 In the upcoming quarters, individual range use and movements should be continuously monitored to examine whether there has been any consistent shifts of individual home ranges from North Lantau to West or Southwest Lantau.

Action Level / Limit Level Exceedance

3.4.49 There was one Limit Level exceedance of dolphin monitoring for the quarterly monitoring data (between December 2017 – February 2018). For detail of investigation, please refer to **Appendix K**.

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

3.4.51 Although dolphins seldom occurred in the area of HKBCF construction in the past and during the baseline monitoring period, it is apparent that dolphin usage has been dramatically reduced in North Lantau waters in recent years, and many individuals have shifted away from this once-important habitat for the dolphins.

3.4.52 It is critical to continuously monitor the dolphin usage in North Lantau region in the upcoming quarters, to determine whether the dolphins are continuously affected by the various construction activities in relation to the HZMB-related works, and whether there is any sign of recovery when the construction works have been completed.

3.5 Implementation of Environmental Measures

3.5.1 In response to the site audit findings, the Contractor carried out corrective actions. Details of site audit findings and the corrective actions during the reporting period are presented in **Appendix G**.

3.5.2 The Contractor waters 8 times per day on all exposed soil within the Contract site and associated works areas when construction activities are being undertaken.

3.5.3 The marine traffic records and geographical plots of all the vessels tracks for the reporting month will be submitted by the Contractor to Engineer's Representative (ER), Environmental Team Leader (ETL) and Independent Environmental Checker / Environmental Project Office (IEC/ENPO) within 3 weeks after the reporting month. As informed by Contractor, there was no marine traffic since 2 June 2017.

3.5.4 Regarding the implementation of dolphin monitoring and protection measures (i.e. implementation of Dolphin Watching Plan, Dolphin Exclusion Zone and Silt Curtain integrity check), regular checking were conducted by the dolphin watcher(s) / dolphin observer(s) within the works area to ensure no dolphin was trapped by the enclosed silt curtain systems. No dolphin spotted within the enclosed silt curtain systems was reported and recorded during the reporting period. Silt curtain systems were also inspected timely in accordance to the submitted plan. All inspection records were kept properly.

3.5.5 Training was provided for barge operators in accordance with the Regular Marine Travel Routes Plan and relevant records were kept properly.

3.5.6 A summary of the Implementation Schedule of Environmental Mitigation Measures (EMIS) is presented in **Appendix E**. Most of the necessary mitigation measures were implemented properly.

3.6 Advice on the Solid and Liquid Waste Management Status

3.6.1 The Contractor registered as a chemical waste producer for the Contract. Sufficient numbers of receptacles were available for general refuse collection and sorting.

3.6.2 No marine sediment was generated/ treated and no treated marine sediment was reused in the reporting period. As informed by the Contractor in March 2016, the transfer of treated marine sediment to Contract no. HY/2010/02 has been discontinued since July 2015.

3.6.3 According to the contractor's information, all recyclable materials from the jetty removal in January 2018 were collected by registered collector for recycling. The recycled steel was shipped out based on the marine travel route plan. The destination is a privately own terminal.

3.6.4 The amount of the metals in waste flow table was updated according to Contractor's information which received on 21 February 2018. The amount of the metals was updated in **Appendix H**.

3.6.5 The summary of waste flow table is detailed in **Appendix H**.

3.6.6 The Contractor was reminded that chemical waste containers should be properly treated and stored temporarily in designated chemical waste storage area on site in accordance with the *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes*.

3.7 Environmental Licenses and Permits

3.7.1 The valid environmental licenses and permits during the reporting period are summarized in **Appendix I**.

4 Summary of Exceedance, Complaint, Notification of Summons and Successful Prosecution

4.1 Summary of Exceedance of the Environmental Quality Performance Limit

4.1.1 For air quality monitoring, no Action and Limit Level exceedances of 1-hour TSP were recorded at AMS2, AMS3B and AMS7/ AMS7B during the reporting period. No Action and Limit Level exceedances of 24-hour TSP were recorded at AMS7/ AMS7B during the reporting period. No Limit Level exceedances of 24-hour TSP were recorded at AMS2 and AMS3B during the reporting period. Two Action Level exceedances of 24-hour TSP were recorded at AMS3B on 23 December 2017 and 17 January 2018. And one Action Level exceedance of 24-hour TSP was recorded at AMS2 on 17 January 2018.

4.1.2 Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 shall be referred to the monthly EM&A Reports (for December 2017 to February 2018) prepared by Contract No. HY/2011/03.

4.1.3 For noise monitoring, no Action and Limit Level exceedances for noise were recorded at NMS2 and NMS3B during the reporting period.

4.1.4 For water quality monitoring during the reporting period, no Action Level and Limit Level exceedances of dissolved oxygen and turbidity were recorded at mid-ebb tide and mid-flood tide.

4.1.5 For water quality monitoring during the reporting period, 6 Action Level exceedances of suspended solid were recorded at mid-ebb tide while 13 Action Level exceedances of suspended solid were recorded at mid-flood tide. No Limit Level exceedances of suspended solid were recorded at mid-ebb tide and mid-flood tide.

4.1.6 After investigation, the exceedances were not related to Contract No. HY/2013/01. No follow-up actions required. No follow-up action is required.

4.1.7 Impact dolphin monitoring results at all transects are reported in the EM&A Reports prepared for Contract No. HY/2013/01. One Limit Level exceedance of dolphin monitoring was recorded in the reporting quarter.

4.2 Summary of Complaints, Notification of Summons and Successful Prosecution

4.2.1 There was no complaint received in relation to the environmental impact during the reporting period. No notification of summons and prosecution was received during the reporting period. The details of cumulative statistics of Environmental Complaints are provided in **Appendix I**.

4.2.2 Statistics on notifications of summons and successful prosecutions are summarized in **Appendix I**.

5 Comments, Recommendations and Conclusion

5.1 Comments

5.1.1 According to the environmental site inspections undertaken during the reporting period, the following recommendations were provided:

- The Contractor was reminded to provide watering for dusty activities to avoid dust generation.
- The Contractor was reminded to provide drip trays for chemical containers.
- The Contractor was reminded to clear the general refuse.

- The Contractor was reminded to cover the dusty material to prevent fugitive dust emission.
- The Contractor was reminded to provide water spraying during concrete breaking in process.
- The Contractor was reminded to clear oil stain as chemical waste treatment.
- The Contractor was reminded to cover the bags of cement entirely by impervious sheeting or place them in an area sheltered on the top and 3 sides.
- The Contractor was reminded to provide proper labels to chemical drums
- The Contractor was reminded to clear accumulated waste.

5.1.2 A summary of the Implementation Schedule of Environmental Mitigation Measures (EMIS) is presented in **Appendix E**. Most of the necessary mitigation measures were implemented properly.

5.2 Recommendations

5.2.1 With implementation of the recommended environmental mitigation measures, the contract's environmental impacts were considered environmentally acceptable. The weekly environmental site inspections ensured that all the environmental mitigation measures recommended were effectively implemented.

5.2.2 The recommended environmental mitigation measures, as included in the EM&A programme, effectively minimize the potential environmental impacts from the contract. Also, the EM&A programme effectively monitored the environmental impacts from the construction activities and ensure the proper implementation of mitigation measures. No particular recommendation was advised for the improvement of the programme.

5.3 Conclusions

5.3.1 The site preparation work of the Contract started on 26 September 2014 and the construction works of the Contract commenced on 6 October 2014. The construction works of the Contract No. HY/2013/06 within Contractor No. HY/2013/01 works area commenced on 20 February 2018. This is the fourteen Quarterly EM&A Report summaries findings of the EM&A works during the reporting period from 1 December 2017 to 28 February 2018(included the construction works of Contract No. HY/2013/06 within Contract No. HY/2013/01 works area).

5.3.2 For air quality monitoring, no Action and Limit Level exceedances of 1-hour TSP were recorded at AMS2, AMS3B and AMS7/ AMS7B during the reporting period. No Action and Limit Level exceedances of 24-hour TSP were recorded at AMS7/ AMS7B during the reporting period. No Limit Level exceedances of 24-hour TSP were recorded at AMS2 and AMS3B during the reporting period. Two Action Level exceedances of 24-hour TSP were recorded at AMS3B on 23 December 2017 and 17 January 2018. And one Action Level exceedance of 24-hour TSP was recorded at AMS2 on 17 January 2018.

5.3.3 Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 shall be referred to the monthly EM&A Reports (for December 2017 to February 2018) prepared by Contract No. HY/2011/03.

5.3.4 For noise monitoring, no Action and Limit Level exceedances for noise were recorded at NMS2 and NMS3B during the reporting period.

5.3.5 For water quality monitoring during the reporting period, no Action Level and Limit Level exceedances of dissolved oxygen and turbidity were recorded at mid-ebb tide and mid-flood tide.

5.3.6 For water quality monitoring during the reporting period, 6 Action Level exceedances of suspended solid were recorded at mid-ebb tide while 13 Action Level exceedances of suspended solid were recorded at mid-flood tide. No Limit Level exceedances of suspended solid were recorded at mid-ebb tide and mid-flood tide

5.3.7 After investigation, the exceedances were not related to Contract No. HY/2013/01. No follow-up actions required.

5.3.8 Impact dolphin monitoring results at all transects are reported in the EM&A Reports prepared for Contract No. HY/2013/01. One Limit Level exceedance of dolphin monitoring was recorded during the monitoring period (between December 2017 – February 2018).

5.3.9 Environmental site inspections were carried out on 6, 13, 20 and 27 December 2017, 3, 10, 17, 24 and 31 January 2018 and 7, 14, 21 and 28 February 2018; and site inspections for Contract No. HY/2013/06 within Contract No. HY/2013/01 works area were carried out on 21 and 28 February 2018. Recommendations on remedial actions were given to the Contractors for the deficiencies identified during the site inspections.

5.3.10 There was no complaint received in relation to the environmental impact during the reporting period.

5.3.11 No notification of summons and successful prosecution was received during the reporting period.

FIGURES

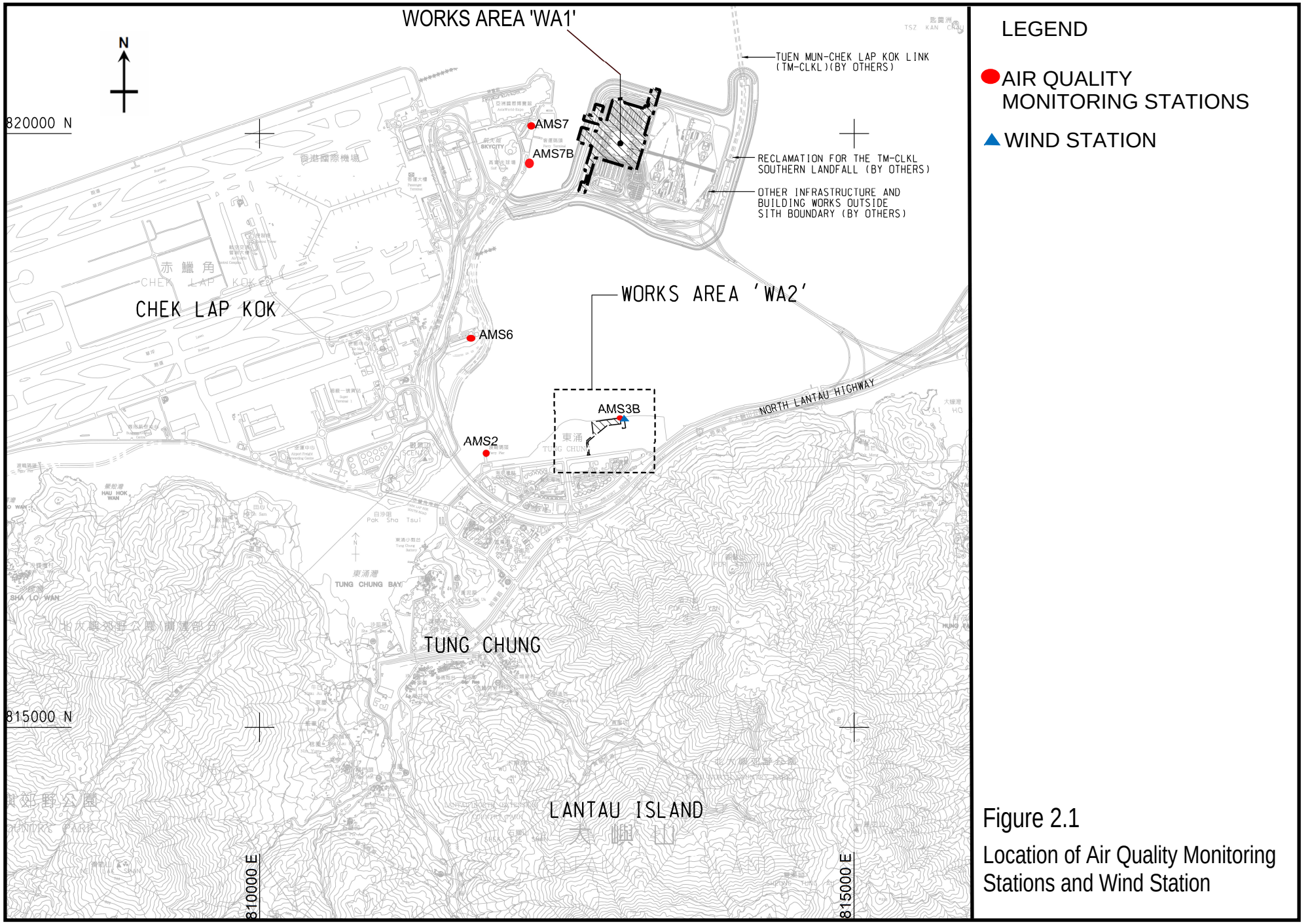


Figure 2.1

Location of Air Quality Monitoring Stations and Wind Station

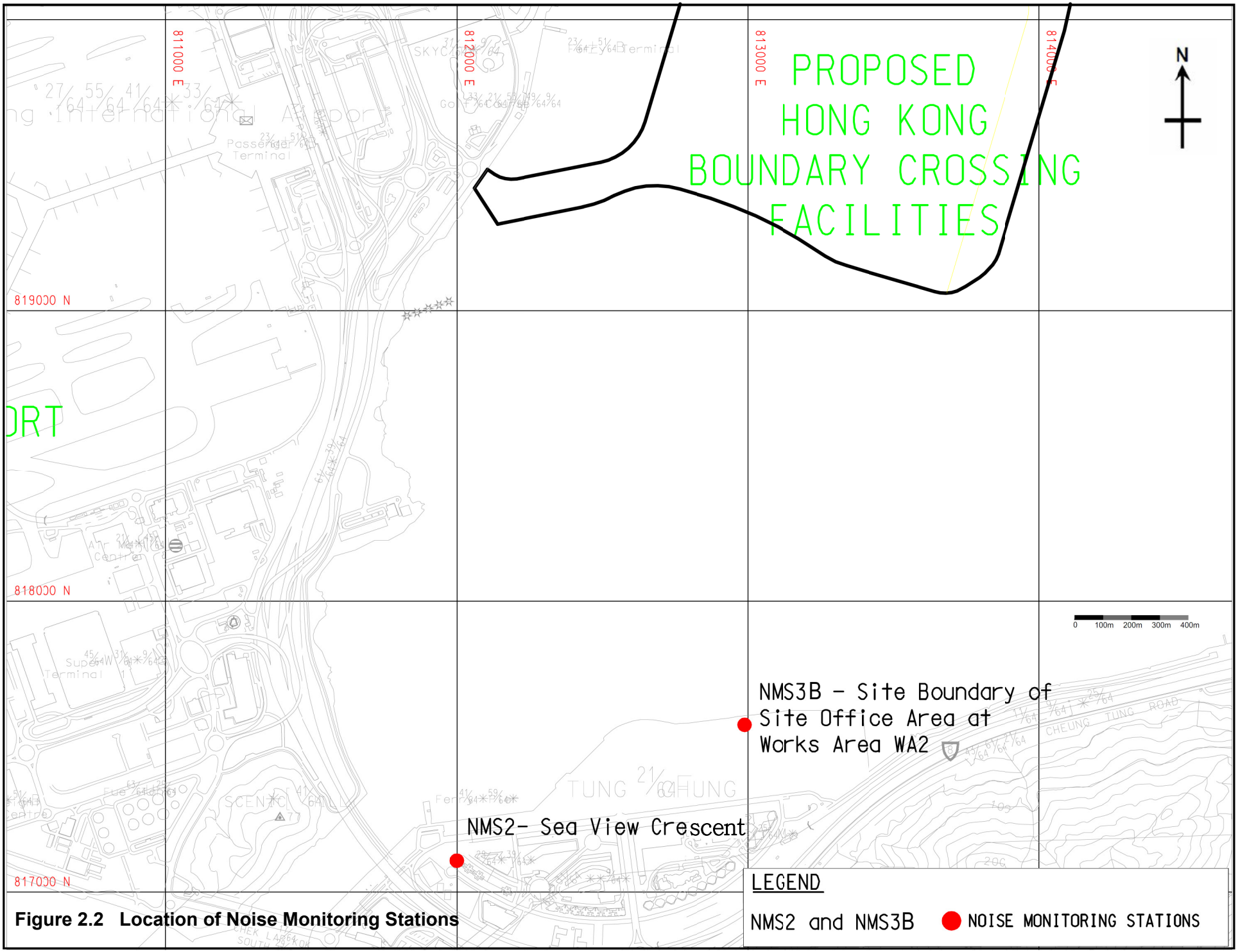


Figure 2.2 Location of Noise Monitoring Stations

LEGEND

IS — IMPACT STATIONS

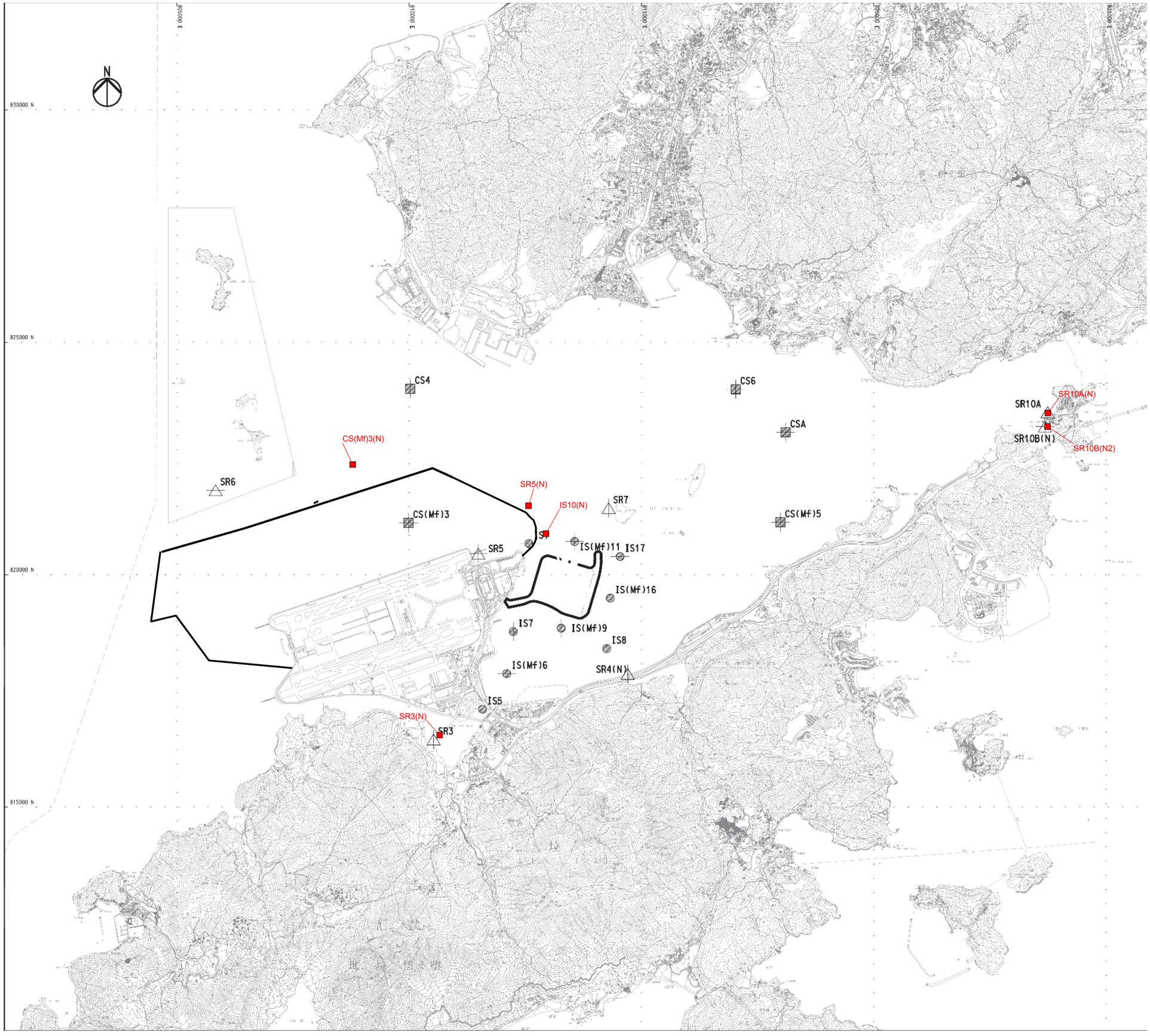
CS — CONTROL / FAR FIELD STATIONS

SR — SENSITIVE RECEIVERS STATIONS

FIGURE 2.3a - Location of Original Water Quality Monitoring (WQM) Stations (The WQM Stations IDs Before 22 December 2017)

SETTING OUT SCHEDULE

MONITORING STATIONS	CO-ORDINATES	
	EASTING	NORTHING
IS5	811579	817106
IS(Mf)6	812101	817873
IS7	812244	818777
IS8	814251	818412
IS(Mf)9	813273	818850
IS10	812577	820670
IS10(N)	812942	820455
IS(Mf)11	813562	820716
IS(Mf)16	814328	819497
IS17	814539	820391
SR3	810525	816456
SR4(N)	814705	817859
SR5	811489	820455
SR5(N)	812569	821475
SR6	805837	821818
SR7	814293	821431
SR10A	823741	823495
SR10B(N)	823683	823187
CS(Mf)3	809989	821117
CS(Mf)3(N)	808814	822355
CS(Mf)5	817990	821129
CS4	810025	824004
CS6	817028	823992
CSA	818103	823064



Station	East	North
IS5	811579	817106
IS(Mf)6	812101	817873
IS7	812244	818777
IS8	814251	818412
IS(Mf)9	813273	818850
IS10(N)	812942	820881
IS(Mf)11	813562	820716
IS(Mf)16	814328	819497
IS17	814539	820391
SR3(N)	810689	816591
SR4(N)	814705	817859
SR5(N)	812569	821475
SR6	805837	821818
SR7	814293	821431
SR10A(N)	823644	823484
SR10B(N2)	823689	823159
CS(Mf)3(N)	808814	822355
CS(Mf)5	817990	821129
CS4	810025	824004
CS6	817028	823992
CSA	818103	823064

FIGURE 2.3b - Location of Water Quality Monitoring (WQM) Stations (The WQM Station IDs After 22 December 2017

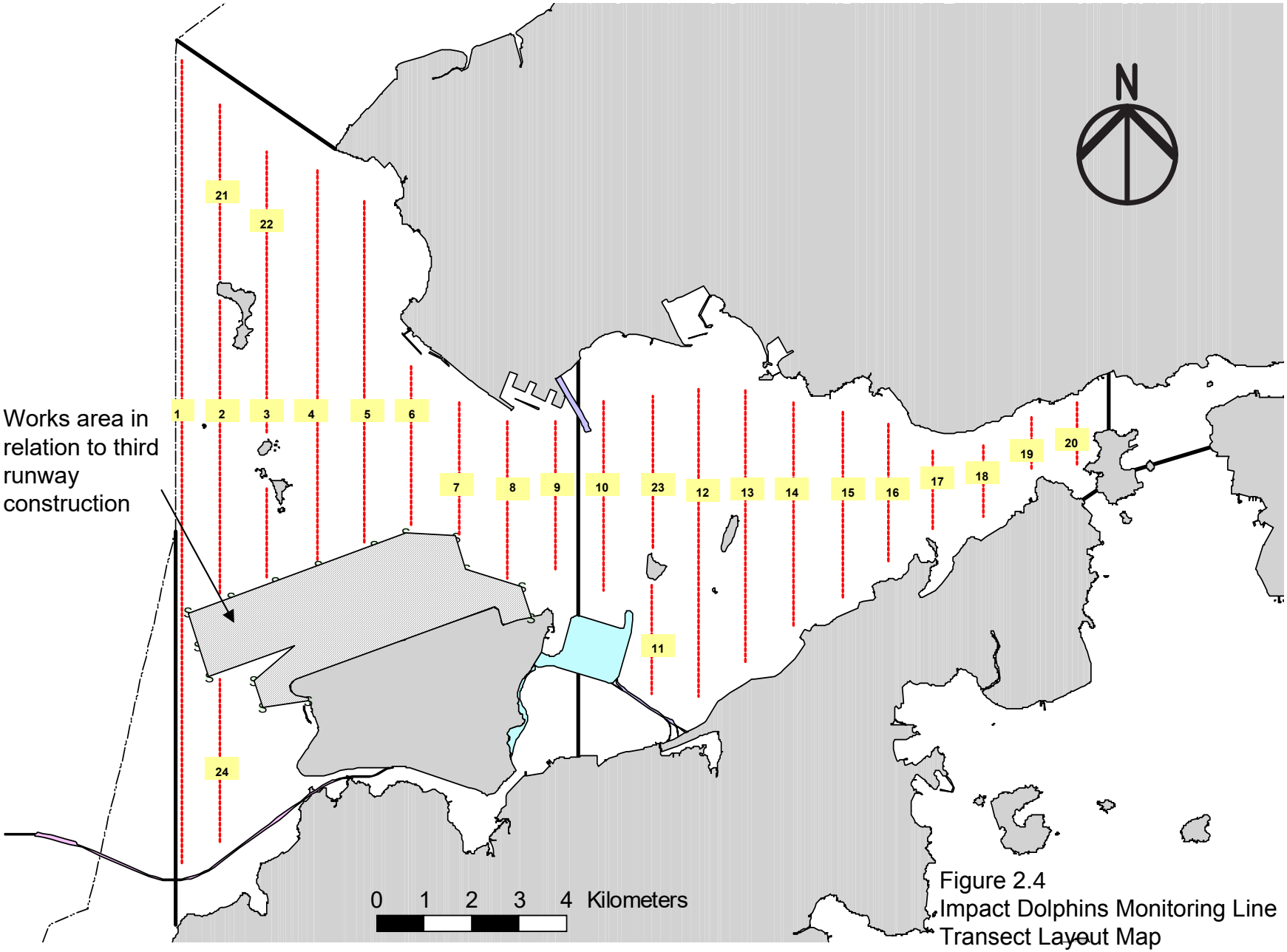
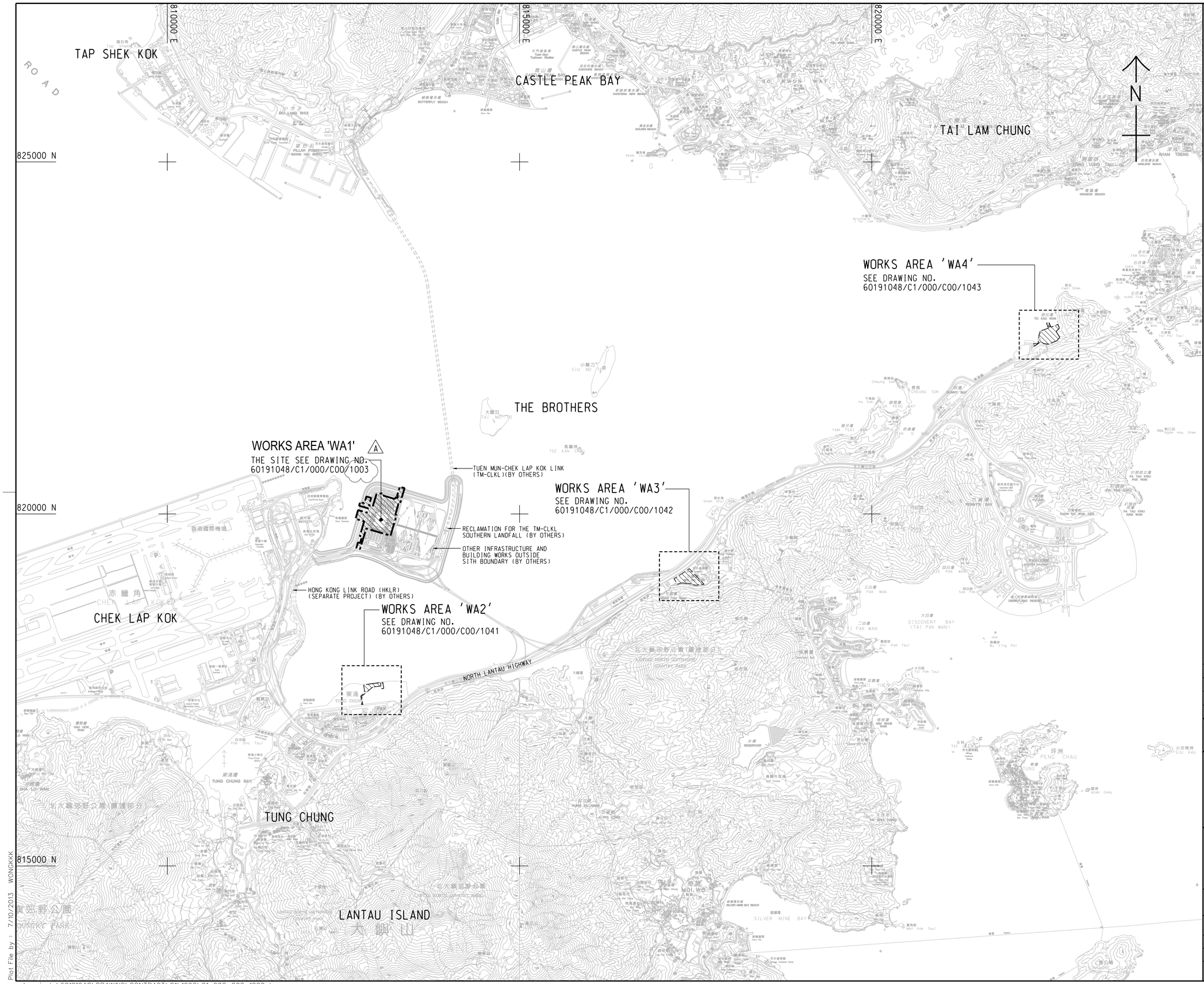


Figure 2.4
Impact Dolphins Monitoring Line Transect Layout Map

APPENDIX A

Location of Works Areas



NOTES:

1. COORDINATES ARE RELATED TO HONG KONG METRIC GRID (1980).
2. DIMENSIONS ARE IN MILLIMETER AND CHAINAGE ARE IN METRES UNLESS OTHERWISE SHOWN.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NOS. 60191048/C1/000/C00/1041 TO 1043.

LEGEND: A

SITE BOUNDARY

WORKS AREA

REV. 修訂	DESCRIPTION 內容摘要	D.E. P.E. CHECKED 查核	DATE 日期
B	WORKING DRAWING	BWCW SCI	JUN.14
A	TENDER ADDENDUM NO. 1	BWCW SCI	OCT.13
-	TENDER DRAWING	BWCW SCI	SEP.13

路政署 HIGHWAYS DEPARTMENT
港珠澳大橋香港工程管理處 Hong Kong - Zhuhai - Macao Bridge Hong Kong Project Management Office

HONG KONG-ZHUHAI-MACAO BRIDGE
HONG KONG BOUNDARY CROSSING FACILITIES
- PASSENGER CLEARANCE BUILDING

SITE LOCATION PLAN

AECOM
Rogers Stirk Harbour + Partners
BURO HAPPOLD ATKINS ADI

Aedas

DRG.NO. 圖紙編號 60191048/C1/000/C00/1000B

DESIGNED BY 設計	BWCW	CONTRACT NO. 合約編號	HY/2013/01
DRAWN BY 繪圖	WSY	P. Dir. APPROVED 負責人	TKH
SCALE 比例	A1 1 : 25000	STATUS 階段	WORKING DRAWING
DIMENSIONS ARE IN 尺寸單位	METRES		

Plot File by : 7/10/2013 WONGKKK

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812500 E

813000 E

813500 E

820500 N

820000 N

819500 N

SKYCITY

GATE 2 TO BE CONSTRUCTED
WHEN HY/2013/02 CONTRACTOR
TAKE OVER PORTION 1

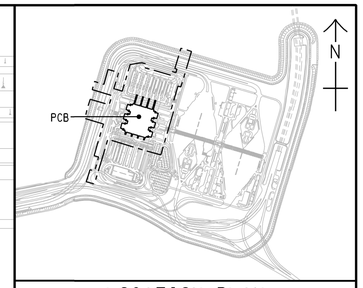
HAUL ROAD TO BE CONSTRUCTED
DIVERTED, MANAGED AND MAINTAINED
BY HY/2013/01 CONTRACT

C3

GATE TO BE CONSTRUCTED
BY CLP

MARINE LOADING AND UNLOADING
POINTS, EXACT LOCATION AND
EXTENT TO BE LIAISED AND
CONFIRMED WITH HY/2013/02
CONTRACTOR

GATE 1 TO BE CONSTRUCTED
AT THE COMMENCEMENT OF THE CONTRACT



LOCATION PLAN
SCALE 1 : 20000

NOTES:

1. COORDINATES ARE BASED ON HONG KONG METRIC GRID (1980) UNLESS OTHERWISE NOTED.
2. LEVELS ARE IN METRES RELATIVE TO HONG KONG PRINCIPAL DATUM (mPD) UNLESS OTHERWISE NOTED.
3. DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.
4. SETTING OUT, DIMENSIONS, LEVELS, COORDINATES ARE TO BE CALCULATED BY THE CONTRACTOR. NO INFORMATION SHOULD BE SCALED PHYSICALLY OR ELECTRONICALLY FROM THE DRAWINGS OR FILES.
5. SITE ACCESS SHALL BE HARD PAVED WITH PROPER DRAINAGE PROVIDED. IT SHALL BE KEPT UNOBSTRUCTED AND UNDISRUPTED AT ALL TIMES.

LEGEND:

SITE BOUNDARY

7.3m CLEAR WIDTH CONSTRUCTION HAUL ROAD

INDICATIVE 20m WIDE VEHICULAR ACCESS BY RECLAMATION CONTRACT HY/2010/02

REV. 修訂	DESCRIPTION 內容摘要	D.E.	P.E. CHECKED 查核	DATE 日期
-	TENDER DRAWING	BWCW	SCI	SEP.13

路政署 HIGHWAYS DEPARTMENT
港珠澳大橋香港工程管理處 Hong Kong - Zhuhai - Macao Bridge Hong Kong Project Management Office

HONG KONG-ZHUHAI-MACAO BRIDGE
HONG KONG BOUNDARY CROSSING FACILITIES
- PASSENGER CLEARANCE BUILDING

WORKS AREA WA1

AECOM
Rogers Stirk Harbour + Partners
BURO HAPPOLD ATKINS ADI
Aedas

DRG.NO. 圖紙編號 60191048/C1/000/C00/1044

DESIGNED BY 設計	CONTRACT NO. 合約編號	P. Dir. APPROVED 負責人
BWCW	HY/2013/01	EMSC
DRAWN BY 繪圖 WSY	STATUS 編改	
SCALE 比例 A1 1 : 2500		
DIMENSIONS ARE IN 尺寸單位 METRES		

Plot File by : 2013/9/10 WANGSY

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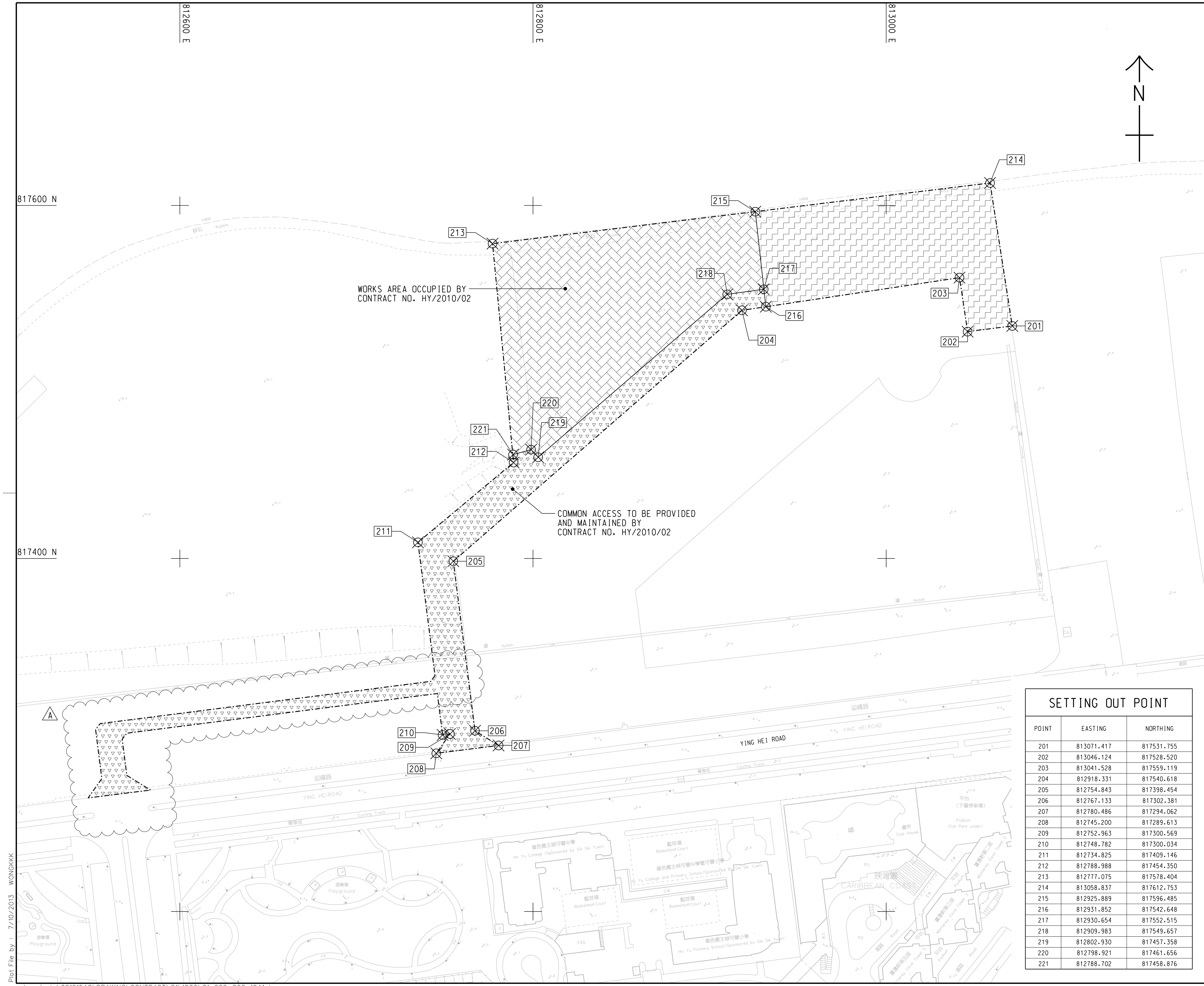

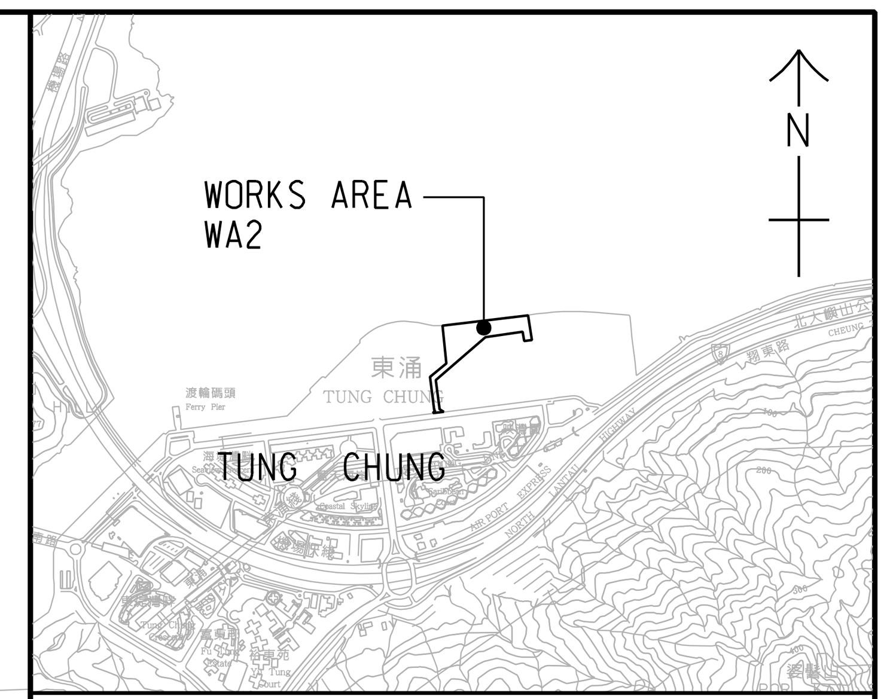

LOCATION PLAN

SCALE 1 : 25000

NOTES:

1. COORDINATES ARE RELATED TO HONG KONG METRIC GRID (1980).
2. DIMENSIONS ARE IN MILLIMETER AND CHAINAGE ARE IN METRES UNLESS OTHERWISE SHOWN.

LEGEND:

- WORKS AREA BOUNDARY
- PORTION 2.1
- PORTION 2.2
- PORTION 2.3

SETTING OUT POINT

POINT	EASTING	NORTHING
201	813071.417	817531.755
202	813046.124	817528.520
203	813041.528	817559.119
204	812918.331	817540.618
205	812754.843	817398.454
206	812767.133	817302.381
207	812780.486	817294.062
208	812745.200	817289.613
209	812752.963	817300.569
210	812748.782	817300.034
211	812734.825	817409.146
212	812788.988	817454.350
213	812777.075	817578.404
214	813058.837	817612.753
215	812925.889	817596.485
216	812931.852	817542.648
217	812930.654	817552.515
218	812909.983	817549.657
219	812802.930	817457.358
220	812798.921	817461.656
221	812788.702	817458.876

REV. 修訂	DESCRIPTION 內容摘要	CHECKED 複核 D.E.	CHECKED 複核 P.E.	DATE 日期
B	WORKING DRAWING	BWCW	SCI	JUN.14
A	TENDER ADDENDUM NO. 1	BWCW	SCI	OCT.13
-	TENDER DRAWING	BWCW	SCI	SEP.13

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WORKS AREA WA2

AECOM
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BURO HAPPOLD ATKINS ADI
Aedas

DRG.NO. 圖紙編號 60191048/C1/000/C00/1041B

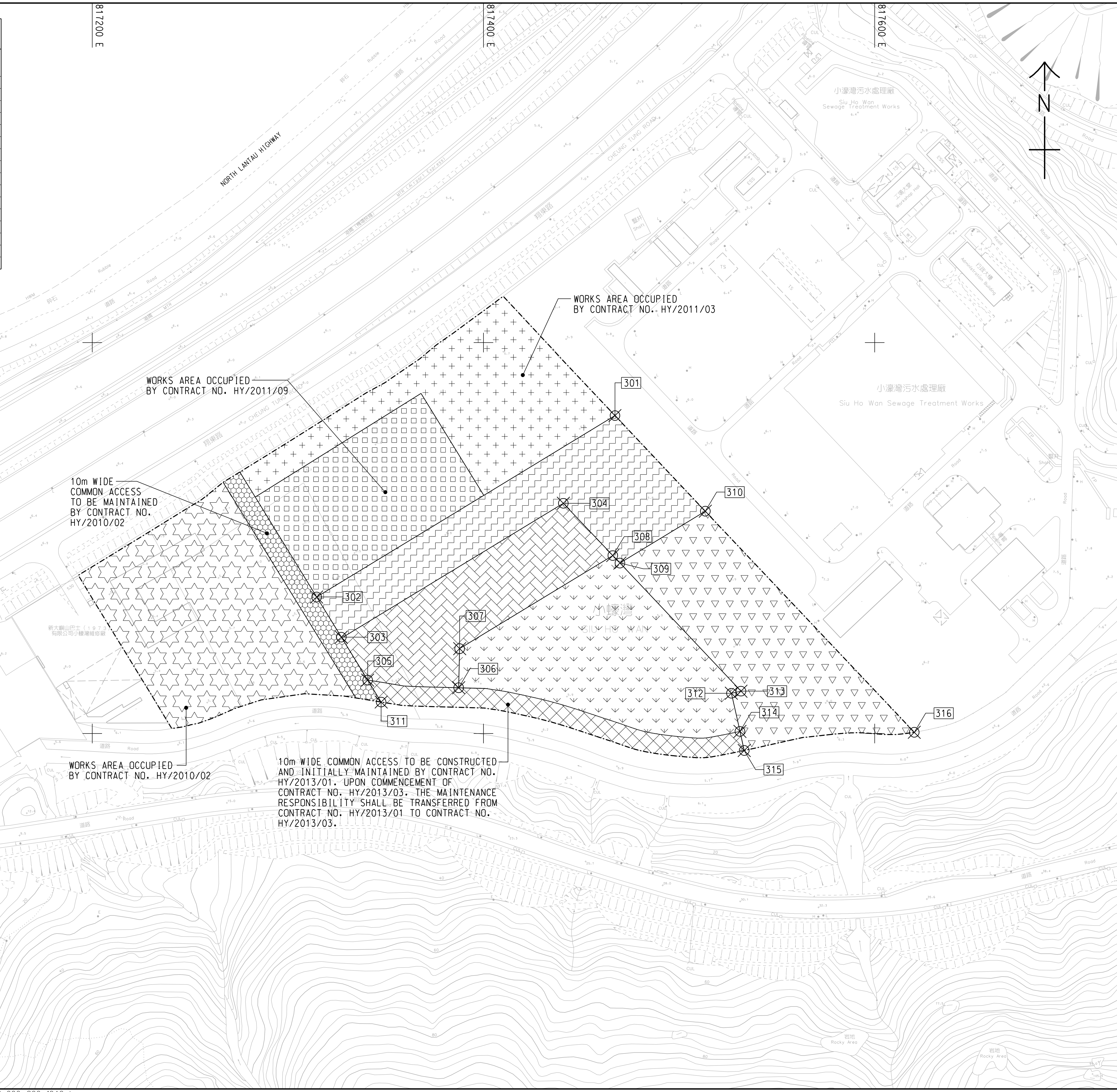
DESIGNED BY 設計: BWCW	CONTRACT NO. 合約編號: HY/2013/01	P. Dir. APPROVED 批准人: TKH
DRAWN BY 繪圖: WSY	STATUS 階段: WORKING DRAWING	
SCALE 比例: A1 1 : 1000		
DIMENSIONS ARE IN 尺寸單位: METRES		

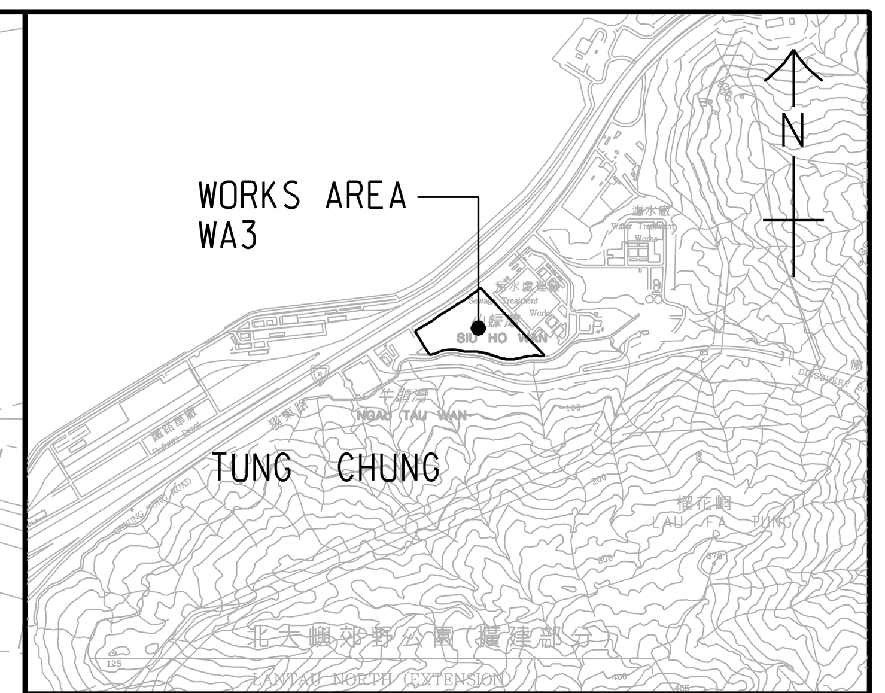
Plot File by : 7/10/2013 WONGKKK

p:\projects\60191048\DRAWING\CONTRACT\C1\1000\C1_000_C00_1041.dgn

SETTING OUT POINT

POINT	EASTING	NORTHING
301	817467.265	819162.683
302	817314.741	819069.828
303	817327.338	819049.295
304	817440.865	819117.811
305	817340.825	819027.314
306	817387.350	819023.403
307	817387.861	819043.396
308	817466.133	819091.047
309	817469.783	819087.181
310	817513.449	819113.764
311	817347.717	819016.082
312	817526.774	819020.578
313	817531.659	819021.641
314	817531.154	819001.065
315	817533.345	818991.306
316	817620.269	819000.620





LOCATION PLAN
SCALE 1 : 25000

NOTES:

1. COORDINATES ARE RELATED TO HONG KONG METRIC GRID (1980).
2. DIMENSIONS ARE IN MILLIMETER AND CHAINAGE ARE IN METRES UNLESS OTHERWISE SHOWN.

LEGEND:

- WORKS AREA BOUNDARY
- PORTION 3.1
- PORTION 3.2
- PORTION 3.3
- PORTION 3.4
- PORTION 3.5
- PORTION 3.6
- PORTION 3.7
- PORTION 3.8
- PORTION 3.9

REV. 修訂	DESCRIPTION 內容摘要	D.E.	P.E. / CHECKED 審核	DATE 日期
A	WORKING DRAWING	BWCW	SCI	JUN.14
-	TENDER DRAWING	BWCW	SCI	SEP.13

路政署 HIGHWAYS DEPARTMENT
港珠澳大橋香港工程管理處 Hong Kong - Zhuhai - Macao Bridge Hong Kong Project Management Office

HONG KONG-ZHUHAI-MACAO BRIDGE
HONG KONG BOUNDARY CROSSING FACILITIES
- PASSENGER CLEARANCE BUILDING

WORKS AREA WA3

AECOM
Aedas
Rogers Stirk Harbour + Partners
BURO HAPPOLD ATKINS ADI

DRG.NO. 圖紙編號 60191048/C1/000/C00/1042A

DESIGNED BY 設計: BWCW	CONTRACT NO. 合約編號: HY/2013/01	P. Dir. APPROVED 批准人: TKH
DRAWN BY 繪圖: WSY	STATUS 階段: WORKING DRAWING	
SCALE 比例: A1 1 : 1000		
DIMENSIONS ARE IN 尺寸單位: METRES		

Plot File by : 2013/9/10 WANGSY

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SETTING OUT POINT

POINT	EASTING	NORTHING
401	822488.151	822632.315
402	822640.593	822689.415
403	822515.608	822559.848
404	822610.940	822599.642
405	822629.428	822607.359
406	822526.988	822529.813
407	822618.348	822567.950
408	822542.232	822489.581
409	822584.983	822507.426
410	822606.866	822516.561
411	822560.278	822441.956
412	822602.949	822460.010
413	822621.914	822467.959
414	822624.130	822470.998
415	822651.725	822508.856

822400 E

822600 E

822600 N

822400 N

TO KAU WAN

401 402 403 404 405 406 407 408 409 410 411 412 413 414 415

WORKS AREA OCCUPIED BY CONTRACT NO. HY/2011/03

WORKS AREA OCCUPIED BY CONTRACT NO. HY/2011/09

WORKS AREA OCCUPIED BY CONTRACT NO. HY/2013/05

9m WIDE COMMON ACCESS TO BE CONSTRUCTED AND MAINTAINED BY CONTRACT NO. HY/2013/01

9m WIDE COMMON ACCESS TO BE MAINTAINED BY CONTRACT NO.HY/2013/01

NORTH LANTAU HIGHWAY

大青洲 TAI TSING CHAU

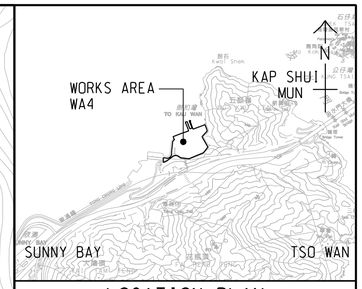
船廠 Shipyard

海堤 Seawall

碎石 Rubble

道路 Road

隧道 Tunnel



LOCATION PLAN
SCALE 1 : 25000

NOTES:

1. COORDINATES ARE RELATED TO HONG KONG METRIC GRID (1980).
2. DIMENSIONS ARE IN MILLIMETER AND CHAINAGE ARE IN METRES UNLESS OTHERWISE SHOWN.

LEGEND:

- WORKS AREA BOUNDARY
- PORTION 4.1
- PORTION 4.2
- PORTION 4.3
- PORTION 4.4
- PORTION 4.5
- PORTION 4.6
- PORTION 4.7
- PORTION 4.8

REV. 修訂	DESCRIPTION 內容摘要	D.C.	P.C. CHECKED 複核	DATE 日期
-	TENDER DRAWING	BWCW	SCI	SEP.13

路政署 HIGHWAYS DEPARTMENT
港珠澳大橋香港工程管理處 Hong Kong - Zhuhai - Macao Bridge Hong Kong Project Management Office

HONG KONG-ZHUHAI-MACAO BRIDGE
HONG KONG BOUNDARY CROSSING FACILITIES
- PASSENGER CLEARANCE BUILDING

WORKS AREA WA4

AECOM
Rogers Stirk Harbour + Partners
BURO HAPPOLD ATKINS ADI
Aedas

DRG.NO. 圖紙編號 60191048/C1/000/C00/1043

DESIGNED BY 設計	CONTRACT NO. 合約編號	P. Dir. APPROVED 批准人
BWCW	HY/2013/01	EMSC
DRAWN BY 繪圖 WSY	STATUS 階段	
SCALE 比例 A1 1 : 1000		
DIMENSIONS ARE IN 尺寸單位 METRES	© COPYRIGHT RESERVED 版 權 所 有	

Plot File by : 2013/9/10 WANGSY

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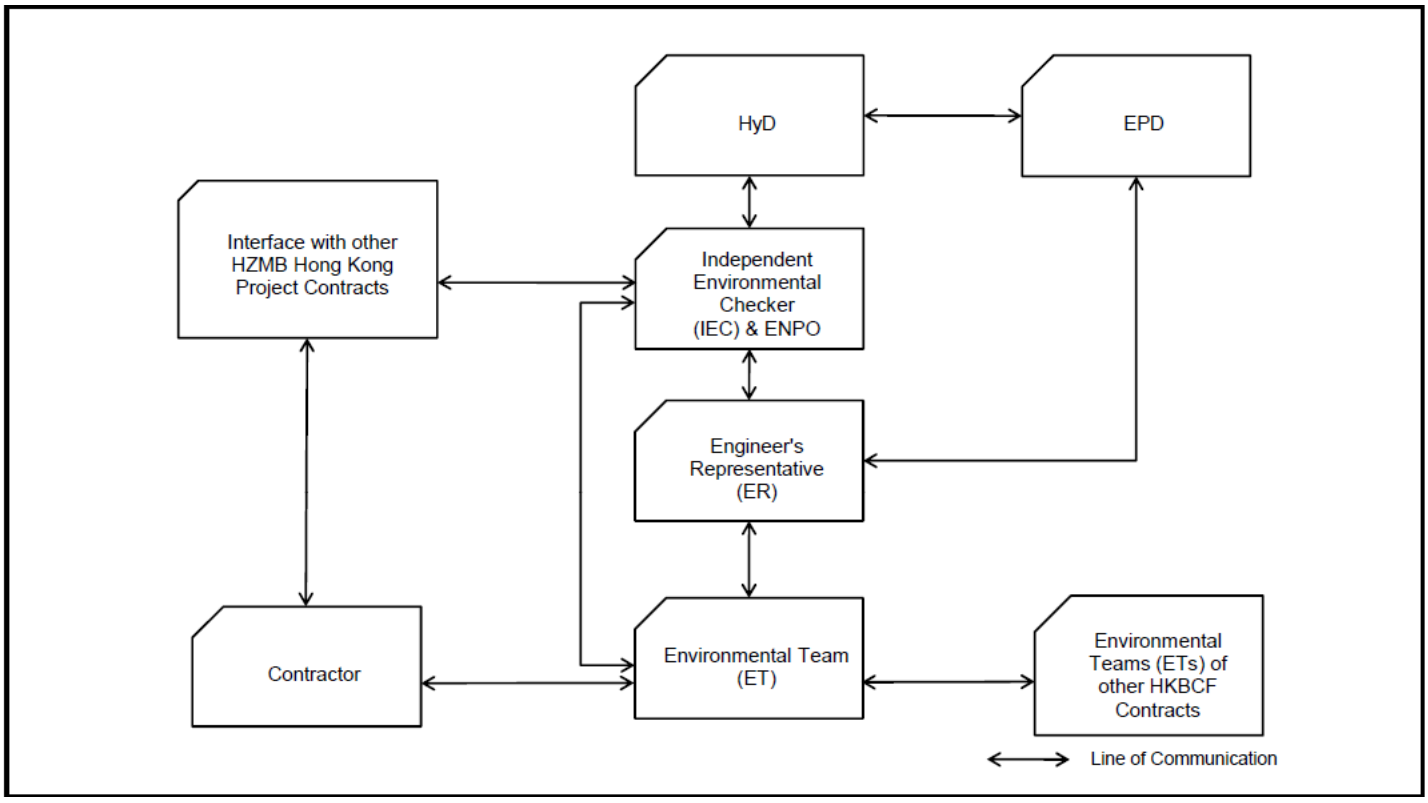
APPENDIX B

Project Organization for Environmental Works

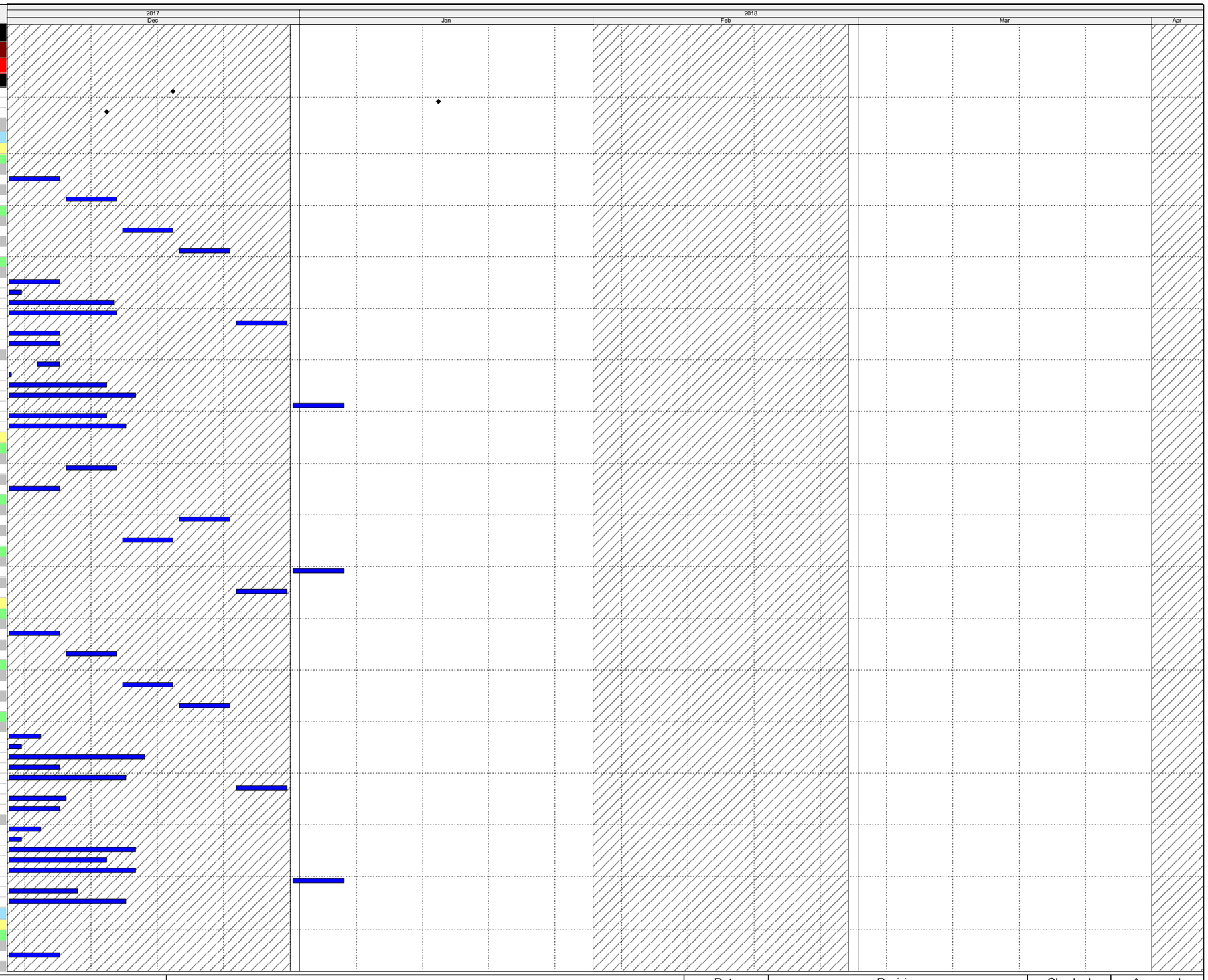
Project Organisation for Environmental Works



APPENDIX C

Construction Programme

Activity ID	Activity Name
HY/2013/01 HKZMB HKBCF	
CONSTRUCTION	
Passenger Clearance Building	
ABWF & BS / MEP / E&M Works	
MEP-02-42605	PCB (GF) E&M: DOC 3 BOH Rms Completion
MEP-02-42695	PCB (GF) E&M: DOC 3 FOH Open Areas Completion
MEP-02-44275	PCB (GF) E&M: Work to Degree 3: Ground Floor Rms Completion
Level 3 Ground Floor	
SOUTH - Gridline J-G	
Zone J	
Degree 1	
ABWF	
ABW-02-44110	PCB (GF) ABWF: Work to Degree 1: FOH - Water feature (Int&Ext)
E&M	
MEP-02-44110	PCB (GF) E&M: Work to Degree 1: FOH - Water feature (Int&Ext)
Degree 2	
ABWF	
ABW-02-44120	PCB (GF) ABWF: Work to Degree 2: FOH - Water feature (Int&Ext)
E&M	
MEP-02-44120	PCB (GF) E&M: Work to Degree 2: FOH - Water feature (Int&Ext)
Degree 3	
ABWF	
ABW-02-43980	PCB (GF) ABWF: Work to Degree 3: BOH - Elec/ELV Rms
ABW-02-44010	PCB (GF) ABWF: Work to Degree 3: BOH - Stairs
ABW-02-44070	PCB (GF) ABWF: Work to Degree 3: BOH - Corridors/Lobby
ABW-02-44100	PCB (GF) ABWF: Work to Degree 3: BOH - Rms
ABW-02-44130	PCB (GF) ABWF: Work to Degree 3: FOH - Water feature (Int&Ext)
ABW-02-44160	PCB (GF) ABWF: Work to Degree 3: FOH - BIN/Kiosks/cubicles
ABW-02-44190	PCB (GF) ABWF: Work to Degree 3: FOH - Open Areas
E&M	
MEP-02-43980	PCB (GF) E&M: Work to Degree 3: BOH - Elec/ELV Rms
MEP-02-44010	PCB (GF) E&M: Work to Degree 3: BOH - Stairs
MEP-02-44070	PCB (GF) E&M: Work to Degree 3: BOH - Corridors/Lobby
MEP-02-44100	PCB (GF) E&M: Work to Degree 3: BOH - Rms
MEP-02-44130	PCB (GF) E&M: Work to Degree 3: FOH - Water feature (Int&Ext)
MEP-02-44160	PCB (GF) E&M: Work to Degree 3: FOH - BIN/Kiosks/cubicles
MEP-02-44190	PCB (GF) E&M: Work to Degree 3: FOH - Open Areas
Zone H	
Degree 1	
E&M	
MEP-02-43810	PCB (GF) E&M: Work to Degree 1: FOH - Water feature (Int&Ext)
ABWF	
ABW-02-43810	PCB (GF) ABWF: Work to Degree 1: FOH - Water feature (Int&Ext)
Degree 2	
E&M	
MEP-02-43820	PCB (GF) E&M: Work to Degree 2: FOH - Water feature (Int&Ext)
ABWF	
ABW-02-43820	PCB (GF) ABWF: Work to Degree 2: FOH - Water feature (Int&Ext)
Degree 3	
ABWF	
MEP-02-43830	PCB (GF) E&M: Work to Degree 3: FOH - Water feature (Int&Ext)
E&M	
ABW-02-43830	PCB (GF) ABWF: Work to Degree 3: FOH - Water feature (Int&Ext)
Zone G	
Degree 1	
ABWF	
ABW-02-43720	PCB (GF) ABWF: Work to Degree 1: FOH - Water feature (Int&Ext)
E&M	
MEP-02-43720	PCB (GF) E&M: Work to Degree 1: FOH - Water feature (Int&Ext)
Degree 2	
ABWF	
ABW-02-43730	PCB (GF) ABWF: Work to Degree 2: FOH - Water feature (Int&Ext)
E&M	
MEP-02-43730	PCB (GF) E&M: Work to Degree 2: FOH - Water feature (Int&Ext)
Degree 3	
ABWF	
ABW-02-43590	PCB (GF) ABWF: Work to Degree 3: BOH - Elec/ELV Rms
ABW-02-43620	PCB (GF) ABWF: Work to Degree 3: BOH - Stairs
ABW-02-43650	PCB (GF) ABWF: Work to Degree 3: BOH - Toilets/Cleaners Rm
ABW-02-43680	PCB (GF) ABWF: Work to Degree 3: BOH - Corridors/Lobby
ABW-02-43710	PCB (GF) ABWF: Work to Degree 3: BOH - Rms
ABW-02-43740	PCB (GF) ABWF: Work to Degree 3: FOH - Water feature (Int&Ext)
ABW-02-43770	PCB (GF) ABWF: Work to Degree 3: FOH - BIN/Kiosks/cubicles/Rms
ABW-02-43800	PCB (GF) ABWF: Work to Degree 3: FOH - Open Areas
E&M	
MEP-02-43590	PCB (GF) E&M: Work to Degree 3: BOH - Elec/ELV Rms
MEP-02-43620	PCB (GF) E&M: Work to Degree 3: BOH - Stairs
MEP-02-43650	PCB (GF) E&M: Work to Degree 3: BOH - Toilets/Cleaners Rm
MEP-02-43680	PCB (GF) E&M: Work to Degree 3: BOH - Corridors/Lobby
MEP-02-43710	PCB (GF) E&M: Work to Degree 3: BOH - Rms
MEP-02-43740	PCB (GF) E&M: Work to Degree 3: FOH - Water feature (Int&Ext)
MEP-02-43770	PCB (GF) E&M: Work to Degree 3: FOH -BIN/Kiosks/cubicles/Rms
MEP-02-43800	PCB (GF) E&M: Work to Degree 3: FOH - Open Areas
MIDDLE - Gridline G-E	
Zone D	
Degree 1	
ABWF	
ABW-02-42910	PCB (GF) ABWF: Work to Degree 1: FOH - Water feature (Int&Ext)
E&M	



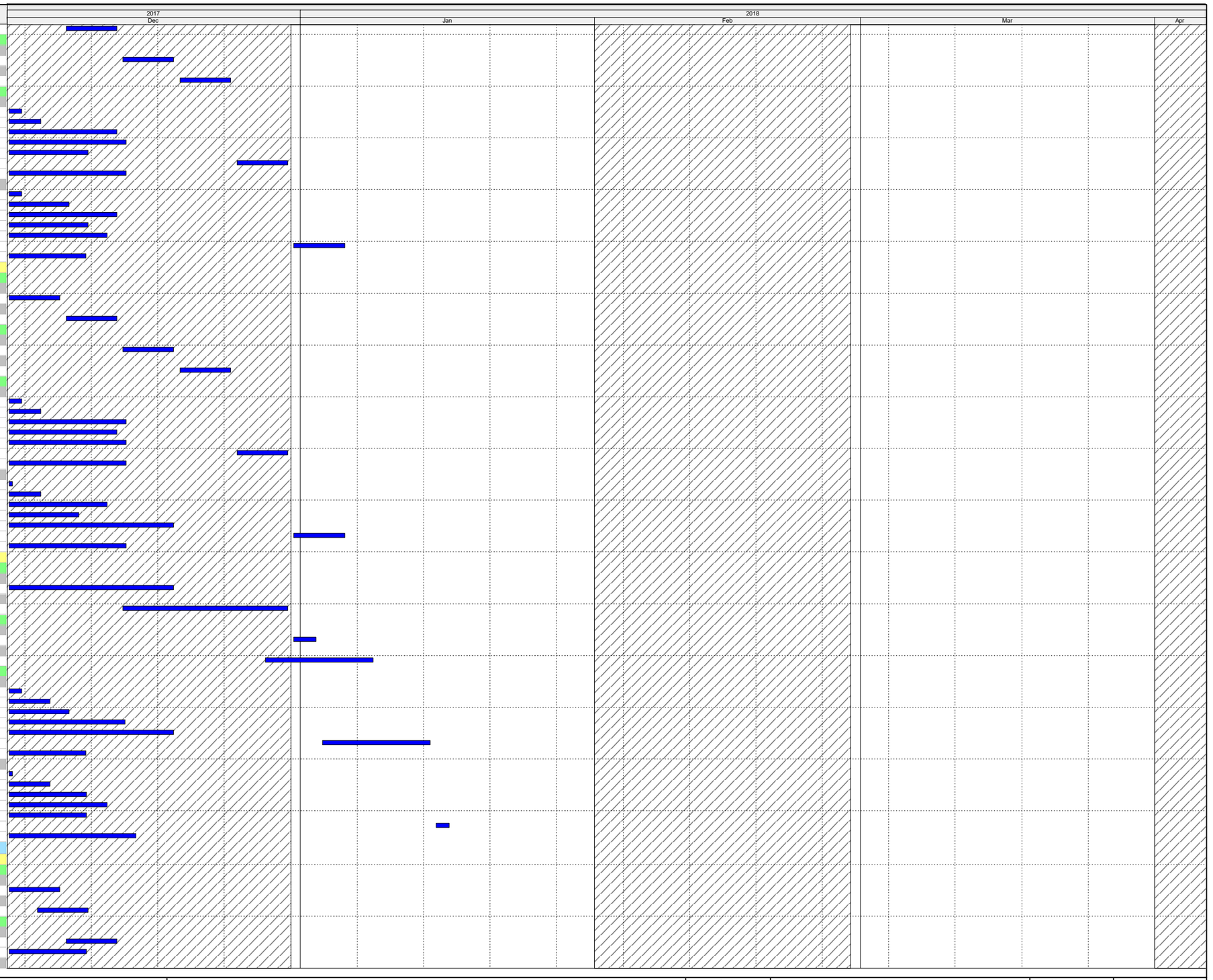
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Three Month Rolling Programme

HKMZB HKBCF - Passenger Clearance Building

Date	Revision	Checked	Approved

Activity ID	Activity Name
MEP-02-42910	PCB (GF) E&M: Work to Degree 1: FOH - Water feature (Int&Ext)
Degree 2	
ABWF	
ABW-02-42920	PCB (GF) ABWF: Work to Degree 2: FOH - Water feature (Int&Ext)
E&M	
MEP-02-42920	PCB (GF) E&M: Work to Degree 2: FOH - Water feature (Int&Ext)
Degree 3	
ABWF	
ABW-02-42780	PCB (GF) ABWF: Work to Degree 3: BOH - Stairs
ABW-02-42810	PCB (GF) ABWF: Work to Degree 3: BOH - Elec/ELV Rms
ABW-02-42840	PCB (GF) ABWF: Work to Degree 3: BOH - Toilets
ABW-02-42870	PCB (GF) ABWF: Work to Degree 3: BOH - Corridors/Lobby
ABW-02-42900	PCB (GF) ABWF: Work to Degree 3: BOH - Rms
ABW-02-42930	PCB (GF) ABWF: Work to Degree 3: FOH - Water feature (Int&Ext)
ABW-02-42990	PCB (GF) ABWF: Work to Degree 3: FOH - Open Areas
E&M	
MEP-02-42780	PCB (GF) E&M: Work to Degree 3: BOH - Stairs
MEP-02-42810	PCB (GF) E&M: Work to Degree 3: BOH - Elec/ELV Rms
MEP-02-42840	PCB (GF) E&M: Work to Degree 3: BOH - Toilets
MEP-02-42870	PCB (GF) E&M: Work to Degree 3: BOH - Corridors/Lobby
MEP-02-42900	PCB (GF) E&M: Work to Degree 3: BOH - Rms
MEP-02-42930	PCB (GF) E&M: Work to Degree 3: FOH - Water feature (Int&Ext)
MEP-02-42990	PCB (GF) E&M: Work to Degree 3: FOH - Open Areas
Zone F	
Degree 1	
ABWF	
ABW-02-43420	PCB (GF) ABWF: Work to Degree 1: FOH - Water feature (Int&Ext)
E&M	
MEP-02-43420	PCB (GF) E&M: Work to Degree 1: FOH - Water feature (Int&Ext)
Degree 2	
ABWF	
ABW-02-43430	PCB (GF) ABWF: Work to Degree 2: FOH - Water feature (Int&Ext)
E&M	
MEP-02-43430	PCB (GF) E&M: Work to Degree 2: FOH - Water feature (Int&Ext)
Degree 3	
ABWF	
ABW-02-43290	PCB (GF) ABWF: Work to Degree 3: BOH - Stairs
ABW-02-43320	PCB (GF) ABWF: Work to Degree 3: BOH - Elec/ELV Rms
ABW-02-43350	PCB (GF) ABWF: Work to Degree 3: BOH - Toilets
ABW-02-43380	PCB (GF) ABWF: Work to Degree 3: BOH - Corridors/Lobby
ABW-02-43410	PCB (GF) ABWF: Work to Degree 3: BOH - Rms
ABW-02-43440	PCB (GF) ABWF: Work to Degree 3: FOH - Water feature (Int&Ext)
ABW-02-43500	PCB (GF) ABWF: Work to Degree 3: FOH - Open Areas
E&M	
MEP-02-43290	PCB (GF) E&M: Work to Degree 3: BOH - Stairs
MEP-02-43320	PCB (GF) E&M: Work to Degree 3: BOH - Elec/ELV Rms
MEP-02-43350	PCB (GF) E&M: Work to Degree 3: BOH - Toilets
MEP-02-43380	PCB (GF) E&M: Work to Degree 3: BOH - Corridors/Lobby
MEP-02-43410	PCB (GF) E&M: Work to Degree 3: BOH - Rms
MEP-02-43440	PCB (GF) E&M: Work to Degree 3: FOH - Water feature (Int&Ext)
MEP-02-43500	PCB (GF) E&M: Work to Degree 3: FOH - Open Areas
Zone E	
Degree 1	
ABWF	
ABW-02-43180	PCB (GF) ABWF: Work to Degree 1: FOH - Water feature (Int)
E&M	
MEP-02-43180	PCB (GF) E&M: Work to Degree 1: FOH - Water feature (Int)
Degree 2	
ABWF	
ABW-02-43190	PCB (GF) ABWF: Work to Degree 2: FOH - Water feature (Int)
E&M	
MEP-02-43190	PCB (GF) E&M: Work to Degree 2: FOH - Water feature (Int)
Degree 3	
ABWF	
ABW-02-43050	PCB (GF) ABWF: Work to Degree 3: BOH - Stairs
ABW-02-43080	PCB (GF) ABWF: Work to Degree 3: BOH - Elec/ELV Rms
ABW-02-43110	PCB (GF) ABWF: Work to Degree 3: BOH - Toilets/Cleaners Rm
ABW-02-43140	PCB (GF) ABWF: Work to Degree 3: BOH - Corridors/Lobby
ABW-02-43170	PCB (GF) ABWF: Work to Degree 3: BOH - Rms
ABW-02-43200	PCB (GF) ABWF: Work to Degree 3: FOH - Water feature (Int)
ABW-02-43230	PCB (GF) ABWF: Work to Degree 3: FOH - Open Areas
E&M	
MEP-02-43050	PCB (GF) E&M: Work to Degree 3: BOH - Stairs
MEP-02-43080	PCB (GF) E&M: Work to Degree 3: BOH - Elec/ELV Rms
MEP-02-43110	PCB (GF) E&M: Work to Degree 3: BOH - Toilets/Cleaners Rm
MEP-02-43140	PCB (GF) E&M: Work to Degree 3: BOH - Corridors/Lobby
MEP-02-43170	PCB (GF) E&M: Work to Degree 3: BOH - Rms
MEP-02-43200	PCB (GF) E&M: Work to Degree 3: FOH - Water feature (Int)
MEP-02-43230	PCB (GF) E&M: Work to Degree 3: FOH - Open Areas
NORTH - Gridline E-B	
Zone A	
Degree 1	
ABWF	
ABW-02-42220	PCB (GF) ABWF: Work to Degree 1: FOH - Water feature (Int&Ext)
E&M	
MEP-02-42220	PCB (GF) E&M: Work to Degree 1: FOH - Water feature (Int&Ext)
Degree 2	
ABWF	
ABW-02-42230	PCB (GF) ABWF: Work to Degree 2: FOH - Water feature (Int&Ext)
ABW-02-42290	PCB (GF) ABWF: Work to Degree 2: FOH - Open Areas
E&M	



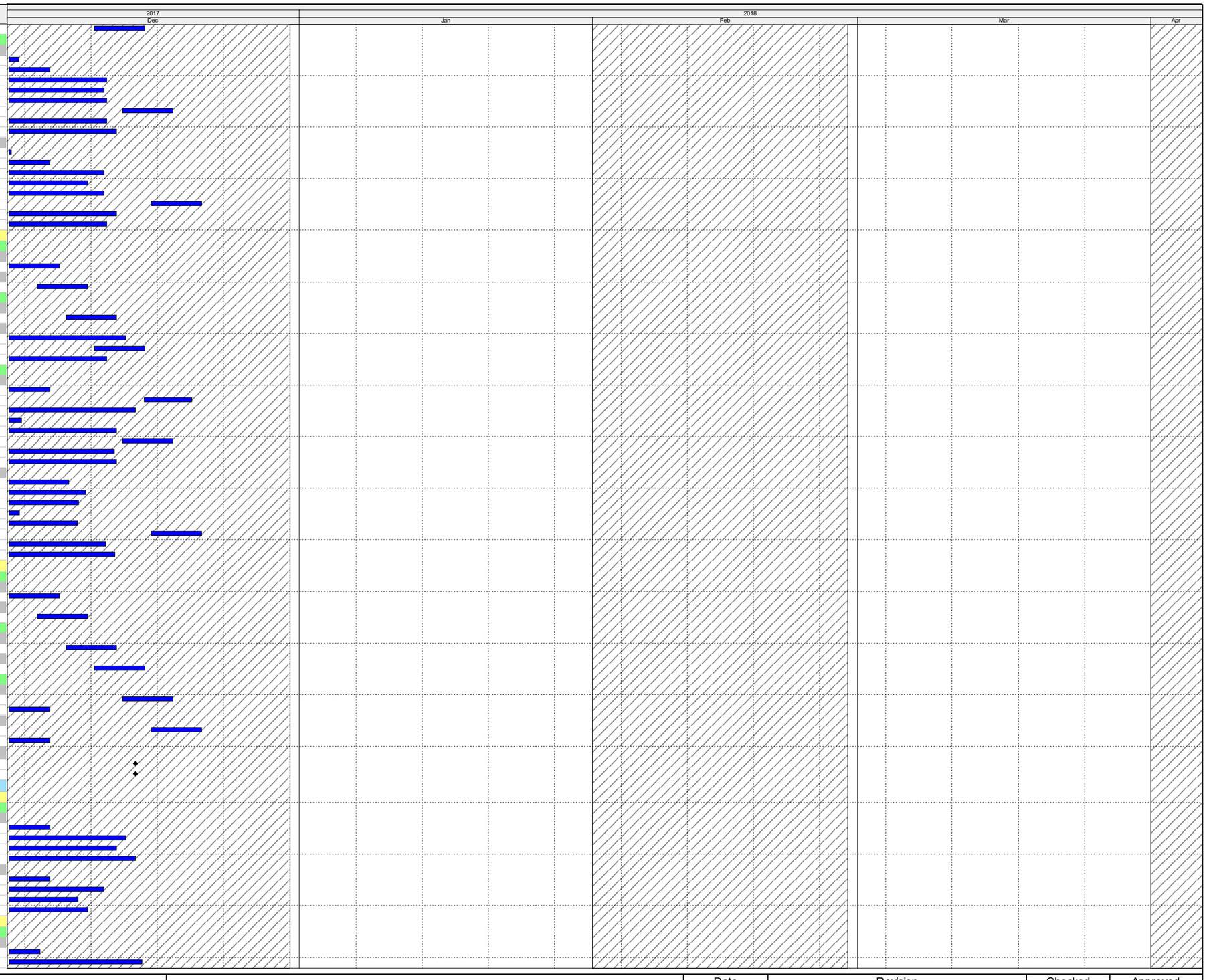
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Three Month Rolling Programme

HKMZB HKBCF - Passenger Clearance Building

Date	Revision	Checked	Approved

Activity ID	Activity Name
MEP-02-42230	PCB (GF) E&M: Work to Degree 2: FOH - Water feature (Int&Ext)
Degree 3	
ABWF	
ABW-02-42090	PCB (GF) ABWF: Work to Degree 3: BOH - Stairs
ABW-02-42120	PCB (GF) ABWF: Work to Degree 3: BOH - Elec/ELV Rms
ABW-02-42150	PCB (GF) ABWF: Work to Degree 3: BOH - Toilets/Cleaners Rm
ABW-02-42180	PCB (GF) ABWF: Work to Degree 3: BOH - Corridors/Lobby
ABW-02-42210	PCB (GF) ABWF: Work to Degree 3: BOH - Rms
ABW-02-42240	PCB (GF) ABWF: Work to Degree 3: FOH - Water feature (Int&Ext)
ABW-02-42270	PCB (GF) ABWF: Work to Degree 3: FOH - BIN/Kiosks/cubicles
ABW-02-42300	PCB (GF) ABWF: Work to Degree 3: FOH - Open Areas
E&M	
MEP-02-42090	PCB (GF) E&M: Work to Degree 3: BOH - Stairs
MEP-02-42120	PCB (GF) E&M: Work to Degree 3: BOH - Elec/ELV Rms
MEP-02-42150	PCB (GF) E&M: Work to Degree 3: BOH - Toilets/Cleaners Rm
MEP-02-42180	PCB (GF) E&M: Work to Degree 3: BOH - Corridors/Lobby
MEP-02-42210	PCB (GF) E&M: Work to Degree 3: BOH - Rms
MEP-02-42240	PCB (GF) E&M: Work to Degree 3: FOH - Water feature (Int&Ext)
MEP-02-42270	PCB (GF) E&M: Work to Degree 3: FOH - BIN/Kiosks/cubicles
MEP-02-42300	PCB (GF) E&M: Work to Degree 3: FOH - Open Areas
Zone C	
Degree 1	
ABWF	
ABW-02-42610	PCB (GF) ABWF: Work to Degree 1: FOH - Water feature (Int&Ext)
E&M	
MEP-02-42610	PCB (GF) E&M: Work to Degree 1: FOH - Water feature (Int&Ext)
Degree 2	
ABWF	
ABW-02-42620	PCB (GF) ABWF: Work to Degree 2: FOH - Water feature (Int&Ext)
E&M	
MEP-02-42530	PCB (GF) E&M: Work to Degree 2: BOH - Toilets/Cleaners Rm
MEP-02-42620	PCB (GF) E&M: Work to Degree 2: FOH - Water feature (Int&Ext)
MEP-02-42680	PCB (GF) E&M: Work to Degree 2: FOH - Open Areas
Degree 3	
ABWF	
ABW-02-42510	PCB (GF) ABWF: Work to Degree 3: BOH - Elec/ELV Rms
ABW-02-42540	PCB (GF) ABWF: Work to Degree 3: BOH - Toilets/Cleaners Rm
ABW-02-42570	PCB (GF) ABWF: Work to Degree 3: BOH - Corridors/Lobby
ABW-02-42573	PCB (GF) ABWF: Work to Degree 3: BOH - Stairs
ABW-02-42600	PCB (GF) ABWF: Work to Degree 3: BOH - Rms
ABW-02-42630	PCB (GF) ABWF: Work to Degree 3: FOH - Water feature (Int&Ext)
ABW-02-42660	PCB (GF) ABWF: Work to Degree 3: FOH - BIN/Kiosks/cubicles
ABW-02-42690	PCB (GF) ABWF: Work to Degree 3: FOH - Open Areas
E&M	
MEP-02-42510	PCB (GF) E&M: Work to Degree 3: BOH - Elec/ELV Rms
MEP-02-42540	PCB (GF) E&M: Work to Degree 3: BOH - Toilets/Cleaners Rm
MEP-02-42570	PCB (GF) E&M: Work to Degree 3: BOH - Corridors/Lobby
MEP-02-42573	PCB (GF) E&M: Work to Degree 3: BOH - Stairs
MEP-02-42600	PCB (GF) E&M: Work to Degree 3: BOH - Rms
MEP-02-42630	PCB (GF) E&M: Work to Degree 3: FOH - Water feature (Int&Ext)
MEP-02-42660	PCB (GF) E&M: Work to Degree 3: FOH - BIN/Kiosks/cubicles
MEP-02-42690	PCB (GF) E&M: Work to Degree 3: FOH - Open Areas
Zone B	
Degree 1	
ABWF	
ABW-02-42310	PCB (GF) ABWF: Work to Degree 1: FOH - Water feature (Int&Ext)
E&M	
MEP-02-42310	PCB (GF) E&M: Work to Degree 1: FOH - Water feature (Int&Ext)
Degree 2	
ABWF	
ABW-02-42320	PCB (GF) ABWF: Work to Degree 2: FOH - Water feature (Int&Ext)
E&M	
MEP-02-42320	PCB (GF) E&M: Work to Degree 2: FOH - Water feature (Int&Ext)
Degree 3	
ABWF	
ABW-02-42330	PCB (GF) ABWF: Work to Degree 3: FOH - Water feature (Int&Ext)
ABW-02-42390	PCB (GF) ABWF: Work to Degree 3: FOH - Open Areas
E&M	
MEP-02-42330	PCB (GF) E&M: Work to Degree 3: FOH - Water feature (Int&Ext)
MEP-02-42390	PCB (GF) E&M: Work to Degree 3: FOH - Open Areas
Level 4 Cabin Mezzanine Floor +10.50mPD	
MEP-02-47425	PCB (MF) E&M: DOC 3 BOH Rms Completion
MEP-02-48495	PCB (MF) E&M: Work to Degree 3: Mezzanine Floor Rms Completion
SOUTH - Gridline J-G	
Zone G	
Degree 3	
ABWF	
ABW-02-48110	PCB (MF) ABWF: Work to Degree 3: BOH - Elec/ELV Rms
ABW-02-48140	PCB (MF) ABWF: Work to Degree 3: BOH - Toilets/Cleaners Rm
ABW-02-48170	PCB (MF) ABWF: Work to Degree 3: BOH - Corridors/Lobby
ABW-02-48200	PCB (MF) ABWF: Work to Degree 3: BOH - Rms
E&M	
MEP-02-48110	PCB (MF) E&M: Work to Degree 3: BOH - Elec/ELV Rms
MEP-02-48140	PCB (MF) E&M: Work to Degree 3: BOH - Toilets/Cleaners Rm
MEP-02-48170	PCB (MF) E&M: Work to Degree 3: BOH - Corridors/Lobby
MEP-02-48200	PCB (MF) E&M: Work to Degree 3: BOH - Rms
Zone J	
Degree 3	
ABWF	
ABW-02-48320	PCB (MF) ABWF: Work to Degree 3: BOH - Elec/ELV Rms
ABW-02-48350	PCB (MF) ABWF: Work to Degree 3: BOH - Toilets/Cleaners Rm



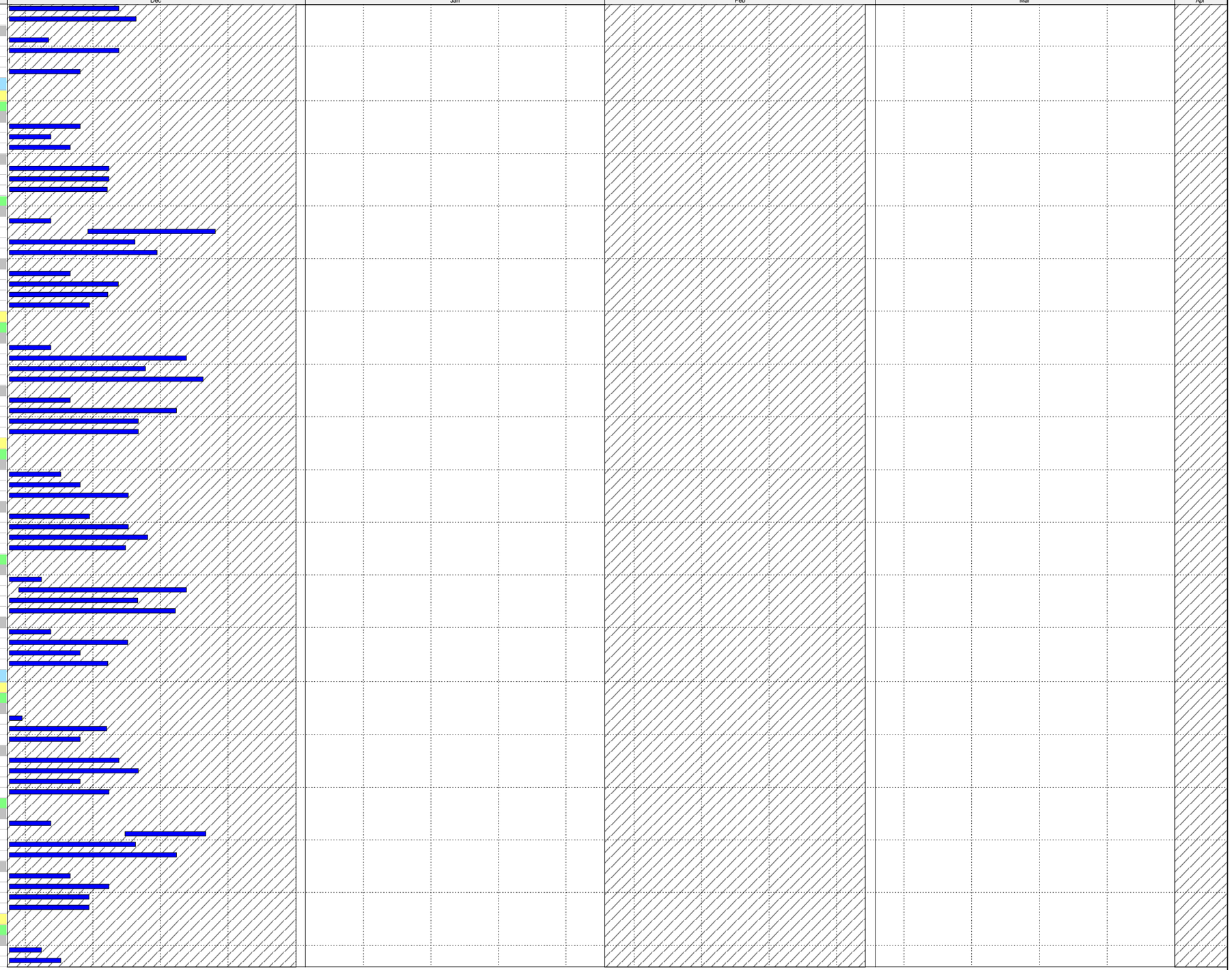
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Three Month Rolling Programme

HKMZB HKBCF - Passenger Clearance Building

Date	Revision	Checked	Approved

Activity ID	Activity Name
ABW-02-48380	PCB (MF) ABWF: Work to Degree 3: BOH - Corridors/Lobby
ABW-02-48410	PCB (MF) ABWF: Work to Degree 3: BOH - Rms
	E&M
MEP-02-48320	PCB (MF) E&M: Work to Degree 3: BOH - Elec/ELV Rms
MEP-02-48350	PCB (MF) E&M: Work to Degree 3: BOH - Toilets/Cleaners Rm
MEP-02-48380	PCB (MF) E&M: Work to Degree 3: BOH - Corridors/Lobby
MEP-02-48410	PCB (MF) E&M: Work to Degree 3: BOH - Rms
MIDDLE - Gridline G-E	
Zone F	
Degree 2	
	ABWF
ABW-02-47920	PCB (MF) ABWF: Work to Degree 2: BOH - Toilets/Cleaners Rm
ABW-02-47950	PCB (MF) ABWF: Work to Degree 2: BOH - Corridors/Lobby
ABW-02-47980	PCB (MF) ABWF: Work to Degree 2: BOH - Rms
	E&M
MEP-02-47890	PCB (MF) E&M: Work to Degree 2: BOH - Elec/ELV Rms
MEP-02-47920	PCB (MF) E&M: Work to Degree 2: BOH - Toilets/Cleaners Rm
MEP-02-47980	PCB (MF) E&M: Work to Degree 2: BOH - Rms
Degree 3	
	ABWF
ABW-02-47900	PCB (MF) ABWF: Work to Degree 3: BOH - Elec/ELV Rms
ABW-02-47930	PCB (MF) ABWF: Work to Degree 3: BOH - Toilets/Cleaners Rm
ABW-02-47960	PCB (MF) ABWF: Work to Degree 3: BOH - Corridors/Lobby
ABW-02-47990	PCB (MF) ABWF: Work to Degree 3: BOH - Rms
	E&M
MEP-02-47900	PCB (MF) E&M: Work to Degree 3: BOH - Elec/ELV Rms
MEP-02-47930	PCB (MF) E&M: Work to Degree 3: BOH - Toilets/Cleaners Rm
MEP-02-47960	PCB (MF) E&M: Work to Degree 3: BOH - Corridors/Lobby
MEP-02-47990	PCB (MF) E&M: Work to Degree 3: BOH - Rms
Zone D	
Degree 3	
	ABWF
ABW-02-47540	PCB (MF) ABWF: Work to Degree 3: BOH - Elec/ELV Rms
ABW-02-47570	PCB (MF) ABWF: Work to Degree 3: BOH - Toilets/Changing Rm
ABW-02-47600	PCB (MF) ABWF: Work to Degree 3: BOH - Corridors/Lobby
ABW-02-47630	PCB (MF) ABWF: Work to Degree 3: BOH - Rms
	E&M
MEP-02-47540	PCB (MF) E&M: Work to Degree 3: BOH - Elec/ELV Rms
MEP-02-47570	PCB (MF) E&M: Work to Degree 3: BOH - Toilets/Changing Rm
MEP-02-47600	PCB (MF) E&M: Work to Degree 3: BOH - Corridors/Lobby
MEP-02-47630	PCB (MF) E&M: Work to Degree 3: BOH - Rms
Zone E	
Degree 2	
	ABWF
ABW-02-47740	PCB (MF) ABWF: Work to Degree 2: BOH - Toilets/Cleaners Rm
ABW-02-47770	PCB (MF) ABWF: Work to Degree 2: BOH - Corridors/Lobby
ABW-02-47800	PCB (MF) ABWF: Work to Degree 2: BOH - Rms
	E&M
MEP-02-47710	PCB (MF) E&M: Work to Degree 2: BOH - Elec/ELV Rms
MEP-02-47740	PCB (MF) E&M: Work to Degree 2: BOH - Toilets/Cleaners Rm
MEP-02-47770	PCB (MF) E&M: Work to Degree 2: BOH - Corridors/Lobby
MEP-02-47800	PCB (MF) E&M: Work to Degree 2: BOH - Rms
Degree 3	
	ABWF
ABW-02-47720	PCB (MF) ABWF: Work to Degree 3: BOH - Elec/ELV Rms
ABW-02-47750	PCB (MF) ABWF: Work to Degree 3: BOH - Toilets/Cleaners Rm
ABW-02-47780	PCB (MF) ABWF: Work to Degree 3: BOH - Corridors/Lobby
ABW-02-47810	PCB (MF) ABWF: Work to Degree 3: BOH - Rms
	E&M
MEP-02-47720	PCB (MF) E&M: Work to Degree 3: BOH - Elec/ELV Rms
MEP-02-47750	PCB (MF) E&M: Work to Degree 3: BOH - Toilets/Cleaners Rm
MEP-02-47780	PCB (MF) E&M: Work to Degree 3: BOH - Corridors/Lobby
MEP-02-47810	PCB (MF) E&M: Work to Degree 3: BOH - Rms
NORTH - Gridline E-B	
Zone A	
Degree 2	
	ABWF
ABW-02-47110	PCB (MF) ABWF: Work to Degree 2: BOH - Elec/ELV Rms
ABW-02-47140	PCB (MF) ABWF: Work to Degree 2: BOH - Toilets
ABW-02-47200	PCB (MF) ABWF: Work to Degree 2: BOH - Rms
	E&M
MEP-02-47110	PCB (MF) E&M: Work to Degree 2: BOH - Elec/ELV Rms
MEP-02-47140	PCB (MF) E&M: Work to Degree 2: BOH - Toilets
MEP-02-47170	PCB (MF) E&M: Work to Degree 2: BOH - Corridors/Lobby
MEP-02-47200	PCB (MF) E&M: Work to Degree 2: BOH - Rms
Degree 3	
	ABWF
ABW-02-47120	PCB (MF) ABWF: Work to Degree 3: BOH - Elec/ELV Rms
ABW-02-47150	PCB (MF) ABWF: Work to Degree 3: BOH - Toilets
ABW-02-47180	PCB (MF) ABWF: Work to Degree 3: BOH - Corridors/Lobby
ABW-02-47210	PCB (MF) ABWF: Work to Degree 3: BOH - Rms
	E&M
MEP-02-47120	PCB (MF) E&M: Work to Degree 3: BOH - Elec/ELV Rms
MEP-02-47150	PCB (MF) E&M: Work to Degree 3: BOH - Toilets
MEP-02-47180	PCB (MF) E&M: Work to Degree 3: BOH - Corridors/Lobby
MEP-02-47210	PCB (MF) E&M: Work to Degree 3: BOH - Rms
Zone C	
Degree 2	
	ABWF
ABW-02-47320	PCB (MF) ABWF: Work to Degree 2: BOH - Elec/ELV Rms
ABW-02-47350	PCB (MF) ABWF: Work to Degree 2: BOH - Toilets/Cleaners Rm



