MOTT MACDONALD

Ramboll Hong Kong Limited
21st Floor, BEA Harbour View Centre
56 Gloucester Road
Wan Chai, Hong Kong

**Attn:**
**Mr. Manson Yeung – Independent Environmental Checker**

**Contract No. HY/2013/04 Hong Kong-Zhuhai-Macao Bridge (HZMB)**
**Hong Kong Boundary Crossing Facilities – Infrastructure Works Stage II (Southern Portion)**

**Final EM&A Review Report (Revision 0)**

**Our Reference**
TC/GC/al/T355861/02/02/L156

3/F International Trade Tower
348 Kwun Tong Road
Kowloon
Hong Kong

T +852 2828 5757
F +852 2827 1823
mottmac.hk

17 September 2020
**By Email**

Dear Sir,

In accordance with Section 16.5 of the updated EM&A Manual for Hong Kong Boundary Crossing Facilities (Version 1.0) covering the captioned contract, we are pleased to submit the certified Final EM&A Review Report (Revision 0) for your verification.

Yours faithfully
For MOTT MACDONALD HONG KONG LIMITED

Gary Chow
Environmental Team Leader

Encl.

cc.
AECOM – Mr. Peter Lee (By Email)
China State Construction Engineering (Hong Kong) Ltd. – Mr. Jason Chung / Mr. Xavier Lam (By Email)

Ref.: HYDHZMBEEM00_0_8206L.20

18 September 2020

By Fax (3748 8900) and By Post

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

Attention: Mr. Peter Lee

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/2013/04**
**HZMB HKBCF – Infrastructure Works Stage II (Southern Portion)**
**Final Environmental Monitoring & Audit Review Report**

Reference is made to the Environmental Team's submission of the Final EM&A Review Report certified by the ET Leader (ET's ref.: "TC/GC/al/T355861/02/02/L156" dated 17 September 2020) and provided to us via e-mail on 17 September 2020.

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

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

Manson Yeung
Independent Environmental Checker
HZMB HKBCF

| | | | |
|---|---|---|---|
| c.c. | HyD | Mr. Andy Ho | (By Fax: 3188 6614) |
| | HyD | Mr. Harry Louie | (By Fax: 3188 6614) |
| | MMHK | Mr. Gary Chow | (By Fax: 2827 1823) |
| | CSCE | Mr. Jason Chung | (By Fax: 2459 4336) |

Internal: DY, YH, ENPO Site

MOTT MACDONALD

# Contract No. HY/2013/04 HZMB HKBCF – Infrastructure Works Stage II (Southern Portion)

## Final EM&A Review Report

September 2020

China State Construction Engineering (Hong Kong) Limited

**Information class: Standard**

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## Figures



## Appendices



## Tables

# Executive summary

This Final Environmental Monitoring and Audit (EM&A) Review Report is prepared for Contract No. HY/2013/04 "Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Infrastructure Works Stage II (Southern Portion)" (hereafter referred to as "the Contract") for the Highways Department of Hong Kong Special Administrative Region (HKSAR). The Contract was awarded to China State Construction Engineering (Hong Kong) Limited (hereafter referred to as "the Contractor") and Mott MacDonald Hong Kong Limited (MMHK) was appointed as the Environmental Team (ET) by the Contractor.

The Contract is part of the "Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities" (HZMB HKBCF) Project which is a "Designated Project" under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance (Cap. 499) and for which an EIA Report (Register No. AEIAR-145/2009) was prepared and approved. The current Environmental Permit (EP) for HKBCF, namely No. EP-353/2009/K, was issued on 11 April 2016. These documents are available through the EIA Ordinance Register. Commencement of the Contract took place on 13 March 2015 and the construction works commenced on 13 July 2015.

Mott MacDonald Hong Kong Limited was 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 (Version 1.0) (hereafter referred to as "the Updated EM&A Manual") and provide environmental team services for the Contract.

The proposal for termination of the construction phase EM&A programme for this Contract including weekly site audits was certified by the ET Leader on 6 March 2020, verified by the IEC on 9 March 2020, approved by EPD on 9 April 2020 and implemented on 20 April 2020.

Furthermore, upon completion of all marine-based construction activities, a post-project monitoring exercise on water quality was carried out for 4 weeks during May 2019 in the same manner as the Baseline monitoring. Subsequently, an impact operational phase monitoring exercise on water quality was carried out monthly during the first year of Project operation at all designated monitoring stations including control stations, commencing in June 2019 and concluding in May 2020.

This is the Final EM&A Review Report submitted under Section 16.5 of the Updated EM&A Manual which summarises the findings on the EM&A programme described above during the period from 13 July 2015 to 31 May 2020 (the "reporting period").

**Breaches of Action and Limit Levels**

During the reporting period, the Environmental Team of this Contract was responsible for the reporting of environmental exceedances under the HZMB HKBCF Project from 1 October 2018 to 31 January 2020 inclusive. A summary of these environmental exceedances as recorded and reported by the Environmental Team of this Contract are listed below:

| Environmental Monitoring | Parameters | Action Level | Limit Level |
|---|---|---|---|
| Air Quality | 1-hour TSP | 0 | 0 |
| | 24-hour TSP | 4 | 0 |
| Noise | $L_{eq\ (30\ min)}$ | 0 | 0 |

| Environmental Monitoring | Parameters | Action Level | Limit Level |
|---|---|---|---|
| Water Quality | Suspended Solids (SS) | 11 | 1 |
| | Turbidity | 1 | 0 |
| | Dissolved Oxygen (DO) | 0 | 0 |
| Chinese White Dolphin | - | 0 | 2 |

The ET of this Contract conducted investigations and the findings are summarised in this report.

After investigations by ET, it was concluded that the air quality exceedances were not related to the Contract and the water quality exceedances were not related to the HZMB HKBCF project. Furthermore, after investigation of the impact dolphin monitoring exceedances, 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 that the contribution of impacts due to the HZMB HKBCF project as a whole (or individual contracts) cannot be quantified nor separate from the other stress factors.

**Implementation of Mitigation Measures**

Weekly environmental site inspections were carried out during the reporting period to confirm the implementation measures undertaken by the Contractor. Potential environmental impacts due to the construction activities, including air quality, noise, water quality, marine ecology, waste management, land contamination, and landscape and visual were monitored or reviewed.

**Record of Complaints**

There were 12 complaints received in relation to the environmental impact for this Contract during the reporting period.

**Notifications of Summons and Successful Prosecutions**

There were no notifications of summons or prosecutions received under this Contract during the reporting period.

# 1 Background

On 13 March 2015, Mott MacDonald Hong Kong Limited (MMHK) was commissioned by China State Construction Engineering (Hong Kong) Limited (also referred to as "the Contractor") to undertake the Environmental Team (ET) services (including environmental monitoring and audit (EM&A)) for Contract No. HY/2013/04 "Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Infrastructure Works Stage II (Southern Portion)" ("the Contract") for the Highways Department of Hong Kong Special Administrative Region (HKSAR).

The Contract is part of the "Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities" (HZMB HKBCF) Project which is a "Designated Project" under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance (Cap. 499) and for which an EIA Report (Register No. AEIAR-145/2009) was prepared and approved. The current Environmental Permit (EP) for HKBCF, namely No. EP-353/2009/K, was issued on 11 April 2016. These documents are available through the EIA Ordinance Register. Commencement of the Contract took place on 13 March 2015 and the construction works commenced on 13 July 2015. The works areas of the contract are shown in **Appendix A**.

The EM&A programme undertaken and reported by this Contract consists of the following:

| Monitoring Parameter | Phase | Period reported by this Contract |
|---|---|---|
| Air (1-hour TSP) | Construction | 1 Oct 2018 – 31 Jan 2020 (AMS2, AMS3C & AMS7B)(A1)(A2)(A3) |
| Air (24-hour TSP) | Construction | 1 Oct 2018 – 31 Jan 2020 (AMS2, AMS3C & AMS7B)(A1)(A2)(A3) |
| Noise | Construction | 1 Oct 2018 – 31 Jan 2020 (NMS2 & NMS3C)(N1)(N2)(N3) |
| Water Quality | Construction | 1 Oct 2018 – 26 Nov 2018(W1)<br>3 – 14 Dec 2018(W2)<br>2 – 4 Jan 2019(W3)(W4) |
| | Post-construction | 1 – 31 May 2019 |
| | Operational (first year) | 1 Jun 2019 – 31 May 2020 |
| Chinese White Dolphin | Construction | 1 Oct 2018 – 28 Feb 2019(CWD1) |
| | Post-construction | 1 Mar 2019 – 29 Feb 2020 |
| Landscape and Visual | Establishment Works | 24 Feb 2019 – 23 Oct 2019 (HY/2013/01, HY/2013/03 & HY/2014/05)<br>20 Feb 2019 – 4 Oct 2019 (HY/2013/02) |
| Weekly Environmental Site Inspections | Construction | 13 Jul 2015 – 20 Apr 2020 |

Remark:

(A1) The remaining air quality monitoring works at AMS2, AMS3C and AMS7B under this Contract were suspended from 1 February 2020. The ET of Contract No. HY/2019/01 "HZMB HKBCF – Phase 2 and Other Works" is required and continues the full implementation of environmental air quality monitoring commencing on 1 February 2020.

(A2) The air quality monitoring station AMS6 is covered by Contract No. HY/2011/03 "Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road (HZMB HKLR) – Section between Scenic Hill and HKBCF" during the reporting period.

(A3) Besides the abovementioned period reported under this Contract, the other contracts responsible for reporting air quality monitoring results during the reporting period are as follows:

AMS2: HY/2010/02 (Jul 2015 – Aug 2017), HY/2013/01 (Sep 2017 – Sep 2018), HY/2019/01 (Feb 2020 – May 2020)

AMS3B: HY/2010/02 (Jul 2015 – Aug 2017), HY/2013/01 (Sep 2017 – 15 Aug 2018)

AMS3C: HY/2019/01 (Feb 2020 – May 2020)

AMS6: HY/2011/03 (Jul 2015 – May 2020)

AMS7: HY/2010/02 (Jan 2016 – Jan 2018)

AMS7A: HY/2010/02 (Jul 2015 – Dec 2015)

AMS7B: HY/2010/02 (Jan 2016 – Aug 2017), HY/2013/01 (Sep 2017 – Sep 2018), HY/2019/01 (Feb 2020 – May 2020)

(N1) The remaining noise monitoring works at NMS2 and NMS3C under this Contract were suspended from 1 February 2020. The ET of Contract No. HY/2019/01 "HZMB HKBCF – Phase 2 and Other Works" is required and continues the full implementation of environmental noise monitoring commencing on 1 February 2020.

(N2) A proposal to terminate impact monitoring for noise at NMS2 and NMS3C was justified by the ET Leader of this Contract and verified by the IEC on 13 August 2019, and approved by EPD on 3 September 2019. Therefore, the last noise monitoring event at NMS2 and NMS3C to be reported under this Contract was conducted on 2 September 2019.

(N3) Besides the abovementioned period reported under this Contract, the other contracts responsible for reporting construction noise monitoring results during the reporting period are as follows:

NMS2: HY/2010/02 (Jul 2015 – Aug 2017), HY/2013/01 (Sep 2017 – Sep 2018), HY/2019/01 (Feb 2020 – May 2020)

NMS3B: HY/2010/02 (Jul 2015 – Aug 2017), HY/2013/01 (Sep 2017 – 15 Aug 2018)

NMS3C: HY/2013/01 (20 Aug 2018 – 30 Sep 2018), HY/2019/01 (Feb 2020 – May 2020)

(W1) A proposal by ET to temporarily suspend the water quality monitoring under the EM&A programme during a scheduled period of no marine works under HZMB HKBCF was verified by IEC on 26 October 2018 and approved by EPD on 21 November 2018. Subsequently, the water quality monitoring programme was temporarily suspended by ET after completion of water quality monitoring on 26 November 2018.

(W2) The water quality monitoring programme was resumed on 3 December 2018 to align with the Contractor's tentative schedule of marine works, and again temporarily suspended after completion of water quality monitoring on 14 December 2018 after the Contractor confirmed that no marine works were scheduled for the remainder of the reporting month.

(W3) The water quality monitoring programme was resumed on 2 January 2019 to align with the Contractor's tentative schedule of marine works and temporarily suspended at the completion of water quality monitoring on 4 January 2019 after the Contractor confirmed that marine works in the form of removal of the silt curtain was completed.

(W4) Besides the abovementioned periods reported under this Contract, the other contracts responsible for reporting water quality monitoring results during the reporting period are as follows:

HY/2010/02 (Jul 2015 – Aug 2017)

HY/2013/01 (Sep 2017 – Sep 2018)

(CWD1) Besides the abovementioned periods reported under this Contract, the other contracts responsible for reporting dolphin monitoring results during the reporting period are as follows:

HY/2010/02 (Jul 2015 – Aug 2017)

HY/2013/01 (Sep 2017 – Sep 2018)

The termination of the construction phase EM&A programme for this Contract including weekly site audits was certified by the ET Leader on 6 March 2020, verified by the IEC on 9 March 2020, approved by EPD on 9 April 2020 and implemented on 20 April 2020.

For water quality, upon completion of all marine-based construction activities, a post-project monitoring exercise was carried out for 4 weeks during May 2019 in the same manner as the Baseline monitoring. Subsequently, an impact operational phase monitoring exercise on water quality was carried out monthly during the first year of Project operation at all designated monitoring stations including control stations, commencing in June 2019 and concluding in May 2020.

This is the Final EM&A Review Report which summarises the findings on the EM&A programme described above during the period from 13 July 2015 to 31 May 2020 (the "reporting period"). The purpose of this report is to summarise the findings in the EM&A programme of the Contract

over the reporting period and was prepared according to the requirements under Section 16.5 of the Updated EM&A Manual.

The Highways Department of HKSAR, the Contractor and MMHK consent to the requirements under the current EP for HZMB HKBCF to submit EM&A reports to the Environmental Protection Department (EPD) for public inspection.

# 2 Project Organisation

The organisation chart and lines of communication with respect to the on-site environmental management structure, and the contact information of the key personnel as of the end of the reporting period, are shown in **Appendix B** and **Table 2.1** respectively.

**Table 2.1: Contact Information of Key Personnel**

| Party | Position | Name | Telephone | Fax |
|---|---|---|---|---|
| Engineer or Engineer's Representative (AECOM Asia Co. Ltd.) | Senior Resident Engineer | Peter Lee | 3958 7465 | 3748 8900 |
| Environmental Project Office / Independent Environmental Checker (Ramboll Hong Kong Limited) | Environmental Project Office Leader | Y H Hui | 3465 2888 | 3465 2899 |
| | Independent Environmental Checker | Manson Yeung | 9700 6767 | 3465 2899 |
| | Environmental Site Supervisor | K C Chan | 6410 0425 | 3465 2899 |
| Contractor (China State Construction Engineering (Hong Kong) Limited) | Site Agent | Jason Chung | 9127 8369 | 2459 4336 |
| | Environmental Officer | Xavier Lam | 9493 2944 | 2459 4336 |
| Environmental Team (Mott MacDonald Hong Kong Limited) | Environmental Team Leader | Gary Chow | 2828 5874 | 2827 1823 |
| 24-hour Complaint Hotline | - | - | 5236 7111 | - |

# 3 Works Undertaken in the Reporting Period

During the reporting period, construction works of the Project undertaken included:

- Construction of vehicular bridge and at-grade roads at the southern portion of Hong Kong Boundary Crossing Facilities;
- Construction of associated street lighting, street furniture, road marking, road signage, box culverts and outfalls, drainage, sewerage, fresh water and flushing water supply, irrigation, landscape, electrical and mechanical (E&M), utilities and services works;
- Provisioning of civil engineering works and power supply for Traffic Control and Surveillance System (TCSS); and
- Other works in accordance with the Contract.

The Construction Works Programme of the Project is provided in **Appendix C**.

# 4 Summary of EM&A Requirements

The EM&A programme requires environmental monitoring of air quality, noise, water quality, Chinese White Dolphin, and landscape and visual as specified in the Updated EM&A Manual. From the list of proposed monitoring locations in the Updated EM&A Manual, the most representative and accessible options were identified and selected for the carrying out of baseline monitoring and impact monitoring for the required parameters.