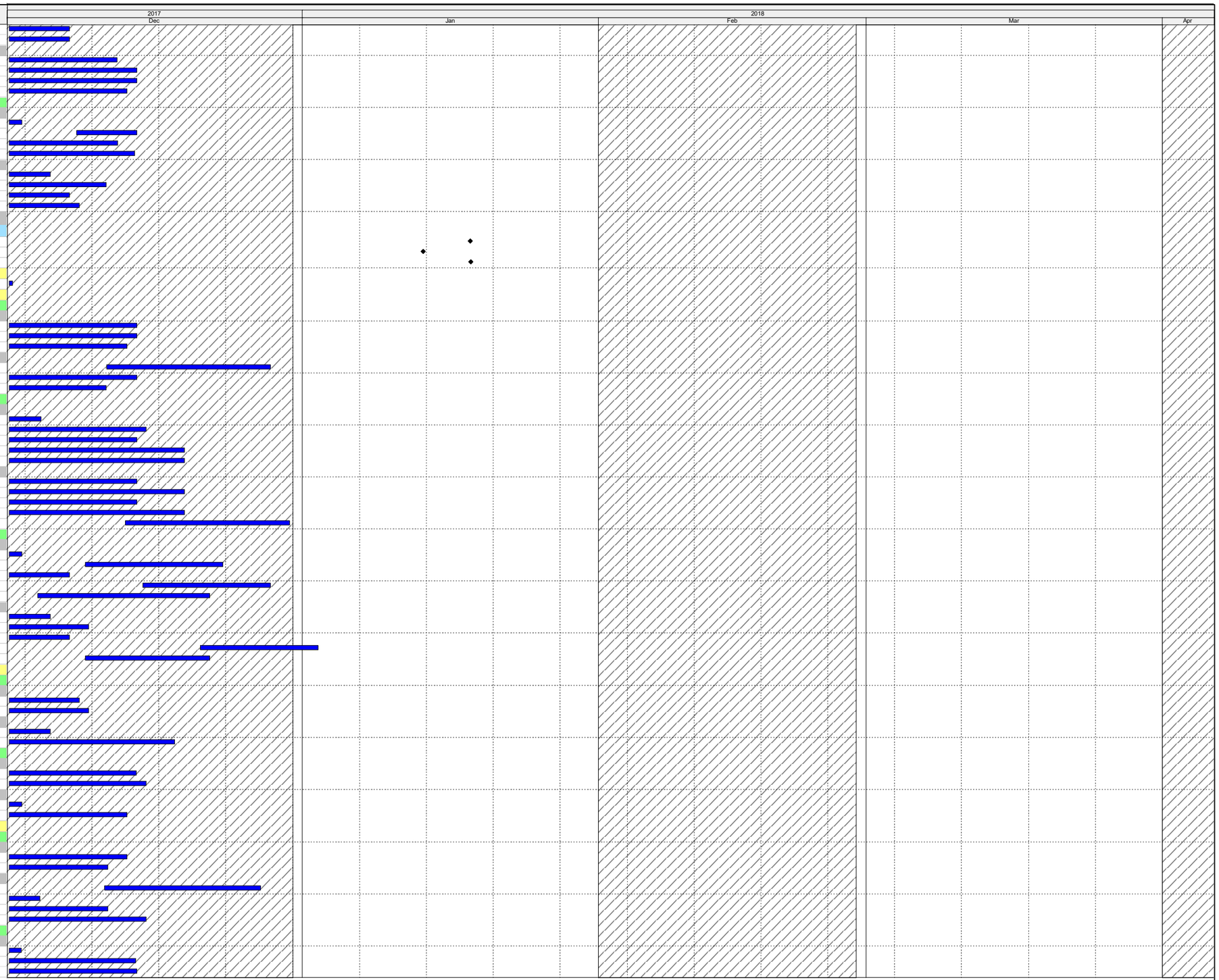
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Three Month Rolling Programme

HKMZB HKBCF - Passenger Clearance Building

Date	Revision	Checked	Approved

Activity ID	Activity Name
ABW-02-47380	PCB (MF) ABWF: Work to Degree 2: BOH - Corridors/Lobby
ABW-02-47410	PCB (MF) ABWF: Work to Degree 2: BOH - Rms
E&M	
MEP-02-47320	PCB (MF) E&M: Work to Degree 2: BOH - Elec/ELV Rms
MEP-02-47350	PCB (MF) E&M: Work to Degree 2: BOH - Toilets/Cleaners Rm
MEP-02-47380	PCB (MF) E&M: Work to Degree 2: BOH - Corridors/Lobby
MEP-02-47410	PCB (MF) E&M: Work to Degree 2: BOH - Rms
Degree 3	
ABWF	
ABW-02-47330	PCB (MF) ABWF: Work to Degree 3: BOH - Elec/ELV Rms
ABW-02-47360	PCB (MF) ABWF: Work to Degree 3: BOH - Toilets/Cleaners Rm
ABW-02-47390	PCB (MF) ABWF: Work to Degree 3: BOH - Corridors/Lobby
ABW-02-47420	PCB (MF) ABWF: Work to Degree 3: BOH - Rms
E&M	
MEP-02-47330	PCB (MF) E&M: Work to Degree 3: BOH - Elec/ELV Rms
MEP-02-47360	PCB (MF) E&M: Work to Degree 3: BOH - Toilets/Cleaners Rm
MEP-02-47390	PCB (MF) E&M: Work to Degree 3: BOH - Corridors/Lobby
MEP-02-47420	PCB (MF) E&M: Work to Degree 3: BOH - Rms
Level 5 First Floor +15.00mPD	
SOUTH - Gridline J-G	
MEP-02-45015	PCB (1F) E&M: Work to Degree 3: First Floor Rms Completion
MEP-02-45045	PCB (1F) E&M: : DOC 3 BOH Rms Completion
MEP-02-45105	PCB (1F) E&M: FOH - Open Areas Works Complete
Degree 3	
PCB-02-17300	PCB(1F) - Installation of Roller Shutter Curtains
Zone J	
Degree 1	
ABWF	
ABW-02-46370	PCB (1F) ABWF: Work to Degree 1: BOH - Toilets/Cleaners Rm
ABW-02-46400	PCB (1F) ABWF: Work to Degree 1: BOH - Corridors/Lobby
ABW-02-46490	PCB (1F) ABWF: Work to Degree 1: FOH - Open Areas
E&M	
MEP-02-46370	PCB (1F) E&M: Work to Degree 1: BOH - Toilets/Cleaners Rm
MEP-02-46400	PCB (1F) E&M: Work to Degree 1: BOH - Corridors/Lobby
MEP-02-46490	PCB (1F) E&M: Work to Degree 1: FOH - Open Areas
Degree 2	
ABWF	
ABW-02-46350	PCB (1F) ABWF: Work to Degree 2: BOH - Elec/ELV Rms
ABW-02-46380	PCB (1F) ABWF: Work to Degree 2: BOH - Toilets/Cleaners Rm
ABW-02-46410	PCB (1F) ABWF: Work to Degree 2: BOH - Corridors/Lobby
ABW-02-46440	PCB (1F) ABWF: Work to Degree 2: BOH - Rms
ABW-02-46500	PCB (1F) ABWF: Work to Degree 2: FOH - Open Areas
E&M	
MEP-02-46350	PCB (1F) E&M: Work to Degree 2: BOH - Elec/ELV Rms
MEP-02-46380	PCB (1F) E&M: Work to Degree 2: BOH - Toilets/Cleaners Rm
MEP-02-46410	PCB (1F) E&M: Work to Degree 2: BOH - Corridors/Lobby
MEP-02-46440	PCB (1F) E&M: Work to Degree 2: BOH - Rms
MEP-02-46500	PCB (1F) E&M: Work to Degree 2: FOH - Open Areas
Degree 3	
ABWF	
ABW-02-46360	PCB (1F) ABWF: Work to Degree 3: BOH - Elec/ELV Rms
ABW-02-46390	PCB (1F) ABWF: Work to Degree 3: BOH - Toilets/Cleaners Rm
ABW-02-46420	PCB (1F) ABWF: Work to Degree 3: BOH - Corridors/Lobby
ABW-02-46450	PCB (1F) ABWF: Work to Degree 3: BOH - Rms
ABW-02-46510	PCB (1F) ABWF: Work to Degree 3: FOH - Open Areas
E&M	
MEP-02-46360	PCB (1F) E&M: Work to Degree 3: BOH - Elec/ELV Rms
MEP-02-46390	PCB (1F) E&M: Work to Degree 3: BOH - Toilets/Cleaners Rm
MEP-02-46420	PCB (1F) E&M: Work to Degree 3: BOH - Corridors/Lobby
MEP-02-46450	PCB (1F) E&M: Work to Degree 3: BOH - Rms
MEP-02-46510	PCB (1F) E&M: Work to Degree 3: FOH - Open Areas
Zone H	
Degree 2	
ABWF	
ABW-02-46170	PCB (1F) ABWF: Work to Degree 2: FOH - Rms
ABW-02-46230	PCB (1F) ABWF: Work to Degree 2: FOH - Open Areas
E&M	
MEP-02-46170	PCB (1F) E&M: Work to Degree 2: FOH - Rms
MEP-02-46230	PCB (1F) E&M: Work to Degree 2: FOH - Open Areas
Degree 3	
ABWF	
ABW-02-46180	PCB (1F) ABWF: Work to Degree 3: FOH - Rms
ABW-02-46240	PCB (1F) ABWF: Work to Degree 3: FOH - Open Areas
E&M	
MEP-02-46180	PCB (1F) E&M: Work to Degree 3: FOH - Rms
MEP-02-46240	PCB (1F) E&M: Work to Degree 3: FOH - Open Areas
Zone G	
Degree 1	
ABWF	
ABW-02-46010	PCB (1F) ABWF: Work to Degree 1: BOH - Toilets/Cleaners Rm
ABW-02-46040	PCB (1F) ABWF: Work to Degree 1: BOH - Corridors/Lobby
E&M	
MEP-02-46010	PCB (1F) E&M: Work to Degree 1: BOH - Toilets/Cleaners Rm
MEP-02-46040	PCB (1F) E&M: Work to Degree 1: BOH - Corridors/Lobby
MEP-02-46070	PCB (1F) E&M: Work to Degree 1: BOH - Rms
MEP-02-46100	PCB (1F) E&M: Work to Degree 1: FOH - BIN/Kiosks/cubicles
Degree 2	
ABWF	
ABW-02-45990	PCB (1F) ABWF: Work to Degree 2: BOH - Elec/ELV Rms
ABW-02-46020	PCB (1F) ABWF: Work to Degree 2: BOH - Toilets/Cleaners Rm
ABW-02-46050	PCB (1F) ABWF: Work to Degree 2: BOH - Corridors/Lobby



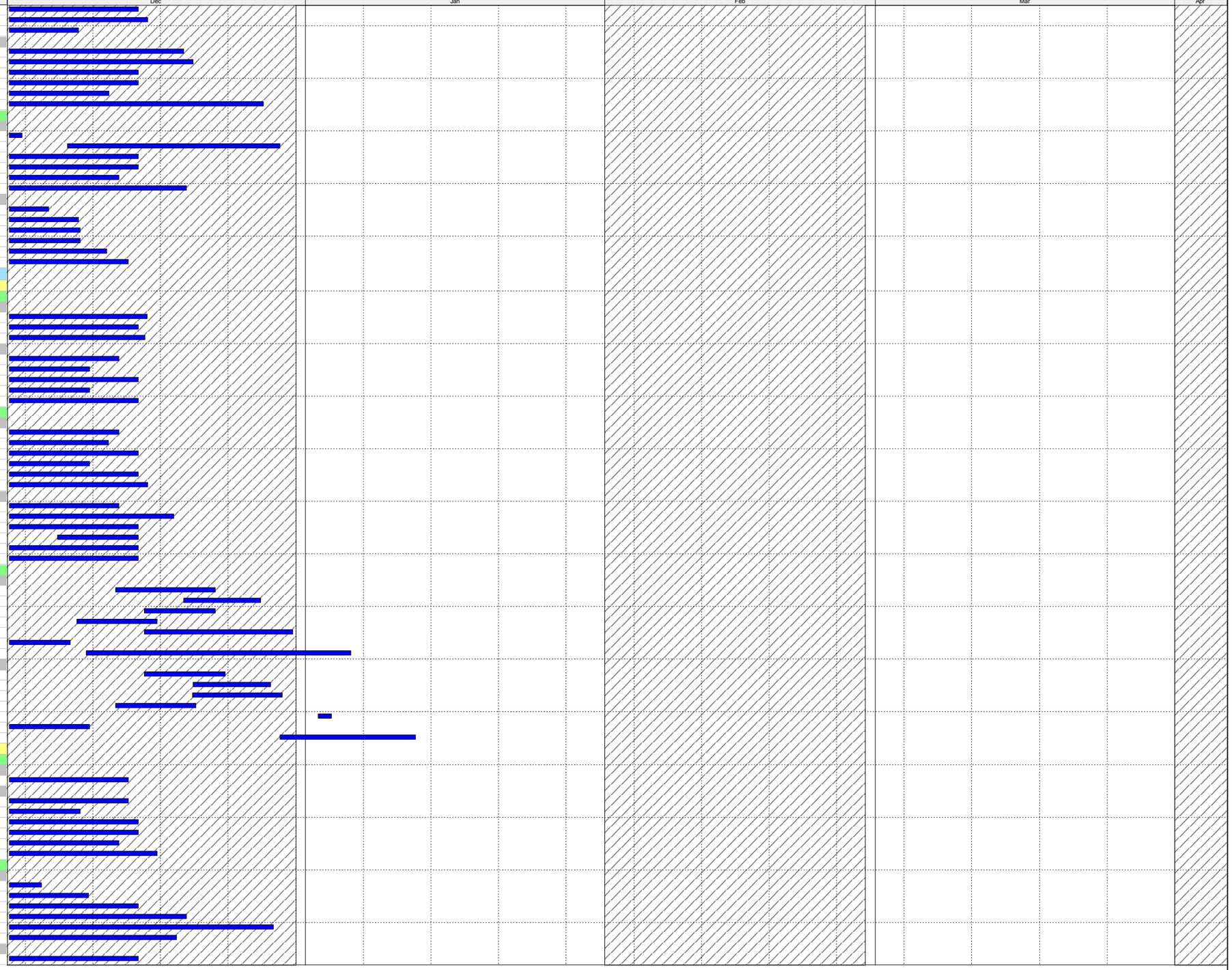
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Three Month Rolling Programme

HKMZB HKBCF - Passenger Clearance Building

Date	Revision	Checked	Approved

Activity ID	Activity Name
ABW-02-46080	PCB (1F) ABWF: Work to Degree 2: BOH - Rms
ABW-02-46110	PCB (1F) ABWF: Work to Degree 2: FOH - BIN/Kiosks/cubicles
ABW-02-46140	PCB (1F) ABWF: Work to Degree 2: FOH - Open Areas
E&M	
MEP-02-45990	PCB (1F) E&M: Work to Degree 2: BOH - Elec/ELV Rms
MEP-02-46020	PCB (1F) E&M: Work to Degree 2: BOH - Toilets/Cleaners Rm
MEP-02-46050	PCB (1F) E&M: Work to Degree 2: BOH - Corridors/Lobby
MEP-02-46080	PCB (1F) E&M: Work to Degree 2: BOH - Rms
MEP-02-46110	PCB (1F) E&M: Work to Degree 2: FOH - BIN/Kiosks/cubicles
MEP-02-46140	PCB (1F) E&M: Work to Degree 2: FOH - Open Areas
Degree 3	
ABWF	
ABW-02-46000	PCB (1F) ABWF: Work to Degree 3: BOH - Elec/ELV Rms
ABW-02-46030	PCB (1F) ABWF: Work to Degree 3: BOH - Toilets/Cleaners Rm
ABW-02-46060	PCB (1F) ABWF: Work to Degree 3: BOH - Corridors/Lobby
ABW-02-46090	PCB (1F) ABWF: Work to Degree 3: BOH - Rms
ABW-02-46120	PCB (1F) ABWF: Work to Degree 3: FOH - BIN/Kiosks/cubicles
ABW-02-46150	PCB (1F) ABWF: Work to Degree 3: FOH - Open Areas
E&M	
MEP-02-46000	PCB (1F) E&M: Work to Degree 3: BOH - Elec/ELV Rms
MEP-02-46030	PCB (1F) E&M: Work to Degree 3: BOH - Toilets/Cleaners Rm
MEP-02-46060	PCB (1F) E&M: Work to Degree 3: BOH - Corridors/Lobby
MEP-02-46090	PCB (1F) E&M: Work to Degree 3: BOH - Rms
MEP-02-46120	PCB (1F) E&M: Work to Degree 3: FOH - BIN/Kiosks/cubicles
MEP-02-46150	PCB (1F) E&M: Work to Degree 3: FOH - Open Areas
MIDDLE - Gridline G-E	
Zone F	
Degree 1	
ABWF	
ABW-02-45710	PCB (1F) ABWF: Work to Degree 1: BOH - Toilets/Cleaners Rm
ABW-02-45740	PCB (1F) ABWF: Work to Degree 1: BOH - Corridors/Lobby
ABW-02-45800	PCB (1F) ABWF: Work to Degree 1: FOH - Rms
E&M	
MEP-02-45680	PCB (1F) E&M: Work to Degree 1: BOH - Elec/ELV Rms
MEP-02-45710	PCB (1F) E&M: Work to Degree 1: BOH - Toilets/Cleaners Rm
MEP-02-45740	PCB (1F) E&M: Work to Degree 1: BOH - Corridors/Lobby
MEP-02-45770	PCB (1F) E&M: Work to Degree 1: BOH - Rms
MEP-02-45800	PCB (1F) E&M: Work to Degree 1: FOH - Rms
Degree 2	
ABWF	
ABW-02-45690	PCB (1F) ABWF: Work to Degree 2: BOH - Elec/ELV Rms
ABW-02-45720	PCB (1F) ABWF: Work to Degree 2: BOH - Toilets/Cleaners Rm
ABW-02-45750	PCB (1F) ABWF: Work to Degree 2: BOH - Corridors/Lobby
ABW-02-45780	PCB (1F) ABWF: Work to Degree 2: BOH - Rms
ABW-02-45810	PCB (1F) ABWF: Work to Degree 2: FOH - Rms
ABW-02-45870	PCB (1F) ABWF: Work to Degree 2: FOH - Open Areas
E&M	
MEP-02-45690	PCB (1F) E&M: Work to Degree 2: BOH - Elec/ELV Rms
MEP-02-45720	PCB (1F) E&M: Work to Degree 2: BOH - Toilets/Cleaners Rm
MEP-02-45750	PCB (1F) E&M: Work to Degree 2: BOH - Corridors/Lobby
MEP-02-45780	PCB (1F) E&M: Work to Degree 2: BOH - Rms
MEP-02-45810	PCB (1F) E&M: Work to Degree 2: FOH - Rms
MEP-02-45870	PCB (1F) E&M: Work to Degree 2: FOH - Open Areas
Degree 3	
ABWF	
ABW-02-45700	PCB (1F) ABWF: Work to Degree 3: BOH - Elec/ELV Rms
ABW-02-45730	PCB (1F) ABWF: Work to Degree 3: BOH - Toilets/Cleaners Rm
ABW-02-45760	PCB (1F) ABWF: Work to Degree 3: BOH - Corridors/Lobby
ABW-02-45790	PCB (1F) ABWF: Work to Degree 3: BOH - Rms
ABW-02-45820	PCB (1F) ABWF: Work to Degree 3: FOH - Rms
ABW-02-45850	PCB (1F) ABWF: Work to Degree 3: FOH - BIN/Kiosks/cubicles/Rms
ABW-02-45880	PCB (1F) ABWF: Work to Degree 3: FOH - Open Areas
E&M	
MEP-02-45700	PCB (1F) E&M: Work to Degree 3: BOH - Elec/ELV Rms
MEP-02-45730	PCB (1F) E&M: Work to Degree 3: BOH - Toilets/Cleaners Rm
MEP-02-45760	PCB (1F) E&M: Work to Degree 3: BOH - Corridors/Lobby
MEP-02-45790	PCB (1F) E&M: Work to Degree 3: BOH - Rms
MEP-02-45820	PCB (1F) E&M: Work to Degree 3: FOH - Rms
MEP-02-45850	PCB (1F) E&M: Work to Degree 3: FOH - BIN/Kiosks/cubicles/Rms
MEP-02-45880	PCB (1F) E&M: Work to Degree 3: FOH - Open Areas
Zone D	
Degree 1	
ABWF	
ABW-02-45230	PCB (1F) ABWF: Work to Degree 1: BOH - Toilets/Changing Rm
E&M	
MEP-02-45200	PCB (1F) E&M: Work to Degree 1: BOH - Elec/ELV Rms
MEP-02-45230	PCB (1F) E&M: Work to Degree 1: BOH - Toilets/Changing Rm
MEP-02-45260	PCB (1F) E&M: Work to Degree 1: BOH - Corridors/Lobby
MEP-02-45290	PCB (1F) E&M: Work to Degree 1: BOH - Rms
MEP-02-45320	PCB (1F) E&M: Work to Degree 1: FOH - Rms
MEP-02-45380	PCB (1F) E&M: Work to Degree 1: FOH - Open Areas
Degree 2	
ABWF	
ABW-02-45210	PCB (1F) ABWF: Work to Degree 2: BOH - Elec/ELV Rms
ABW-02-45240	PCB (1F) ABWF: Work to Degree 2: BOH - Toilets/Changing Rm
ABW-02-45270	PCB (1F) ABWF: Work to Degree 2: BOH - Corridors/Lobby
ABW-02-45300	PCB (1F) ABWF: Work to Degree 2: BOH - Rms
ABW-02-45330	PCB (1F) ABWF: Work to Degree 2: FOH - Rms
ABW-02-45390	PCB (1F) ABWF: Work to Degree 2: FOH - Open Areas
E&M	
MEP-02-45210	PCB (1F) E&M: Work to Degree 2: BOH - Elec/ELV Rms



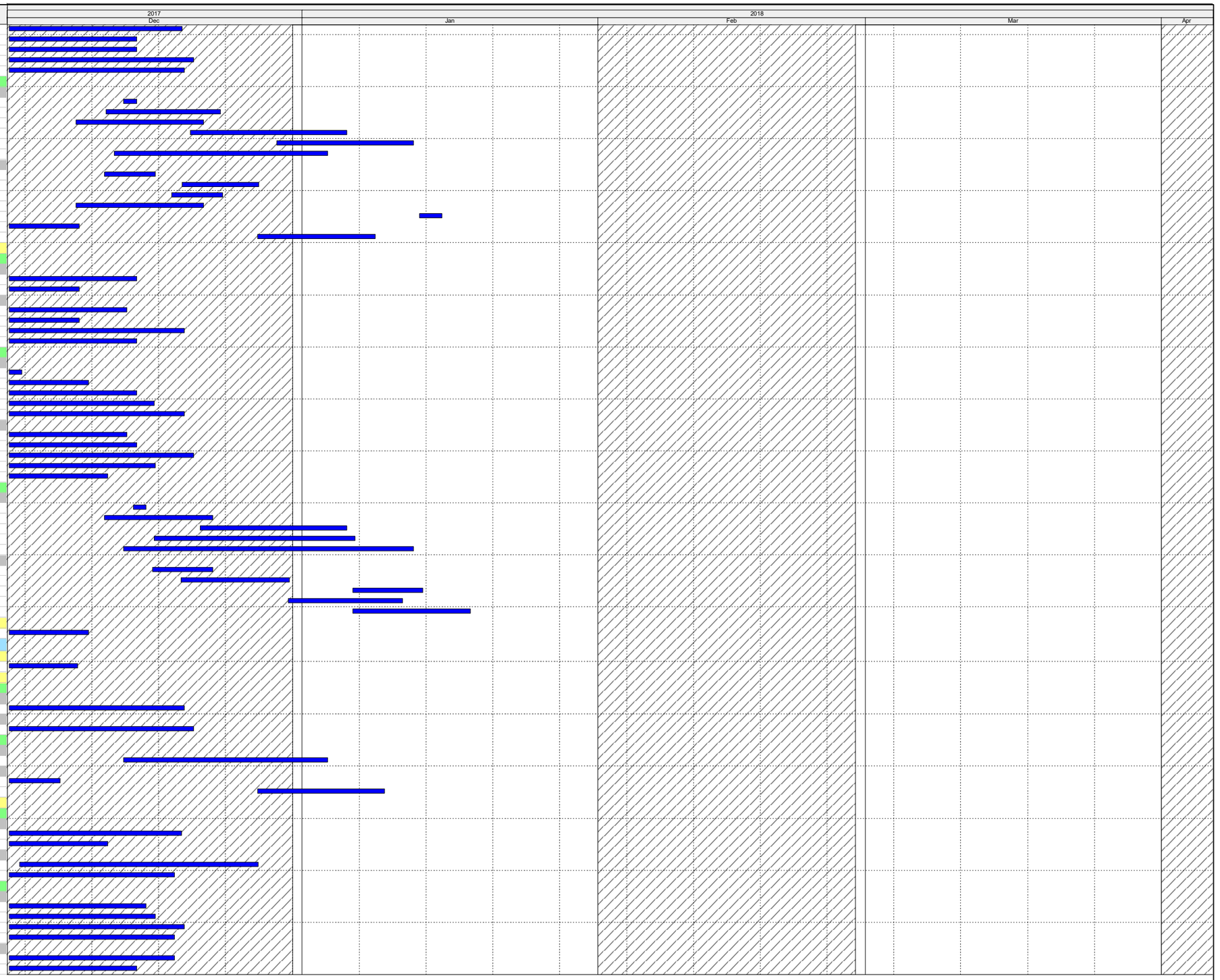
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Three Month Rolling Programme

HKMZB HKBCF - Passenger Clearance Building

Date	Revision	Checked	Approved

Activity ID	Activity Name
MEP-02-45240	PCB (1F) E&M: Work to Degree 2: BOH - Toilets/Changing Rm
MEP-02-45270	PCB (1F) E&M: Work to Degree 2: BOH - Corridors/Lobby
MEP-02-45300	PCB (1F) E&M: Work to Degree 2: BOH - Rms
MEP-02-45330	PCB (1F) E&M: Work to Degree 2: FOH - Rms
MEP-02-45390	PCB (1F) E&M: Work to Degree 2: FOH - Open Areas
Degree 3	
ABWF	
ABW-02-45220	PCB (1F) ABWF: Work to Degree 3: BOH - Elec/ELV Rms
ABW-02-45250	PCB (1F) ABWF: Work to Degree 3: BOH - Toilets/Changing Rm
ABW-02-45280	PCB (1F) ABWF: Work to Degree 3: BOH - Corridors/Lobby
ABW-02-45310	PCB (1F) ABWF: Work to Degree 3: BOH - Rms
ABW-02-45340	PCB (1F) ABWF: Work to Degree 3: FOH - Rms
ABW-02-45400	PCB (1F) ABWF: Work to Degree 3: FOH - Open Areas
E&M	
MEP-02-45220	PCB (1F) E&M: Work to Degree 3: BOH - Elec/ELV Rms
MEP-02-45250	PCB (1F) E&M: Work to Degree 3: BOH - Toilets/Changing Rm
MEP-02-45280	PCB (1F) E&M: Work to Degree 3: BOH - Corridors/Lobby
MEP-02-45310	PCB (1F) E&M: Work to Degree 3: BOH - Rms
MEP-02-45340	PCB (1F) E&M: Work to Degree 3: FOH - Rms
MEP-02-45370	PCB (1F) E&M: Work to Degree 3: FOH - BIN/Kiosks/cubicles/Rms
MEP-02-45400	PCB (1F) E&M: Work to Degree 3: FOH - Open Areas
Zone E	
Degree 1	
ABWF	
ABW-02-45500	PCB (1F) ABWF: Work to Degree 1: BOH - Toilets/Cleaners Rm
ABW-02-45530	PCB (1F) ABWF: Work to Degree 1: BOH - Corridors/Lobby
E&M	
MEP-02-45470	PCB (1F) E&M: Work to Degree 1: BOH - Elec/ELV Rms
MEP-02-45500	PCB (1F) E&M: Work to Degree 1: BOH - Toilets/Cleaners Rm
MEP-02-45530	PCB (1F) E&M: Work to Degree 1: BOH - Corridors/Lobby
MEP-02-45560	PCB (1F) E&M: Work to Degree 1: BOH - Rms
Degree 2	
ABWF	
ABW-02-45480	PCB (1F) ABWF: Work to Degree 2: BOH - Elec/ELV Rms
ABW-02-45510	PCB (1F) ABWF: Work to Degree 2: BOH - Toilets/Cleaners Rm
ABW-02-45540	PCB (1F) ABWF: Work to Degree 2: BOH - Corridors/Lobby
ABW-02-45570	PCB (1F) ABWF: Work to Degree 2: BOH - Rms
ABW-02-45600	PCB (1F) ABWF: Work to Degree 2: FOH - Open Areas
E&M	
MEP-02-45480	PCB (1F) E&M: Work to Degree 2: BOH - Elec/ELV Rms
MEP-02-45510	PCB (1F) E&M: Work to Degree 2: BOH - Toilets/Cleaners Rm
MEP-02-45540	PCB (1F) E&M: Work to Degree 2: BOH - Corridors/Lobby
MEP-02-45570	PCB (1F) E&M: Work to Degree 2: BOH - Rms
MEP-02-45600	PCB (1F) E&M: Work to Degree 2: FOH - Open Areas
Degree 3	
ABWF	
ABW-02-45490	PCB (1F) ABWF: Work to Degree 3: BOH - Elec/ELV Rms
ABW-02-45520	PCB (1F) ABWF: Work to Degree 3: BOH - Toilets/Cleaners Rm
ABW-02-45550	PCB (1F) ABWF: Work to Degree 3: BOH - Corridors/Lobby
ABW-02-45580	PCB (1F) ABWF: Work to Degree 3: BOH - Rms
ABW-02-45610	PCB (1F) ABWF: Work to Degree 3: FOH - Open Areas
E&M	
MEP-02-45490	PCB (1F) E&M: Work to Degree 3: BOH - Elec/ELV Rms
MEP-02-45520	PCB (1F) E&M: Work to Degree 3: BOH - Toilets/Cleaners Rm
MEP-02-45550	PCB (1F) E&M: Work to Degree 3: BOH - Corridors/Lobby
MEP-02-45580	PCB (1F) E&M: Work to Degree 3: BOH - Rms
MEP-02-45610	PCB (1F) E&M: Work to Degree 3: FOH - Open Areas
Degree 3	
PCB-02-17710	PCB(1F) - Installation of Roller Shutter Curtains
NORTH - Gridline E-B	
Degree 3	
PCB-02-18030	PCB(1F) - Installation of Roller Shutter Curtains
Zone B	
Degree 2	
ABWF	
ABW-02-44820	PCB (1F) ABWF: Work to Degree 2: FOH - Open Areas
E&M	
MEP-02-44820	PCB (1F) E&M: Work to Degree 2: FOH - Open Areas
Degree 3	
ABWF)	
ABW-02-44830	PCB (1F) ABWF: Work to Degree 3: FOH - Open Areas
E&M	
MEP-02-44800	PCB (1F) E&M: Work to Degree 3: FOH - BIN/Kiosks/cubicles/Rms
MEP-02-44830	PCB (1F) E&M: Work to Degree 3: FOH - Open Areas
Zone A	
Degree 1	
ABWF	
ABW-02-44630	PCB (1F) ABWF: Work to Degree 1: BOH - Toilets/Cleaners Rm
ABW-02-44660	PCB (1F) ABWF: Work to Degree 1: BOH - Corridors/Lobby
E&M	
MEP-02-44630	PCB (1F) E&M: Work to Degree 1: BOH - Toilets/Toilet area
MEP-02-44660	PCB (1F) E&M: Work to Degree 1: BOH - Corridors/Lobby
Degree 2	
ABWF	
ABW-02-44640	PCB (1F) ABWF: Work to Degree 2: BOH - Toilets/Toilet area
ABW-02-44670	PCB (1F) ABWF: Work to Degree 2: BOH - Corridors/Lobby
ABW-02-44700	PCB (1F) ABWF: Work to Degree 2: BOH - Rms
ABW-02-44760	PCB (1F) ABWF: Work to Degree 2: FOH - Open Areas
E&M	
MEP-02-44610	PCB (1F) E&M: Work to Degree 2: BOH - Elec/ELV Rms
MEP-02-44640	PCB (1F) E&M: Work to Degree 2: BOH - Toilets/Toilet area



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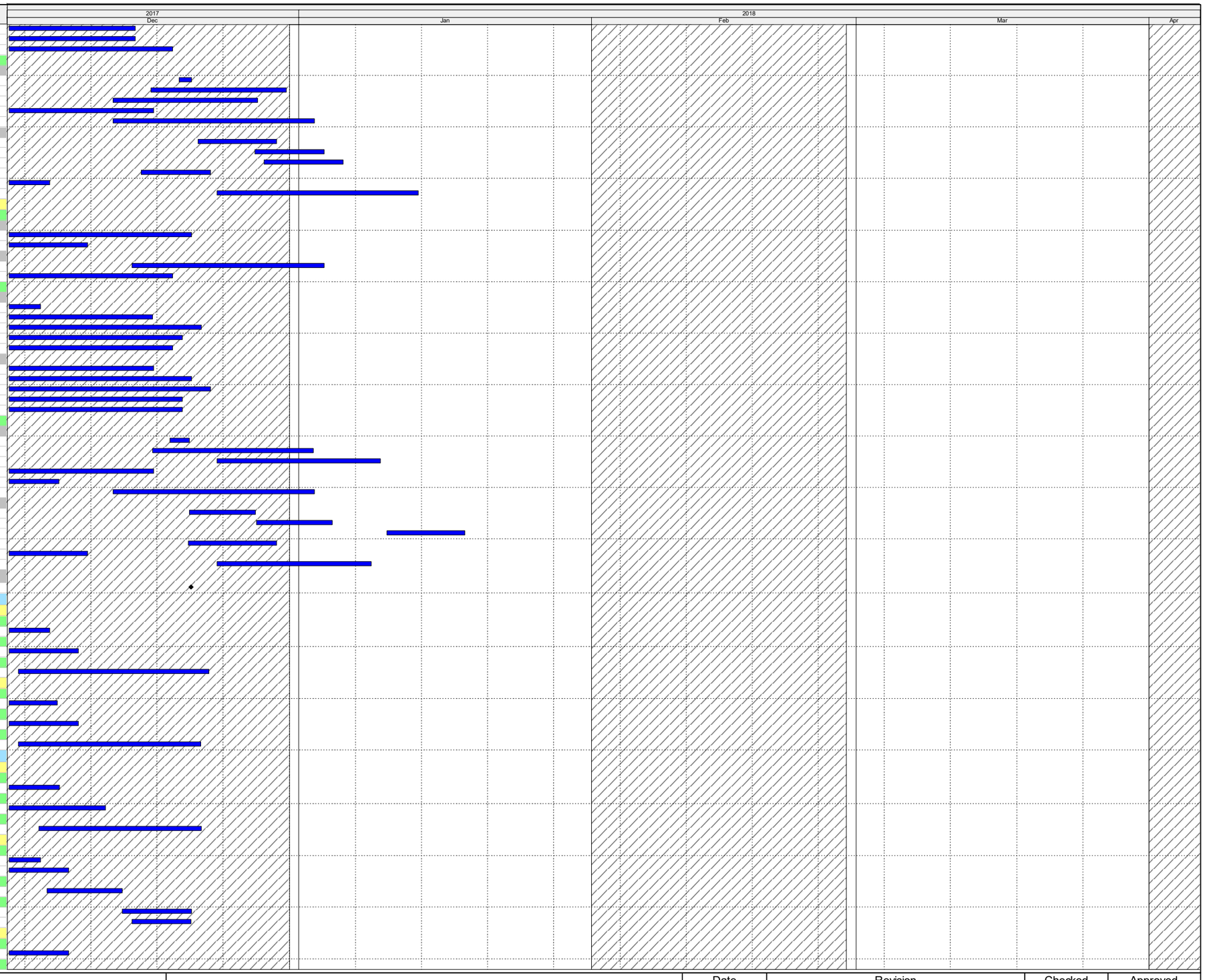
HKMZB HKBCF - Passenger Clearance Building

Date	Revision	Checked	Approved

Activity ID	Activity Name
MEP-02-44670	PCB (1F) E&M: Work to Degree 2: BOH - Corridors/Lobby
MEP-02-44700	PCB (1F) E&M: Work to Degree 2: BOH - Rms
MEP-02-44760	PCB (1F) E&M: Work to Degree 2: FOH - Open Areas
Degree 3	
ABWF	
ABW-02-44620	PCB (1F) ABWF: Work to Degree 3: BOH - Elec/ELV Rms
ABW-02-44650	PCB (1F) ABWF: Work to Degree 3: BOH - Toilets/Toilet area
ABW-02-44680	PCB (1F) ABWF: Work to Degree 3: BOH - Corridors/Lobby
ABW-02-44710	PCB (1F) ABWF: Work to Degree 3: BOH - Rms
ABW-02-44770	PCB (1F) ABWF: Work to Degree 3: FOH - Open Areas
E&M	
MEP-02-44620	PCB (1F) E&M: Work to Degree 3: BOH - Elec/ELV Rms
MEP-02-44650	PCB (1F) E&M: Work to Degree 3: BOH - Toilets/Toilet area
MEP-02-44680	PCB (1F) E&M: Work to Degree 3: BOH - Corridors/Lobby
MEP-02-44710	PCB (1F) E&M: Work to Degree 3: BOH - Rms
MEP-02-44740	PCB (1F) E&M: Work to Degree 3: FOH - BIN/Kiosks/cubicles/Rms
MEP-02-44770	PCB (1F) E&M: Work to Degree 3: FOH - Open Areas
Zone C	
Degree 1	
ABWF	
ABW-02-44960	PCB (1F) ABWF: Work to Degree 1: BOH - Toilets/Cleaners Rm
ABW-02-44990	PCB (1F) ABWF: Work to Degree 1: BOH - Corridors/Lobby
E&M	
MEP-02-44960	PCB (1F) E&M: Work to Degree 1: BOH - Toilets/Cleaners Rm
MEP-02-44990	PCB (1F) E&M: Work to Degree 1: BOH - Corridors/Lobby
Degree 2	
ABWF	
ABW-02-44940	PCB (1F) ABWF: Work to Degree 2: BOH - Elec/ELV Rms
ABW-02-44970	PCB (1F) ABWF: Work to Degree 2: BOH - Toilets/Cleaners Rm
ABW-02-45000	PCB (1F) ABWF: Work to Degree 2: BOH - Corridors/Lobby
ABW-02-45030	PCB (1F) ABWF: Work to Degree 2: BOH - Rms
ABW-02-45090	PCB (1F) ABWF: Work to Degree 2: FOH - Open Areas
E&M	
MEP-02-44940	PCB (1F) E&M: Work to Degree 2: BOH -Elec/ELV Rms
MEP-02-44970	PCB (1F) E&M: Work to Degree 2: BOH - Toilets/Cleaners Rm
MEP-02-45000	PCB (1F) E&M: Work to Degree 2: BOH - Corridors/Lobby
MEP-02-45030	PCB (1F) E&M: Work to Degree 2: BOH - Rms
MEP-02-45090	PCB (1F) E&M: Work to Degree 2: FOH - Open Areas
Degree 3	
ABWF	
ABW-02-44950	PCB (1F) ABWF: Work to Degree 3: BOH - Elec/ELV Rms
ABW-02-44980	PCB (1F) ABWF: Work to Degree 3: BOH - Toilets/Cleaners Rm
ABW-02-45010	PCB (1F) ABWF: Work to Degree 3: BOH - Corridors/Lobby
ABW-02-45040	PCB (1F) ABWF: Work to Degree 3: BOH - Rms
ABW-02-45070	PCB (1F) ABWF: Work to Degree 3: FOH - BIN/Kiosks/cubicles/Rms
ABW-02-45100	PCB (1F) ABWF: Work to Degree 3: FOH - Open Areas
E&M	
MEP-02-44950	PCB (1F) E&M: Work to Degree 3: BOH - Elec/ELV Rms
MEP-02-44980	PCB (1F) E&M: Work to Degree 3: BOH - Toilets/Cleaners Rm
MEP-02-45010	PCB (1F) E&M: Work to Degree 3: BOH - Corridors/Lobby
MEP-02-45040	PCB (1F) E&M: Work to Degree 3: BOH - Rms
MEP-02-45070	PCB (1F) E&M: Work to Degree 3: FOH - BIN/Kiosks/cubicles/Rms
MEP-02-45100	PCB (1F) E&M: Work to Degree 3: FOH - Open Areas
Level 6 Cabin Roof +19.50mPD	
MEP-02-50095	PCB (CR) E&M: Work to Degree 3: Cabin Roof Rms Completion
Southern Cabins	
Zone G	
Degree 1	
ABW-02-50581	PCB (CR) ABWF: Work to Degree 1: BOH - E&M Plant Area
Degree 2	
MEP-02-50591	PCB (CR) E&M: Work to Degree 2: BOH - E&M Plant Area
Degree 3	
ABW-02-50601	PCB (CR) ABWF: Work to Degree 3: BOH - E&M Plant Area
Zone J	
Degree 1	
ABW-02-50580	PCB (CR) ABWF: Work to Degree 1: BOH - E&M Plant Area
Degree 2	
MEP-02-50590	PCB (CR) E&M: Work to Degree 2: BOH - E&M Plant Area
Degree 3	
ABW-02-50600	PCB (CR) ABWF: Work to Degree 3: BOH - E&M Plant Area
Middle Cabins	
Zone D	
Degree 1	
ABW-02-50160	PCB (CR) ABWF: Work to Degree 1: BOH - E&M Plant Area
Degree 2	
MEP-02-50170	PCB (CR) E&M: Work to Degree 2: BOH - E&M Plant Area
Degree 3	
ABW-02-50180	PCB (CR) ABWF: Work to Degree 3: BOH - E&M Plant Area
Zone E	
Degree 1	
ABW-02-50220	PCB (CR) ABWF: Work to Degree 1: BOH - Service Column
MEP-02-50220	PCB (CR) E&M: Work to Degree 1: BOH - Service Column
Degree 2	
MEP-02-50230	PCB (CR) E&M: Work to Degree 2: BOH - Service Column (Roof Connection)
Degree 3	
ABW-02-50240	PCB (CR) ABWF: Work to Degree 3: BOH - Service Column (Cladding)
MEP-02-50240	PCB (CR) E&M: Work to Degree 3: BOH - Service Column
Zone F	
Degree 1	
ABW-02-50250	PCB (CR) ABWF: Work to Degree 1: BOH - E&M Plant Area
Degree 2	



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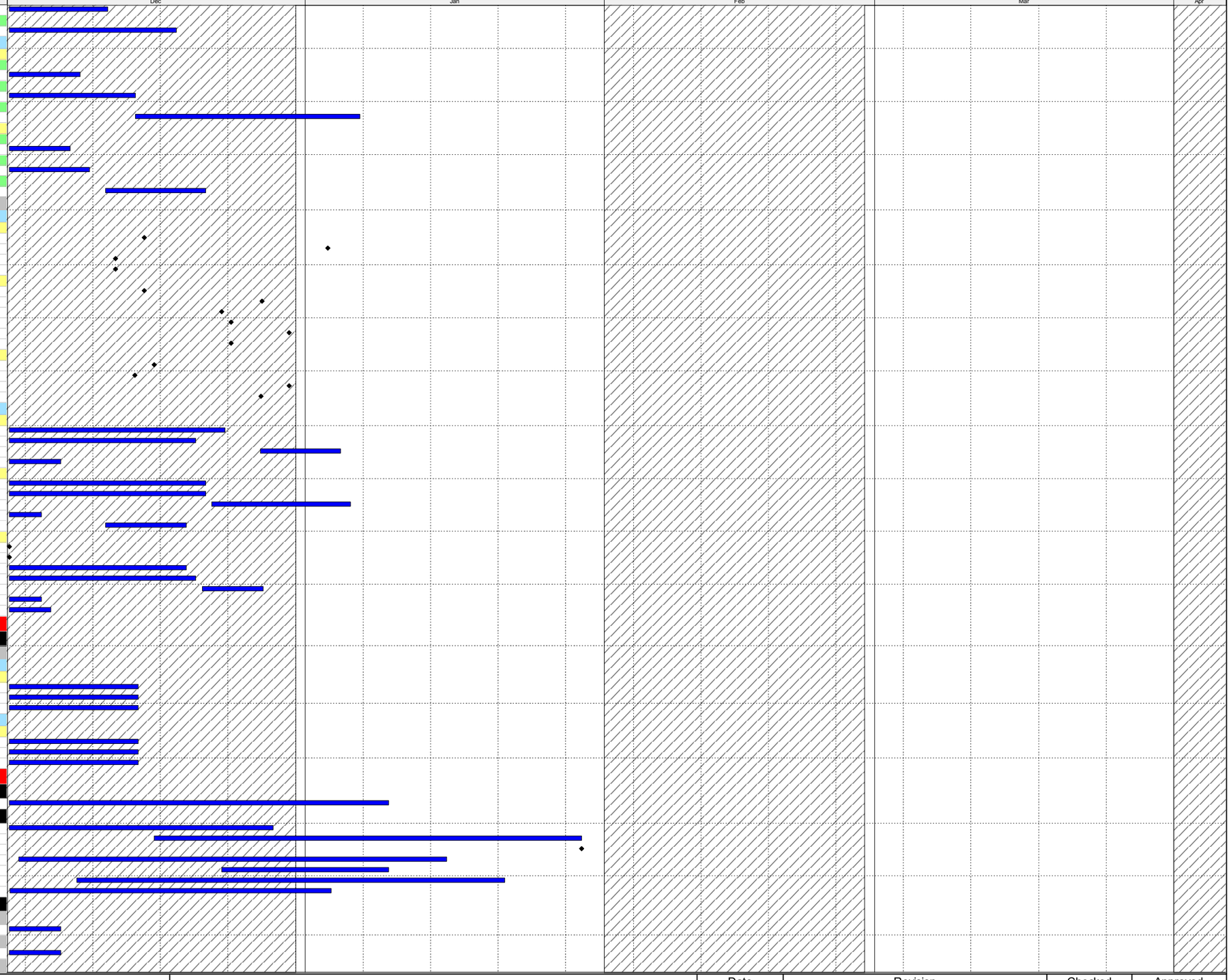
HKMZB HKBCF - Passenger Clearance Building

Date	Revision	Checked	Approved

Activity ID	Activity Name
MEP-02-50260	PCB (CR) E&M: Work to Degree 2: BOH - E&M Plant Area
Degree 3	
ABW-02-50270	PCB (CR) ABWF: Work to Degree 3: BOH - E&M Plant Area
Northern Cabins	
Zone C	
Degree 1	
ABW-02-50070	PCB (CR) ABWF: Work to Degree 1: BOH - E&M Plant Area
Degree 2	
MEP-02-50080	PCB (CR) E&M: Work to Degree 2: BOH - E&M Plant Area
Degree 3	
ABW-02-50090	PCB (CR) ABWF: Work to Degree 3: BOH - E&M Plant Area
Zone A	
Degree 1	
ABW-02-50010	PCB (CR) ABWF: Work to Degree 1: BOH - E&M Plant Area
Degree 2	
MEP-02-50020	PCB (CR) E&M: Work to Degree 2: BOH - E&M Plant Area
Degree 3	
ABW-02-50030	PCB (CR) ABWF: Work to Degree 3: BOH - E&M Plant Area
PCB - All Levels (Shafts, Ducts and Risers)	
PCB - All Levels	
SOUTH - Gridline J-G	
MEP-02-41275	PCB (Zone G) - BOH Rms Ready for Testing
MEP-02-41295	PCB (Zone J) - BOH Rms Ready for Testing
MEP-02-50805	PCB (Zone G) E&M: BS Dist Complete Ready for Testing
MEP-02-50825	PCB (Zone J) E&M: BS Dist Complete Ready for Testing
MIDDLE - Gridline G-E	
MEP-02-41245	PCB (Zone D) - BOH Rms Ready for Testing
MEP-02-41255	PCB (Zone E) - BOH Rms Ready for Testing
MEP-02-41265	PCB (Zone F) - BOH Rms Ready for Testing
MEP-02-50755	PCB (Zone D) E&M: BS Dist Complete Ready for Testing
MEP-02-50765	PCB (Zone E) E&M: BS Dist Complete Ready for Testing
MEP-02-50785	PCB (Zone F) E&M: BS Dist Complete Ready for Testing
NORTH - Gridline E-B	
MEP-02-41215	PCB (Zone A) - BOH Rms Ready for Testing
MEP-02-41235	PCB (Zone C) - BOH Rms Ready for Testing
MEP-02-50715	PCB (Zone A) E&M: BS Dist Complete Ready for Testing
MEP-02-50735	PCB (Zone C) E&M: BS Dist Complete Ready for Testing
PCB - Ceiling	
SOUTH - Gridline J-G	
ABW-02-56040	PCB(CL) ABWF: Internal baffle South - Row 2
ABW-02-56070	PCB(CL) ABWF: External baffle South - Row 1&2
ABW-02-56100	PCB(CL) ABWF: Cleaning & Inspection Sth - Row 1&2
MEP-02-56040	PCB(CL) E&M: Works Row 1&2 Works
MIDDLE - Gridline G-E	
ABW-02-56050	PCB(CL) ABWF: Internal baffle Middle - Row 3
ABW-02-56080	PCB(CL) ABWF: External baffle Middle - Row 3
ABW-02-56110	PCB(CL) ABWF: Cleaning & Inspection Middle - Row 3
MEP-02-56050	PCB(CL) E&M: Works Row 3 Works
MEP-02-56080	PCB(CL) E&M: Service Column Connected and BS Works
NORTH - Gridline E-B	
ABW-02-56014	PCB(CL) ABWF: Facade East/West Completion Nth
ABW-02-56020	PCB(CL) ABWF: Facade North Completion
ABW-02-56060	PCB(CL) ABWF: Internal baffle North - Row 4
ABW-02-56090	PCB(CL) ABWF: External baffle North - Row 4
ABW-02-56120	PCB(CL) ABWF: Cleaning & Inspection North - Row 4&5
MEP-02-56060	PCB(CL) E&M: Works Row 4 Works
MEP-02-56070	PCB(CL) E&M: Works Row 5 Works
Facade	
Façade - Window Wall to Cabins	
Solar Shading Louvre & Glass Cladding to Cabins	
East Elevation	
Solar Shades	
PCB-XX-0500	Install Solar Shades above Cabin 4
PCB-XX-540	Install Solar Shades above Cabin 5
PCB-XX-550	Install Solar Shades above Cabin 6
West Elevation	
Solar Shades	
PCB-XX-0490	Install Solar Shades above Cabin 1
PCB-XX-520	Install Solar Shades above Cabin 2
PCB-XX-530	Install Solar Shades above Cabin 3
Southern Drop-Off Area	
Southern Drop off Area - Decking	
PCB-16-520-28	DoA - JV Temporary Occupy Drop Off Deck for Office
Road & Drainage Works	
PCB-16-550	DOA - Road and Drainage works (Upper deck)
PCB-16-770	DOA - Cleaning and Snagging (Upper deck)
PCB-16-850	Complete Section VII - Elevated drop-off area (Contract 770 days +263 days)
PCB-16-890	DOA - Construct 5no Steel Covered Walkways (Upper deck)
PCB-16-900	DOA - Parapets, Steel Ballustrades (Upper deck)
PCB-16-910	DOA - Road Markings and Signage (Upper deck)
PCB-16-930	DOA - Kurbing and Pedestrian Walkways (Upper deck)
Southern Footbridge Links	
South Footbridge 4	
PCB-16-840	SFB4 - Erect glass balustrade and complete remaining works
South Footbridge 3	
PCB-16-810	SFB3 - Erect glass balustrade and complete remaining works
South Footbridge 2	



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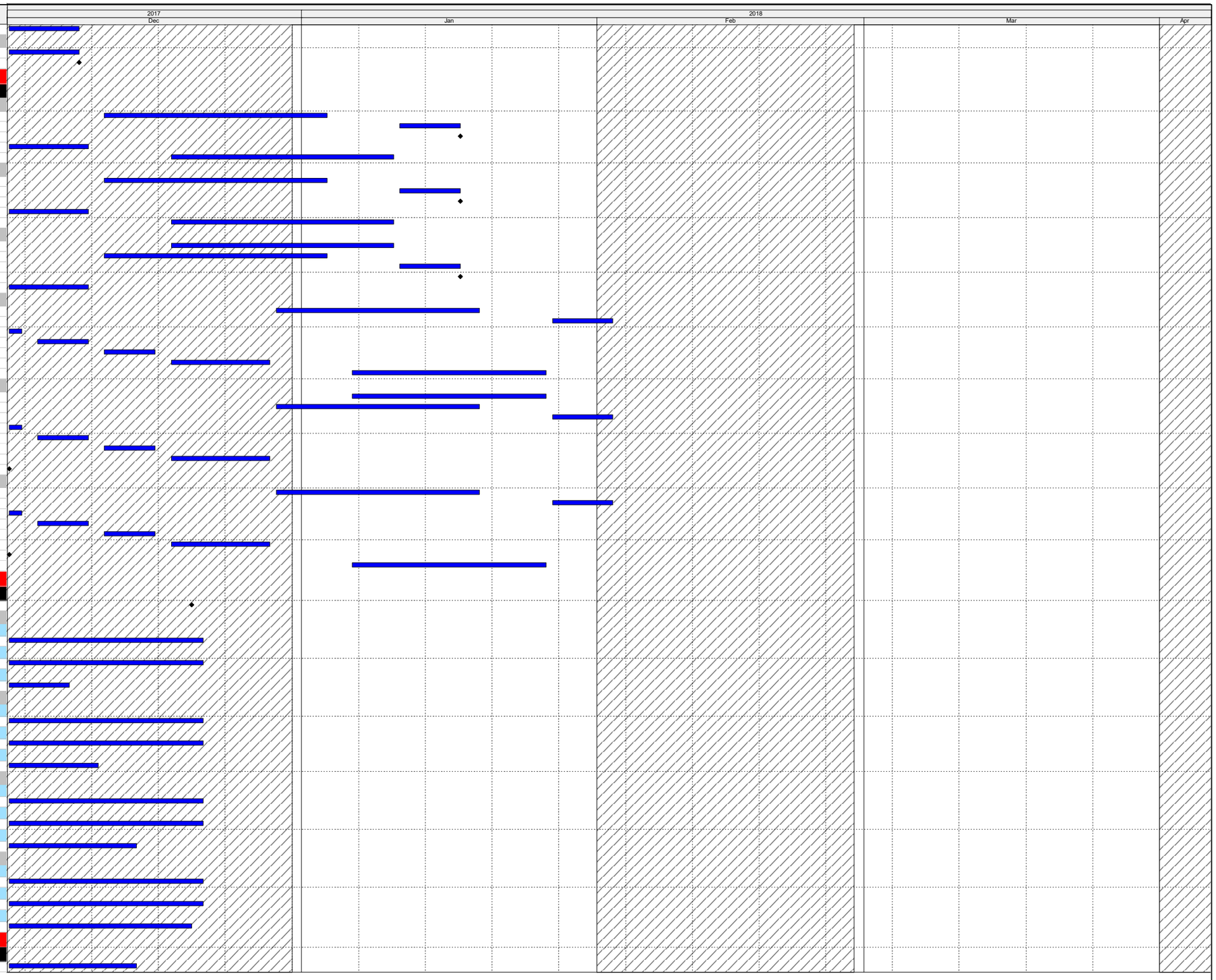
Activity ID	Activity Name
PCB-16-760	SFB2 - Erect glass balustrade and complete remaining works
South Footbridge 1	
PCB-16-720	SFB1 - Erect glass balustrade and complete remaining works
PCB-16-940	Complete Section VII - Southern Footbridges (Contract 770 days +263 days)
C&ED Observation Guard Booth	
Structures	
South PTI COB06	
PCB-05-1530	OGB(S) - ABWF Works
PCB-05-1540	OGB(S) - T&C, Final Inspection
PCB-05-1550	Completion of Section VII - Guard Booths (Contract 770 days +263 days)
PCB-05-1590	OGB(S) - Construct Steel Columns & Roof
PCB-05-1610	OGB(S) - MEP Works
South PTI COB07	
PCB-05-1720	OGB(S) - ABWF Works
PCB-05-1730	OGB(S) - T&C, Final Inspection
PCB-05-1740	Completion of Section VII - Guard Booths (Contract 770 days +263 days)
PCB-05-1780	OGB(S) - Construct Steel Columns & Roof
PCB-05-1800	OGB(S) - MEP Works
South PTI COB08	
PCB-05-1700	OGB(S) - MEP Works
PCB-05-1810	OGB(S) - ABWF Works
PCB-05-1820	OGB(S) - T&C, Final Inspection
PCB-05-1830	Completion of Section VII - Guard Booths (Contract 770 days +263 days)
PCB-05-1870	OGB(S) - Construct Steel Columns & Roof
North PTI COB03	
PCB-05-1620	OGB(N) - ABWF Works
PCB-05-1630	OGB(N) - T&C, Final Inspection
PCB-05-1640	OGB(N) - Site Suvey and Setting out
PCB-05-1650	OGB(N) - Construct Footings
PCB-05-1660	OGB(N) - Construct Ground Slab
PCB-05-1670	OGB(N) - Construct Steel Columns & Roof
PCB-05-1710	OGB(N) - MEP Works
North PTI COB04	
PCB-05-1950	OGB(N) - MEP Works
PCB-05-2040	OGB(N) - ABWF Works
PCB-05-2050	OGB(N) - T&C, Final Inspection
PCB-05-2060	OGB(N) - Site Suvey and Setting out
PCB-05-2070	OGB(N) - Construct Footings
PCB-05-2080	OGB(N) - Construct Ground Slab
PCB-05-2090	OGB(N) - Construct Steel Columns & Roof
PCB-05-2100	Complete Northern Facade and NFB Piers
North PTI COB05	
PCB-05-1880	OGB(N) - ABWF Works
PCB-05-1890	OGB(N) - T&C, Final Inspection
PCB-05-1900	OGB(N) - Site Suvey and Setting out
PCB-05-1910	OGB(N) - Construct Footings
PCB-05-1920	OGB(N) - Construct Ground Slab
PCB-05-1930	OGB(N) - Construct Steel Columns & Roof
PCB-05-1940	Complete Northern Facade and NFB Piers
PCB-05-2110	OGB(N) - MEP Works
Northern Footbridge Links	
North Footbridges	
PCB-03-740	Completion of Section VIII - Northern Footbridges (Contract 950 days +263 days)
North Footbridge 4	
Stage 1 - PCB to P2	
PCB-03-2730	NFB4 - Complete at Grade works under bridge footprint
Stage 2 - P2 to P1	
PCB-03-2890	NFB4 - Complete at Grade works under bridge footprint
Stage 3 - P1 to Abutment	
PCB-03-2900	NFB4 - Complete Northern Footbridge P1 to Abutment including stripping
North Footbridge 3	
Stage 1 - PCB to P2	
PCB-03-2740	NFB3 - Complete at Grade works under bridge footprint
Stage 2 - P2 to P1	
PCB-03-3150	NFB3 - Complete at Grade works under bridge footprint
Stage 3 - P1 to Abutment	
PCB-03-3160	NFB3 - Complete Northern Footbridge P1 to Abutment including stripping
North Footbridge 2	
Stage 1 - PCB to P2	
PCB-03-2750	NFB2 - Complete at Grade works under bridge footprint
Stage 2 - P2 to P1	
PCB-03-3890	NFB2 - Complete at Grade works under bridge footprint
Stage 3 - P1 to Abutment	
PCB-03-3900	NFB2 - Complete Northern Footbridge P1 to Abutment including stripping
North Footbridge 1	
Stage 1 - PCB to P2	
PCB-03-2760	NFB1 - Complete at Grade works under bridge footprint
Stage 2 - P2 to P1	
PCB-03-3630	NFB1 - Complete at Grade works under bridge footprint
Stage 3 - P1 to Abutment	
PCB-03-3640	NFB1 - Complete Northern Footbridge P1 to Abutment including stripping
Generator Set Building	
ABWF & BS / MEP / E&M Works	
PCB-07-1080	GSB - Install Stainless Steel Facade Greenery System



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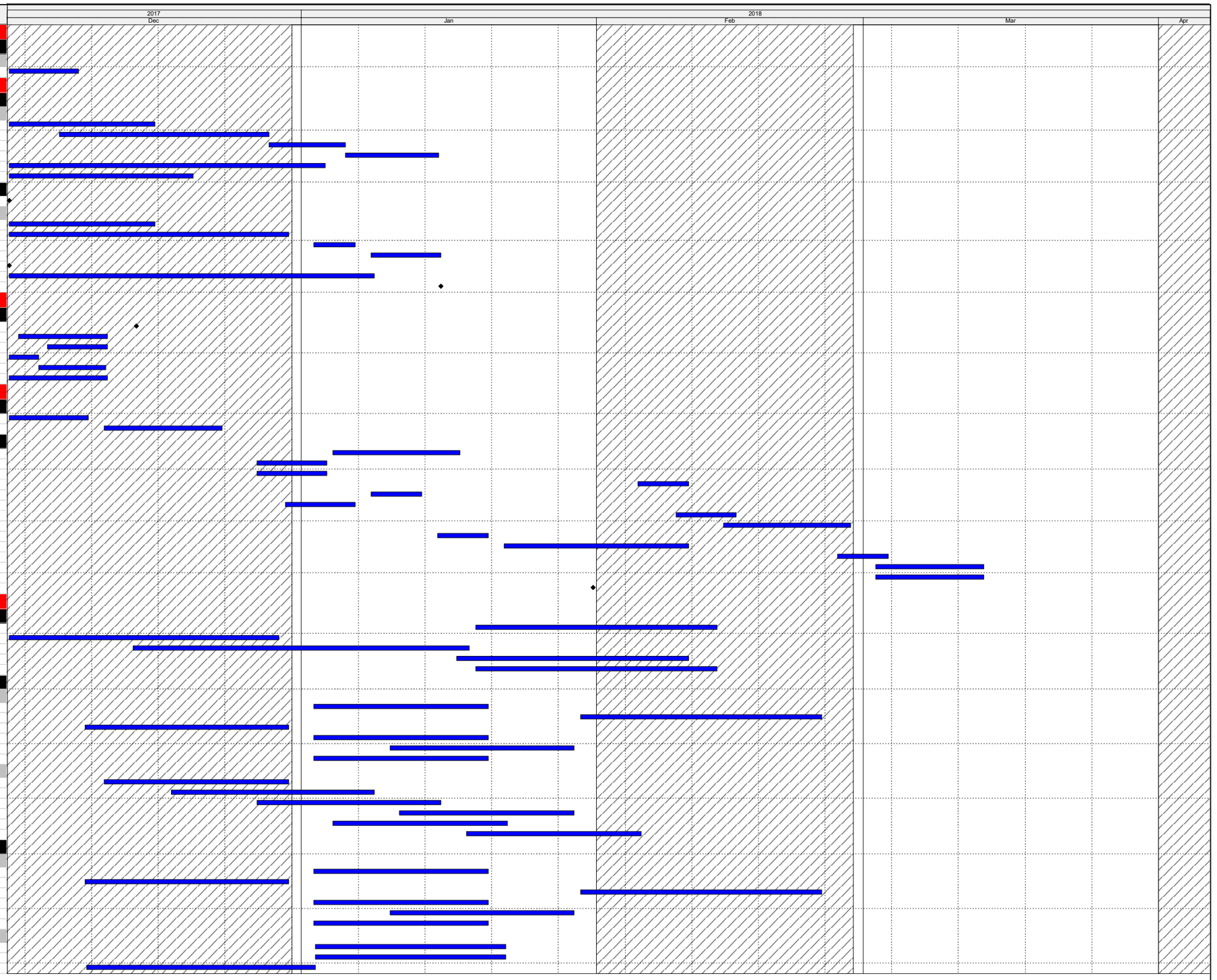
HKMZB HKBCF - Passenger Clearance Building

Date	Revision	Checked	Approved

Activity ID	Activity Name
Seawater Pump House	
ABWF & BS / MEP / E&M Works	
Ground Floor Level	
PCB-13A-680	SWP - ABWF Works to Ground Floor Rooms(Incl FS)
Vertical Circulation Structures	
East Vertical Circulation	
ABWF/MEP	
ABW-02-50336	EVC - ABWF : Work Degree 1 to 3 EVC Structure
MEP-02-50336	EVC - E&M : Work Degree 1 to 3 EVC Structure
MEP-02-50338	EVC - E&M : Initial Commissioning (Temp power)
MEP-02-50339	EVC - E&M : Final Commissioning (Perm Power)
MEP-02-50365	EVC - Escalator E-01 & E-02 Degree 1 to 3
MEP-02-70644	EVC - Liftshaft 9 : Lift Install
West Vertical Circulation	
PCB-02-A9890	WVC - Earliest Commencement of ABWF/MEP to WVC
ABWF/MEP	
ABW-02-50333	WVC - ABWF : Work Degree 1 to 3 WVC Structure
MEP-02-50333	WVC - E&M :A Work Degree 1 to 3 WVC Structure
MEP-02-50343	WVC - E&M : Initial Commissioning (Temp power)
MEP-02-50353	WVC - E&M : Final Commissioning (Perm Power)
MEP-02-70694	WVC - Liftshaft 8 : Lift shaft complete/Handover
MEP-02-70704	WVC - Liftshaft 8 : Lift Install
PCB-02-510	Completion of Section VII - WVC and EVC (Contract 770 days +263 days)
Refuse Collection Point - Refuse Storage and Material Recovery Cha	
ABWF & BS / MEP / E&M Works	
PCB-06-1010	Completion of Section VIII - Refuse Collection Point (Contract 950 days +263 days)
PCB-06-1020	RCP - Installation of Steel Louvers and Frames
PCB-06-1050	RCP - Final Painting (3 Coats)
PCB-06-1060	RCP - Roller Shutter Header Box Installation
PCB-06-1070	RCP - Roller Shutter Steel Curtain Installation
PCB-06-1110	RCP - BS/MEP/E&M Works
Public Toilets at South PTI	
RC Structures	
PCB-04-140	PT - Construct Wall & Roof floor
PCB-04-260	PT - Cure and Strip Roof Floor
ABWF & BS Works	
PCB-04-150	PT - E&M installation works
PCB-04-170	PT - Steel frame for Blockwall installation
PCB-04-180	PT - Blockwall Installation
PCB-04-190	PT - Screeding Works
PCB-04-200	PT - Rendering
PCB-04-210	PT - Ceiling Painting
PCB-04-220	PT - Wall Tiling
PCB-04-230	PT - Floor Skirting and Tiling
PCB-04-240	PT - Sanitaryware Installation
PCB-04-250	PT - Plumbing and drainage connections
PCB-04-270	PT - Install Doors and Windows
PCB-04-280	PT - Final Painting
PCB-04-290	PT - Snagging and remedials
PCB-05-1510	Completion of Section VIII - Public Toilet (Contract 950 days +263 days)
External At Grade Finishes Works	
South	
PCB-19-100	PCB - Southern Soft Landscape Works
PCB-19-110	PCB - Install Natural Granite Pavers and Tactiles
PCB-19-120	PCB - Install Pre-cast Concrete Pavers
PCB-19-140	PCB - Install External Furniture, Cleaning, Snagging
PCB-19-90	PCB - Southern Hard Landscape Works
East	
Gridline J to F	
PCB-19-150	PCB - Install Pre-cast Concrete Pavers
PCB-19-170	PCB - Cleaning, Snagging
PCB-19-180	PCB - Complete Roads and Paving to PCB East
PCB-19-270	PCB - Eastern Hard Landscape Works
PCB-19-280	PCB - Eastern Soft Landscape Works
PCB-19-80	PCB - External areas railing, fencing, beam barrier, bollard and Signage (East)
Gridline F to C	
PCB-19-690	PCB - Complete Roads and Paving to PCB East
PCB-19-700	PCB - Install Pre-cast Concrete Pavers
PCB-19-710	PCB - Eastern Hard Landscape Works
PCB-19-720	PCB - Eastern Soft Landscape Works
PCB-19-730	PCB - External areas railing, fencing, beam barrier, bollard and Signage (East)
PCB-19-740	PCB - Cleaning, Snagging
West	
Gridline J to F	
PCB-19-190	PCB - Install Pre-cast Concrete Pavers
PCB-19-200	PCB - Complete Roads and Paving to PCB West
PCB-19-210	PCB - Cleaning, Snagging
PCB-19-300	PCB - Western Hard Landscape Works
PCB-19-310	PCB - Western Soft Landscape Works
PCB-19-620	PCB - External areas railing, fencing, beam barrier, bollard and Signage (West)
Gridline F to C	
PCB-19-360	PCB - External areas railing, fencing, beam barrier, bollard and Signage (West)
PCB-19-560	PCB - Install Pre-cast Concrete Pavers
PCB-19-570	PCB - Complete Roads and Paving to PCB West



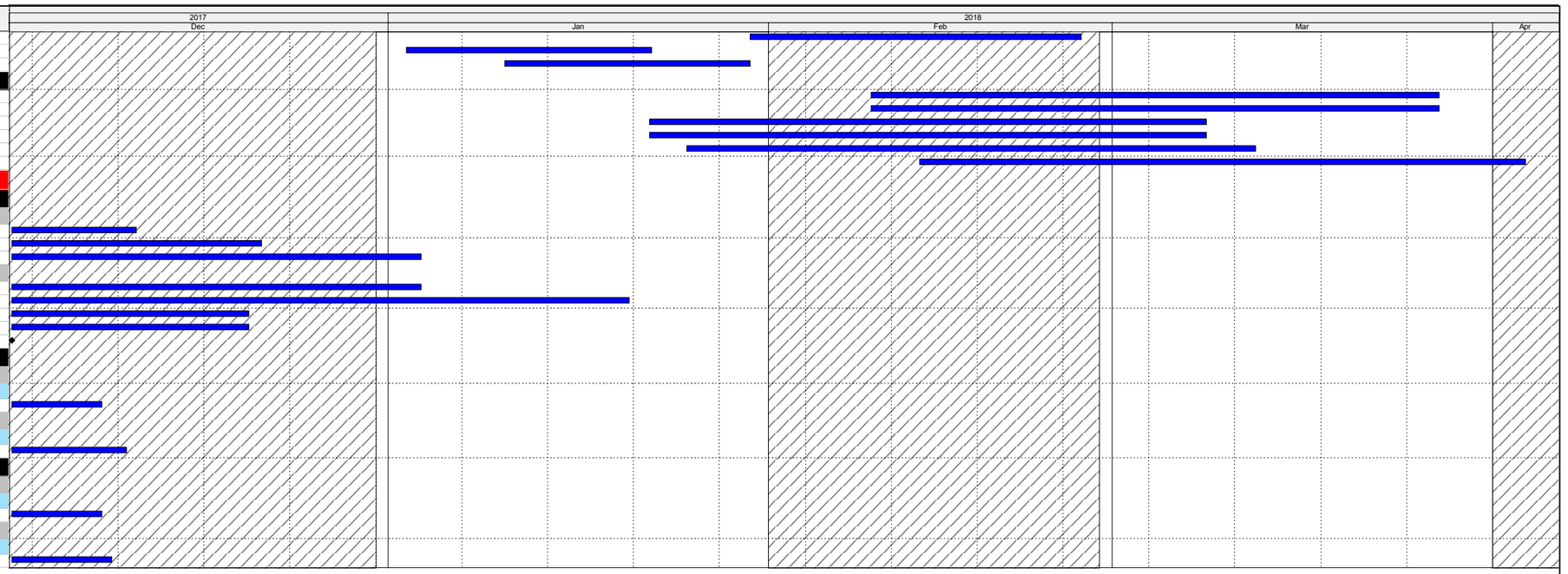
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Three Month Rolling Programme

HKMZB HKBCF - Passenger Clearance Building

Date	Revision	Checked	Approved

Activity ID	Activity Name
PCB-19-580	PCB - Cleaning, Snagging
PCB-19-590	PCB - Western Hard Landscape Works
PCB-19-600	PCB - Western Soft Landscape Works
North	
PCB-19-230	PCB - Install Natural Granite Pavers and Tactiles
PCB-19-240	PCB - Install Pre-cast Concrete Pavers
PCB-19-260	PCB - Complete Roads and Paving to PCB North EVA
PCB-19-320	PCB - Hard Landscape Works
PCB-19-330	PCB - Soft Landscape Works
PCB-19-750	PCB - Railing, fencing, beam barrier, bollard and Signage (North)
Underground Utilities Installation	
NORTH	
Pipework	
PCB-11-0010	Stormwater Drainage South of BC (568m) (Precast, uPVC and DI)
PCB-11-40	Stormwater Drainage North of BC (509m) (Precast, uPVC and DI) North
PCB-12-50	Fresh Watermains North of BC (400m) (Polyethylene Pipe 315mm) North
Ductwork	
PCB-18-0010	Utilities and Telecom Ducts (2000m) (uPVC) North (After Surcharge)
PCB-18-0030	Road Lighting Ducts South of PTI (1200m) North
PCB-18-0040	TCSS Ductwork (450m) North
PCB-18-50	LV and ELV Cable Ducts South of Box Culvert (1500m) North
PCB-19-810	PCB - Complete sheetpile Platform for Footbridge 4
EAST	
Gridline J to F	
Utilties	
PCB-11-20	Utilites, Drainage and Ductwork Installation East GL J to F
Gridline F to C	
Pipework	
PCB-11-70	Utilites, Drainage and Ductwork Installation East GL F to C
WEST	
Gridline J to F	
Utilties	
PCB-11-10	Utilites, Drainage and Ductwork Installation West GL J to F
Gridline F to C	
Utilties	
PCB-11-80	Utilites, Drainage and Ductwork Installation East GL F to C



Actual Work
Remaining Work
Critical Remaining Work
Milestone

Three Month Rolling Programme

HKMZB HKBCF - Passenger Clearance Building

Date	Revision	Checked	Approved

Activity ID	Activity Name
	Hong Kong-Zhuhai_Macao Bridge Hong Kong Boundary Crossing F
	Key Dates
	Interface Activities
	Site and Facility Inspection
JS1200	Pre Site and Facility Inspection by Contractor at Location 4 - Deg2
JS1210	Joint Site and Facility Inspection with Interface Contractor at Location 4 - Deg2
JS1620	Pre Site and Facility Inspection by Contractor at Location 14 - Deg2
JS1630	Joint Site and Facility Inspection with Interface Contractor at Location 14 - Deg2
JS1760	Pre Site and Facility Inspection by Contractor at Location 18 - Deg1
JS1770	Joint Site and Facility Inspection with Interface Contractor at Location 18 - Deg1
JS1780	Pre Site and Facility Inspection by Contractor at Location 18 - Deg2
JS1790	Joint Site and Facility Inspection with Interface Contractor at Location 18 - Deg2
	Access Dates
AD1000	Location 1(PCB (001) Basement)-Deg1 (270d)
AD1010	Location 1(PCB (001) Basement)-Deg2 (380d)
AD1020	Location 1(PCB (001) ELV Room (Grid Line E3))-Deg1 (270d)
AD1030	Location 1(PCB (001) ELV Room (Grid Line E3))-Deg2 (380d)
AD1040	Location 2(PCB (001) First Floor Main Server Room)-Deg1 (330d)
AD1050	Location 2(PCB (001) First Floor Main Server Room)-Deg2 (380d)
AD1060	Location 2(PCB (001) First Floor Main Server Room) - For Server Installation - Deg2 (:
AD1070	Location 2(PCB (001) Ground Floor ELV Room (Grid Line E3)) - Deg1 (330d)
AD1080	Location 2(PCB (001) Ground Floor DOH Port Health Control Room (Grid Line BD5)) -
AD1090	Location 2(PCB (001) Ground Floor DOH Port Health Control Room (Grid Line BD5)) -
AD1130	Location 3(Inbd Cargo Exam Bldg (037) Platform Control Room)-Deg2 (500d)
AD1150	Location 3(Inbd Cargo Exam Bldg (037) Inspector Offices 128,129,130,131,128,129,14
AD1170	Location 3a(Inbd Cargo Exam Bldg (037) ROCARS Room)-Deg2 (480d)
AD1190	Location 3a(Inbd Cargo Exam Bldg (037) Main Server Room)-Deg2 (480d)
AD1200	Location 3a(Inbd Cargo Exam Bldg (037) Main Server Room) - For Server installation -
AD1220	Location 4(Outbd Cargo Exam Bldg (023))-Deg2 (680d)
AD1240	Location 4a(Outbd Cargo Exam Bldg (023))-Deg2 (630d)
AD1270	Location 6(Common Utility Enclosure & Staff Subway)-Deg1 (400d)
AD1290	Location 7(Common Utility Enclosure & Staff Subway)-Deg1 (270d)
AD1300	Location 8(Inbd Private Car Annex (025))-Deg1 (430d)
AD1310	Location 8(Inbd Private Car Annex (025))-Deg2 (580d)
AD1320	Location 8(Inbd Private Car Annex (025) Canopy)-Deg1 (430d)
AD1330	Location 8(Inbd Private Car Annex (025) Canopy)-Deg2 (580d)
AD1340	Location 9(Outbd Private Car Annex (032))-Deg1 (520d)
AD1350	Location 9(Outbd Private Car Annex (032))-Deg2 (660d)
AD1360	Location 9(Outbd Private Car Annex (032) Canopy)-Deg1 (520d)
AD1370	Location 9(Outbd Private Car Annex (032) Canopy)-Deg2 (660d)
AD1501	Location 12(Inbd Private Car Kiosks(027))-Deg1 (400d) Phase 2
AD1510	Location 12(Inbd Private Car Kiosks(027))-Deg2 (480d) Phase 1
AD1511	Location 12(Inbd Private Car Kiosks(027))-Deg2 (480d) Phase 2
AD1521	Location 12(Inbd Private Car Kiosks(027) Canopy)-Deg1 (400d) Phase 2

Programme No.: HZMB-DWP
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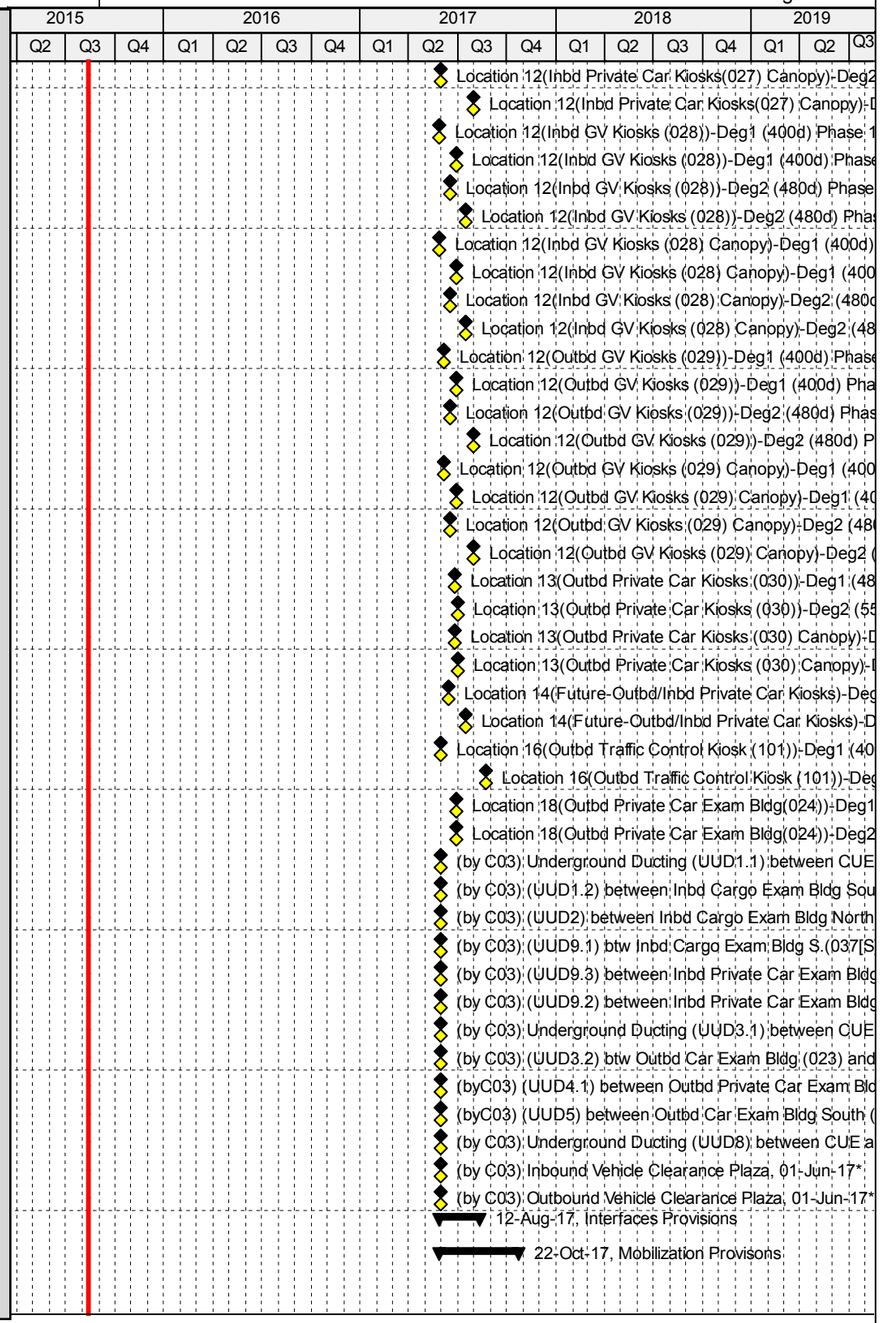
Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities - Automatic Vehicle Clearance Support System (AVCSS)

Date	Revision	Checked	Approved
14-Nov-16	Rev.: 0	WC	LC
10-Mar-17	Rev.: 1.0a	WC	LC
5-May-17	Rev.: 1.0b	WC	LC

Activity ID	Activity Name
AD1530	Location 12(Inbd Private Car Kiosks(027) Canopy)-Deg2 (480d) Phase 1
AD1531	Location 12(Inbd Private Car Kiosks(027) Canopy)-Deg2 (480d) Phase 2
AD1540	Location 12(Inbd GV Kiosks (028))-Deg1 (400d) Phase 1
AD1541	Location 12(Inbd GV Kiosks (028))-Deg1 (400d) Phase 2
AD1550	Location 12(Inbd GV Kiosks (028))-Deg2 (480d) Phase 1
AD1551	Location 12(Inbd GV Kiosks (028))-Deg2 (480d) Phase 2
AD1560	Location 12(Inbd GV Kiosks (028) Canopy)-Deg1 (400d) Phase 1
AD1561	Location 12(Inbd GV Kiosks (028) Canopy)-Deg1 (400d) Phase 2
AD1570	Location 12(Inbd GV Kiosks (028) Canopy)-Deg2 (480d) Phase 1
AD1571	Location 12(Inbd GV Kiosks (028) Canopy)-Deg2 (480d) Phase 2
AD1580	Location 12(Outbd GV Kiosks (029))-Deg1 (400d) Phase 1
AD1581	Location 12(Outbd GV Kiosks (029))-Deg1 (400d) Phase 2
AD1590	Location 12(Outbd GV Kiosks (029))-Deg2 (480d) Phase 1
AD1591	Location 12(Outbd GV Kiosks (029))-Deg2 (480d) Phase 2
AD1600	Location 12(Outbd GV Kiosks (029) Canopy)-Deg1 (400d) Phase 1
AD1601	Location 12(Outbd GV Kiosks (029) Canopy)-Deg1 (400d) Phase 2
AD1610	Location 12(Outbd GV Kiosks (029) Canopy)-Deg2 (480d) Phase 1
AD1611	Location 12(Outbd GV Kiosks (029) Canopy)-Deg2 (480d) Phase 2
AD1620	Location 13(Outbd Private Car Kiosks (030))-Deg1 (480d) Phase 1
AD1630	Location 13(Outbd Private Car Kiosks (030))-Deg2 (550d) Phase 1
AD1640	Location 13(Outbd Private Car Kiosks (030) Canopy)-Deg1 (480d) Phase 1
AD1650	Location 13(Outbd Private Car Kiosks (030) Canopy)-Deg2 (550d) Phase 1
AD1660	Location 14(Future-Outbd/Inbd Private Car Kiosks)-Deg1 (610d)
AD1670	Location 14(Future-Outbd/Inbd Private Car Kiosks)-Deg2 (680d)
AD1700	Location 16(Outbd Traffic Control Kiosk (101))-Deg1 (400d)
AD1710	Location 16(Outbd Traffic Control Kiosk (101))-Deg2 (480d)
AD1740	Location 18(Outbd Private Car Exam Bldg(024))-Deg1 (-)
AD1750	Location 18(Outbd Private Car Exam Bldg(024))-Deg2 (670d)
AD1780	(by C03) Underground Ducting (UUD1.1) between CUE and Inbd Cargo Exam Bldg (0
AD1790	(by C03) (UUD1.2) between Inbd Cargo Exam Bldg South (037[S]) and DOH Cargo C
AD1800	(by C03) (UUD2) between Inbd Cargo Exam Bldg North (037[N]) and Inbd Vehicle Clea
AD1810	(by C03) (UUD9.1) btw Inbd Cargo Exam Bldg S.(037[S]) & Inbd PC Exam Bldg(033) &
AD1820	(by C03) (UUD9.3) between Inbd Private Car Exam Bldg (033) and Inbd Vehicle Clearа
AD1830	(by C03) (UUD9.2) between Inbd Private Car Exam Bldg (033) and Inbd Vehicle Clearа
AD1840	(by C03) Underground Ducting (UUD3.1) between CUE to Outbd Cargo Exam Bldg (0
AD1850	(by C03) (UUD3.2) btw Outbd Car Exam Bldg (023) and Outbd PC Exam Bldg (024) a
AD1860	(byC03) (UUD4.1) between Outbd Private Car Exam Bldg (024) and Outbd Vehicle Cle
AD1870	(byC03) (UUD5) between Outbd Car Exam Bldg South (023[S]) and Outbd Vehicle Cle
AD1880	(by C03) Underground Ducting (UUD8) between CUE and Outbd PCA (032)
AD1910	(by C03) Inbound Vehicle Clearance Plaza
AD1920	(by C03) Outbound Vehicle Clearance Plaza
	Interfaces Provisions
	Mobilization Provisons
	WA4 Site Erection & Servicing



Programme No.: HZMB-DWP
Data Date: 14-Aug-15

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- Actual Work
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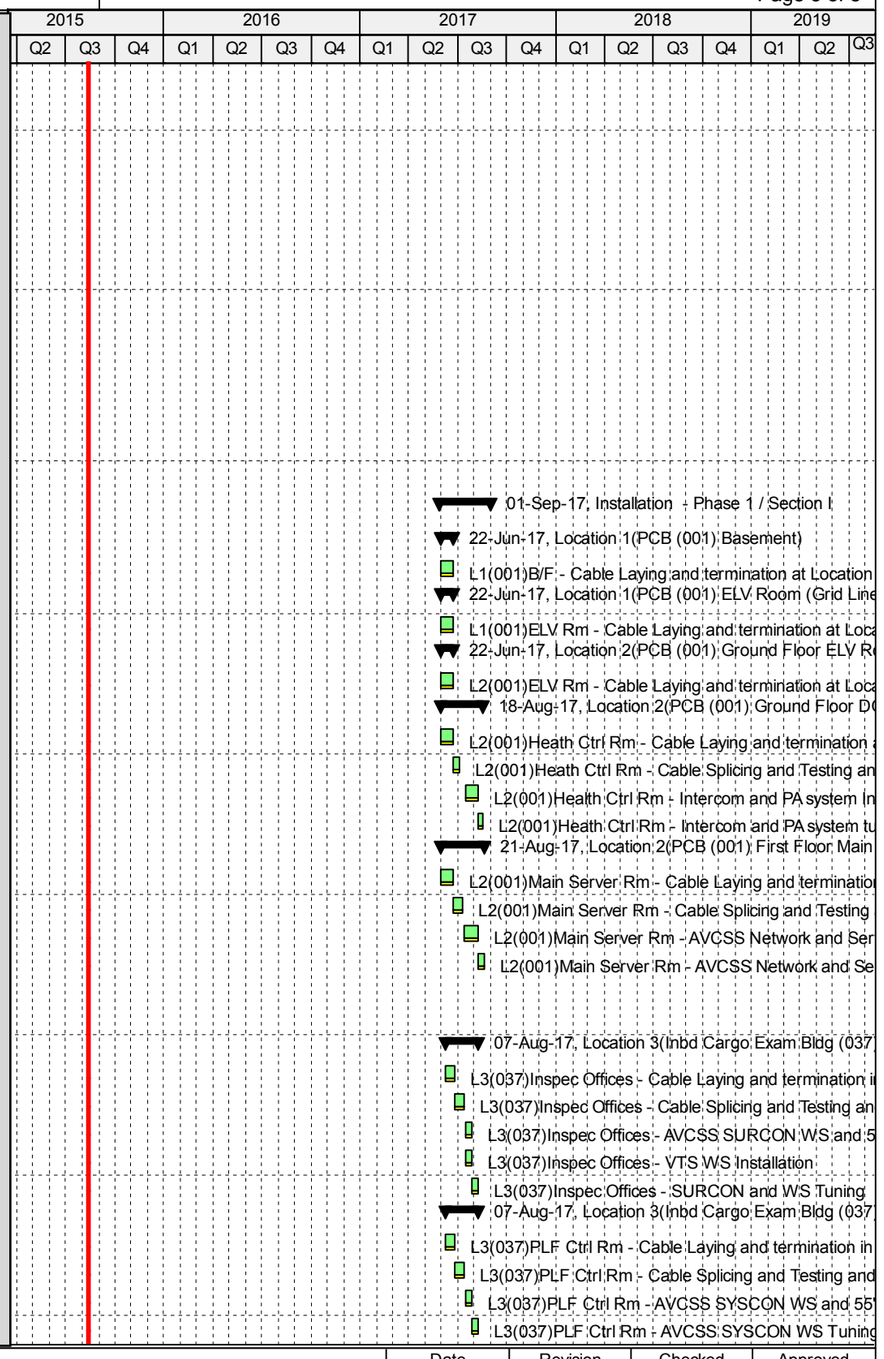
- summary

Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing
Facilities - Automatic Vehicle
Clearance Support System (AVCSS)

Date	Revision	Checked	Approved
14-Nov-16	Rev.: 0	WC	LC
10-Mar-17	Rev.: 1.0a	WC	LC
5-May-17	Rev.: 1.0b	WC	LC

Activity ID	Activity Name
	Detailed Design Specification
	Contruction Design and Management
	Supply/Manufacture Mock-up items
	Supply/Manufacture prototypes
	Software Design, Coding and Testing
	Coding
	Software System Inetgration
	Prototype & Software Simulation Tests
	Procurement - Phase 1 / Section I
	Supply/Manufacture products for FAT
	Factory Acceptance Test (FAT)
	Supply/Manufacture Equipment
	Delivery and Bench Acceptance Test for Phase 1/ Section I
	Installation - Phase 1 / Section I
	Location 1(PCB (001) Basement)
EM1920	L1(001)B/F - Cable Laying and termination at Location 1 and Location 2
	Location 1(PCB (001) ELV Room (Grid Line E3))
EM1940	L1(001)ELV Rm - Cable Laying and termination at Location 1 and Location 2
	Location 2(PCB (001) Ground Floor ELV Room (Grid Line E3))
EM1960	L2(001)ELV Rm - Cable Laying and termination at Location 1 and Location 2
	Location 2(PCB (001) Ground Floor DOH Port Health Control Room (Grid Line BD5))
EM1080	L2(001)Heath Ctrl Rm - Cable Laying and termination at Location 1 and Location 2
EM1100	L2(001)Heath Ctrl Rm - Cable Splicing and Testing and Labeling
EM1120	L2(001)Health Ctrl Rm - Intercom and PA system Installation
EM1140	L2(001)Heath Ctrl Rm - Intercom and PA system tuning
	Location 2(PCB (001) First Floor Main Server Room)
EM1000	L2(001)Main Server Rm - Cable Laying and termination at Location 1 and Location 2
EM1020	L2(001)Main Server Rm - Cable Splicing and Testing and Labeling
EM1040	L2(001)Main Server Rm - AVCSS Network and Server Installation
EM1060	L2(001)Main Server Rm - AVCSS Network and Server Tuning
	Location 3(Inbd Cargo Exam Bldg (037) MDF Room)
	Location 3(Inbd Cargo Exam Bldg (037) ELV Room)
	Location 3(Inbd Cargo Exam Bldg (037) Inspector Offices 128,129,130,131,128,129,14
EM2020	L3(037)Inspec Offices - Cable Laying and termination in Location 3 and Location 3a
EM2040	L3(037)Inspec Offices - Cable Splicing and Testing and Labeling
EM2060	L3(037)Inspec Offices - AVCSS SURCON WS and 55" LCD Installation
EM2080	L3(037)Inspec Offices - VTS WS Installation
EM2100	L3(037)Inspec Offices - SURCON and WS Tuning
	Location 3(Inbd Cargo Exam Bldg (037) Platform Control Room)
EM1160	L3(037)PLF Ctrl Rm - Cable Laying and termination in Location 3 and Location 3a
EM1180	L3(037)PLF Ctrl Rm - Cable Splicing and Testing and Labeling
EM1200	L3(037)PLF Ctrl Rm - AVCSS SYSCON WS and 55" TV Wall Installation
EM1220	L3(037)PLF Ctrl Rm - AVCSS SYSCON WS Tuning