A summary of impact EM&A requirements and parameters is presented **Table 4.1**.

**Table 4.2** to **Table 4.7** describes the details of the monitoring stations and **Figures 1, 2, 3.1-3.3 and 4** show the locations of monitoring stations during the course of the reporting period.

**Table 4.1: Summary of Impact EM&A Requirements**

| Parameters | Descriptions | Remarks | Frequencies |
|---|---|---|---|
| Air Quality | 24-hour Total Suspended Particulates (TSP) | - | Once every 6 days |
| | 1-hour TSP | - | 3 times every 6 days |
| Noise | $L_{eq}$, $L_{90}$ & $L_{10}$ (30 min) | Daytime on normal weekdays (07:00-19:00 hrs) | Once every week (daytime on normal weekdays) |
| | $L_{eq}$, $L_{90}$ & $L_{10}$ (5 min) | Evening time on all days (19:00-23:00 hrs) and Holidays (including Sundays) during daytime and evening (07:00-23:00 hrs) | For restricted hours (outside daytime on normal weekdays), one set of measurement shall include at least 3 consecutive $L_{eq}$(5 mins) results. |
| | | All days during the night-time (23:00-07:00 hrs of the next day) | |
| Water Quality | • Depth, m<br>• Temperature, °C<br>• Salinity, ppt<br>• Dissolved Oxygen (DO), mg/L<br>• DO Saturation, %<br>• Turbidity, NTU<br>• pH<br>• Suspended Solids (SS), mg/L | No. of depths measured: 3 (1m below water surface, mid-depth and 1m above sea bed, except where the water depth is less than 6m, in which case the mid-depth station may be omitted. Should the water depth be less than 3m, only the mid-depth station will be monitored.) | Three times per week during mid-ebb and mid-flood tides (within ±1.75 hour of the predicted time) |
| Chinese White Dolphin | Vessel based surveys | Line-transect vessel survey method, following pre-set and fixed transect lines in the two areas defined by AFCD as: Northeast Lantau (NEL) survey area; and Northwest Lantau (NWL) survey area. | Two sets of systematic line-transect vessel surveys were conducted under the HKBCF dolphin monitoring programme for each month, to cover all transect lines in NWL and NEL survey areas twice. |
| Landscape and Visual | Construction Phase Audits | Checking of the contractor's operations during the construction period. | Bi-weekly |
| | Establishment Works | Checking of the planting works during the 12-month Establishment Period after completion of the construction works. | Every 2 months |

### Table 4.2: Construction Dust Monitoring Locations

| Identification No. | Location Description | Contract Responsible for Reporting on Dust Monitoring during the Reporting Period |
|---|---|---|
| AMS2 | Tung Chung Development Pier | HY/2010/02 (Jul 2015 – Aug 2017)<br>HY/2013/01 (Sep 2017 – Sep 2018)<br>HY/2013/04 (Oct 2018 – Jan 2020)<br>HY/2019/01 (Feb 2020 – May 2020) |
| AMS3B | Site Boundary of Site Office Area at Works Area WA2 | HY/2010/02 (Jul 2015 – Aug 2017)<br>HY/2013/01 (Sep 2017 – 15 Aug 2018) |
| AMS3C | Ying Tung Estate Market Rooftop | HY/2013/01 (20 Aug 2018 – 30 Sep 2018)<br>HY/2013/04 (Oct 2018 – Jan 2020)<br>HY/2019/01 (Feb 2020 – May 2020) |
| AMS6(1) | Dragonair/CNAC (Group) Building | HY/2011/03 (Jul 2015 – May 2020) |
| AMS7 | Hong Kong SkyCity Marriott Hotel | HY/2010/02 (Jan 2016 – Jan 2018) |
| AMS7A | Chu Kong Air-Sea Union Transportation Co. Ltd. | HY/2010/02 (Jul 2015 – Dec 2015) |
| AMS7B | 3RS Site Offices | HY/2010/02 (Jan 2016 – Aug 2017)<br>HY/2013/01 (Sep 2017 – Sep 2018)<br>HY/2013/04 (Oct 2018 – Jan 2020)<br>HY/2019/01 (Feb 2020 – May 2020) |

Remark: (1) The air quality monitoring station AMS6 is covered by Contract No. HY/2011/03 "Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road (HZMB HKLR) – Section between Scenic Hill and HKBCF" during the reporting period.

### Table 4.3: Construction Noise Monitoring Locations

| Identification No. | Location Description | Contract Responsible for Reporting on Noise Monitoring during the Reporting Period |
|---|---|---|
| NMS2 | Seaview Crescent | HY/2010/02 (Jul 2015 – Aug 2017)<br>HY/2013/01 (Sep 2017 – Sep 2018)<br>HY/2013/04 (Oct 2018 – Jan 2020)<br>HY/2019/01 (Feb 2020 – May 2020) |
| NMS3B(1) | Site Boundary of Site Office Area at Works Area WA2 | HY/2010/02 (Jul 2015 – Aug 2017)<br>HY/2013/01 (Sep 2017 – 15 Aug 2018) |
| NMS3C(1) | Ying Tung Estate Refuse Collection Point | HY/2013/01 (20 Aug 2018 – 30 Sep 2018)<br>HY/2013/04 (Oct 2018 – Jan 2020)<br>HY/2019/01 (Feb 2020 – May 2020) |

Remarks: (1) The Action and Limit Levels for schools is applied for this alternative monitoring location.

### Table 4.4: Construction Phase 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* (1) | Impact Station (Close to HKBCF construction site) | 812577 | 820670 |
| **IS10(N)# (1)** | **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$ (2) | Sensitive receivers (San Tau SSSI) | 810525 | 816456 |
| **SR3(N)% (2)** | **Sensitive receivers (San Tau SSSI)** | **810689** | **816591** |

| Station | Description | East | North |
|---|---|---|---|
| SR4(N) | Sensitive receivers (Tai Ho) | 814705 | 817859 |
| SR5* (1) | Sensitive receivers (Artificial Reef in NE Airport) | 811489 | 820455 |
| **SR5(N)# (1)** | **Sensitive receivers (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$ (2) | Sensitive receivers (Ma Wan FCZ) 1 | 823741 | 823495 |
| **SR10A(N)% (2)** | **Sensitive receivers (Ma Wan FCZ) 1** | **823644** | **823484** |
| SR10B(N)$ (1) | Sensitive receivers (Ma Wan FCZ) 2 | 823683 | 823187 |
| **SR10B(N2)# (1)** | **Sensitive receivers (Ma Wan FCZ) 2** | **823689** | **823159** |
| CS(Mf)3* (1) | Control Station | 809989 | 821117 |
| **CS(Mf)3(N)# (1)** | **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: (1) On 15 May 2017, IEC/ENPO notified ET of changes to the EM&A Programme regarding some water quality monitoring stations being conducted by Contract No. HY/2010/02. These changes were certified by the ETL of Contract No. HY/2010/02 and verified by the IEC on 24 March 2017, and approved by EPD on 12 May 2017. Three monitoring stations, namely IS10, SR5 and CS(Mf)3 (marked *), were replaced by IS10(N), SR5(N) and CS(Mf)3(N) respectively (marked #, shown in **bold red** font).

(2) On 27 December 2017, IEC/ENPO notified ET of changes to the EM&A Programme regarding some water quality monitoring stations being conducted by Contract No. HY/2013/01. These changes were justified by the ETL of Contract No. HY/2013/01 on 8 November 2017, verified by the IEC on 13 November 2017 and approved by EPD on 22 December 2017 for implementation with effect from the same date. Three monitoring stations, namely SR3, SR10A and SR10B(N) (marked $), were replaced by SR3(N), SR10A(N) and SR10B(N2) respectively (marked %, shown in **bold red** font).

When exceedance(s) at these stations were recorded by the ET of the Contract or referred by the other ET under the HZMB project to the Contract, the ET of the Contract carried out an investigation and findings were reported in the monthly EM&A Report.