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Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing
Facilities - Automatic Vehicle
Clearance Support System (AVCSS)

Date	Revision	Checked	Approved
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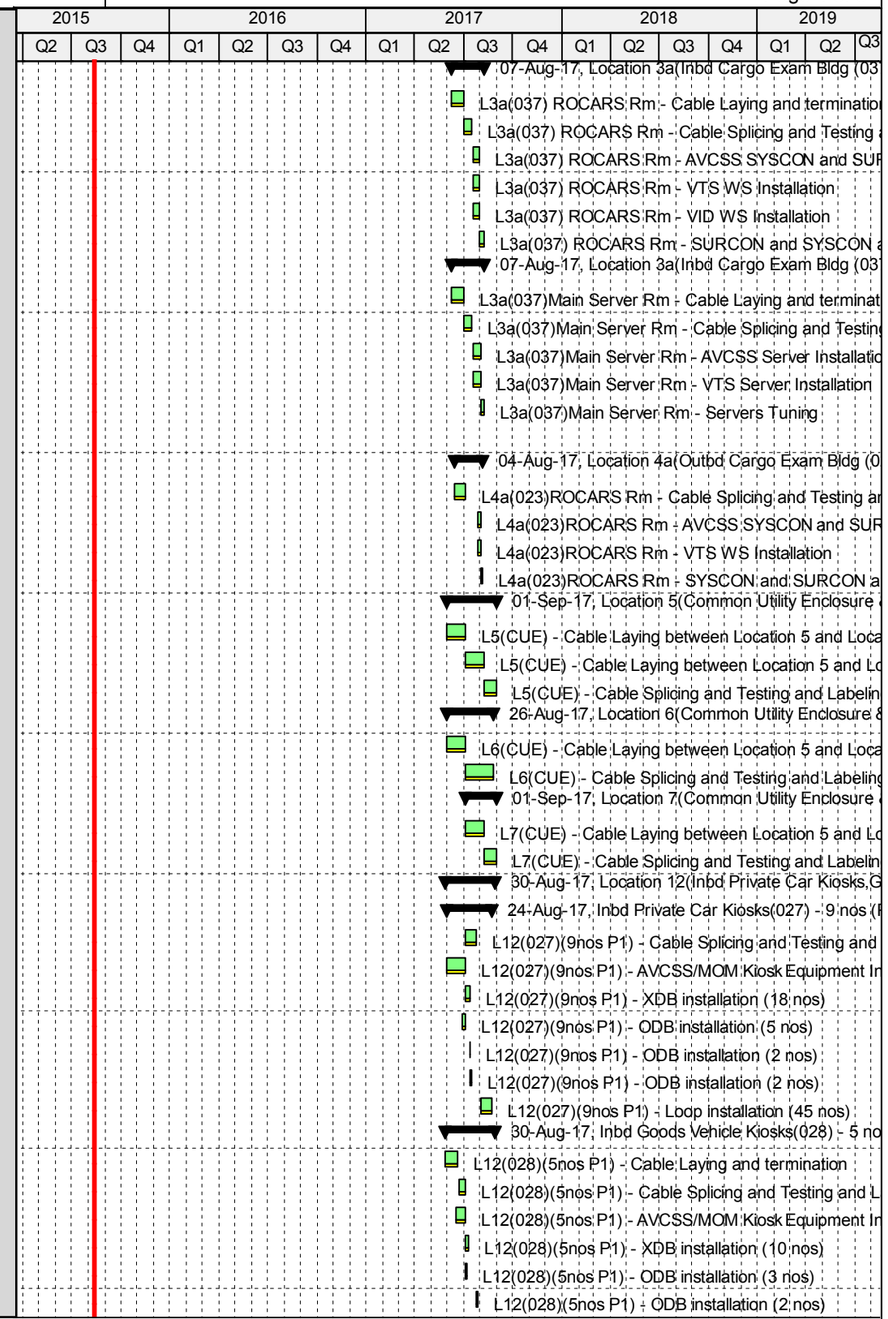
5-May-17	Rev.: 1.0b	WC	LC

Activity ID	Activity Name
Location 3a(Inbd Cargo Exam Bldg (037) ROCARS Room)	
EM1240	L3a(037) ROCARS Rm - Cable Laying and termination in Location 3 and Location 3a
EM1260	L3a(037) ROCARS Rm - Cable Splicing and Testing and Labeling
EM1280	L3a(037) ROCARS Rm - AVCSS SYSCON and SURCON and Intercom Installation
EM1300	L3a(037) ROCARS Rm - VTS WS Installation
EM1320	L3a(037) ROCARS Rm - VID WS Installation
EM1340	L3a(037) ROCARS Rm - SURCON and SYSCON and WS Tuning
Location 3a(Inbd Cargo Exam Bldg (037) Main Server Room)	
EM2120	L3a(037)Main Server Rm - Cable Laying and termination in Location 3 and Location 3a
EM2140	L3a(037)Main Server Rm - Cable Splicing and Testing and Labeling
EM2160	L3a(037)Main Server Rm - AVCSS Server Installation
EM2180	L3a(037)Main Server Rm - VTS Server Installation
EM2200	L3a(037)Main Server Rm - Servers Tuning
Location 4(Outbd Cargo Exam Bldg (023) MDF Room)	
Location 4a(Outbd Cargo Exam Bldg (023) ROCARS Room)	
EM2240	L4a(023)ROCARS Rm - Cable Splicing and Testing and Labeling
EM2260	L4a(023)ROCARS Rm - AVCSS SYSCON and SURCON and Intercom Installation
EM2280	L4a(023)ROCARS Rm - VTS WS Installation
EM2300	L4a(023)ROCARS Rm - SYSCON and SURCON and WS Tuning
Location 5(Common Utility Enclosure & Staff Subway)	
EM2341	L5(CUE) - Cable Laying between Location 5 and Location 6
EM2361	L5(CUE) - Cable Laying between Location 5 and Location 7
EM2380	L5(CUE) - Cable Splicing and Testing and Labeling
Location 6(Common Utility Enclosure & Staff Subway)	
EM2400	L6(CUE) - Cable Laying between Location 5 and Location 6
EM2420	L6(CUE) - Cable Splicing and Testing and Labeling
Location 7(Common Utility Enclosure & Staff Subway)	
EM2440	L7(CUE) - Cable Laying between Location 5 and Location 7
EM2460	L7(CUE) - Cable Splicing and Testing and Labeling
Location 12(Inbd Private Car Kiosks,GV Kiosks (027,028,029))	
Inbd Private Car Kiosks(027) - 9 nos (Phase 1)	
EM1500	L12(027)(9nos P1) - Cable Splicing and Testing and Labeling
EM1520	L12(027)(9nos P1) - AVCSS/MOM Kiosk Equipment Installation (9 nos)
EM1541	L12(027)(9nos P1) - XDB installation (18 nos)
EM1542	L12(027)(9nos P1) - ODB installation (5 nos)
EM1543	L12(027)(9nos P1) - ODB installation (2 nos)
EM1544	L12(027)(9nos P1) - ODB installation (2 nos)
EM1560	L12(027)(9nos P1) - Loop installation (45 nos)
Inbd Goods Vehicle Kiosks(028) - 5 nos (Phase 1)	
EM1620	L12(028)(5nos P1) - Cable Laying and termination
EM1640	L12(028)(5nos P1) - Cable Splicing and Testing and Labeling
EM1660	L12(028)(5nos P1) - AVCSS/MOM Kiosk Equipment Installation (5 nos)
EM1681	L12(028)(5nos P1) - XDB installation (10 nos)
EM1682	L12(028)(5nos P1) - ODB installation (3 nos)
EM1683	L12(028)(5nos P1) - ODB installation (2 nos)



Programme No.: HZMB-DWP
Data Date: 14-Aug-15

Actual Level of Effort
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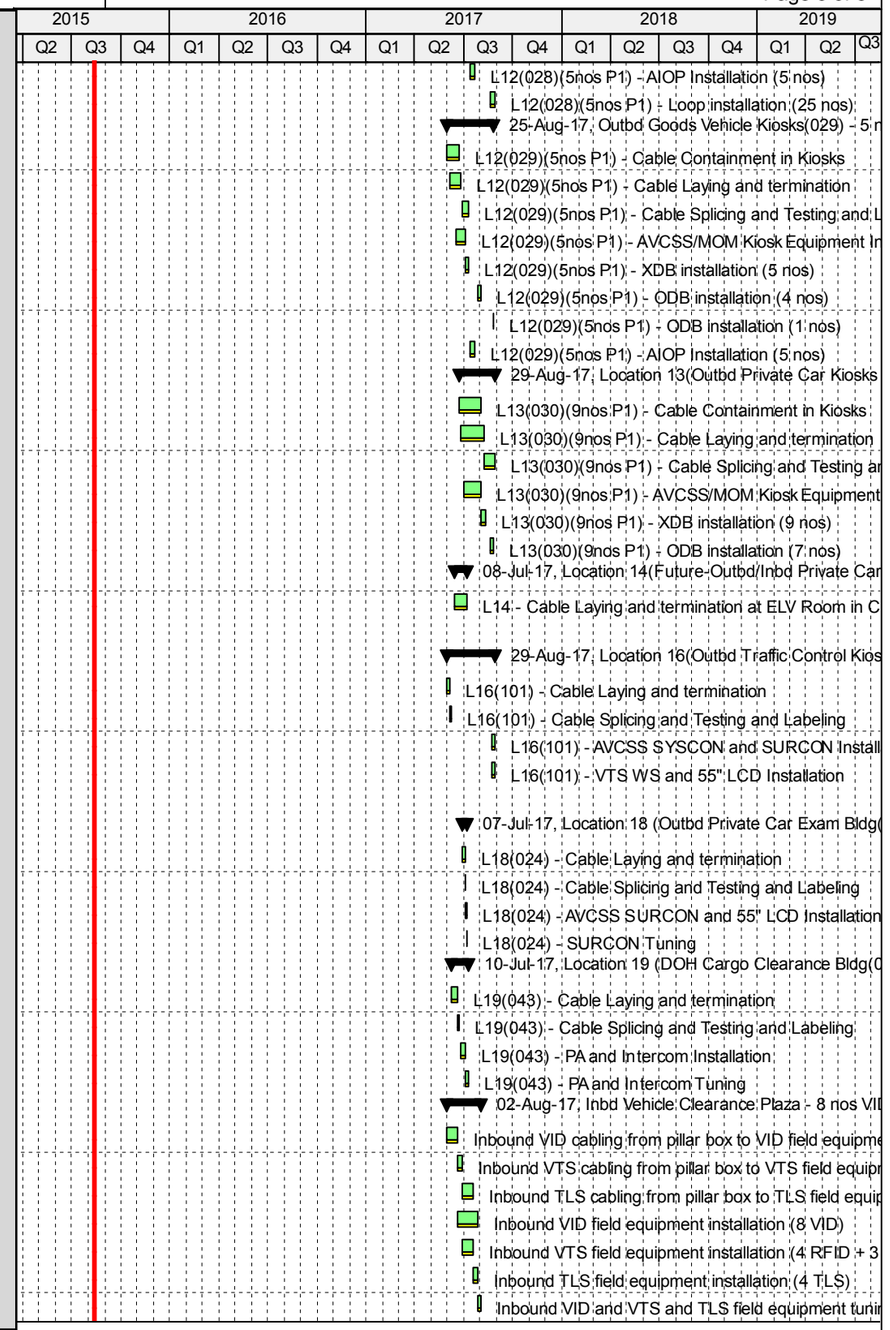
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing
Facilities - Automatic Vehicle
Clearance Support System (AVCSS)

Date	Revision	Checked	Approved
14-Nov-16	Rev.: 0	WC	LC
10-Mar-17	Rev.: 1.0a	WC	LC
5-May-17	Rev.: 1.0b	WC	LC

Activity ID	Activity Name
EM1700	L12(028)(5nos P1) - AIOP Installation (5 nos)
EM1720	L12(028)(5nos P1) - Loop installation (25 nos)
Outbd Goods Vehicle Kiosks(029) - 5 nos (Phase 1)	
EM1740	L12(029)(5nos P1) - Cable Containment in Kiosks
EM1760	L12(029)(5nos P1) - Cable Laying and termination
EM1780	L12(029)(5nos P1) - Cable Splicing and Testing and Labeling
EM1800	L12(029)(5nos P1) - AVCSS/MOM Kiosk Equipment Installation (5 nos)
EM1821	L12(029)(5nos P1) - XDB installation (5 nos)
EM1822	L12(029)(5nos P1) - ODB installation (4 nos)
EM1823	L12(029)(5nos P1) - ODB installation (1 nos)
EM1840	L12(029)(5nos P1) - AIOP Installation (5 nos)
Location 13(Outbd Private Car Kiosks (030)) - 9 nos (Phase 1)	
EM2520	L13(030)(9nos P1) - Cable Containment in Kiosks
EM2540	L13(030)(9nos P1) - Cable Laying and termination
EM2560	L13(030)(9nos P1) - Cable Splicing and Testing and Labeling
EM2580	L13(030)(9nos P1) - AVCSS/MOM Kiosk Equipment Installation (9 nos)
EM2601	L13(030)(9nos P1) - XDB installation (9 nos)
EM2602	L13(030)(9nos P1) - ODB installation (7 nos)
Location 14(Future-Outbd/Inbd Private Car Kiosks) - 6+6 nos	
EM1440	L14 - Cable Laying and termination at ELV Room in CUE
Location 15(Inbd Traffic Control Kiosk (100))	
Location 16(Outbd Traffic Control Kiosk (101))	
EM2760	L16(101) - Cable Laying and termination
EM2780	L16(101) - Cable Splicing and Testing and Labeling
EM2800	L16(101) - AVCSS SYSCON and SURCON Installation
EM2820	L16(101) - VTS WS and 55" LCD Installation
Location 17(Inbd Private Car Exam Bldg(033) Operational Office)	
Location 18 (Outbd Private Car Exam Bldg(024) Operational Office)	
EM2940	L18(024) - Cable Laying and termination
EM2960	L18(024) - Cable Splicing and Testing and Labeling
EM2980	L18(024) - AVCSS SURCON and 55" LCD Installation
EM3000	L18(024) - SURCON Tuning
Location 19 (DOH Cargo Clearance Bldg(043))	
EM1360	L19(043) - Cable Laying and termination
EM1380	L19(043) - Cable Splicing and Testing and Labeling
EM1400	L19(043) - PA and Intercom Installation
EM1420	L19(043) - PA and Intercom Tuning
Inbd Vehicle Clearance Plaza - 8 nos VID, 7 nos VTS, 4 nos TLS	
EM3020	Inbound VID cabling from pillar box to VID field equipment
EM3040	Inbound VTS cabling from pillar box to VTS field equipment
EM3060	Inbound TLS cabling from pillar box to TLS field equipment
EM3080	Inbound VID field equipment installation (8 VID)
EM3100	Inbound VTS field equipment installation (4 RFID + 3 Cameras)
EM3120	Inbound TLS field equipment installation (4 TLS)
EM3140	Inbound VID and VTS and TLS field equipment tuning



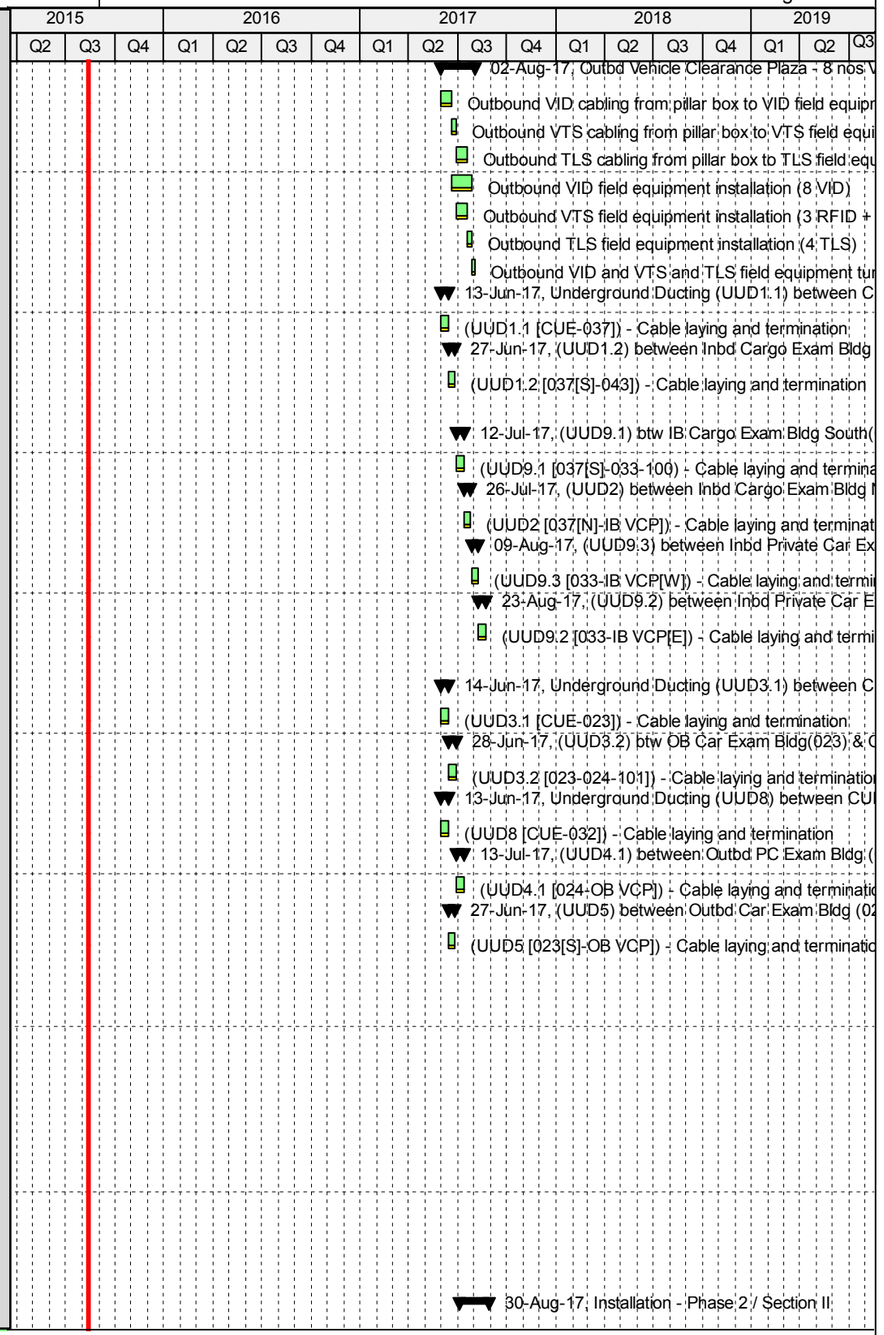
Programme No.: HZMB-DWP
Data Date: 14-Aug-15

Actual Level of Effort
Primary Baseline
Actual Work
Remaining Work
Critical Remaining Work
Baseline Milestone
Milestone
summary

Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities - Automatic Vehicle Clearance Support System (AVCSS)

Date	Revision	Checked	Approved
14-Nov-16	Rev.: 0	WC	LC
10-Mar-17	Rev.: 1.0a	WC	LC
5-May-17	Rev.: 1.0b	WC	LC

Activity ID	Activity Name
	Outbd Vehicle Clearance Plaza - 8 nos VID, 6 nos VTS, 4 nos TLS
EM3160	Outbound VID cabling from pillar box to VID field equipment
EM3180	Outbound VTS cabling from pillar box to VTS field equipment
EM3200	Outbound TLS cabling from pillar box to TLS field equipment
EM3220	Outbound VID field equipment installation (8 VID)
EM3240	Outbound VTS field equipment installation (3 RFID + 3 Cameras)
EM3260	Outbound TLS field equipment installation (4 TLS)
EM3280	Outbound VID and VTS and TLS field equipment tuning
	Underground Ducting (UUD1.1) between CUE and Inbd Cargo Exam Bldg (037)
UD1000	(UUD1.1 [CUE-037]) - Cable laying and termination
	(UUD1.2) between Inbd Cargo Exam Bldg South (037[S]) and DOH Cargo Clearance Bl
UD1060	(UUD1.2 [037[S]-043]) - Cable laying and termination
	Underground Ducting (UUD6) between CUE and Shuttle Bus Kiosk (006) and Inbd Priv
	(UUD9.1) btw IB Cargo Exam Bldg South(037[S]) & IB PC Exam Bldg(033) & IB Traffic
UD1040	(UUD9.1 [037[S]-033-100) - Cable laying and termination
	(UUD2) between Inbd Cargo Exam Bldg North (037[N]) to Inbd VCP
UD1010	(UUD2 [037[N]-IB VCP]) - Cable laying and termination
	(UUD9.3) between Inbd Private Car Exam Bldg (033) and Inbd Vehicle Clearance Plaza
UD1070	(UUD9.3 [033-IB VCP[W]) - Cable laying and termination
	(UUD9.2) between Inbd Private Car Exam Bldg (033) and Inbd Vehicle Clearance Plaza
UD1020	(UUD9.2 [033-IB VCP[E]) - Cable laying and termination
	Underground Ducting (UUD7) between PCB(001) and Inbd Coach Kiosks(010)
	Underground Ducting (UUD3.1) between CUE and Outbd Cargo Exam Bldg (023)
UD1030	(UUD3.1 [CUE-023]) - Cable laying and termination
	(UUD3.2) btw OB Car Exam Bldg(023) & OB PC Exam Bldg(024) & OB Traffic Control I
UD1050	(UUD3.2 [023-024-101]) - Cable laying and termination
	Underground Ducting (UUD8) between CUE and Outbd PCA (032)
UD1100	(UUD8 [CUE-032]) - Cable laying and termination
	(UUD4.1) between Outbd PC Exam Bldg (024) and Outbd Vehicle Clearance Plaza
UD1080	(UUD4.1 [024-OB VCP]) - Cable laying and termination
	(UUD5) between Outbd Car Exam Bldg (023[S]) and Outbd Vehicle Clearance Plaza
UD1090	(UUD5 [023[S]-OB VCP]) - Cable laying and termination
	Initial On-Site Test and Commissioning / Pre-SAT (Phase 1 / Section I)
	Site Acceptance Test (Phase 1 / Section I)
	Security Risk Assessment and Audit
	Operability Period Test (Phase 1 / Section I)
	Completion (Phase 1 /Section I)
	Training and Document (Phase 1 /Section I)
	Operation (Phase 1 /Section I)
	Engineering Support for Phase 1 / Section I
	Procurement - Phase 2 / Section II
	Delivery and Bench Acceptance Test for Phase 2/Section II
	Installation - Phase 2 / Section II



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Actual Level of Effort
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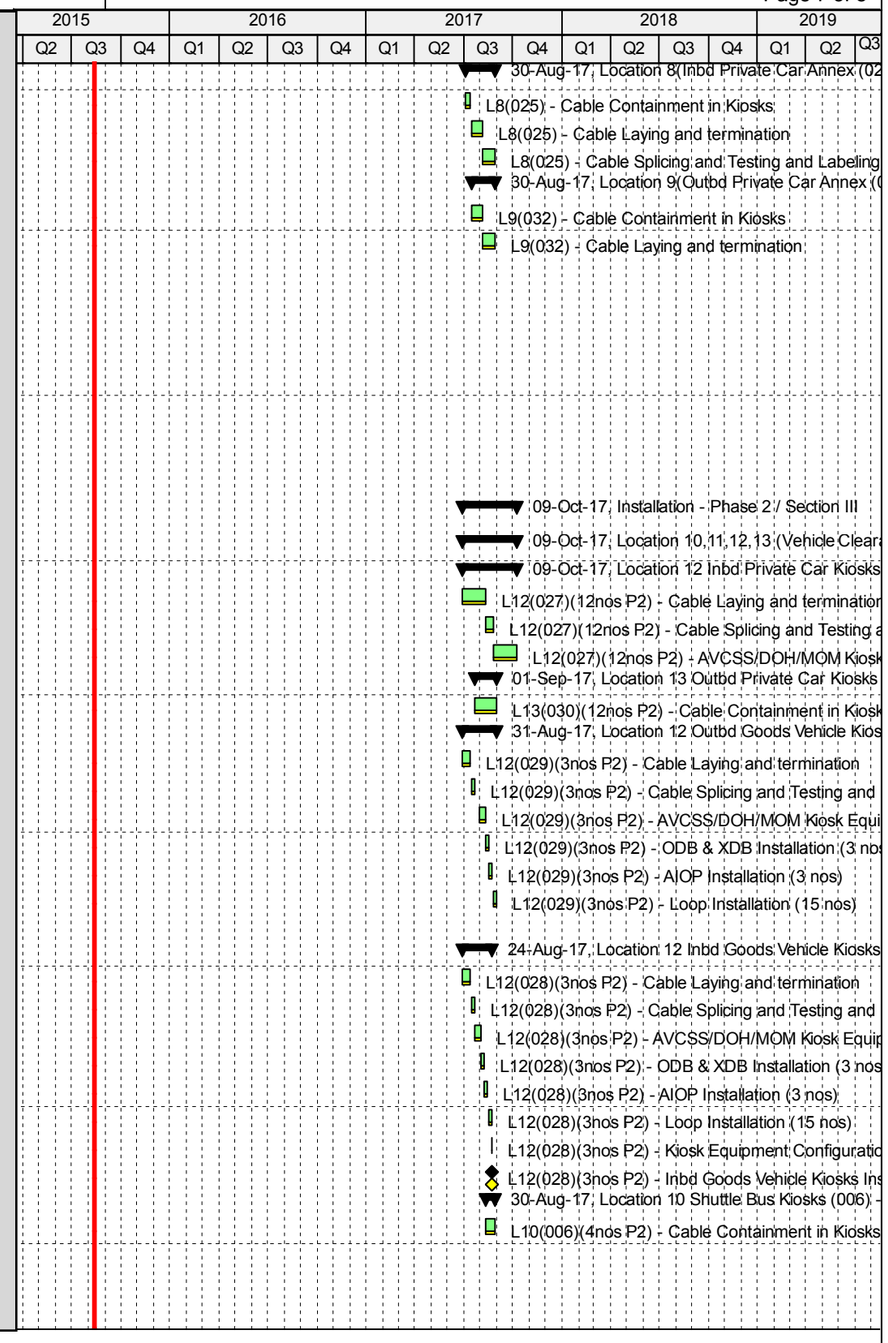
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing
Facilities - Automatic Vehicle
Clearance Support System (AVCSS)

Date	Revision	Checked	Approved
14-Nov-16	Rev.: 0	WC	LC
10-Mar-17	Rev.: 1.0a	WC	LC
5-May-17	Rev.: 1.0b	WC	LC

Activity ID	Activity Name
	Location 8(Inbd Private Car Annex (025)) (Phase 2)
EM3370	L8(025) - Cable Containment in Kiosks
EM3380	L8(025) - Cable Laying and termination
EM3400	L8(025) - Cable Splicing and Testing and Labeling
	Location 9(Outbd Private Car Annex (032)) (Phase 2)
EM3500	L9(032) - Cable Containment in Kiosks
EM3520	L9(032) - Cable Laying and termination
	Initial On-Site Test and Commissioning / Pre-SAT (Phase 2 / Section II)
	Site Acceptance Test (Phase 2 / Section II)
	Operability Period Test (Phase 2 / Section II)
	Completion (Phase 2 / Section II)
	Engineering Support for Phase 2 / Section II
	Procurement for Phase2 / Section III
	Delivery and Bench Acceptance Test for Phase2 / Section III
	Installation - Phase 2 / Section III
	Location 10,11,12,13 (Vehicle Clearance Kiosks)
	Location 12 Inbd Private Car Kiosks (027) - 12 nos (Phase 2)
EM4440	L12(027)(12nos P2) - Cable Laying and termination
EM4460	L12(027)(12nos P2) - Cable Splicing and Testing and Labeling
EM4480	L12(027)(12nos P2) - AVCSS/DOH/MOM Kiosk Equipment Installation (12 nos)
	Location 13 Outbd Private Car Kiosks (030) - 12 nos (Phase 2)
EM4560	L13(030)(12nos P2) - Cable Containment in Kiosks
	Location 12 Outbd Goods Vehicle Kiosks (029) - 3 nos (Phase 2)
EM4880	L12(029)(3nos P2) - Cable Laying and termination
EM4900	L12(029)(3nos P2) - Cable Splicing and Testing and Labeling
EM4920	L12(029)(3nos P2) - AVCSS/DOH/MOM Kiosk Equipment Installation (3 nos)
EM4940	L12(029)(3nos P2) - ODB & XDB Installation (3 nos)
EM4960	L12(029)(3nos P2) - AIOP Installation (3 nos)
EM4980	L12(029)(3nos P2) - Loop Installation (15 nos)
	Location 11 Outbd Coach Kiosks (009) - 4 nos (Phase 2)
	Location 12 Inbd Goods Vehicle Kiosks (028) - 3 nos (Phase 2)
EM4720	L12(028)(3nos P2) - Cable Laying and termination
EM4740	L12(028)(3nos P2) - Cable Splicing and Testing and Labeling
EM4760	L12(028)(3nos P2) - AVCSS/DOH/MOM Kiosk Equipment Installation (3 nos)
EM4780	L12(028)(3nos P2) - ODB & XDB Installation (3 nos)
EM4800	L12(028)(3nos P2) - AIOP Installation (3 nos)
EM4820	L12(028)(3nos P2) - Loop Installation (15 nos)
EM4840	L12(028)(3nos P2) - Kiosk Equipment Configuration (3 nos)
EM5120	L12(028)(3nos P2) - Inbd Goods Vehicle Kiosks Installation Complete
	Location 10 Shuttle Bus Kiosks (006) - 4 nos (Phase 2)
EM4000	L10(006)(4nos P2) - Cable Containment in Kiosks
	Location 11 Inbd Coach Kiosks (010) - 2 nos (Phase 2)-1
	Location 11 Inbd Coach Kiosks (010) - 2 nos (Phase 2)-2
	Initial On-Site Test and Commissioning / Pre-SAT (Phase 2 / Section III)



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Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities - Automatic Vehicle Clearance Support System (AVCSS)

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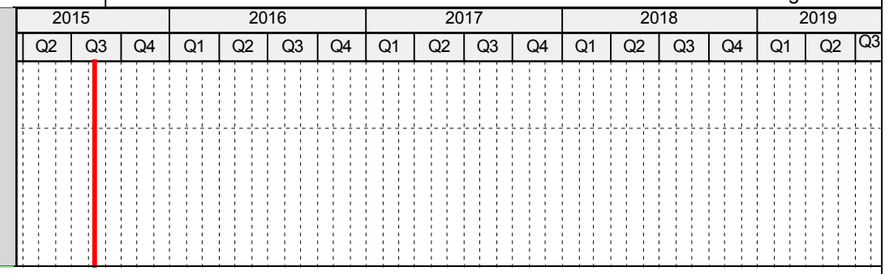
Activity ID	Activity Name
	Site Acceptance Test (Phase 2 / Section III)
	Operability Period Test (Phase 2 / Section III)
	Completion (Phase 2 / Section III)
	Operation (Phase 2 / Section III)
	Defect Liability Period (DLP)
	Document Submission (Phase 2 / Section III)



Programme No.: HZMB-DWP
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Actual Level of Effort
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Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing
Facilities - Automatic Vehicle
Clearance Support System (AVCSS)

Date	Revision	Checked	Approved
14-Nov-16	Rev.: 0	WC	LC
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5-May-17	Rev.: 1.0b	WC	LC

APPENDIX D

Event and Action Plan

Event/Action Plan for Air Quality Monitoring

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

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
LIMIT LEVEL				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform ER, Contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
2. Exceedance for two or more consecutive samples	1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Event / Action Plan for Construction Noise Monitoring

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action Level	1. Notify IEC and Contractor; 2. Identify source, investigate the causes of exceedance and propose remedial measures; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the Contractor and formulate remedial measures; 5 Increase monitoring frequency to check mitigation effectiveness.	1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented.	1. Submit noise mitigation proposals to IEC; 2. Implement noise mitigation proposals.
Limit Level	1. Inform IEC, ER, EPD and Contractor; 2. Identify source; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Event / Action Plan for Water Quality Monitoring

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action level being exceeded by one sampling day	1. Repeat in situ measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, contractor and ER; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Repeat measurement on next day of exceedance to confirm findings.	1. Check monitoring data submitted by ET and Contractor's working methods; 2. Discuss with ET and Contractor on possible remedial actions; 3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly; 4. Assess the effectiveness of the implemented mitigation measures.	1. Confirm receipt of notification of non-compliance in writing; 2. Discuss with IEC on the proposed mitigation measures; 3. Make agreement on mitigation measures to be implemented; 4. Ensure mitigation measures are properly implemented.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment and consider changes of working methods; 4. Discuss with ET and IEC on possible remedial actions and propose mitigation measures to IEC and ER; 5. Implement the agreed mitigation measures. 6. Amend working methods if appropriate.
Action level being exceeded by two or more consecutive sampling days	1. Repeat in situ measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, Contractor and ER; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Action level; 8. Repeat measurement on next day of exceedance to confirm findings.	1. Check monitoring data submitted by ET and Contractor's working method; 2. Discuss with ET and Contractor on possible remedial actions; 3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly; 4. Assess the effectiveness of the implemented mitigation measures.	1. Confirm receipt of notification of non-compliance in writing; 2. Discuss with IEC on the proposed mitigation measures; 3. Make agreement on mitigation measures to be implemented; 4. Ensure mitigation measures are properly implemented; 5. Assess the effectiveness of the implemented mitigation measures.	1. Inform the Engineer and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment and consider changes of working methods; 4. Discuss with ET and IEC on possible remedial actions and propose mitigation measures to IEC and ER within 3 working days of notification; 5. Implement the agreed mitigation measures; 6. Amend working methods if appropriate.

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Limit level being exceeded by one sampling day	1. Repeat *in-situ* measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, Contractor, ER and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit level.	1. Check monitoring data submitted by ET and Contractor's working method; 2. Discuss with ET and Contractor on possible remedial actions; 3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly; 4. Assess the effectiveness of the implemented mitigation measures.	1. Confirm receipt of notification of failure in writing; 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 3. Request Contractor to critically review the working methods; 4. Ensure mitigation measures are properly implemented; 5. Assess the effectiveness of the implemented mitigation measures.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment and consider changes of working methods; 4. Submit proposal of mitigation measures to ER within 3 working days of notification and discuss with ET, IEC and ER; 5. Implement the agreed mitigation measures; 6. Amend working methods if appropriate.
Limit level being exceeded by two or more consecutive sampling days	1. Repeat *in-situ* measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, contractor, ER and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days.	1. Check monitoring data submitted by ET and Contractor's working method; 2. Discuss with ET and Contractor on possible remedial actions; 3. Review the Contractor's mitigation measures whenever necessary to assure their effectiveness and advise the ER accordingly.	1. Confirm receipt of notification of failure in writing; 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 3. Request Contractor to critically review the working methods; 4. Make agreement on the mitigation measures to be implemented; 5. Ensure mitigation measures are properly implemented; 6. Assess the effectiveness of the implemented mitigation measures; 7. 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.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Take immediate action to avoid further exceedance; 3. Rectify unacceptable practice; 4. Check all plant and equipment and consider changes of working methods; 5. Submit proposal of mitigation measures to ER within 3 working days of notification and discuss with ET, IEC and ER; 6. Implement the agreed mitigation measures; 7. Resubmit proposals of mitigation measures if problem still not under control; 8. As directed by the Engineer, to slow down or to stop all or part of the construction activities until no exceedance of Limit level.

Event / Action Plan for Dolphin Monitoring

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

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Limit Level	1. Repeat statistical data analysis to confirm findings; 2. Review all available and relevant data, including raw data and statistical analysis results of other parameters covered in the EM&A, to ascertain if differences are as a result of natural variation or previously observed seasonal differences; 3. Identify source(s) of impact; 4. Inform the IEC, ER/SOR and Contractor of findings; 5. Check monitoring data; 6. Repeat 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.	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.	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.	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 E

Implementation Schedule for Environmental Mitigation Measures (EMIS)

Contract No. HY/2013/01 – Hong Kong Zhuhai and Macao Bridge Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Implementation Schedule for Environmental Mitigation Measures

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
Air Quality								
S5.5.6.1	A1	1) The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation	Good construction site practices to control the dust impact at the nearby sensitive receivers to within the relevant criteria.	Contractor	All construction sites	Construction stage	To control the dust impact to within the HKAQO and TM-EIA criteria (Ref. 1- hr and 24hr TSP levels are 500 μgm^{-3} and 260 μgm^{-3}, respectively)	√
S5.5.6.2	A2	2) Proper watering of exposed spoil should be undertaken throughout the construction phase: • Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading; • Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads; • A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones. • The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle; • Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; • The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials; • Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously; • Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet;	Good construction site practices to control the dust impact at the nearby sensitive receivers to within the relevant criteria.	Contractor	All construction sites	Construction stage	To control the dust impact to within the HKAQO and TM-EIA criteria (Ref. 1- hr and 24hr TSP levels are 500 μgm^{-3} and 260 μgm^{-3}, respectively)	√ √ √ √ √ √ √ √

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
S5.5.6.2	A2	• Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding; • Any skip hoist for material transport should be totally enclosed by impervious sheeting; • Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides; • Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed; • Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system; and • Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies.	Good construction site practices to control the dust impact at the nearby sensitive receivers to within the relevant criteria.	Contractor	All construction sites	Construction stage	To control the dust impact to within the HKAQO and TM-EIA criteria (Ref. 1- hr and 24hr TSP levels are 500 μgm^{-3} and 260 μgm^{-3}, respectively)	√ √ √ √ √ √
S5.5.6.4	A3	The Contractor should undertake proper watering on all exposed spoil (with at least 8 times per day) throughout the construction phase.	Control construction dust	Contractor	All construction sites	Construction stage	To control the dust impact	√
S5.5.6.5	A4	Engineer to incorporate the controlled measures into the Particular Specification (PS) for the civil work. The PS should also draw the contractor's attention to the relevant latest Practice Notes issued by EPD.	Control construction dust	Engineer	All construction sites	Design Stage	Air Pollution Control (Construction Dust) Regulation	√

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
S5.5.6.5	A5	Implement regular dust monitoring under EM&A programme during the construction stage.	Monitor the 24 hr and 1hr TSP levels at the representative dust monitoring stations to ensure compliance with relevant criteria throughout the construction period.	Contractor	Selected representative dust monitoring station	Construction stage	• Air Pollution Control (Construction Dust) Regulation •To control the dust impact to within the HKAQO and TM-EIA criteria (Ref. 1- hr and 24hr TSP levels are 500 μgm^{-3} and 260 μgm^{-3}, respectively)	√ (The dust monitoring works (Station AMS6) under EM&A programme for the Contract is covered by Contract No. HY/2011/03. Monitoring stations AMS2, AMS3B and AMS7/ AMS7B for the Contract are covered by Contract No. HY/2013/01)
S5.5.7.1	A6	The following mitigation measures should be adopted to prevent fugitive dust emissions for concrete batching plant: • Loading, unloading, handling, transfer or storage of any dusty materials should be carried out in totally enclosed system; • All dust-laden air or waste gas generated by the process operations should be properly extracted and vented to fabric filtering system to meet the emission limits for TSP; • Vents for all silos and cement/pulverised fuel ash (PFA) weighing scale should be fitted with fabric filtering system; • The materials which may generate airborne dusty emissions should be wetted by water spray system; • All receiving hoppers should be enclosed on three sides up to 3m above unloading point; • All conveyor transfer points should be totally enclosed; • All access and route roads within the premises should be paved and wetted; and • Vehicle cleaning facilities should be provided and used by all concrete trucks before leaving the premises to wash off any dust on the wheels and/or body.	Monitor the 24 hr and 1hr TSP levels at the representative dust monitoring stations to ensure compliance with relevant criteria throughout the construction period.	Contractor	Selected representative dust monitoring station	Construction stage	• Air Pollution Control (Construction Dust) Regulation •To control the dust impact to within the HKAQO and TM-EIA criteria (Ref. 1- hr and 24hr TSP levels are 500 μgm^{-3} and 260 μgm^{-3}, respectively)	N/A
S5.5.2.7	A7	The following mitigation measures should be adopted to prevent fugitive dust emissions at barging point: • All road surface within the barging facilities will be paved; • Dust enclosures will be provided for the loading ramp; • Vehicles will be required to pass through designated wheels wash facilities; and • Continuous water spray at the loading points.	Control construction dust	Contractor	All construction sites	Construction stage	Air Pollution Control (Construction Dust) Regulation	N/A

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
Construction Noise (Air borne)								
S6.4.10	N1	1) Use of good site practices to limit noise emissions by considering the following: • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme; • machines and plant (such as trucks, cranes) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs; • silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works; • mobile plant should be sited as far away from NSRs as possible and practicable; • material stockpiles, mobile container site officer and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.	Control construction airborne noise by means of good site practices	Contractor	All construction sites	Construction stage	Noise Control Ordinance	√ √ √ √ √ √
S6.4.11	N2	2) Install temporary hoarding located on the site boundaries between noisy construction activities and NSRs. The conditions of the hoardings shall be properly maintained throughout the construction period.	Reduce the construction noise levels at low-level zone of NSRs through partial screening.	Contractor	All construction sites	Construction stage	• Noise Control Ordinance • Annex 5, TM-EIA	N/A
S6.4.12	N3	3) Install movable noise barriers (typically density @14kg/m^2), acoustic mat or full enclosure close to noisy plants including air compressor, generators, saw.	Screen the noisy plant items to be used at all construction sites	Contractor	For plant items listed in Appendix 6D of the EIA report at all construction sites	Construction stage	• Noise Control Ordinance • Annex 5, TM-EIA • 75dB(A) for residential premises • The movable barrier should achieve at least 5dB(A) and the full enclosure should be designed to achieve 10dB(A)	N/A

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
S6.4.13	N4	4) Select "Quiet plants" which comply with the BS 5228 Part 1 or TM standards.	Reduce the noise levels of plant items	Contractor	For plant items listed in Appendix 6D of the EIA report at all construction sites	Construction stage	• Noise Control Ordinance & its TM • Annex 5, TM-EIA	√
S6.4.14	N5	5) Sequencing operation of construction plants where practicable.	Operate sequentially within the same work site to reduce the construction airborne noise	Contractor	All construction sites where practicable	Construction stage	• Noise Control Ordinance • Annex 5, TM-EIA	√
S6.4.14	N6	6) Implement a noise monitoring under EM&A programme.	Monitor the construction noise levels at the selected representative locations	Contractor	Selected representative noise monitoring station	Construction stage	• Noise Control Ordinance • Annex 5, TM-EIA • 75dB(A) for residential premises	√ (ET of Contract No. HY/2013/01 is responsible conducting monitoring for entire HKBCF)
Sediment								t
S7.3	S1	1) The requirements as recommended in ETWB TC 34/2002 Management of Dredged/Excavated Sediment shall be included in the Particular Specification as appropriate.	Develop sediment disposal arrangement	Engineer	All construction sites	Design stage	• Waste Disposal Ordinance • ETW B TC 34/2002	N/A .
Waste Management (Construction Waste)								
S8.3.8	WM1	<u>*Construction and Demolition Material*</u> The following mitigation measures should be implemented in handling the waste: • Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement; • Carry out on-site sorting; • Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; • Adopt 'Selective Demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible; • Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified; and	Good site practice to minimize the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal	Contractor	All construction sites	Construction stage	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance • ETW BTC 19/2005	√ √ √ √ √

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
S8.3.8	WM1	• Implement an enhanced Waste Management Plan similar to ETW BTC (Works) No. 19/2005 – "Environmental Management on Construction Sites" to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction. • In addition, disposal of the C&D materials onto any sensitive locations such as agricultural lands, etc. should be avoided. The Contractor shall propose the final disposal sites to the Project Proponent and get its approval before implementation.	Good site practice to minimize the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal	Contractor	All construction sites	Construction stage	•	√ √
S8.3.9-S8.3.11	WM2	*C&D Waste* • Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Use of wooden hoardings should not be used, as in other projects. Metal hoarding should be used to enhance the possibility of recycling. The purchasing of construction materials will be carefully planned in order to avoid over ordering and wastage. • The Contractor should recycle as much of the C&D materials as possible on-site. Public fill and C&D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites should be considered for such segregation and storage.	Good site practice to minimize the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal	Contractor	All construction sites	Construction stage	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance • ETWB TC 19/2005	√ √
S8.2.12-S8.3.15	WM3	*Chemical Waste* • Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, should be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. • Containers used for the storage of chemical wastes should be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450 liters unless the specification has been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the regulation. • The storage area for chemical wastes should be clearly labelled and used solely for the storage of chemical waste; enclosed on at least 3 sides; have an impermeable floor and bunding of sufficient capacity to accommodate 110% of the volume of the largest container or 20 % of the total volume of waste stored in that area, whichever is the greatest; have adequate ventilation; covered to prevent rainfall entering; and arranged so that incompatible materials are adequately separated.	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction stage	• Waste Disposal (Chemical Waste) General) Regulation • Code of Practice on the Packaging, Labelling and Storage of Chemical Waste	√ √ √

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
S8.2.12-S8.3.15	WM3	• Disposal of chemical waste should be via a licensed waste collector; be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Centre which also offers a chemical waste collection service and can supply the necessary storage containers; or be to a reuser of the waste, under approval from the EPD.	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction stage		√
S8.3.16	WM4	*Sewage* • Adequate numbers of portable toilets should be provided for the workers. The portable toilets should be maintained in a state, which will not deter the workers from utilizing these portable toilets. Night soil should be collected by licensed collectors regularly.	Proper handling of sewage from worker to avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	• Waste Disposal Ordinance	√
S8.3.17	WM5	*General Refuse* • General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes. • A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimize odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law. • Aluminium cans are often recovered from the waste stream by individual collectors if they are segregated and made easily accessible. Separate labelled bins for their deposit should be provided if feasible. • Office wastes can be reduced through the recycling of paper if volumes are large enough to warrant collection. Participation in a local collection scheme should be considered by the Contractor. In addition, waste separation facilities for paper, aluminum cans, plastic bottles etc., should be provided. • Training should be provided to workers about the concepts of site cleanliness and appropriate waste management procedure, including reduction, reuse and recycling of wastes.	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	• Waste Disposal Ordinance	√ √ √ √ √

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
Water Quality (Construction Phase)								
S.9.11.1.7	W1	Mitigation during the marine works to reduce impacts to within acceptable levels have been recommended and will comprise a series of measures that restrict the method and sequencing of backfilling, as well as protection measures. Details of the measures are provided below: • Reclamation filling for the Project shall not proceed until at least 200m of leading seawall at the reclamation area formed above +2.2mPD, unless otherwise agreement was obtained from EPD, except for the 300m gaps for marine access. All underwater filling works shall be carried out behind seawalls to avoid dispersion of suspended solids outside the Project limit;	To control construction water quality	Contractor	During filling	Construction stage	TM-EIAO	√
S.9.11.1.7	W1	• Except for the filling of the cellular structures, not more than 15% public fill shall be used for reclamation filling below +2.5mPD during construction of the seawall; • After the seawall is completed except for the 300m marine access as indicated in the EPs, not more than 30% public fill shall be used for reclamation filling below +2.5mPD, unless otherwise agreement from EPD was obtained; • Upon completion of 200m leading seawall, no more than a total of 60 filling barge trips per day shall be made with a cumulative maximum daily filling rate of 60,000 m3 for HKBCF and TMCLKL southern landfall reclamation during the filling operation; and • Upon completion of the whole section of seawall except for the 300m marine access as indicated in the EPs, no more than a total of 190 filling barge trips per day shall be made with a cumulative maximum daily filling rate of 190,000 m3 for the remaining filling operations for HKBCF and TMCLKL southern landfall reclamation. • Floating type perimeter silt curtains shall be around the HKBCF site before the commencement of marine works. Staggered layers of silt curtain shall be provided to prevent sediment loss at navigation accesses. The length of each staggered layers shall be at least 200m; • Single layer silt curtain to be applied around the North-east airport water intake; • The silt-curtains should be maintained in good condition to ensure the sediment plume generated from filling be confined effectively within the site boundary; • The filling works shall be scheduled to spread the works evenly over a working day; • Cellular structure shall be used for seawall construction; • A layer of geotextile shall be placed on top of the seabed before any filling activities take place inside the cellular structures to form the seawall;	To control construction water quality	Contractor	During filling	Construction stage	TM-EIAO	√ √ √ √ √ √ √ √ √ √ √

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
S.9.11.1.7	W1	• The conveyor belts shall be fitted with windboards and conveyor release points shall be covered with curtain to prevent any spillage of filling materials onto the surrounding waters; and • An additional layer of silt curtain shall be installed near the active stone column installation points. A layer of geotextile with stone blanket on top shall be placed on the seabed prior to stone column installation works.	To control construction water quality	Contractor	During filling	Construction stage	TM-EIAO	√ √
S.9.11.1.7	W2	<u>Land Works</u> General construction activities on land should also be governed by standard good working practice. Specific measures to be written into the works contracts should include: • wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;	To control construction water quality	Contractor	Land-based works areas	Construction stage	TM-EIAO	√
S.9.11.1.7	W2	• sewage effluent and discharges from on-site kitchen facilities shall be directed to Government sewer in accordance with the requirements of the WPCO or collected for disposal offsite. The use of soakaways shall be avoided; • storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks; • silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm; • temporary access roads should be surfaced with crushed stone or gravel; • rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities; • measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system; • open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms; • manholes (including any newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers; • discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;	To control construction water quality	Contractor	Land-based works areas	Construction stage	TM-EIAO	√ √ √ √ √ √ √ √

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
S9.11.1.7	W2	• all vehicles and plant should be cleaned before they leave the construction site to ensure that no earth, mud or debris is deposited by them on roads. A wheel washing bay should be provided at every site exit; • wheel wash overflow shall be directed to silt removal facilities before being discharged to the storm drain; • the section of construction road between the wheel washing bay and the public road should be surfaced with crushed stone or coarse gravel; • wastewater generated from concreting, plastering, internal decoration, cleaning work and other similar activities, shall be screened to remove large objects; • vehicle and plant servicing areas, vehicle wash bays and lubrication facilities shall be located under roofed areas. The drainage in these covered areas shall be connected to foul sewers via a petrol interceptor in accordance with the requirements of the WPCO or collected for off site disposal; • the contractors shall prepare an oil / chemical cleanup plan and ensure that leakages or spillages are contained and cleaned up immediately; • waste oil should be collected and stored for recycling or disposal, in accordance with the Waste Disposal Ordinance; • all fuel tanks and chemical storage areas should be provided with locks and be sited on sealed areas. The storage areas should be surrounded by bunds with a capacity equal to 110% of the storage capacity of the largest tank; and • surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.	To control construction water quality	Contractor	Land-based works areas	Construction stage	TM-EIAO	√ √ √ √ √ √ √ √ √
S.9.14	W3	• Implement a water quality monitoring programme.	To control water quality	Contractor	Selected representative water quality monitoring station	Construction stage	• TM-EIAO • Water Pollution Control Ordinance	√ (ET of ContractNo. HY/2013/01 is responsible conducting monitoring for entire HKBCF)

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
Ecology (Construction Phase)								
S10.7	E1	• Install silt curtain during the construction • Limit works fronts • Construct seawall prior to reclamation filling where practicable • Good site practices • Strict enforcement of no marine dumping • Site runoff control • Spill response plan	Prevent Sedimentation from Land-based works areas	Contractor	Seawall, reclamation area	During construction	TM-Water	√ √ √ √ √ √ √
S10.7	E2	• Watering to reduce dust generation; prevention of siltation of freshwater habitats; Site runoff should be desilted, to reduce the potential for suspended sediments, organics and other contaminants to enter streams and standing freshwater.	Prevent Sedimentation from Land-based works areas	Contractor	Land-based works areas	During construction	TM-Water	√
S10.7	E3	• Good site practices, including strictly following the permitted works hours, using quieter machines where practicable, and avoiding excessive lightings during night time	Prevent disturbance to terrestrial fauna and habitats	Contractor	Land-based works areas	During construction	TM-Water	√
S10.7	E4	• Dolphin Exclusion Zone • Dolphin Watching plan	Minimise marine traffic disturbance on dolphins	Contractor	Marine Works	During construction	TM-Water	√ √
S10.7	E5	• Decouple compressors and other equipment on working vessels • Proposal on design and implementation of acoustic decoupling measures applied during reclamation works • Avoidance of percussive piling	Minimise marine traffic disturbance on dolphins	Contractor	Marine Works	During construction	TM-Water	√ √ √
S10.7	E6	• Control vessel speed • Skipper training • Predefined and regular routes for working vessels; avoid Brother Islands.	Minimise marine traffic disturbance on dolphins	Contractor	Marine Traffic	During construction	TM-Water	√ √ √
S10.7	E7	• Vessel based dolphin monitoring	Minimise marine traffic disturbance on dolphins	Contractor	Northeast and Northwest Lantau	During construction	TM-Water	√ (ET of Contract No.HY/2013/01 is responsible conducting monitoring for entire HKBCF.)
Fisheries								
S11.7	F1	• Reduce re-suspension of sediments • Limit works fronts • Good site practices • Strict enforcement of no marine dumping • Spill response plan	Minimise impacts on marine water quality impacts	Marine Department	Seawall, reclamation area	During operation		√ √ √ √ √
S11.7	F2	• Install silt-grease trap in the drainage system collecting surface runoff	Minimise impacts on marine water quality impacts	Marine Department	Reclamation area	During operation		√

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
S11.7	F4	• Maritime Oil Spill Response Plan (MOSRP); • Contingency plan.	Minimise impacts on marine water quality impacts	Marine Department	HKBCF	During operation		N/A
Landscape & Visual (Detailed Design Phase)								
S14.3.3.1	LV1	General design measures include: • Roadside planting and planting along the edge of the HKBCF Island is proposed; • Transplanting of mature trees in good health and amenity value where appropriate and reinstatement of areas disturbed during construction by compensatory hydro-seeding and planting; • Protection measures for the trees to be retained during construction activities; • Optimizing the sizes and spacing of the bridge columns; Fine-tuning the location of the bridge columns to avoid visually-sensitive locations; • Maximizing new tree, shrub and other vegetation planting to compensate tree felled and vegetation removed; • Providing planting area around peripheral of HKBCF for tree planting screening effect; • Providing salt-tolerant native trees along the planter strip at affected seawall and newly reclaimed coastline;	Minimise visual & landscape impact	Detailed designer	HKBCF	Design Stage		N/A
S14.3.3.1	LV1	• For HKBCF, providing aesthetic architectural design on the related buildings (e.g. similar materials for PCB building facade to Airport buildings, roof planting and subtle materials for other facilities buildings and so on), and the related infrastructure (e.g. parapet planting and transparent cover for elevated footbridges) to provide harmonious atmosphere of the HKBCF; and • Fine-tuning the sizes of the structural members to minimize the bulkiness of buildings and adjustment of building arrangement to minimise disturbance to surrounding vegetation in the HKBCF.	Minimise visual & landscape impact	Detailed designer	HKBCF	Design Stage		N/A

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
Landscape & Visual (Construction Phase)								
S14.3.3.3	LV2	Mitigate both Landscape and Visual Impacts • Grass-hydroseed bare soil surface and stock pile areas. • Add planting strip and automatic irrigation system if appropriate at some portions of bridge footbridge to screen bridge and traffic. • Not applicable as this is for HKLR. • For HKBCF, providing aesthetic architectural design on the related buildings (e.g. similar materials for PCB building facade to Airport buildings, roof planting and subtle materials for other facilities buildings and so on), and the related infrastructure (e.g. parapet planting and transparent cover for elevated footbridges) to provide harmonious atmosphere of the HKBCF. • Vegetation reinstatement and upgrading to disturbed areas • Maximizing new tree shrub and other vegetation planting to compensate tree felled and vegetation removed • Providing planting area around peripheral of HKBCF for tree planting screening effect; • Plant salt-tolerant native and shrubs etc along the planter strip at affected seawall. • Reserve of loose natural granite rocks for re-use. Provide new coastline to adopt "natural-look" by means of using armour rocks in the form of natural rock materials and planting strip area accommodating screen buffer to enchance "natural-look" of the new coastline.	Minimise visual & landscape impact	Contractor	HKBCF	Construction stage		N/A
S14.3.3.3	LV3	Mitigate Visual Impacts • V1.Minimize time for construction activities during construction period. • V2.Provide screen hoarding at the portion of the project site / works areas / storage areas near VSRs who have close low-level views to the Project during HKBCF construction.						√ N/A
EM&A								
S15.2.2	EM1	An Independent Environmental Checker needs to be employed as per the EM&A Manual.	Control EM&A Performance	Project Proponent	All construction sites		• EIAO Guidance Note No.4/2002 • TM-EIAO	√

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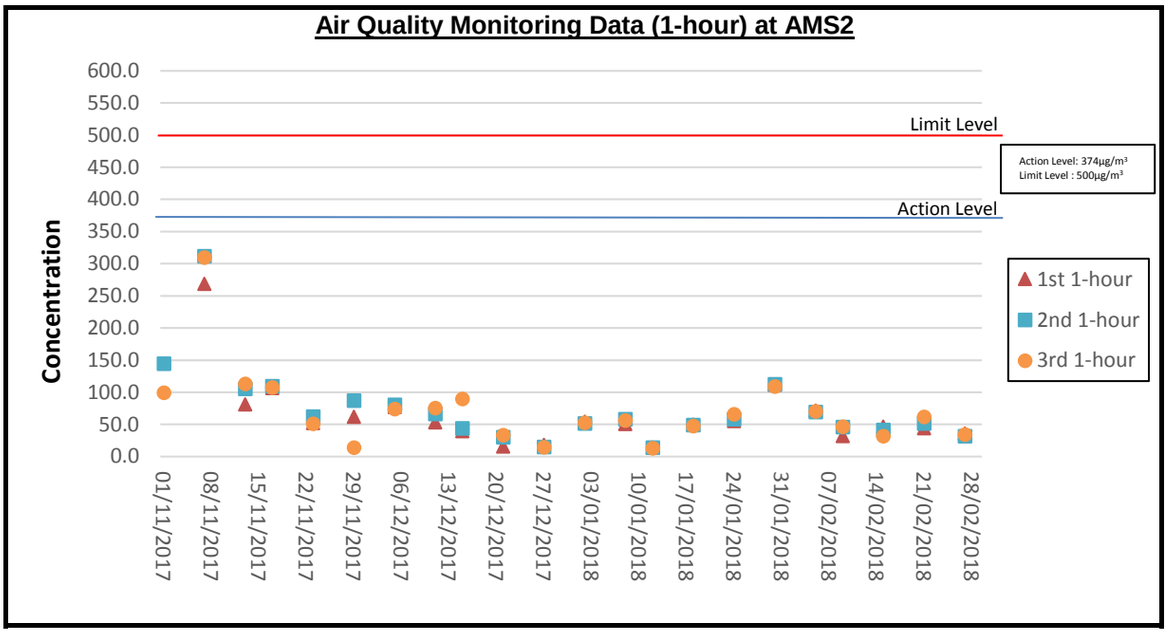
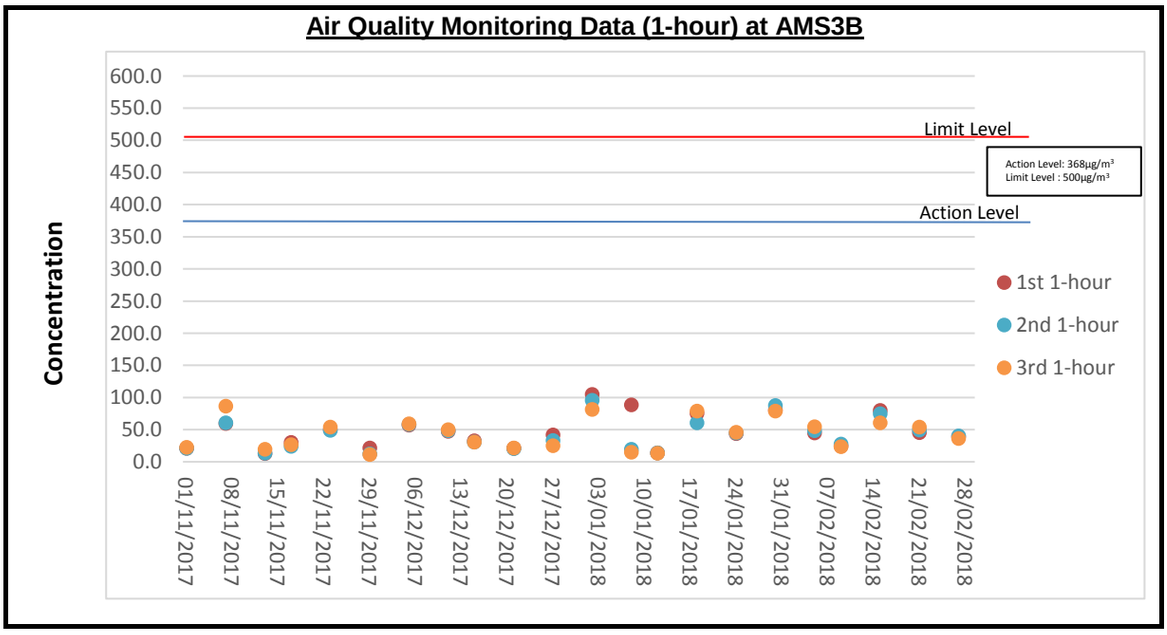
S15.5 - S15.6	EM2	• An Environmental Team needs to be employed as per the EM&A Manual. • Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures. • An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in the EM&A Manual are fully complied with.	Perform environmental monitoring & auditing	Contractor	All construction sites		• EIAO Guidance Note No.4/2002 • TM-EIAO	√ √ √

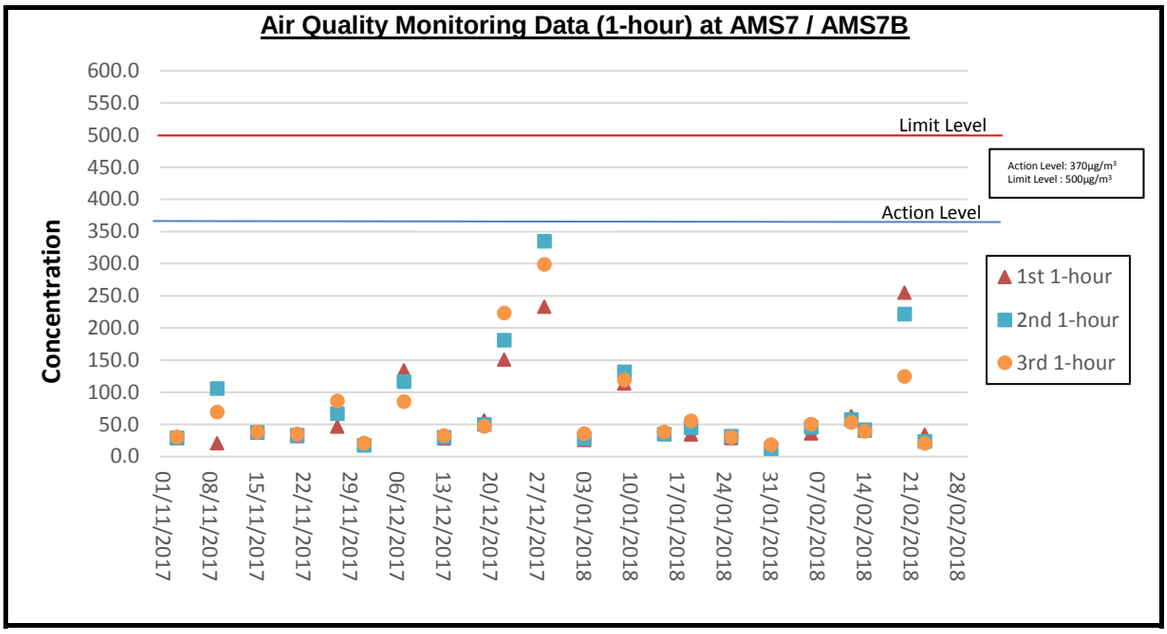
Legends: √ = Implemented; X = Not implemented; N/A = Not applicable

APPENDIX F

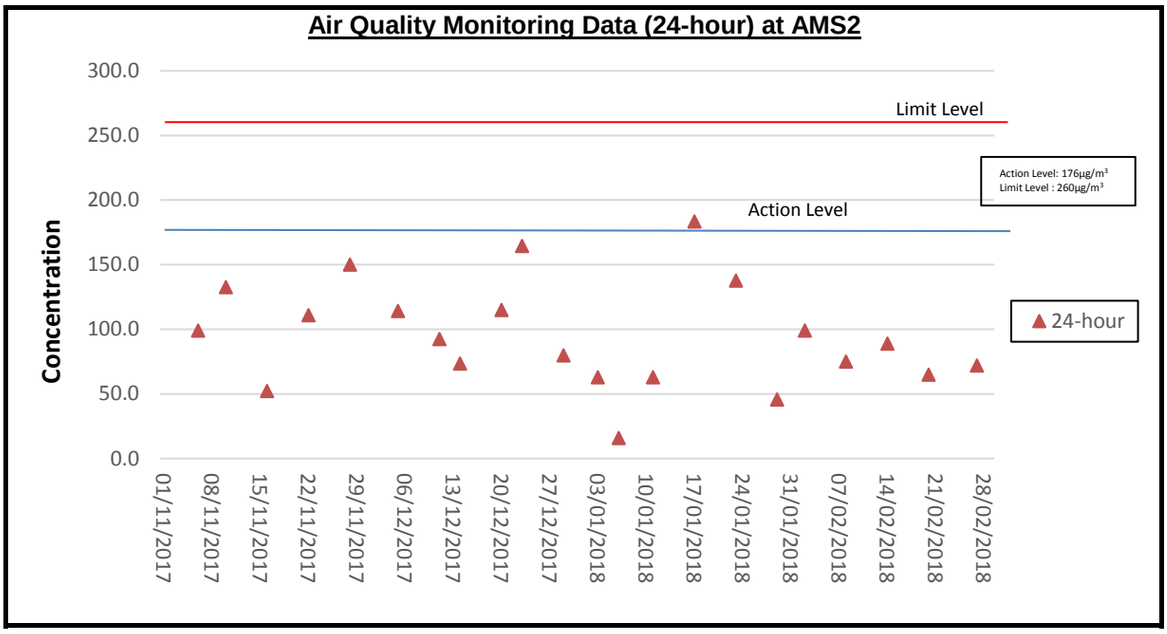
Graphical Plot (Air Quality, Noise and Water Quality)


Air Quality Monitoring Data (1-hour) at AMS2
Concentration
600.0
550.0
500.0
450.0
400.0
350.0
300.0
250.0
200.0
150.0
100.0
50.0
0.0
Limit Level
Action Level
Action Level: 374µg/m³
Limit Level : 500µg/m³
1st 1-hour
2nd 1-hour
3rd 1-hour
01/11/2017
08/11/2017
15/11/2017
22/11/2017
29/11/2017
06/12/2017
13/12/2017
20/12/2017
27/12/2017
03/01/2018
10/01/2018
17/01/2018
24/01/2018
31/01/2018
07/02/2018
14/02/2018
21/02/2018
28/02/2018

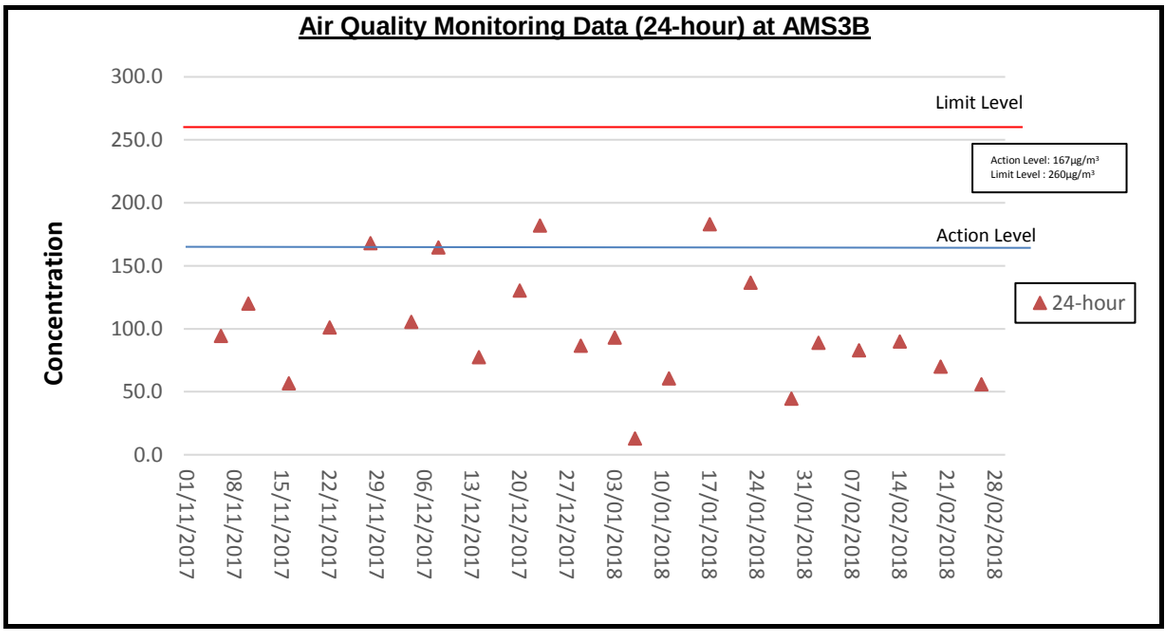

Air Quality Monitoring Data (1-hour) at AMS3B
Concentration
600.0
550.0
500.0
450.0
400.0
350.0
300.0
250.0
200.0
150.0
100.0
50.0
0.0
Limit Level
Action Level
Action Level: 368µg/m³
Limit Level : 500µg/m³
1st 1-hour
2nd 1-hour
3rd 1-hour
01/11/2017
08/11/2017
15/11/2017
22/11/2017
29/11/2017
06/12/2017
13/12/2017
20/12/2017
27/12/2017
03/01/2018
10/01/2018
17/01/2018
24/01/2018
31/01/2018
07/02/2018
14/02/2018
21/02/2018
28/02/2018

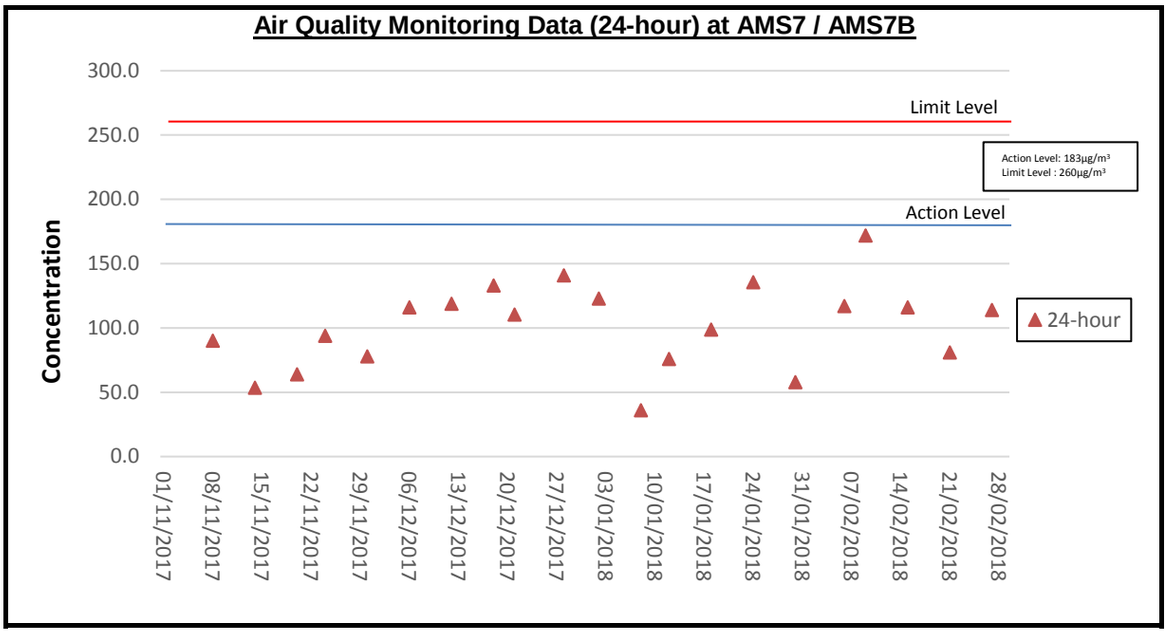


(1) A proposal of re-location of Air Quality Monitoring (AQM) station, AMS7, for HZMB HKBCF Project was justified by the ET Leader for Contract No. HY/2013/01 on 22 January 2018; verified by the IEC on 24 January 2018 and submitted to EPD on 30 January 2018, and AQM station has been carrying out at the alternative AQM station,AMS7B, with EPD's consent since 6 February 2018.

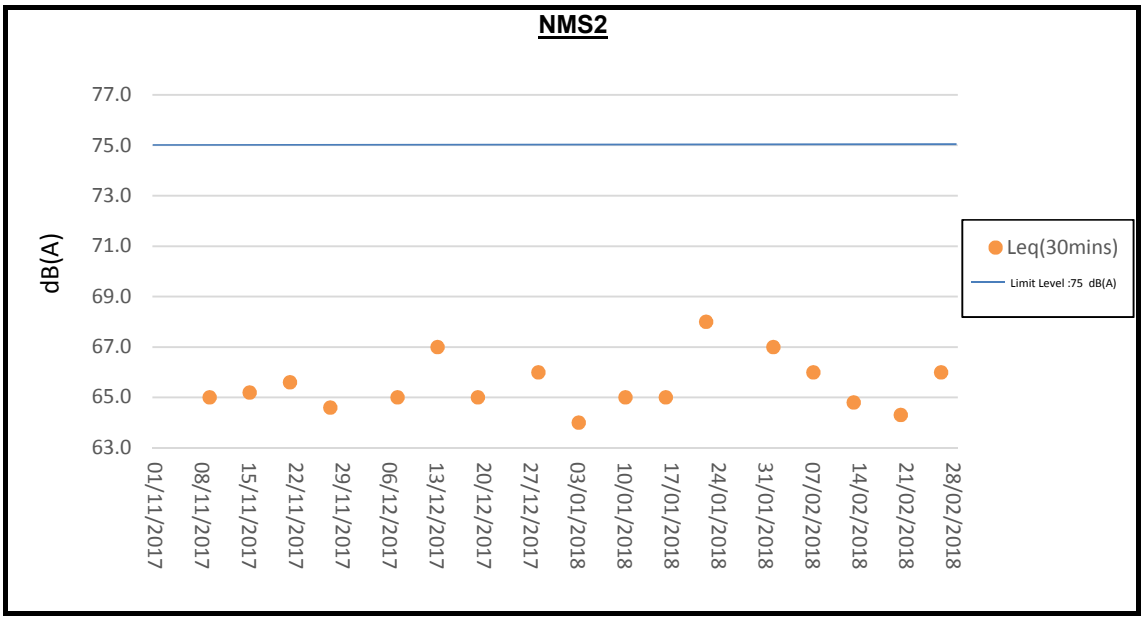


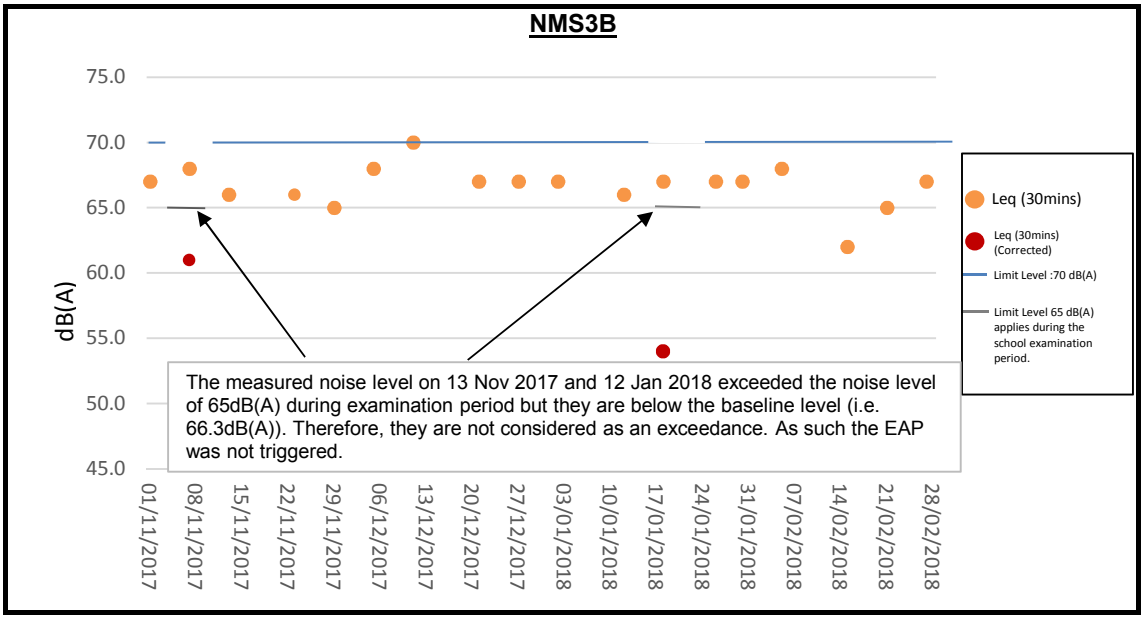
(3) 24 hour TSP monitoring on 26 February 2018 at AMS2 (Tung Chung Pier) was suspended to 27 February 2018 due to electrcity suppy failure.

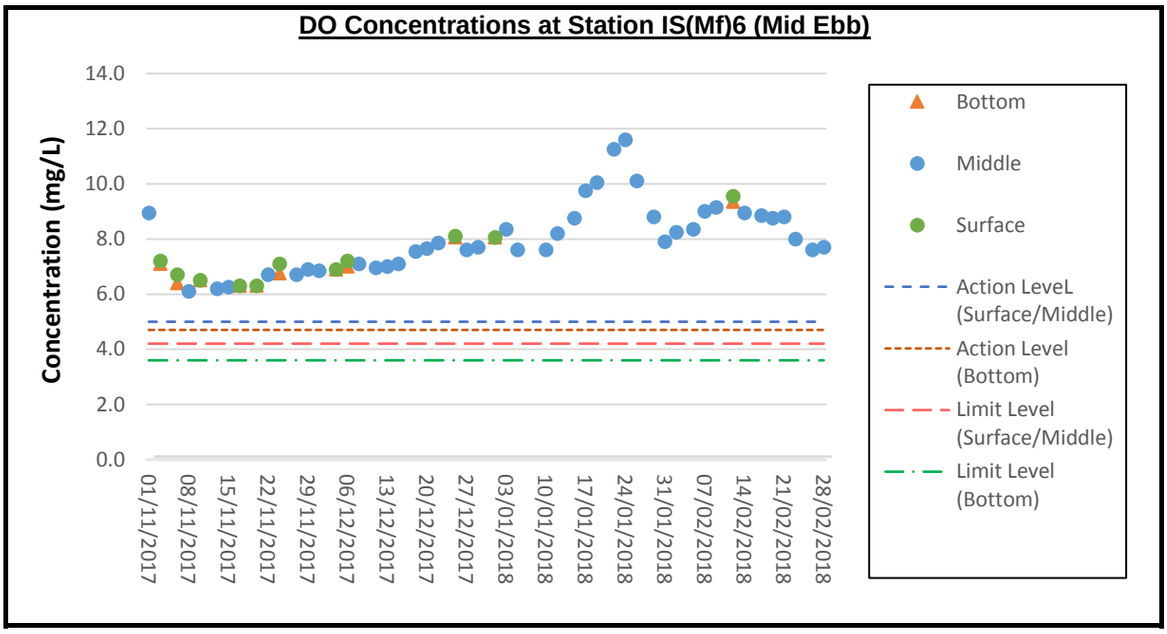


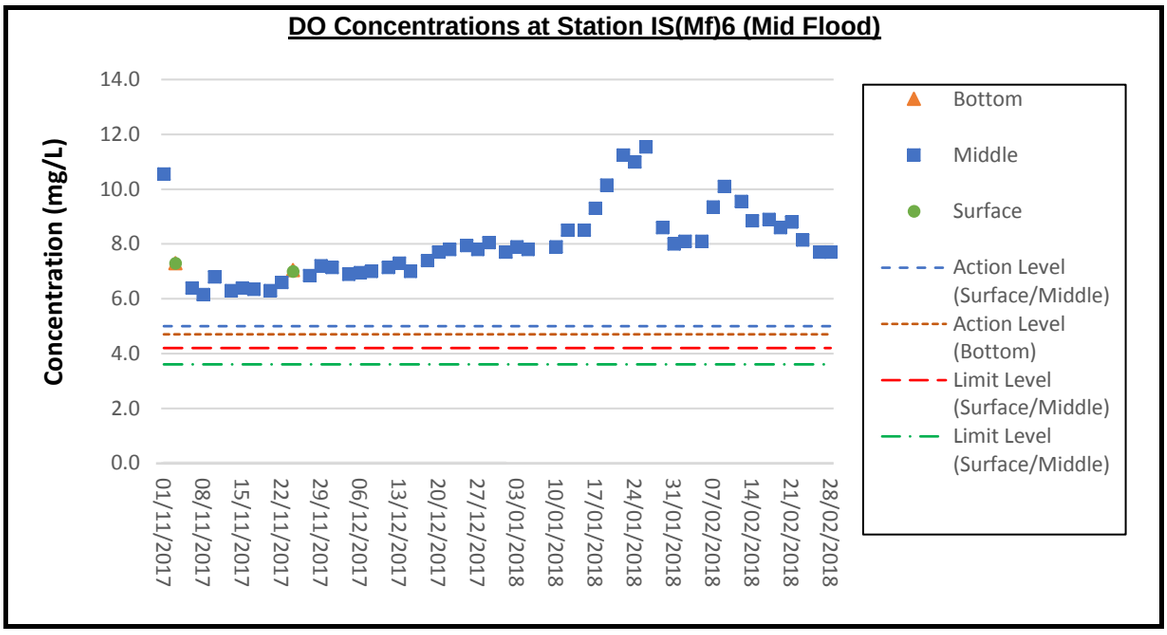


(1) 24 hour TSP monitoring on 5 February 2018 at AMS7B (3RS site office) was rescheduled to 6 February 2018 due to technical problem.
(2) A proposal of re-location of Air Quality Monitoring (AQM) station, AMS7, for HZMB HKBCF Project was justified by the ET Leader for Contract No. HY/2013/01 on 22 January 2018; verified by the IEC on 24 January 2018 and submitted to EPD on 30 January 2018, and AQM station has been carrying out at the alternative AQM station,AMS7B, with EPD's consent since 6 February 2018.

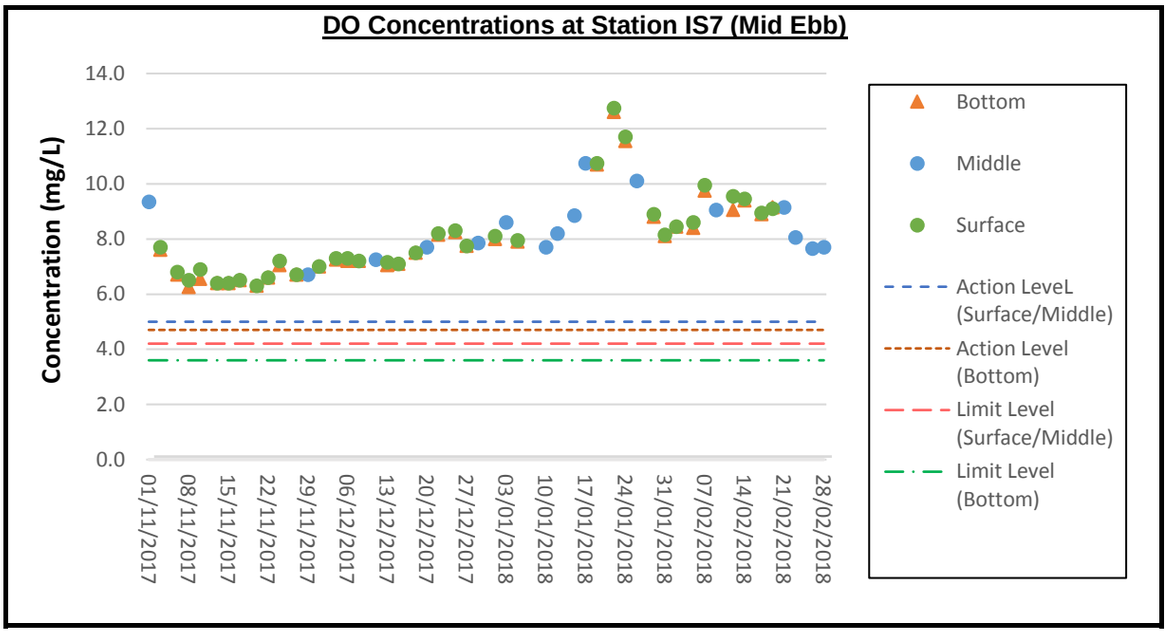

NMS2
77.0
75.0
73.0
71.0
69.0
67.0
65.0
63.0
dB(A)
01/11/2017
08/11/2017
15/11/2017
22/11/2017
29/11/2017
06/12/2017
13/12/2017
20/12/2017
27/12/2017
03/01/2018
10/01/2018
17/01/2018
24/01/2018
31/01/2018
07/02/2018
14/02/2018
21/02/2018
28/02/2018
Leq(30mins)
Limit Level :75 dB(A)

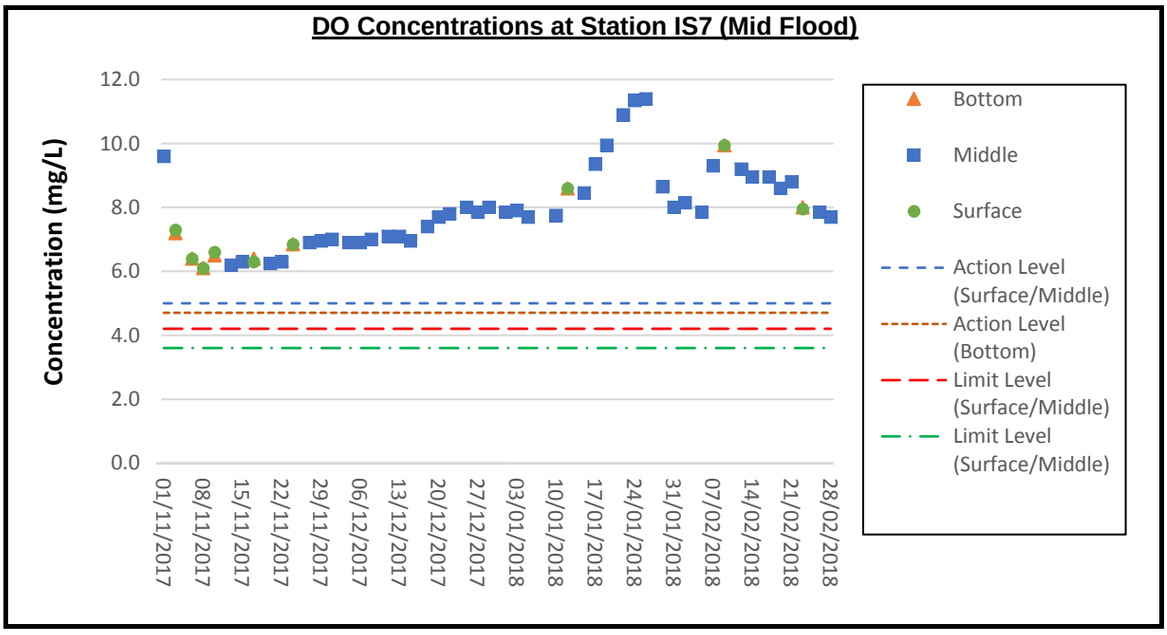

NMS3B
75.0
70.0
65.0
60.0
55.0
50.0
45.0
dB(A)
01/11/2017
08/11/2017
15/11/2017
22/11/2017
29/11/2017
06/12/2017
13/12/2017
20/12/2017
27/12/2017
03/01/2018
10/01/2018
17/01/2018
24/01/2018
31/01/2018
07/02/2018
14/02/2018
21/02/2018
28/02/2018
The measured noise level on 13 Nov 2017 and 12 Jan 2018 exceeded the noise level of 65dB(A) during examination period but they are below the baseline level (i.e. 66.3dB(A)). Therefore, they are not considered as an exceedance. As such the EAP was not triggered.
Leq (30mins)
Leq (30mins) (Corrected)
Limit Level :70 dB(A)
Limit Level 65 dB(A) applies during the school examination period.



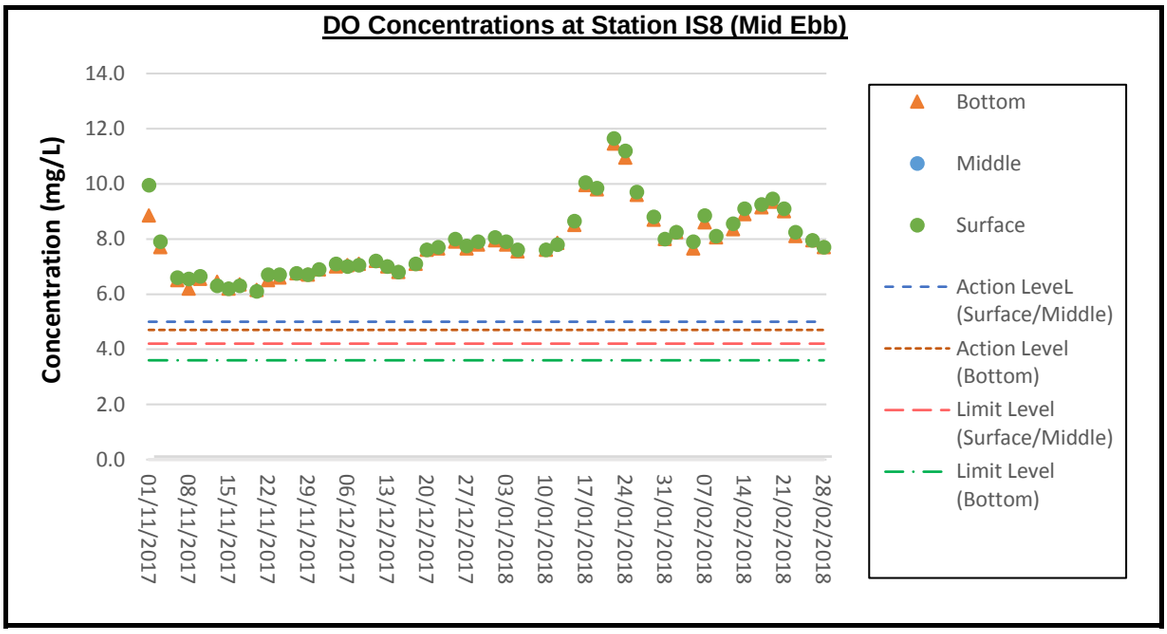


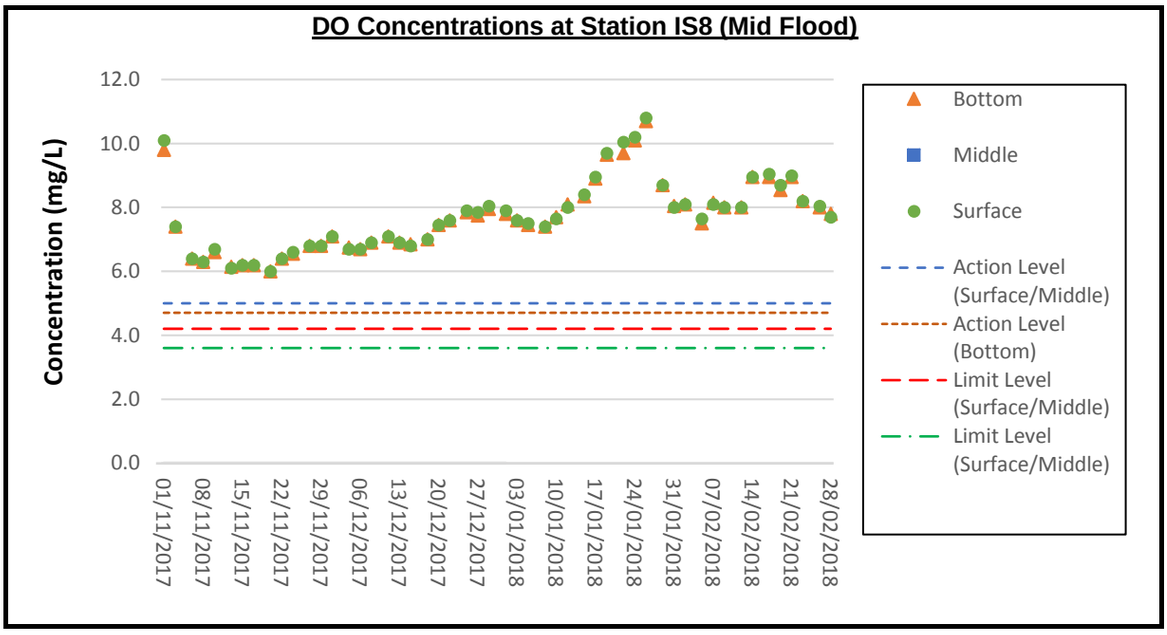
Remark:The water quality monitoring(WQM) at stations CS(Mf)3(N), IS5,IS(Mf)11, IS(Mf)6, IS10(N), IS7, SR3(N), SR5(N), SR6 and SR7 during flood tide and all water quality monitoring stations during ebb tide were not conducted on 8 January 2018 due to safety issues.The Strong Monsoon Signal was hoisted in this morning and the WQM was cancelled due to marine safety issues as considered by the vessel captain.