**Table 4.5: Post-Construction 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 |
| **IS8(N)#** | **Impact Station (Close to HKBCF construction site)** | **814413** | **818570** |
| IS(Mf)9 | Impact Station (Close to HKBCF construction site) | 813273 | 818850 |
| 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 |
| **SR4(N2)#** | **Sensitive receivers (Tai Ho)** | **814688** | **817996** |
| SR5(N) | Sensitive receivers (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 |

| Station | Description | East | North |
|---|---|---|---|
| SR10B(N2) | Sensitive receivers (Ma Wan FCZ) 2 | 823689 | 823159 |
| 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 |

Remark: For the post-construction water quality programme, the ETL of this Contract proposed changes to the EM&A Programme regarding some water quality monitoring stations. These changes were justified by the ETL of this Contract on 30 April 2019, verified by the IEC on 2 May 2019 and submitted to EPD for record on 2 May 2019 for implementation with effect from 3 May 2019. Two monitoring stations, namely IS8 and SR4(N) (marked *), were replaced by IS8(N) and SR4(N2) respectively (marked #, shown in **bold red** font).

### Table 4.6: Impact Operational Phase Water Quality Monitoring Stations

| Station | Description | East | North |
|---|---|---|---|
| SR2(A) | Sensitive receivers (Sha Lo Wan) | 807810 | 817189 |
| SR3(N) | Sensitive receivers (San Tau SSSI) | 810689 | 816591 |
| CS2(A) | Control Station | 805232 | 818606 |
| CS(Mf)5 | Control Station | 817990 | 821129 |

### Table 4.7: Construction Phase Impact and Post-Construction Dolphin Monitoring Line Transect Co-ordinates (Provided by AFCD)

| Transect | HK Grid System | | Long Lat in WGS84 | |
|---|---|---|---|---|
| | X | Y | Long | Lat |
| 1# | 804671 | 815456 | 113.870287 | 22.277678 |
| | 804671 | 831404 | 113.869975 | 22.421696 |
| 2#^ | 805476 | 820800 | 113.877995 | 22.325951 |
| | 805476 | 826654 | 113.877882 | 22.378815 |
| 3^ | 806464 | 821150 | 114.030267 | 22.196697 |
| | 806464 | 822911 | 114.047344 | 22.196712 |
| 4^ | 807518 | 821500 | 114.033651 | 22.206219 |
| | 807518 | 829230 | 114.108618 | 22.206267 |
| 5^ | 808504 | 821850 | 114.037037 | 22.215126 |
| | 808504 | 828602 | 114.102523 | 22.215169 |
| 6^ | 809490 | 822150 | 114.039938 | 22.224033 |
| | 809490 | 825352 | 114.070995 | 22.224056 |
| 7#^ | 810499 | 822000 | 114.038474 | 22.233143 |
| | 810499 | 824613 | 114.063820 | 22.233163 |
| 8# | 811508 | 821123 | 113.936539 | 22.328966 |
| | 811508 | 824254 | 113.936486 | 22.357241 |
| 9# | 812516 | 821303 | 113.946320 | 22.330606 |
| | 812516 | 824254 | 113.946279 | 22.357255 |
| 10* | 813525 | 820827 | 113.956112 | 22.326321 |
| | 813525 | 824657 | 113.956066 | 22.360908 |
| 11# | 814556 | 818853 | 113.966155 | 22.304858 |
| | 814556 | 820992 | 113.966125 | 22.327820 |
| 12 | 815542 | 818807 | 113.975726 | 22.308109 |
| | 815542 | 824882 | 113.975647 | 22.362962 |

| Transect | HK Grid System | | Long Lat in WGS84 | |
|---|---|---|---|---|
| 13 | 816506 | 819480 | 113.985072 | 22.314192 |
| | 816506 | 824859 | 113.985005 | 22.362771 |
| 14 | 817537 | 820220 | 113.995070 | 22.320883 |
| | 817537 | 824613 | 113.995018 | 22.360556 |
| 15 | 818568 | 820735 | 114.005071 | 22.325550 |
| | 818568 | 824433 | 114.005030 | 22.358947 |
| 16 | 819532 | 821420 | 114.014420 | 22.331747 |
| | 819532 | 824209 | 114.014390 | 22.356933 |
| 17 | 820451 | 822125 | 114.023333 | 22.338117 |
| | 820451 | 823671 | 114.023317 | 22.352084 |
| 18 | 821504 | 822371 | 114.033556 | 22.340353 |
| | 821504 | 823761 | 114.033544 | 22.352903 |
| 19 | 822513 | 823268 | 114.043340 | 22.348458 |
| | 822513 | 824321 | 114.043331 | 22.357971 |
| 20 | 823477 | 823402 | 114.052695 | 22.349680 |
| | 823477 | 824613 | 114.052686 | 22.360610 |
| 21 | 805476 | 827081 | 113.877878 | 22.382668 |
| | 805476 | 830562 | 113.877811 | 22.414103 |
| 22 | 806464 | 824033 | 113.887520 | 22.355164 |
| | 806464 | 829598 | 113.887416 | 22.405423 |
| 23 | 814559 | 821739 | 113.966142 | 22.334574 |
| | 814559 | 824768 | 113.966101 | 22.361920 |
| 24^ | 805476 | 815900 | 113.979368 | 22.187721 |
| | 805476 | 819100 | 114.010398 | 22.187756 |

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 4 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, 2, 7, 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) ^ Due to marine works of the Expansion of Hong Kong International Airport into a Three-Runway System (3RS Project), the change of transect lines 2, 3, 4, 5, 6 and 7 and new transect line 24 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.

The approved EIA Report, which includes the Updated EM&A Manual, contained predictions on the resulting air quality, noise, water quality and Chinese White Dolphin impacts during construction and operation phases, which are normal practice in the course of conducting an EIA study under the Environmental Impact Assessment Ordinance (EIAO).

The Action and Limit Levels for air quality, noise, water quality and Chinese White Dolphin monitoring are shown in **Appendix D**. The Event and Action Plan for the abovementioned monitoring parameters, as well as landscape and visual, are shown in **Appendix E**.

# 5 Environmental Mitigation Measures

## 5.1 Introduction

The EM&A programme followed the recommended mitigation measures stipulated in the Updated EM&A Manual and EPs. The EM&A requirements of the environmental mitigation measures are provided in **Appendix F**. The Contractor is responsible for the implementation of these measures.

## 5.2 Site Inspection

In particular, the following mitigation measures were brought to attention during the site audits:

**Air Quality**

- Excavated dusty materials should be covered by impervious sheeting or sprayed with water to keep the entire surface wet.
- The haul roads should be sprayed with water to keep the entire road surface wet.
- Every vehicle should be washed to remove dusty materials from its body and wheels before leaving a construction site.
- Cement mixing area should be covered on top and 3 sides with impervious sheets.
- The load carried by vehicle should be covered by impervious sheeting to ensure no leakage of dusty materials from the vehicle.
- Vehicle speed within the construction sites should be maintained at 20 km/h or below.
- The heights from which fill materials are dropped should be controlled to a practical level to minimise the fugitive dust arising from unloading.
- Sufficient water spraying for dusty operation to suppress dust emission.
- Dusty materials shall be stored in a covered warehouse and the excess amount should be removed from the site.

**Noise**

- Machines and plant that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum.
- Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction works.
- Material stockpiles and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.

**Water Quality**

- Dusty materials shall be stored in a covered warehouse and the excess amount should be removed from the site.
- Sediment tanks of sufficient capacity, constructed from pre-formed individual cells of approximately 6 to 8 $m^3$ capacity, are recommended as a general mitigation measure which can be used for settling storm water prior to disposal.
- Water to be pumped out from trenches or foundation excavations shall be discharged into storm drains via silt removal facilities.

- Construction waste, debris and rubbish shall be properly collected, handled and disposed of to avoid water quality impacts.
- Particular attention shall be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes.
- All drainage facilities and erosion and sediment control structures shall be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rainstorms.
- Measures shall be taken to minimise the ingress of any site drainage into excavations.
- All vehicles and mechanical plant shall be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads.
- Channels, earth bunds or sand bag barriers shall be provided on site to direct storm water to silt removal facilities. The design of efficient silt removal facilities shall be based on the guidelines in Appendix A1 of ProPECC PN 1/94. Measures shall be taken to minimise the ingress of any site drainage into excavations.
- Slopes and stockpiles shall be covered to avoid the soil from being washed away during rainy days.
- The bentonite, grouting and cement materials shall only be delivered to the construction site when they are to be used.
- A temporary drainage channel shall be provided to divert any runoff away from the site.
- Construction and demolition materials shall not be deposited on public road.
- Drip trays shall be provided for the chemical containers to avoid chemical spillage.