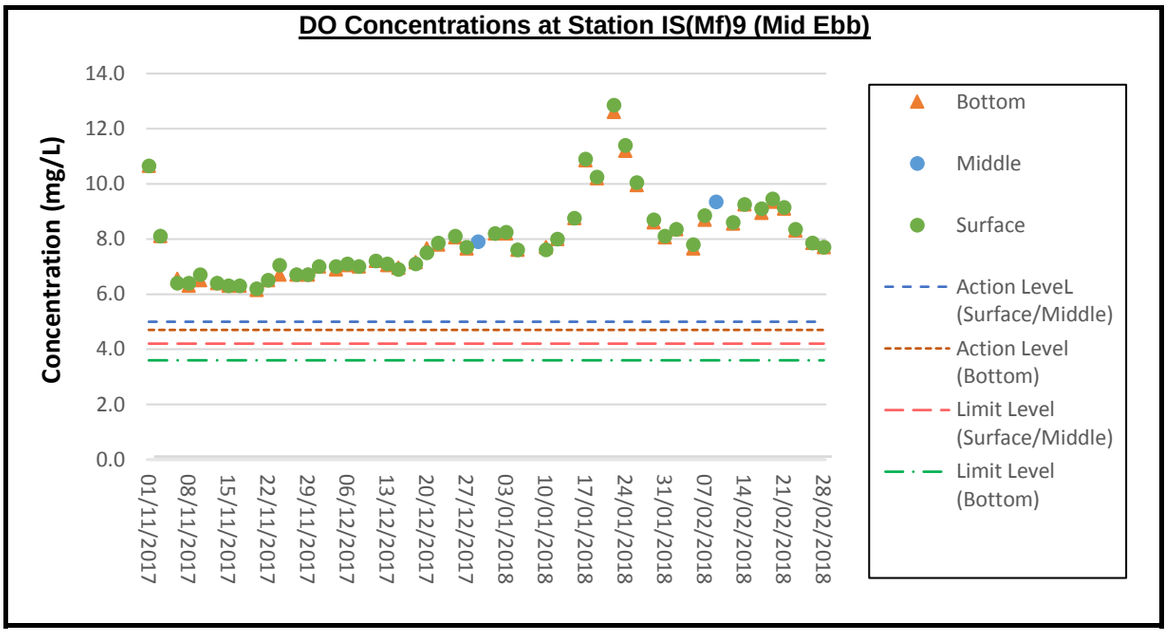


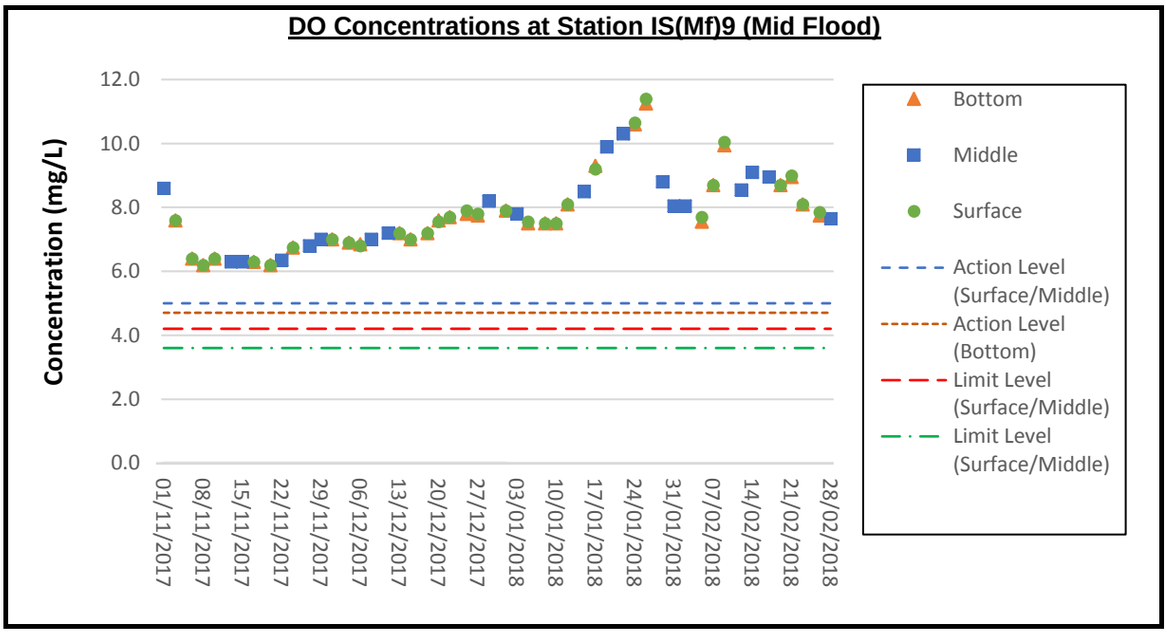
Remark:The water quality monitoring(WQM) at stations CS(Mf)3(N), IS5,IS(Mf)11, IS(Mf)6, IS10(N), IS7, SR3(N), SR5(N), SR6 and SR7 during flood tide and all water quality monitoring stations during ebb tide were not conducted on 8 January 2018 due to safety issues.The Strong Monsoon Signal was hoisted in this morning and the WQM was cancelled due to marine safety issues as considered by the vessel captain.



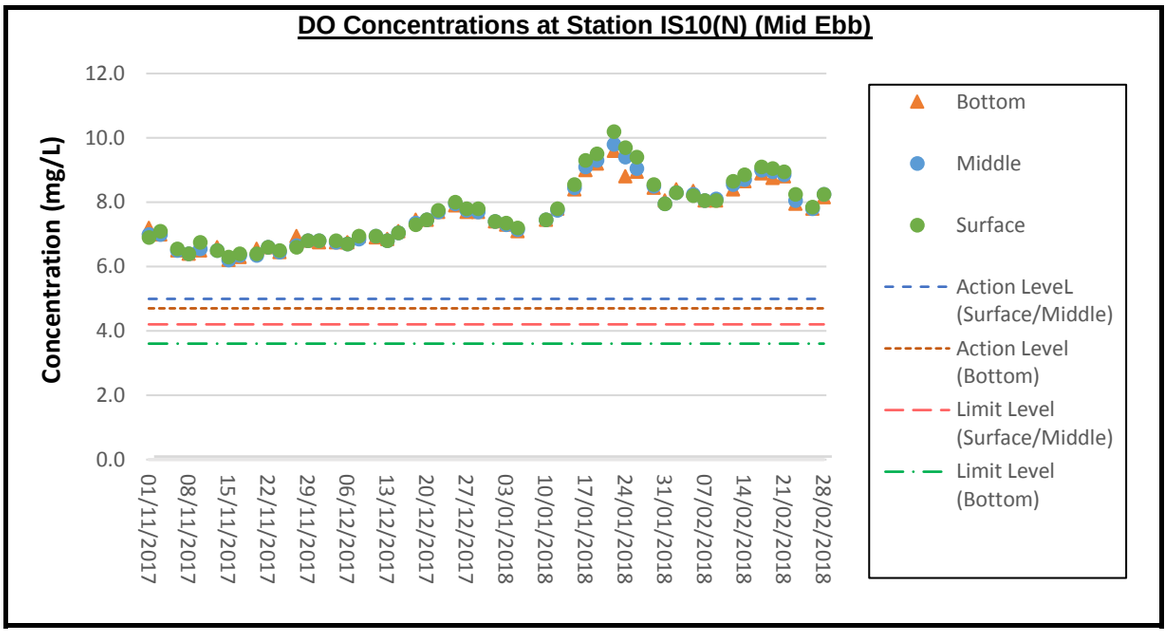


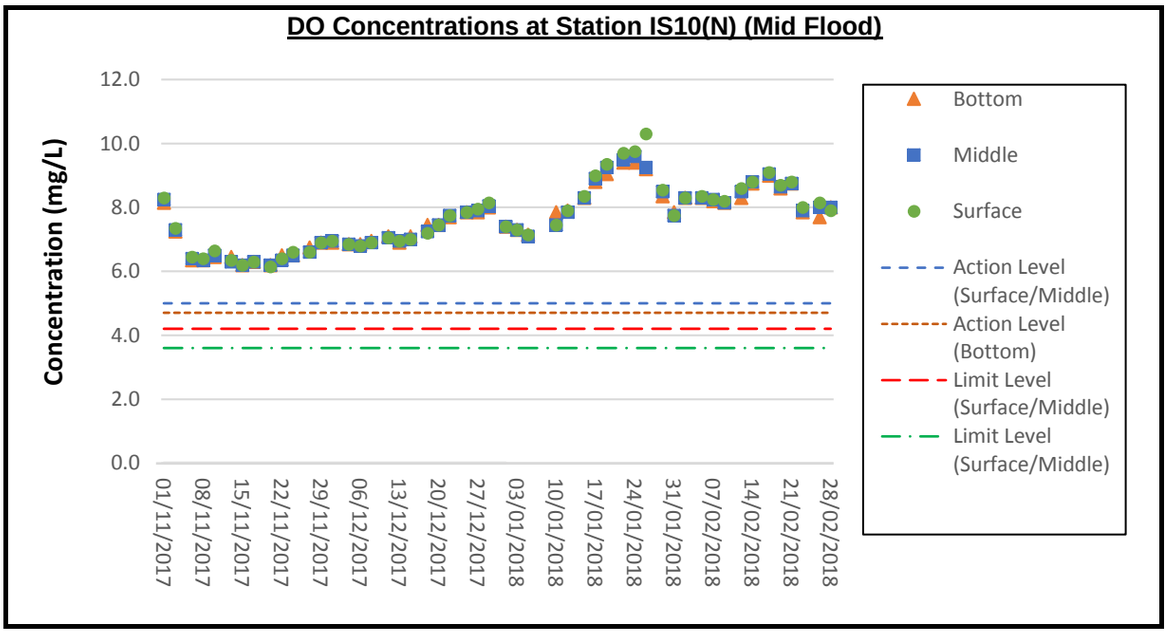
Remark:The water quality monitoring(WQM) at stations CS(Mf)3(N), IS5,IS(Mf)11, IS(Mf)6, IS10(N), IS7, SR3(N), SR5(N), SR6 and SR7 during flood tide and all water quality monitoring stations during ebb tide were not conducted on 8 January 2018 due to safety issues.The Strong Monsoon Signal was hoisted in this morning and the WQM was cancelled due to marine safety issues as considered by the vessel captain.



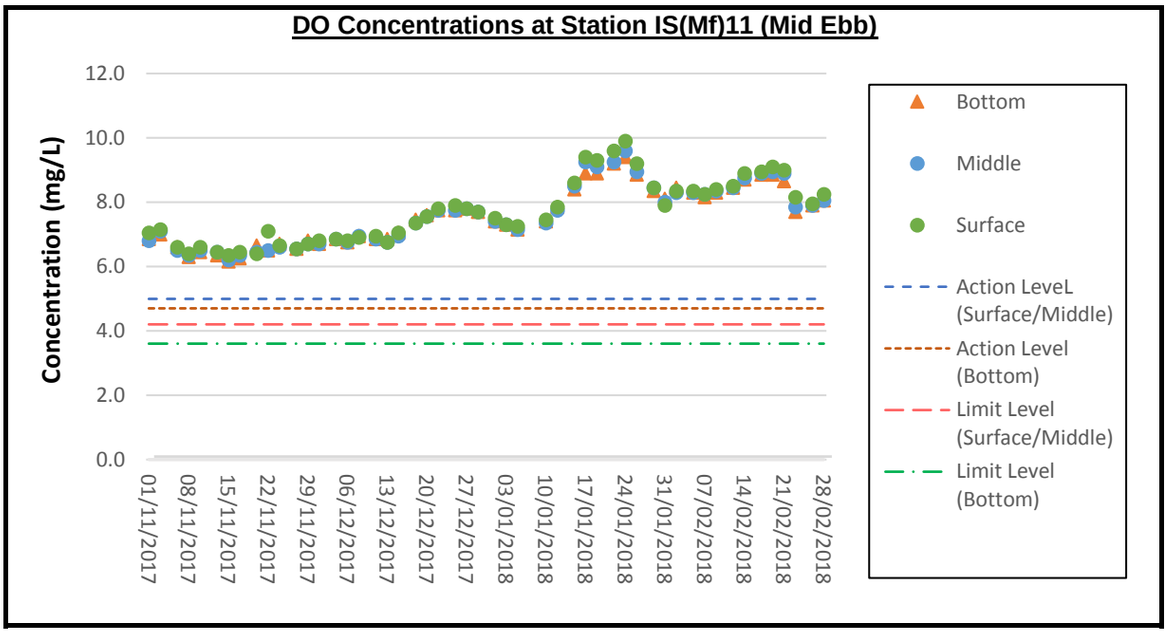


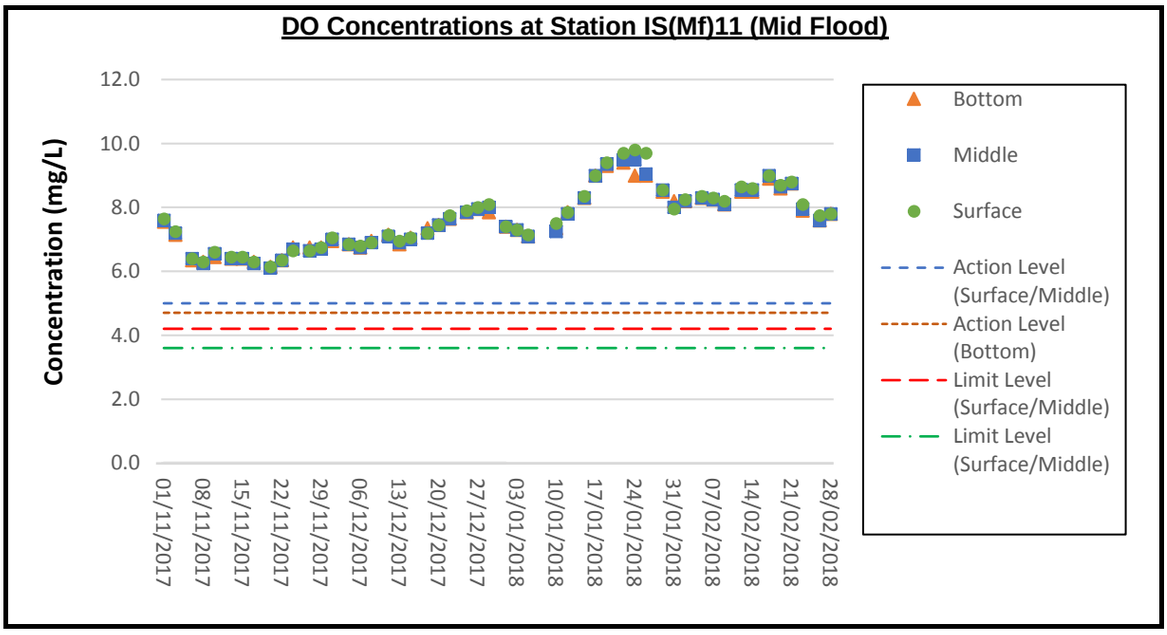
Remark:The water quality monitoring(WQM) at stations CS(Mf)3(N), IS5,IS(Mf)11, IS(Mf)6, IS10(N), IS7, SR3(N), SR5(N), SR6 and SR7 during flood tide and all water quality monitoring stations during ebb tide were not conducted on 8 January 2018 due to safety issues.The Strong Monsoon Signal was hoisted in this morning and the WQM was cancelled due to marine safety issues as considered by the vessel captain.



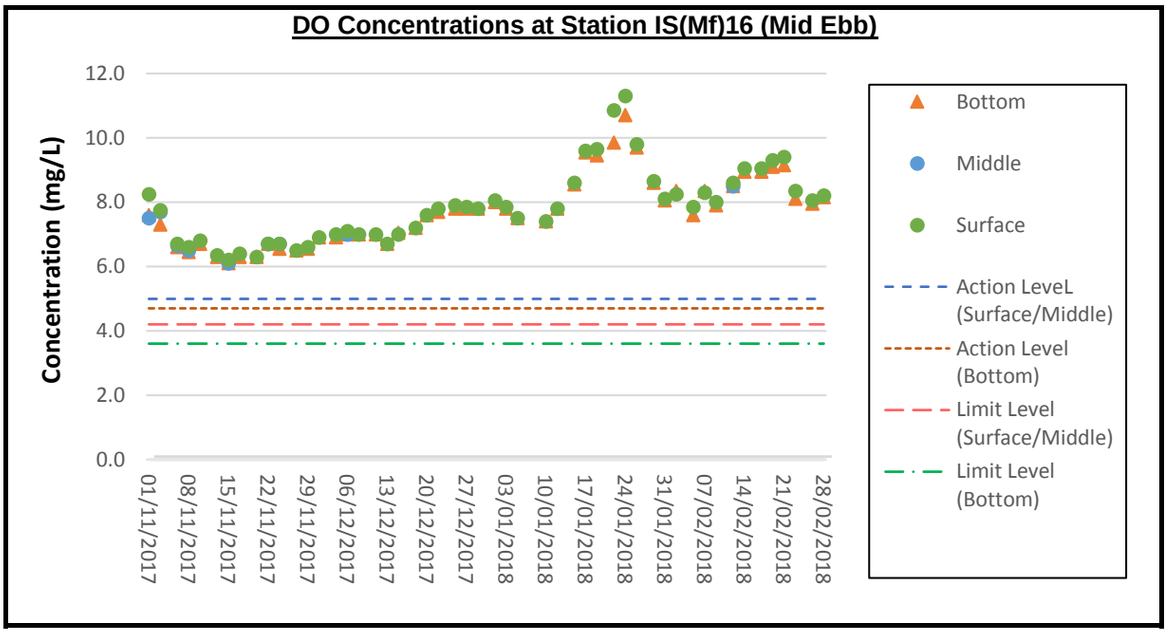


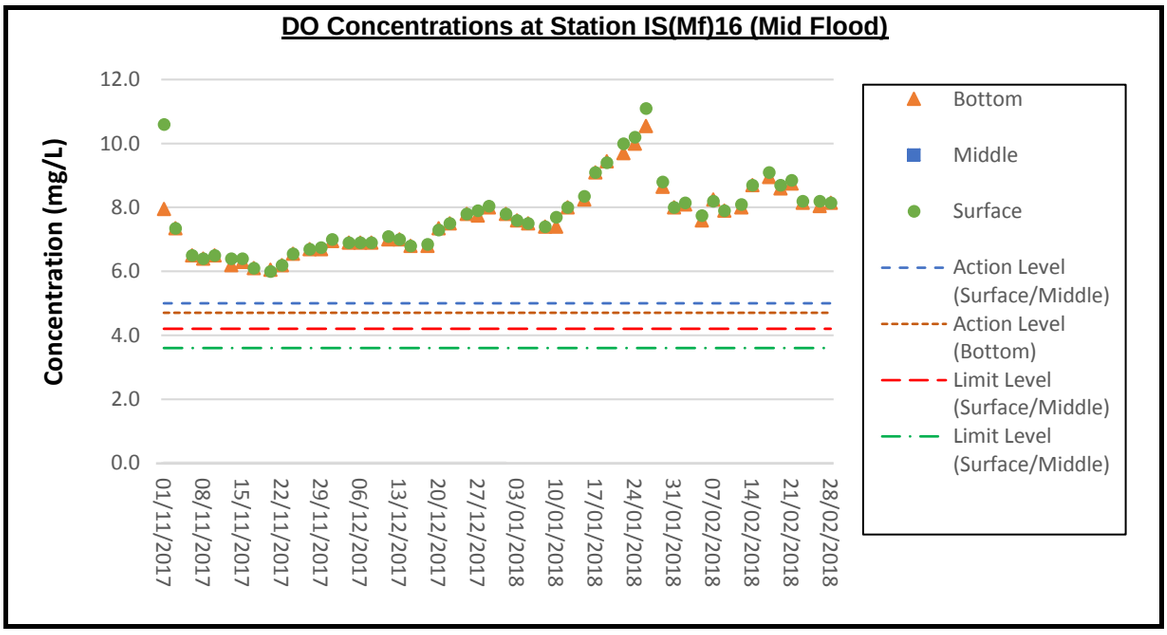
Remark:The water quality monitoring(WQM) at stations CS(Mf)3(N), IS5,IS(Mf)11, IS(Mf)6, IS10(N), IS7, SR3(N), SR5(N), SR6 and SR7 during flood tide and all water quality monitoring stations during ebb tide were not conducted on 8 January 2018 due to safety issues.The Strong Monsoon Signal was hoisted in this morning and the WQM was cancelled due to marine safety issues as considered by the vessel captain.



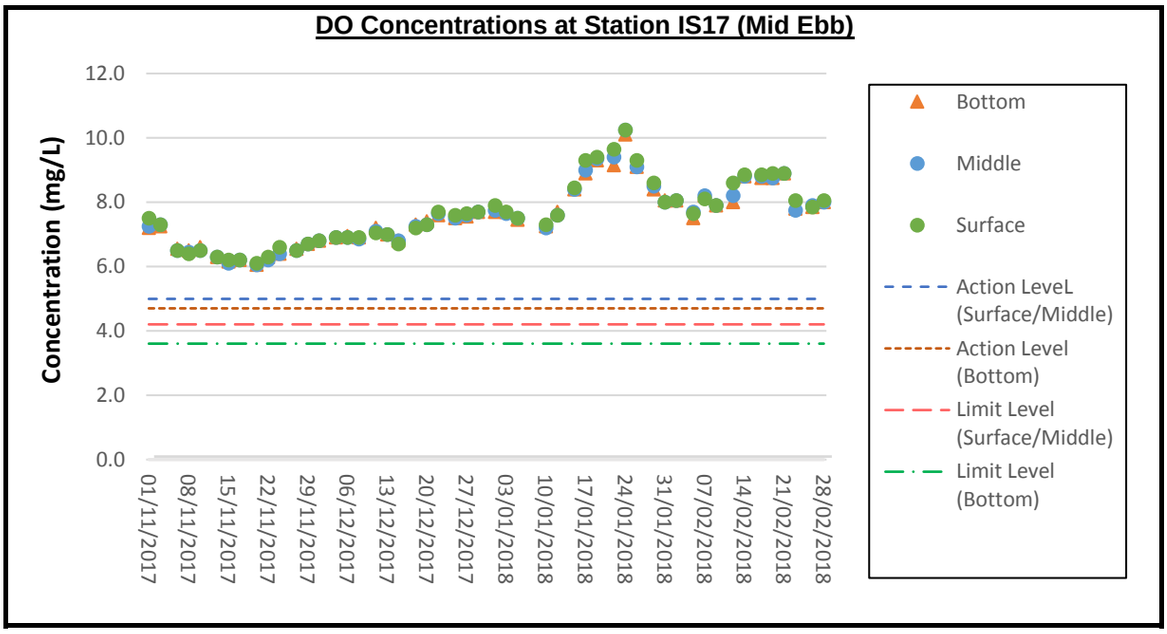


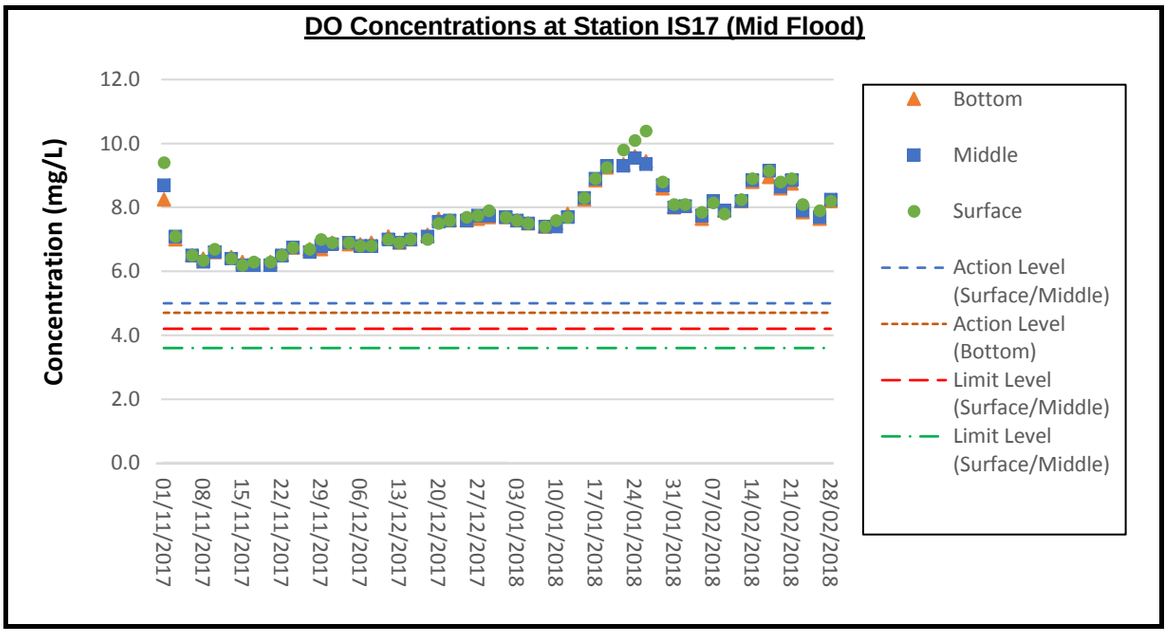
Remark:The water quality monitoring(WQM) at stations CS(Mf)3(N), IS5,IS(Mf)11, IS(Mf)6, IS10(N), IS7, SR3(N), SR5(N), SR6 and SR7 during flood tide and all water quality monitoring stations during ebb tide were not conducted on 8 January 2018 due to safety issues.The Strong Monsoon Signal was hoisted in this morning and the WQM was cancelled due to marine safety issues as considered by the vessel captain.





Remark:The water quality monitoring(WQM) at stations CS(Mf)3(N), IS5,IS(Mf)11, IS(Mf)6, IS10(N), IS7, SR3(N), SR5(N), SR6 and SR7 during flood tide and all water quality monitoring stations during ebb tide were not conducted on 8 January 2018 due to safety issues.The Strong Monsoon Signal was hoisted in this morning and the WQM was cancelled due to marine safety issues as considered by the vessel captain.





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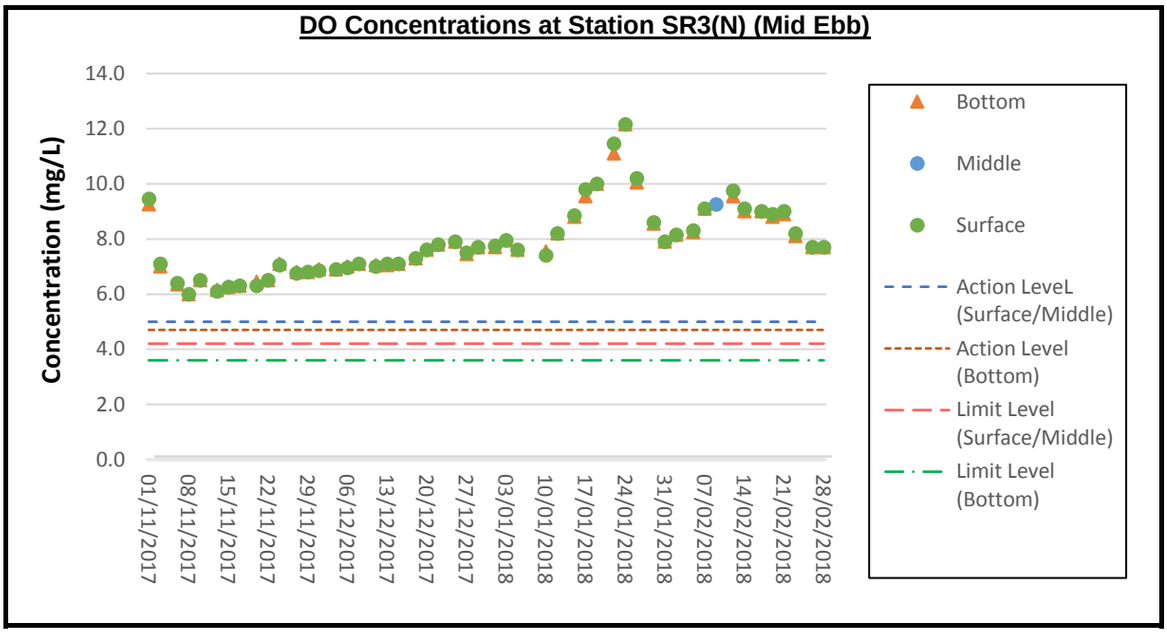

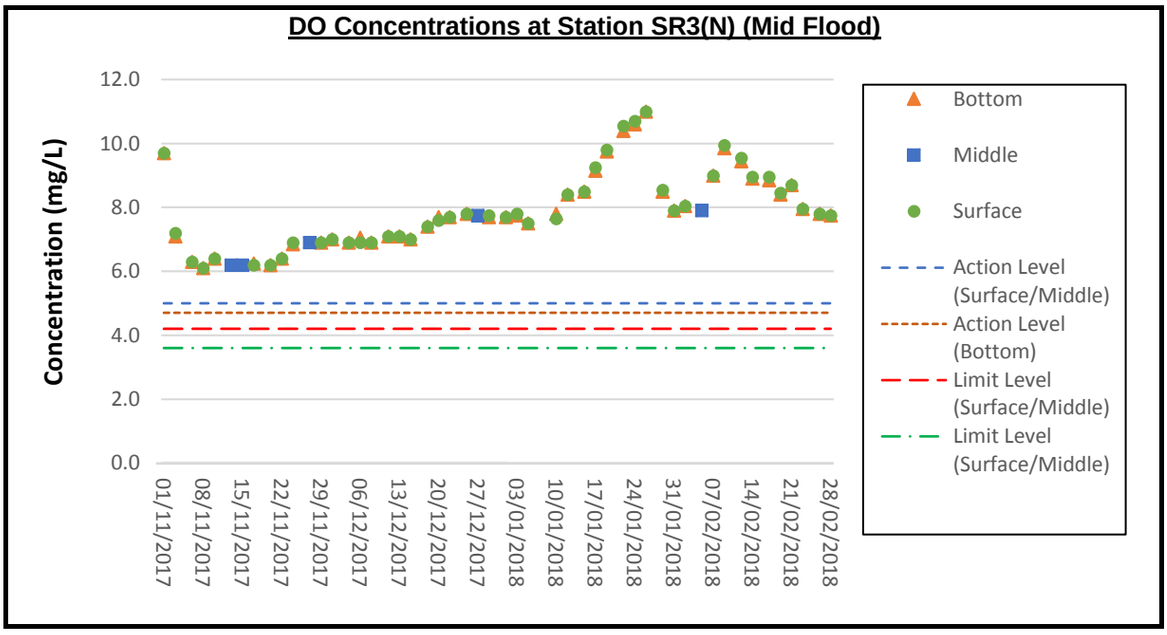

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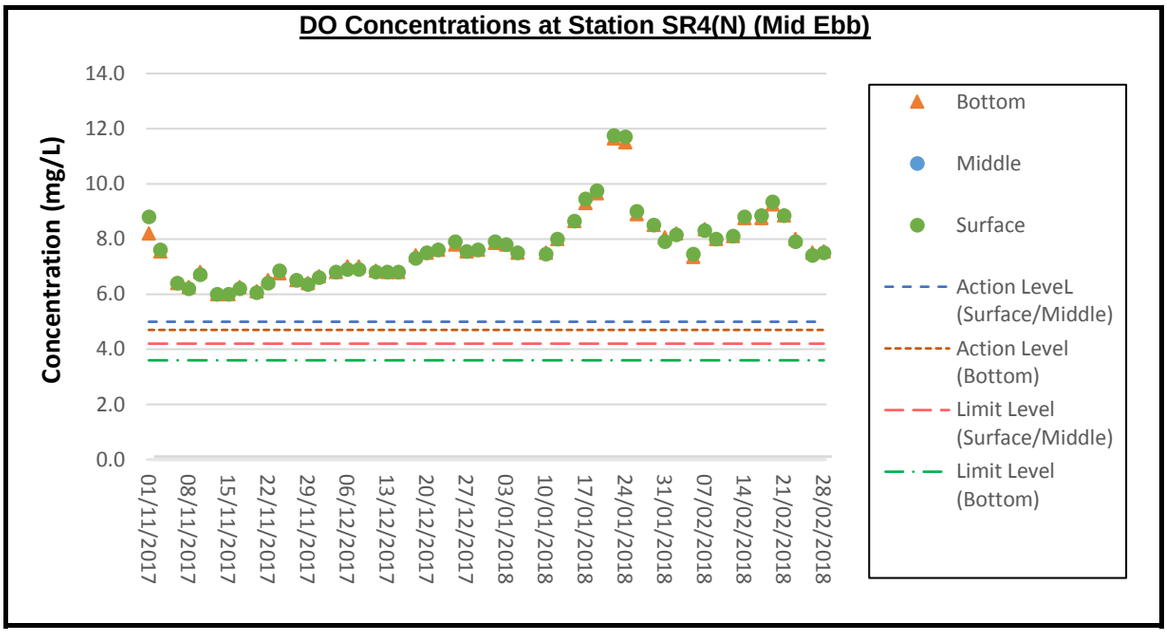

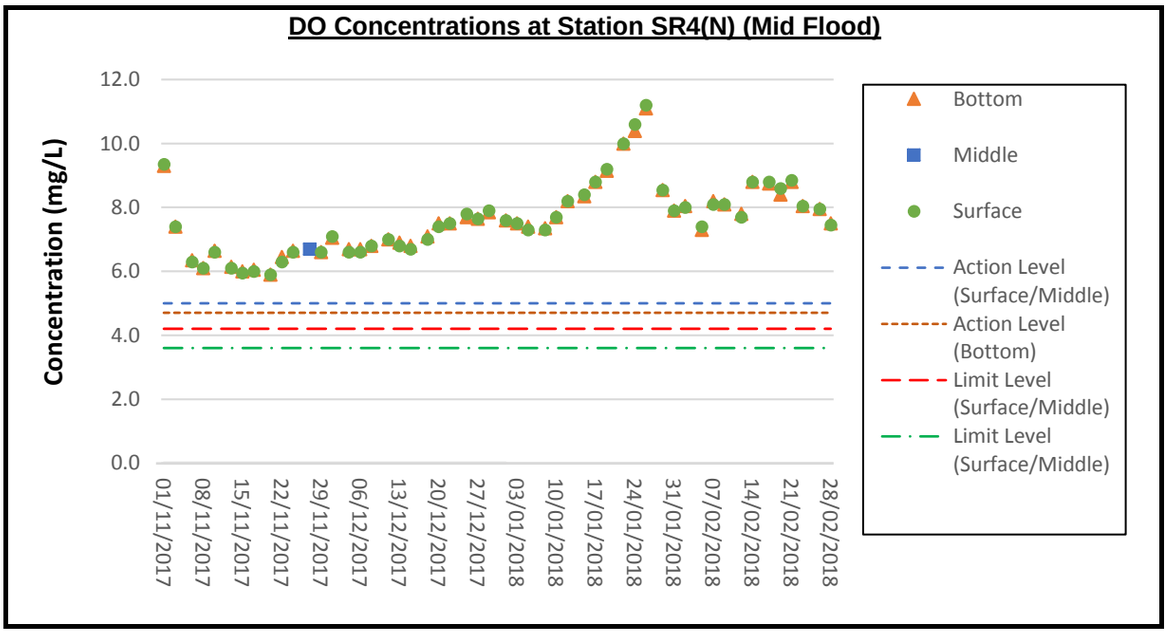

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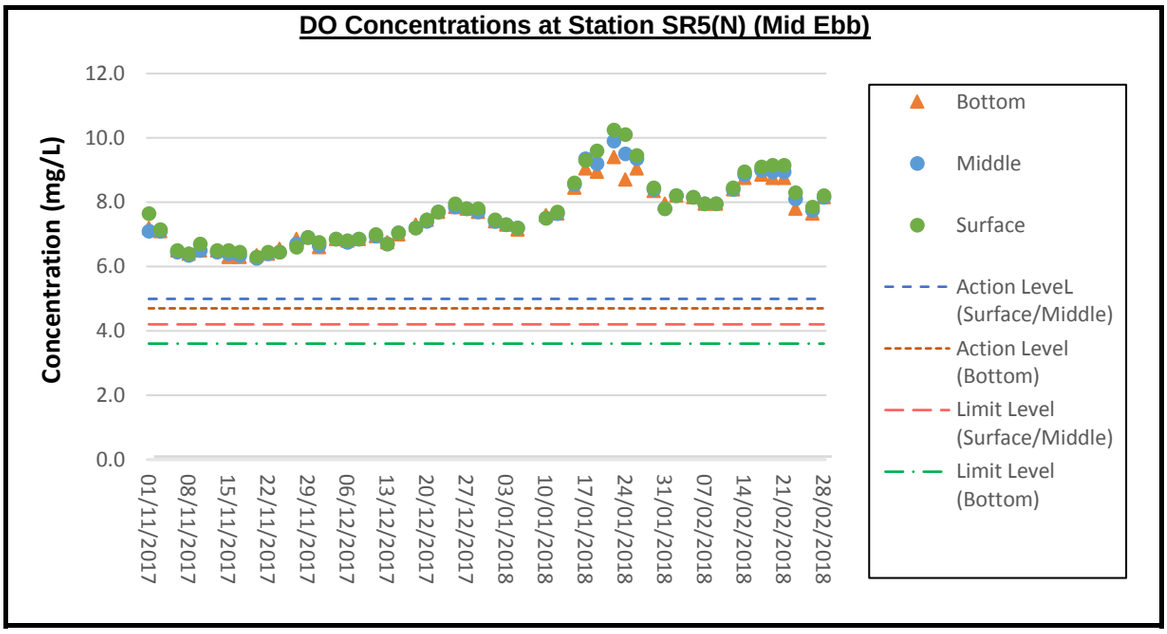

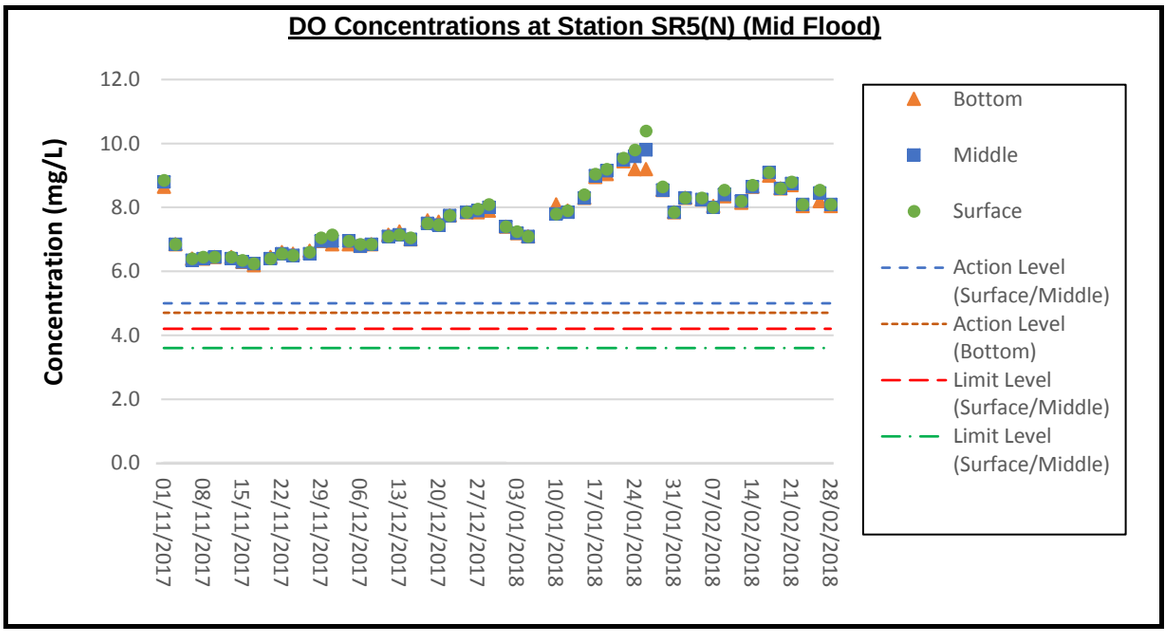

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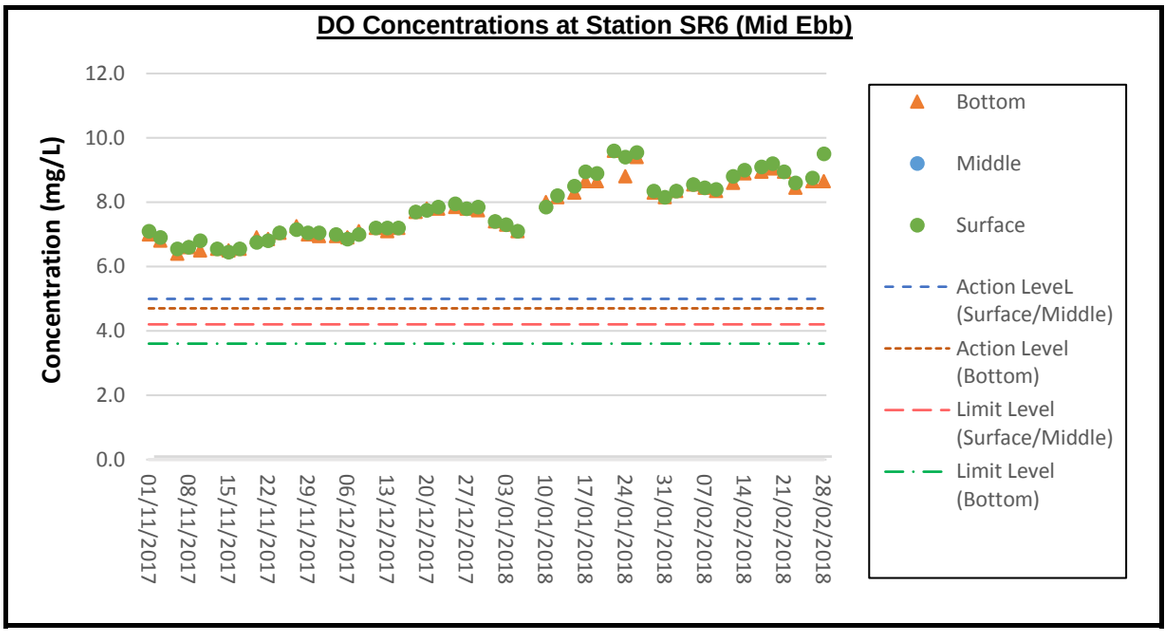

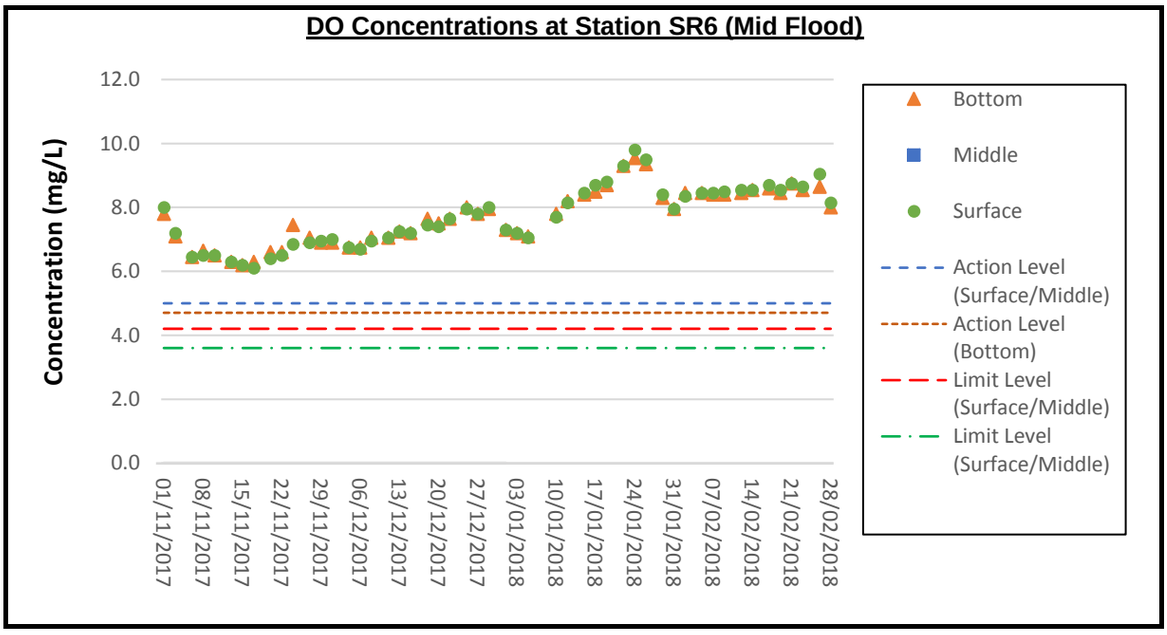

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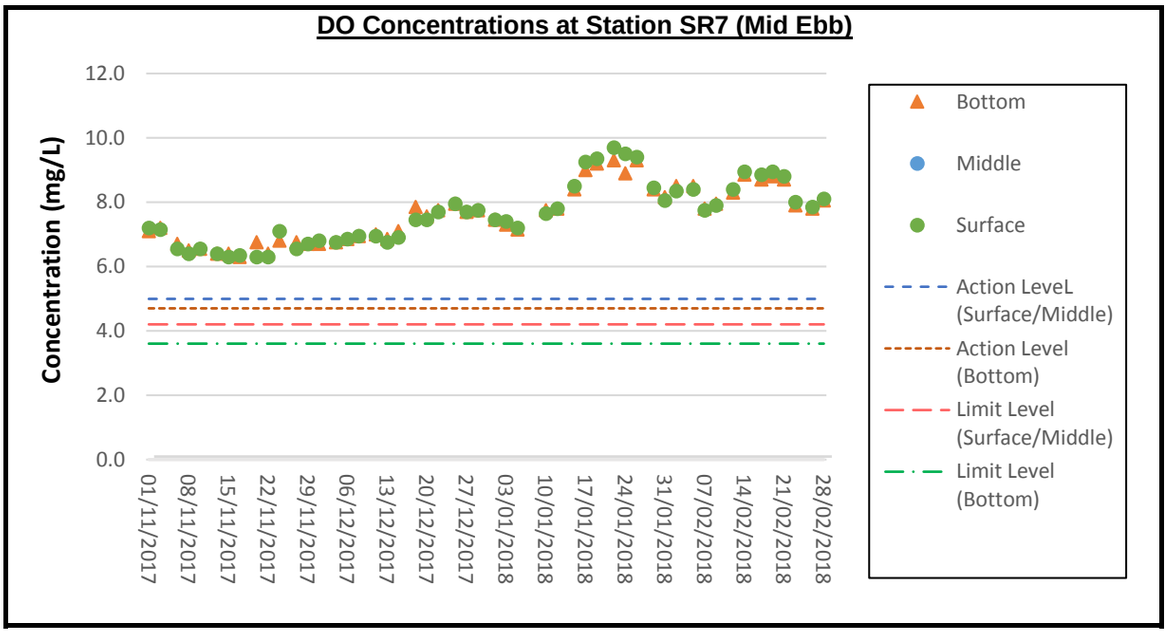
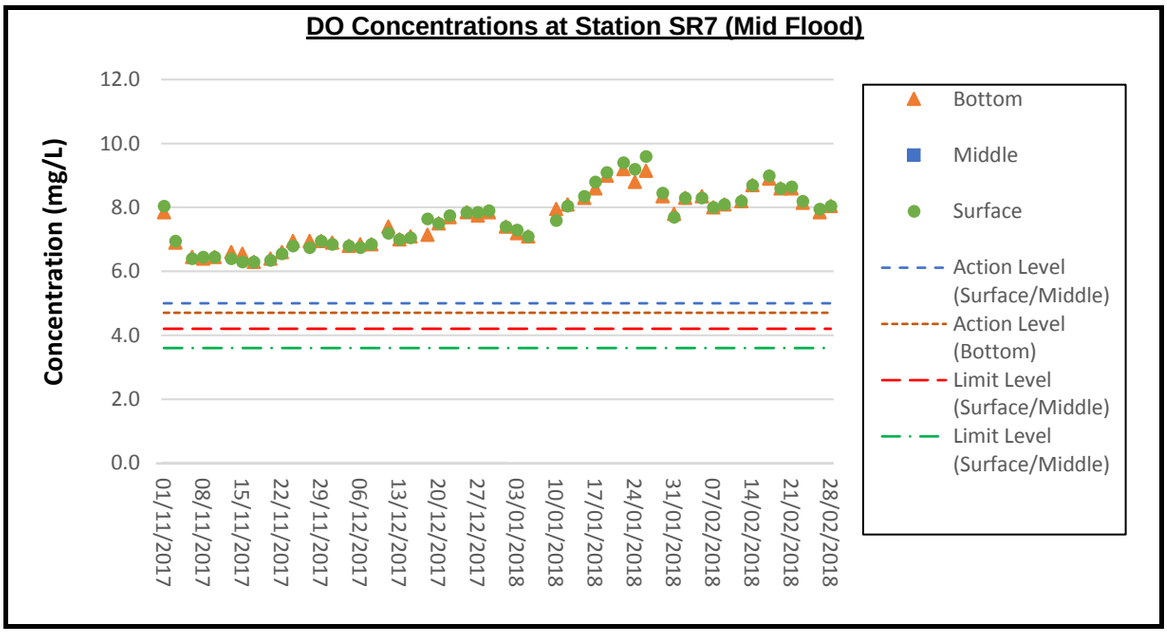
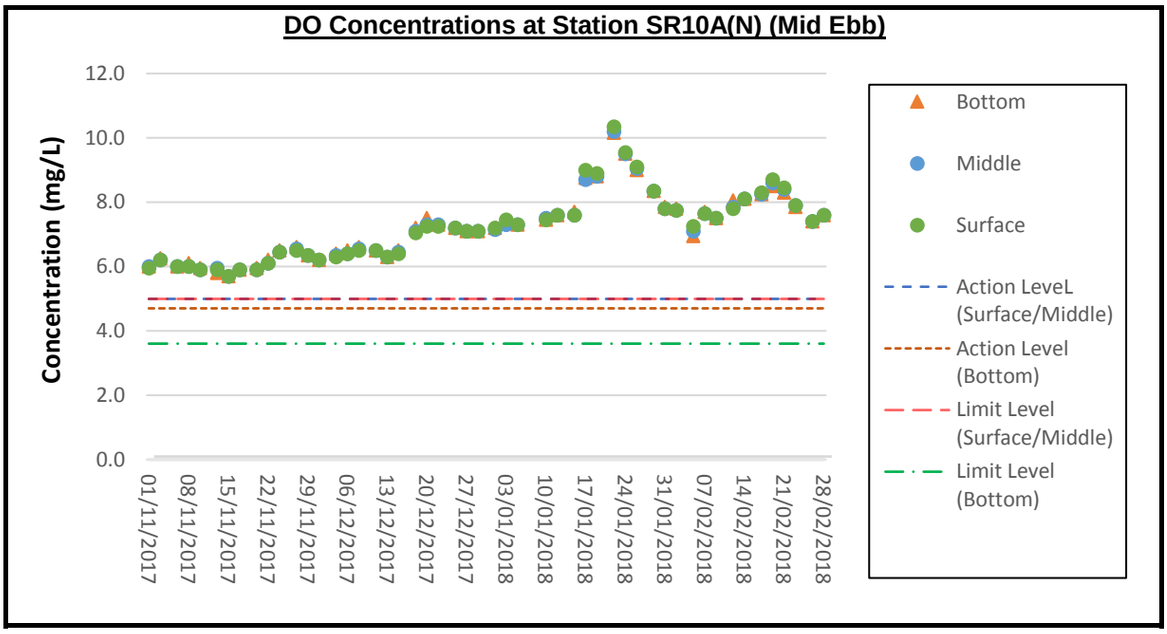
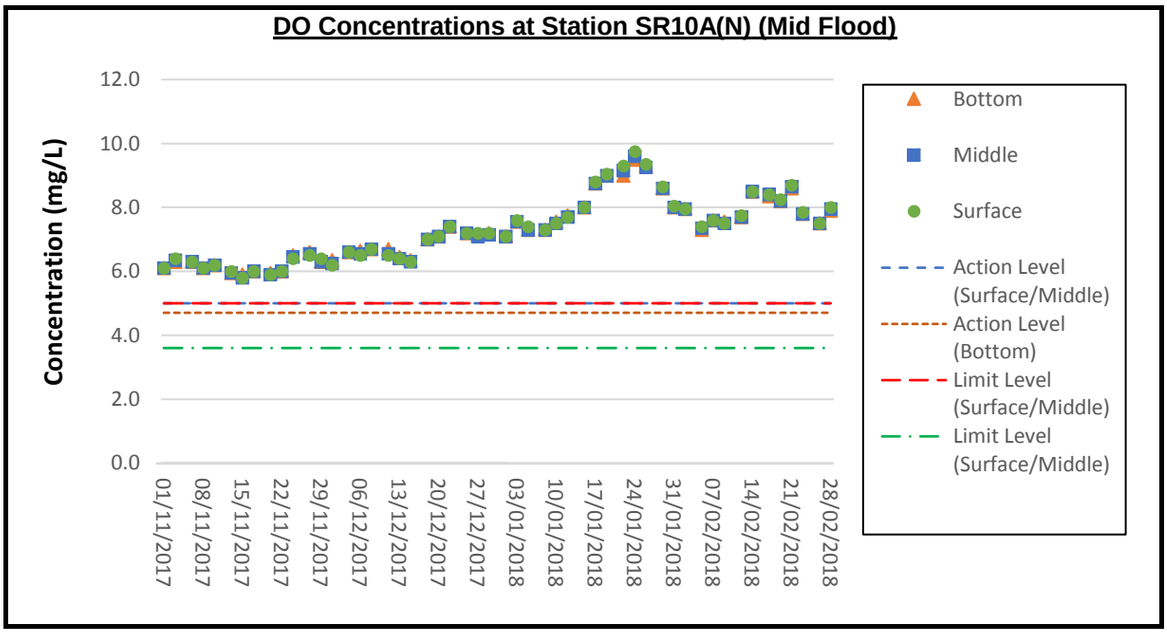


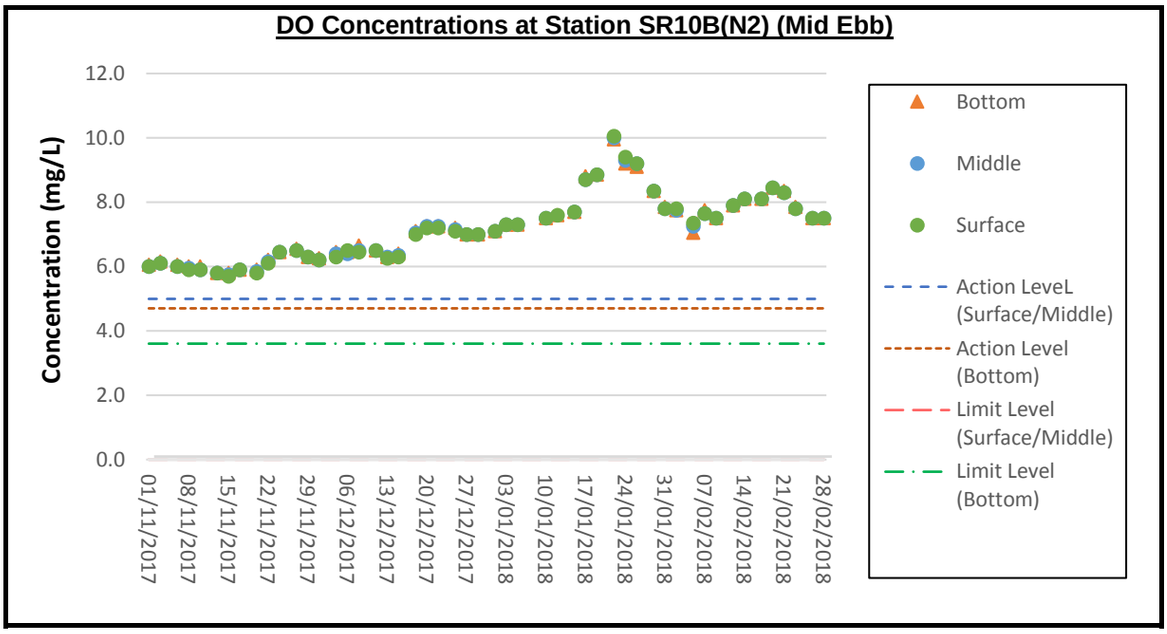


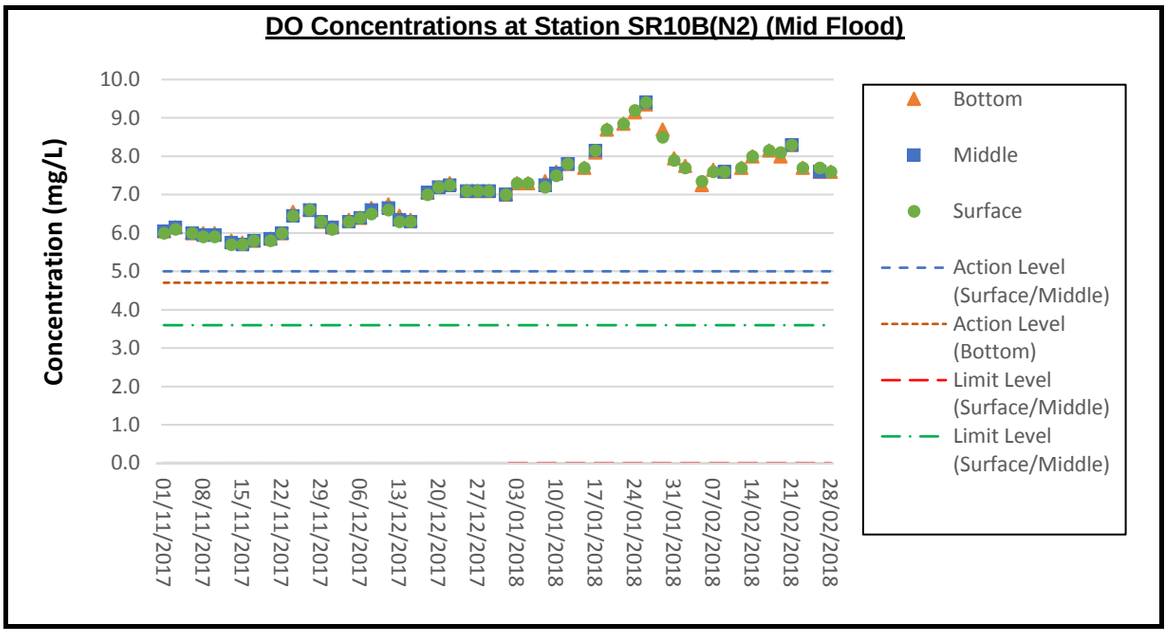
Remark:The water quality monitoring(WQM) at stations CS(Mf)3(N), IS5,IS(Mf)11, IS(Mf)6, IS10(N), IS7, SR3(N), SR5(N), SR6 and SR7 during flood tide and all water quality monitoring stations during ebb tide were not conducted on 8 January 2018 due to safety issues.The Strong Monsoon Signal was hoisted in this morning and the WQM was cancelled due to marine safety issues as considered by the vessel captain.



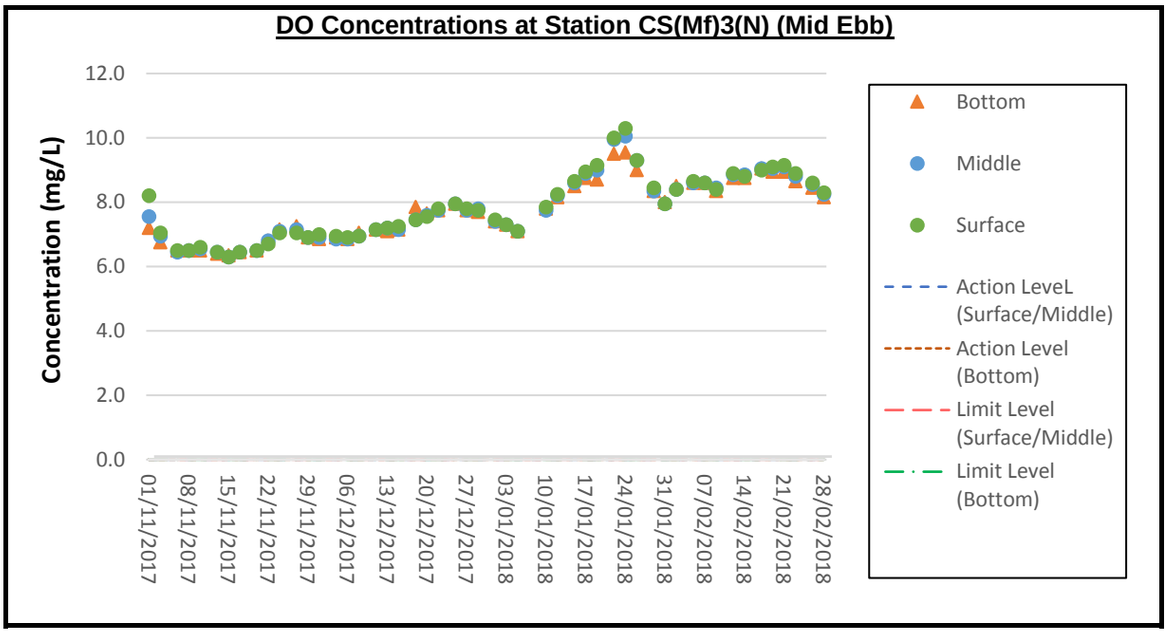


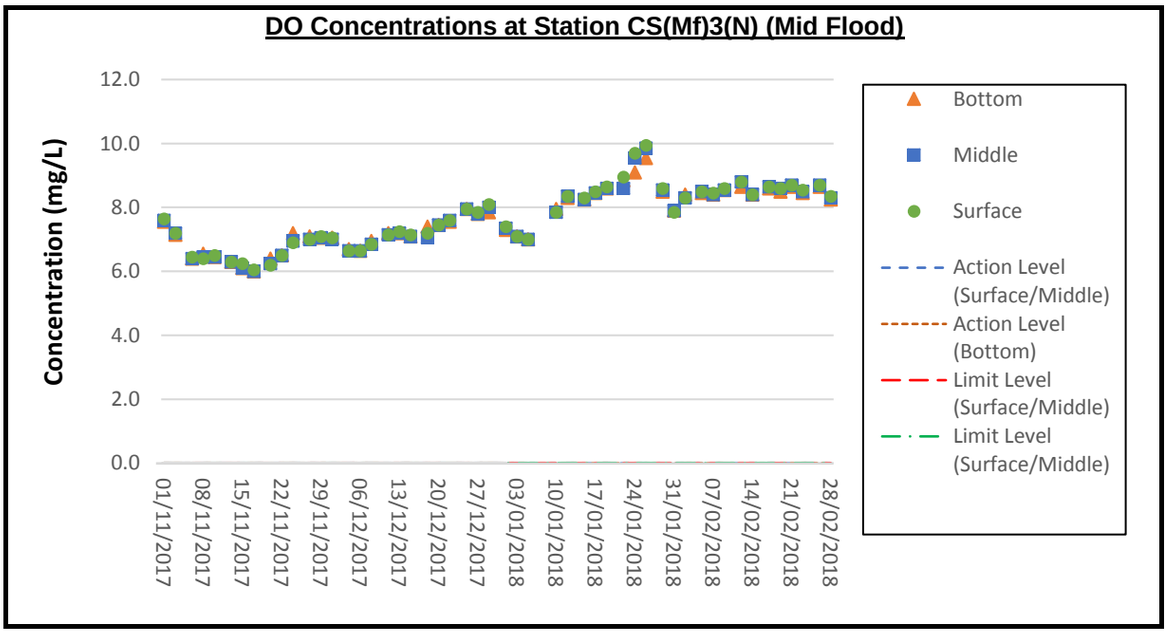
Remark:The water quality monitoring(WQM) at stations CS(Mf)3(N), IS5,IS(Mf)11, IS(Mf)6, IS10(N), IS7, SR3(N), SR5(N), SR6 and SR7 during flood tide and all water quality monitoring stations during ebb tide were not conducted on 8 January 2018 due to safety issues.The Strong Monsoon Signal was hoisted in this morning and the WQM was cancelled due to marine safety issues as considered by the vessel captain.





Remark:The water quality monitoring(WQM) at stations CS(Mf)3(N), IS5,IS(Mf)11, IS(Mf)6, IS10(N), IS7, SR3(N), SR5(N), SR6 and SR7 during flood tide and all water quality monitoring stations during ebb tide were not conducted on 8 January 2018 due to safety issues.The Strong Monsoon Signal was hoisted in this morning and the WQM was cancelled due to marine safety issues as considered by the vessel captain.





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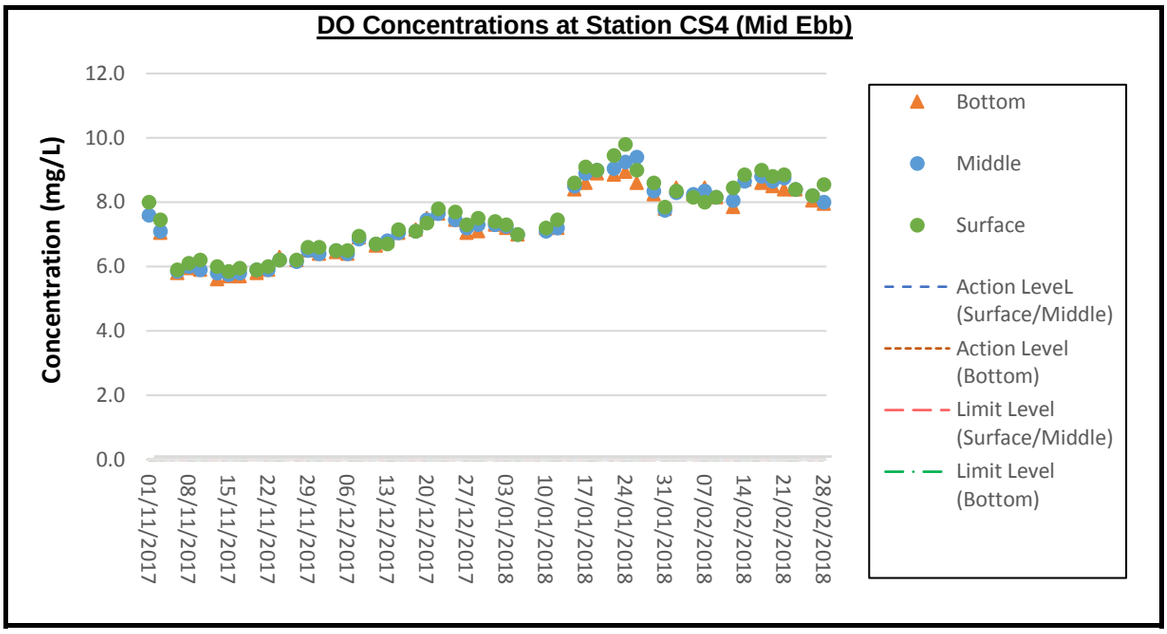

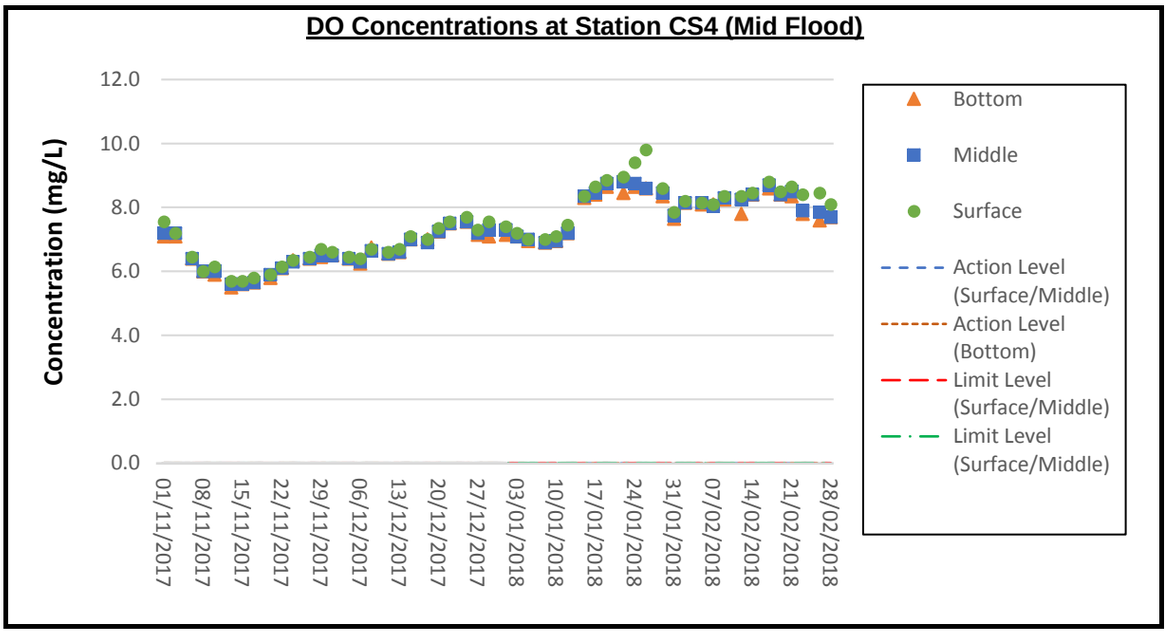

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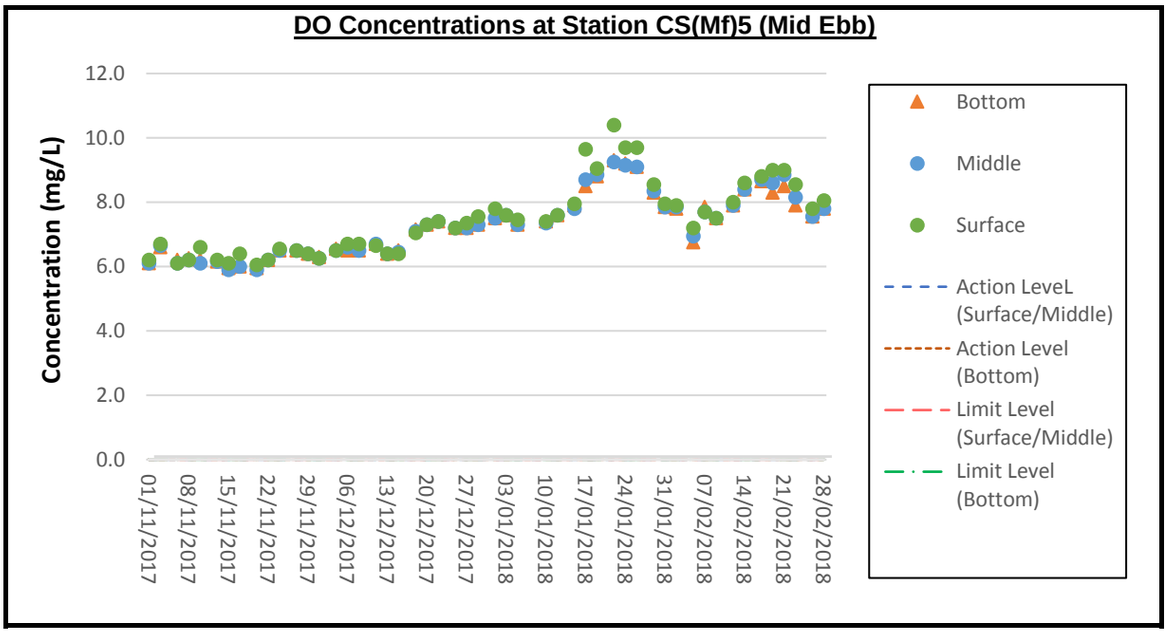

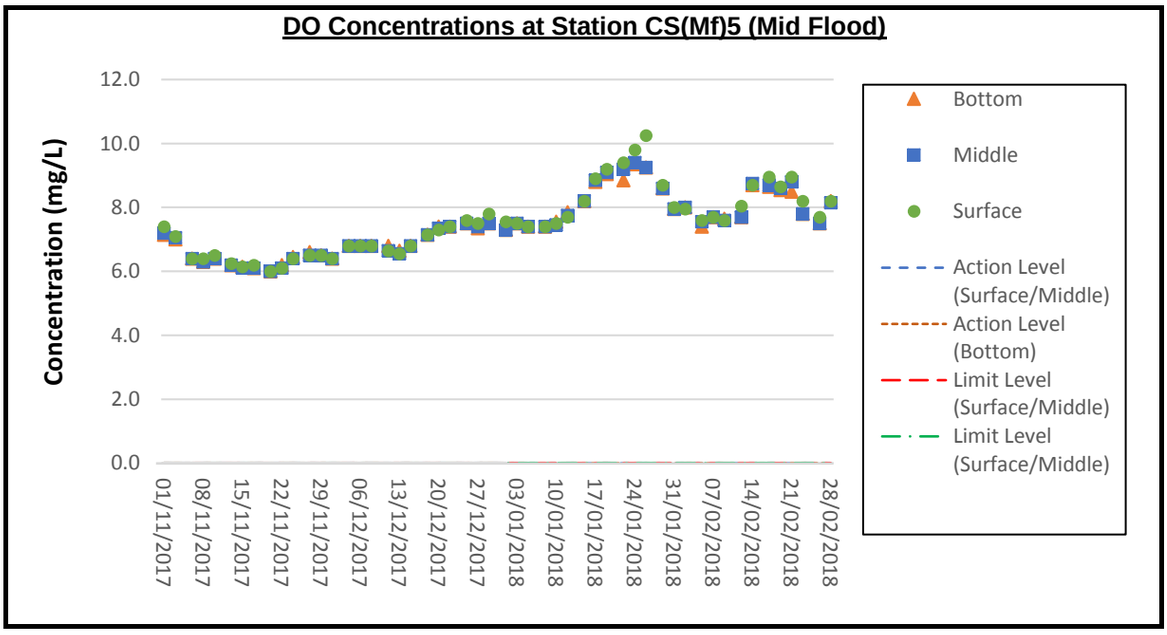

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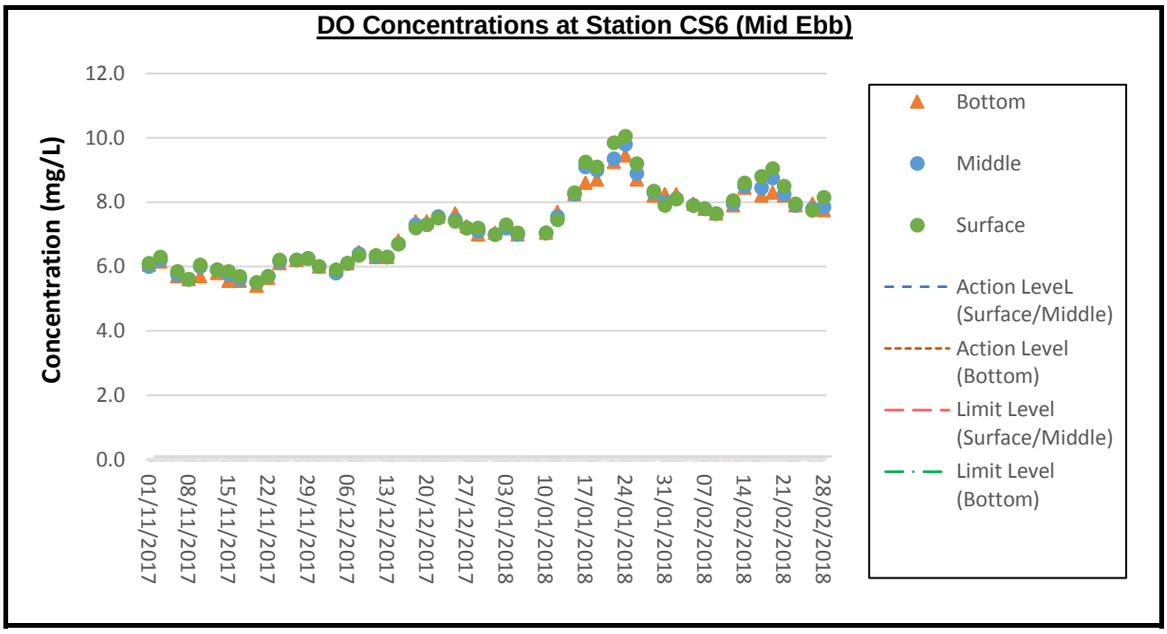

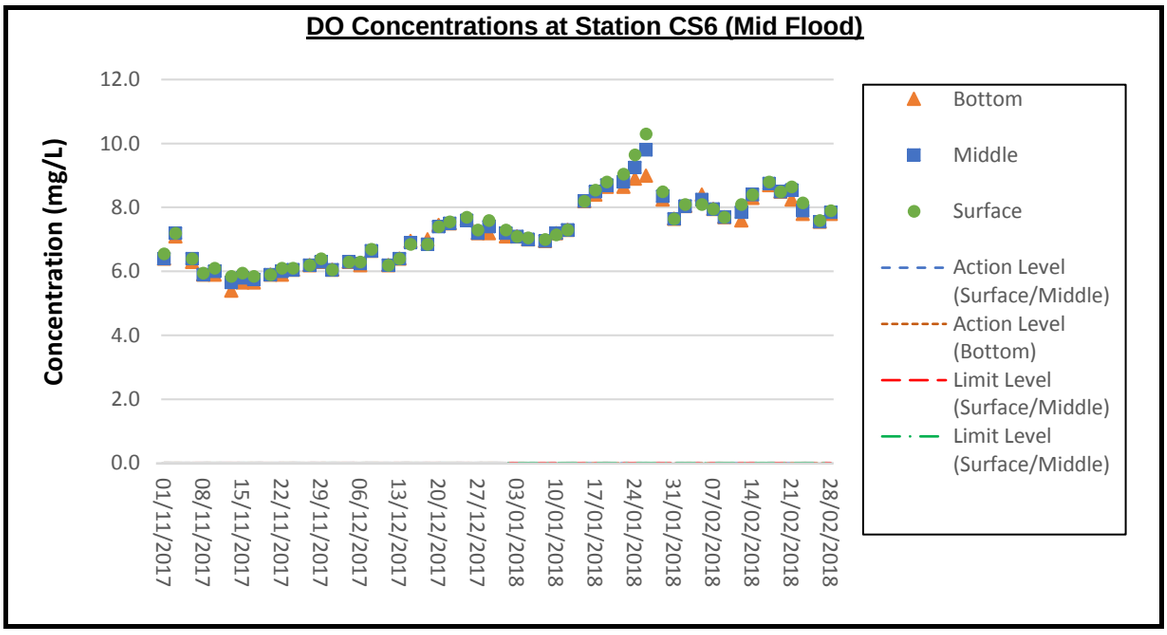

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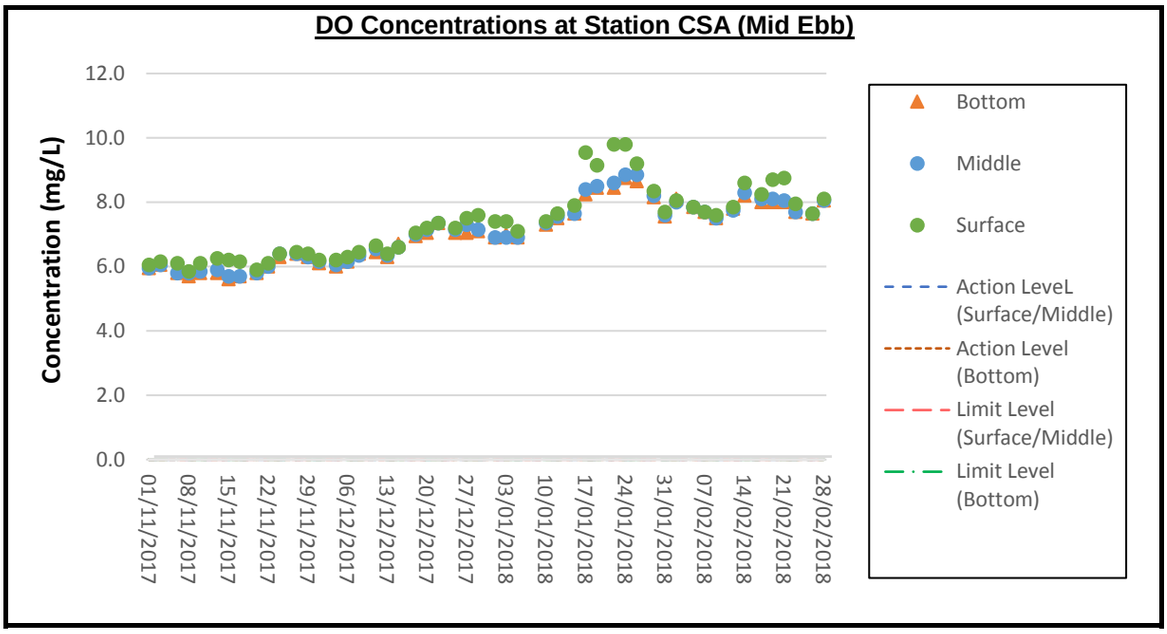

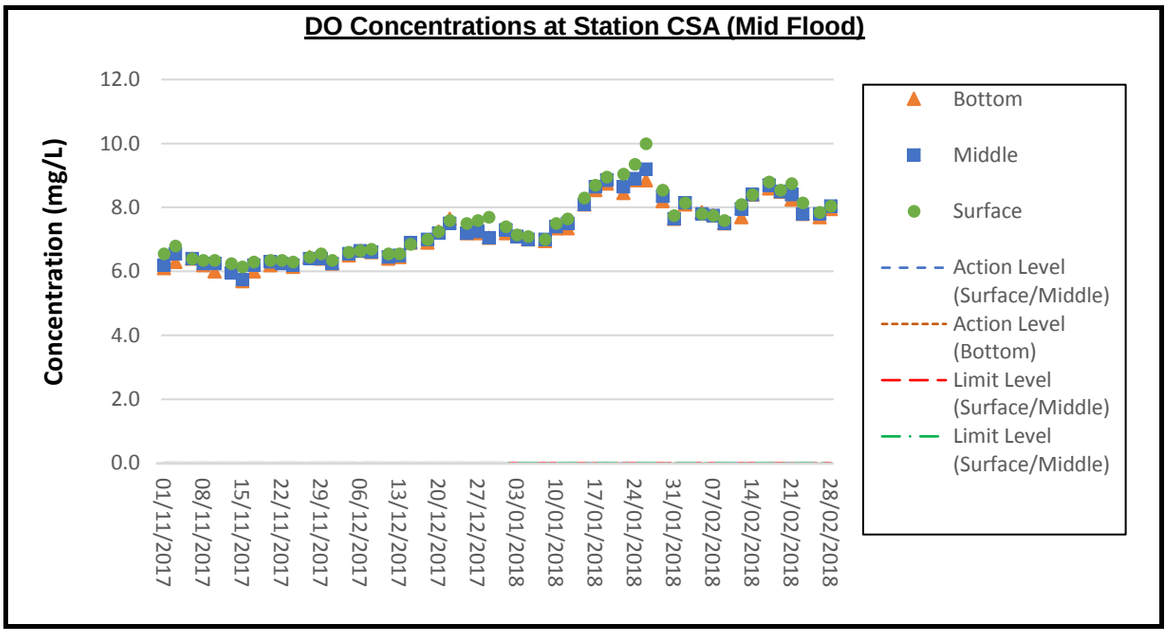

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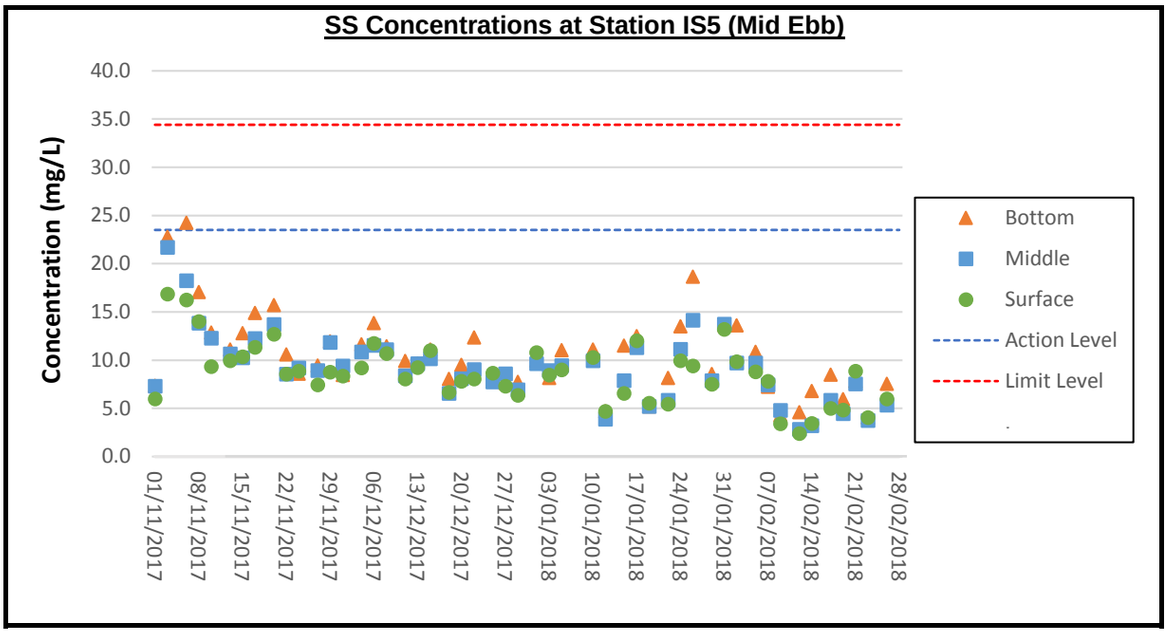

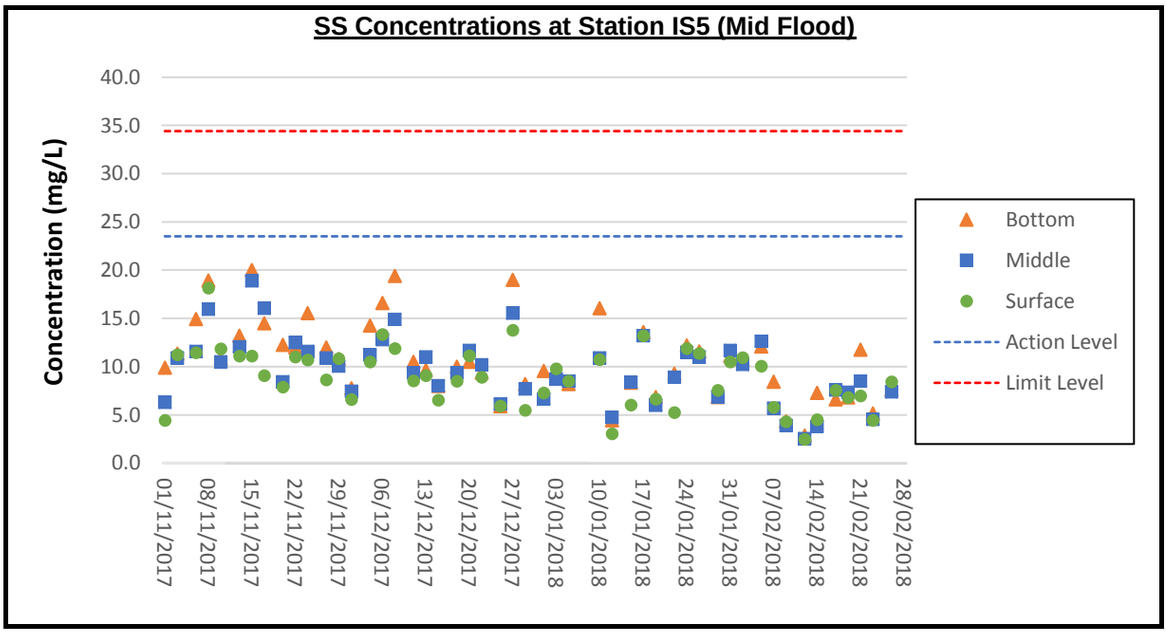

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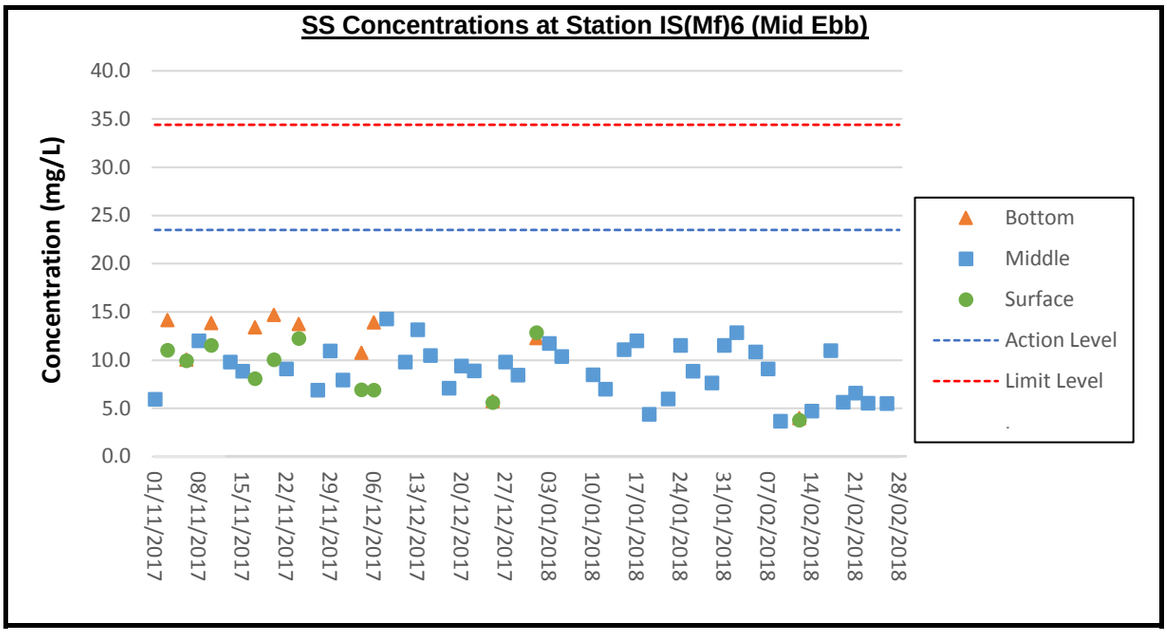

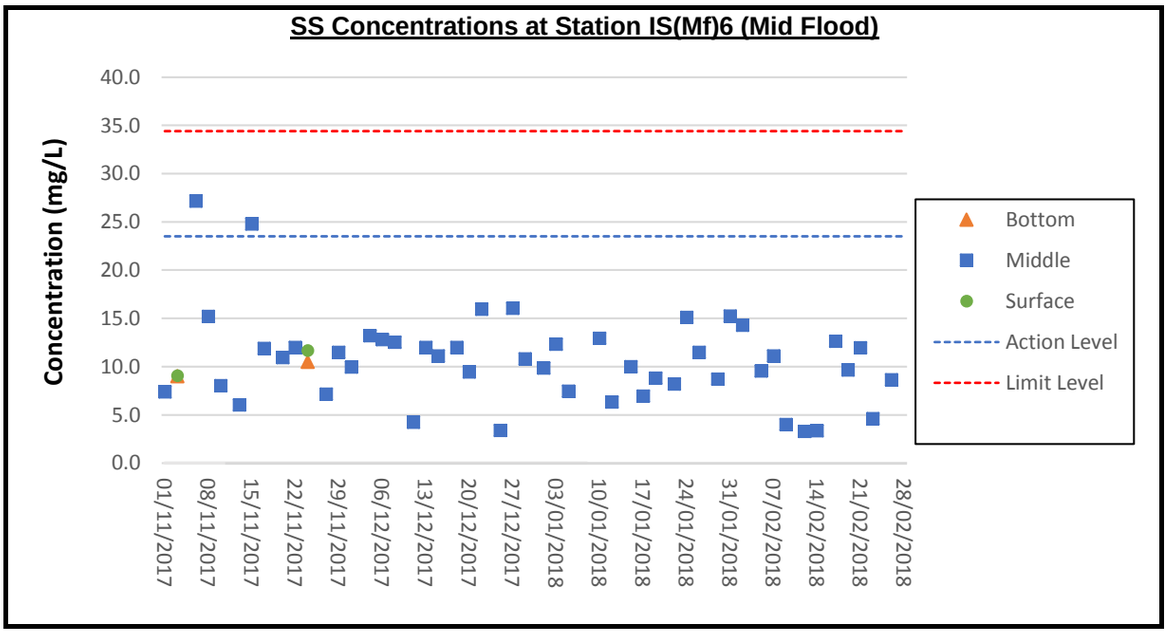

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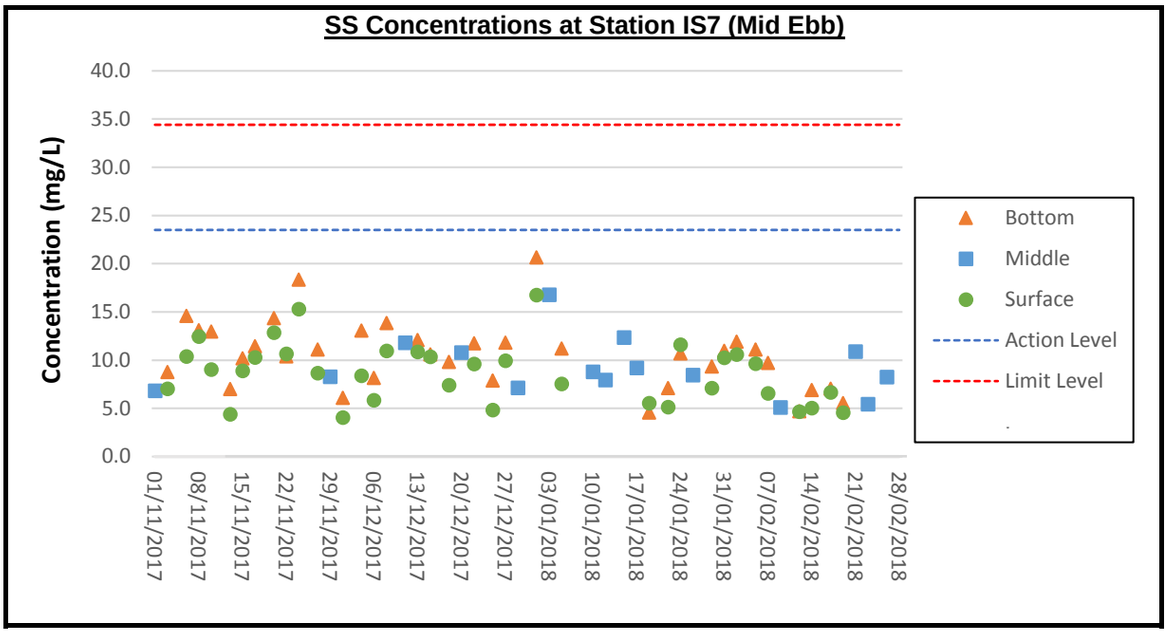

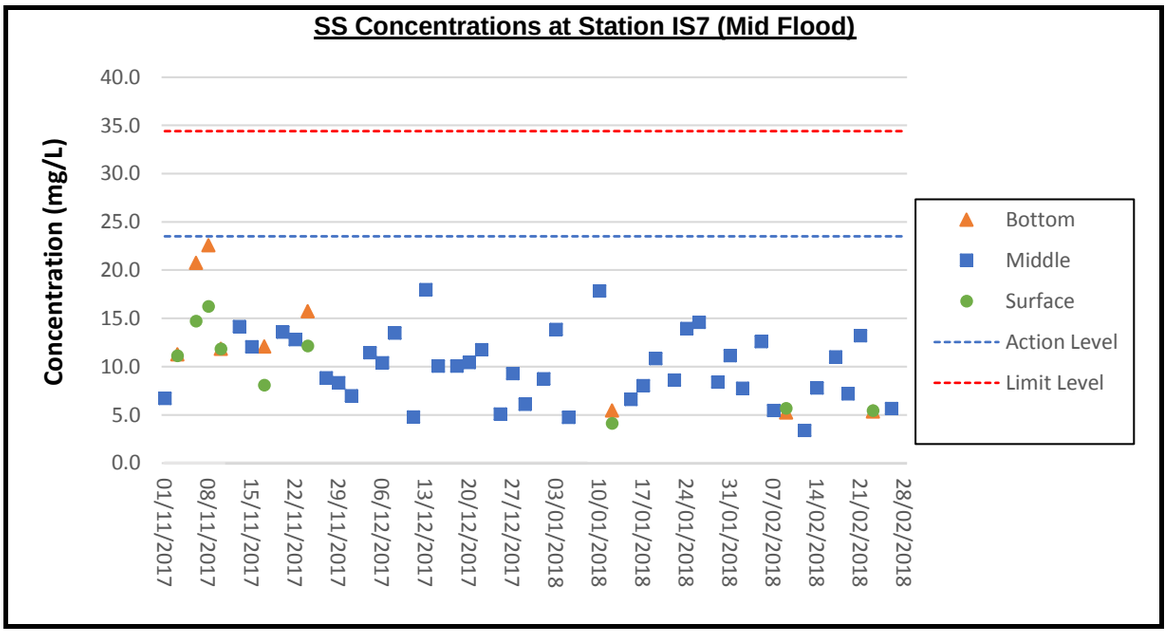

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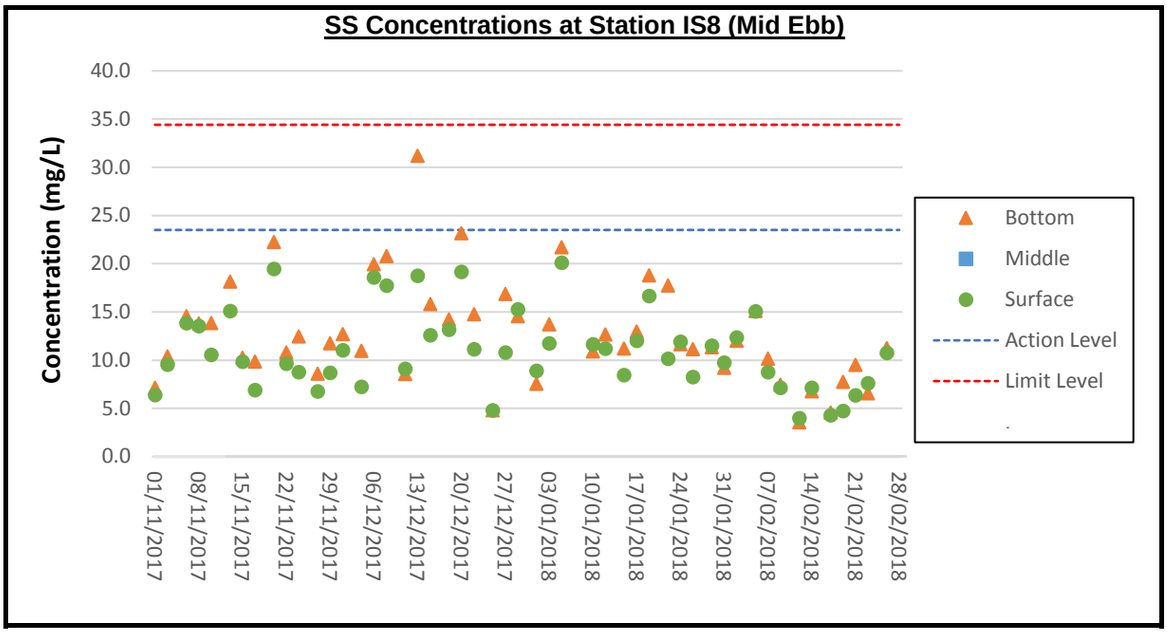