**Waste Management**

- Construction solid waste, debris and rubbish on site shall be collected, handled and disposed of properly.
- Remove wastes in a timely manner.
- Chemical waste produced should be handled in accordance with the relevant guidelines and regulations.
- Handle and store wastes in a manner which ensures that they are held securely without loss or leakage, thereby minimising the potential for pollution.
- Control measures shall be taken at the stockpiling area to prevent the generation of dust and pollution of stormwater channels.
- Minimise windblown litter and dust during transportation by either covering trucks or transporting wastes in enclosed containers.
- Soil affected by oil leak should be removed as chemical waste.
- To minimize the potential for pollution, regular maintenance of construction plants should be implemented.

## 5.3 Landscape Establishment Monitoring

During the reporting period, bi-monthly landscape establishment monitoring for Contract Nos. HY/2013/01, HY/2013/02, HY/2013/03 and HY/2014/05 was conducted.

As coordinated between IEC and EPD, the monitoring reports for landscape establishment for Contract Nos. HY/2013/01 (for 24 Feb 2019 – 23 Oct 2019), HY/2013/02 (20 Feb 2019 – 4 Oct 2019), HY/2013/03 (for 24 Feb 2019 – 23 Oct 2019) and HY/2014/05 (24 Feb 2019 – 23 Oct 2019) were covered in the individual monthly and quarterly EM&A reports for this Contract which have already been submitted to EPD.

# 6 Status of Environmental Protection and Pollution Control Environmental Mitigation Measures

Weekly site inspections were carried out during the reporting period to confirm the implementation measures undertaken by the Contractor regarding air quality, noise, water quality, waste management, marine ecology, terrestrial ecology, and landscape and visual. Some of the key observations from site inspections during the reporting period are summarised below:

**Air Quality**

- Some dark smoke emission was observed from a construction plant.
- Dry haul road was observed.
- Open stockpile of C&D material was observed.
- Enhanced continuous water spray during each concrete breaking period was recommended.
- The Contractor was reminded to ensure that all NRMMs operated on-site are approved/exempted and affixed with requisite label, as applicable.
- A concrete-mixing area was operating without proper dust mitigation measures.
- Rock breaking works without provision of watering was observed.
- Stockpile of more than 20 bags of cement was observed without covering.
- Vehicles were observed leaving the site without wheel wash.
- Muddy trail was observed on public road near the site gate.
- The exposed works areas were observed dry and dusty.

**Noise**

- Panel door of a generator was open.

**Water Quality**

- Stagnant water pond following rainfall was observed.
- Some chemical containers were not stored in drip tray.
- Stagnant water was observed in drip tray.
- Silty water was observed immediately outside the perimeter of a silt curtain.
- Gaps were observed at the silt curtain.
- Leakage of site runoff was observed outside the silt curtain.
- The wetsep provided was not yet in operation.
- The silt curtains at Box Culvert C and D were disconnected from the coastal shoreline.
- Plastic pipes were observed directly connected to storm drain without passing thorugh Wetsep.

**Waste Management**

- Drip tray was not provided for chemical container.
- Oil stain on bare ground was observed.
- Stockpile of exposed excavated marine sediment was observed.
- Some loose general refuse was observed on the ground.
- Some general refuse bins were not properly closed.
- A full tank (waste skip) of general refuse without cover was observed.
- A stockpile of unsorted construction waste was observed.
- C&D materials mixed with general refuse were observed.
- Chemical containers without labelling was observed.
- A chemical waste storage area was observed damaged.
- Inert C&D material was observed mixing with non-inert C&D material in a waste skip.

# 7 Impact Monitoring Results

## 7.1 Summary of Monitoring Results

Impact monitoring for air quality and construction noise (during construction phase), water quality (during construction phase, post-construction phase and the first year of operational phase) and Chinese White Dolphin (during construction phase and post-construction phase) were undertaken in compliance with the Updated EM&A Manual during the reporting period, and the results of monitoring were included in the individual Monthly EM&A reports covering this reporting period which have been already submitted to EPD.

The number of monitoring events and exceedances recorded during the reporting period are presented in **Table 7.1**.

**Table 7.1: Summary of Monitoring Events and Exceedances reported by this Contract during the Reporting Period**

| Monitoring Parameter | Phase | Period reported by this Contract | No. of Monitoring Events reported by this Contract (Monitoring Locations) | No. of Action Level Exceedances | No. of Limit Level Exceedances |
|---|---|---|---|---|---|
| Air (1-hour TSP) | Construction | 1 Oct 2018 – 31 Jan 2020(A1) | 88 (AMS2) | 0 | 0 |
| | | 1 Oct 2018 – 31 Jan 2020(A1) | 87 (AMS3C) | 0 | 0 |
| | | 1 Oct 2018 – 31 Jan 2020(A1) | 87 (AMS7B) | 0 | 0 |
| Air (24-hour TSP) | Construction | 1 Oct 2018 – 31 Jan 2020(A1) | 88 (AMS2) | 0 | 0 |
| | | 1 Oct 2018 – 31 Jan 2020(A1) | 87 (AMS3C) | 1 | 0 |
| | | 1 Oct 2018 – 31 Jan 2020(A1) | 87 (AMS7B) | 3 | 0 |
| Noise | Construction | 1 Oct 2018 – 31 Jan 2020 (N1)(N2) | 49 (NMS2) | 0 | 0 |
| | | 1 Oct 2018 – 31 Jan 2020 (N1)(N2) | 49 (NMS3C) | 0 | 0 |
| Water Quality | Construction | 1 Oct 2018 – 26 Nov 2018(W1)<br>3 – 14 Dec 2018(W2)<br>2 – 4 Jan 2019(W3) | 33 (21 no. monitoring locations) | 1 (turbidity)<br>11 (SS) | 1 (SS) |
| | Post-construction | 1 – 31 May 2019 | 12 (21 no. monitoring locations) | N/A | N/A |
| | Operational (first year) | 1 Jun 2019 – 31 May 2020 | 12 (4 no. monitoring locations) | N/A | N/A |
| Chinese White Dolphin | Construction | 1 Oct 2018 – 28 Feb 2019 | 12 | 0 | 2 |
| | Post-construction | 1 Mar 2019 – 29 Feb 2020 | 24 | N/A | N/A |

Remarks:

(A1) The remaining air quality monitoring works at AMS2, AMS3C and AMS7B under this Contract were suspended from 1 February 2020. The ET of Contract No. HY/2019/01 "HZMB HKBCF – Phase 2 and Other Works" is required and continues the full implementation of environmental air quality monitoring commencing on 1 February 2020.

(N1) The remaining noise monitoring works at NMS2 and NMS3C under this Contract were suspended from 1 February 2020. The ET of Contract No. HY/2019/01 "HZMB HKBCF – Phase 2 and Other Works" is required and continues the full implementation of environmental noise monitoring commencing on 1 February 2020.

(N2) A proposal to terminate impact monitoring for noise at NMS2 and NMS3C was justified by the ET Leader of this Contract and verified by the IEC on 13 August 2019, and approved by EPD on 3 September 2019. Therefore, the last noise monitoring event at NMS2 and NMS3C to be reported under this Contract was conducted on 2 September 2019.

(W1) A proposal by ET to temporarily suspend the water quality monitoring under the EM&A programme during a scheduled period of no marine works under HZMB HKBCF was verified by IEC on 26 October 2018 and approved by EPD on 21 November 2018. Subsequently, the water quality monitoring programme was temporarily suspended by ET after completion of water quality monitoring on 26 November 2018.

(W2) The water quality monitoring programme was resumed on 3 December 2018 to align with the Contractor's tentative schedule of marine works, and again temporarily suspended after completion of water quality monitoring on 14 December 2018 after the Contractor confirmed that no marine works were scheduled for the remainder of the reporting month.

(W3) The water quality monitoring programme was resumed on 2 January 2019 to align with the Contractor's tentative schedule of marine works and temporarily suspended at the completion of water quality monitoring on 4 January 2019 after the Contractor confirmed that marine works in the form of removal of the silt curtain was completed.