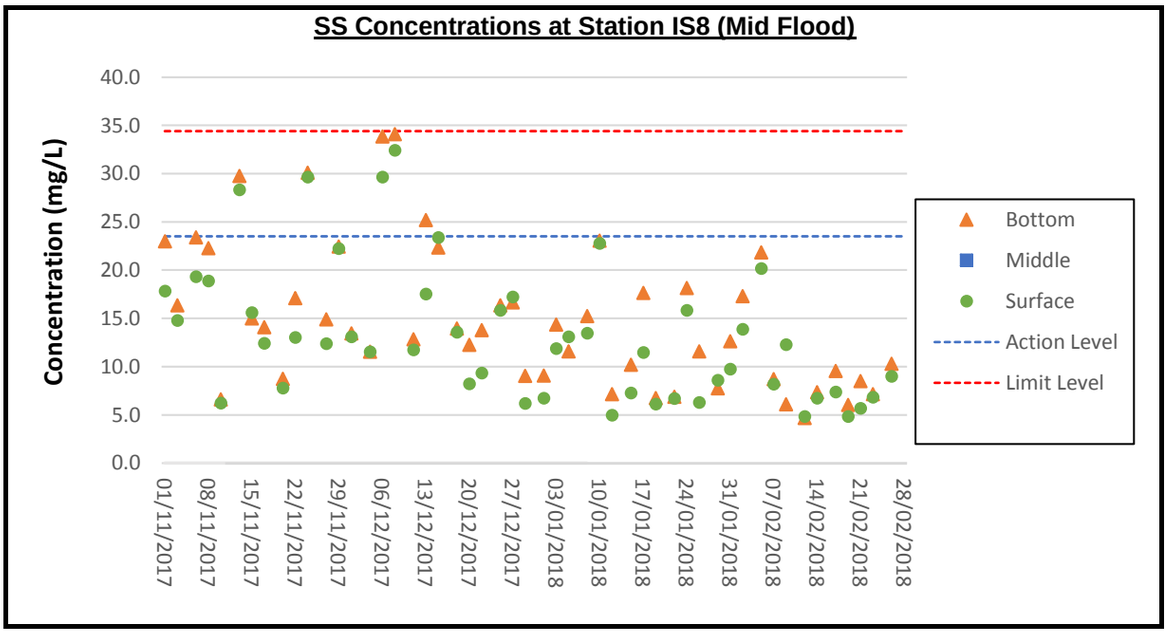

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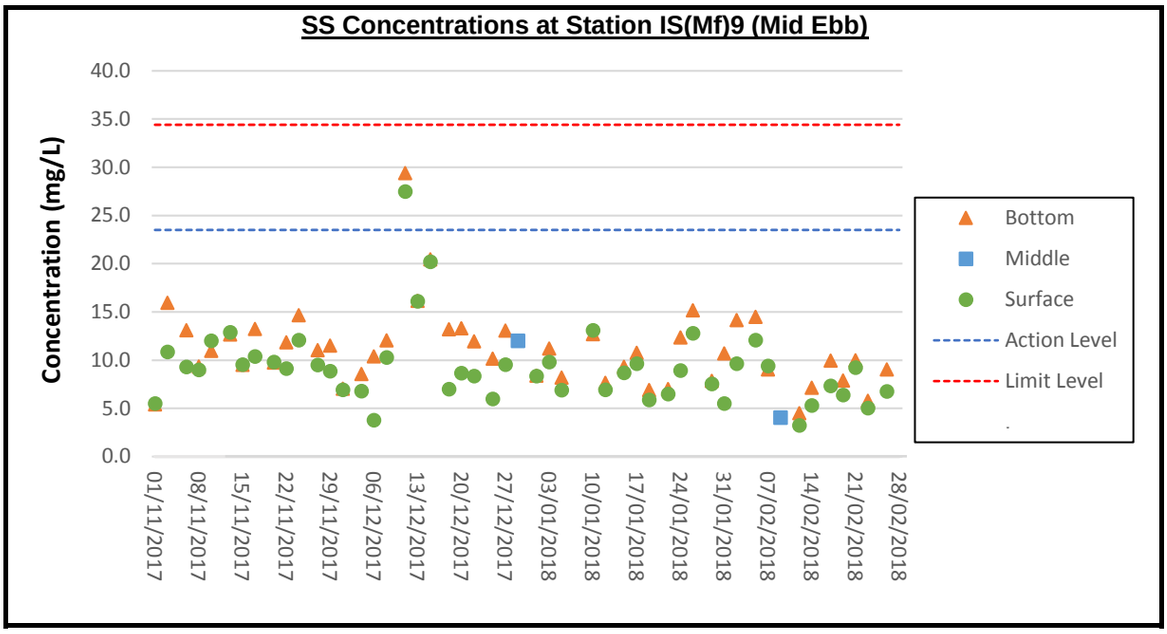

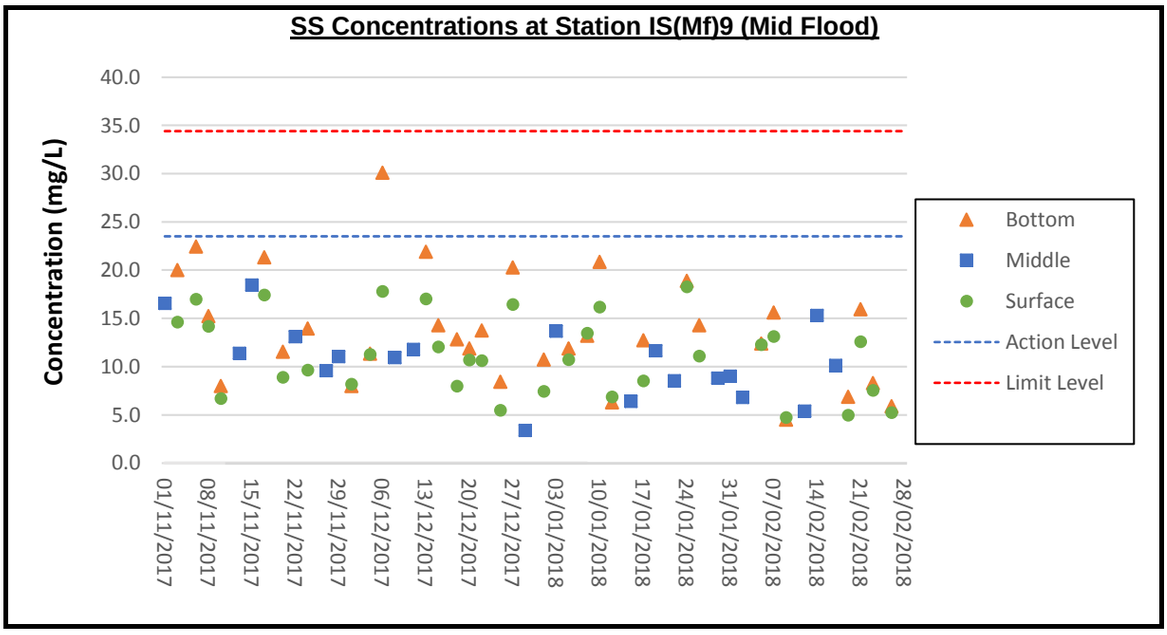

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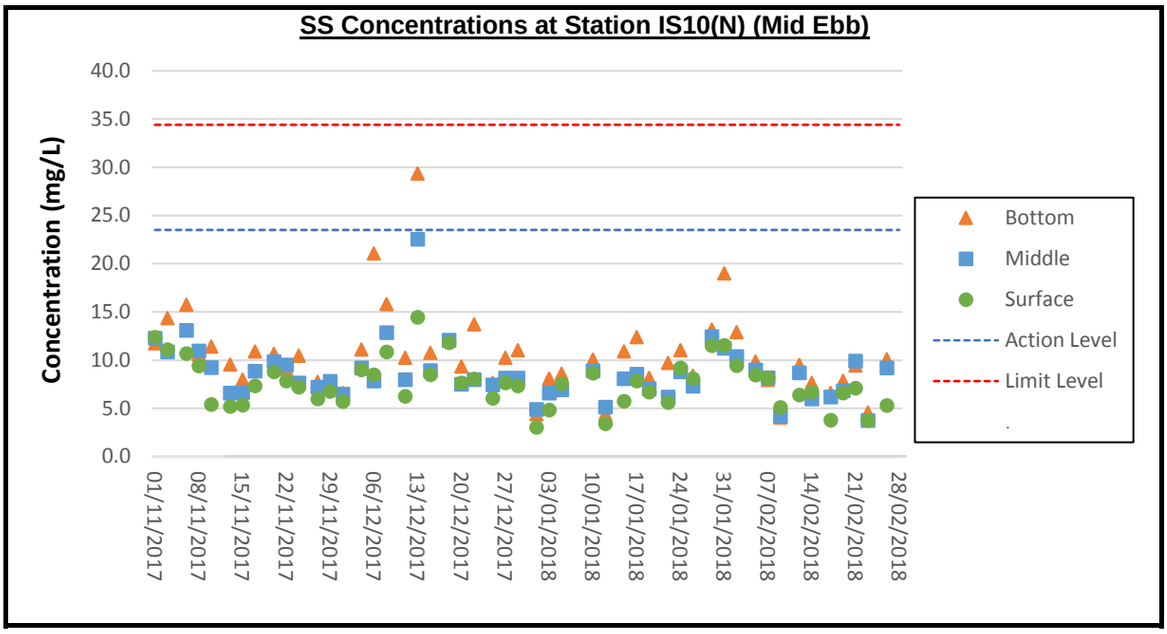

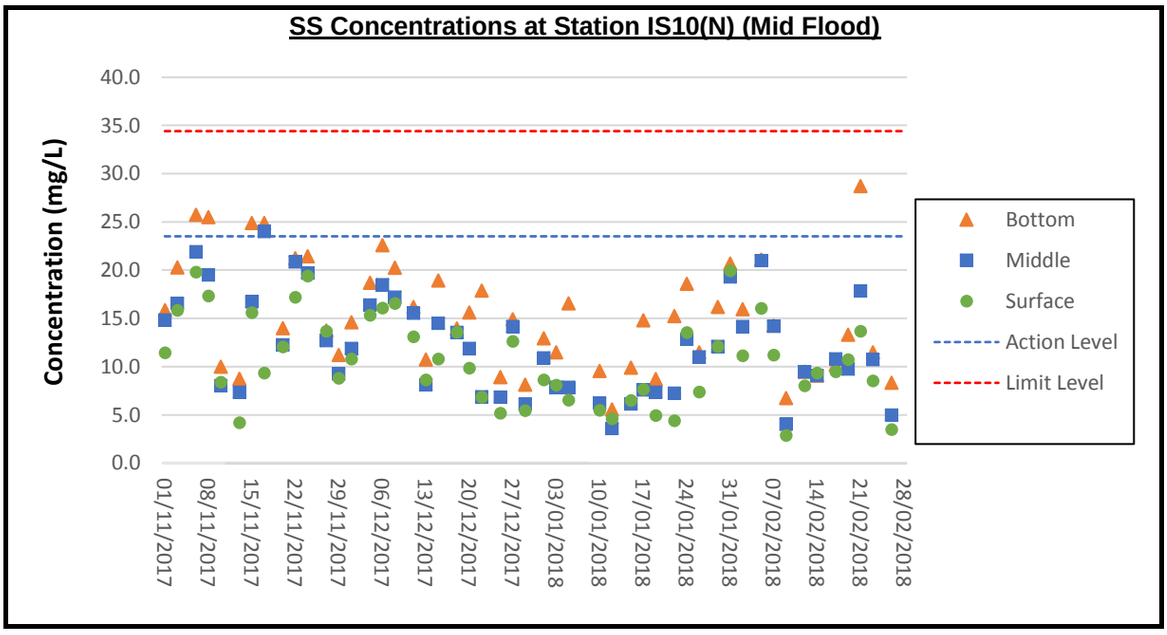

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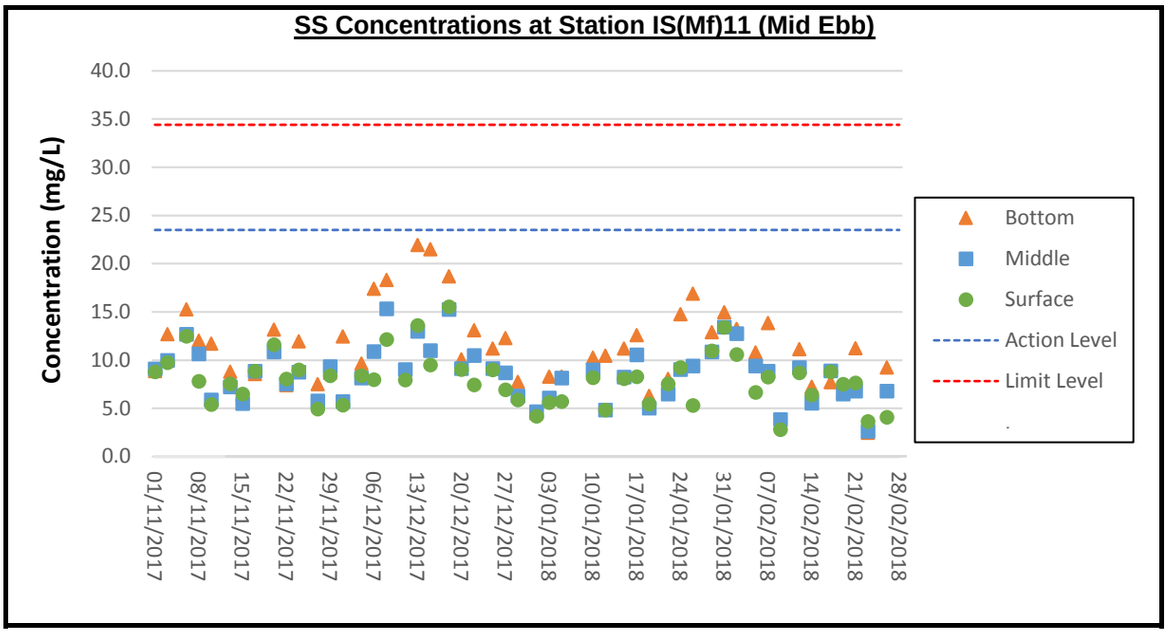

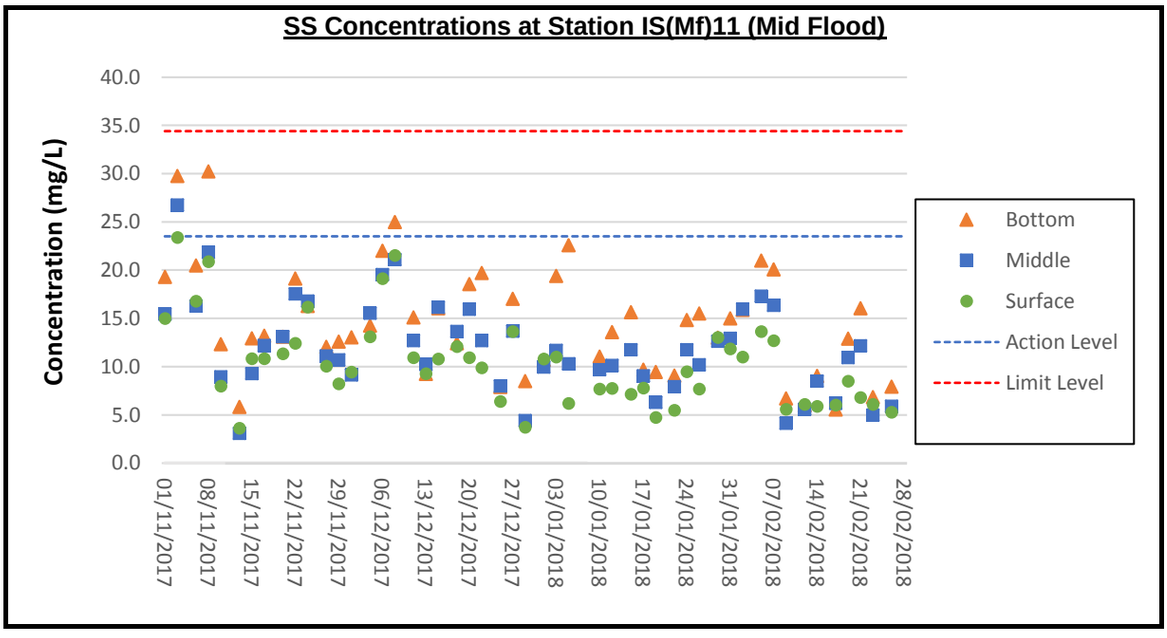

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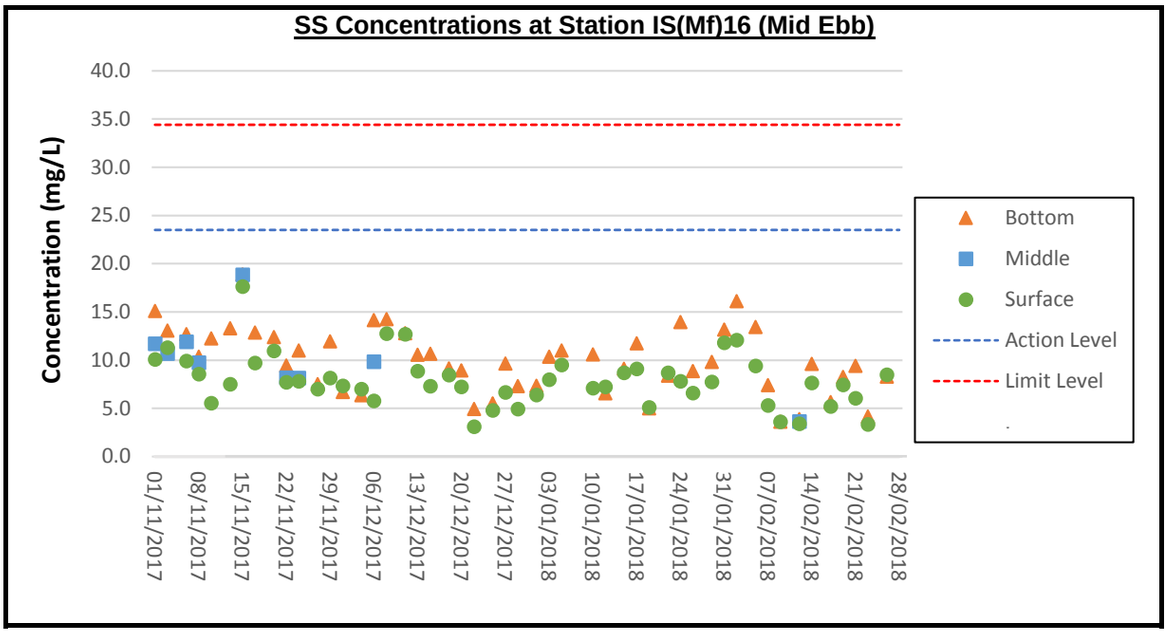

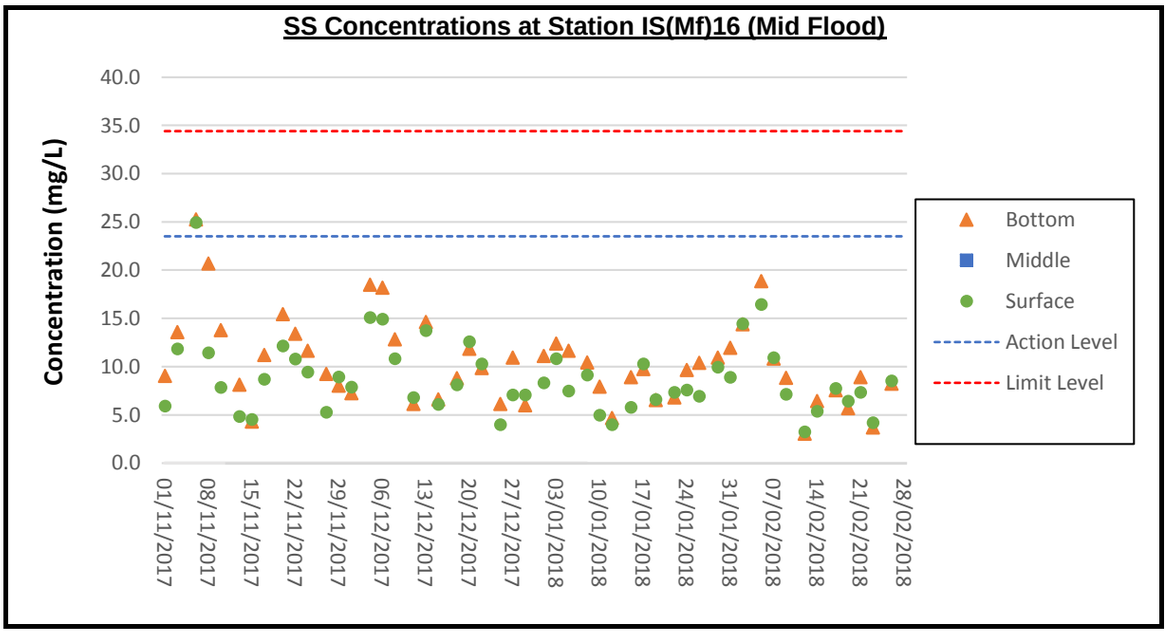

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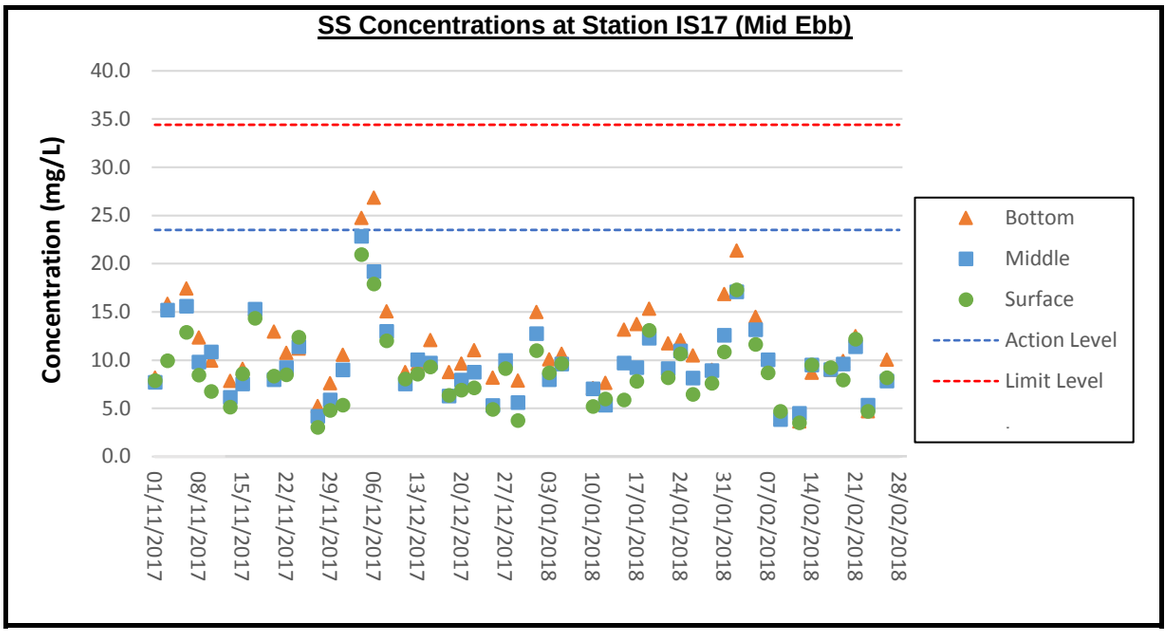

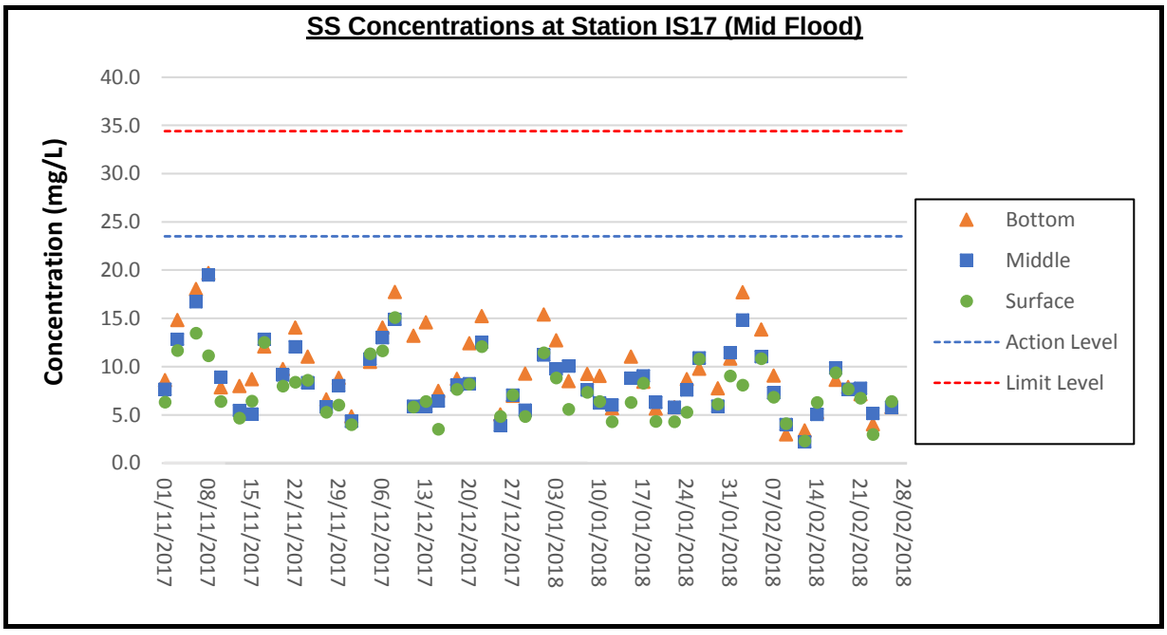

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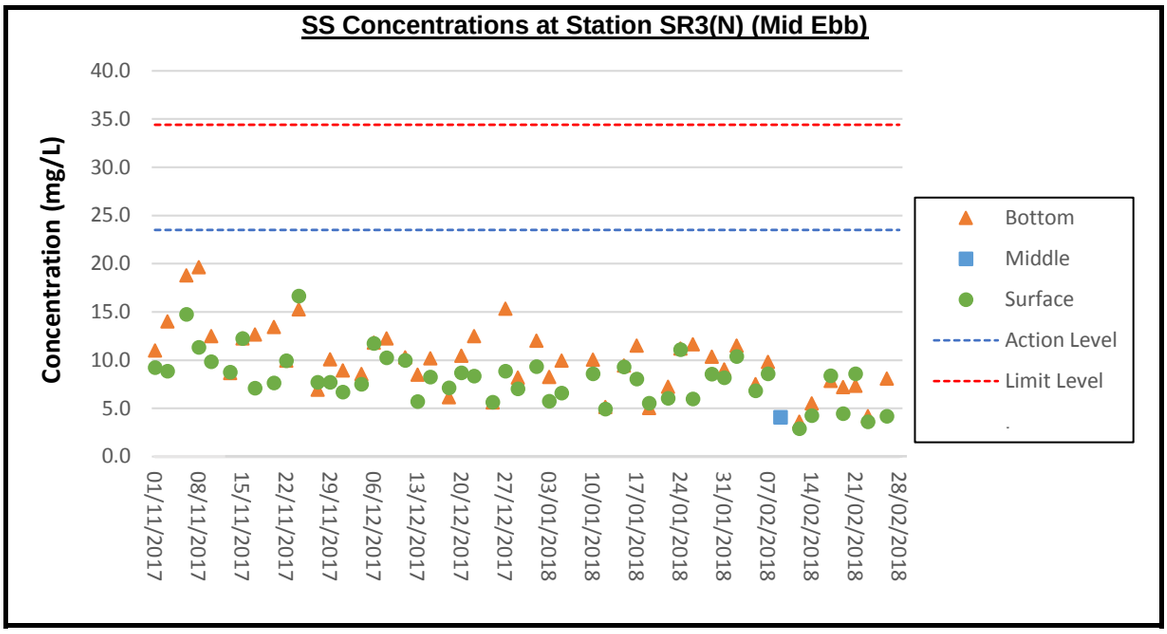

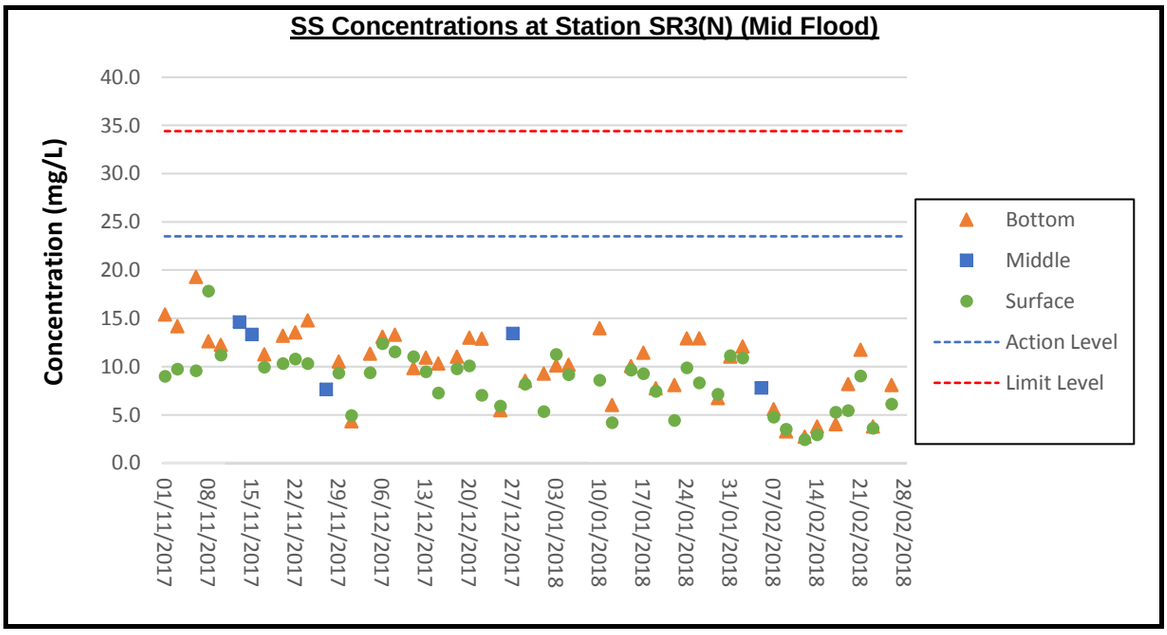

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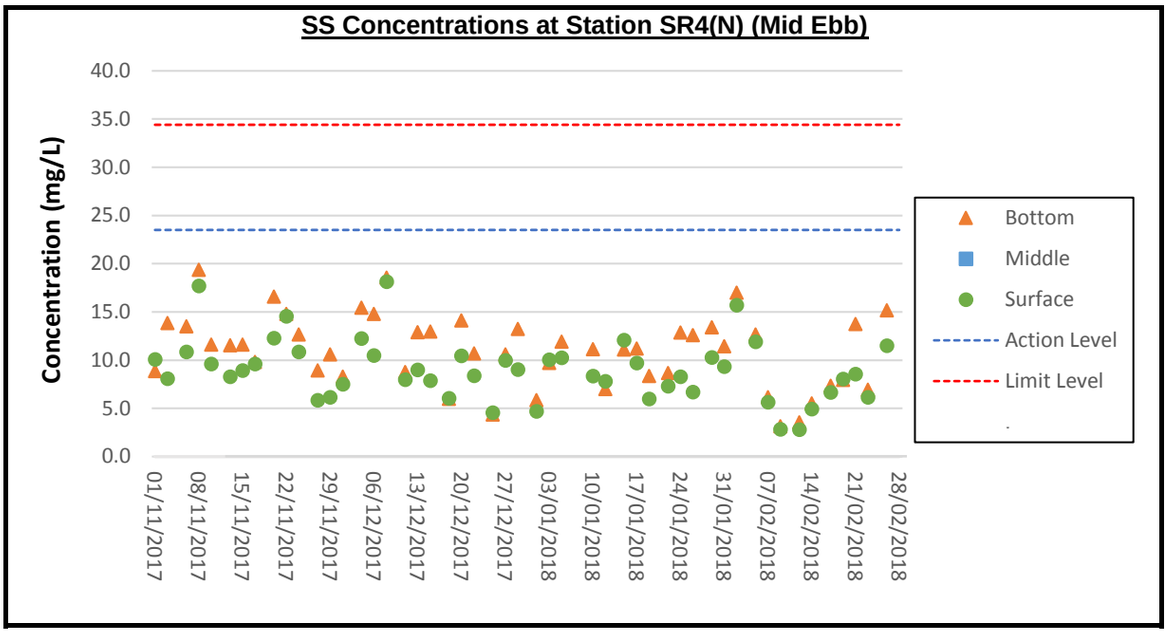

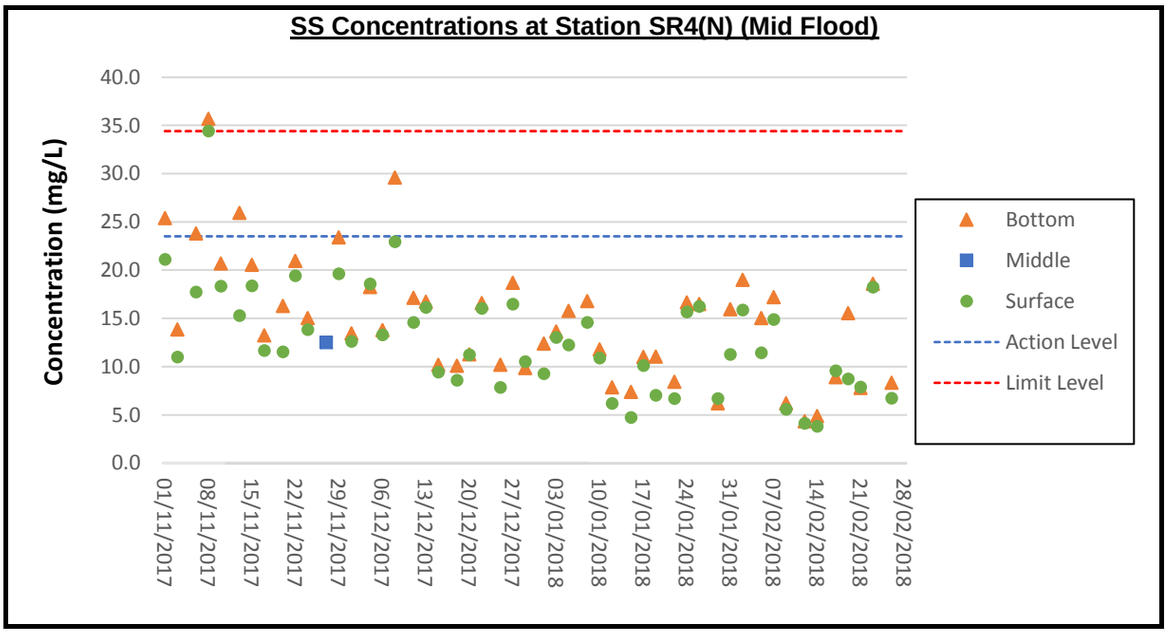

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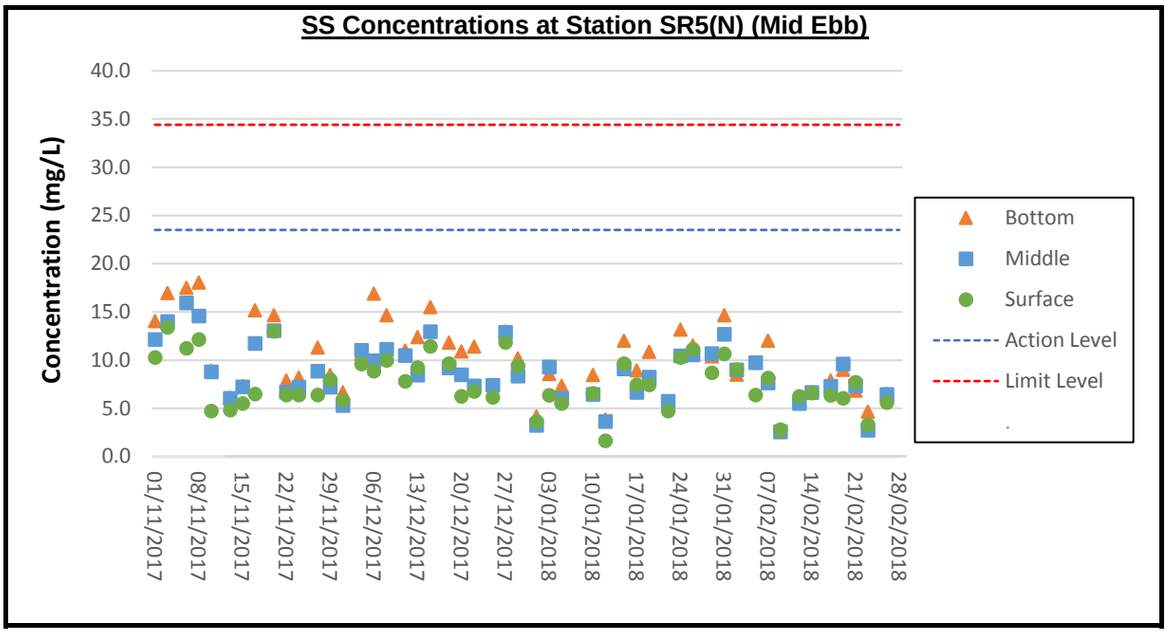

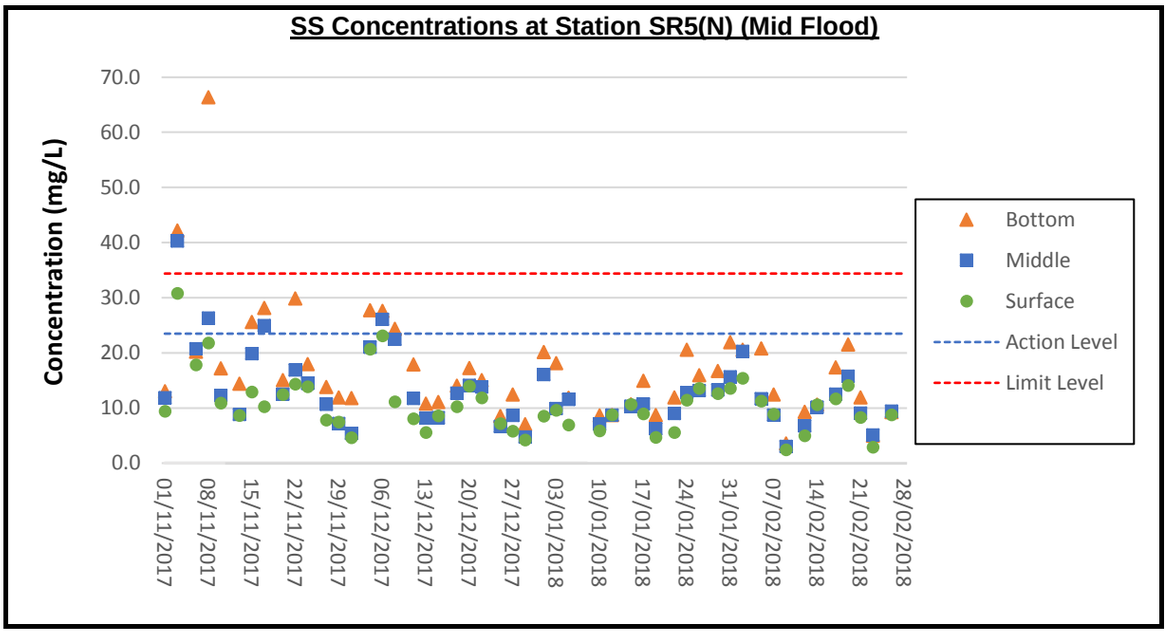

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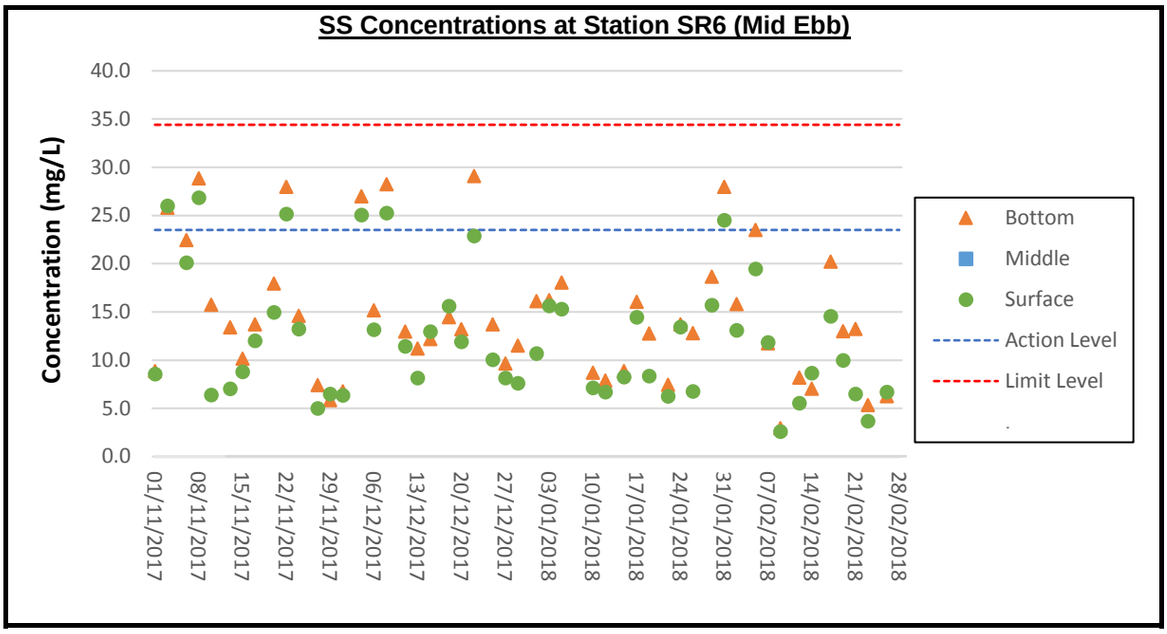

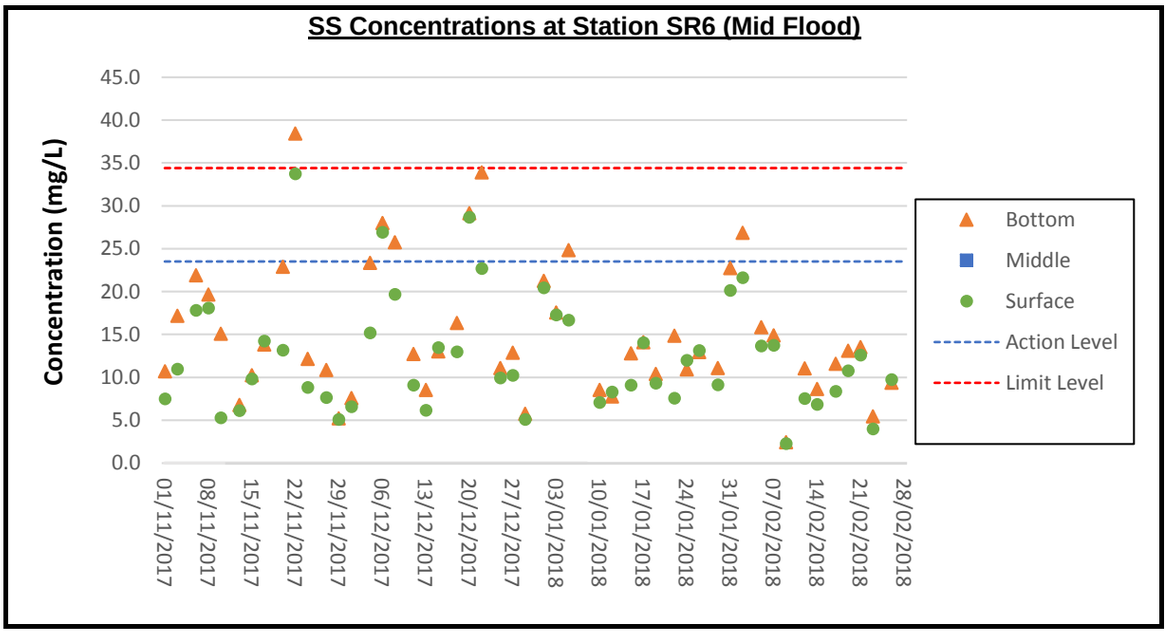

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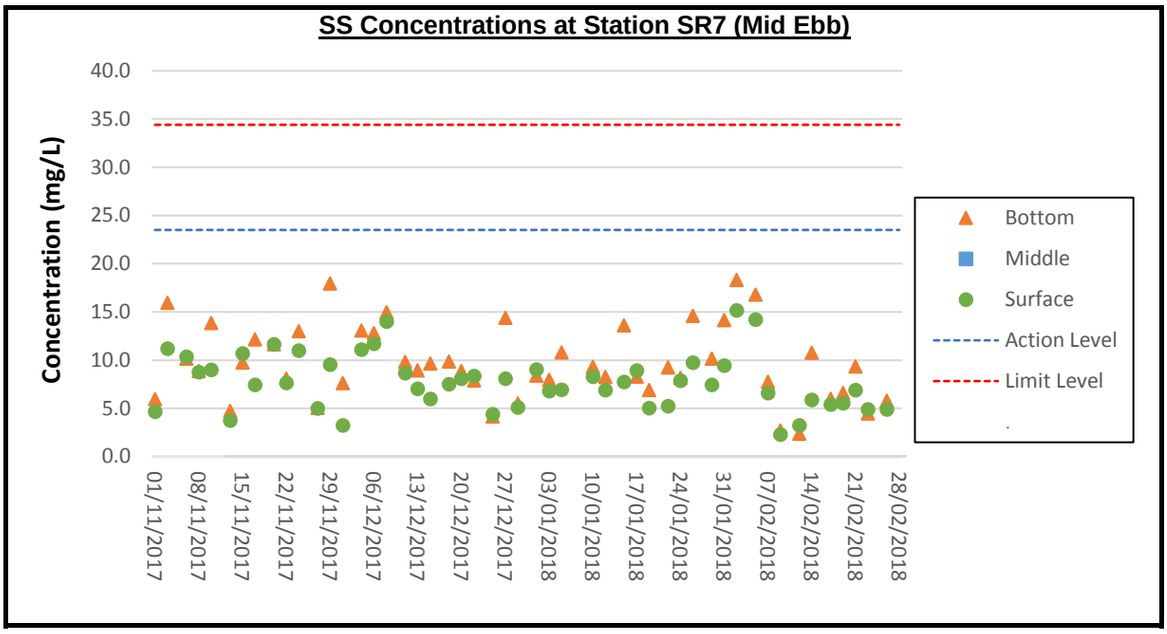

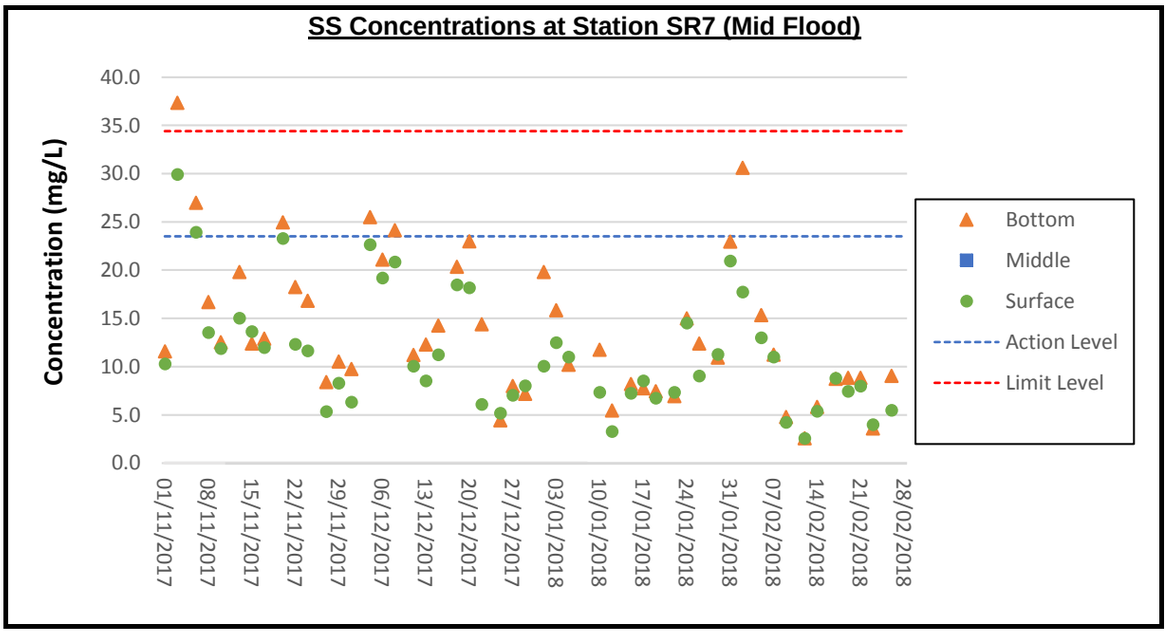

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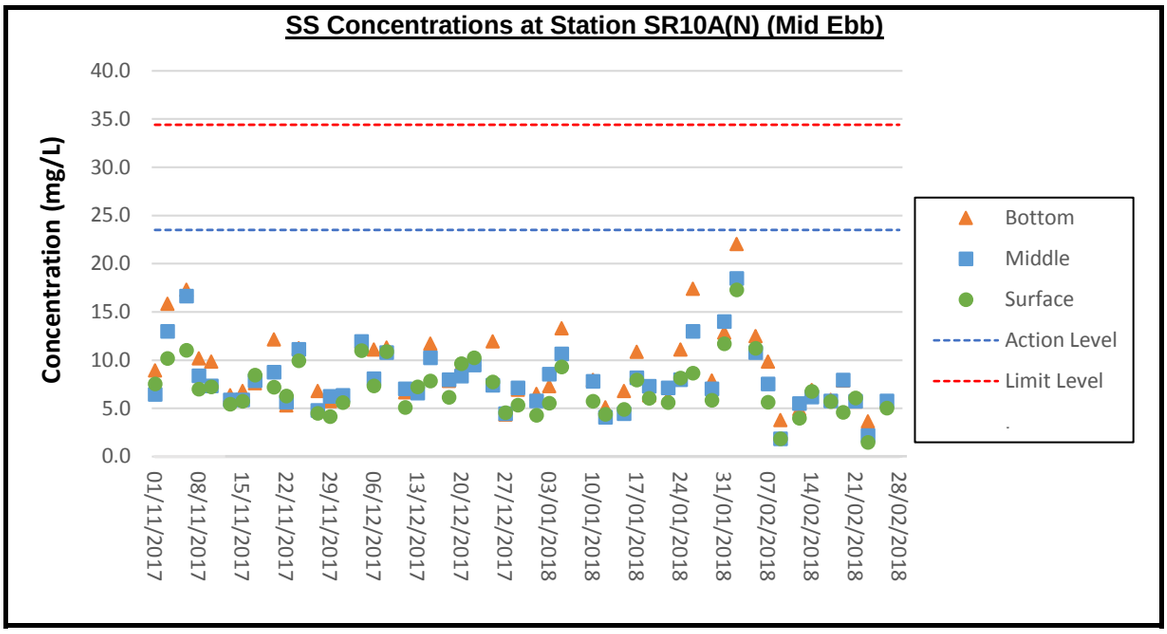

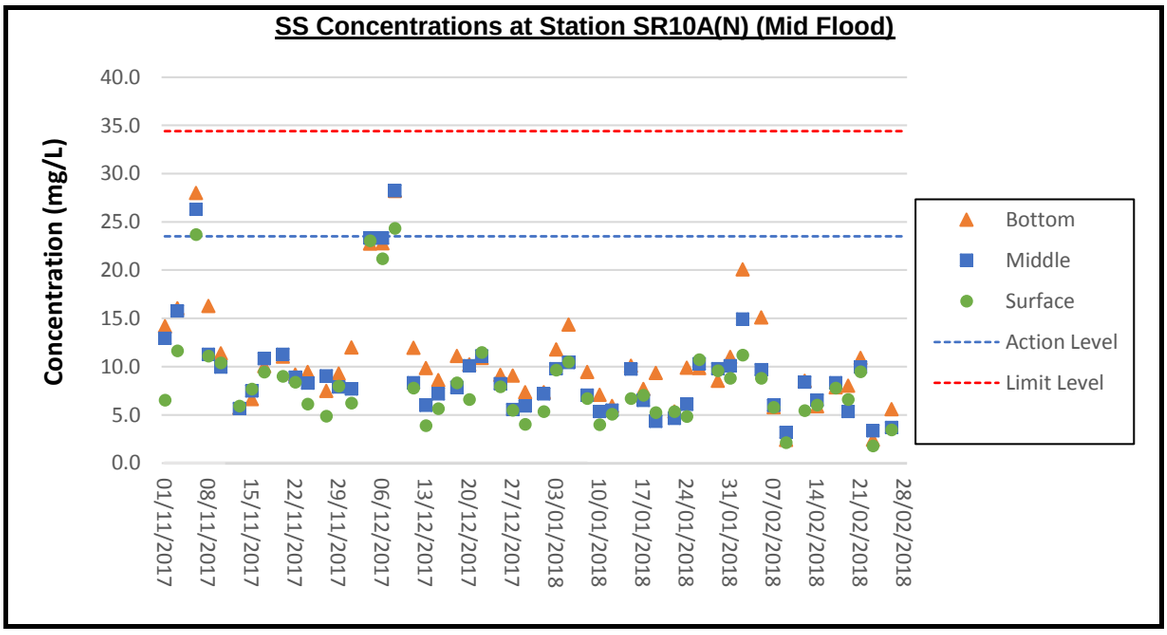

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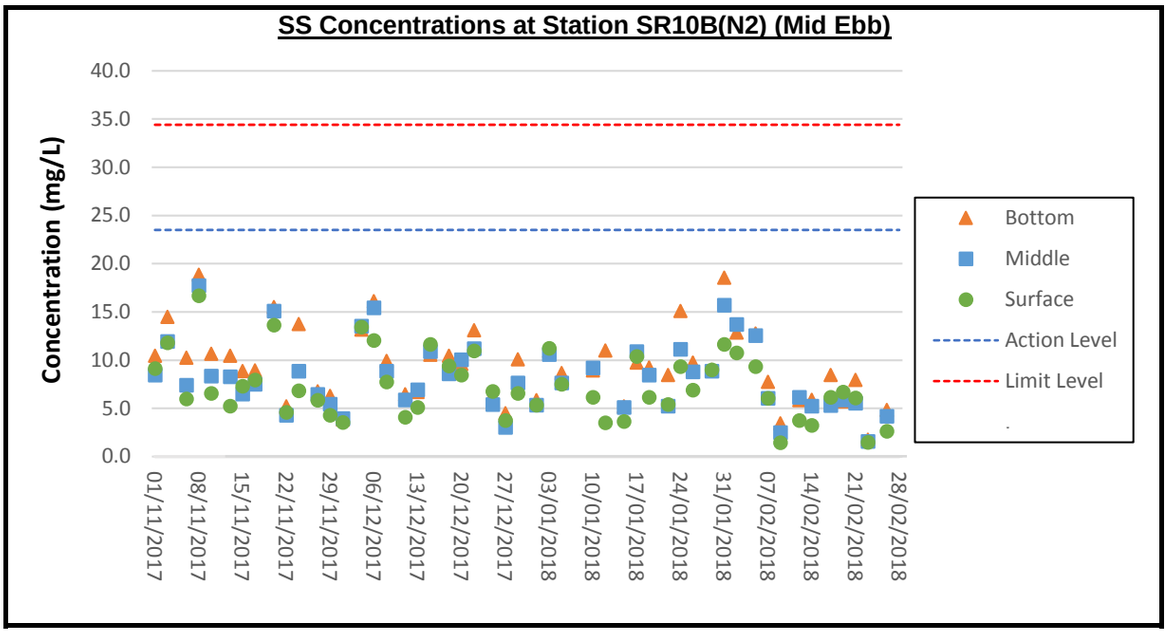

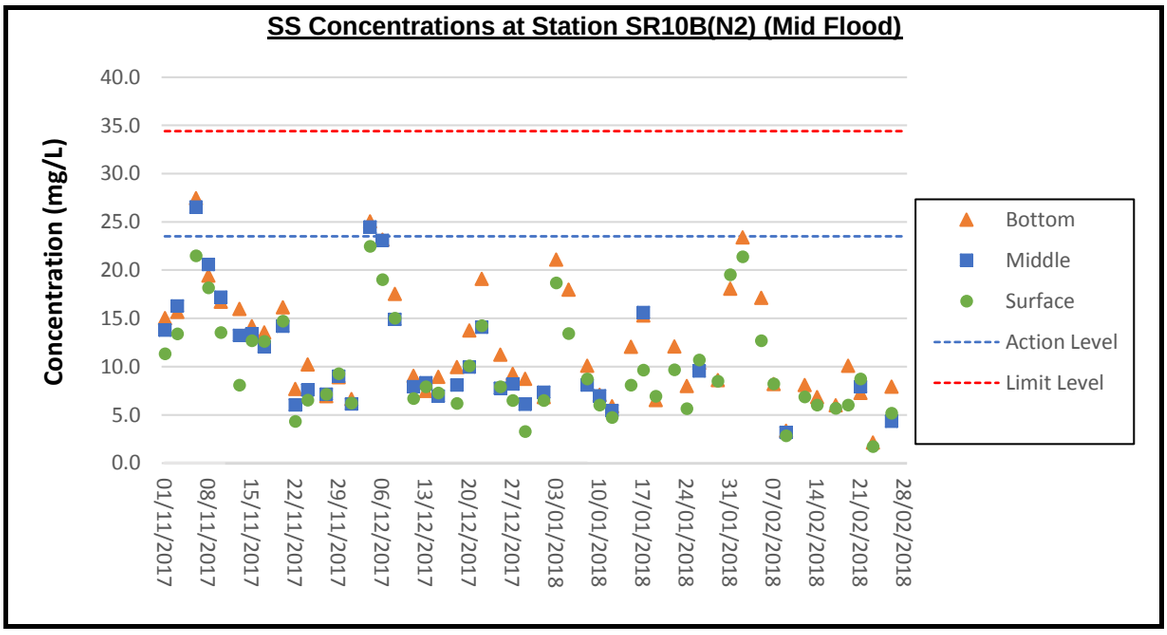

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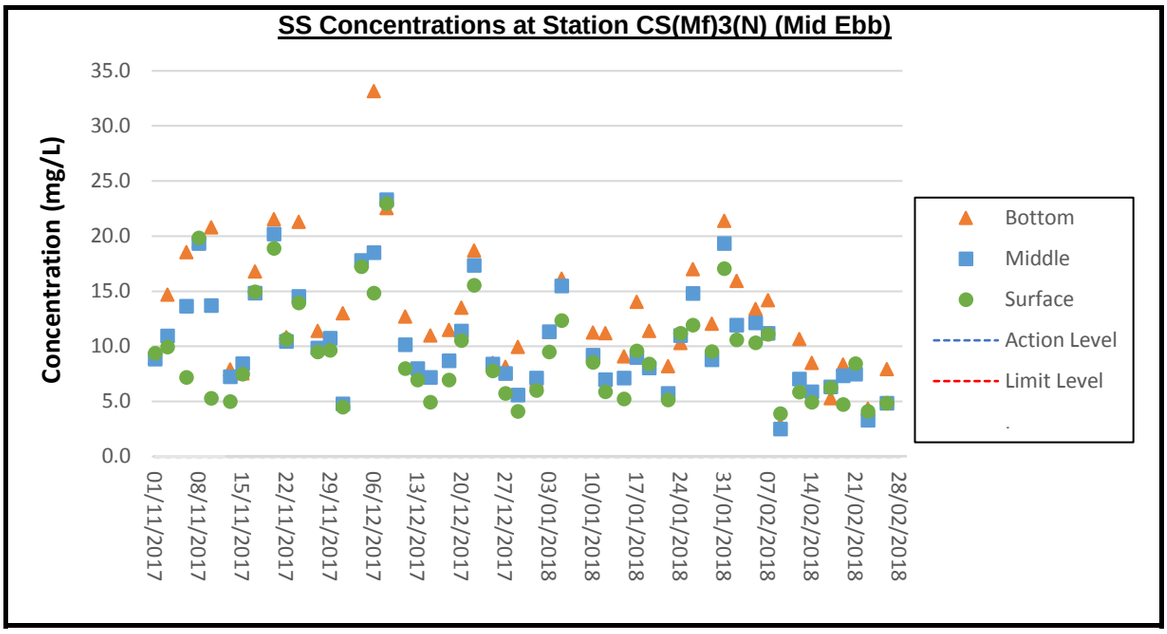

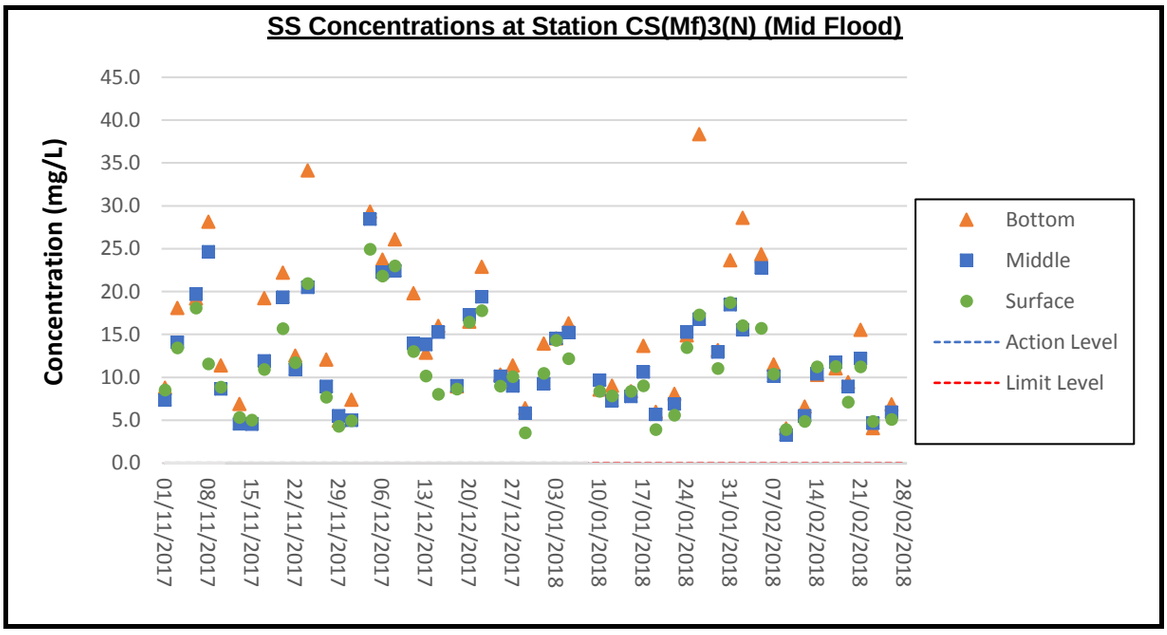

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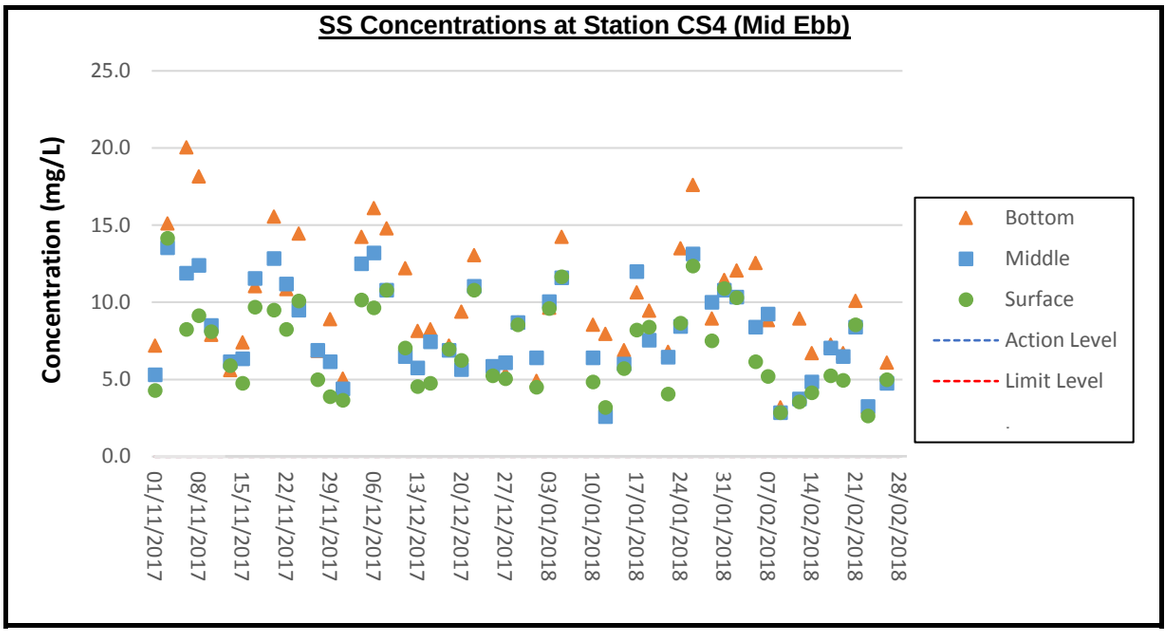

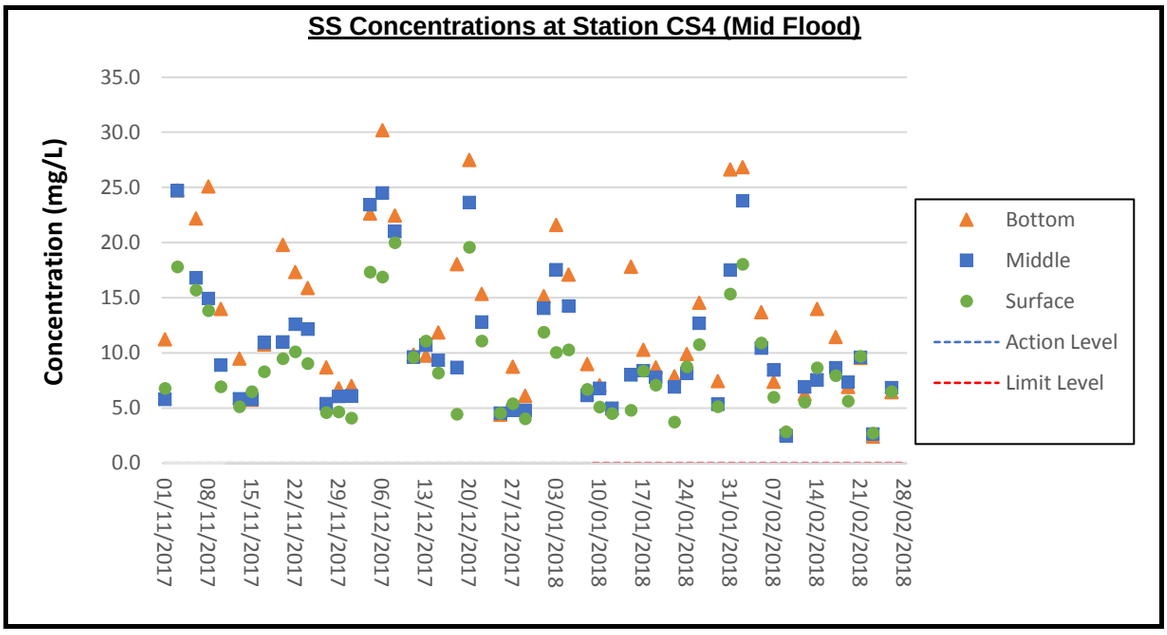

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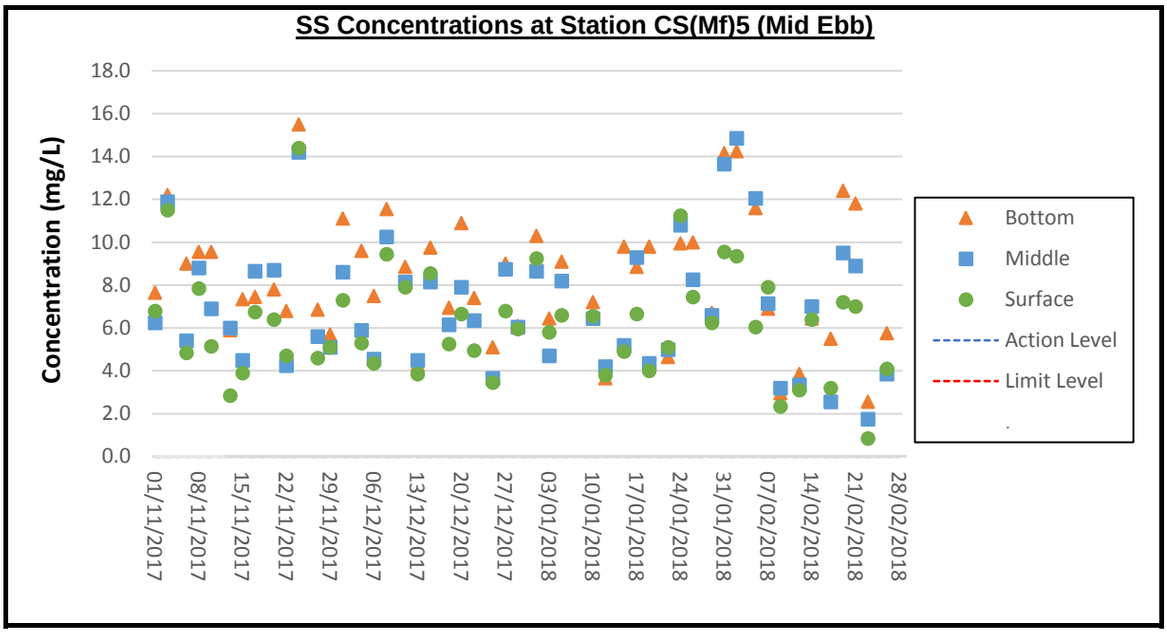

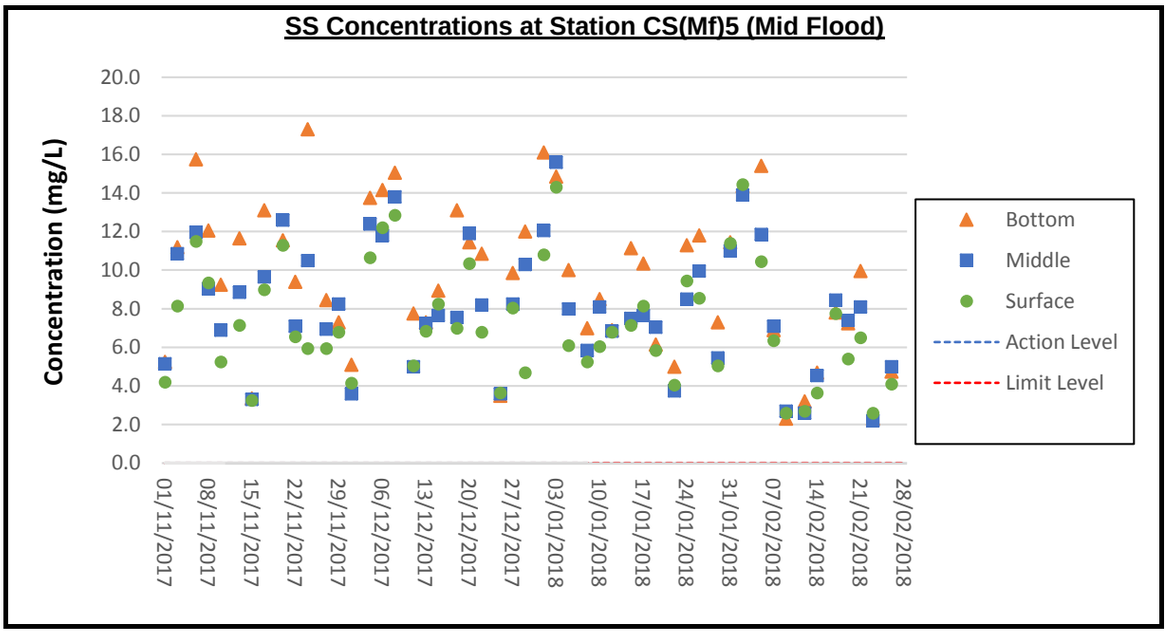

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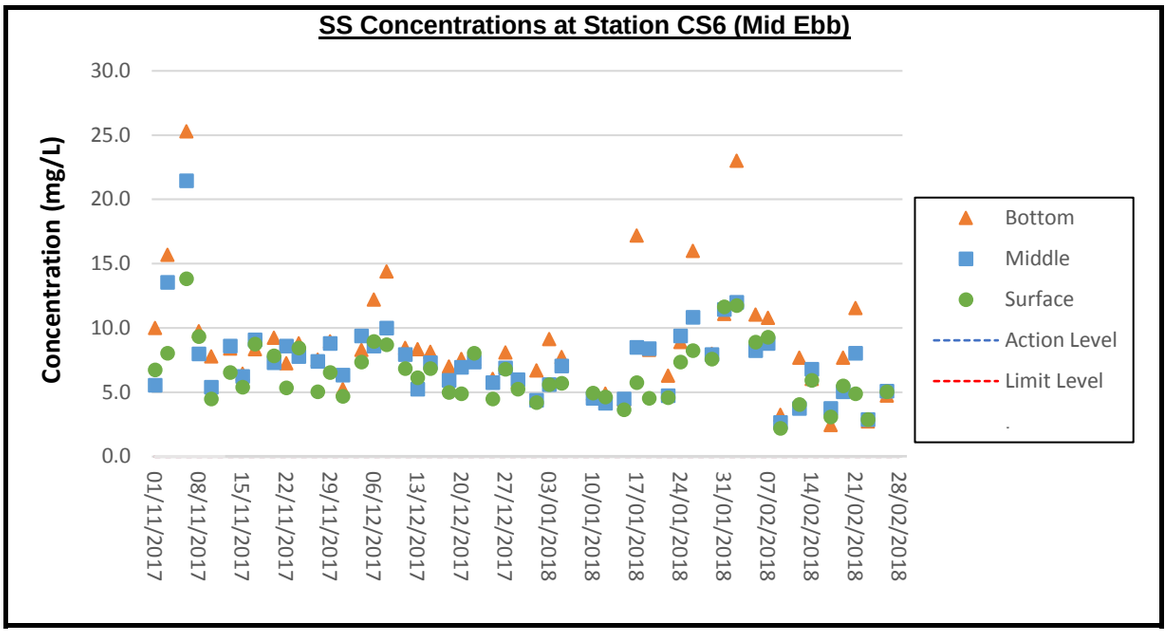

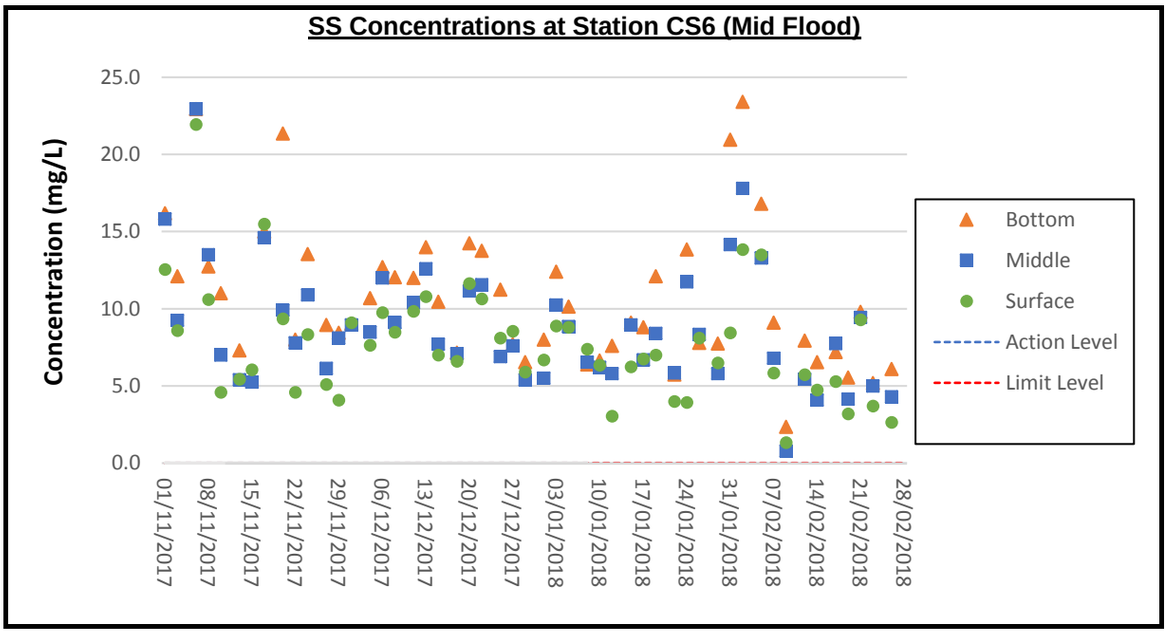

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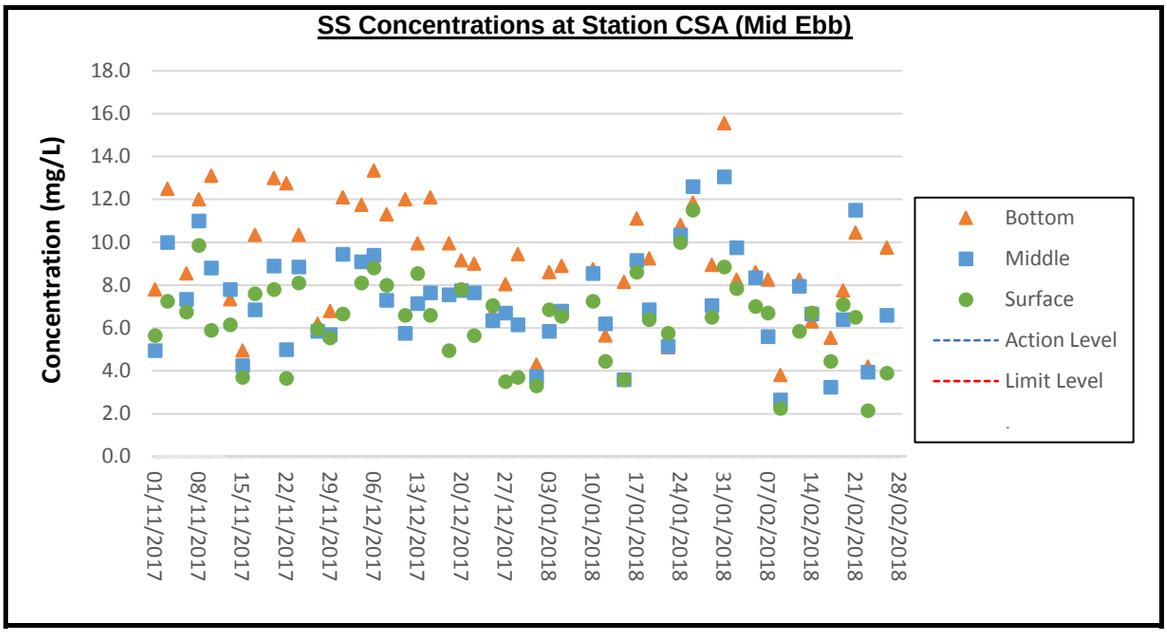

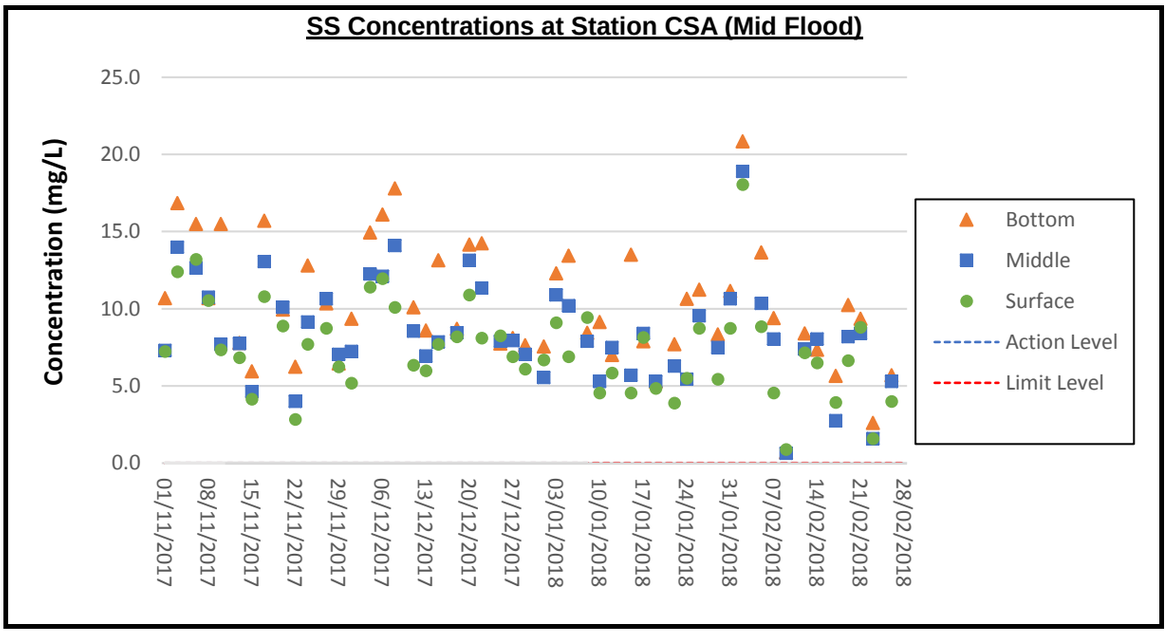

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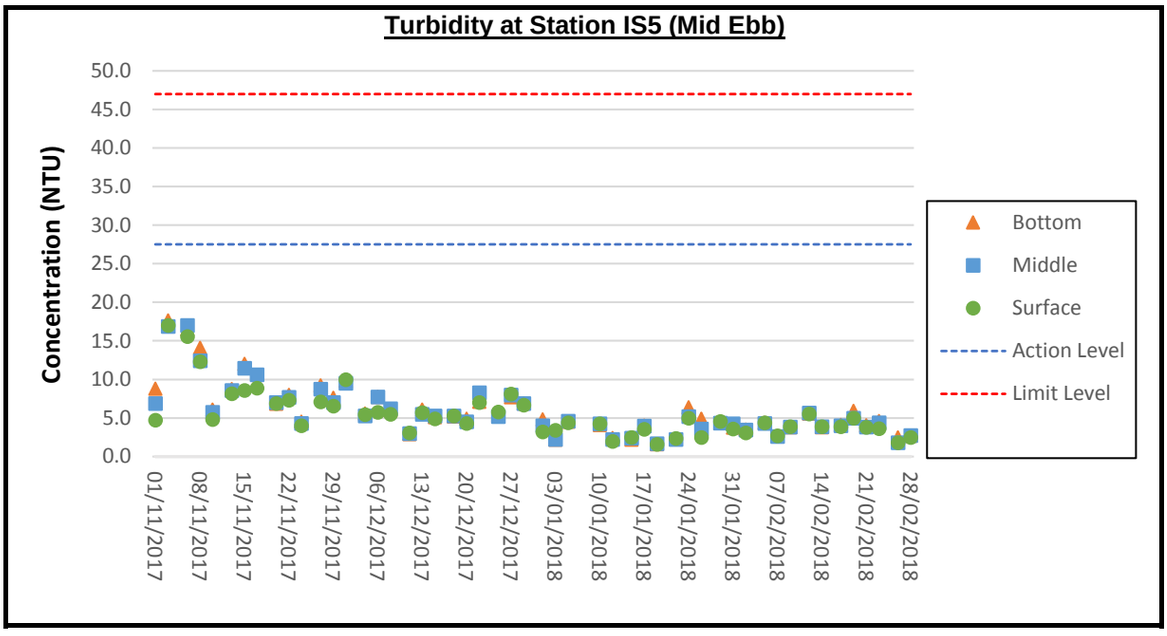

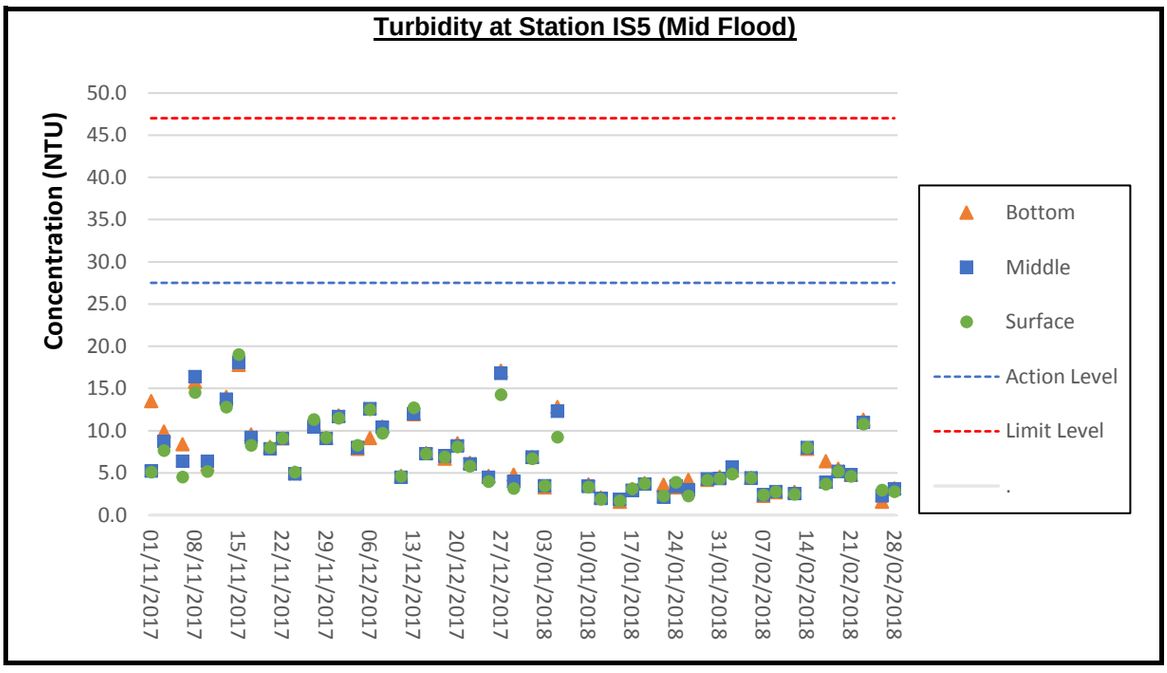

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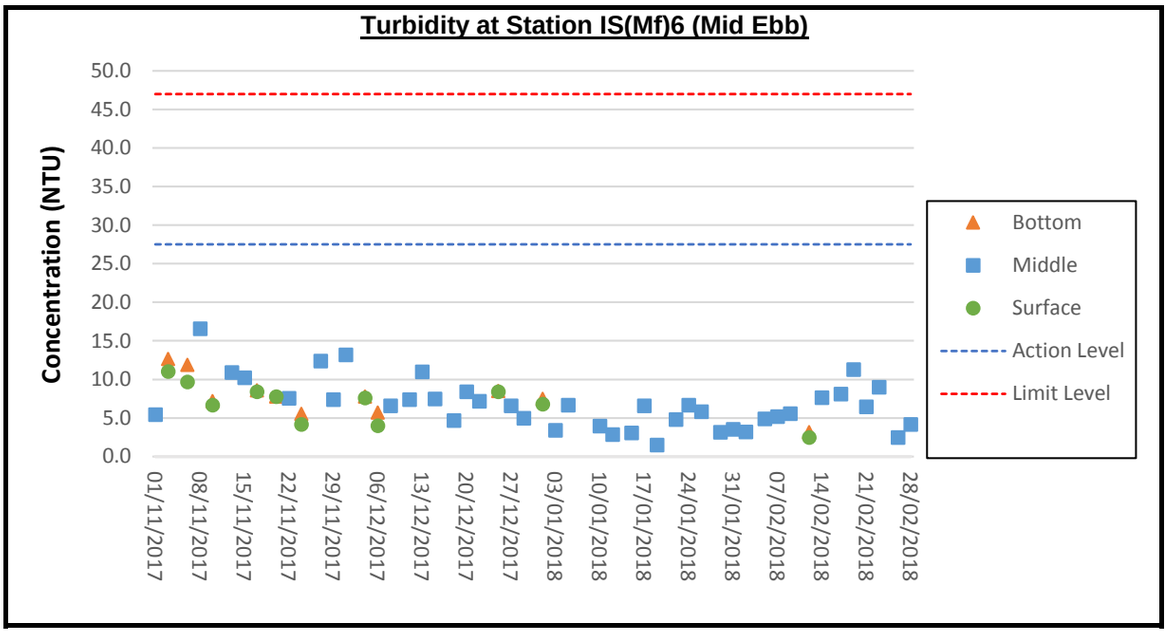

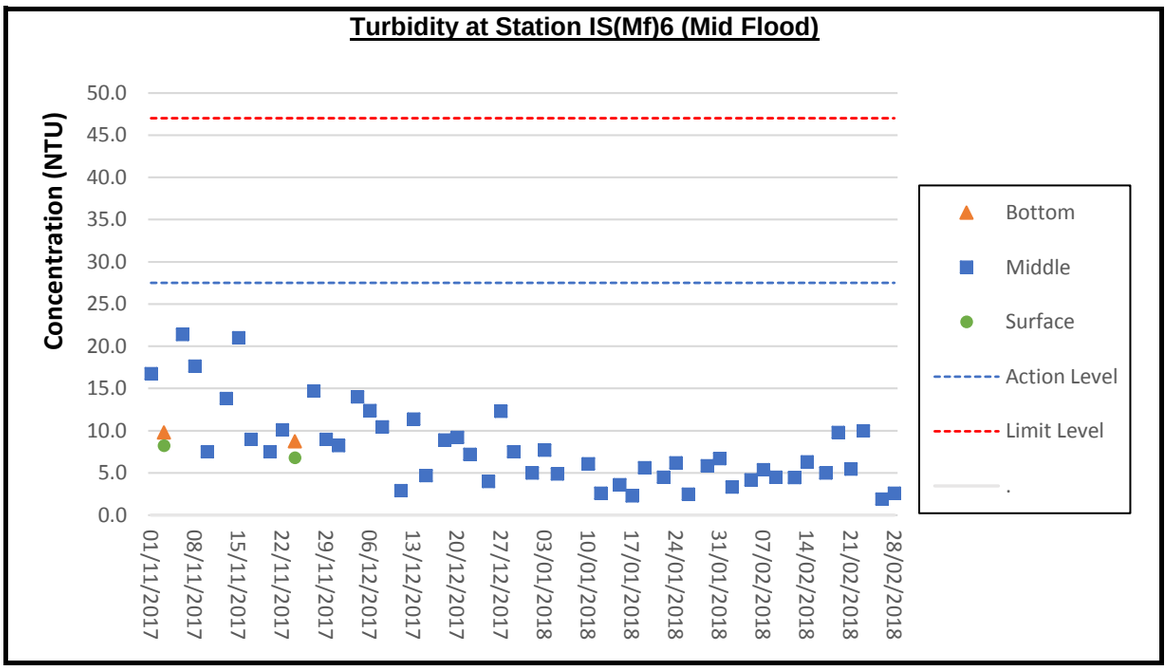

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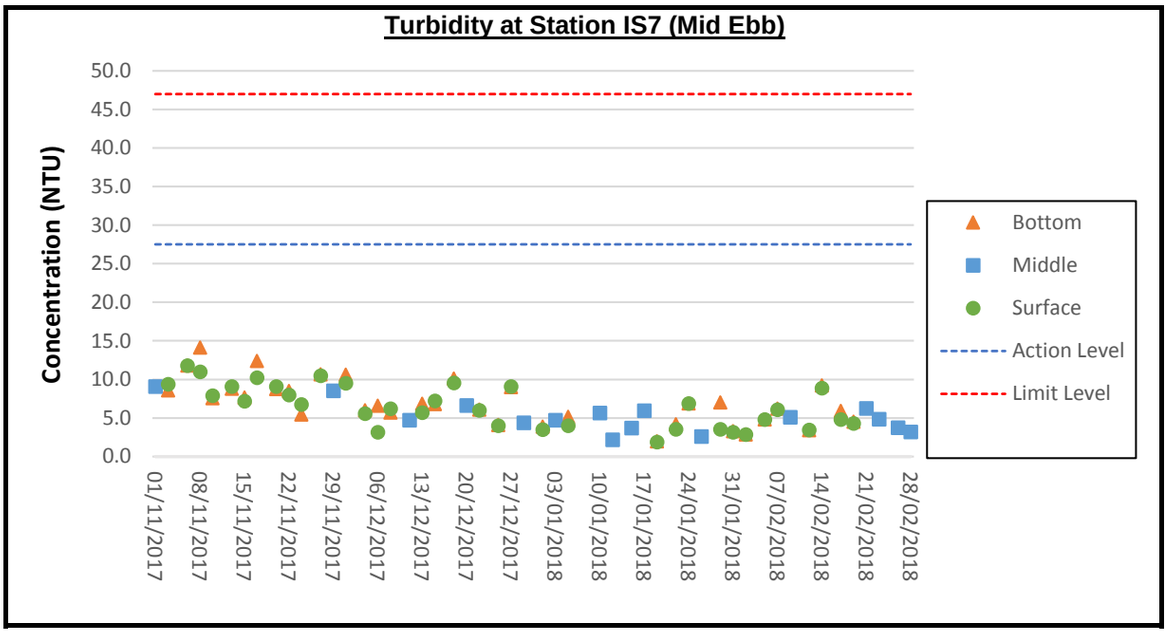

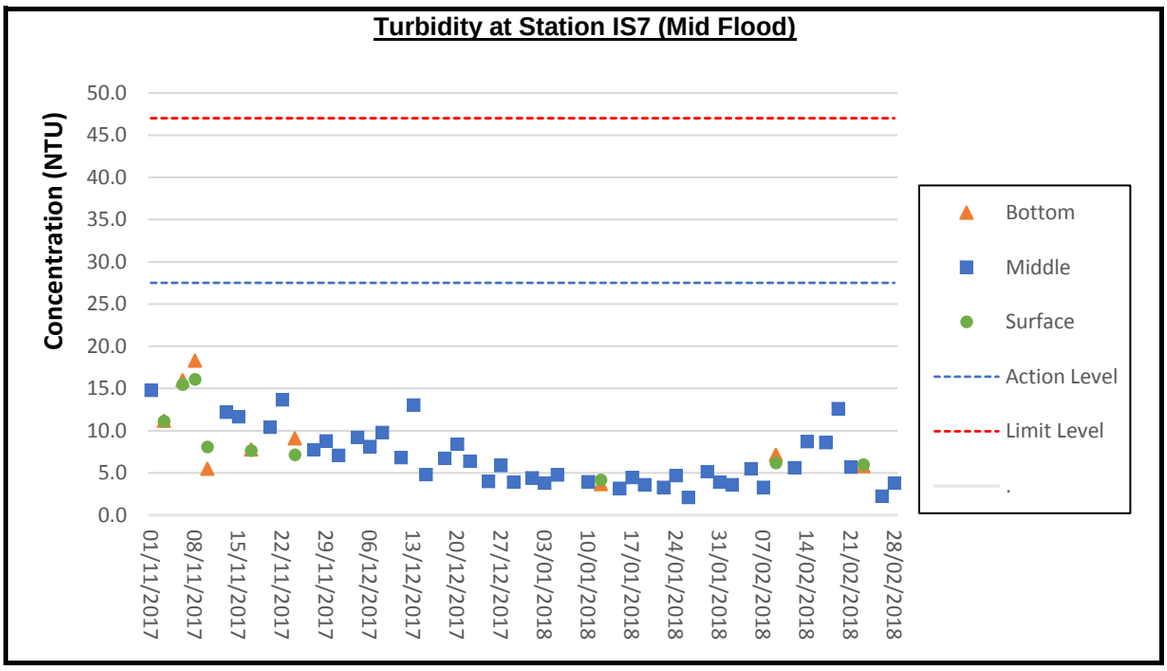

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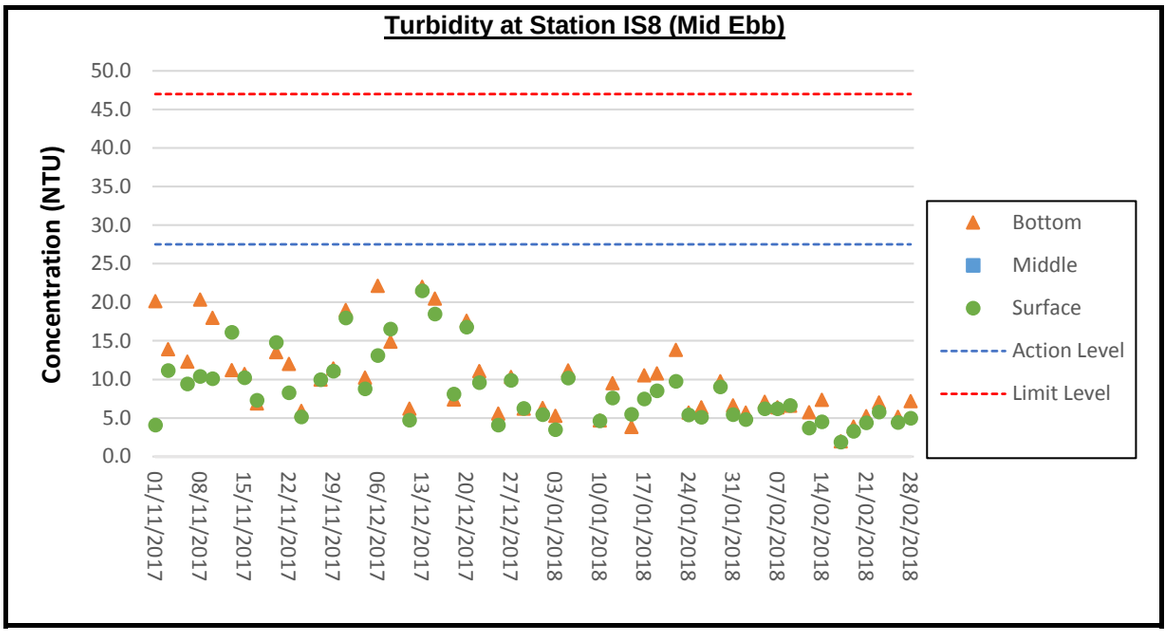

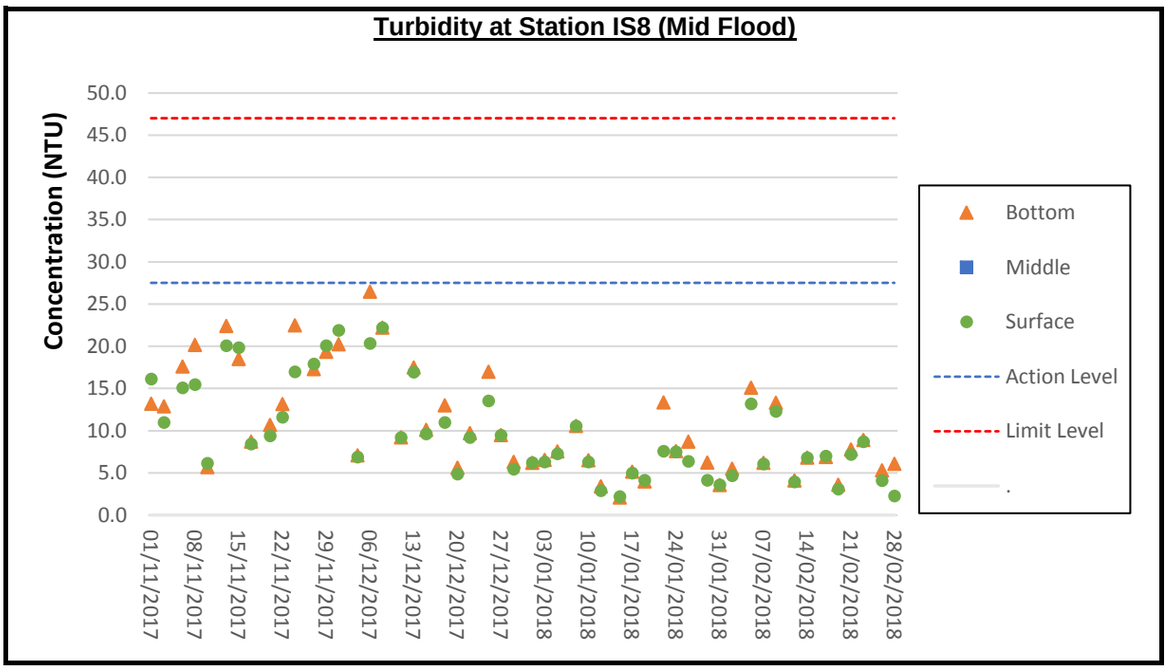

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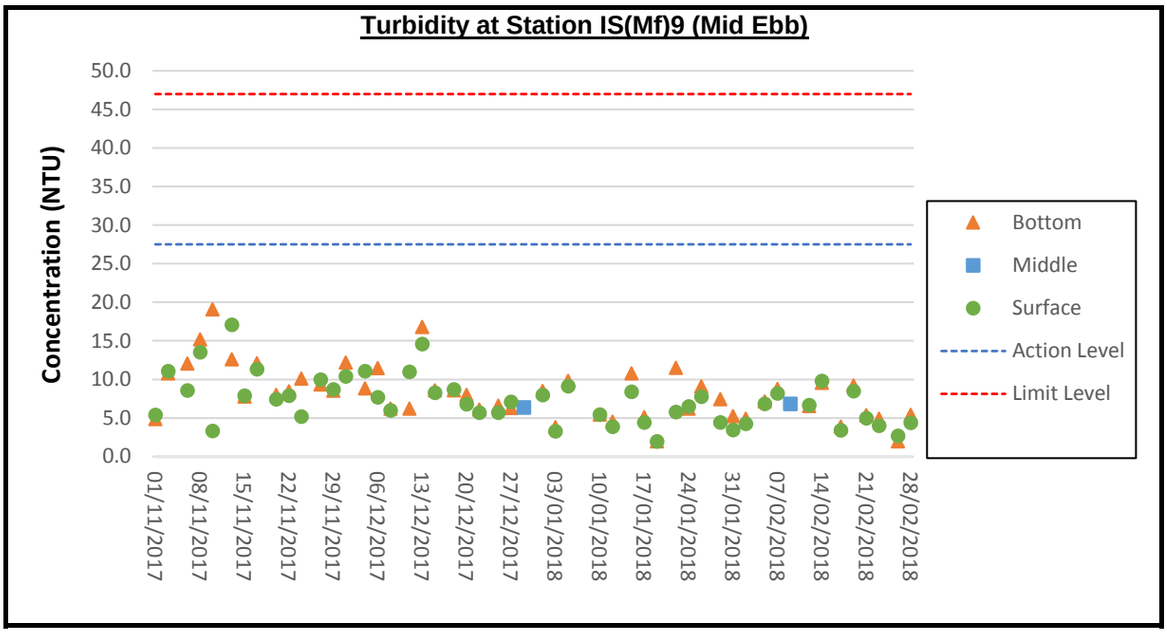

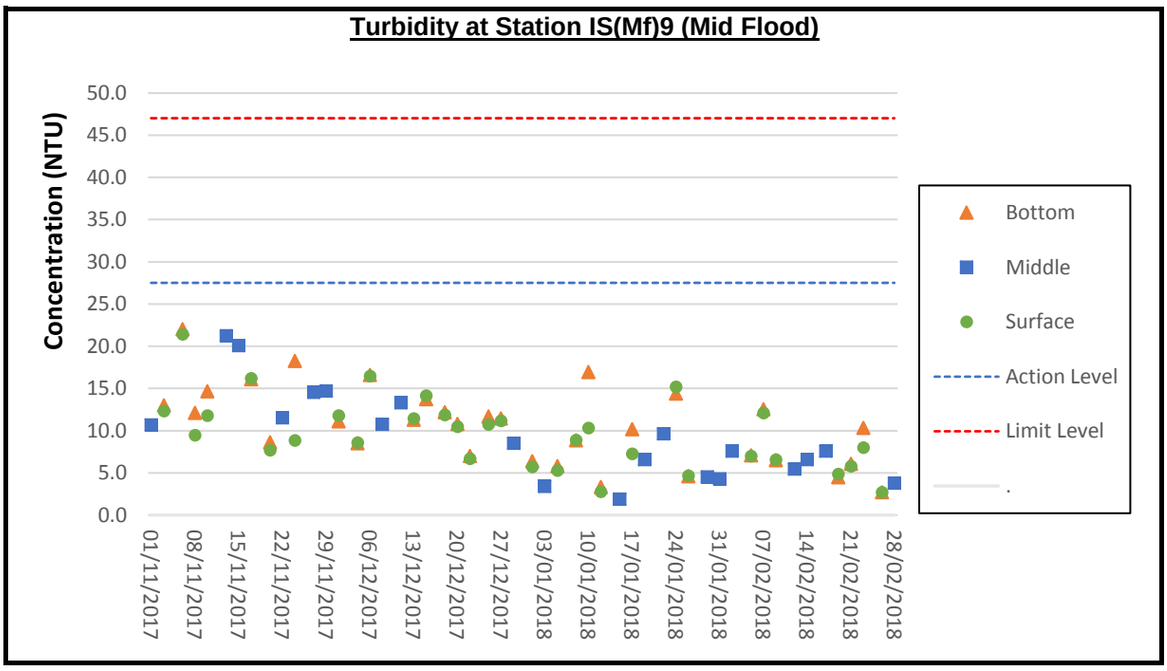

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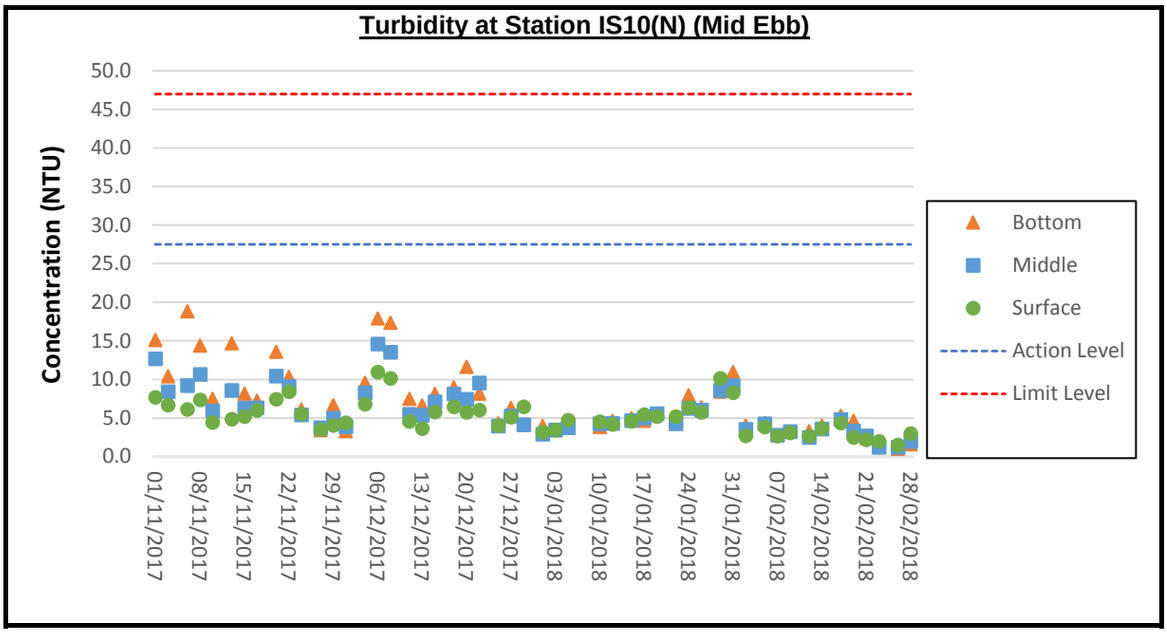

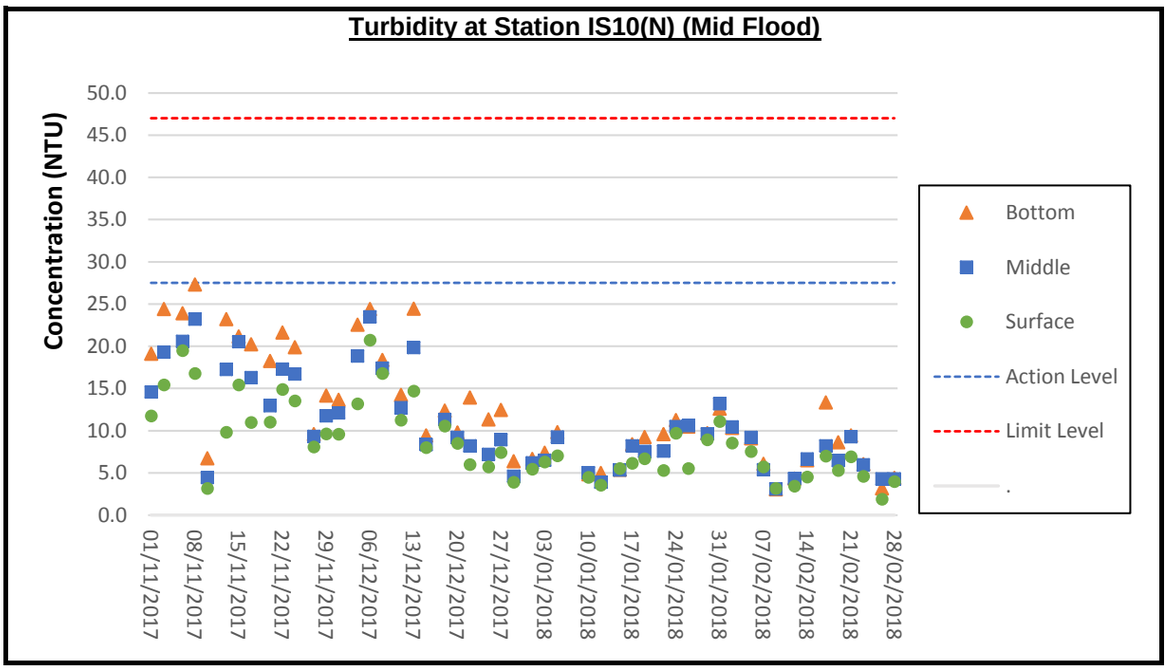

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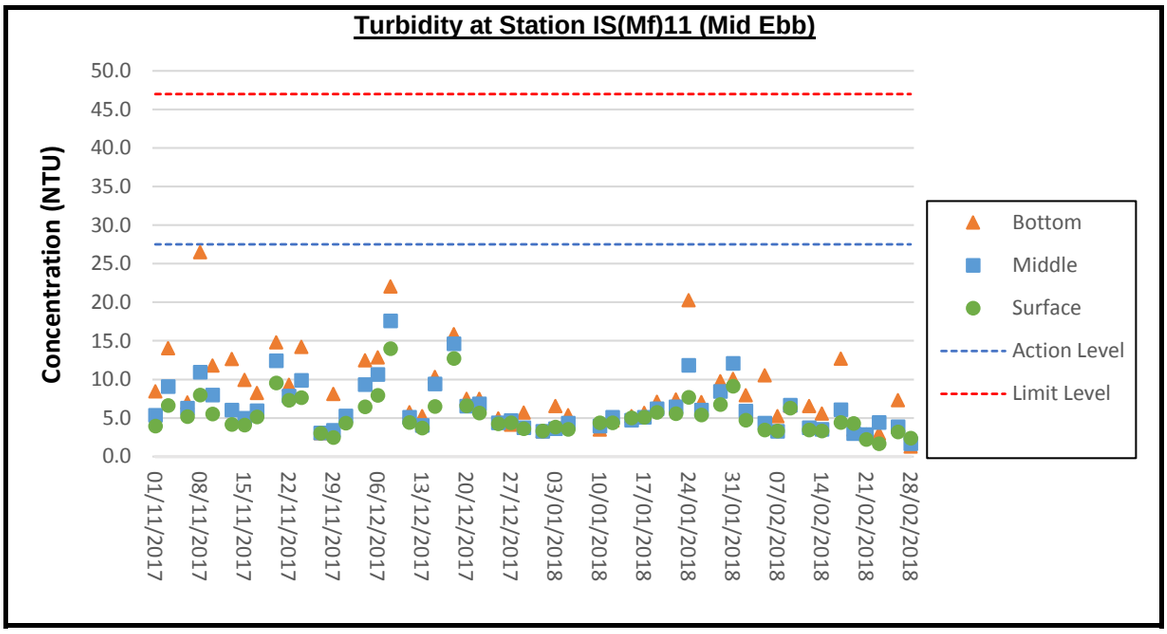

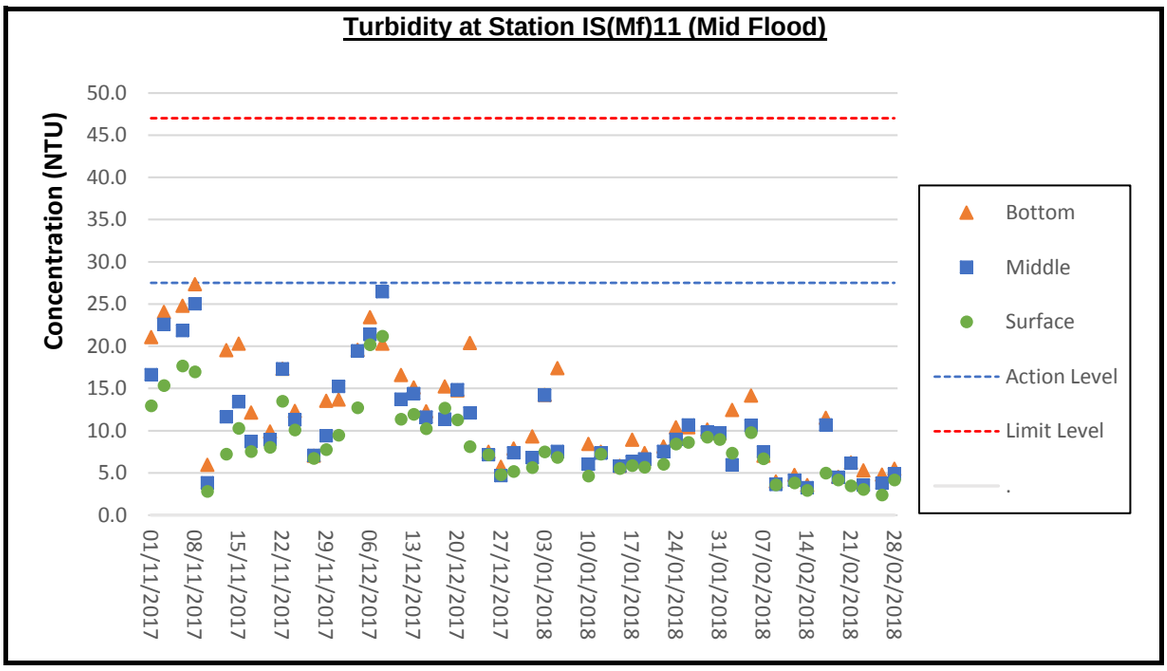

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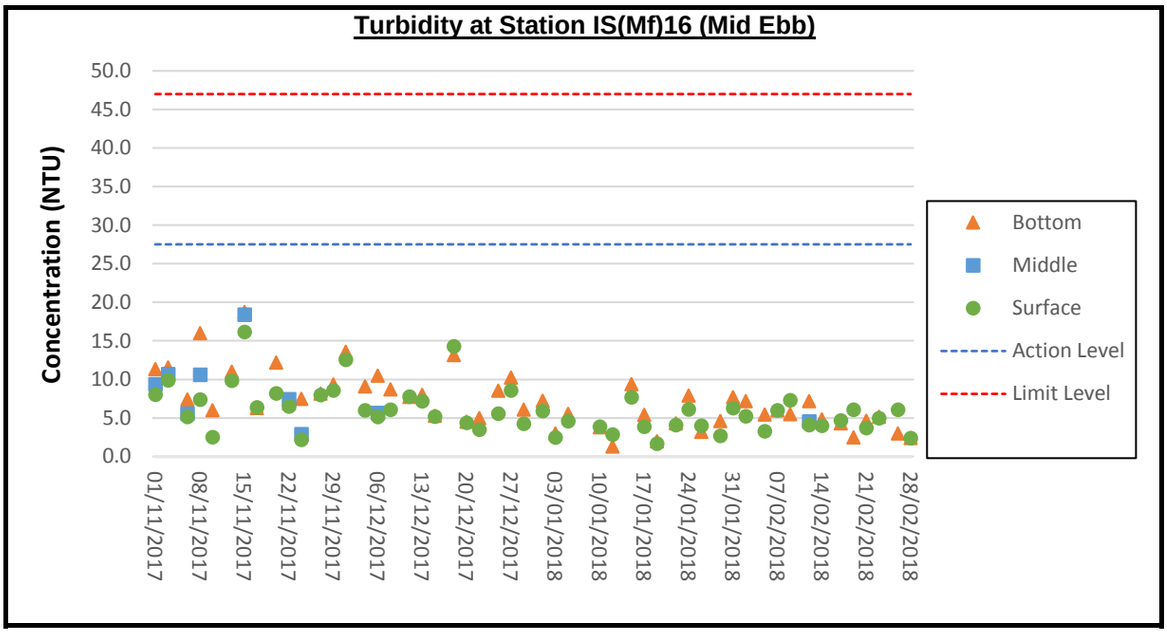

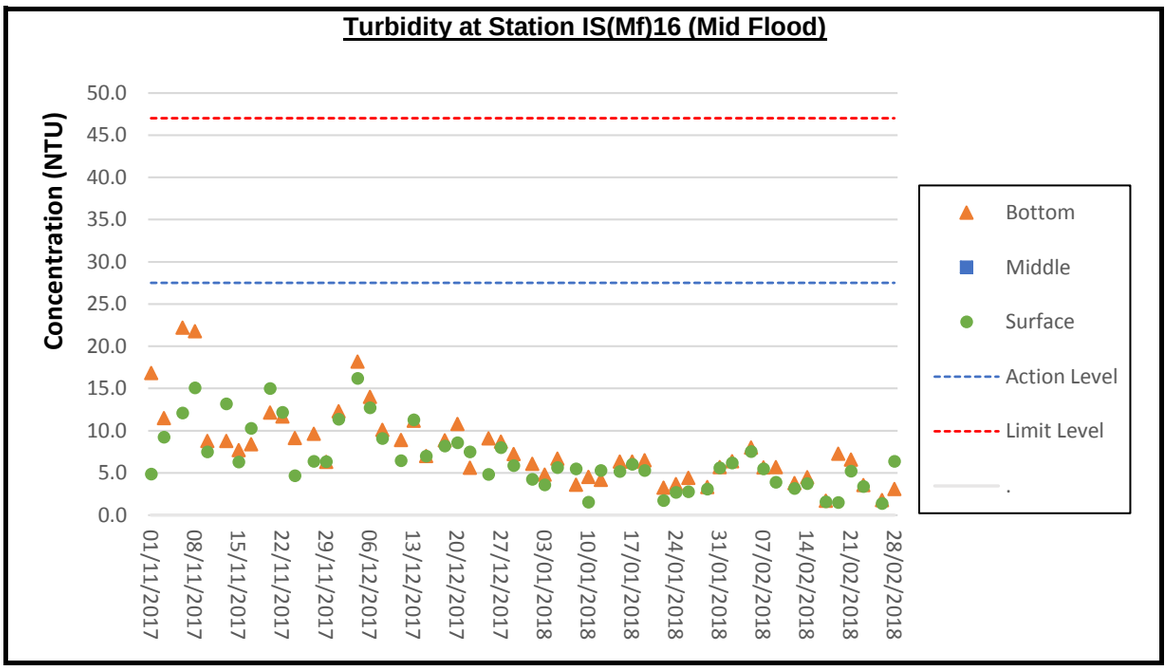

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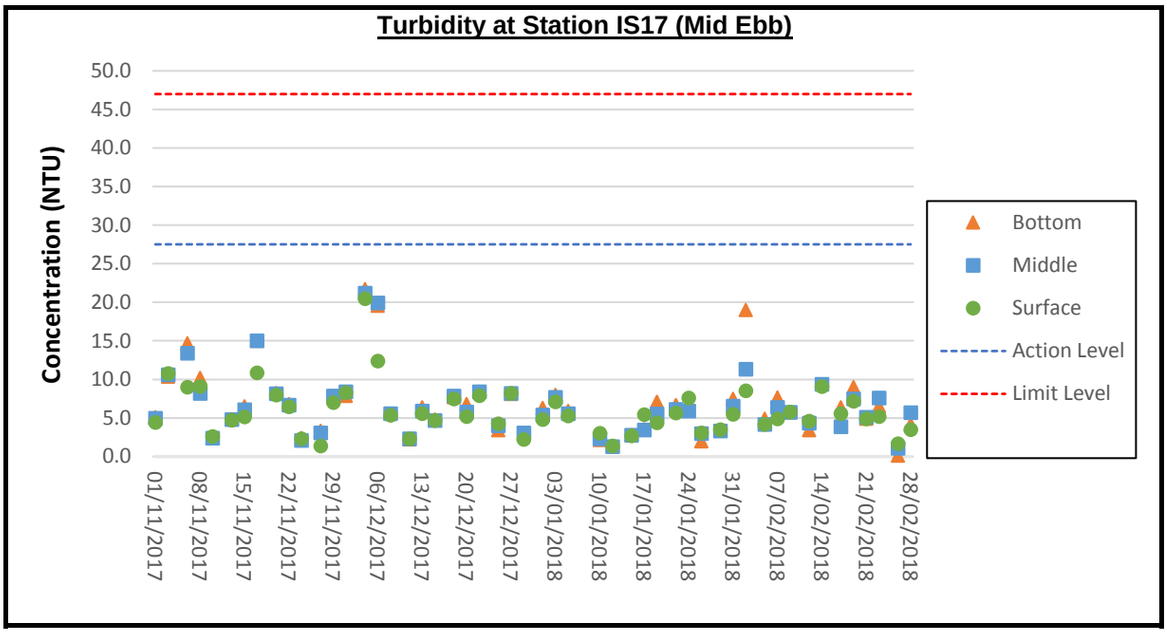

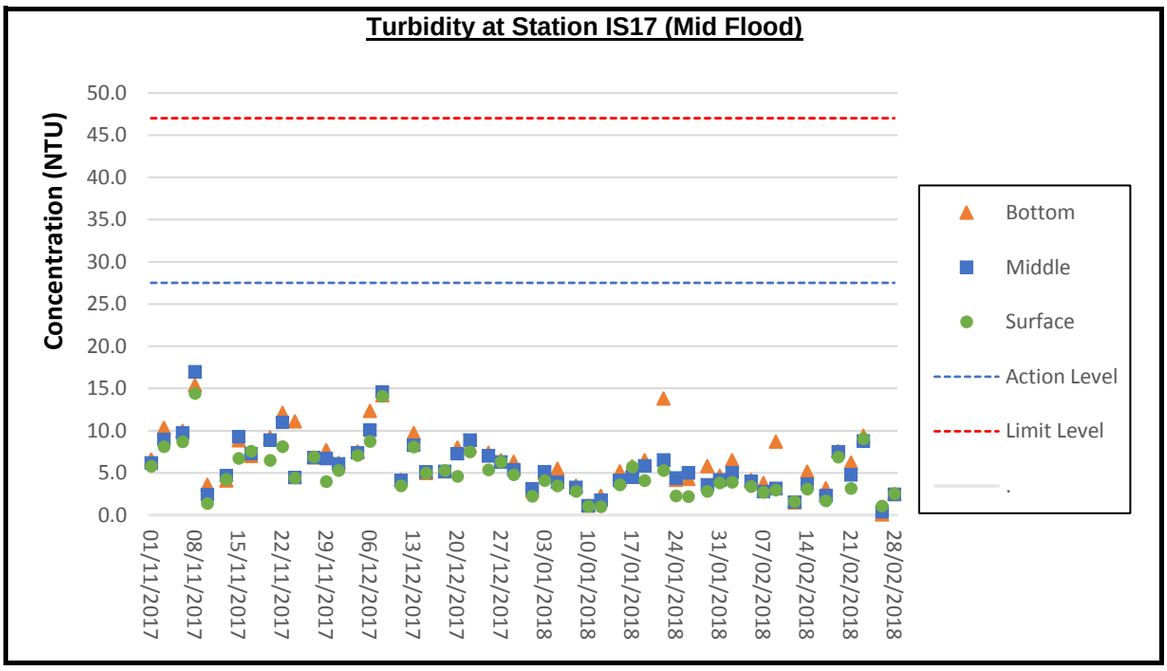

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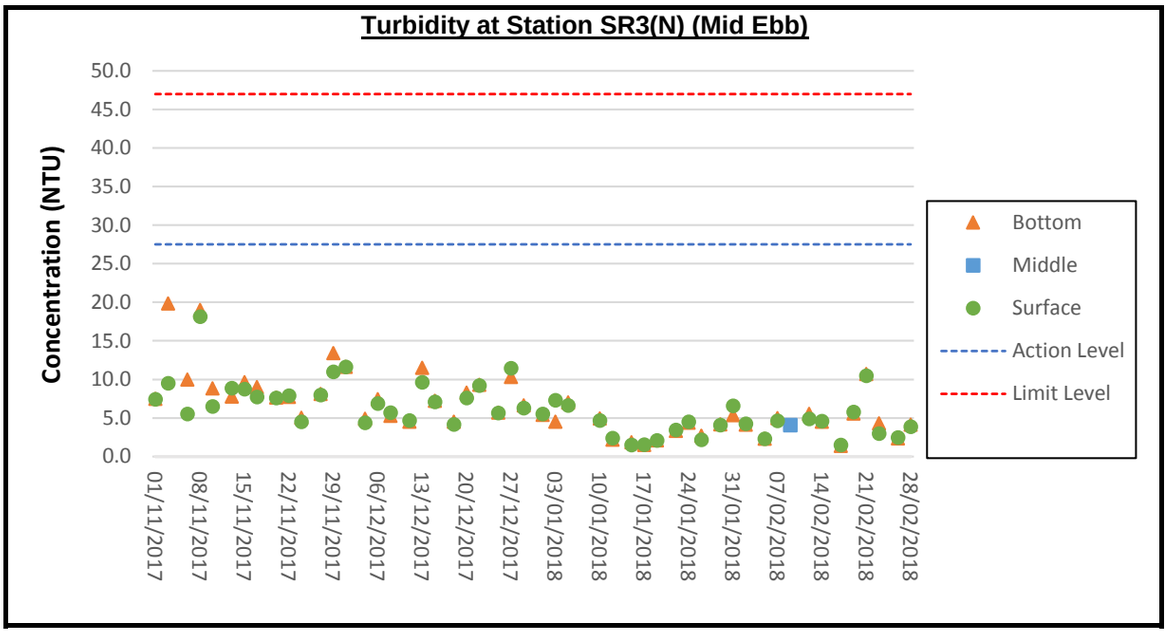

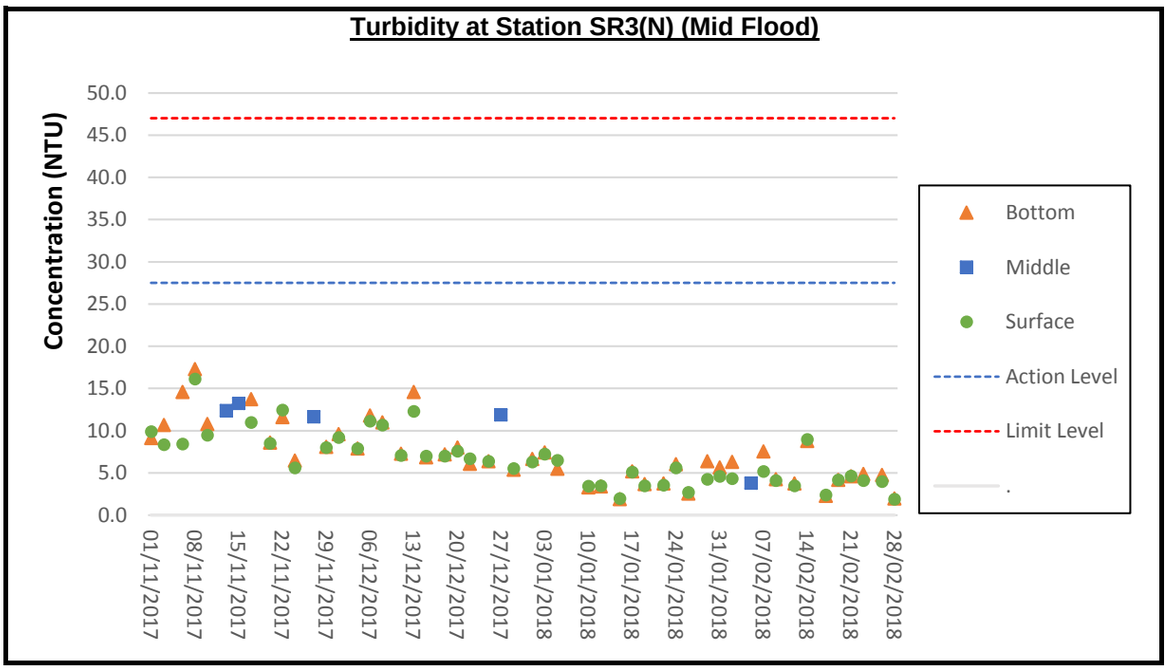

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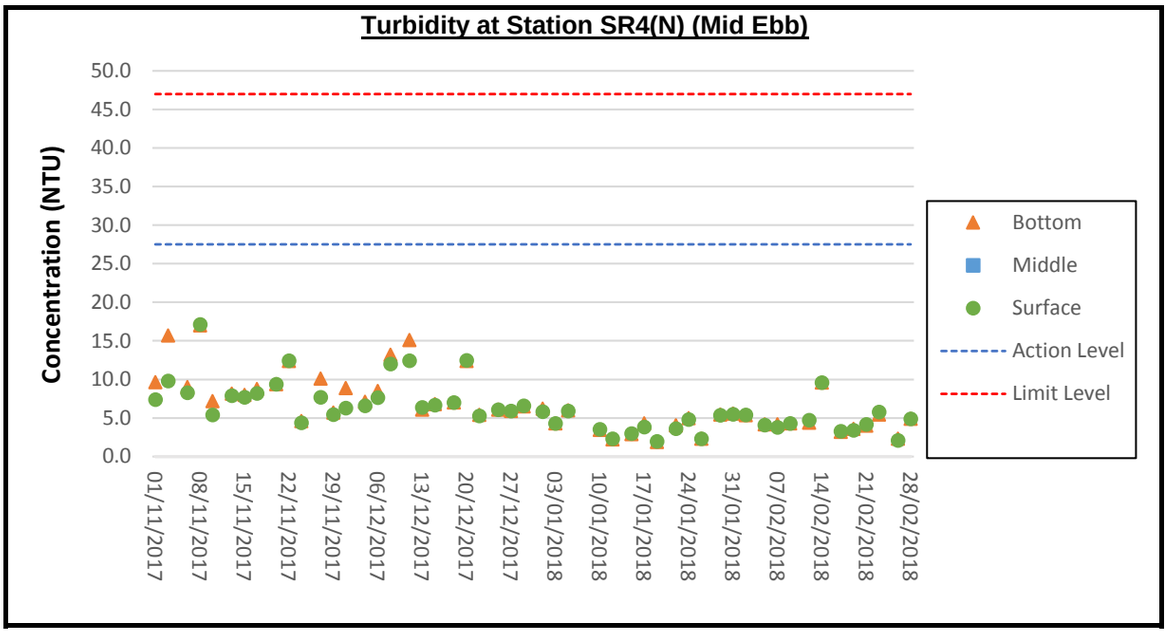

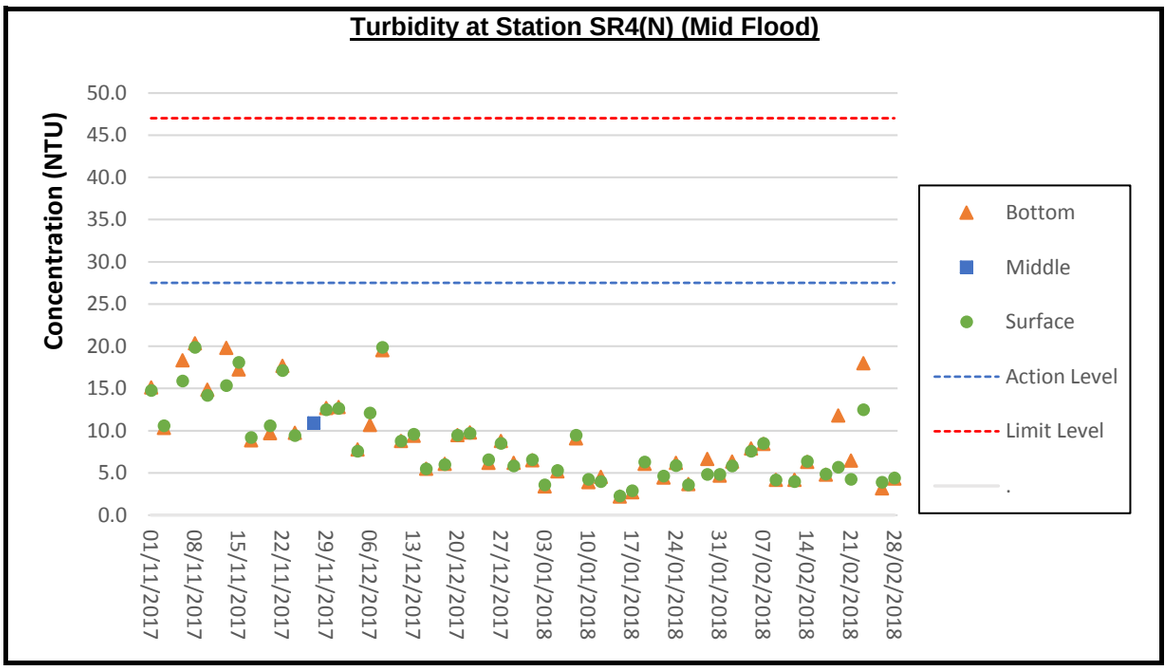

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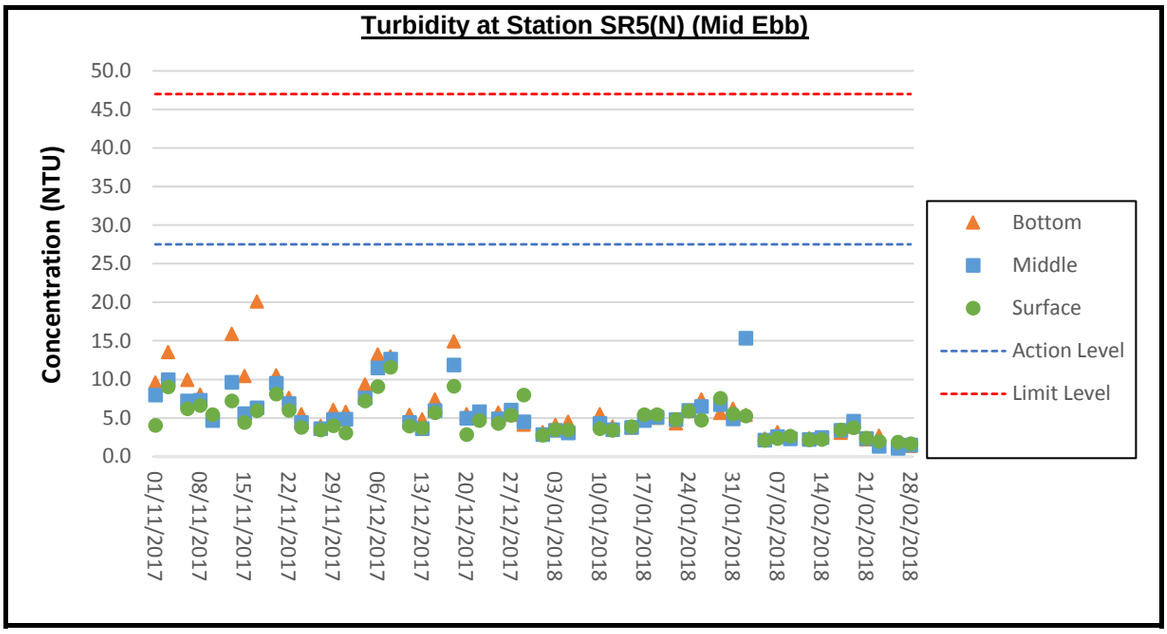

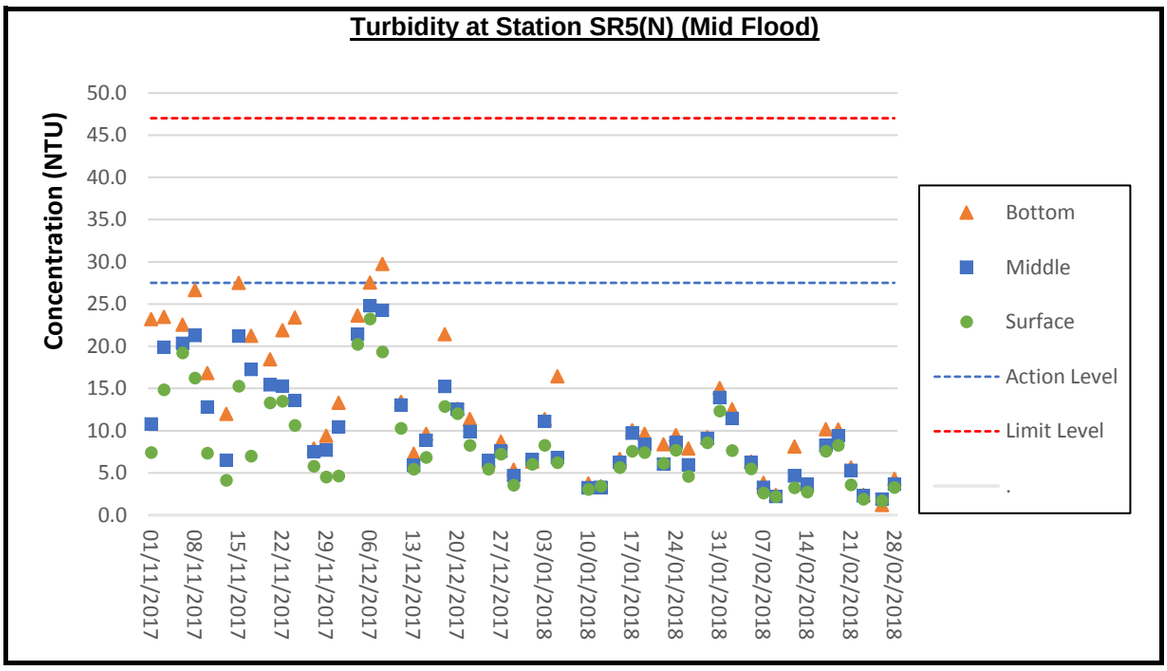

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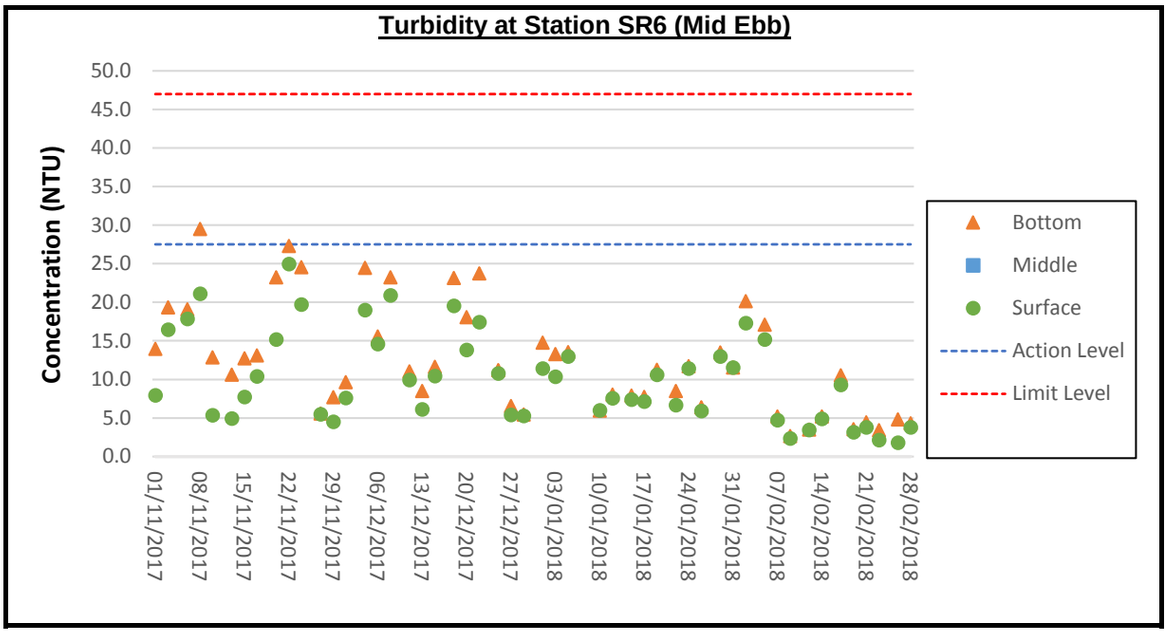

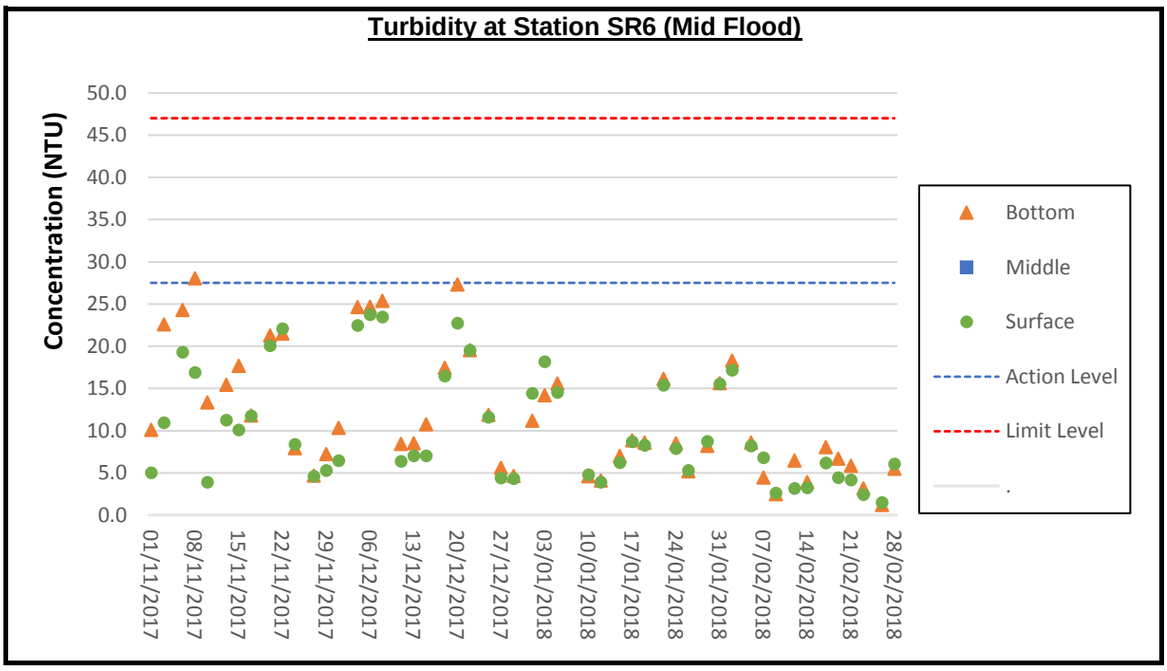

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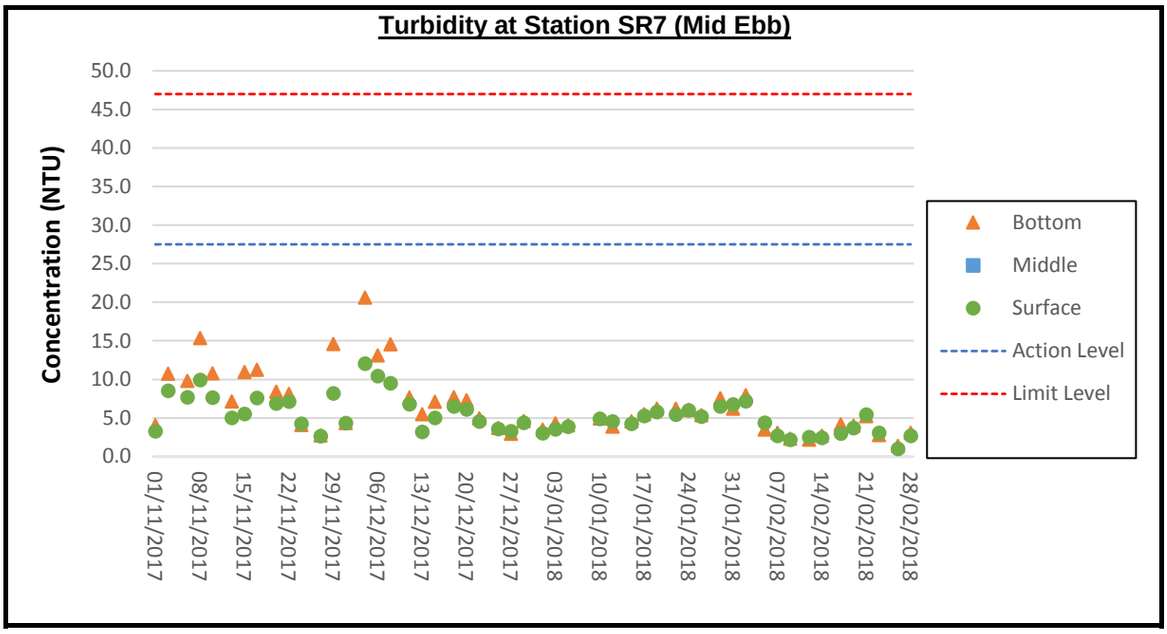

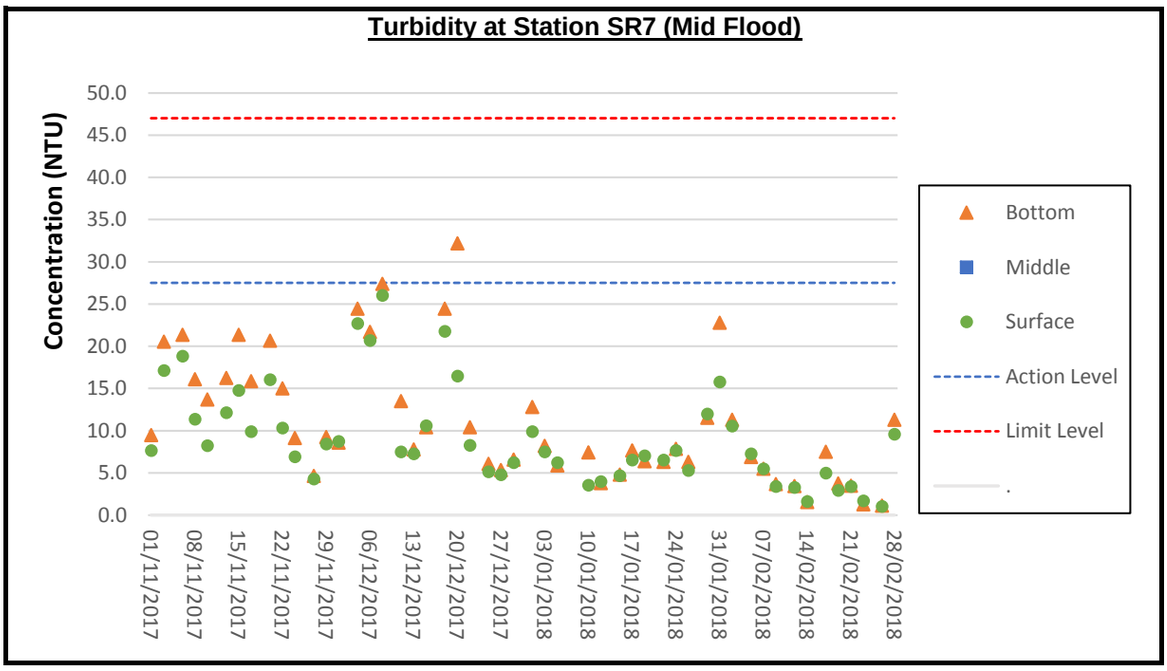

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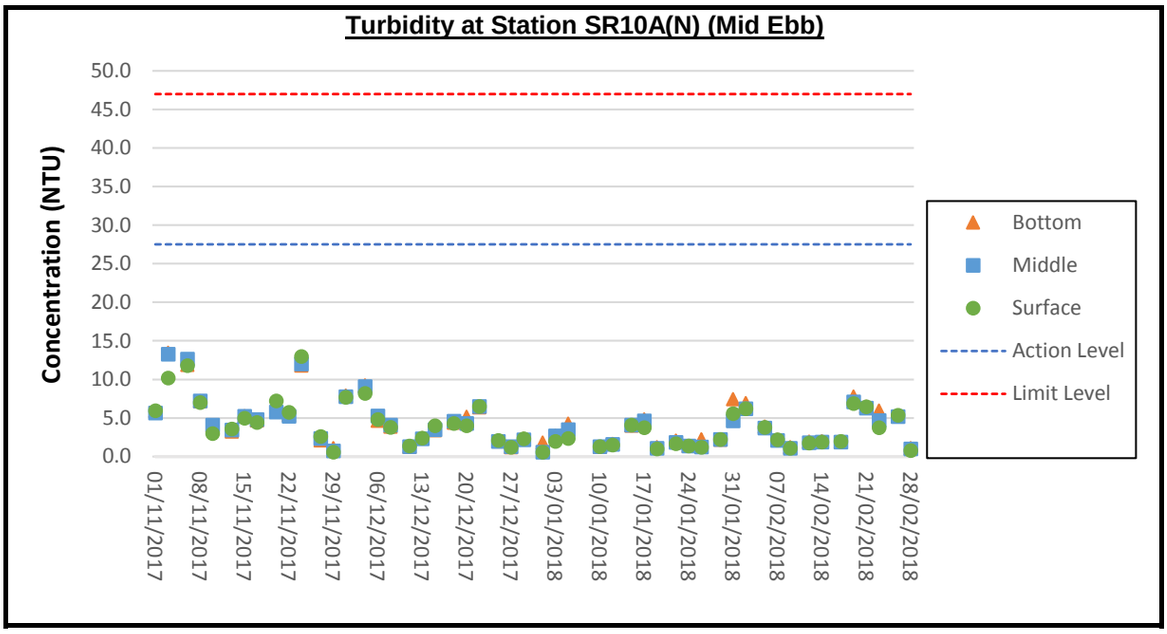

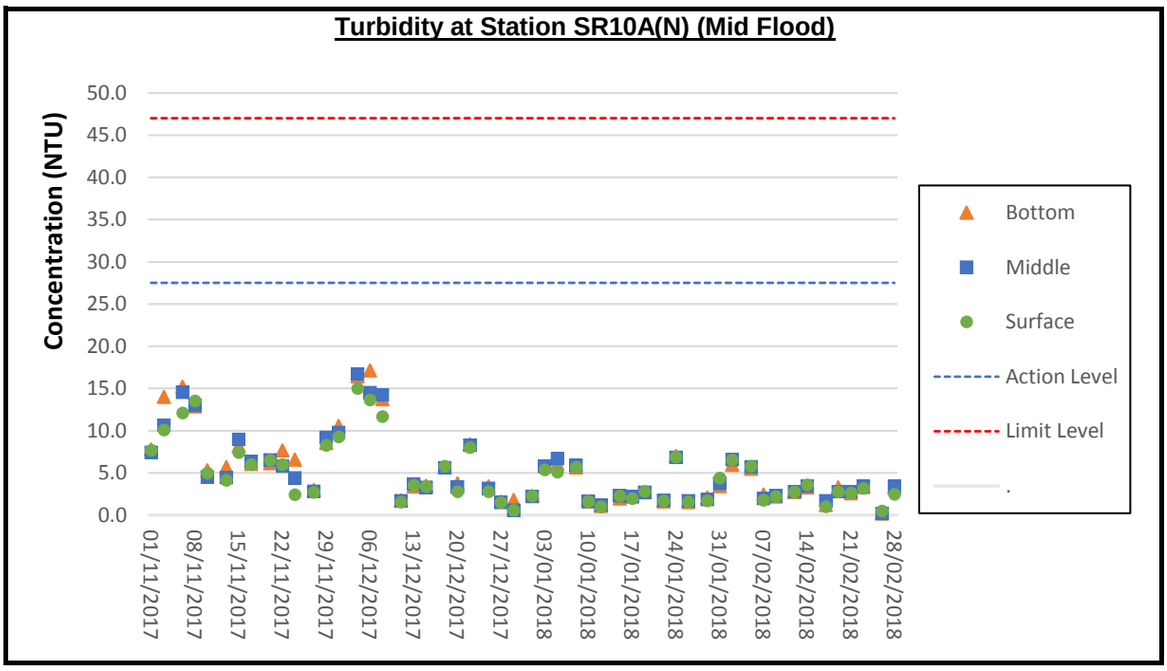

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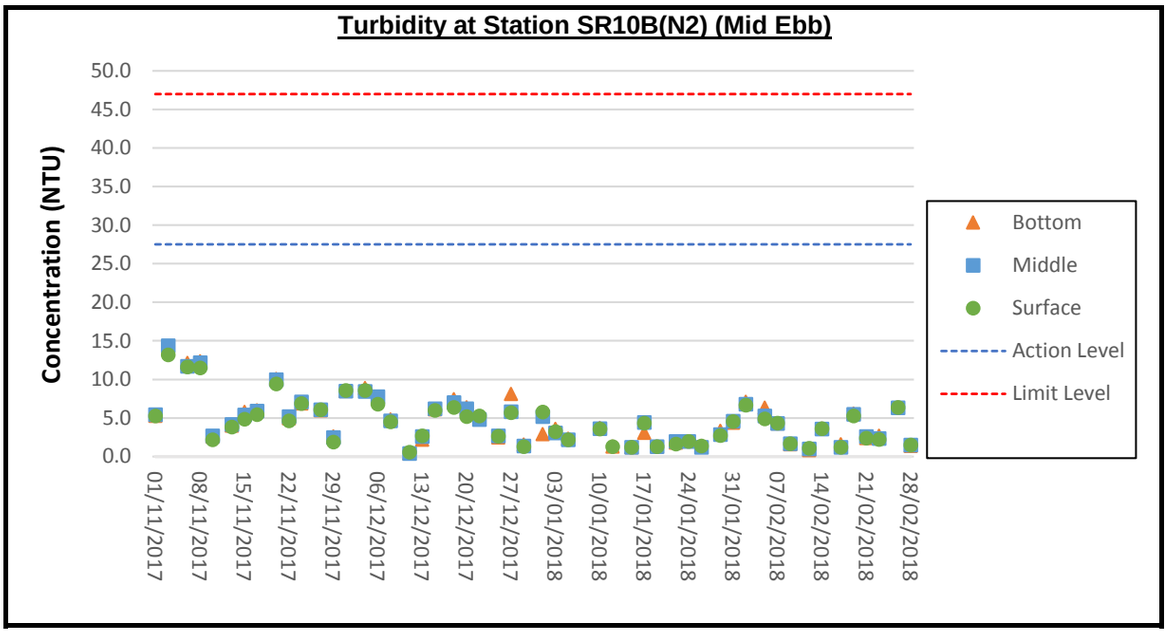

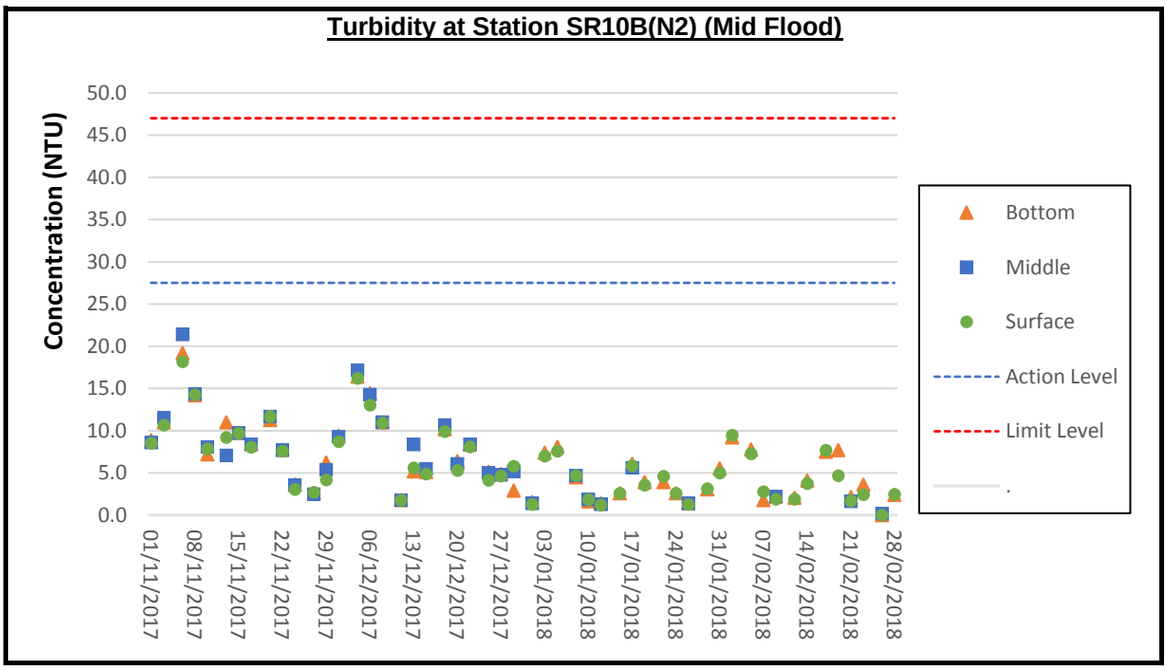

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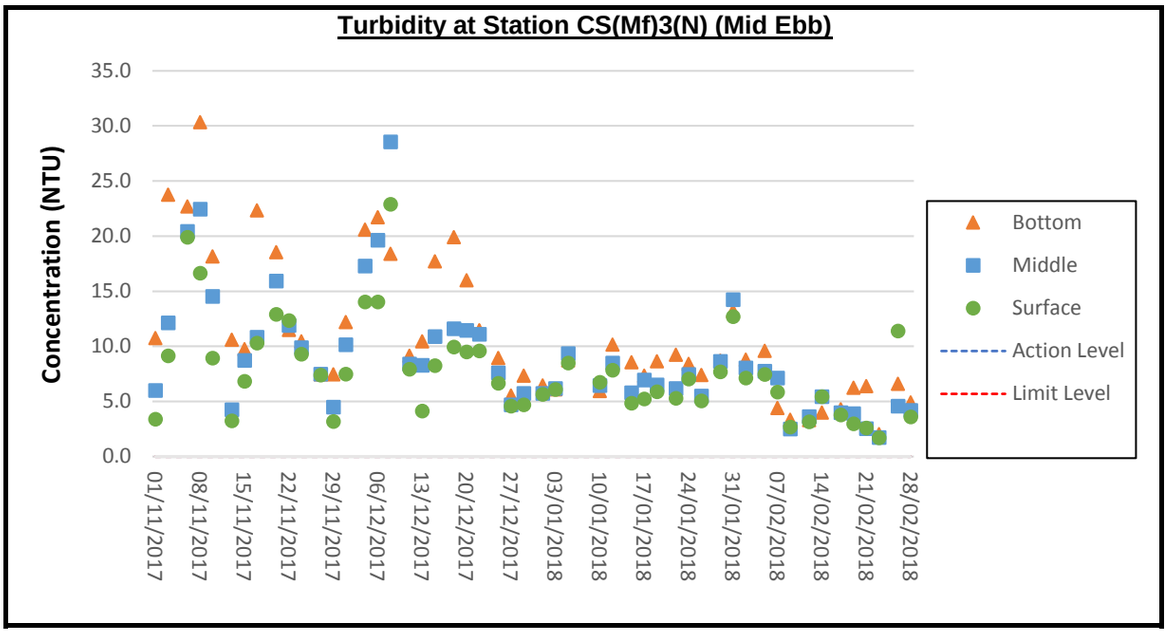
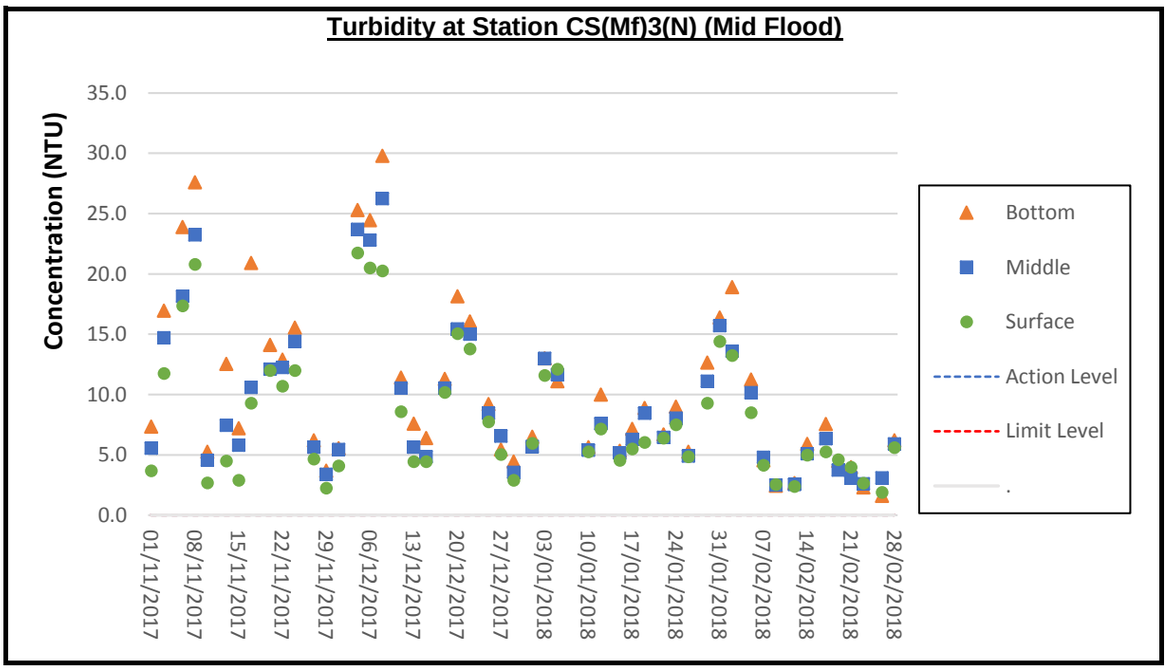
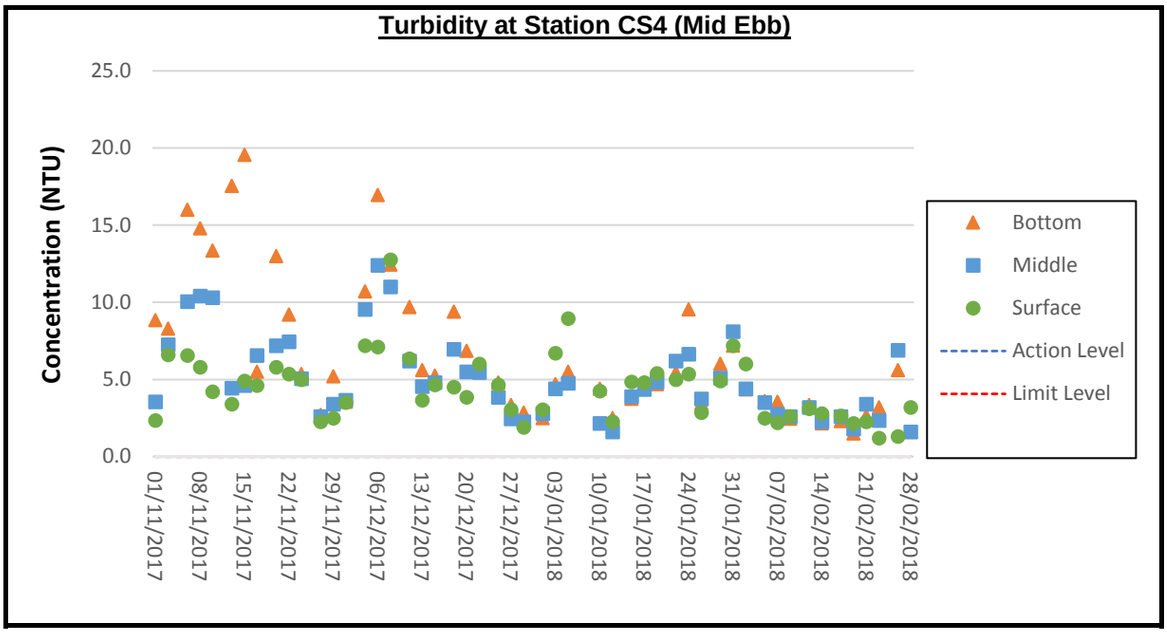
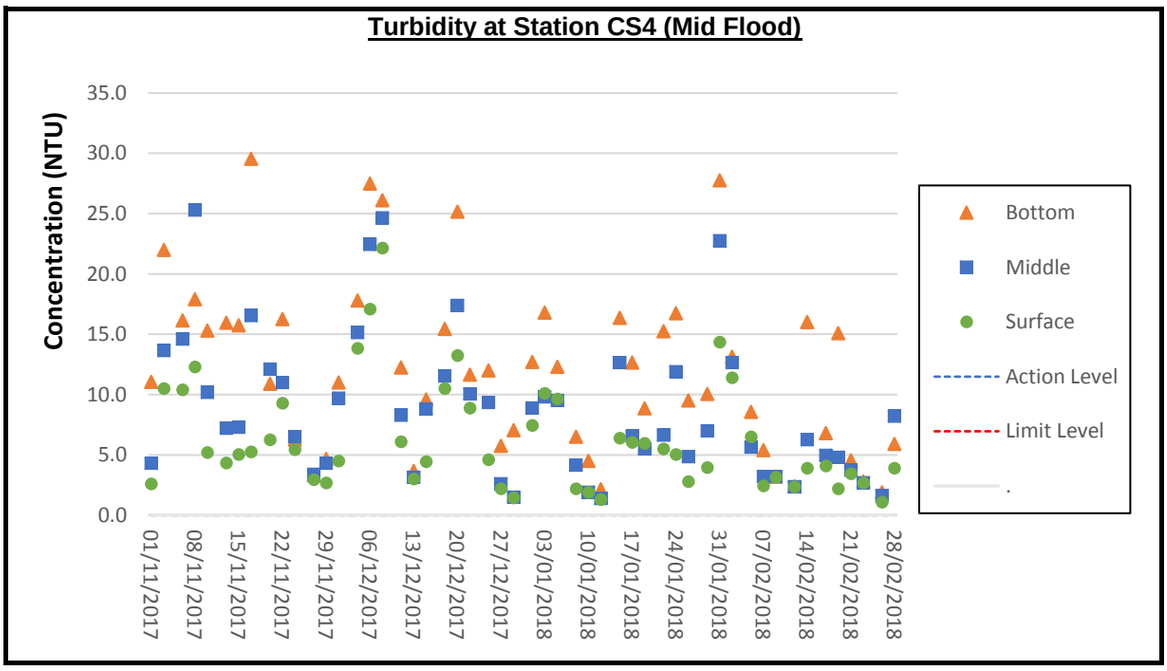


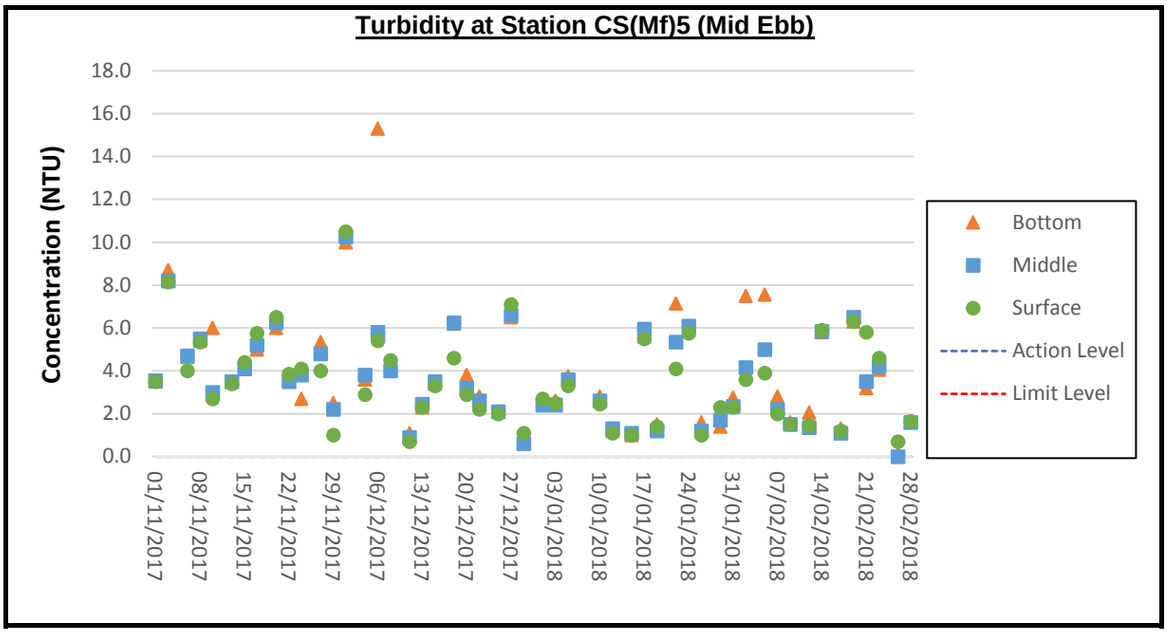


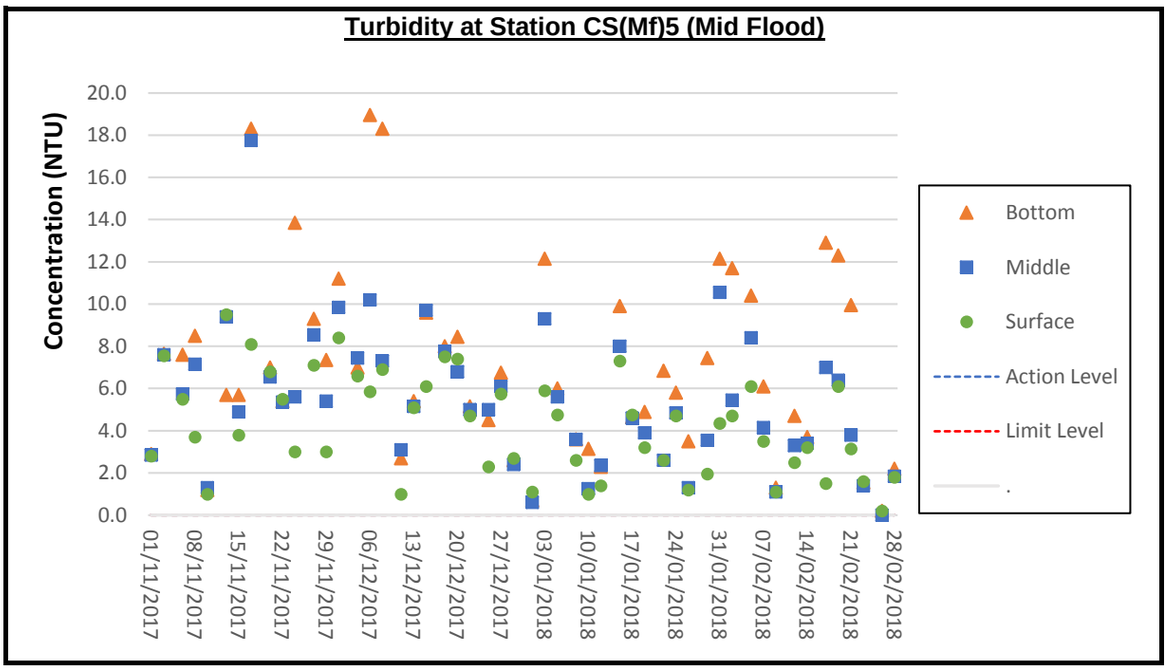
Remark:The water quality monitoring(WQM) at stations CS(Mf)3(N), IS5,IS(Mf)11, IS(Mf)6, IS10(N), IS7, SR3(N), SR5(N), SR6 and SR7 during flood tide and all water quality monitoring stations during ebb tide were not conducted on 8 January 2018 due to safety issues.The Strong Monsoon Signal was hoisted in this morning and the WQM was cancelled due to marine safety issues as considered by the vessel captain.



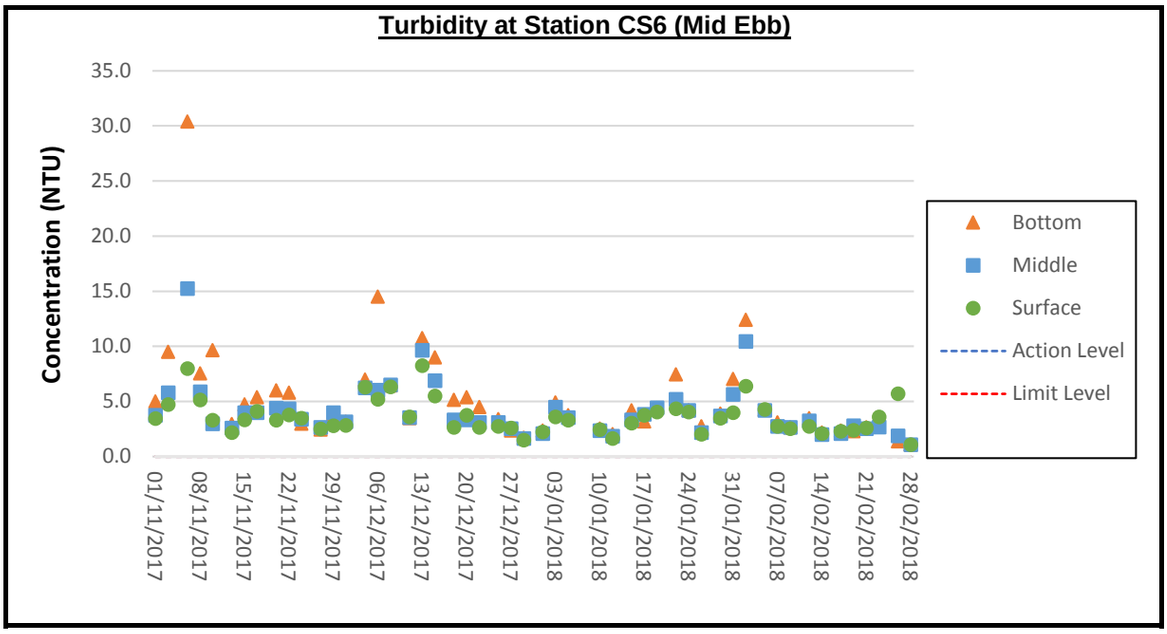


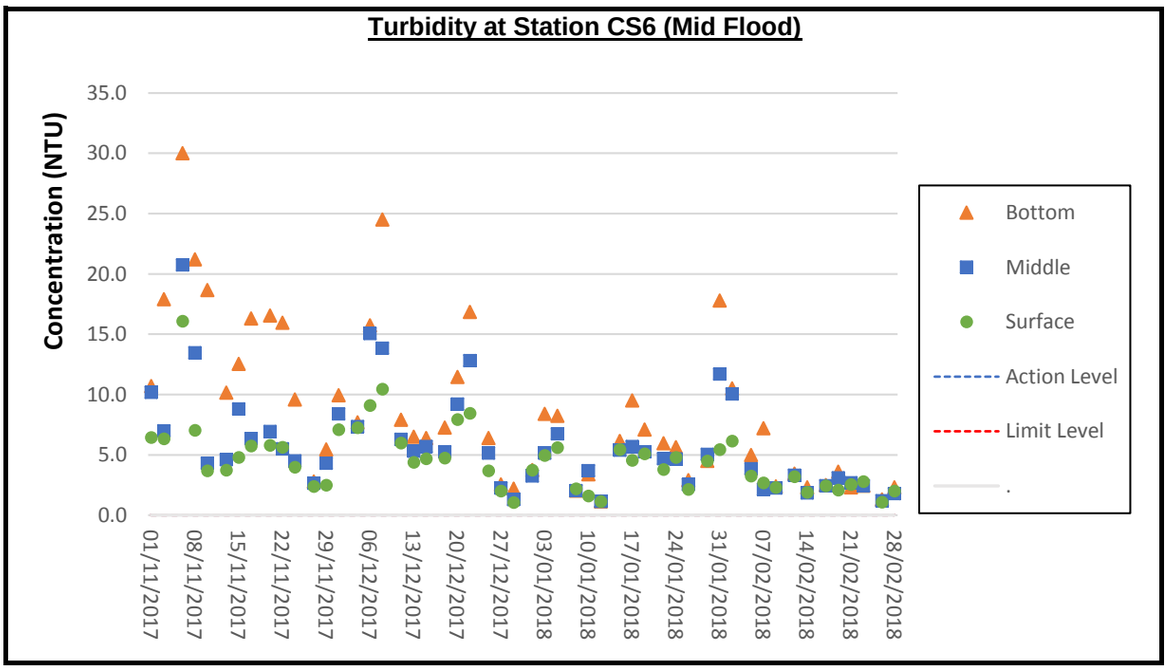
Remark:The water quality monitoring(WQM) at stations CS(Mf)3(N), IS5,IS(Mf)11, IS(Mf)6, IS10(N), IS7, SR3(N), SR5(N), SR6 and SR7 during flood tide and all water quality monitoring stations during ebb tide were not conducted on 8 January 2018 due to safety issues.The Strong Monsoon Signal was hoisted in this morning and the WQM was cancelled due to marine safety issues as considered by the vessel captain.



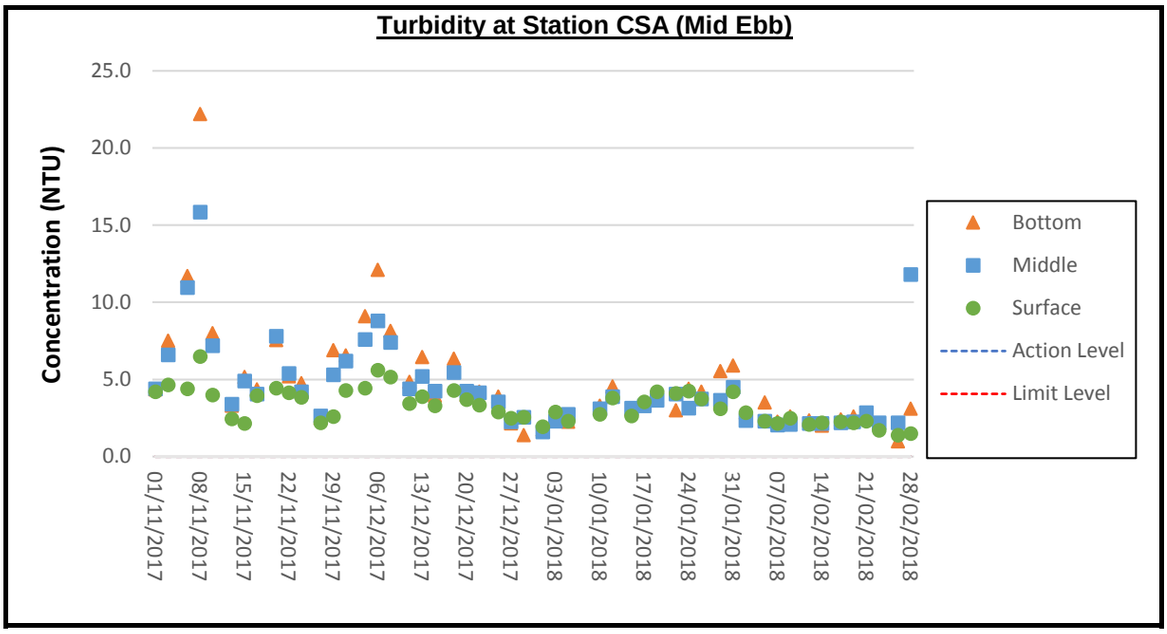


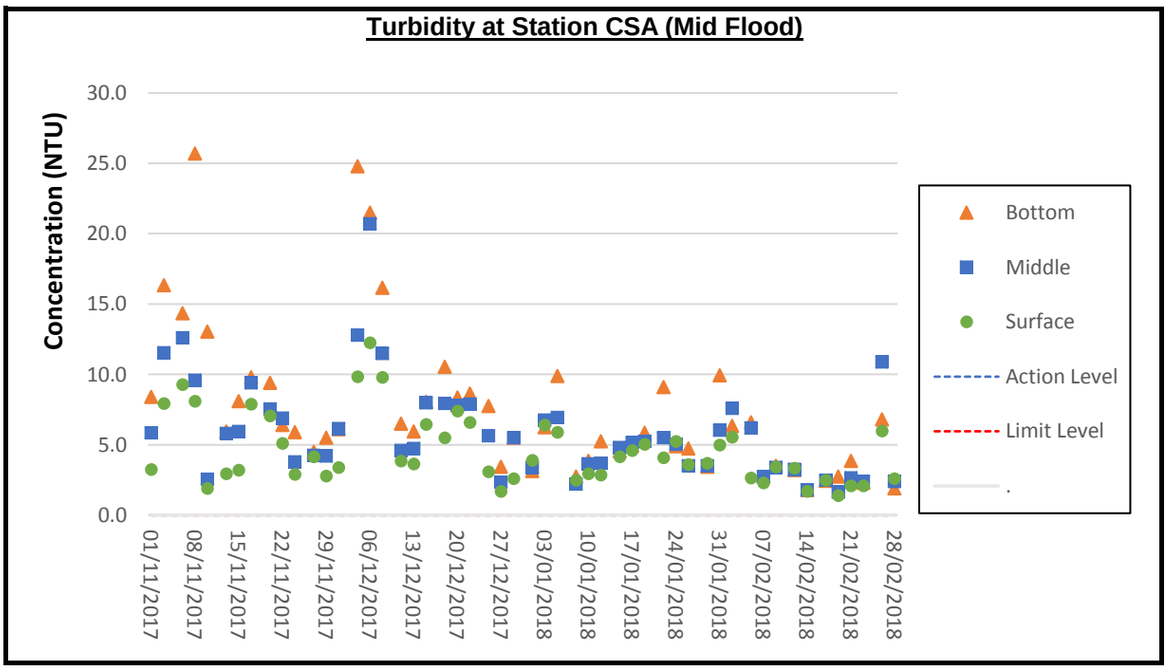
Remark:The water quality monitoring(WQM) at stations CS(Mf)3(N), IS5,IS(Mf)11, IS(Mf)6, IS10(N), IS7, SR3(N), SR5(N), SR6 and SR7 during flood tide and all water quality monitoring stations during ebb tide were not conducted on 8 January 2018 due to safety issues.The Strong Monsoon Signal was hoisted in this morning and the WQM was cancelled due to marine safety issues as considered by the vessel captain.



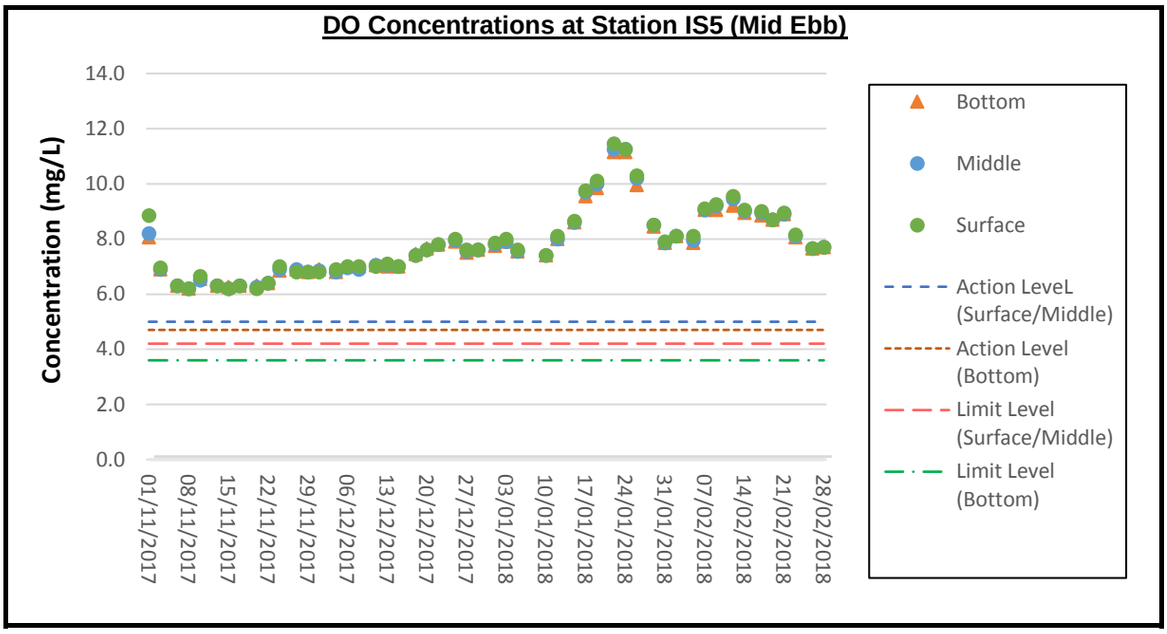


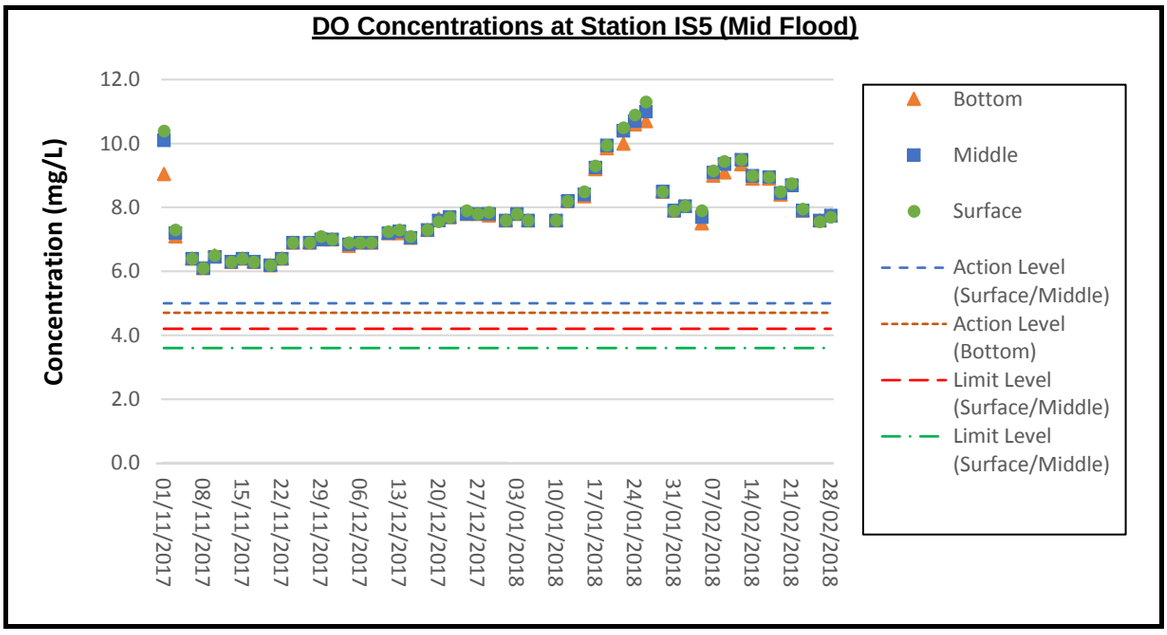
Remark:The water quality monitoring(WQM) at stations CS(Mf)3(N), IS5,IS(Mf)11, IS(Mf)6, IS10(N), IS7, SR3(N), SR5(N), SR6 and SR7 during flood tide and all water quality monitoring stations during ebb tide were not conducted on 8 January 2018 due to safety issues.The Strong Monsoon Signal was hoisted in this morning and the WQM was cancelled due to marine safety issues as considered by the vessel captain.





Remark:The water quality monitoring(WQM) at stations CS(Mf)3(N), IS5,IS(Mf)11, IS(Mf)6, IS10(N), IS7, SR3(N), SR5(N), SR6 and SR7 during flood tide and all water quality monitoring stations during ebb tide were not conducted on 8 January 2018 due to safety issues.The Strong Monsoon Signal was hoisted in this morning and the WQM was cancelled due to marine safety issues as considered by the vessel captain.





Remark:The water quality monitoring(WQM) at stations CS(Mf)3(N), IS5,IS(Mf)11, IS(Mf)6, IS10(N), IS7, SR3(N), SR5(N), SR6 and SR7 during flood tide and all water quality monitoring stations during ebb tide were not conducted on 8 January 2018 due to safety issues.The Strong Monsoon Signal was hoisted in this morning and the WQM was cancelled due to marine safety issues as considered by the vessel captain.

APPENDIX G

Site Audit Findings and Corrective Actions

Appendix G – Site Audit Findings and Corrective Actions

1.1.1 Site Inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures for the Contract No. HY/2013/01(includes the construction works of Contract No. HY/2013/06 within Contract No. HY/2013/01 works area). During the reporting period, thirteen site inspections of Contract No. HY/2013/01 were carried out 6, 13, 20 and 27 December 2017, 3, 10, 17, 24 and 31 January 2018 and 7, 14, 21 and 28 February 2018 while Contract No. HY/2013/06 (within Contract No. HY/2013/01 works area) were carried out on 21 and 28 February 2018

1.1.2 Particular for Contract No. HY/2013/01 and Contract No. HY/2013/06 within Contract No. HY/2013/01 works area during the site inspections and corrective actions undertaken by the Contractor are described in Table 1 and Table 2.