**Air Quality**

***AMS2, AMS3C and AMS7B***

All 1-hour TSP results recorded at AMS2, AMS3C and AMS7B by the ET of this Contract were below the Action and Limit Level during the reporting period.

A total of four Action Level exceedances of the 24-hour TSP were recorded and investigated by the ET of this Contract during the reporting period. It was concluded that these exceedances were not due to the Contract.

Construction phase air quality impacts from the Contract with respect to 1-hour and 24-hour TSP levels were compared to those predicted under the mitigated scenario in the approved EIA Report. From the impact monitoring results during the reporting period, the maximum 1-hour TSP levels were found to be less than those predicted in the approved EIA Report, while the maximum 24-hour TSP levels were found to be more than the predicted maximum levels.

Tables and graphical plots of the air quality monitoring results recorded by the ET of this Contract during this reporting period were included in the Monthly EM&A Reports between October 2018 and January 2020 which have been already submitted. A graphical summary of the monitoring results is presented in **Appendix G**.

***AMS6***

The monitoring results for AMS6 are reported in the monthly EM&A Reports prepared for Contract No. HY/2011/03.

**Noise**

All noise monitoring results recorded by the ET of this Contract were below the Limit Level during the reporting period. Also, since no documented noise complaint was received from any one of the sensitive receivers during the reporting period, there was no Action Level exceedance.

Construction phase noise impacts from the Contract were found to be less than those predicted in the approved EIA Report, based on the noise impact monitoring results during the reporting period.

Tables and graphical plots of the noise monitoring results recorded by the ET of this Contract during this reporting period were included in the Monthly EM&A Reports between October 2018 and January 2020 which have been already submitted. A graphical summary of the monitoring results is presented in **Appendix G**.

### Water Quality

A total of 12 Action Limit exceedances (one for turbidity and 11 for suspended solids) and one Limit Level exceedance (suspended solids) for water quality were recorded and investigated by the ET of this Contract during the reporting period. Following investigations, it was concluded that the exceedances were not related to the HZMB HKBCF project. The investigation findings are presented in this report.

Tables and graphical plots of the water quality monitoring results recorded by the ET of this Contract (for the impact construction phase, post-construction phase and first year of impact operational phase) during this reporting period were included in the Monthly EM&A Reports between October 2018 and May 2020 which have been already submitted. A graphical summary of the monitoring results is presented in **Appendix G**.

### Chinese White Dolphin

Two Limit Level exceedances of impact dolphin monitoring were recorded and investigated by the ET of this Contract during the reporting period. Following investigations, 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 that the contribution of impacts due to the HZMB works as a whole (or individual contracts) cannot be quantified nor separate from the other stress factors. The investigation findings are presented in this report.

## 7.2 Weather Conditions

A summary of the weather conditions during the reporting period is presented in **Table 7.2**.

**Table 7.2: Summary of Weather Conditions during the Reporting Period**

| Month | Description |
|---|---|
| Jul 2015 | This month was warmer and cloudier than usual. With the increase in cloudiness, the total sunshine duration recorded was below normal. The month was also wetter than usual. |
| Aug 2015 | August 2015 was hotter and drier than usual. It was the seventh highest temperature for August on record. The monthly total rainfall recorded in August 2015 was only about one-third of the normal figure. |
| Sep 2015 | Marked by sunny and warm weather with below normal rainfall. |
| Oct 2015 | The weather was warmer and wetter than usual, mainly as a result of heavy rain brought by tropical cyclone Mujigae during the first week of the month. |
| Nov 2015 | Emerged as the warmest November in Hong Kong since records began in 1884. The month was also drier than usual. |
| Dec 2015 | Gloomier and wetter than usual. It was also warmer than usual. |
| Jan 2016 | Mainly fine and dry. Unseasonably warm weather was experienced in the first three weeks of the month and intense cold surge with freezing temperatures was recorded in the latter part of the month. |
| Feb 2016 | Cooler than usual with frequent replenishment of winter monsoon and drier than usual as affected by dry continental air. |
| Mar 2016 | Gloomy, rainy and humid with fluctuating temperatures as affected by the northeast monsoon and a humid maritime airstream competing for dominance over the south China coast. March was cooler and wetter than usual. |
| Apr 2016 | Exceptionally humid and gloomy with a maritime airstream trying to exert control over the coastal areas of Guangdong in a change of seasons. |
| May 2016 | Warmer and drier than usual. |
| Jun 2016 | Rainy with persistent hot weather as a trough of low pressure over southern China edged towards the coast of Guangdong. |
| Jul 2016 | Unusually hot and sunny under the influence of an active southerly airstream, and was much drier than usual with less rainfall. |
| Aug 2016 | Generally rainy with less sunshine than usual. |

| Month | Description |
|---|---|
| Sep 2016 | Gloomier than usual and the weather was unstable with a trough of low pressure lingering over the South China coast. |
| Oct 2016 | Marked by record-breaking high mean temperatures, despite a succession of cyclonic systems passing by in the vicinity of Hong Kong. |
| Nov 2016 | Warmer and much wetter than usual. |
| Dec 2016 | Warmer than usual and the northeast monsoon over the south China coastal areas remained relatively weak for most of the month. |
| Jan 2017 | Warmest January in Hong Kong with record-breaking monthly mean temperature. |
| Feb 2017 | Cooler than usual. |
| Mar 2017 | Marked by fluctuating temperatures and drier than usual weather. |
| Apr 2017 | Warmer than usual and also drier than usual despite stormy weather on a few days. |
| May 2017 | Wetter than usual due to the heavy rain on the morning of 24 May. |
| Jun 2017 | Overall warmer and wetter than usual as a result of the very hot weather in early June and the rainy spell in mid-June. |
| Jul 2017 | Cloudier with more rain than usual. |
| Aug 2017 | Hotter than normal, and the prolonged heat was relieved by the successive strikes of tropical cyclones Hato and Pakhar within a 5-day period during the latter part of the month. |
| Sep 2017 | Unseasonably hot, drier than usual. |
| Oct 2017 | Fine and unseasonably hot days in the first half of the month; a spell of fine weather then prevailed for the rest of the month as a continental airstream dominated over the south China coastal areas. |
| Nov 2017 | Gloomier and more humid than usual. |
| Dec 2017 | Sunny and bright. |
| Jan 2018 | Dominated by the northeast monsoon with two episodes of cold weather during the first half and towards the end of the month. Overall, the month was slightly cooler more rainy than usual. |
| Feb 2018 | Overall cooler than usual, with the persistence of an intense winter monsoon during the early part of the month. |
| Mar 2018 | Unseasonably warm and sunny with little rain. |
| Apr 2018 | Warmer and much drier than usual. |
| May 2018 | Exceptionally hot and dry with a 20-day fine spell that lasted till the end of the month. |
| Jun 2018 | Warmer than usual with slightly above average rainfall. |
| Jul 2018 | Warmer and cloudier than usual with slightly below average rainfall. |
| Aug 2018 | Wetter and much gloomier than usual. |
| Sep 2018 | Wetter than usual mainly due to rainfall associated with severe typhoon Mangkhut. |
| Oct 2018 | Slightly cooler and wetter than usual. |
| Nov 2018 | Slightly warmer and wetter than average with the highest amount of cloud on record for November. |
| Dec 2018 | Much warmer and drier than usual. |
| Jan 2019 | Much warmer than usual with elatively less cold air outbreaks from the north arriving at the south China coast during the month. |
| Feb 2019 | Unseasonably warm which was mainly attributed to weaker than normal northeast monsoon over the south China coast for most of the time in the month. |
| Mar 2019 | Much warmer and wetter than usual. |
| Apr 2019 | Much warmer and slightly wetter than average. |
| May 2019 | Cloudier and cooler than usual with slightly above average rainfall. |
| Jun 2019 | Much hotter and slightly drier than usual. |
| Jul 2019 | Much hotter and cloudier than usual with below average rainfall. |
| Aug 2019 | Hotter and wetter than usual. |
| Sep 2019 | Sunnier, hotter and drier than usual. |
| Oct 2019 | Exceptionally hot and sunny, and wetter than normal. |
| Nov 2019 | Prolonged dry and sunny weather, also one of the driest Novembers since records began. |
| Dec 2019 | Much warmer and drier than usual. |

| Month | Description |
|---|---|
| Jan 2020 | Much warmer and drier than usual. |
| Feb 2020 | Much warmer than usual with higher than average rainfall. |
| Mar 2020 | Much warmer and drier than usual. |
| Apr 2020 | Drier and slightly cooler than usual. |
| May 2020 | Generally fine and hot weather during the first part of the month and unsettled weather with outbreaks of heavy showers in the latter part. |

## 7.3 Major Sources of Environmental Impacts

Apart from impacts caused by this project, in terms of air quality impact, the major dust sources were from other nearby construction works at adjacent sites and from the operations of other nearby facilities. Meanwhile, the major sources of noise impact were aircraft noise and ships and no major sources of impacts on water quality and Chinese White Dolphin. Some environmental impacts from other nearby construction works at adjacent sites were expected to be caused.