Table 1 Summary of Environmental Site Inspections for Contract No. HY/2013/01

Date of Audit	Observations	Actions Taken by Contractor / Recommendation	Date of Observations Closed
29 November 2017	1. Chemical drums were found without chemical labels near the main gate.	1. Proper labels were provided for the chemical drums near the main gate.	6 December 2017
6 December 2017	1. Oil product was stored in a plastic bottle and was found without drip tray in the vicinity of row 5 PCB Building. 2. Rubbish was found in the vicinity of row 5 PCB Building.	1. Chemical drums were removed near the main gate. 2. Rubbish was removed near row 5 PCB Building.	13 December 2017
13 December 2017	1. The general refuses were accumulated near the waste skip at western side of PCB building. 2. Oily water was found in the drip tray at Row 2. 3. Chemical Containers were found without drip trays at Row 2 and Row 5. 4. Oil stain found beside the drip tray for the generator at Row 5.	1. The general refuse and the waste skip was removed from the western side of PCB building. 2. The oily water in the drip tray was removed at Row 2. 3. The chemical containers were removed at Row 2 and Row 5. 4. The oil stain found beside the drip tray for the generator was cleared at Row 5.	20 December 2017
20 December 2017	1. More than 20 bags of cement were placed without cover on 1/F of Row 1.	1. The bags of cement were removed on 1/F of Row 1.	27 December 2017

Date of Audit	Observations	Actions Taken by Contractor / Recommendation	Date of Observations Closed
27 December 2017	Nil	Nil.	Nil
3 January 2018	Nil	Nil	Nil
10 January 2018	1. The C&D waste was scattered near the waste skip at western part of haul road.	1. The C&D waste was removed at western part of haul road.	24 January 2018
	2. Oily water was found in the drip tray at Row 2.	2. The oily water was removed from drip tray at Row 2.	17 January 2018
	3. Chemical container was found without drip tray at Row 2.	3. The chemical container was removed at Row 2.	24 January 2018
	4. The NRMM label was found damaged on the 1/F of Row 4.	4. An appropriate NRMM label was affixed on the machinery on the 1/F of Row 4.	31 January 2018
	5. The dust emission was generated from the rock breaking activities at the work area near Row 4.	5. Rock breaking was not observed at the work area near Row 4 during site inspection. Dust emission was not observed.	17 January 2018
17 January 2018	1. The C&D waste was scattered near the waste skip at western part of haul road.	1. The C&D waste was removed at western part of haul road.	24 January 2018
	2. Chemical container was found without drip tray at Row 2.	2. The chemical container was removed at Row 2.	
	3. The NRMM label was found damaged on the 1/F of Row 4.	3. An appropriate NRMM label was affixed on the machinery on the 1/F of Row 4.	31 January 2018
	4. Dust emission was observed from breaking activities at 1/F of Row 4.	4. Watering was provided for dusty activities on the 1/F of Row 4.	24 January 2018
24 January 2018	1. The NRMM label was found damaged on the 1/F of Row 4. 2. The stockpiles of cement (>20 bags) were found uncovered on the 1/F of Row 4.	1. An appropriate NRMM label was affixed on the machinery on the 1/F of Row 4. 2. The stockpile of cement (>20 bags) were removed on the 1/F of Row 4.	31 January 2018
31 January 2018	Nil	Nil	Nil
7 February 2018	1. General refuses were accumulated on G/F at the work area between Row 1 and Row 2.	1. The general refuses were cleared on G/F at the work area between Row 1 and Row. 2	14 February 2018

Date of Audit	Observations	Actions Taken by Contractor / Recommendation	Date of Observations Closed
14 February 2018	Nil	Nil.	Nil.
21 February 2018	1. More than 20 cement bags were observed without impervious cover on the 1/F of Row 1.	1. The bags of cement were removed on the 1/F of Row 1.	28 February 2018
28 February 2018	1. More than 20 cement bags were observed without impervious cover on the 1/F of Row 5.	1. The Contractor was reminded to cover the bags of cement on the 1/F of Row 5.	Follow-up action undertaken by the Contractor will be inspected during the site inspection to be undertaken in March 2018.

Table 2 Summary of Environmental Site Inspections for Contract No. HY/2013/06 within Contract No. HY/2013/01 works area

Date of Audit	Observations	Actions Taken by Contractor / Recommendation	Date of Observations Closed
21 February 2018	No particular environmental issue was recorded during the site inspection.	Nil.	Nil.
28 February 2018	No particular environmental issue was recorded during the site inspection.	Nil.	Nil.

Remark: The commencement date of Contract No. HY/2013/06 within Contract No. HY/2013/01 works area was 20 February 2018.

APPENDIX H

Waste Flow Table

Name of Department: Highways Department

Contract No.: HY/2013/01

Leighton - Chun Wo Joint Venture

Monthly Summary Waste Flow Table for 2017

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	a.Total Quantity Generated (see Note 8)	b. Hard Rock and Large Broken Concrete (see Note 9)	c. Reused in the Contract	d. Reused in Other Projects	e. Disposed as Public Fill (see Note 10)	f. Imported Fill	g. Metals (see Note 5)	h. Paper / Cardboard Packaging (see Note 5)	i. Plastics (see Note 3) (see Note 5)	j. Chemical Waste	k. Others, e.g. general refuse
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m^3)
January	0.046	0.046	0.000	0.000	0.046	0.000	55.920	1.564	0.000	0.000	0.707
February	0.364	0.364	0.000	0.000	0.364	0.000	56.790	1.785	0.000	0.000	0.625
March	0.957	0.957	0.000	0.000	0.957	3.152	85.350	1.477	0.000	0.000	0.813
April	0.487	0.487	0.000	0.000	0.487	30.030	144.450	1.412	0.000	0.090	0.709
May	1.807	1.807	0.000	0.000	1.807	0.000	46.300	0.000	0.000	0.000	0.737
June	3.140	3.140	0.000	0.000	3.140	0.000	117.810	0.000	0.000	0.000	0.595
Sub-total	6.801	6.801	0.000	0.000	6.801	33.182	506.620	6.238	0.000	0.090	4.186
July	1.780	1.780	0.000	0.000	1.780	0.000	177.660	2.856	0.000	0.800	0.664
August	1.190	1.190	0.000	0.000	1.190	0.000	21.140	1.168	0.000	0.000	0.740
September	0.679	0.679	0.000	0.000	0.679	0.000	36.090	1.516	0.000	0.000	1.015
October	0.410	0.410	0.000	0.000	0.410	0.000	8.310	0.000	0.000	0.000	1.200
November	1.068	1.068	0.000	0.000	1.068	0.000	57.750	2.028	0.000	0.000	1.441
December	1.096	1.096	0.000	0.000	1.096	0.000	14.110	0.918	0.000	0.000	0.985
Total	13.024	13.024	0.000	0.000	13.024	33.182	821.680	14.724	0.000	0.890	10.231

Total C&D waste generated = a+b+f+g+h+i+j+k

Total C&D waste generated (excluded excavated material) = g+h+i+j+k

Total C&D waste recycled = c+d+g+h+i

% of recycled C&D waste = (Total C&D waste generated - Total C&D waste recycled) / Total C&D waste generated

Name of Department: Highways Department

Contract No.: HY/2013/01

Leighton - Chun Wo Joint Venture

Forecast of Total Quantities of C&D Materials to be Generated from the Contract*										
a.Total Quantity Generated (see Note 8)	**b. Hard Rock and Large Broken Concrete** (see Note 9)	**c. Reused in the Contract**	**d. Reused in Other Projects**	**e. Disposed as Public Fill** (see Note 10)	**f. Imported Fill**	**g. Metals** (see Note 5)	**h. Paper / Cardboard Packaging** (see Note 5)	**i. Plastics** (see Note 3) (see Note 5)	**j. Chemical Waste**	**k. Others, e.g. general refuse**
(in '000m^3)	**(in '000m^3)**	**(in '000m^3)**	**(in '000m^3)**	**(in '000m^3)**	**(in '000m^3)**	**(in '000kg)**	**(in '000kg)**	**(in '000kg)**	**(in '000kg)**	**(in '000m^3)**

Notes:
(1) The performance target are given in PS Clause 6(14)
(2) The waste flow table shall also include C&D materials that are not specified in the Contract to be imported for use at the Site
(3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material
(4) The Contractor shall also submit the latest forecast of the amount of C&D materials expected to be generated from the Works, together with a break down of the nature where the total amount of C&D materials expected to be generated from the Works is equal to or exceeding 50,000m3.
(5) All recyclable materials, including metals, paper / cardboard packaging, plastics, etc. will be collected by registered collector for recycling.
(6) Conversion factors for reporting purpose:
in-situ: rock = 2.5 tonnes/m^3; soil = 2.0 tonnes/m^3
excavated: rock = 2.0 tonnes/m^3; soil = 1.8 tonnes/m^3; broken concrete and bitumen = 2.4 tonnes/m^3
C&D Waste = 0.9 tonnes/m^3; bentonite slurry = 2.8 tonnes/m^3
Diesel density: 0.8kg/l
(7) Numbers are rounded off to the nearest three decimal places
(8) The "Total Quantity Generated" equals to the sum of "Reuse in the Contract", "Reuse in Other Projects" and "Disposed as Public Fill"
(9) The "Hard Rock and Large Broken Concrete" were disposed as public fill
(10) The amount in "Disposed as Public Fill" included the "Hard Rock and Large Broken Concrete" disposed as public fill

Name of Department: Highways Department

Contract No.: HY/2013/01

Monthly Summary Waste Flow Table for 2018

Leighton - Chun Wo Joint Venture

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	a.Total Quantity Generated (see Note 8)	b. Hard Rock and Large Broken Concrete (see Note 9)	c. Reused in the Contract	d. Reused in Other Projects	e. Disposed as Public Fill (see Note 10)	f. Imported Fill	g. Metals (see Note 5)	h. Paper / Cardboard Packaging (see Note 5)	i. Plastics (see Note 3) (see Note 5)	j. Chemical Waste	k. Others, e.g. general refuse
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m^3)
January	1.836	1.836	0.000	0.000	1.836	0.000	437.36(*)	1.922	0.000	0.000	0.912
February	0.648	0.648	0.000	0.000	0.648	0.000	0.000	0.000	0.000	0.000	1.124
March											
April											
May											
June											
Sub-total	2.484	2.484	0.000	0.000	2.484	0.000	0.000	1.922	0.000	0.000	2.036
July											
August											
September											
October											
November											
December											
Total	2.484	2.484	0.000	0.000	2.484	0.000	0.000	1.922	0.000	0.000	2.036

Total C&D waste generated = a+b+f+g+h+i+j+k

Total C&D waste generated (excluded excavated material) = g+h+i+j+k

Total C&D waste recycled = c+d+g+h+i

% of recycled C&D waste = (Total C&D waste generated - Total C&D waste recycled) / Total C&D waste generated

Leighton - Chun Wo Joint Venture

Forecast of Total Quantities of C&D Materials to be Generated from the Contract*										
a.Total Quantity Generated (see Note 8)	**b. Hard Rock and Large Broken Concrete** (see Note 9)	**c. Reused in the Contract**	**d. Reused in Other Projects**	**e. Disposed as Public Fill** (see Note 10)	**f. Imported Fill**	**g. Metals** (see Note 5)	**h. Paper / Cardboard Packaging** (see Note 5)	**i. Plastics** (see Note 3) (see Note 5)	**j. Chemical Waste**	**k. Others, e.g. general refuse**
(in '000m^3)	**(in '000m^3)**	**(in '000m^3)**	**(in '000m^3)**	**(in '000m^3)**	**(in '000m^3)**	**(in '000kg)**	**(in '000kg)**	**(in '000kg)**	**(in '000kg)**	**(in '000m^3)**

Notes:
(1) The performance target are given in PS Clause 6(14)
(2) The waste flow table shall also include C&D materials that are not specified in the Contract to be imported for use at the Site
(3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material
(4) The Contractor shall also submit the latest forecast of the amount of C&D materials expected to be generated from the Works, together with a break down of the nature where the total amount of C&D materials expected to be generated from the Works is equal to or exceeding 50,000m3.
(5) All recyclable materials, including metals, paper / cardboard packaging, plastics, etc. will be collected by registered collector for recycling.
(6) Conversion factors for reporting purpose:
in-situ: rock = 2.5 tonnes/m^3; soil = 2.0 tonnes/m^3
excavated: rock = 2.0 tonnes/m^3; soil = 1.8 tonnes/m^3; broken concrete and bitumen = 2.4 tonnes/m^3
C&D Waste = 0.9 tonnes/m^3; bentonite slurry = 2.8 tonnes/m^3
Diesel density: 0.8kg/l
(7) Numbers are rounded off to the nearest three decimal places
(8) The "Total Quantity Generated" equals to the sum of "Reuse in the Contract", "Reuse in Other Projects" and "Disposed as Public Fill"
(9) The "Hard Rock and Large Broken Concrete" were disposed as public fill
(10) The amount in "Disposed as Public Fill" included the "Hard Rock and Large Broken Concrete" disposed as public fill
(*) According to Contractor's information, the quantity of metals generated as reported in Monthly EM&A Report of January 2018 are correct.

Ver: 1st
Date: Jan 2017

ATAL Technologies Ltd.
Contract No. **HY/2013/06** HKBCF Automatic Vehicle Clearance Support System
Location: Artifical Island of HKBCF **(C1 Area)**

Monthly Summary Waste Flow Table for 2018

Month	Inert C&D Waste disposal / 堕性廢物 (in tonnes) (see Note 1)						Non-inert C&D Waste disposal 非堕性廢物 (in tonnes)		Waste to be recycled and returned / 可再循環利用或回收的廢物								Total Quantity Generated 總生產量	
	Reused in the Work Package (e.g. backfilling) 再用於工程 (如回填)		Reused in other Projects 再用於其他工程		Inert Waste (e.g. soil, broken concrete, rubble, fill material etc.) 堕性廢物 (如泥, 石矢頭, 石, 填料等)		Others (e.g. general refuse, broken formwork etc) 其他 (如垃圾, 廢板枋等)		Metals 金屬		Plastic 塑膠		Paper/cardboard packaging 廢紙/包裝紙類		Chemical Waste 化學廢物			
	(b)		(c)		(d)		(e)		(in tonnes)		(in tonnes)		(in tonnes)		(in litre)		(a)= (b+c+d+e)	
	Est. Qty. 估計數量	Act. Qty. 實際數量	Est. Qty. 估計數量	Act. Qty. 實際數量	Est. Qty. 估計數量	Act. Qty. 實際數量	Est. Qty. 估計數量	Act. Qty. 實際數量	Est. Qty. 估計數量	Act. Qty. 實際數量	Est. Qty. 估計數量	Act. Qty. 實際數量	Est. Qty. 估計數量	Act. Qty. 實際數量	Est. Qty. 估計數量	Act. Qty. 實際數量	Est. Qty. 估計數量	Act. Qty. 實際數量
January	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
February	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.010**	**0.010**	**0.002**	**0.002**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.010**	**0.010**
March																		
April																		
May																		
June																		
July																		
August																		
September																		
October																		
November																		
December																		
Total	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.010**	**0.010**	**0.002**	**0.002**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.010**	**0.010**

Notes: (1) The quantitles of C&D Materials, in tonne, was calculated by multiply the estimated volume, in m3, with the density of the soil, which is 1.5 gcm-^{3}.

APPENDIX I

Environmental Licenses and Permits

Contract No. HY/2013/01 – Hong Kong Zhuhai and Macao Bridge Hong Kong Boundary Crossing Facilities - Passenger Clearance Building

Date: February 2018

Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date	Issuing Office	Remark
	Work Area	Date	Reference						
1.	All Areas	29 Jul 13	N/A	Environmental Permit to construct the Passenger Clearance Building and associated works of the Hong Kong Zhuhai and Macao Bridge Boundary Crossing Facilities	EP-353/2009/G	06 Aug 13	N/A	EPD	Superseded by EP-353/2009/H
2.	All Areas	16 Jan 15	N/A	Environmental Permit to construct the Passenger Clearance Building and associated works of the Hong Kong Zhuhai and Macao Bridge Boundary Crossing Facilities	EP-353/2009/H	19 Jan 15	N/A	EPD	Superseded by EP-353/2009/I
3.	All Areas	30 Jun 15	N/A	Environmental Permit to construct the Passenger Clearance Building and associated works of the Hong Kong Zhuhai and Macao Bridge Boundary Crossing Facilities	EP-353/2009/I	17 Jul 15	N/A	EPD	Superseded by EP-353/2009/J
4.	All Areas	18 Feb 2016	N/A	Environmental Permit to construct the Passenger Clearance Building and associated works of the Hong Kong Zhuhai and Macao Bridge Boundary Crossing Facilities	EP-353/2009/J	25 Feb 2016	N/A	EPD	Superseded by EP-353/2009/K

Environmental License/ Permits /Notification Register

LCAL H2620

Contract No. HY/2013/01 – Hong Kong Zhuhai and Macao Bridge Hong Kong Boundary Crossing Facilities - Passenger Clearance Building

Date: February 2018

Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date	Issuing Office	Remark
	Work Area	Date	Reference						
5.	All Areas	24 Mar 2016	N/A	Environmental Permit to construct the Passenger Clearance Building and associated works of the Hong Kong Zhuhai and Macao Bridge Boundary Crossing Facilities	EP-353/2009/K	11 Apr 2016	N/A	EPD	
6.	All Areas	29 Apr 14	H2620-LTR-EPD-AU-000006	**Billing Account** for disposal of construction waste	Billing Account No.: 7019944	16 May 14	N/A	EPD	
7.	PCB	30 Apr 14	H2620-LTR- EPD-000002	**Notification** that notifiable works are anticipated to commence (Form NA).	Acknowledge Receipt Ref. No. 373961	05 May 14	N/A	EPD	
8.	WA2	30 Apr 14	H2620-LTR- EPD-000003	**Notification** that notifiable works are anticipated to commence (Form NA).	Acknowledge Receipt Ref. No. 373956	05 May 14	N/A	EPD	
9.	WA3	30 Apr 14	H2620-LTR-EPD-AU-000001	**Notification** that notifiable works are anticipated to commence (Form NA).	Acknowledge Receipt Ref. No. 373962	05 May 14	N/A	EPD	

Contract No. HY/2013/01 – Hong Kong Zhuhai and Macao Bridge Hong Kong Boundary Crossing Facilities - Passenger Clearance Building

Date: February 2018

Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date	Issuing Office	Remark
	Work Area	Date	Reference						
10.	PCB	30 May 14	H2620-LTR-EPD-AU-000020	**Registration** as Chemical Waste Producer for disposal of spent batteries, used lubrication oil and surplus paint at PCB area	WPN: 5213-951-L2846-01	08 Jul 14	N/A	EPD	
11.	PCB	23 Jun 14	In H2620-LTR-EPD-000017	**CNP** for the use of powered mechanical equipment for the purpose of carry out pre-drill and bore piling works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0683-14	03 Jul 14	29 Dec 14	EPD	Superseded by GW-RS0908-14
12.	WA2	02 Jul 14	H2620-LTR-LCJ-AU-000280	**CNP** for the use of powered mechanical equipment for the purpose of carry out ER Office construction works from 19:00 to 23:00. (Non-designated area)	GW-RS0715-14	17 Jul 14	15 Jan 15	EPD	Superseded by GW-RS1034-14
13.	WA3	02 Jul 14	H2620-LTR-LCJ-AU-000324	**CNP** for the use of powered mechanical equipment for the purpose of carry out construction of JV site office from 19:00 to 23:00. (Non-designated)	GW-RS0716-14	17 Jul 14	15 Jan 15	EPD	Expired

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Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date	Issuing Office	Remark
	Work Area	Date	Reference						
14.	PCB	23 Jun 14	H2620-LTR- EPD-000527	**CNP** for the use of powered mechanical equipment for the purpose of carry out pre-drill and bore piling works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0908-14	03 Sep 14	22 Dec 14	EPD	Superseded by GW-RS1044-14
15.	PCB	29 Sep 14	H2620-LTR-EPD-AU-000034	**CNP** for the use of powered mechanical equipment for the purpose of carry out pre-drill and bore piling works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS1044-14	29 Sep 14	24 Dec 14	EPD	Superseded by GW-RS1300-14
16.	WA2	12 Sep 14	H2620-LTR-EPD-AU-000032	**CNP** for the use of powered mechanical equipment for the purpose of carry out ER Office construction works from 19:00 to 23:00. (Non-designated area)	GW-RS1034-14	29 Sep 14	28 Mar 15	EPD	Expired
17.	WA4	17 Oct 14	H2620-LTR-EPD-AU-000036	**CNP** for the use of powered mechanical equipment from 19:00 to 23:00. (Non-designated area)	GW-RW0814-14	20 Oct 14	19 Apr 15	EPD	Expired and replaced by GW-RW0171-15

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Date: February 2018

Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date	Issuing Office	Remark
	Work Area	Date	Reference						
18.	PCB	03 Nov 14	H2620-LTR-EPD-AU-000040	**CNP** for the use of powered mechanical equipment for the purpose of carry out pre-drill and bore piling works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS1300-14	17 Nov 14	16 Feb 15	EPD	Superseded by GW-RS0087-15
19.	PCB	12 Jan 15	H2620-LTR-EPD-AU-000046	**CNP** for the use of powered mechanical equipment for the purpose of carry out pre-drill and bore piling works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0087-15	26 Jan 15	25 Apr 15	EPD	Superseded by GW-RS0308-15
20.	PCB	12 Mar 15	H2620-LTR-EPD-AU-000051	**CNP** for the use of powered mechanical equipment for the purpose of carry out pre-drill and bore piling works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0308-15	26 Mar 15	25 Jun 15	EPD	Superseded by GW-RS0476-15
21.	PCB	31 Jul 14	H2620-LTR-EPD-AU-000038	**Water Discharge License** for construction works on PCB island	WT00020335-2014	13 Nov 14	30 Nov 19	EPD	

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Date: February 2018

Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date	Issuing Office	Remark
	Work Area	Date	Reference						
22.	WA4	27 Mar 15	H2620-LTR-EPD-AU-000054	**CNP** for the use of powered mechanical equipment from 19:00 to 23:00. (Non-designated area)	GW-RW0171-15	20 Apr 15	19 Oct 15	EPD	Superseded by GW-RW0351-15
23.	PCB	15 Apr 15	H2620-LTR-EPD-AU-000057	**CNP** for the use of powered mechanical equipment for the purpose of carry out pre-drill and bore piling works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0476-15	01 May 15	31 Jul 15	EPD	Superseded by GW-RS0685-15
24.	PCB	09 Jun 15	H2620-LTR-EPD-AU-000063	**CNP** for the use of powered mechanical equipment for the purpose of carry out pre-drill and bore piling works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0685-15	01 Jul 15	30 Sep 15	EPD	Superseded by GW-RS0877-15
25.	WA4	29 Jun 15	H2620-LTR-EPD-AU-000066	**CNP** for the use of powered mechanical equipment from 19:00 to 23:00. (Non-designated area)	GW-RW0351-15	17 Jul 15	12 Jan 16	EPD	Expired. Replaced by GW-RW0003-16

Date: February 2018

Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date	Issuing Office	Remark
	Work Area	Date	Reference						
26.	PCB	27 Jul 15	H2620-LTR-EPD-AU-000069	**CNP** for the use of powered mechanical equipment for the purpose of carry out pre-drill and bore piling works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0877-15	10 Aug 15	09 Nov 15	EPD	Superseded by GW-RS1016-15
27.	PCB	02 Sep 15	H2620-LTR-EPD-AU-000072	**CNP** for the use of powered mechanical equipment for the purpose of carry out pre-drill and bore piling works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS1016-15	18 Sep 15	17 Dec 15	EPD	Superseded by GW-RS1195-15
28.	PCB	22 Oct 15	H2620-LTR-EPD-AU-000075	**CNP** for the use of powered mechanical equipment for the purpose of carry out works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS1195-15	9 Nov 15	8 Feb 16	EPD	Superseded by GW-RS1444-15
29.	PCB	17 Dec 15	H2620-LTR-EPD-AU-000076	**CNP** for the use of powered mechanical equipment for the purpose of carry out works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS1444-15	31 Dec15	30 Mar 16	EPD	Superseded by GW-RW0191-16

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Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date	Issuing Office	Remark
	Work Area	Date	Reference						
30.	WA4	24 Dec 15	H2620-LTR-EPD-AU-000080	**CNP** for the use of powered mechanical equipment from 19:00 to 23:00. (Non-designated area)	GW-RW0003-16	13 Jan 16	06 Jul 16	EPD	Superseded by GW-RW0394-16
31.	PCB	17 Feb 16	H2620-LTR-EPD-AU-000083	**CNP** for the use of powered mechanical equipment for the purpose of carry out works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0191-16	3 Mar 16	2 Jun 16	EPD	Superseded by GW-RW0543-16
32.	PCB	18 May 16	H2620-LTR-EPD-AU-000086	**CNP** for the use of powered mechanical equipment for the purpose of carry out works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0543-16	2 Jun 16	1 Sep 16	EPD	Superseded by GW-RS0879-16
33.	WA4	20 Jun 16	H2620-LTR-EPD-AU-000089	**CNP** for the use of powered mechanical equipment from 19:00 to 23:00. (Non-designated area)	GW-RW0394-16	07 Jul 16	06 Jan 17	EPD	Superseded by GW-RW0742-16

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Date: February 2018

Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date	Issuing Office	Remark
	Work Area	Date	Reference						
34.	PCB	09 Aug 16	H2620-LTR-EPD-AU-000092	**CNP** for the use of powered mechanical equipment for the purpose of carry out works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0879-16	23 Aug 16	22 Dec 16	EPD	Superseded by GW-RS1193-16
35.	PCB	16 Nov 16	H2620-LTR-EPD-AU-000094	**CNP** for the use of powered mechanical equipment for the purpose of carry out works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS1193-16	30 Nov 16	29 May 17	EPD	Superseded by GW-RS0005-17
36.	WA4	17 Dec 16	H2620-LTR-EPD-AU-000100	**CNP** for the use of powered mechanical equipment from 19:00 to 23:00. (Non-designated area)	GW-RW0742-16	07 Jan 17	06 Jul 17	EPD	Superseded by GW-RW0341-17
37.	PCB	19 Dec 16	H2620-LTR-EPD-AU-000103	**CNP** for the use of powered mechanical equipment for the purpose of carry out works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0005-17	6 Jan 17	5 Jul 17	EPD	Superseded by GW-RS0461-17

Contract No. HY/2013/01 – Hong Kong Zhuhai and Macao Bridge Hong Kong Boundary Crossing Facilities - Passenger Clearance Building

Date: February 2018

Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date	Issuing Office	Remark
	Work Area	Date	Reference						
38.	WA3	30 Dec 16	H2620-LTR-EPD-AU-000102	**CNP** for the use of powered mechanical equipment for the purpose of carry out construction of JV site office from 19:00 to 23:00. (Non-designated)	GW-RS0015-17	12 Jan 17	11 Jul 17	EPD	Superseded by GW-RS0587-17
39.	PCB	12 May 17	H2620-LTR-EPD-AU-000106	**CNP** for the use of powered mechanical equipment for the purpose of carry out works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0461-17	25 May 17	24 Nov 17	EPD	Superseded by GW-RS0998-17
40.	WA3	22 Jun 17	H2620-LTR-EPD-AU-000113	**CNP** for the use of powered mechanical equipment for the purpose of carry out construction of JV site office from 19:00 to 23:00. (Non-designated)	GW-RS0587-17	12 Jul 17	11 Jan 18	EPD	Expired and replaced by GW-RS1201-17
41.	WA4	19 Jun 17	H2620-LTR-EPD-AU-000112	**CNP** for the use of powered mechanical equipment from 19:00 to 23:00. (Non-designated area)	GW-RW0341-17	10 Jul 17	6 Jan 18	EPD	Expired and replaced by GW-RW0005-18

Contract No. HY/2013/01 – Hong Kong Zhuhai and Macao Bridge Hong Kong Boundary Crossing Facilities - Passenger Clearance Building

Date: February 2018

Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date	Issuing Office	Remark
	Work Area	Date	Reference						
42.	PCB	20 Oct 17	H2620-LTR-EPD-AU-000117	**CNP** for the use of powered mechanical equipment for the purpose of carry out works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0998-17	15 Nov 17	12 May 18	EPD	-
43.	WA3	20 Dec 17	H2620-LTR-EPD-AU-000119	**CNP** for the use of powered mechanical equipment for the purpose of carry out construction of JV site office from 19:00 to 23:00. (Non-designated)	GW-RS1201-17	12 Jan 18	11 Jul 18	EPD	-
44.	WA4	20 Dec 17	H2620-LTR-EPD-AU-000118	**CNP** for the use of powered mechanical equipment from 19:00 to 23:00. (Non-designated area)	GW-RW0005-18	07 Jan 18	06 Jul 18	EPD	-

ATAL Technologies Limited

Environmental License/ Permits /Notification Register

LCAL H2642

Contract No. HY/2013/06 – Hong Kong Zhuhai and Macao Bridge - HKBCF – Automatic Vehicle Clearance Support System

Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date	Issuing Office	Remark
						Date: 28 Feb 2018			
	Work Area	Date	Reference						
1	HZMB-HK Boundary Crossing Facilities	31 July 2015	WFG14980	Disposal of Construction Waste Billing Account	7023015	20 August 2015	– –	EPD	
2	HZMB-HK Boundary Crossing Facilities	14 Nov 2017	EP831/N09/RS1037-17	Construction Noise Permit	GW-RS1037-17	1 Dec 2017	30 May 2018	EPD	

APPENDIX J

Statistics on Environmental Complaints, Notification of Summons and Successful Prosecutions

Statistics on Environmental Complaints, Notifications of Summons and Successful Prosecutions

Reporting Period	Cumulative Statistics		
	Complaints	Notifications of summons	Successful prosecutions
This reporting period	0	0	0
From commencement date of contract to end of reporting period	10	0	0

APPENDIX K

Investigation Report

Contract No. HY/2013/01 -
Hong Kong- Zhuhai- Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances Notification No.: 20171204SS

Date of Notification: 8 December 2017 **Date of Investigation Report:** 14 December 2017

Works Inspected: Data collected from water sampling works on 4 December 2017 and the results were issued on 8 December 2017

Monitoring Location: Water Quality Monitoring Station

Parameter: ~~Dissolved Oxygen (DO)/~~ Suspended Solid (SS)~~/ Turbidity (TURB)~~

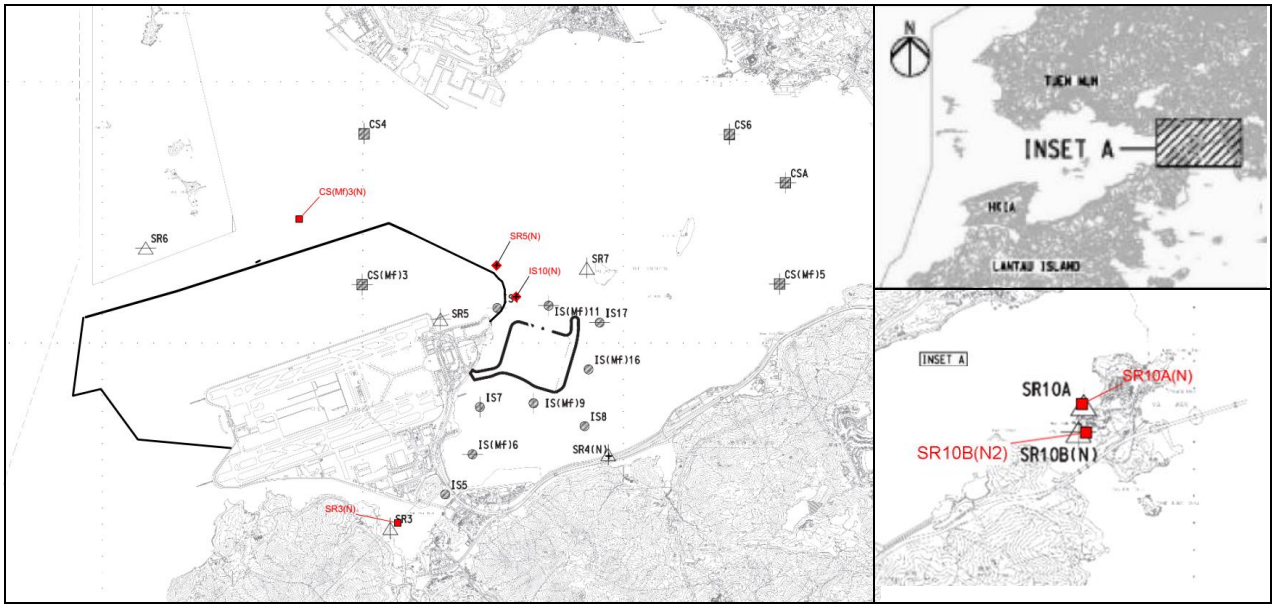
Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
SS	SR6	Depth Average	23.5 and 120% (i.e. 17.9 for mid-ebb/13.6 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 19.4 for mid-ebb/14.8 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes	**26.0**	19.3
	SR7				12.1	**24.1**
	SR10B(N)				13.4	**24.0**

Notes:
AL means Action Level.
LL means Limit Level.
Bold means AL exceedances.
Bold with underline means LL exceedances.
Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4
Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Possible reason for Action / Limit Level Non-compliance:

On 4 December 2017, one AL exceedance of SS at SR6 was recorded during mid-ebb tide and two AL exceedances of SS at SR7 and SR10B(N) were recorded during mid-flood tide.



As confirmed by the Contractor, there was no marine transportation and marine-based work on 4 December 2017. No site runoff within the Contract site has been observed. Therefore, it is concluded that the exceedances were not related to the Contract.

Actions taken/ to be taken:
As the exceedance was not related to the Contract, no immediate actions are required. However, the Contractor was also reminded to implement environmental mitigation measures in accordance with Environmental Mitigation Implementation Schedule.

Prepared by:	Evan Wong	Title:	Environmental Team Representative
Signature:		Date:	14 December 2017
Checked by:	Keith Chau	Title:	Environmental Team Leader
Signature:		Date:	14 December 2017

Copied to : Contractor, Engineer Representative and IEC/ENPO

Contract No. HY/2013/01 -
Hong Kong- Zhuhai- Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances Notification No.: 20171206SS

Date of Notification: 14 December 2017 **Date of Investigation Report:** 19 December 2017

Works Inspected: Data collected from water sampling works on 6 December 2017 and the results were issued on 14 December 2017

Monitoring Location: Water Quality Monitoring Station

Parameter: ~~Dissolved Oxygen (DO)/~~ Suspended Solid (SS)~~/ Turbidity (TURB)~~

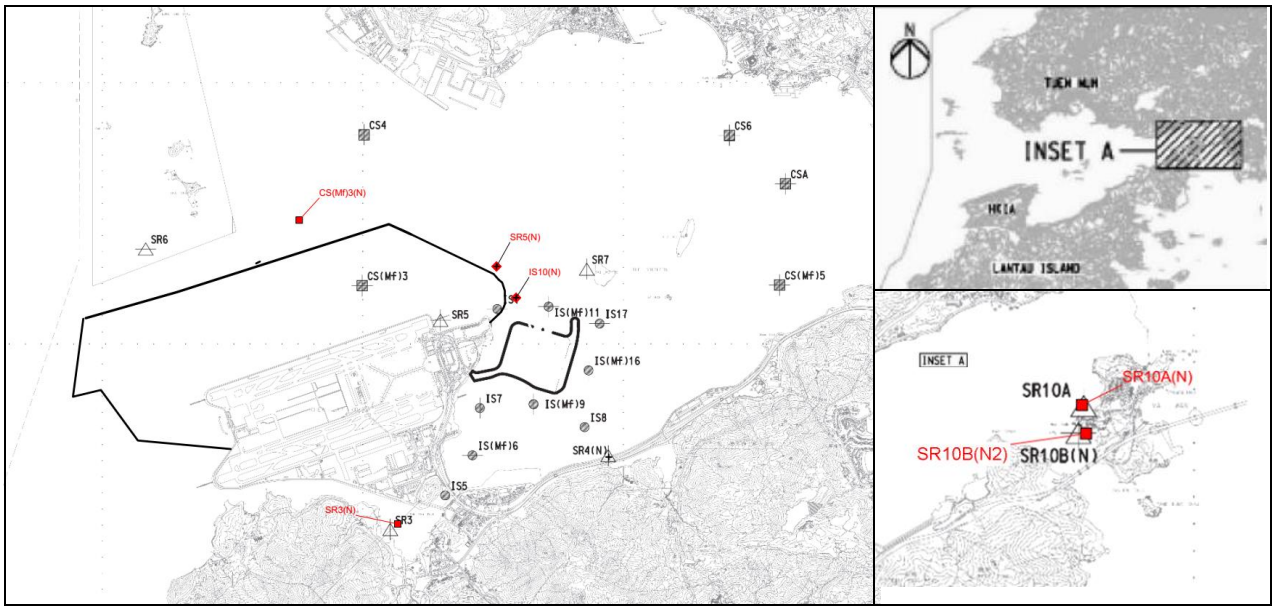
Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
SS	IS8	Depth Average	23.5 and 120% (i.e. 21.1 for mid-ebb/15 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 22.8 for mid-ebb/16.3 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes	19.3	**31.8**
	IS(Mf)9				7.1	**24.0**
	SR5(N)				11.9	**25.6**
	SR6				14.2	**27.5**

Notes:
AL means Action Level.
LL means Limit Level.
Bold means AL exceedances.
Bold with underline means LL exceedances.
Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4
Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Possible reason for Action / Limit Level Non-compliance:

On 6 December 2017, four AL exceedances of SS at IS8, IS(Mf)9, SR5(N) and SR6 were recorded during mid-flood tide.



As confirmed by the Contractor, there was no marine transportation and marine-based work on 6 December 2017. No site runoff within the Contract site has been observed. Therefore, it is concluded that the exceedances were not related to the Contract.

Actions taken/ to be taken:

As the exceedance was not related to the Contract, no immediate actions are required. However, the Contractor was also reminded to implement environmental mitigation measures in accordance with Environmental Mitigation Implementation Schedule.

Prepared by:	Ruby Law	Title:	Environmental Team Representative
Signature:		Date:	19 December 2017
Checked by:	Keith Chau	Title:	Environmental Team Leader
Signature:		Date:	19 December 2017

Copied to : Contractor, Engineer Representative and IEC/ENPO

Contract No. HY/2013/01 -
Hong Kong- Zhuhai- Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances Notification No.: 20171208SS

Date of Notification: 15 December 2017 **Date of Investigation Report:** 19 December 2017

Works Inspected: Data collected from water sampling works on 8 December 2017 and the results were issued on 15 December 2017

Monitoring Location: Water Quality Monitoring Station

Parameter: ~~Dissolved Oxygen (DO)/~~ Suspended Solid (SS)~~/ Turbidity (TURB)~~

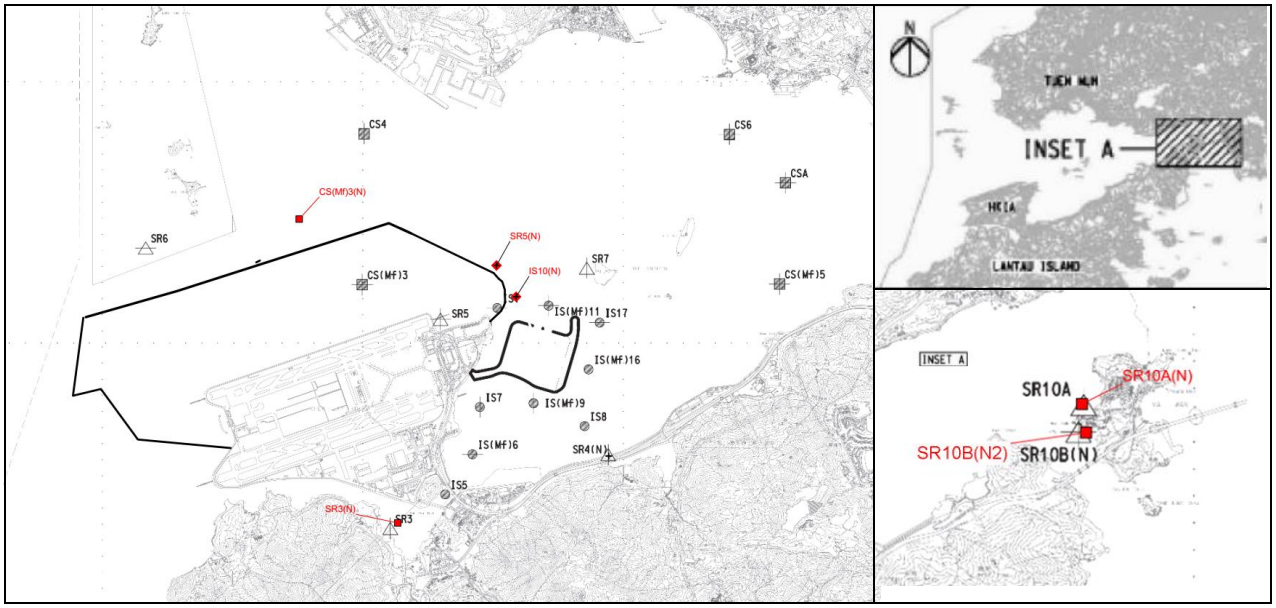
Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
SS	IS8	Depth Average	23.5 and 120% (i.e. 21 for mid-ebb/15.1 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 22.8 for mid-ebb/16.4 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes	19.3	**33.3**
	SR4(N)				18.4	**26.3**
	SR6				**26.8**	22.7
	SR10A				11.0	**26.9**

Notes:
AL means Action Level.
LL means Limit Level.
Bold means AL exceedances.
Bold with underline means LL exceedances.
Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4
Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Possible reason for Action / Limit Level Non-compliance:

On 8 December 2017, one AL exceedance of SS at SR6 was recorded during mid-ebb tide and three AL exceedances of SS at IS8, SR4(N) and SR10A were recorded during mid-flood tide.



As confirmed by the Contractor, there was no marine transportation and marine-based work on 8 December 2017. No site runoff within the Contract site has been observed. Therefore, it is concluded that the exceedances were not related to the Contract.

Actions taken/ to be taken:
As the exceedance was not related to the Contract, no immediate actions are required. However, the Contractor was also reminded to implement environmental mitigation measures in accordance with Environmental Mitigation Implementation Schedule.

Prepared by:	Ruby Law	Title:	Environmental Team Representative
Signature:		Date:	19 December 2017
Checked by:	Keith Chau	Title:	Environmental Team Leader
Signature:		Date:	19 December 2017

Copied to : Contractor, Engineer Representative and IEC/ENPO

Contract No. HY/2013/01 -
Hong Kong- Zhuhai- Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances Notification No.: 20171211SS

Date of Notification: 19 December 2017 **Date of Investigation Report:** 9 January 2018

Works Inspected: Data collected from water sampling works on 11 December 2017 and the results were issued on 15 December 2017

Monitoring Location: Water Quality Monitoring Station

Parameter: ~~Dissolved Oxygen (DO)~~/ Suspended Solid (SS)~~/ Turbidity (TURB)~~

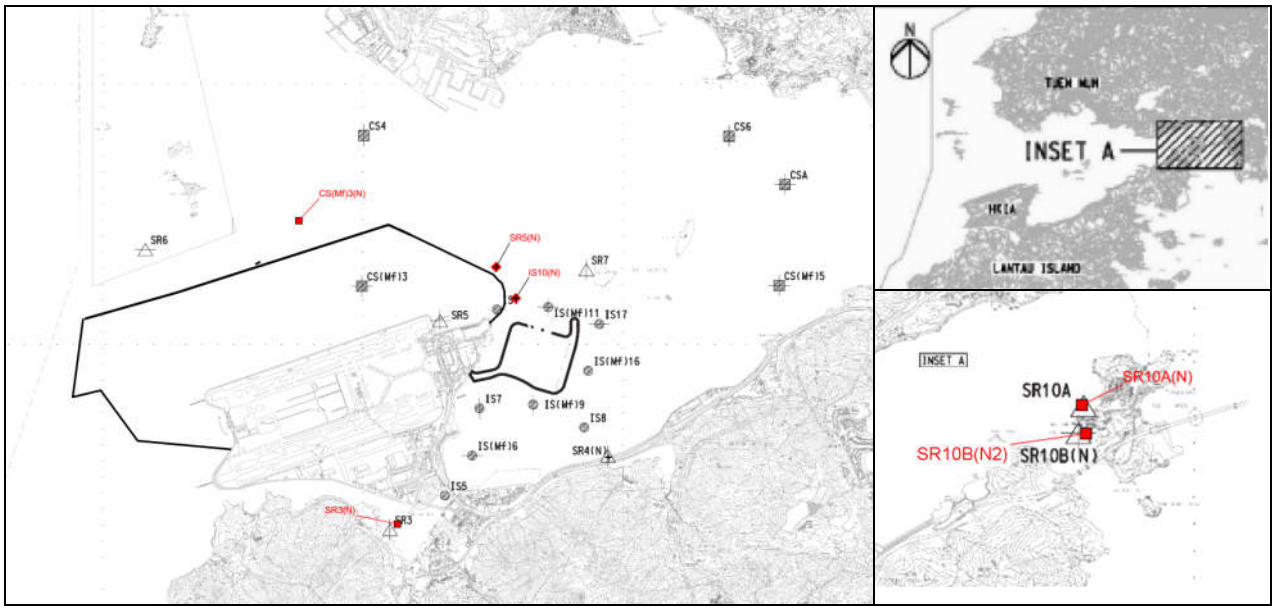
Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
SS	IS(Mf)9	Depth Average	23.5 and 120% (i.e. 11.3 for mid-ebb/10 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 12.3 for mid-ebb/10.8 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes	**28.5**	11.8

Notes:
AL means Action Level.
LL means Limit Level.
Bold means AL exceedances.
Bold with underline means LL exceedances.
Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4
Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Possible reason for Action / Limit Level Non-compliance:

On 11 December 2017, one AL exceedance of SS at IS(Mf)9 was recorded during mid-ebb tide.



As confirmed by the Contractor, there was no marine transportation and marine-based work on 11 December 2017. No site runoff within the Contract site has been observed. Therefore, it is concluded that the exceedances were not related to the Contract.

Actions taken/ to be taken:

As the exceedance was not related to the Contract, no immediate actions are required. However, the Contractor was also reminded to implement environmental mitigation measures in accordance with Environmental Mitigation Implementation Schedule.

Prepared by:	Ruby Law	Title:	Environmental Team Representative
Signature:		Date:	9 January 2018
Checked by:	Keith Chau	Title:	Environmental Team Leader
Signature:		Date:	9 January 2018

Copied to : Contractor, Engineer Representative and IEC/ENPO

Contract No. HY/2013/01 -
Hong Kong- Zhuhai- Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances Notification No.: 20171213SS

Date of Notification: 20 December 2017 **Date of Investigation Report:** 21 December 2017

Works Inspected: Data collected from water sampling works on 13 December 2017 and the results were issued on 20 December 2017

Monitoring Location: Water Quality Monitoring Station

Parameter: ~~Dissolved Oxygen (DO)/~~ Suspended Solid (SS)~~/ Turbidity (TURB)~~

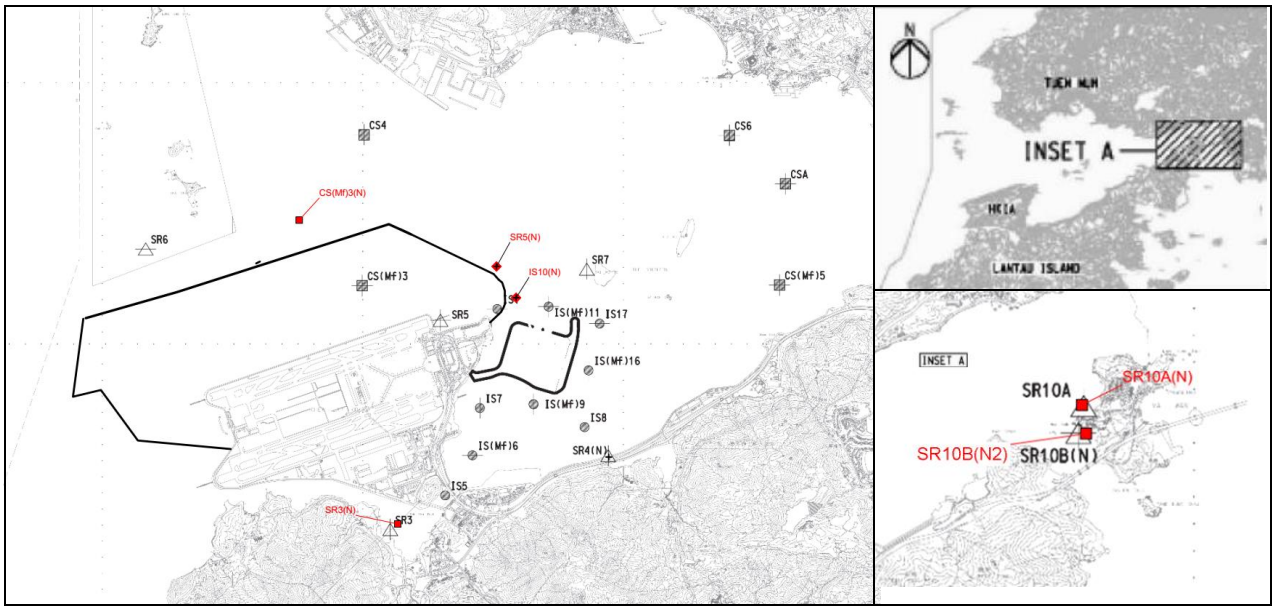
Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
SS	IS8	Depth Average	23.5 and 120% (i.e. 8.2 for mid-ebb/10.7 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 8.9 for mid-ebb/11.6 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes	**25.0**	21.4

Notes:
AL means Action Level.
LL means Limit Level.
Bold means AL exceedances.
Bold with underline means LL exceedances.
Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4
Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Possible reason for Action / Limit Level Non-compliance:

On 13 December 2017, one AL exceedance of SS at IS8 was recorded during mid-ebb tide.



As confirmed by the Contractor, there was no marine transportation and marine-based work on 13 December 2017. No site runoff within the Contract site has been observed. Therefore, it is concluded that the exceedances were not related to the Contract.

Actions taken/ to be taken:

As the exceedance was not related to the Contract, no immediate actions are required. However, the Contractor was also reminded to implement environmental mitigation measures in accordance with Environmental Mitigation Implementation Schedule.

Prepared by:	Ruby Law	Title:	Environmental Team Representative
Signature:		Date:	21 December 2017
Checked by:	Keith Chau	Title:	Environmental Team Leader
Signature:		Date:	21 December 2017

Copied to : Contractor, Engineer Representative and IEC/ENPO

Contract No. HY/2013/01 -
Hong Kong- Zhuhai- Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances Notification No.: 20171220SS

Date of Notification: 3 January 2018 **Date of Investigation Report:** 8 January 2018

Works Inspected: Data collected from water sampling works on 20 December 2017 and the results were issued on 3 January 2018

Monitoring Location: Water Quality Monitoring Station

Parameter: ~~Dissolved Oxygen (DO)~~/ Suspended Solid (SS)/ ~~Turbidity (TURB)~~

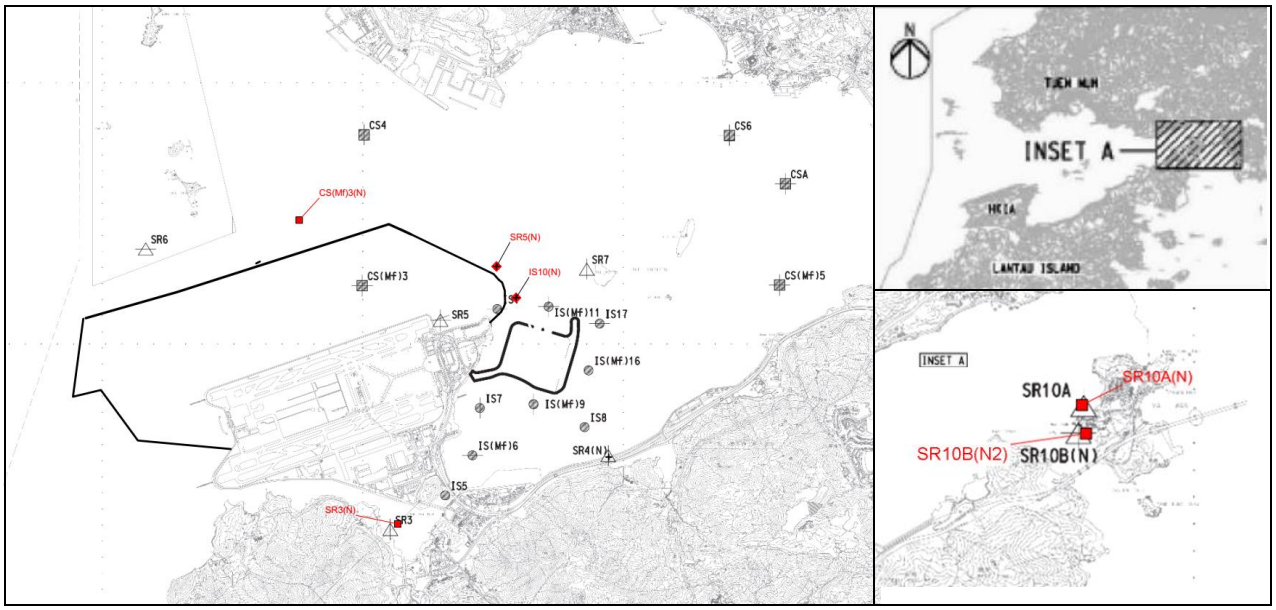
Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
SS	SR6	Depth Average	23.5 and 120% (i.e. 11.4 for mid-ebb/14.5 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 12.3 for mid-ebb/15.7 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes	12.6	**28.9**

Notes:
AL means Action Level.
LL means Limit Level.
Bold means AL exceedances.
Bold with underline means LL exceedances.
Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4
Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Possible reason for Action / Limit Level Non-compliance:

On 20 December 2017, one AL exceedance of SS at SR6 was recorded during mid-flood tide.



As confirmed by the Contractor, there was no marine transportation and marine-based work on 20 December 2017. No site runoff within the Contract site has been observed. Therefore, it is concluded that the exceedances were not related to the Contract.

Actions taken/ to be taken:

As the exceedance was not related to the Contract, no immediate actions are required. However, the Contractor was also reminded to implement environmental mitigation measures in accordance with Environmental Mitigation Implementation Schedule.

Prepared by:	Ruby Law	Title:	Environmental Team Representative
Signature:		Date:	8 January 2018
Checked by:	Keith Chau	Title:	Environmental Team Leader
Signature:		Date:	8 January 2018

Copied to : Contractor, Engineer Representative and IEC/ENPO

Contract No. HY/2013/01 -
Hong Kong- Zhuhai- Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances Notification No.: 20171222SS_v1

Date of Notification: 4 January 2018 **Date of Investigation Report:** 10 January 2018

Works Inspected: Data collected from water sampling works on 22 December 2017 and the results were issued on 4 January 2018

Monitoring Location: Water Quality Monitoring Station

Parameter: ~~Dissolved Oxygen (DO)~~/ Suspended Solid (SS)/ ~~Turbidity (TURB)~~

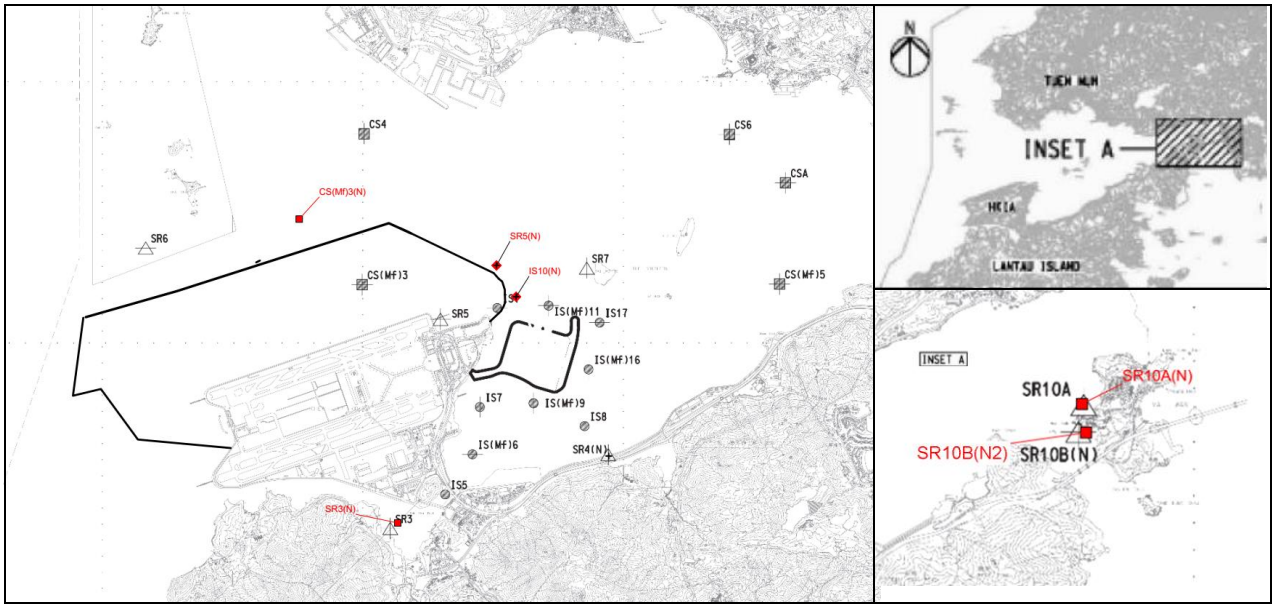
Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
SS	SR6	Depth Average	23.5 and 120% (i.e. 17.3 for mid-ebb/12.7 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 18.7 for mid-ebb/13.8 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes	**26.0**	**28.3**

Notes:
AL means Action Level.
LL means Limit Level.
Bold means AL exceedances.
Bold with underline means LL exceedances.
Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4
Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Possible reason for Action / Limit Level Non-compliance:

On 22 December 2017, one AL exceedance of SS at SR6 was recorded during mid-flood tide and one AL exceedance of SS at SR6 was recorded during mid-ebb tide.



As confirmed by the Contractor, there was no marine transportation on 22 December 2017. According to information from Contractor, temporary loading and unloading facility dismantling which is marine-based work conducted on 22 December 2017. Although AL exceedances were recorded, the exceedance station, SR6, was far away from marine based work (more than 6km). No exceedances were recorded at monitoring stations IS10(N) and SR5(N), which are closer to the marine-based works, on the same day. No site runoff within the Contract site has been observed. Therefore, it is concluded that the exceedances were not related to the Contract.

Actions taken/ to be taken:

Actions were taken under action plan:

1. Not applicable as SS was not measured in situ;
2. After considering the above-mentioned investigation results, it appears that it was unlikely that the suspended solids exceedance was attributed to active construction activities of this Contract;
3. IEC, Contractor and ER were informed via email;
4. Monitoring data, all plant, equipment and Contractor's working methods were checked;
5. Since it is considered that the suspended solids exceedance is unlikely to be contract related, as such, Actions 5-7 under the EAP are not considered applicable.

However, the Contractor was also reminded to implement environmental mitigation measures in accordance with Environmental Mitigation Implementation Schedule.

Prepared by:	Ruby Law	Title:	Environmental Team Representative
Signature:		Date:	10 January 2018
Checked by:	Keith Chau	Title:	Environmental Team Leader
Signature:		Date:	10 January 2018

Copied to : Contractor, Engineer Representative and IEC/ENPO

Appendix A – Photos of the sea condition during samples monitoring at SR6

Photo during Ebb tide

Photo during flood tide


Appendix B - Photos showing the condition of marine-based works area

Photo 1 Marine works on 22 December 2017

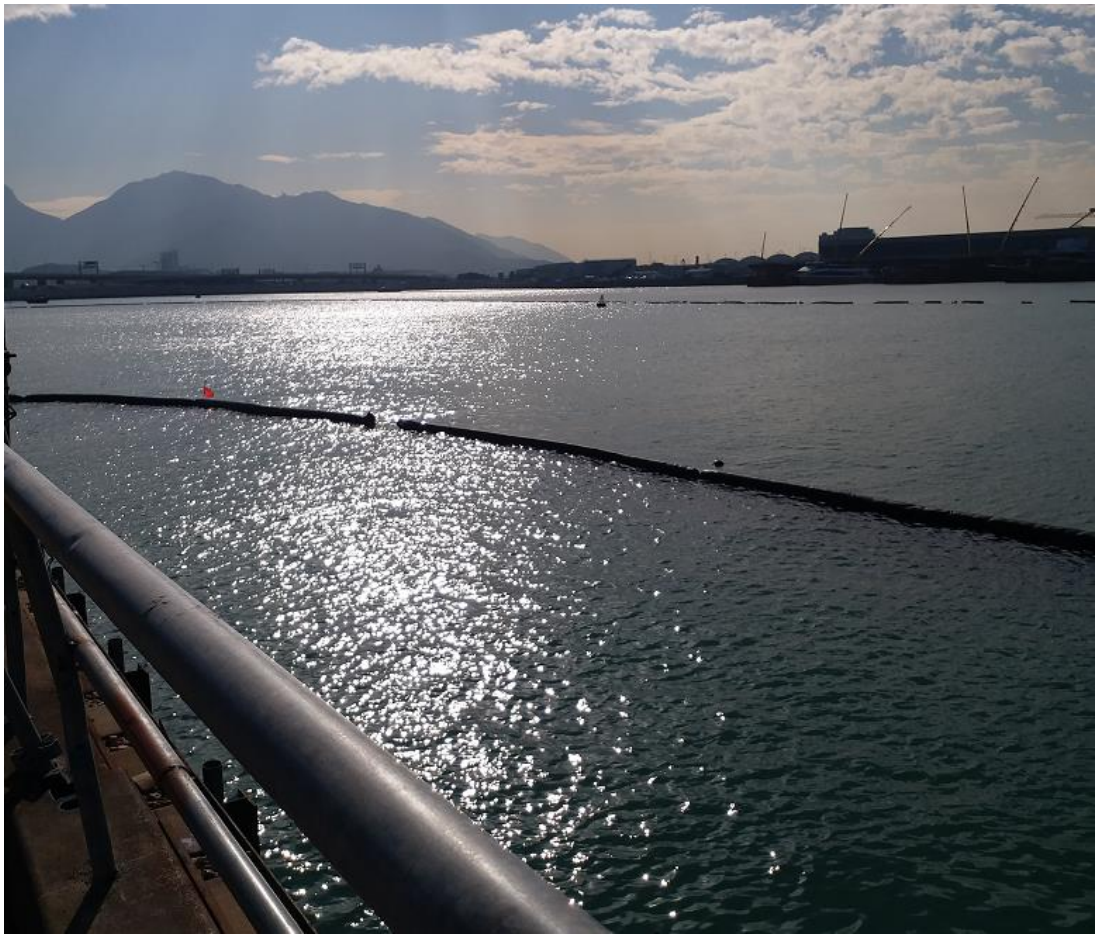


Photo 2 Marine works on 22 December 2017

Contract No. HY/2013/01 -
Hong Kong- Zhuhai- Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances Notification No.: 201711223_Air_24hr

Date of Notification: 5 January 2018 **Date of Investigation Report:** 10 January 2018

Date of Environmental Quality Limit Exceedance: 23 December 2017 and the results were issued on 4 January 2018

Monitoring Location: AMS3B – Site Boundary of Site Office Area at Work Area WA2

Monitoring Date: 23 December 2017 **Start Time:** 08:00

Action & Limit Level (AL & LL) / Measured Level:

PARAMETER	STATION	AL ($\mu g/m^3$)	LL ($\mu g/m^3$)	MEASURED LEVEL, $\mu g/m^3$
24-hr TSP	AMS3B – Site Boundary of Site Office Area at Works Area WA2	167	260	***182***

Notes: ***Bold Italic*** means AL exceedance
Bold Italic with underline means LL exceedance

Possible reason for Action / Limit Level Non-compliance:

On 23 December 2017, one AL exceedance of 24-hr TSP at AMS3B was recorded.

Based on the information form the Contractor, the construction works undertaken on 23 and 24 December 2017 are shown as below:

- Backfilling
- Falsework stripping
- Pipework and ductwork installation
- Wet trade works
- Dry trade works
- MEP High Level Containment
- Removal of temporary works
- Window wall glazing
- Hanging scaffolding removal
- Southern toilet
- MISC steelwork
- Lift installation
- Escalator Installation
- Glazed lift installation
- Road & Kerbing
- Water features and planters
- Temporary Loading and Unloading facility dismantling

The Contractor confirmed that the mitigation measures according to Water Spraying Plan in December 2017 (Appendix A) are implemented to avoid dust emission. Photos of haul road condition and dust suppression are included in Appendix A. The Contractor has provided the guideline to remind the site vehicles travel within speed limit of 8km/hr. According to the site inspection conducted on 27 December 2017, no dusty activities and dry condition in haul road were observed in the site area.

The Air Quality Health Index (AQHI) of Tung Chung station with the wind data from the on-site wind station are shown in Appendix B. The hourly AQHI of Tung Chung Station ranged 3 to 8 (Low to Very High) on 23 and 24 December 2017 during monitoring period. According to the wind data at on-site wind station, no prevailing wind direction was found in the monitoring period. The PCB site of HKBCF is far away from AMS3B (more than 1km). No potential dust source was observed near the monitoring station at AMS3B during the monitoring period.

Therefore, it is concluded that the exceedances were not related to the Contract.

Actions taken/ to be taken:
The Water Spraying Plan including the information of watering schedule, routing of trucks of for watering and the location of water filling, was prepared and submitted to RE and ENPO. The Contractor was also reminded to implement all necessary mitigation as specified in EIA (Section 5.5.6.3), EM&A Manual (EM&A Log Ref: A3), EMP, Method Statements, General and Particular Specifications of this Project to minimize the potential dust impact during construction activities.

Prepared by:	Ruby Law	Title:	Environmental Team Representative
Signature:		Date:	10 January 2018
Checked by:	Keith Chau	Title:	Environmental Team Leader
Signature:		Date:	10 January 2018

Copied to : Contractor, Engineer Representative and IEC/ENPO

Appendix A

LEIGHTON 俊和 Chun Wo
Leighton - Chun Wo Joint Venture

Contract No. HY/2013/01
Hong Kong – Zhuhai – Macao – Bridge
Boundary Crossing Facility – Passenger Clearance Building

Water Truck License Plate Number: TH7681

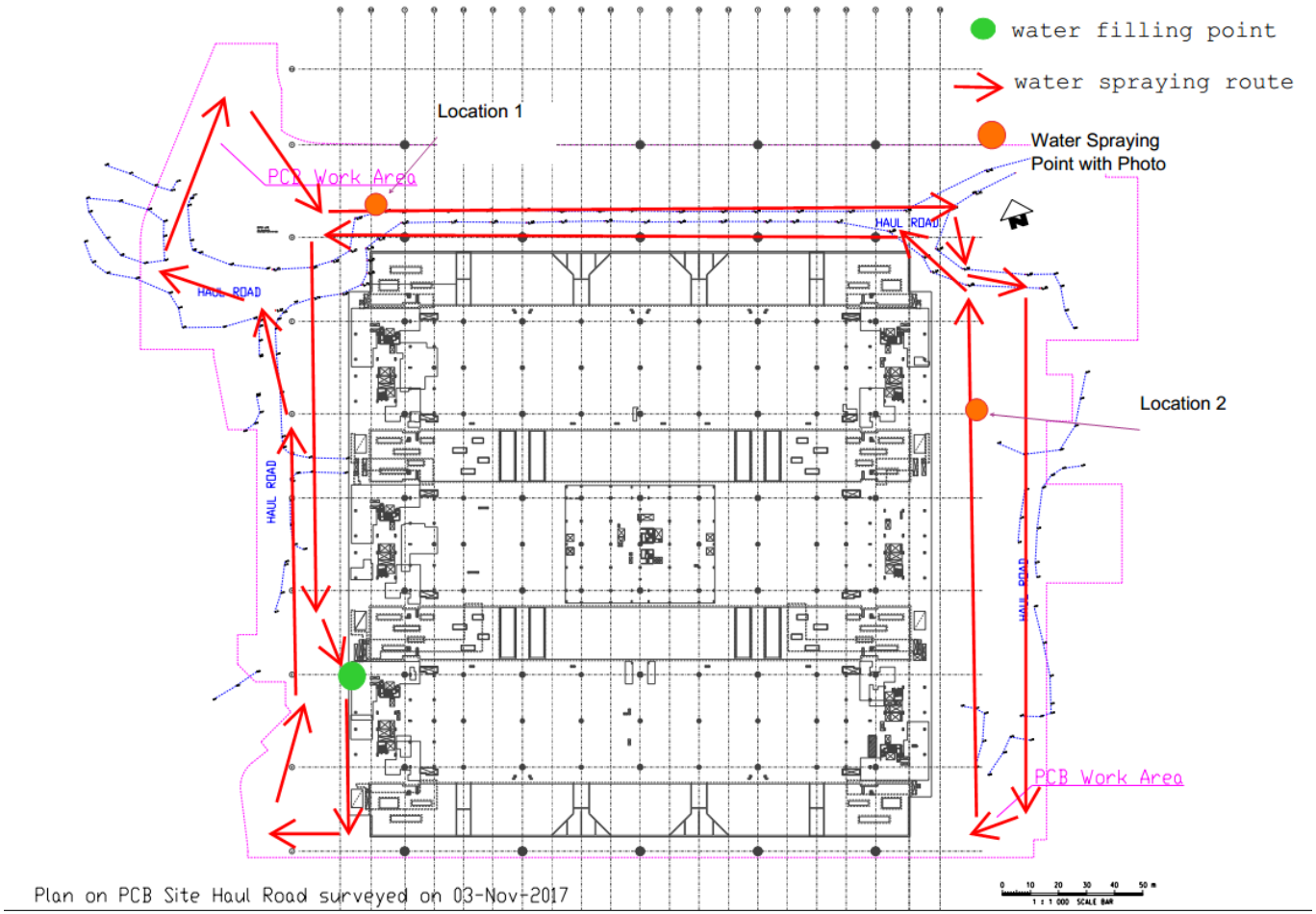
Capacity of Water Truck: 18000L

Volume of water / distance travelled = 11.4L/m

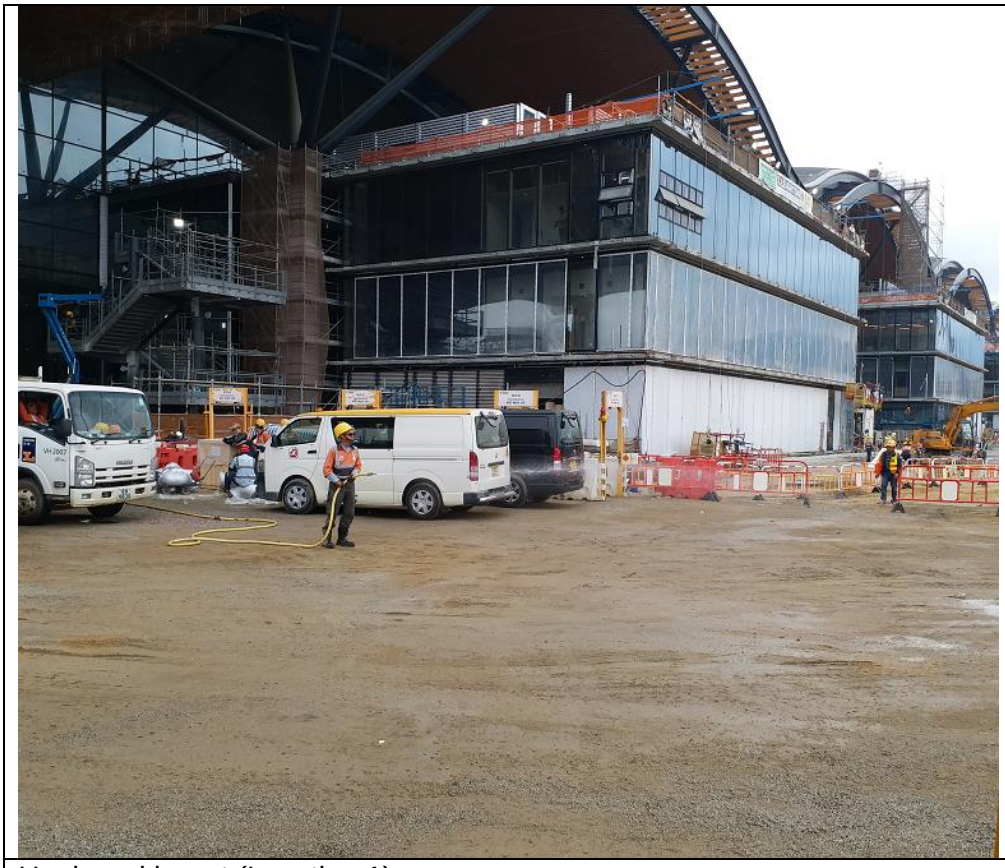
Water Truck could spray 18000L in one 50 minutes trip.

Planned Schedule of Watering Spraying by Water Truck

Cycle	Time of water spraying
1	08:00 – 09:15
2	09:15 – 10:30
3	10:30 – 11:45
4	13:00 – 14:15
5	14:15 – 15:30
6	15:30 – 16:45
7	16:45 – 18:00
8	18:00 – 19:00


water filling point
water spraying route
Water Spraying Point with Photo
Location 1
Location 2
PCB Work Area
PCB Work Area
HAUL ROAD
HAUL ROAD
HAUL ROAD
HAUL ROAD
Plan on PCB Site Haul Road surveyed on 03-Nov-2017

Water spraying record



Haul road is wet (Location 1)

Water truck spray water on haul road (Location 2)

Site condition on 27 Dec 2017

Haul road is wet (Photo taken during site inspection on 27 December 2017)

Haul road is wet (Photo taken during site inspection on 27 December 2017)

Appendix B

Date	Hour	AQHI at Tung Chung Station	Average Wind Speed (m/s) #	Average Wind Direction #
23/12/2017	08:00	3	0	ENE
23/12/2017	09:00	3	0	NNE
23/12/2017	10:00	4	0	ENE
23/12/2017	11:00	4	0	ENE
23/12/2017	12:00	4	0	NNE
23/12/2017	13:00	4	0	N
23/12/2017	14:00	4	0	NE
23/12/2017	15:00	5	0	NE
23/12/2017	16:00	6	0	NNE
23/12/2017	17:00	6	0	N
23/12/2017	18:00	6	0	---
23/12/2017	19:00	6	0	NE
23/12/2017	20:00	6	0	WNW
23/12/2017	21:00	5	0	N
23/12/2017	22:00	5	0	N
23/12/2017	23:00	5	0	NNW
24/12/2017	00:00	5	0	ENE
24/12/2017	01:00	6	0	ESE
24/12/2017	02:00	5	0	---
24/12/2017	03:00	6	0	---
24/12/2017	04:00	7	0	W
24/12/2017	05:00	8	0	SSE
24/12/2017	06:00	8	0	NNW
24/12/2017	07:00	7	0	---
24/12/2017	08:00	7	0	---

Remark:

^ The data collection for calculation of AQHI was affected due to station or equipment maintenance, the data of a most similar station was adopted.

#- The related wind data is obtained from the on-site wind station.

N.A. - Not available.

Contract No. HY/2013/01 -
Hong Kong- Zhuhai- Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances Notification No.: 20180117_Air_24hr_v2

Date of Notification: 29 January 2018 **Date of Investigation Report:** 20 February 2018

Date of Environmental Quality Limit Exceedance: 17 January 2018 and the results were issued on 29 January 2018

Monitoring Location: AMS2 – Tung Chung Pier and AMS3B – Site Boundary of Site Office Area at Works Area WA2

Monitoring Date: 17 January 2018 **Start Time:** 08:00

Action & Limit Level (AL & LL) / Measured Level:

PARAMETER	STATION	AL (µg/m^3)	LL (µg/m^3)	MEASURED LEVEL, µg/m^3
24-hr TSP	AMS2 – Tung Chung Pier	176	260	***184***
24-hr TSP	AMS3B – Site Boundary of Site Office Area at Works Area WA2	167	260	***183***

Notes: ***Bold Italic*** means AL exceedance
Bold Italic with underline means LL exceedance

Possible reason for Action / Limit Level Non-compliance:

On 17 January 2018, one AL exceedance of 24-hr TSP at AMS2 and one AL exceedance of 24-hr TSP at AMS3B were recorded.

Based on the information from the Contractor, the construction works undertaken on 17 and 18 January 2018 are shown as below:

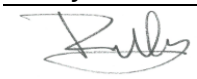
- Backfilling
- Falsework stripping
- Pipework and ductwork installation
- Wet trade works
- Dry trade works
- MEP High Level Containment
- Removal of temporary works
- Window wall glazing
- Hanging scaffolding removal
- Southern toilet
- MISC steelwork
- Glazed Lift installation
- Road & Kerbing
- EVA Roadwork

Contractor confirmed that the mitigation measures according to Water Spraying Plan in January 2018 (Appendix A) are implemented to avoid dust emission. Photos of haul road condition and dust suppression are included in Appendix A. Contractor has provided the guideline to remind the site vehicles travel within speed limit of 8km/hr.

The Air Quality Health Index (AQHI) of Tung Chung station with the wind data from the on-site wind station are shown in Appendix B. The hourly AQHI of Tung Chung Station ranged 3 to 10+ (Low to Serious) on 17 and 18 January 2018 during monitoring period. According to the wind data at on-site wind station, no prevailing wind direction was found in the monitoring period. The PCB site of HKBCF is far away from AMS2 and AMS3B (more than 1km). No potential dust source was observed near the monitoring station at AMS2 and AMS3B during the monitoring period.

Therefore, it is concluded that the exceedances were not related to the Contract.

Actions taken/ to be taken:
The Water Spraying Plan including the information of watering schedule, routing of trucks of for watering and the location of water filling, was prepared and submitted to RE and ENPO. The Contractor was also reminded to implement all necessary mitigation as specified in EIA (Section 5.5.6.3), EM&A Manual (EM&A Log Ref: A3), EMP, Method Statements, General and Particular Specifications of this Project to minimize the potential dust impact during construction activities.

Prepared by:	Ruby Law	Title:	Environmental Team Representative
Signature:		Date:	20 February 2018
Checked by:	Keith Chau	Title:	Environmental Team Leader
Signature:		Date:	20 February 2018

Copied to : Contractor, Engineer Representative and IEC/ENPO

Appendix A

Leighton - Chun Wo Joint Venture

Contract No. HY/2013/01
Hong Kong – Zhuhai – Macao – Bridge
Boundary Crossing Facility – Passenger Clearance Building

Water Truck License Plate Number: TH7681

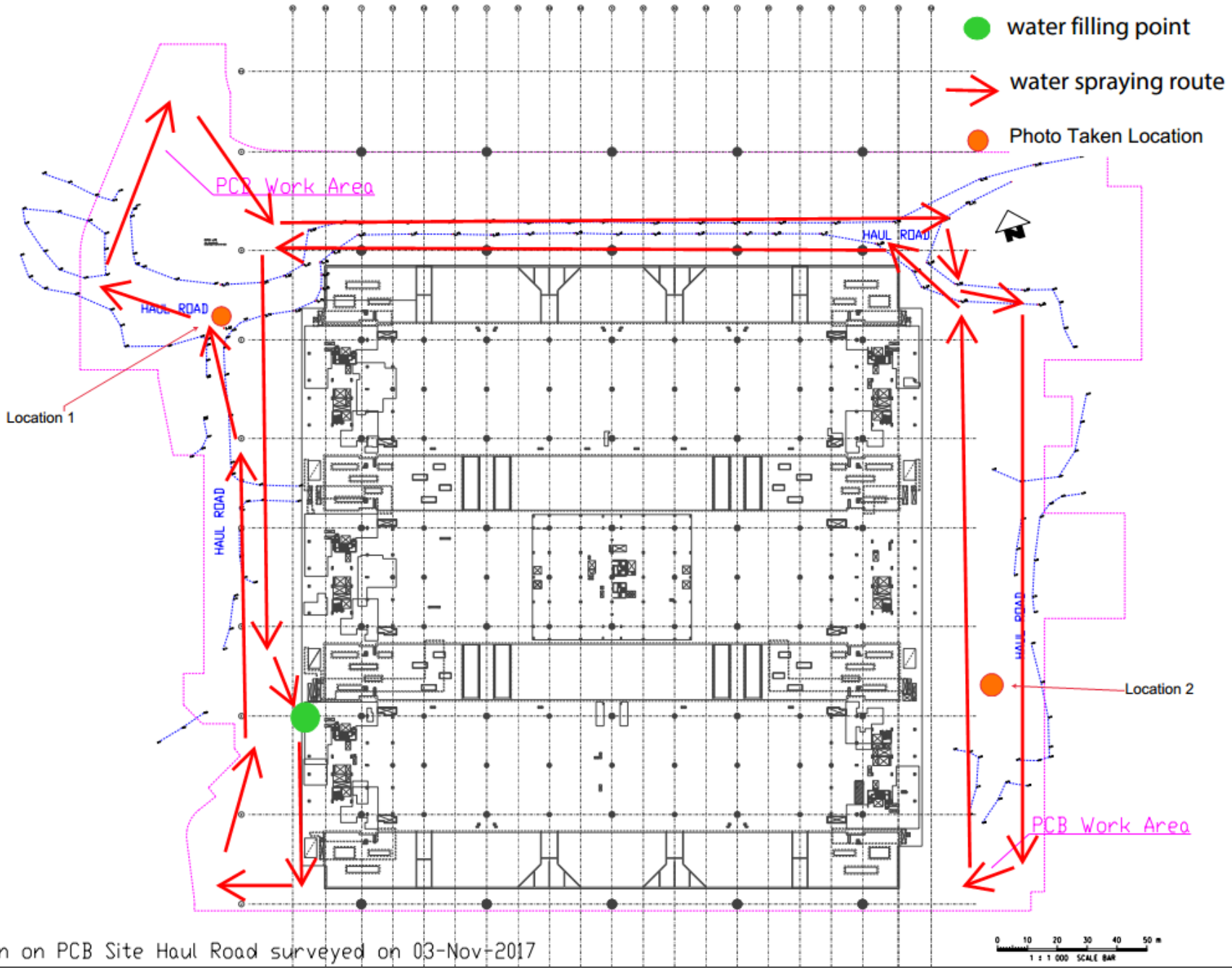
Capacity of Water Truck: 18000L

Volume of water / distance travelled = 11.4L/m

Water Truck could spray 18000L in one 50 minutes trip.

Planned Schedule of Watering Spraying by Water Truck

Cycle	Time of water spraying
1	08:00 – 09:15
2	09:15 – 10:30
3	10:30 – 11:45
4	13:00 – 14:15
5	14:15 – 15:30
6	15:30 – 16:45
7	16:45 – 18:00
8	18:00 – 19:00


water filling point
water spraying route
Photo Taken Location
PCB Work Area
HAUL ROAD
HAUL ROAD
HAUL ROAD
HAUL ROAD
Location 1
Location 2
PCB Work Area
Plan on PCB Site Haul Road surveyed on 03-Nov-2017
0 10 20 30 40 50 m
1 : 1 000 SCALE BAR

Water spraying record

Haul road is wet (Location 1)

Water spray on haul road (Location 2)

Appendix B

Date	Hour	AQHI at Tung Chung Station	Average Wind Speed (m/s) #	Average Wind Direction #
17/01/2018	08:00	6	0	SW
17/01/2018	09:00	6	0	SW
17/01/2018	10:00	6	0	SSW
17/01/2018	11:00	8	0	SSW
17/01/2018	12:00	10	0	W
17/01/2018	13:00	10+	0	---
17/01/2018	14:00	10+	0	W
17/01/2018	15:00	10+	0	W
17/01/2018	16:00	10+	0	W
17/01/2018	17:00	10+	0	W
17/01/2018	18:00	10+	0	E
17/01/2018	19:00	10+	0	---
17/01/2018	20:00	9	0	SSE
17/01/2018	21:00	6	0	SSE
17/01/2018	22:00	5	0	E
17/01/2018	23:00	5	0	SE
18/01/2018	00:00	5	0	SSE
18/01/2018	01:00	4	0	E
18/01/2018	02:00	4	0	SE
18/01/2018	03:00	4	0	SSE
18/01/2018	04:00	4	0	SE
18/01/2018	05:00	4	0	SSE
18/01/2018	06:00	3	0	SSW
18/01/2018	07:00	3	0	---
18/01/2018	08:00	3	0	---

Remark:

#- The related wind data is obtained from the on-site wind station.

Contract No. HY/2013/01 -
Hong Kong- Zhuhai- Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances Notification No.: 20180131SS

Date of Notification: 7 February 2018 **Date of Investigation Report:** 9 February 2018

Works Inspected: Data collected from water sampling works on 31 January 2018 and the results were issued on 7 February 2018

Monitoring Location: Water Quality Monitoring Station

Parameter: ~~Dissolved Oxygen (DO)~~/ Suspended Solid (SS)/ ~~Turbidity (TURB)~~

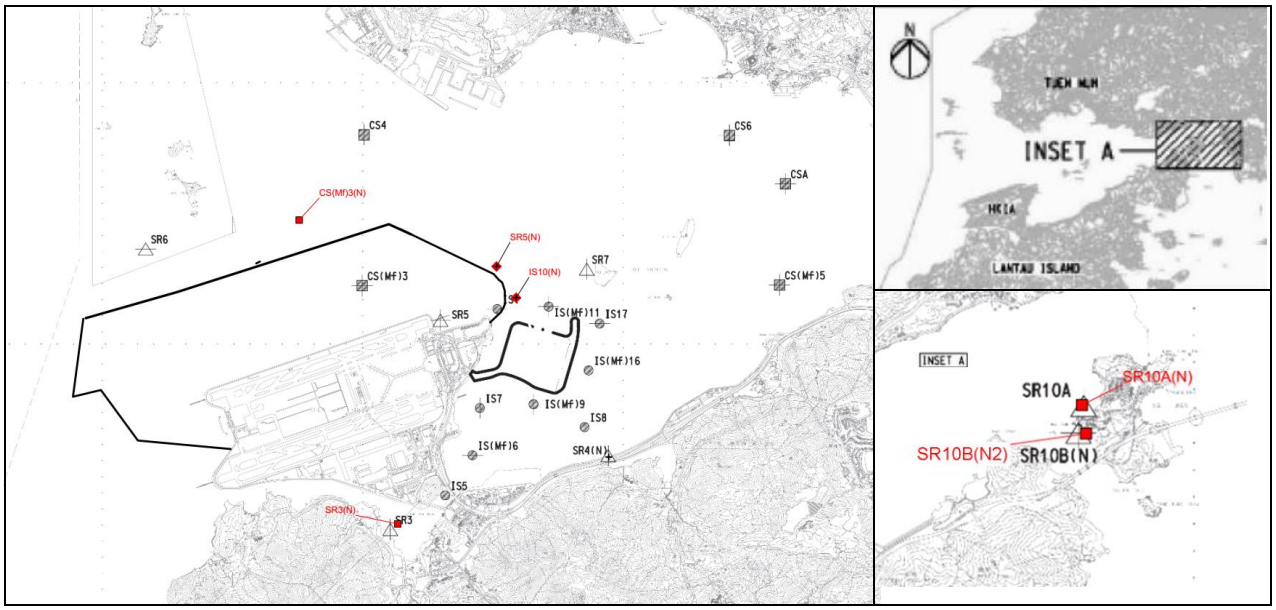
Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
SS	SR6	Depth Average	23.5 and 120% (i.e. 18.2 for mid-ebb/14.4 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 19.7 for mid-ebb/15.6 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes	**26.2**	21.5

Notes:
AL means Action Level.
LL means Limit Level.
Bold means AL exceedances.
Bold with underline means LL exceedances.
Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4
Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Possible reason for Action / Limit Level Non-compliance:

On 31 January 2018, one AL exceedance of SS at SR6 was recorded during mid-ebb tide.



As confirmed by the Contractor, there was no marine transportation on 31 January 2018. According to information from Contractor, temporary loading and unloading facility dismantling which is marine-based work conducted on 31 January 2018 and the work was conducted within silt curtain. Although AL exceedance was recorded, the exceedance station, SR6, was far away from marine based work (more than 6km). No exceedances were recorded at monitoring stations IS10(N) and SR5(N), which are closer to the marine-based works, on the same day. No site runoff within the Contract site has been observed. Therefore, it is concluded that the exceedances were not related to the Contract.

Actions taken/ to be taken:

Actions were taken under action plan:

1. Not applicable as SS was not measured in situ;
2. After considering the above-mentioned investigation results, it appears that it was unlikely that the suspended solids exceedance was attributed to active construction activities of this Contract;
3. IEC, Contractor and ER were informed via email;
4. Monitoring data, all plant, equipment and Contractor's working methods were checked;
5. Since it is considered that the suspended solids exceedance is unlikely to be contract related, as such, Actions 5-7 under the EAP are not considered applicable.

However, the Contractor was also reminded to implement environmental mitigation measures in accordance with Environmental Mitigation Implementation Schedule.

Prepared by:	Ruby Law	Title:	Environmental Team Representative
Signature:		Date:	9 February 2018
Checked by:	Keith Chau	Title:	Environmental Team Leader
Signature:		Date:	9 February 2018

Copied to : Contractor, Engineer Representative and IEC/ENPO

Contract No. HY/2013/01 -
Hong Kong- Zhuhai- Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances Notification No.: 20180202SS

Date of Notification: 9 February 2018 **Date of Investigation Report:** 2 March 2018

Works Inspected: Data collected from water sampling works on 2 February 2018 and the results were issued on 9 February 2018

Monitoring Location: Water Quality Monitoring Station

Parameter: ~~Dissolved Oxygen (DO)~~/ Suspended Solid (SS)/ ~~Turbidity (TURB)~~

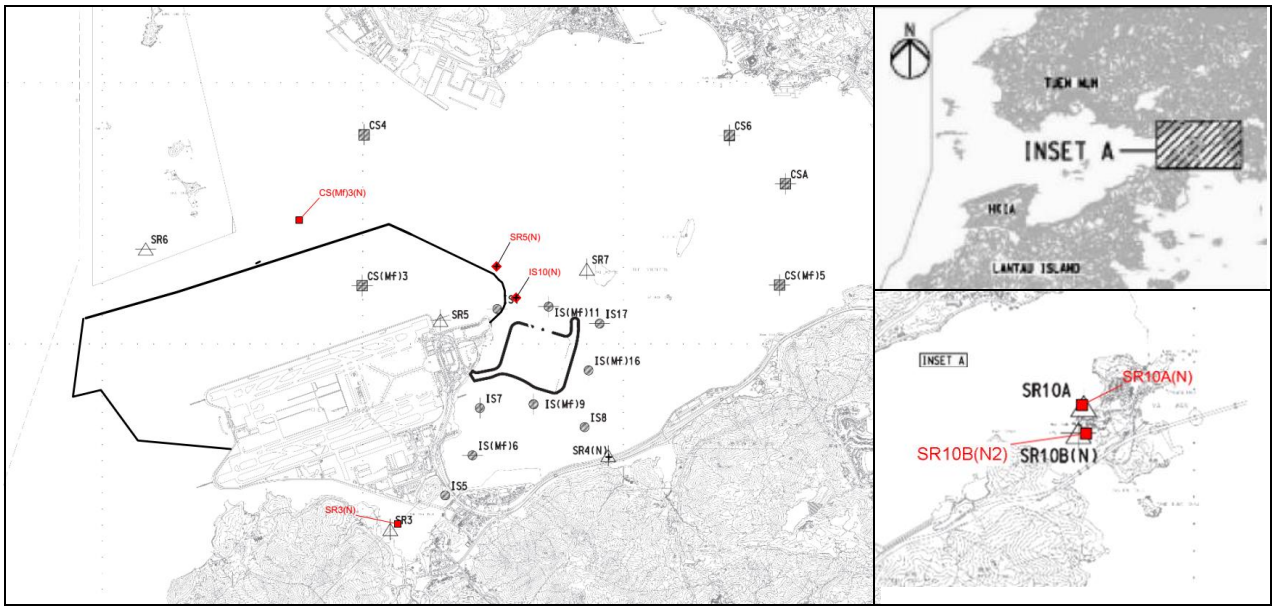
Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
SS	SR6	Depth Average	23.5 and 120% (i.e. 18.2 for mid-ebb/14.4 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 19.7 for mid-ebb/15.6 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes	14.5	**24.3**
SS	SR7	Depth Average			16.7	**24.2**

Notes:
AL means Action Level.
LL means Limit Level.
Bold means AL exceedances.
Bold with underline means LL exceedances.
Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4
Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Possible reason for Action / Limit Level Non-compliance:

On 2 February 2018, two AL exceedances of SS at SR6 and SR7 was recorded during mid-flood tide.



As confirmed by the Contractor, there was no marine transportation and marine-based work on 2 February 2018. No site runoff within the Contract site has been observed. Therefore, it is concluded that the exceedances were not related to the Contract.

Actions taken/ to be taken:

Actions were taken under action plan:

1. Not applicable as SS was not measured in situ;
2. After considering the above-mentioned investigation results, it appears that it was unlikely that the suspended solids exceedance was attributed to active construction activities of this Contract;
3. IEC, Contractor and ER were informed via email;
4. Monitoring data, all plant, equipment and Contractor's working methods were checked;
5. Since it is considered that the suspended solids exceedance is unlikely to be contract related, as such, Actions 5-7 under the EAP are not considered applicable.

However, the Contractor was also reminded to implement environmental mitigation measures in accordance with Environmental Mitigation Implementation Schedule.

Prepared by:	Ruby Law	Title:	Environmental Team Representative
Signature:		Date:	2 March 2018
Checked by:	Keith Chau	Title:	Environmental Team Leader
Signature:		Date:	2 March 2018

Copied to : Contractor, Engineer Representative and IEC/ENPO

Contract No. HY/2013/01 -
Hong Kong- Zhuhai- Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building
Notification of Environmental Quality Limit Exceedance Notification No.: 201712-201802D

Date of Notification: 4 March 2019

Works Inspected: Not Applicable

Monitoring Location: NEL & NWL

Parameter: Ecology (Chinese White Dolphin Monitoring)

Action & Limit Levels			**Monitoring Results**
	North Lantau Social Cluster		The quarter of December 2017 – February 2018
	Action Level (AL)	Limit Level (LL)	
Northeast Lantau (NEL)	STG < 4.2 & ANI < 15.5	NEL: (STG < 2.4 & ANI <8.9) and NWL: (STG < 3.9 & ANI <17.9)	***STG = 0.52; ANI = 2.61***
Northwest Lantau (NWL)	STG < 6.9 & ANI < 31.3		***STG = 3.80; ANI = 14.25***

Notes:
1. STG means quarterly encounter rate of number of dolphin sightings.
2. ANI means quarterly encounter rate of total number of dolphins.
3. For North Lantau Social Cluster, AL will be triggered if either NEL or NWL falls below the criteria; LL will be triggered if both NEL and NWL fall below the criteria.
4. ***Bold Italic*** means AL exceedances.
5. ***Bold Italic with underline*** means LL exceedances

Possible reason for Action / Limit Level Non-compliance:

One Limit Level exceedance of dolphin monitoring was recorded during quarterly monitoring (December 2017 – February 2018). The ETL informed IEC, ENPO, ER and Contractor via email on 14 March 2018.
According to information provided by ER, the marine based works undertaken during the quarterly were shown as below:
Contract No.: HY/2013/01

- Localized silt curtain deployment at jetty;
- Localized silt curtain removal at seawater intake and box culvert;
- Temporary Loading and Unloading facility dismantling and
- Marine transportation for delivery of materials from temporary loading and unloading facility.

There is no evidence showing the current LL non-compliance directly related to the construction works of Contract No. HY/2013/01 (the Contract). The working vessels under the Contract have been travelling from source to destination in accordance with the Marine Travel Route to minimize impacts on Chinese White Dolphin (CWD). In addition, the fundamental principle is that the routes will not go through the dolphin hotspots near Brothers Marine Park.

Contract No.: HY/2013/02

- No marine based works.

Contract No.: HY/2013/03

- Box Culvert B outfall construction with cofferdams.

Contract No.: HY/2013/04

- Construction of temp steel cofferdam for Outfall construction at Box C and D.

Actions taken/ to be taken:

1. Statistical data analysis has been repeated to confirm findings;
2. All available and relevant data, including raw data and statistical analysis results of other parameters covered in the EM&A have been reviewed;
3. Identification of source of impact was carried out;
4. The ETL informed IEC, ENPO, ER and Contractor have been informed of findings on 14 March 2018;
5. Monitoring data have been checked;
6. Repeated review to ensure all the dolphin protective measures are fully and properly implemented and advise on additional measures if necessary;
7. After investigation, there was no evidence that indicated that the reduced number of dolphins in NWL and NEL was related solely to Project works. It was also concluded the contributed of impacted due to the HZMB works as a whole (or individual nor separate.

Recommendations/ mitigation measures/ actions if necessary:

All dolphin protective measures are fully and properly implemented in accordance with the EM&A Manual.

Contract No.: HY/2013/01

According to information from ER, silt curtain was installed.

Contract No.: HY/2013/02

Not applicable.

Contract No.: HY/2013/03

According to information from ER, silt curtain was installed.

Contract No.: HY/2013/04

According to information from ER, silt curtain was installed.

Based on section 10.2.19 of the Updated EM&A Manual (for Hong Kong Boundary Crossing Facilities)(version 1.0) that verification by IEC on 4 January 2012, the travelling speed of vessels must not exceed 10 knots within the boundaries of the Sha Chau/Lung Kwu Chau Marine Park appears to be effective in protecting the dolphins from vessel collisions. The Contractor will continue to provide training for Captains of construction vessels working in the West Lantau waters and near the Brothers Marine Parks should undergo training to learn about local dolphins and porpoises.

They should be trained to be aware of the protocol for "dolphin friendly" vessel operation. All working vessels should be required to use regular travel routes, in order to minimize the chance of vessel collision. And the routes would not go through the dolphin hotspot near Brothers Marine Parks.

A meeting was held on 7 March 2018 with attendance of representative of ENPO, Resident Site Staff (RSS), Environmental Team (ET) and dolphin specialist for Contract Nos. HY/2013/01, HY/2011/03, HY/2011/09, HY/2012/07, HY/2012/08, to discuss dolphin encounter rates during the period December 2017 - February 2018.

In the meeting, it was concluded that the Hong Kong-Zhuhai-Macao (HZMB) works is one of the contributing factors affecting the dolphins. It was also concluded the contribution of impacts due to the HZMB works as a whole (or individual marine contracts) cannot be quantified nor separate from the other stress factors.

It was reminded that the ETs shall keep reviewing the implementation status of the dolphin related mitigation measures and remind the contractor to ensure the relevant measures were fully implemented.

It was recommended that the marine works of HZMB projects should be completed as soon as possible so as to reduce the overall duration of impacts and allow the dolphins population to recover as early as possible.

It was also recommended that the marine works footprint (e.g., reduce the size of peripheral silt curtain) and vessels for the marine works should be reduced as much as possible, and vessels idling / mooring in other part of the North Lantau shall be avoided whenever possible.

The marine travel route will shift along the edge of Brothers Marine Park (BMP) as much as practical under the Regular Marine Travel Route Plan. It was noted that even though marine vessels may moor within the mooring site of BMP, commercial activities including loading / unloading / transshipment are not allowed except a permit is obtained. The HZMB works vessels were recommended to avoid the BMP.

Prepared by: Ruby Law Title: ET Representative (up to 31 October 2018)

Date: 4 March 2019

Reviewed by: Keith Chau Title: ET Leader (up to 31 October 2018)

Date : 4 March 2019

Copied to: IEC/ENPO, Contractor and Engineer Representative

APPENDIX L

Dolphin Monitoring Results

CONTRACT NO. HY/2013/01
Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Dolphin Monthly Monitoring

Second Quarterly Progress Report (December 2017-February 2018)
submitted to Leighton – Chun Wo Joint Venture

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

April 9, 2018

1. Introduction

1.1. For the Hong Kong-Zhuhai-Macao Bridge (HZMB) Hong Kong Boundary Crossing Facilities (HKBCF), the construction of the Passenger Clearance Building (PCB) requires the contractor (i.e. Leighton – Chun Wo Joint Venture) and the associated environmental team to conduct monthly line-transect vessel surveys for the Chinese White Dolphins to cover the Northwest (NWL) and Northeast Lantau (NEL) survey areas under the Environmental Monitoring and Audit (EM&A) programme.

1.2. In August 2017, Hong Kong Cetacean Research Project (HKCRP) has been commissioned by the contractor to conduct regular dolphin monitoring study in order to collect data on Chinese White Dolphins during the construction phase (i.e. impact period) of the HKBCF-PCB project, and to analyze the collected survey data to monitor distribution, encounter rate, activities and occurrence of dolphin calves. Photo-identification will also be collected from individual Chinese White Dolphins to examine their individual ranging patterns.

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

1.4. This report is the second quarterly progress report under the HKBCF construction phase dolphin monitoring programme submitted to Leighton – Chun Wo Joint Venture, summarizing the results of the surveys findings during the period of December 2017 to February 2018.

1.5. Notably, throughout the present quarterly progress report, the previous monitoring data obtained under Contract No. HY/2011/03 (i.e. HKLR03) are referenced and compared to the present quarterly monitoring data collected for the HKBCF-PCB project, as both HKBCF-PCB and HKLR03 project data was collected by the same HKCRP survey team, to ensure 100% consistency in monitoring methodology including vessel survey method as well as various analyses. On the contrary, the previous monitoring data collected under HZMB HKBCF-Reclamation Works contract (Contract No. HY/2010/02) was from a different survey team that have adopted different survey methodology (e.g. two observers and one data recorder under HKBCF-Reclamation Works contract, as compared to one primary observer and one data recorder under HKLR03 and HKBCF-PCB contract). Therefore, we cannot ensure that such HKBCF monitoring data under that contract can be directly comparable to the HKBCF-PCB monitoring data, and would rather use the previous HKLR03 monitoring data instead for comparison with the present quarterly findings.

2. Monitoring Methodology

2.1. Vessel-based Line-transect Survey

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

Table 1 Co-ordinates of transect lines

Line No.		Easting	Northing		Line No.		Easting	Northing
1	Start Point	804671	815456		13	Start Point	816506	819480
1	End Point	804671	831404		13	End Point	816506	824859
2	Start Point	805476	820800		14	Start Point	817537	820220
2	End Point	805476	826654		14	End Point	817537	824613
3	Start Point	806464	821150		15	Start Point	818568	820735
3	End Point	806464	822911		15	End Point	818568	824433
4	Start Point	807518	821500		16	Start Point	819532	821420
4	End Point	807518	829230		16	End Point	819532	824209

5	Start Point	808504	821850		17	Start Point	820451	822125
5	End Point	808504	828602		17	End Point	820451	823671
6	Start Point	809490	822150		18	Start Point	821504	822371
6	End Point	809490	825352		18	End Point	821504	823761
7	Start Point	810499	822000		19	Start Point	822513	823268
7	End Point	810499	824613		19	End Point	822513	824321
8	Start Point	811508	821123		20	Start Point	823477	823402
8	End Point	811508	824254		20	End Point	823477	824613
9	Start Point	812516	821303		21	Start Point	805476	827081
9	End Point	812516	824254		21	End Point	805476	830562
10	Start Point	813525	821176		22	Start Point	806464	824033
10	End Point	813525	824657		22	End Point	806464	829598
11	Start Point	814556	818853		23	Start Point	814559	821739
11	End Point	814556	820992		23	End Point	814559	824768
12	Start Point	815542	818807		24	Start Point	805476	815900
12	End Point	815542	824882		24	End Point	805476	819100

2.1.2. The survey team used standard line-transect methods (Buckland et al. 2001) to conduct the systematic vessel surveys, and followed the same technique of data collection that has been adopted over the last 20 years of marine mammal monitoring surveys in Hong Kong developed by HKCRP (see Hung 2017). For each monitoring vessel survey, a 15-m inboard vessel with an open upper deck (about 4.5 m above water surface) was used to make observations from the flying bridge area.

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

cetacean species.

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

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

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

2.1.7. Survey effort being conducted along the parallel transect lines that were perpendicular to the coastlines (as indicated in Figure 1) was labeled as “primary” survey effort, while the survey effort conducted along the connecting lines between parallel lines was labeled as “secondary” survey effort. According to HKCRP long-term dolphin monitoring data, encounter rates of Chinese white dolphins deduced from effort and sighting data collected along primary and secondary lines were similar in NEL and NWL survey areas. Therefore, both primary and secondary survey effort were presented as on-effort survey effort in this report.

2.2. Photo-identification Work

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

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

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

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

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

2.3. Data analysis

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

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

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

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

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

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

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

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

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

2.3.4. Behavioural analysis – When dolphins were sighted during vessel surveys, their

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

2.3.5. Ranging pattern analysis – Location data of individual dolphins that occurred during the 3-month impact phase monitoring period were obtained from the dolphin sighting database and photo-identification catalogue. To deduce home ranges for individual dolphins using the fixed kernel methods, the program Animal Movement Analyst Extension, was loaded as an extension with ArcView© 3.1 along with another extension Spatial Analyst 2.0. Using the fixed kernel method, the program calculated kernel density estimates based on all sighting positions, and provided an active interface to display kernel density plots. The kernel estimator then calculated and displayed the overall ranging area at 95% UD level.

3. Monitoring Results

3.1. Summary of survey effort and dolphin sightings

3.1.1. During the period of December 2017 to February 2018, six sets of systematic line-transect vessel surveys were conducted for the HKBCF project to cover all transect lines in NWL and NEL survey areas twice per month.

3.1.2. From these surveys, a total of 790.6 km of survey effort was collected, with 93.5% of the total survey effort being conducted under favourable weather conditions (i.e. Beaufort Sea State 3 or below with good visibility). Among the two areas, 299.5 km and 491.1 km of survey effort were conducted in NEL and NWL survey areas respectively.

3.1.3. The total survey effort conducted on primary lines was 578.6 km, while the effort on secondary lines was 212.0 km. Survey effort conducted on both primary and secondary lines were considered as on-effort survey data. A summary table of the survey effort is shown in Appendix I.

3.1.4. During the six sets of monitoring surveys in December 2017 to February 2018, 20 groups of 73 Chinese White Dolphins were sighted, with the summary table of the dolphin sightings shown in Appendix II. All except one dolphin sighting were made during

on-effort search, while 16 of the 19 on-effort dolphin sightings were made on primary lines. In addition, almost all dolphin groups were sighted in NWL, while an exceptionally rare sighting was also made in NEL (note: the last dolphin sighting made in NEL during HZMB-related surveys can be dated back to June 2016).

3.2. Distribution

3.2.1. Distribution of dolphin sightings made during monitoring surveys in December 2017 to February 2018 is shown in Figure 1. The majority of the sightings were concentrated at the northwestern end (mainly to the north of Lung Kwu Chau) and southwestern end (near HKLR09 alignment and to the west of the airport platform) of the North Lantau region (Figure 1). Other sightings were sparsely distributed near Pillar Point, Black Point, Sha Chau and to the northeast of the airport. The lone sighting made in NEL was located near Siu Ho Wan.

3.2.2. In general, the dolphins were mostly absent from the central and eastern portions of North Lantau waters, similar to the consistent findings of HKLR03 surveys in recent years (Figure 1).

3.2.3. One dolphin sighting was made in the proximity of the HKBCF reclamation site, while several groups were also sighted near the HKLR09 alignment. On the contrary, other dolphin sightings were located far away from the HKLR03 reclamation site as well as the alignment and Tuen Mun-Chek Lap Kok Link (TMCLKL) (Figure 1).

3.2.4. Sighting distribution of dolphins during the present impact phase monitoring period (December 2017 to February 2018) was very different from the one during the baseline monitoring period (Figure 1). In the present quarter, dolphins have mostly disappeared from the NEL region, which was in stark contrast to their frequent occurrence around the Brothers Islands, near Shum Shui Kok and in the vicinity of HKBCF reclamation site during the baseline period (Figure 1).

3.2.5. On the other hand, dolphin occurrence in NWL waters was also noticeably different between the baseline and impact phase periods. During the present impact monitoring period, dolphins were infrequently sighted here, and mainly at the northwestern and southwestern ends of the area, which was in stark contrast with their frequent occurrences throughout the entire survey area during the baseline period (Figure 1).

3.3. Encounter rate

3.3.1. During the present three-month study period, the encounter rates of Chinese White Dolphins deduced from the survey effort and on-effort sighting data from the primary

transect lines under favourable conditions (Beaufort 3 or below) for each set of the surveys in NEL and NWL are shown in Table 2. The average encounter rates deduced from the six sets of surveys were also compared with the ones deduced from the baseline monitoring period (September – November 2011) (Table 3).

3.3.2. To facilitate the comparison with the AFCD long-term monitoring results, the encounter rates were also calculated for the present quarter using both primary and secondary survey effort. The encounter rates of sightings (STG) and dolphins (ANI) in NWL were 3.6 sightings and 13.9 dolphins per 100 km of survey effort respectively, while the encounter rates of sightings (STG) and dolphins (ANI) in NEL were 0.3 and 1.7 respectively for this quarter.

Table 2. Dolphin encounter rates (sightings per 100 km of survey effort) during Dec 2017 - Feb 2018

SURVEY AREA	DOLPHIN MONITORING DATES	Encounter rate (STG) (no. of on-effort dolphin sightings per 100 km of survey effort)	Encounter rate (ANI) (no. of dolphins from all on-effort sightings per 100 km of survey effort)
		Primary Lines Only	Primary Lines Only
Northeast Lantau	Set 1 (1 & 7 Dec 2017)	0.0	0.0
	Set 2 (14 & 19 Dec 2017)	0.0	0.0
	Set 3 (9 & 11 Jan 2018)	0.0	0.0
	Set 4 (19 & 26 Jan 2018)	0.0	0.0
	Set 5 (1 & 6 Feb 2018)	3.1	15.7
	Set 6 (13 & 26 Feb 2018)	0.0	0.0
Northwest Lantau	Set 1 (1 & 7 Dec 2017)	1.6	14.6
	Set 2 (14 & 19 Dec 2017)	0.0	0.0
	Set 3 (9 & 11 Jan 2018)	2.0	9.8
	Set 4 (19 & 26 Jan 2018)	5.1	20.3
	Set 5 (1 & 6 Feb 2018)	4.3	6.5
	Set 6 (13 & 26 Feb 2018)	9.8	34.3

Table 3. Comparison of average dolphin encounter rates from impact monitoring period (December 2017-February 2018) and baseline monitoring period (September – November 2011) (Note: encounter rates deduced from the baseline monitoring period have been recalculated based only on survey effort and on-effort sighting data made along the primary transect lines under favourable conditions; ± denotes the standard deviation of the average 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)	
	December 2017 – February 2018	**September – November 2011**	**December 2017 – February 2018**	**September – November 2011**
Northeast Lantau	0.5 ± 1.28	6.0 ± 5.05	2.6 ± 6.40	22.2 ± 26.81
Northwest Lantau	3.8 ± 3.48	9.9 ± 5.85	14.3 ± 12.01	44.7 ± 29.85

3.3.3. In NEL, the average dolphin encounter rates (both STG and ANI) in the present three-month impact monitoring period were both very low with only one on-effort sighting of five dolphins being made, and such extremely rare occurrence of dolphins in NEL have also been consistently recorded in recent years of HZMB monitoring (Table 4). Nevertheless, after recording zero encounter rates in the previous three winter quarters during HKLR03 impact monitoring, the present quarter recorded the rare occurrence of dolphins for the first time in recent years.

3.3.4. On the other hand, the average dolphin encounter rates (STG and ANI) in NWL during the present impact phase monitoring period (reductions of 61.4% and 68.1% respectively) were only small fractions of the ones recorded during the three-month baseline period, indicating a noticeable decline in dolphin usage of this survey area during the present impact phase period (Table 5).

3.3.5. During the same winter quarters (with comparison to past HKLR03 monitoring data), dolphin encounter rates in NWL during winter 2017-18 was almost identical to the previous winter period in 2016-17, higher than the ones in 2014-15 and 2015-16, but much lower than the ones in 2012-13 and 2013-14 (Table 5). Such temporal trend should be closely monitored in the upcoming monitoring quarters whether the dolphin occurrence would continue to increase as almost all marine construction activities of HKBCF works have been completed in coming months.

Table 4. Comparison of average dolphin encounter rates in Northeast Lantau survey area from the same winter quarters of HKLR03 and HKBCF impact monitoring periods and baseline monitoring period (September-November 2011) (Note: encounter rates deduced from the baseline monitoring period have been recalculated based only on survey effort and on-effort sighting data made along the primary transect lines under favourable conditions; ± denotes the standard deviation of the average 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)
September-November 2011 (Baseline)	**6.0 ± 5.05**	**22.2 ± 26.81**
December 2012-February 2013 (HKLR03 Impact*)	3.1 ± 3.21	6.3 ± 8.64
December 2013-February 2014 (HKLR03 Impact*)	0.5 ± 1.10	1.3 ± 3.29
December 2014-February 2015 (HKLR03 Impact*)	0.0	0.0
December 2015-February 2016 (HKLR03 Impact*)	0.0	0.0
December 2016-February 2017 (HKLR03 Impact*)	0.0	0.0
December 2017-February 2018 (HKBCF Impact)	**0.5 ± 1.28**	**2.6 ± 6.40**

* As explained in Section 1.5, the previous monitoring data from Contract No. HY/2011/03 (i.e. HKLR03) were adopted for comparison with the baseline and present HKBCF impact monitoring period

Table 5. Comparison of average dolphin encounter rates in Northwest Lantau survey area from all winter quarters of HKLR03 and HKBCF impact monitoring periods and baseline monitoring period (September-November 2011) (Note: encounter rates deduced from the baseline monitoring period have been recalculated based only on survey effort and on-effort sighting data made along the primary transect lines under favourable conditions; ± denotes the standard deviation of the average 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)
September-November 2011 (Baseline)	**9.9 ± 5.85**	**44.7 ± 29.85**
December 2012-February 2013 (HKLR03 Impact*)	8.4 ± 5.03	35.9 ± 23.10
December 2013-February 2014 (HKLR03 Impact*)	8.2 ± 2.21	32.6 ± 11.21
December 2014-February 2015 (HKLR03 Impact*)	2.9 ± 2.69	11.3 ± 15.19
December 2015-February 2016 (HKLR03 Impact*)	2.6 ± 1.52	11.0 ± 3.81
December 2016-February 2017 (HKLR03 Impact*)	3.8 ± 3.79	14.5 ± 17.21
December 2017-February 2018 (HKBCF Impact)	**3.8 ± 3.48**	**14.3 ± 12.01**

* As explained in Section 1.5, the previous monitoring data from Contract No. HY/2011/03 (i.e. HKLR03) were adopted for comparison with the baseline and present HKBCF impact monitoring period

3.3.6. A two-way ANOVA with repeated measures and unequal sample size was conducted to examine whether there were any significant differences in the average encounter rates between the baseline and impact monitoring periods. The two variables that were examined included the two periods (baseline and impact phases) and two locations (NEL and NWL).

3.3.7. For the comparison between the baseline period and the present quarter, the p-values for the differences in average dolphin encounter rates of STG and ANI were 0.0138 and 0.0475 respectively. If the alpha value is set at 0.05, significant differences were detected between the baseline and present quarter in both the average dolphin encounter rates of STG and ANI.

3.3.8. As indicated in both dolphin distribution patterns and encounter rates, dolphin usage has been significantly reduced in both NEL and NWL survey areas during the present quarterly period, and such low occurrence of dolphins has also been consistently documented in past HZMB dolphin monitoring studies.

3.3.9. The decline in dolphin usage of North Lantau region raises serious concern, as the timing of the decline in dolphin usage in North Lantau waters coincided well with the construction schedule of the HZMB-related projects (Hung 2017). Apparently there was very little sign of recovery of dolphin usage even though most of the marine works associated with the HZMB construction have been completed, and therefore continuous dolphin monitoring would remain critical in coming months.

3.4. Group size

3.4.1. Group size of Chinese White Dolphins ranged from one to nine individuals per group in North Lantau region during December 2017 to February 2018. The average dolphin group sizes from these three months were compared with the ones deduced from the baseline period in September to November 2011, as shown in Table 6.

Table 6. Comparison of average dolphin group sizes from impact monitoring period December 2017-February 2018) and baseline monitoring period (September-November 2011) (Note: ± denotes the standard deviation of average group size)

	Average Dolphin Group Size	
	December 2017 – February 2018	**September – November 2011**
Overall	3.7 ± 2.43 (n = 20)	3.7 ± 3.13 (n = 66)
Northeast Lantau	5.0 (n=1)	3.2 ± 2.16 (n = 17)
Northwest Lantau	3.6 ± 2.48 (n = 19)	3.9 ± 3.40 (n = 49)

3.4.2. The average dolphin group size in NWL waters during December 2017 to February 2018 was slightly lower than the one recorded during the three-month baseline period, but it should also be noted that the sample size of six dolphin groups in the present quarter was small when compared to the 66 groups sighted during the baseline period (Table 6).

3.4.3. On the other hand, even the group size of the lone dolphin sighting recorded in NEL (five animals) was higher than the average recorded during the three-month period, but it was only based on the sample size of one (Table 6).

3.4.4. Overall, it should be noted that 12 of the 20 dolphin groups sighted during the present quarter were composed of 1-3 individuals only. On the other hand, the other eight groups were medium-sized, with four groups with five animals per group, three groups with seven animals per group, and one group with nine animals (Appendix II).

3.4.5. Distribution of the larger dolphin groups with five individuals or more per group during the present quarter is shown in Figure 3, with comparison to the one in baseline period. Four of the medium-sized groups were located to the north of Lung Kwu Chau, while the other four were distributed near Sha Chau, Pillar Point, to the northeast of airport, and near Siu Ho Wan (Figure 2). Such distribution pattern was very different from the baseline period, when the larger dolphin groups were frequently sighted and evenly distributed in NWL waters, with a few also sighted in NEL waters (Figure 2).

3.5. Habitat use

3.5.1. From December 2017 to February 2018, the grids that recorded high dolphin densities were located to the north of Lung Kwu Chau, near Sha Chau and Pillar Point, to the northeast of airport platform, and near Siu Ho Wan (Figures 3a and 3b). Notably, the two grids overlapped with the HKLR09 alignment as well as the few grids to the west of the airport platform only recorded low to very low densities of dolphins in the present quarterly period (Figures 3a and 3b).

3.5.2. However, it should be emphasized that the amount of survey effort collected in each grid during the three-month period was fairly low (6-12 units of survey effort for most grids), and therefore the habitat use pattern derived from the three-month dataset should be treated with caution. A more complete picture of dolphin habitat use pattern should be examined when more survey effort for each grid will be collected throughout the impact phase monitoring programme.

3.5.3. When compared with the habitat use patterns during the baseline period, dolphin usage in NEL and NWL has drastically diminished in both areas during the present impact

monitoring period (Figure 4). During the baseline period, many grids between Siu Mo To and Shum Shui Kok in NEL recorded moderately high to high dolphin densities, which was in stark contrast to the near-complete absence of dolphins there during the present impact phase period (Figure 4).

3.5.4. The density patterns were also very different in NWL between the baseline and impact phase monitoring periods, with high dolphin usage throughout the area during the baseline period. In contrast, only several grids with high dolphin densities were located to the north of Lung Kwu Chau, near Sha Cha Chau and Pillar Point during the present impact phase period (Figure 4).

3.6. Mother-calf pairs

3.6.1. During the present quarterly period, only one unspotted juvenile was sighted with its mothers in the North Lantau region. This rare sighting of young calf was located near Sha Chau (Figure 5).

3.6.2. The rare occurrence of young calves in the present quarter was very different from their regular occurrence in North Lantau waters during the baseline period (Figure 5). This should be of a serious concern, and the occurrence of young calves in North Lantau waters should be closely monitored in the upcoming quarters.

3.7. Activities and associations with fishing boats

3.7.1. During the present quarterly period, two of the 20 dolphin groups were engaged in feeding activity, which were located near Sha Chau and to the northeast of the airport platform. However, the rest of the groups were not engaged in socializing, traveling or milling/resting activity during the three-month study period.

3.7.2. When compared to the baseline period, distribution of various dolphin activities during the present impact phase monitoring period was drastically different with very rare occurrence of such activities in the present quarter (Figure 6).

3.7.3. Notably, none of the 20 groups was associated with any operating fishing vessel during the present impact phase period.

3.8. Summary of photo-identification works

3.8.1. From December 2017 to February 2018, over 2,500 digital photographs of Chinese White Dolphins were taken during the impact phase monitoring surveys for the photo-identification work.

3.8.2. In total, 26 individuals sighted 52 times altogether were identified (see summary table in Appendix III and photographs of identified individuals in Appendix IV). The majority of the re-sightings were made in NWL, while there were five re-sightings of five individual dolphins (NL37, Nl120, NL123, NL136 and NL226) made in NEL from the rare sighting made in February 2018.

3.8.3. Among the 26 individuals, 15 of them were re-sighted only once, while six individuals were re-sighted 2-3 times and five individuals were re-sighted 4-7 times during the three-month period (Appendix III).

3.8.4. Notably, eight of these 26 individuals (i.e. CH34, NL123, NL136, NL182, NL226, NL261, NL272 and NL296) were also sighted in NWL during the HKLR03 monitoring surveys conducted concurrently in the same three-month period. However, none of the individual was sighted in West Lantau waters during the HKLR09 monitoring surveys from the same quarterly period.

3.9. Individual range use

3.9.1. Ranging patterns of the 26 individuals identified during the three-month study period were determined by fixed kernel method, and are shown in Appendix V.

3.9.2. The majority of identified dolphins sighted in the present quarter were utilizing NWL waters only, but five individuals have also spanned their range across to NEL waters, where many of them have utilized as their core areas in the past (Appendix V). This is still in stark contrary to the extensive movements between NEL and NWL survey areas observed in the earlier impact monitoring quarters as well as the baseline period.

3.9.3. On the other hand, none of the individuals have extended their range use to WL during the present quarter.

3.9.4. In the upcoming quarters, individual range use and movements should be continuously monitored to examine whether there has been any consistent shifts of individual home ranges from North Lantau to West or Southwest Lantau.

4. Conclusion

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

4.2. Although dolphins seldom occurred in the area of HKBCF construction in the past and during the baseline monitoring period, it is apparent that dolphin usage has been dramatically reduced in North Lantau waters in recent years, and many individuals have shifted away from this once-important habitat for the dolphins.

4.3. It is critical to continuously monitor the dolphin usage in North Lantau region in the upcoming quarters, to determine whether the dolphins are continuously affected by the various construction activities in relation to the HZMB-related works, and whether there is any sign of recovery when the construction works have been completed.

5. References

Buckland, S. T., Anderson, D. R., Burnham, K. P., Laake, J. L., Borchers, D. L., and Thomas, L. 2001. Introduction to distance sampling: estimating abundance of biological populations. Oxford University Press, London.

Hung, S. K. 2008. Habitat use of Indo-Pacific humpback dolphins (*Sousa chinensis*) in Hong Kong. Ph.D. dissertation. University of Hong Kong, Hong Kong, 266 p.

Hung, S. K. 2017. Monitoring of Marine Mammals in Hong Kong waters: final report (2016-17). An unpublished report submitted to the Agriculture, Fisheries and Conservation Department, 162 pp.

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

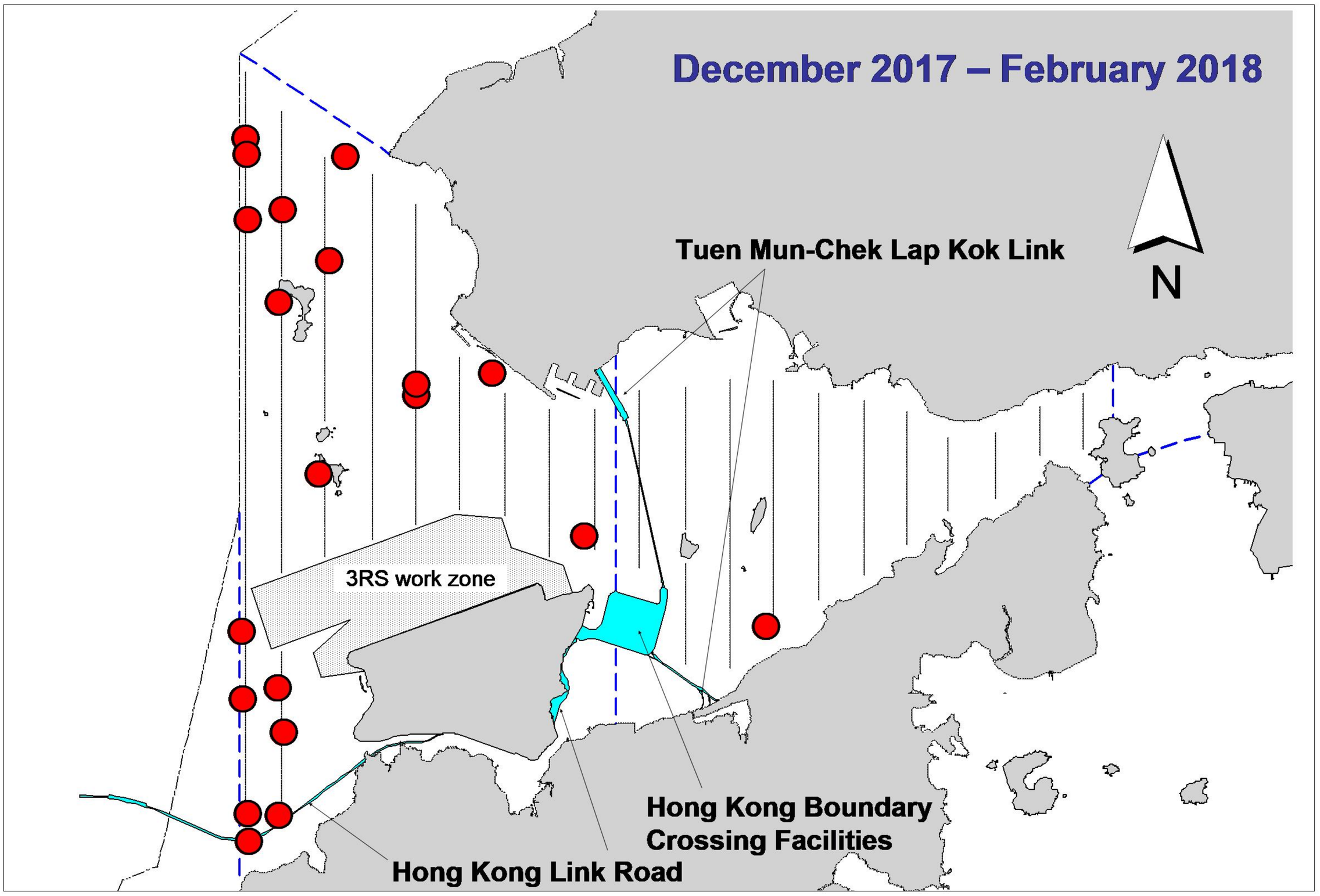


Figure 1. Distribution of Chinese white dolphin sighting in Northwest and Northeast Lantau during HKBCF impact phase (top) and baseline monitoring surveys (bottom)

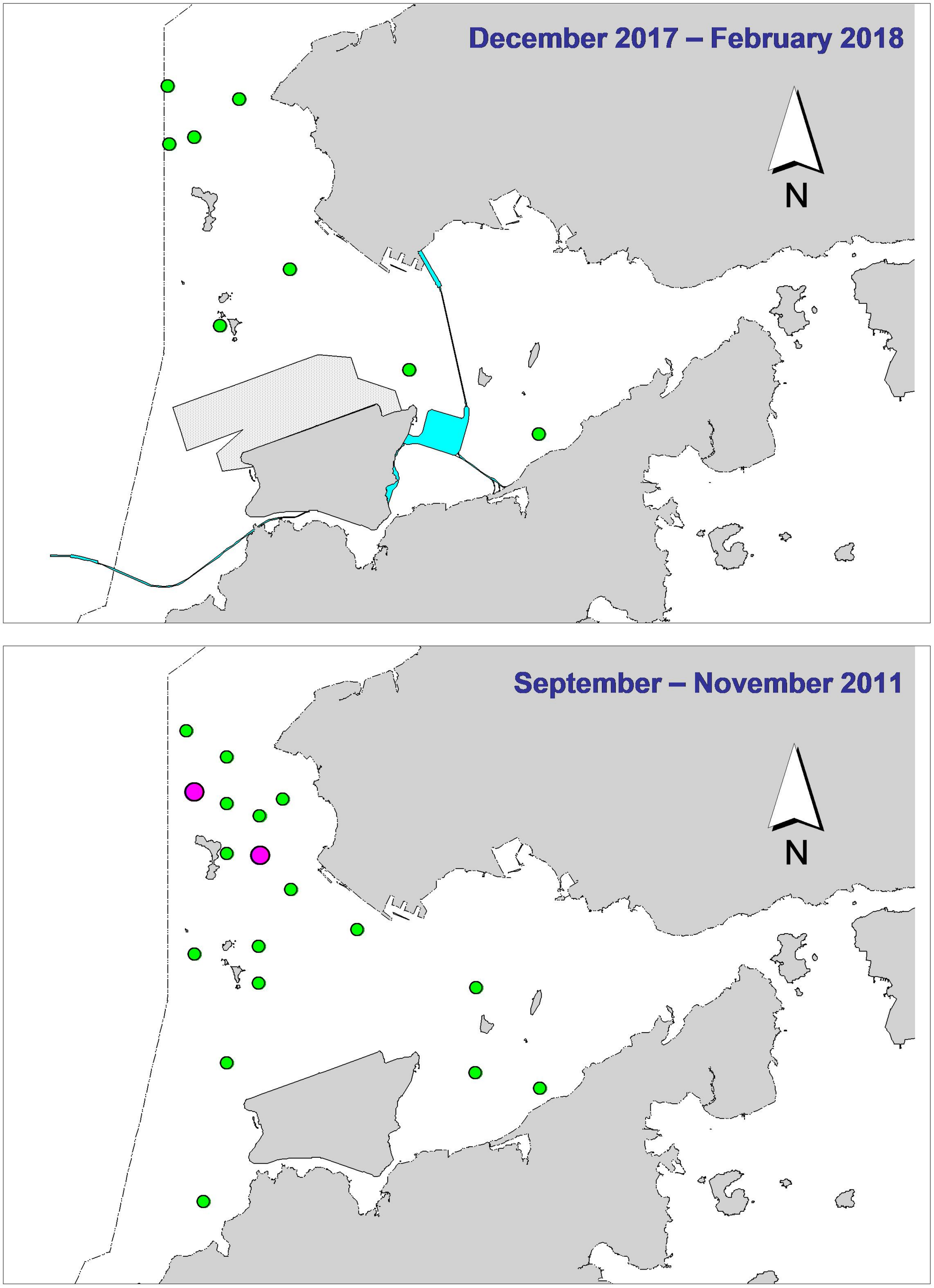


Figure 2. Distribution of Chinese white dolphins with larger group sizes during HKBCF impact phase (top) and baseline monitoring surveys (bottom) (green dots: group sizes of 5 or more; purple dots: group sizes of 10 or more)

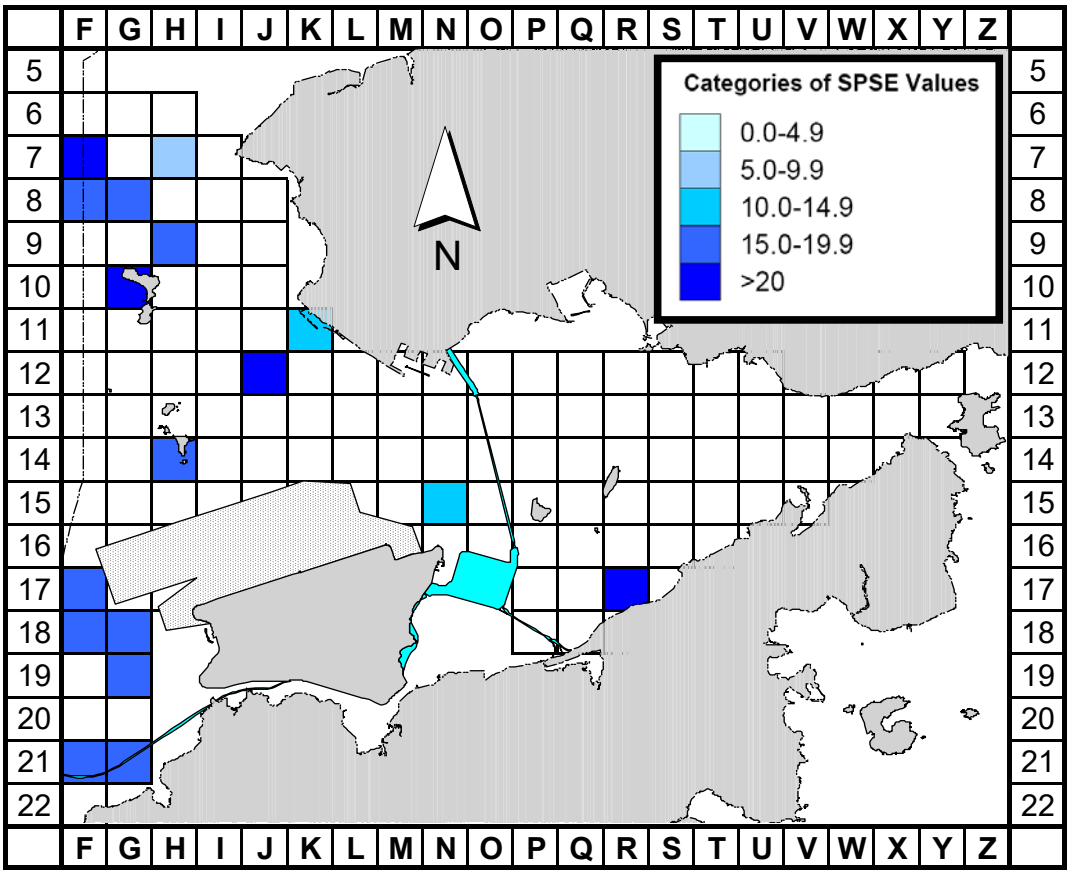


Figure 3a. Sighting density of Chinese white dolphins with corrected survey effort per km^2 in Northeast and Northwest Lantau survey areas, using data collected during HKBCF impact monitoring period monitoring period (Dec 17-Feb 18) (SPSE = no. of on-effort sightings per 100 units of survey effort)

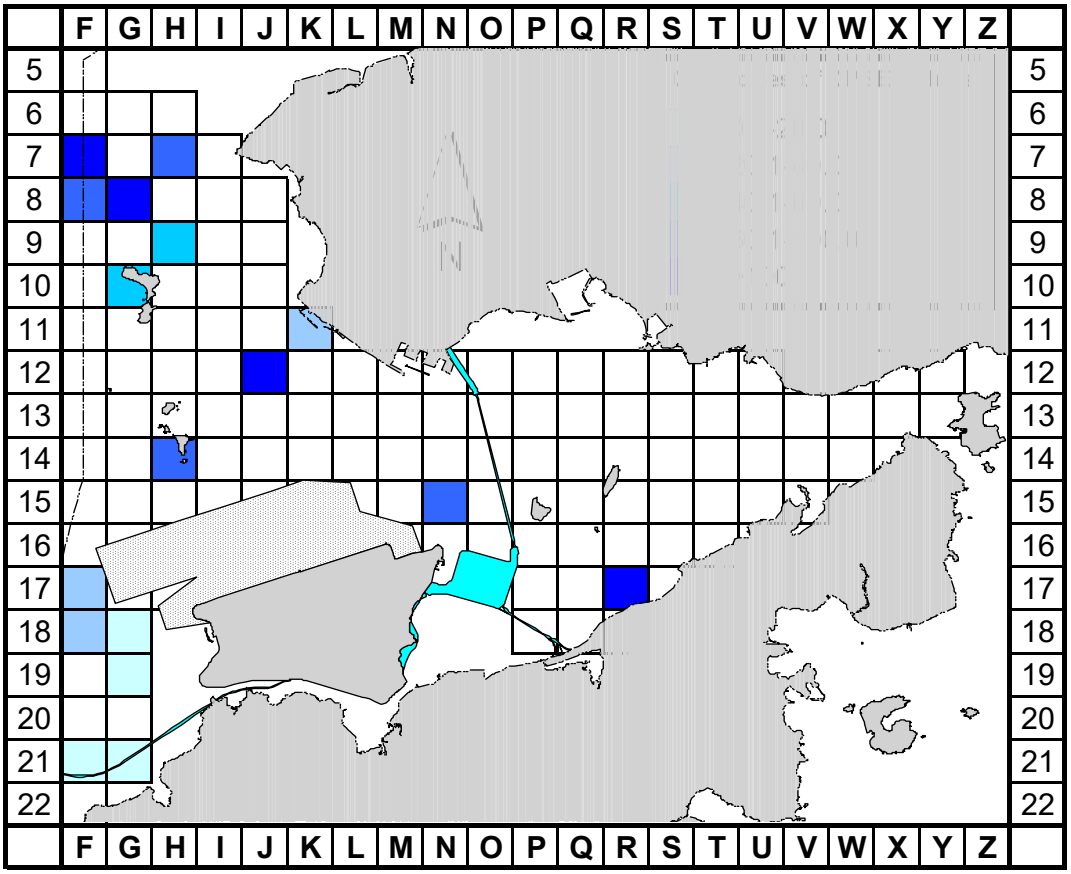


Figure 3b. Density of Chinese white dolphins with corrected survey effort per km^2 in Northeast and Northwest Lantau survey areas, using data collected during HKBCF impact monitoring period (Dec 17-Feb 18) (DPSE = no. of dolphins per 100 units of survey effort)

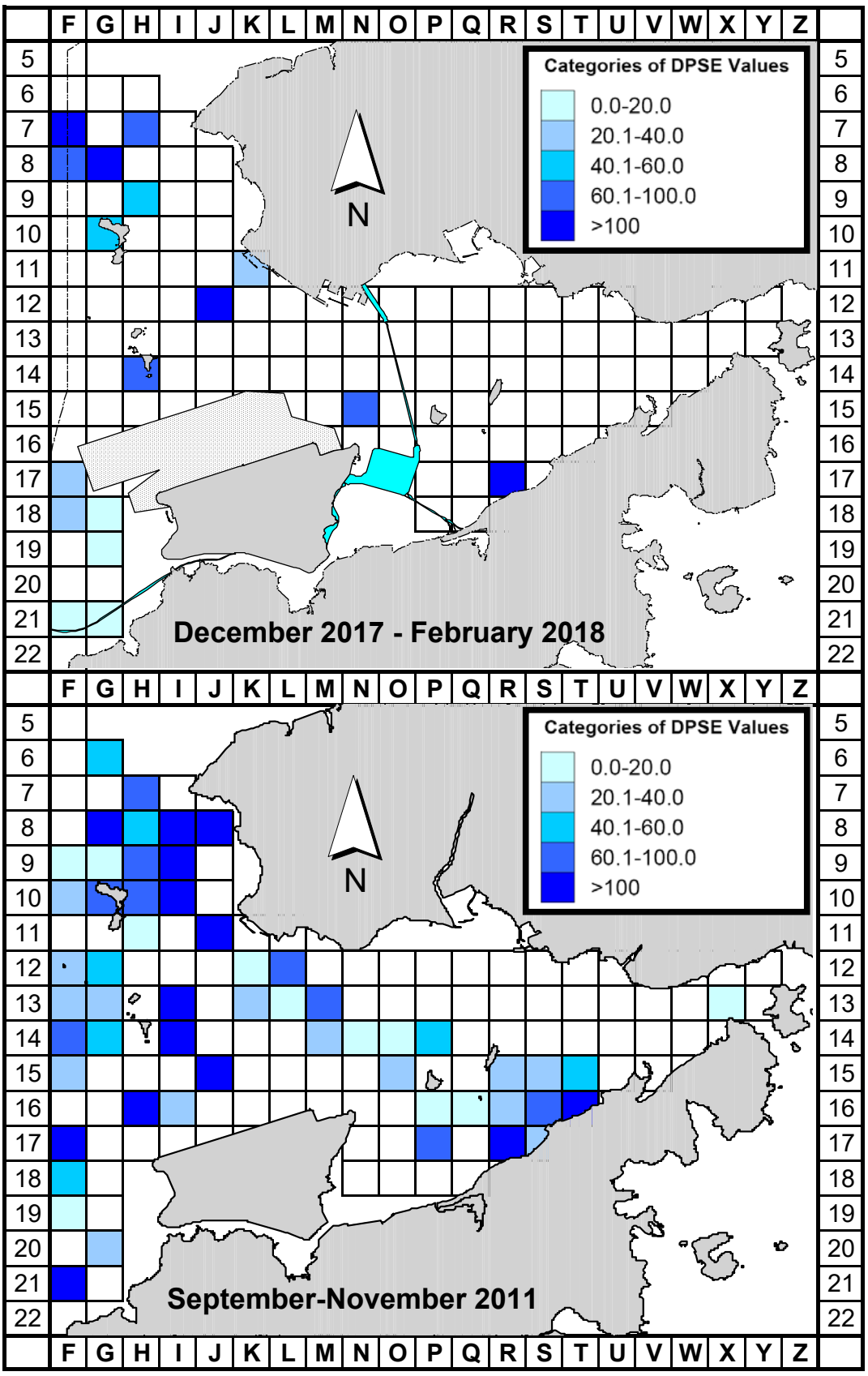


Figure 4. Comparison of density of Chinese white dolphins with corrected survey effort per km^2 in Northwest and Northeast Lantau survey area between the HKBCF impact monitoring period (December 2017 - February 2018) and baseline monitoring period (September-November 2011) (DPSE = no. of dolphins per 100 units of survey effort)

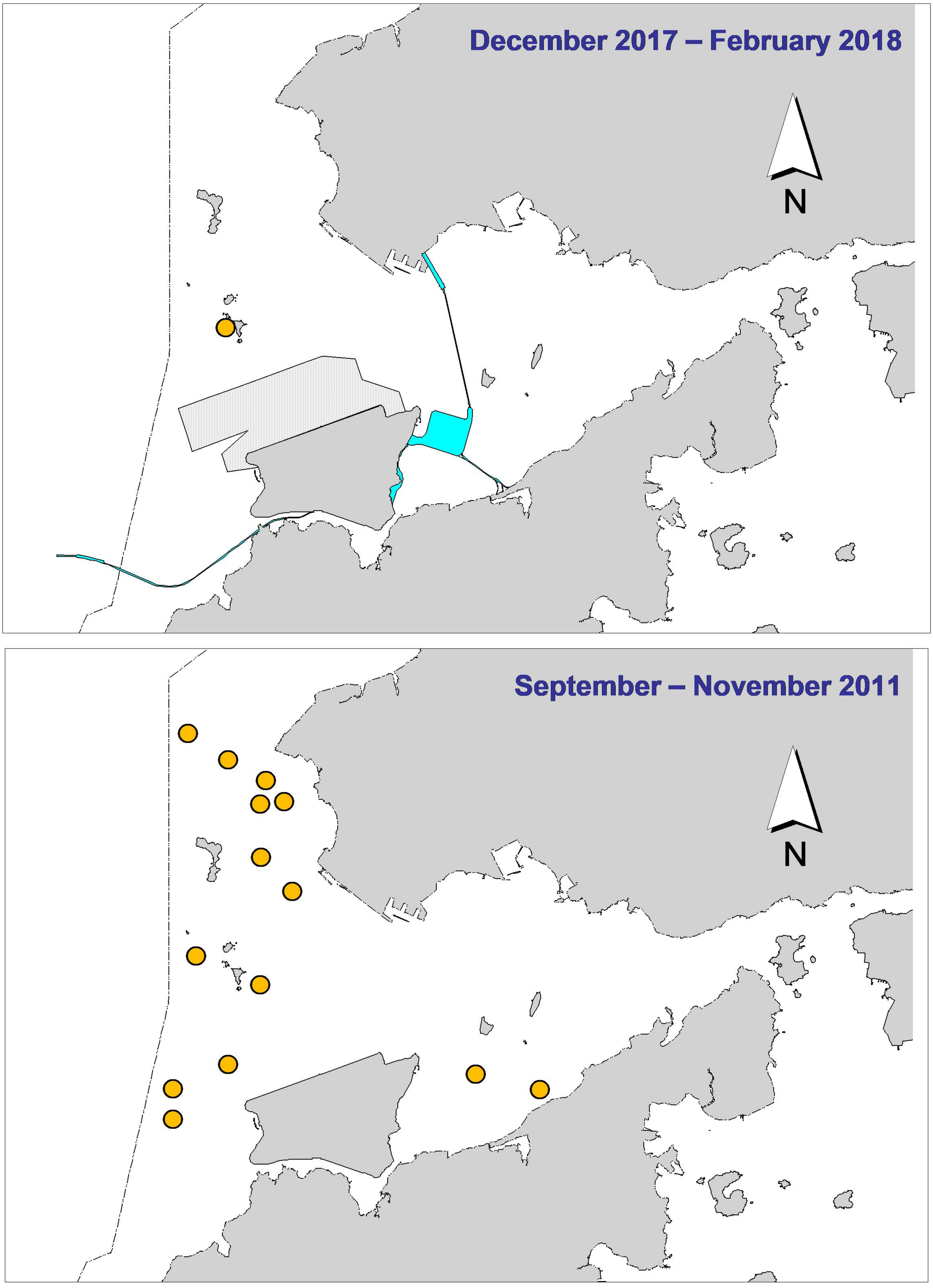


Figure 5. Distribution of young calves of Chinese white dolphins during HKBCF impact phase (top) and baseline monitoring surveys (bottom)

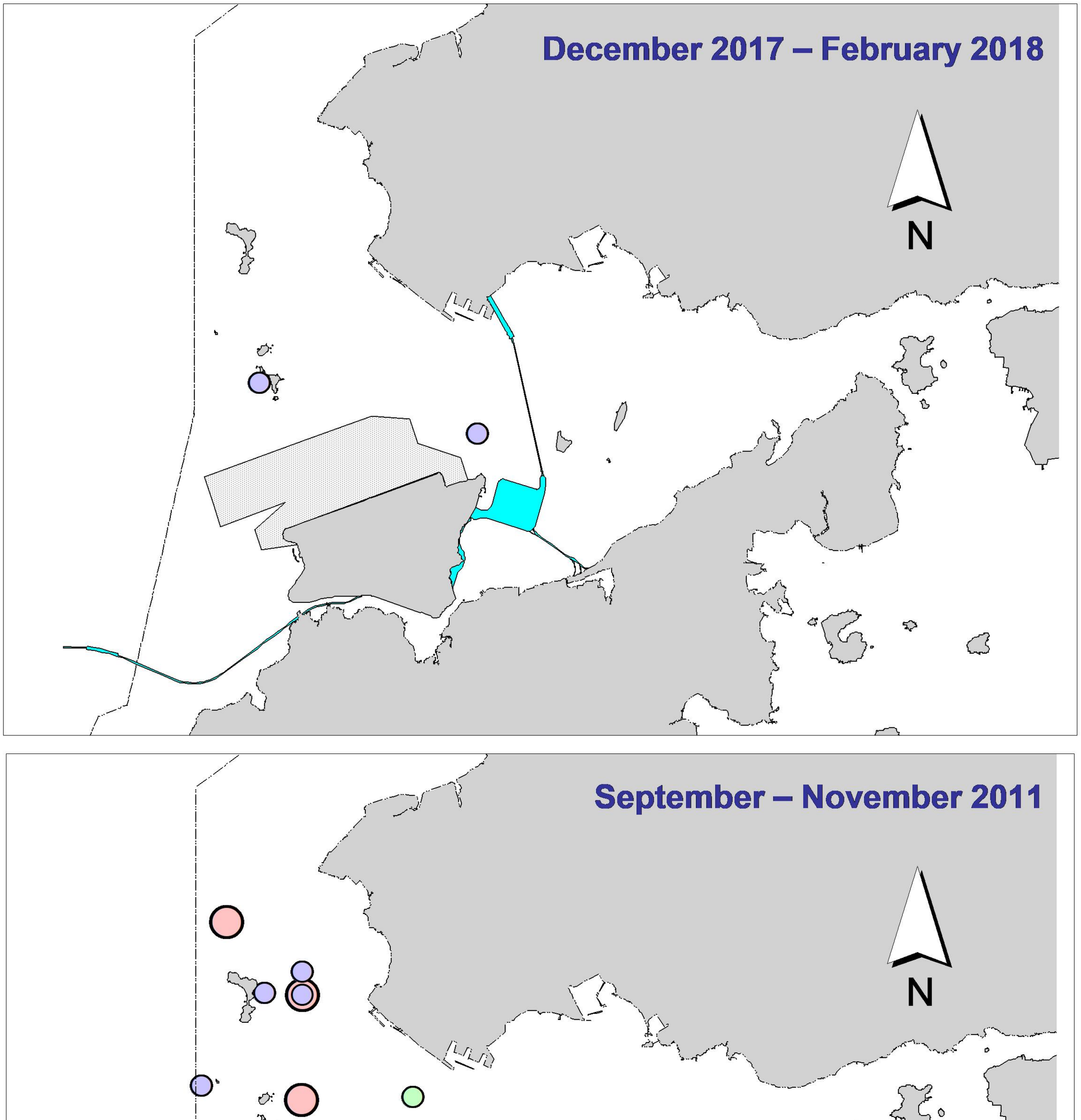


Figure 6. Distribution of Chinese white dolphins engaged in feeding (purple dots), socializing (pink dots) and traveling (green dots) activities during HKBCF impact phase (top) and baseline monitoring surveys (bottom)

Appendix I. HKBCF Survey Effort Database (December 2017-February 2018)

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

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	TYPE	P/S
1-Dec-17	NW LANTAU	2	7.28	WINTER	STANDARD36826	HKBCF	P
1-Dec-17	NW LANTAU	3	25.26	WINTER	STANDARD36826	HKBCF	P
1-Dec-17	NW LANTAU	2	3.52	WINTER	STANDARD36826	HKBCF	S
1-Dec-17	NW LANTAU	3	7.49	WINTER	STANDARD36826	HKBCF	S
1-Dec-17	NE LANTAU	1	3.60	WINTER	STANDARD36826	HKBCF	P
1-Dec-17	NE LANTAU	2	31.89	WINTER	STANDARD36826	HKBCF	P
1-Dec-17	NE LANTAU	2	11.81	WINTER	STANDARD36826	HKBCF	S
7-Dec-17	NW LANTAU	1	6.35	WINTER	STANDARD36826	HKBCF	P
7-Dec-17	NW LANTAU	2	19.51	WINTER	STANDARD36826	HKBCF	P
7-Dec-17	NW LANTAU	3	3.10	WINTER	STANDARD36826	HKBCF	P
7-Dec-17	NW LANTAU	1	5.14	WINTER	STANDARD36826	HKBCF	S
7-Dec-17	NW LANTAU	2	5.90	WINTER	STANDARD36826	HKBCF	S
14-Dec-17	NW LANTAU	1	1.60	WINTER	STANDARD36826	HKBCF	P
14-Dec-17	NW LANTAU	2	29.73	WINTER	STANDARD36826	HKBCF	P
14-Dec-17	NW LANTAU	3	1.93	WINTER	STANDARD36826	HKBCF	P
14-Dec-17	NW LANTAU	2	8.24	WINTER	STANDARD36826	HKBCF	S
19-Dec-17	NW LANTAU	3	10.00	WINTER	STANDARD36826	HKBCF	P
19-Dec-17	NW LANTAU	4	17.61	WINTER	STANDARD36826	HKBCF	P
19-Dec-17	NW LANTAU	2	2.40	WINTER	STANDARD36826	HKBCF	S
19-Dec-17	NW LANTAU	3	4.90	WINTER	STANDARD36826	HKBCF	S
19-Dec-17	NW LANTAU	4	5.09	WINTER	STANDARD36826	HKBCF	S
19-Dec-17	NE LANTAU	1	1.40	WINTER	STANDARD36826	HKBCF	P
19-Dec-17	NE LANTAU	2	20.79	WINTER	STANDARD36826	HKBCF	P
19-Dec-17	NE LANTAU	3	14.34	WINTER	STANDARD36826	HKBCF	P
19-Dec-17	NE LANTAU	2	7.82	WINTER	STANDARD36826	HKBCF	S
19-Dec-17	NE LANTAU	3	6.85	WINTER	STANDARD36826	HKBCF	S
9-Jan-18	NE LANTAU	1	1.42	WINTER	STANDARD36826	HKBCF	P
9-Jan-18	NE LANTAU	2	20.01	WINTER	STANDARD36826	HKBCF	P
9-Jan-18	NE LANTAU	3	16.10	WINTER	STANDARD36826	HKBCF	P
9-Jan-18	NE LANTAU	1	1.19	WINTER	STANDARD36826	HKBCF	S
9-Jan-18	NE LANTAU	2	8.28	WINTER	STANDARD36826	HKBCF	S
9-Jan-18	NE LANTAU	3	3.20	WINTER	STANDARD36826	HKBCF	S
9-Jan-18	NW LANTAU	2	11.32	WINTER	STANDARD36826	HKBCF	P
9-Jan-18	NW LANTAU	3	5.86	WINTER	STANDARD36826	HKBCF	P
9-Jan-18	NW LANTAU	2	4.51	WINTER	STANDARD36826	HKBCF	S
11-Jan-18	NW LANTAU	3	34.08	WINTER	STANDARD36826	HKBCF	P
11-Jan-18	NW LANTAU	4	9.19	WINTER	STANDARD36826	HKBCF	P
11-Jan-18	NW LANTAU	5	1.50	WINTER	STANDARD36826	HKBCF	P
11-Jan-18	NW LANTAU	2	1.30	WINTER	STANDARD36826	HKBCF	S
11-Jan-18	NW LANTAU	3	5.33	WINTER	STANDARD36826	HKBCF	S
11-Jan-18	NW LANTAU	4	0.80	WINTER	STANDARD36826	HKBCF	S
11-Jan-18	NW LANTAU	5	2.30	WINTER	STANDARD36826	HKBCF	S
19-Jan-18	NW LANTAU	1	1.40	WINTER	STANDARD36826	HKBCF	P
19-Jan-18	NW LANTAU	2	25.40	WINTER	STANDARD36826	HKBCF	P
19-Jan-18	NW LANTAU	1	4.29	WINTER	STANDARD36826	HKBCF	S
19-Jan-18	NW LANTAU	2	8.61	WINTER	STANDARD36826	HKBCF	S
26-Jan-18	NW LANTAU	1	8.06	WINTER	STANDARD36826	HKBCF	P
26-Jan-18	NW LANTAU	2	24.23	WINTER	STANDARD36826	HKBCF	P
26-Jan-18	NW LANTAU	2	11.24	WINTER	STANDARD36826	HKBCF	S
26-Jan-18	NE LANTAU	1	1.10	WINTER	STANDARD36826	HKBCF	P

Appendix I. (cont'd)

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

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	TYPE	P/S
26-Jan-18	NE LANTAU	2	35.26	WINTER	STANDARD36826	HKBCF	P
26-Jan-18	NE LANTAU	2	11.64	WINTER	STANDARD36826	HKBCF	S
1-Feb-18	NW LANTAU	2	11.07	WINTER	STANDARD36826	HKBCF	P
1-Feb-18	NW LANTAU	3	13.79	WINTER	STANDARD36826	HKBCF	P
1-Feb-18	NW LANTAU	2	5.23	WINTER	STANDARD36826	HKBCF	S
1-Feb-18	NW LANTAU	3	5.31	WINTER	STANDARD36826	HKBCF	S
1-Feb-18	NE LANTAU	2	15.10	WINTER	STANDARD36826	HKBCF	P
1-Feb-18	NE LANTAU	2	9.70	WINTER	STANDARD36826	HKBCF	S
6-Feb-18	NW LANTAU	2	6.26	WINTER	STANDARD36826	HKBCF	P
6-Feb-18	NW LANTAU	3	14.95	WINTER	STANDARD36826	HKBCF	P
6-Feb-18	NW LANTAU	4	14.58	WINTER	STANDARD36826	HKBCF	P
6-Feb-18	NW LANTAU	2	3.61	WINTER	STANDARD36826	HKBCF	S
6-Feb-18	NW LANTAU	3	9.69	WINTER	STANDARD36826	HKBCF	S
6-Feb-18	NE LANTAU	1	0.70	WINTER	STANDARD36826	HKBCF	P
6-Feb-18	NE LANTAU	2	16.08	WINTER	STANDARD36826	HKBCF	P
6-Feb-18	NE LANTAU	1	2.00	WINTER	STANDARD36826	HKBCF	S
6-Feb-18	NE LANTAU	2	12.62	WINTER	STANDARD36826	HKBCF	S
13-Feb-18	NW LANTAU	1	0.41	WINTER	STANDARD36826	HKBCF	P
13-Feb-18	NW LANTAU	2	35.45	WINTER	STANDARD36826	HKBCF	P
13-Feb-18	NW LANTAU	2	10.87	WINTER	STANDARD36826	HKBCF	S
26-Feb-18	NW LANTAU	2	23.18	WINTER	STANDARD36826	HKBCF	P
26-Feb-18	NW LANTAU	3	2.20	WINTER	STANDARD36826	HKBCF	P
26-Feb-18	NW LANTAU	2	10.02	WINTER	STANDARD36826	HKBCF	S
26-Feb-18	NE LANTAU	2	27.58	WINTER	STANDARD36826	HKBCF	P
26-Feb-18	NE LANTAU	3	7.90	WINTER	STANDARD36826	HKBCF	P
26-Feb-18	NE LANTAU	2	9.42	WINTER	STANDARD36826	HKBCF	S
26-Feb-18	NE LANTAU	3	1.70	WINTER	STANDARD36826	HKBCF	S

Appendix II. HKBCF Chinese White Dolphin Sighting Database (December 2017 - February 2018)

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

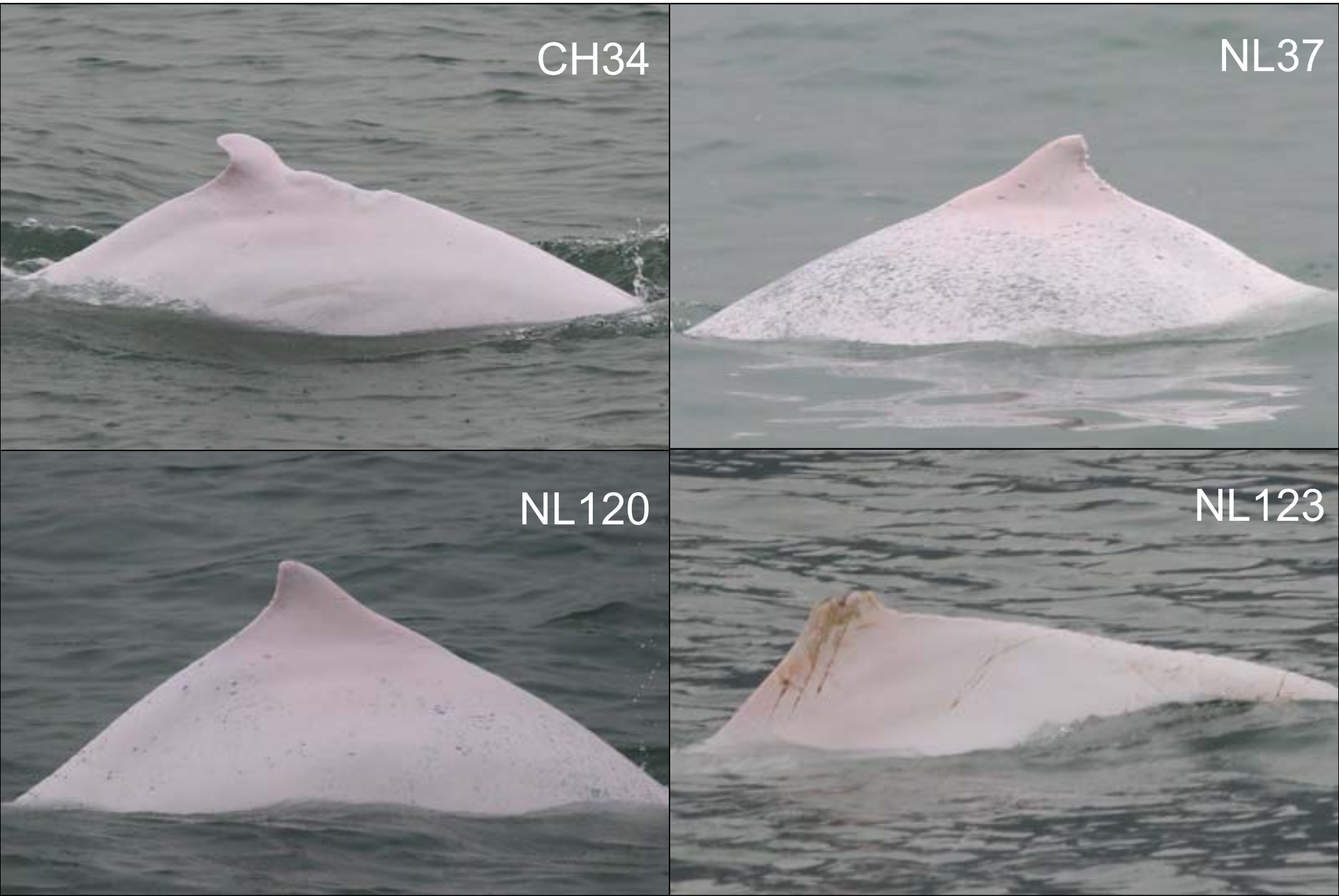
DATE	STG #	TIME	HRD SZ	AREA	BEAU	PSD	EFFORT	TYPE	NORTHING	EASTING	SEASON	BOAT ASSOC.	P/S
1-Dec-17	1	1125	9	NW LANTAU	2	1147	ON	HKBCF	829998	804640	WINTER	NONE	P
9-Jan-18	1	1401	5	NW LANTAU	3	169	ON	HKBCF	824554	808491	WINTER	NONE	P
19-Jan-18	1	1153	7	NW LANTAU	2	13	ON	HKBCF	828468	805481	WINTER	NONE	P
19-Jan-18	2	1316	2	NW LANTAU	2	ND	OFF	HKBCF	815126	804723	WINTER	NONE	
26-Jan-18	1	1023	2	NW LANTAU	2	664	ON	HKBCF	818138	804585	WINTER	NONE	P
26-Jan-18	2	1152	3	NW LANTAU	2	293	ON	HKBCF	827414	806509	WINTER	NONE	P
1-Feb-18	1	1014	1	NW LANTAU	3	48	ON	HKBCF	817428	805490	WINTER	NONE	P
1-Feb-18	2	1055	2	NW LANTAU	3	198	ON	HKBCF	826509	805385	WINTER	NONE	P
1-Feb-18	3	1244	7	NW LANTAU	2	285	ON	HKBCF	821568	812236	WINTER	NONE	S
1-Feb-18	4	1546	5	NE LANTAU	2	474	ON	HKBCF	819680	816324	WINTER	NONE	P
6-Feb-18	1	1113	3	NW LANTAU	4	785	ON	HKBCF	829655	804660	WINTER	NONE	P
6-Feb-18	2	1230	2	NW LANTAU	4	24	ON	HKBCF	824797	808482	WINTER	NONE	P
6-Feb-18	3	1310	3	NW LANTAU	2	36	ON	HKBCF	825038	810171	WINTER	NONE	S
13-Feb-18	1	1138	5	NW LANTAU	2	385	ON	HKBCF	822886	806284	WINTER	NONE	P
13-Feb-18	2	1220	7	NW LANTAU	2	467	ON	HKBCF	829595	806884	WINTER	NONE	P
13-Feb-18	3	1302	5	NW LANTAU	2	209	ON	HKBCF	828282	804688	WINTER	NONE	P
13-Feb-18	4	1342	2	NW LANTAU	2	398	ON	HKBCF	819567	804567	WINTER	NONE	P
13-Feb-18	5	1404	1	NW LANTAU	2	799	ON	HKBCF	815702	804693	WINTER	NONE	S
26-Feb-18	1	1015	1	NW LANTAU	2	92	ON	HKBCF	815667	805394	WINTER	NONE	P
26-Feb-18	2	1030	1	NW LANTAU	2	15	ON	HKBCF	818369	805378	WINTER	NONE	P

Appendix III. Individual dolphins identified during HKBCF monitoring surveys in December 2017 - February 2018

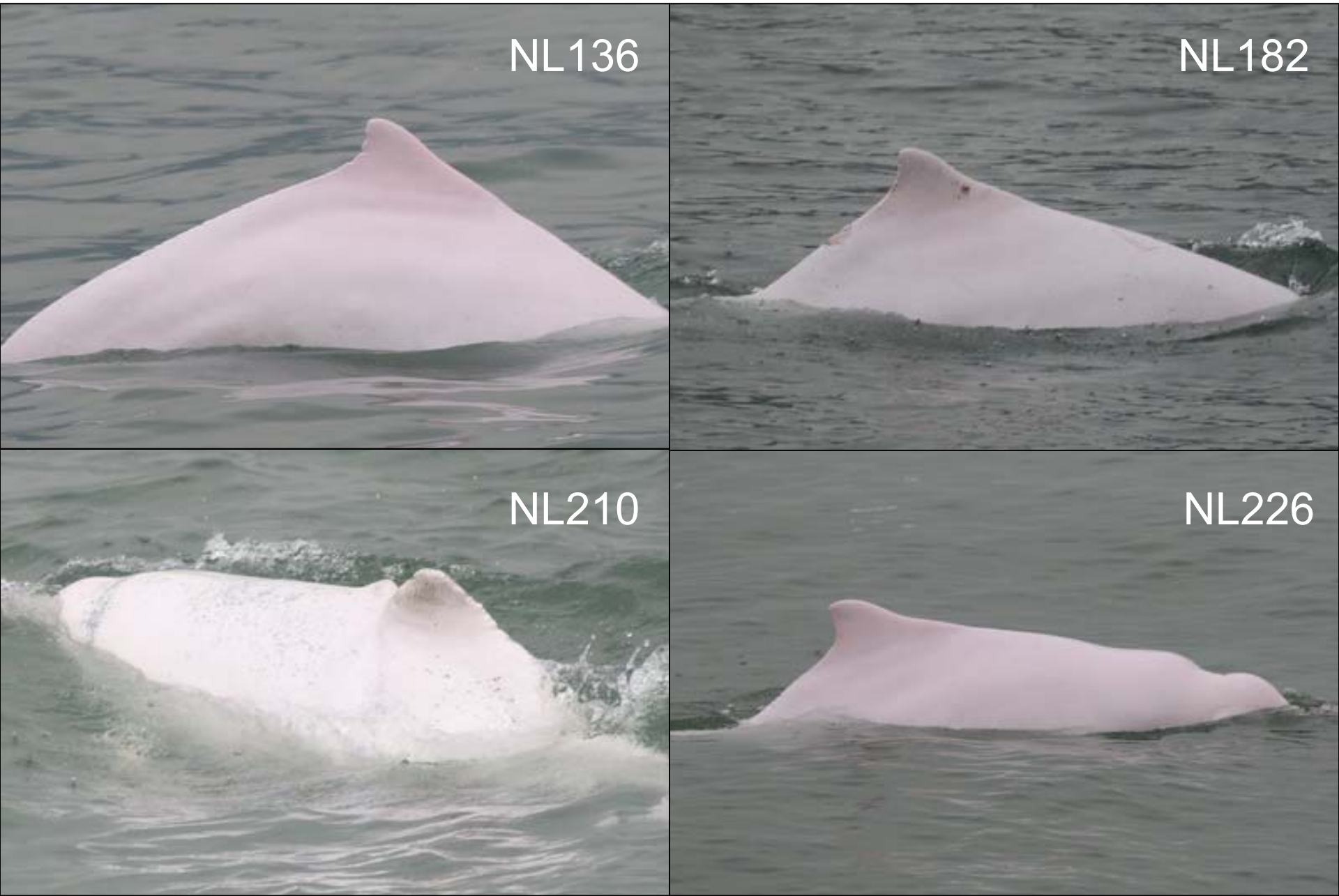
ID#	DATE	STG#	AREA
CH34	01/12/17	1	NW LANTAU
	19/01/18	1	NW LANTAU
	26/01/18	2	NW LANTAU
	13/02/18	2	NW LANTAU
	13/02/18	3	NW LANTAU
NL37	01/02/18	3	NW LANTAU
	01/02/18	4	NE LANTAU
NL120	09/01/18	1	NW LANTAU
	19/01/18	1	NW LANTAU
	01/02/18	3	NW LANTAU
	01/02/18	4	NE LANTAU
NL123	01/02/18	3	NW LANTAU
	01/02/18	4	NE LANTAU
NL136	19/01/18	1	NW LANTAU
	01/02/18	3	NW LANTAU
	01/02/18	4	NE LANTAU
	06/02/18	2	NW LANTAU
	06/02/18	3	NW LANTAU
	13/02/18	2	NW LANTAU
	13/02/18	3	NW LANTAU
NL182	19/01/18	1	NW LANTAU
	06/02/18	2	NW LANTAU
	13/02/18	2	NW LANTAU
	13/02/18	3	NW LANTAU
NL210	01/12/17	1	NW LANTAU
	26/01/18	2	NW LANTAU

ID#	DATE	STG#	AREA
NL226	09/01/18	1	NW LANTAU
	01/02/18	3	NW LANTAU
	01/02/18	4	NE LANTAU
NL233	01/12/17	1	NW LANTAU
NL261	19/01/18	1	NW LANTAU
	13/02/18	2	NW LANTAU
	13/02/18	3	NW LANTAU
NL272	19/01/18	1	NW LANTAU
	13/02/18	2	NW LANTAU
NL280	01/12/17	1	NW LANTAU
NL295	09/01/18	1	NW LANTAU
NL296	09/01/18	1	NW LANTAU
NL317	01/12/17	1	NW LANTAU
NL320	19/01/18	1	NW LANTAU
NL328	26/01/18	2	NW LANTAU
NL329	01/12/17	1	NW LANTAU
WL145	26/01/18	1	NW LANTAU
WL167	13/02/18	1	NW LANTAU
WL179	13/02/18	1	NW LANTAU
WL241	19/01/18	2	NW LANTAU
WL243	19/01/18	2	NW LANTAU
	13/02/18	1	NW LANTAU
	26/02/18	1	NW LANTAU
WL281	01/02/18	2	NW LANTAU
WL283	01/02/18	2	NW LANTAU
WL291	13/02/18	1	NW LANTAU

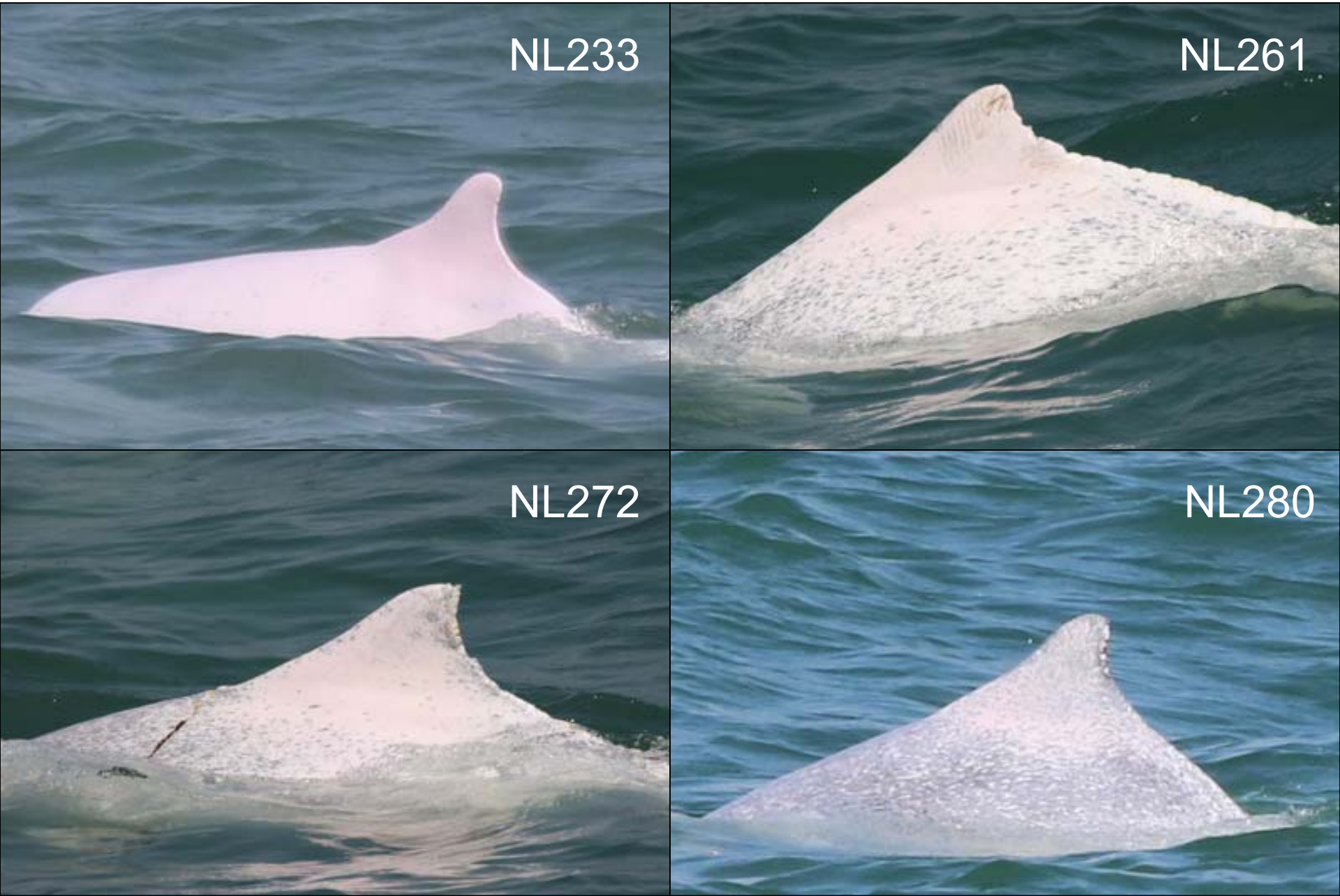
Appendix IV. Twenty-six individual dolphins that were identified during December 2017 to February 2018 under HKBCF impact phase monitoring surveys



Appendix IV. (cont'd)

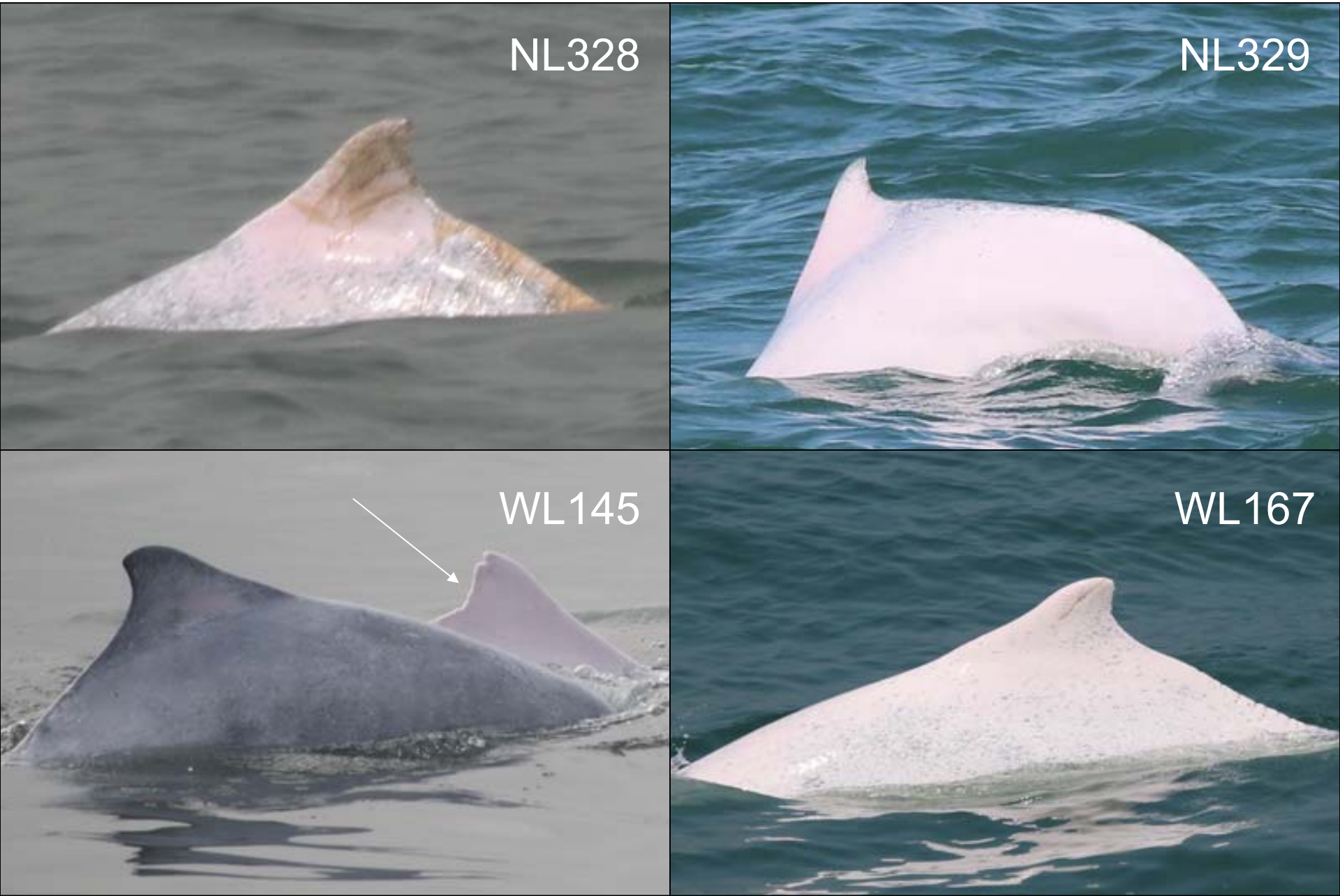


Appendix IV. (cont'd)



Appendix IV. (cont'd)

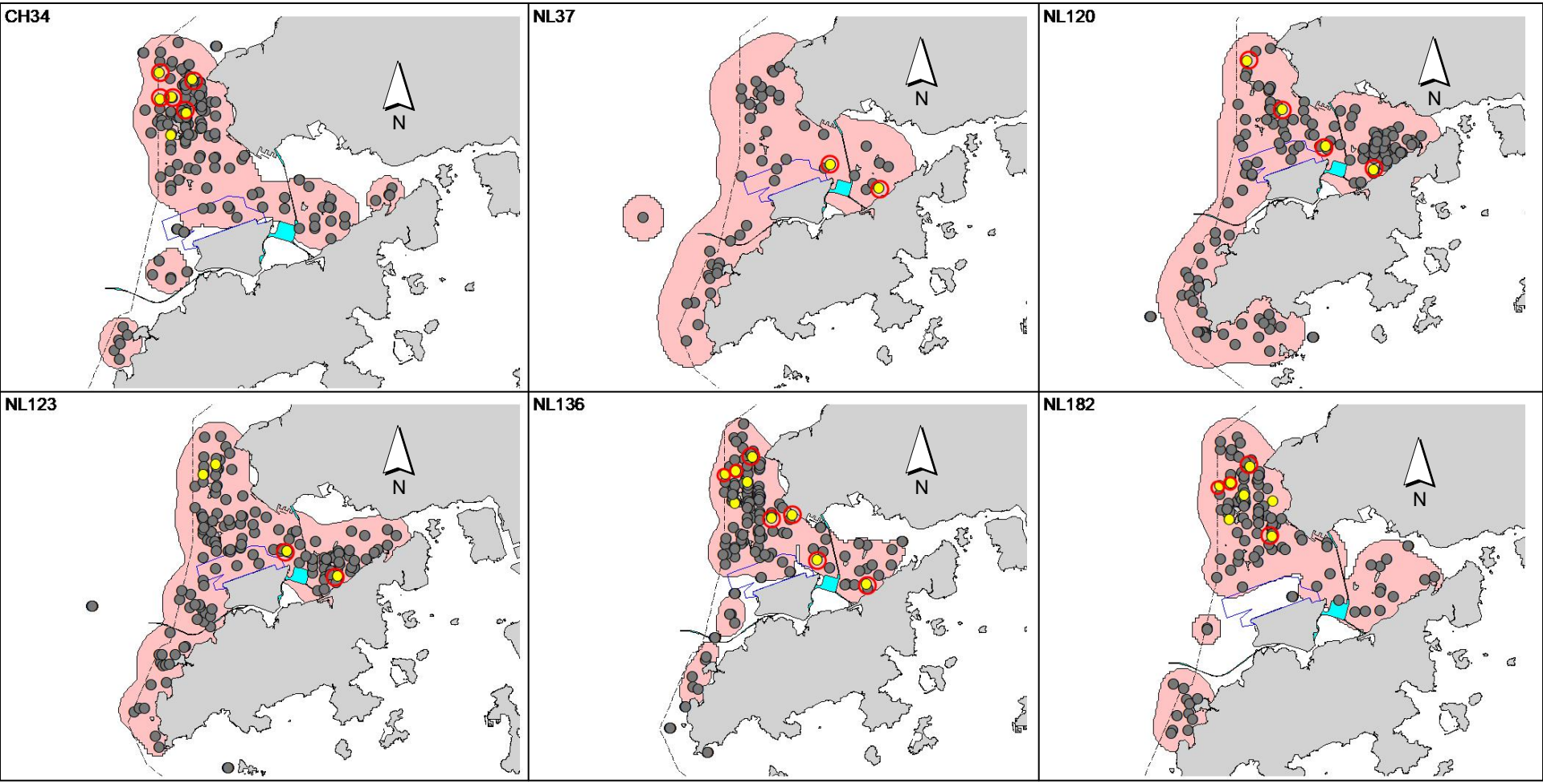
Appendix IV. (cont'd)



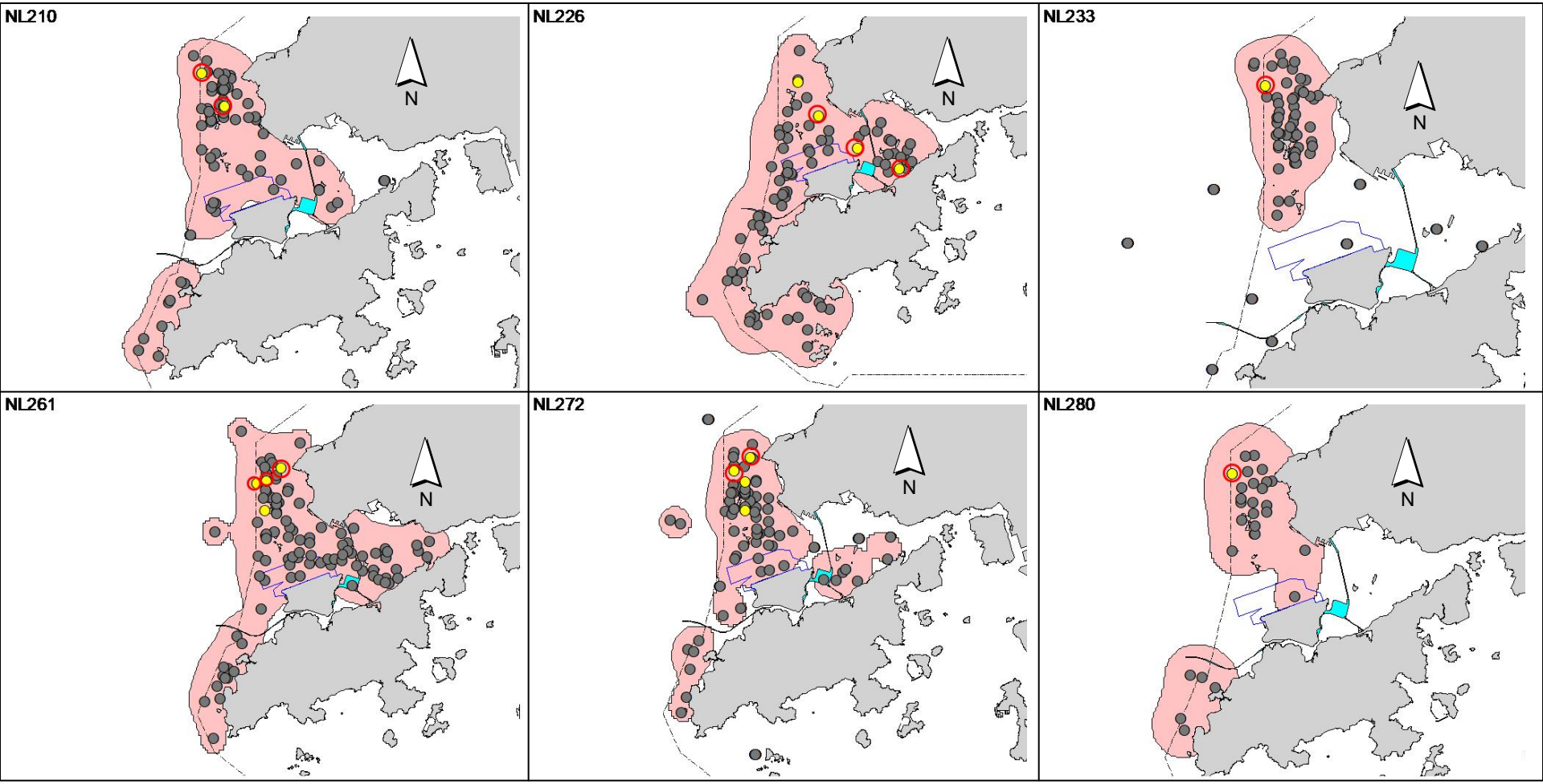
Appendix IV. (cont'd)

Appendix IV. (cont'd)

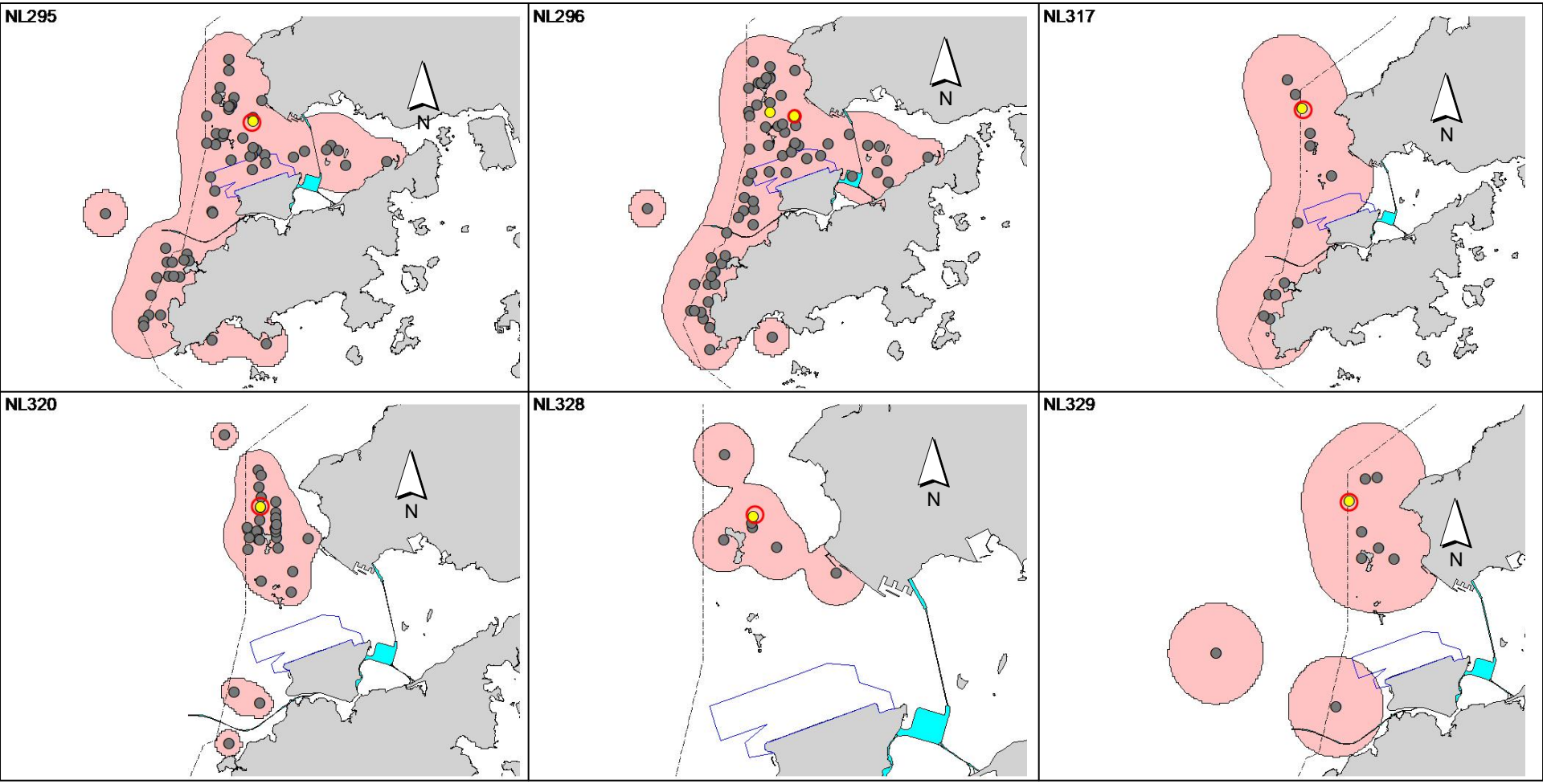
Appendix V. Ranging patterns (95% kernel ranges) of 26 individual dolphins that were sighted during HKBCF impact phase monitoring period (note: yellow dots with red circles indicate sightings made in December 2017-February 2018 during HKBCF monitoring surveys; other yellow dots indicate the ones made during HKLR03 & HKLR09 monitoring surveys)



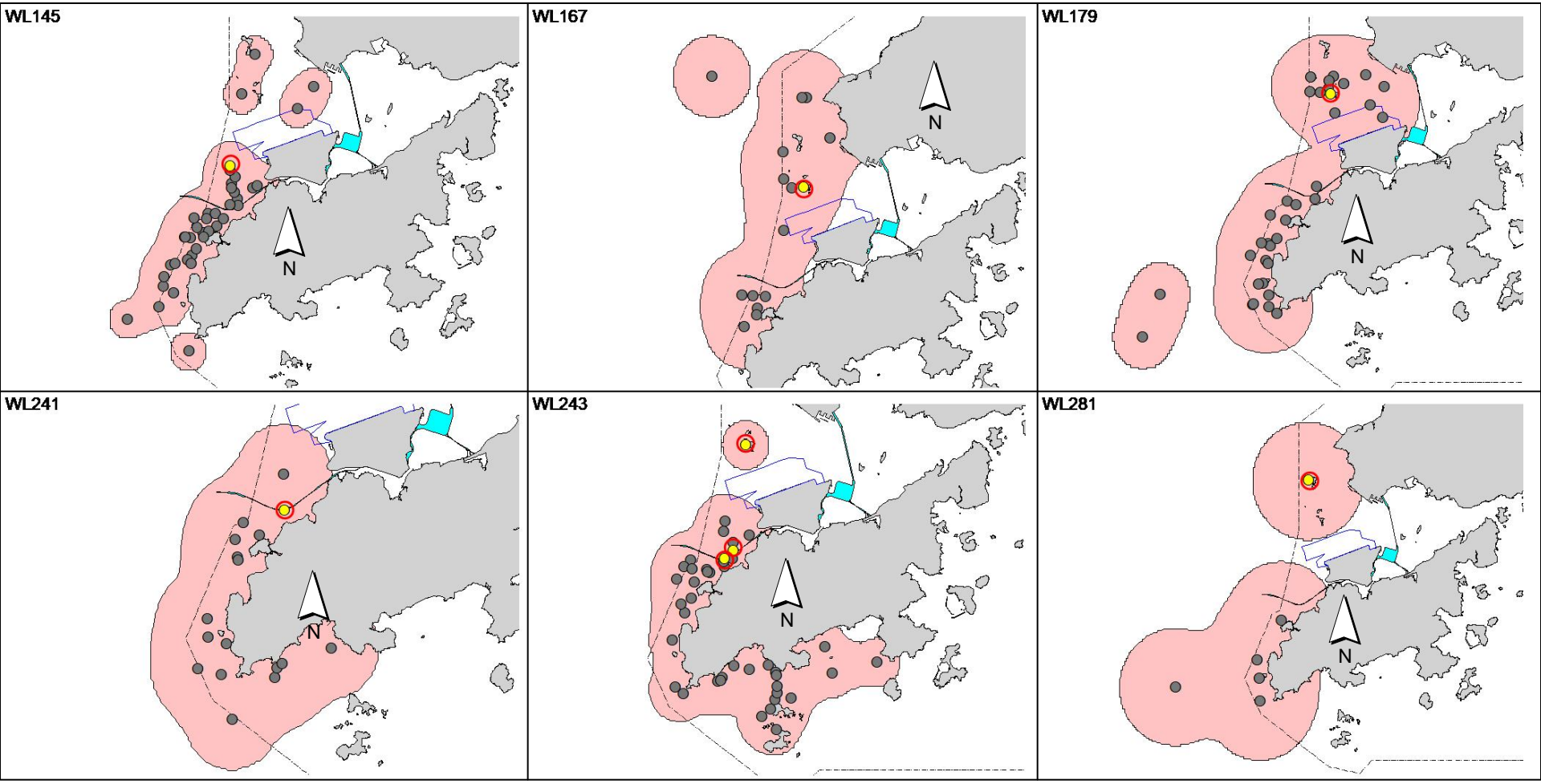
Appendix V. (cont'd)



Appendix V. (cont'd)



Appendix V. (cont'd)



Appendix V. (cont'd)