# 8 Summary of Non-compliance (Exceedances)

Exceedances investigated and reported by the ET of this Contract during the reporting period are summarised in **Table 8.1** to **Table 8.3** below.

**Table 8.1: Air Quality Monitoring Exceedances (for AMS2, AMS3C and AMS7B) reported by this Contract from 1 October 2018 to 31 January 2020**

| Date | Monitoring Station | Exceedance Recorded | Measured 24-hour TSP Concentration, µg/m$^3$ | Action Level, µg/m$^3$ | Limit Level, µg/m$^3$ |
|---|---|---|---|---|---|
| 30 Sep 2019 | AMS7B | Action Level | 211 | 183 | 260 |
| 4 Nov 2019 | AMS3C | Action Level | 170 | 167 | 260 |
| 21 Nov 2019 | AMS7B | Action Level | 218 | 183 | 260 |
| 2 Dec 2019 | AMS7B | Action Level | 198 | 183 | 260 |

**Table 8.2: Summary of Construction Phase Water Quality Exceedances (for NMS2 and NMS3C) reported by this Contract from 1 October 2018 to 31 January 2020**

| Date | Parameter | Station | Depth | Exceedance Recorded during Mid-ebb Tide | Exceedance Recorded during Mid-flood Tide |
|---|---|---|---|---|---|
| 10 Oct 2018 | SS | SR6 | Depth Average | - | Action Level |
| 24 Oct 2018 | Turbidity | IS(Mf)6 | Depth Average | Action Level | - |
| 23 Nov 2018 | SS | IS10(N) | Depth Average | - | Action Level |
| 23 Nov 2018 | SS | IS(Mf)11 | Depth Average | - | Action Level |
| 23 Nov 2018 | SS | SR7 | Depth Average | - | Action Level |
| 26 Nov 2018 | SS | SR10A(N) | Depth Average | - | Action Level |
| 26 Nov 2018 | SS | SR10B(N2) | Depth Average | - | Action Level |
| 7 Dec 2018 | SS | SR6 | Depth Average | - | Action Level |
| 10 Dec 2018 | SS | SR6 | Depth Average | Action Level | - |
| 12 Dec 2018 | SS | IS8 | Depth Average | - | Limit Level |
| 12 Dec 2018 | SS | SR4(N) | Depth Average | - | Action Level |
| 12 Dec 2018 | SS | IS(Mf)9 | Depth Average | - | Action Level |
| 12 Dec 2018 | SS | IS7 | Depth Average | - | Action Level |

**Table 8.3: Chinese White Dolphin Monitoring Exceedances reported by this Contract from 1 October 2018 to 28 February 2019**

| Monitoring Period | Monitoring Location | Exceedance Recorded | Monitoring Results for the Monitoring Period | Action Level | Limit Level |
|---|---|---|---|---|---|
| Sep 2018 – Nov 2018 | NEL & NWL | Limit Level | **NEL**: STG = 0 & ANI = 0<br>**NWL**: STG = 1.5 ± 2.25 & ANI = 3.0 ± 3.89 | **NEL**: STG < 4.2 & ANI < 15.5<br>**NWL**: STG < 6.9 & ANI < 31.3 | **NEL**: (STG < 2.4 & ANI < 8.9) and **NWL**: (STG < 3.9 & ANI < 17.9) |

| Monitoring Period | Monitoring Location | Exceedance Recorded | Monitoring Results for the Monitoring Period | Action Level | Limit Level |
|---|---|---|---|---|---|
| Dec 2018 – Feb 2019 | NEL & NWL | Limit Level | **NEL**:<br>STG = 0 & ANI = 0<br>**NWL**:<br>STG = 2.4 ± 1.88 & ANI = 8.0 ± 6.60 | **NEL**:<br>STG < 4.2 & ANI < 15.5<br>**NWL**:<br>STG < 6.9 & ANI < 31.3 | **NEL**:<br>(STG < 2.4 & ANI < 8.9)<br>and<br>**NWL**:<br>(STG < 3.9 & ANI < 17.9) |

# 9 Review of Reasons for and the Implications of Non-compliance

## 9.1 Air Quality Exceedance

### 9.1.1 Air Quality Exceedance – 30 September 2019

According to the Contractor of HY/2013/04, the major construction activities conducted under the Contract during the monitoring period included construction of parapets for bridge structures, construction of Retaining Wall RW16N and RW16S, construction of Bridge Deck D16 in-situ deck, construction of utilities cross-over frame under Bridge D9c, backfilling of retaining walls and formation of fill slopes and road embankment, drainage works and watermains laying, roadworks and road furniture.

As informed by the Contractor of HY/2013/04, watering of all main haul roads was provided in accordance with the HY/2013/04 site watering plan. This plan schedules water spraying for at least 8 times per day which follows the recommended mitigation measures in the Updated EM&A Manual and Environmental Permit.

During ET's regular weekly site inspection on 25 September 2019 (between 09:30 and 10:30 a.m.), one air quality observation was recorded: namely, stockpiles and some exposed works areas were observed dry and dusty. The same observation was recorded during the next ET regular weekly site inspection on 2 October 2019 (between 14:15 and 15:00). Subsequently, the Contractor provided water spray for stockpiles and exposed works areas and the observation was closed during the subsequent ET regular weekly site inspection on 9 October 2019 (between 14:15 and 15:00). The remaining haul roads were observed to be watered and no fugitive dust generation from HY/2013/04 works was observed during this inspection. There was further no air quality observation associated with watering of site areas.

Photos relating to the abovementioned site inspections are presented in the investigation report prepared by the ET of this Contract.

The wind data collected at the AMS3C wind station at Ying Tung Estate and the Hong Kong Observatory wind station at Chek Lap Kok during the abovementioned 24-hour monitoring period shows that winds were mostly from the south/southwest on the afternoon/evening of 30 September 2019 and west/northwest on the morning of 1 October 2019. This indicates that it was unlikely that the source of exceedance could be attributed to HY/2013/04.

Information available on EPD's Air Quality Health Index (AQHI) website shows that the short-term health risk of air pollution between 12:00 p.m. on 30 September 2019 and 12:00 p.m. on 1 October 2019 was low to serious in Tung Chung (with maximum AQHI of 10+ at 13:00-17:00 on 30 September 2019). This, combined with the winds recorded at the abovementioned wind stations, indicates that the background air pollution was relatively high during part of the monitoring period and may have contributed to the high level of TSP recorded. The AQHI data is available online at:

- http://www.aqhi.gov.hk/epd/ddata/html/history/2019/201909_Eng.csv
- http://www.aqhi.gov.hk/epd/ddata/html/history/2019/201910_Eng.csv

It was concluded that the exceedance was not due to HY/2013/04.

*Actions Taken in the event of Non-compliance*

Not applicable.

### 9.1.2 Air Quality Exceedance – 4 November 2019

According to the Contractor of HY/2013/04, the major construction activities conducted under the Contract during the monitoring period included aggregate placement for seawall capping layer, formation of remaining works, construction of utilities cross-over frame under Bridge D9c, trimming of fill slopes, U-channel casting works and concrete defect rectification at bridge external face and deck voids.

As informed by the Contractor of HY/2013/04, watering of all main haul roads was provided in accordance with the HY/2013/04 site watering plan. This plan schedules water spraying for at least 8 times per day which follows the recommended mitigation measures in the Updated EM&A Manual and Environmental Permit.

During ET's regular weekly site inspections on 30 October 2019 (between 14:15 and 15:00) and 6 November 2019 (14:15-15:00), one air quality observation was recorded: namely, an exposed works area was observed dry and dusty.

Photos relating to the Contractor's site watering on 4-6 November 2019 and abovementioned site inspections are presented in the investigation report.

The wind data collected at the AMS3C wind station at Ying Tung Estate during the abovementioned 24-hour monitoring period shows that winds were mostly from the northeast/east during the 24-hour TSP monitoring. This indicates that it was unlikely that the source of exceedance could be attributed to HY/2013/04.

Information available on EPD's Air Quality Health Index (AQHI) website shows that the short-term health risk of air pollution between 12:00 p.m. on 4 November 2019 and 12:00 p.m. on 5 November 2019 was moderate to very high in Tung Chung (with maximum AQHI of 8 at 15:00-16:00 on 4 November 2019). This, combined with the winds recorded at the abovementioned wind stations, indicates that the background air pollution was relatively high during part of the monitoring period and may have contributed to the high level of TSP recorded. The AQHI data is available online at:

- http://www.aqhi.gov.hk/epd/ddata/html/history/2019/201911_Eng.csv

It was concluded that the exceedance was not due to HY/2013/04.

*Actions Taken in the event of Non-compliance*

Not applicable.

### 9.1.3 Air Quality Exceedance – 21 November 2019

According to the Contractor of HY/2013/04, the major construction activities conducted under the Contract during the monitoring period included aggregate placement for seawall capping layer, formation of remaining works, construction of utilities cross-over frame under Bridge D9c, trimming of fill slopes, U-channel casting works and concrete defect rectification at bridge external face and deck voids.

As informed by the Contractor of HY/2013/04, watering of all main haul roads was provided in accordance with the HY/2013/04 site watering plan. This plan schedules water spraying for at least 8 times per day which follows the recommended mitigation measures in the Updated EM&A Manual and Environmental Permit.

During ET's regular weekly site inspections on 18 November 2019 (14:30-15:30) and 27 November 2019 (14:45-15:45), one air quality observation was recorded: namely, an exposed works area was observed dry and dusty.

Photos relating to the Contractor's site watering on 21-23 November 2019 and abovementioned site inspections are presented in the investigation report.

The wind data collected at the AMS3C wind station at Ying Tung Estate and the Hong Kong Observatory wind station at Chek Lap Kok during the abovementioned 24-hour monitoring period shows that winds were initially from the north then more variable during the 24-hour TSP monitoring. This indicates that it was unlikely that the source of exceedance could be attributed to HY/2013/04.

Information available on EPD's Air Quality Health Index (AQHI) website shows that the short-term health risk of air pollution between 8:00 a.m. on 21 November 2019 and 8:00 a.m. on 22 November 2019 was low to very high Tung Chung (with maximum AQHI of 8 at 17:00-18:00 on 21 November 2019). This, combined with the winds recorded at the abovementioned wind stations, indicates that the background air pollution was relatively high during part of the monitoring period and may have contributed to the high level of TSP recorded. The AQHI data is available online at:

- http://www.aqhi.gov.hk/epd/ddata/html/history/2019/201911_Eng.csv

It was concluded that the exceedance was not due to HY/2013/04.

*Actions Taken in the event of Non-compliance*

Not applicable.

### 9.1.4 Air Quality Exceedance – 2 December 2019

According to the Contractor of HY/2013/04, the major construction activities conducted under the Contract during the monitoring period included aggregate placement for seawall capping layer, formation of remaining works, construction of utilities cross-over frame under Bridge D9c, trimming of fill slopes, U-channel casting works and concrete defect rectification at bridge external face and deck voids.

As informed by the Contractor of HY/2013/04, watering of all main haul roads was provided in accordance with the HY/2013/04 site watering plan. This plan schedules water spraying for at least 8 times per day which follows the recommended mitigation measures in the Updated EM&A Manual and Environmental Permit.

During ET's regular weekly site inspections on 27 November 2019 (14:45-15:45) and 4 December 2019 (14:30-15:30), one air quality observation was recorded: namely, an exposed works area was observed dry and dusty.

Photos relating to the Contractor's site watering on 1-3 December 2019 and abovementioned site inspections are presented in the investigation report.

The wind data collected at the AMS3C wind station at Ying Tung Estate and the Hong Kong Observatory wind station at Chek Lap Kok during the abovementioned 24-hour monitoring period (as presented in the investigation report) shows that winds were in the NNW to ENE range during the 24-hour TSP monitoring. This indicates that it was unlikely that the source of exceedance could be attributed to HY/2013/04.

Information available on EPD's Air Quality Health Index (AQHI) website shows that the short-term health risk of air pollution between 8:00 a.m. on 2 December 2019 and 8:00 a.m. on 3

December 2019 was low to moderate at Tung Chung (with maximum AQHI of 4 at 14:00-02:00 a.m. and 07:00-08:00 a.m.). The AQHI data is available online at:

- http://www.aqhi.gov.hk/epd/ddata/html/history/2019/201912_Eng.csv

It was concluded that the exceedance was not due to HY/2013/04.

*Actions Taken in the event of Non-compliance*

Not applicable.

## 9.2 Water Quality Exceedance

### 9.2.1 Water Quality Exceedance – 10 October 2018

On 10 October 2018, 1 no. AL exceedance of SS at station SR6 was recorded during mid-flood tide.

According to the Contractor of HY/2013/04, all marine-based segment deliveries were completed in January 2018 and no marine-based works were conducted under the contract on 10 October 2018. Furthermore, there was no visible observation of any discharge or accumulation of organic matter at the active works areas within HY/2013/04 site area on 10 October 2018.

HY/2013/04 site shoreline interfacing with open waters was inspected during ET's regular weekly site inspection on 10 October 2018 (between 14:40 and 14:50). It was observed that the silt curtain at Box Culvert D was installed properly, however the silt curtain at Box Culvert C was not reinstated. The Contractor was reminded to reinstate the silt curtain at Box Culvert C as soon as possible. There were no other observations in relation to the same shoreline.

It was concluded that the exceedance was not due to HY/2013/04.

*Actions Taken in the event of Non-compliance*

Actions were taken under Event and Action Plan (EAP):

1. In situ measurement was repeated to confirm findings;

2. After considering the above-mentioned investigation results, it appears that it was unlikely that the 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 exceedance was unlikely to be contract related, as such, Actions 5-7 under the EAP are not considered applicable.

### 9.2.2 Water Quality Exceedance – 24 October 2018

On 24 October 2018, 1 no. AL exceedance of turbidity at station IS(Mf)6 was recorded during mid-ebb tide.

According to the Contractor of HY/2013/04, all marine-based segment deliveries were completed in January 2018 and no marine-based works were conducted under the contract on 24 October 2018. Furthermore, there was no visible observation of any discharge or accumulation of organic matter at the active works areas within HY/2013/04 site area on 24 October 2018.

HY/2013/04 site shoreline interfacing with open waters was inspected during ET's regular weekly site inspections on 22 October 2018 (between 14:25 and 14:45) and 31 October 2018 (between 14:55 and 15:15). At both site inspections, it was observed that the silt curtain at Box

Culvert D was installed properly, however the silt curtain at Box Culvert C was not reinstated. The Contractor was reminded to reinstate the silt curtain at Box Culvert C as soon as possible. There were no other observations in relation to the same shoreline.

It was concluded that the exceedance was not due to HY/2013/04.

*Actions Taken in the event of Non-compliance*

Actions were taken under Event and Action Plan (EAP):

1. In situ measurement was repeated to confirm findings;

2. After considering the above-mentioned investigation results, it appears that it was unlikely that the 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 exceedance was unlikely to be contract related, as such, Actions 5-7 under the EAP are not considered applicable.

### 9.2.3 Water Quality Exceedance – 23 November 2018

On 23 November 2018, 3 no. AL exceedances of suspended solids at stations IS10(N), IS(Mf)11 and SR7 were recorded during mid-flood tide.

According to the Contractor of HY/2013/04, all marine-based segment deliveries were completed in January 2018 and no marine-based works were conducted under the contract on 23 November 2018. Furthermore, there was no visible observation of any discharge or accumulation of organic matter at the active works areas within HY/2013/04 site area on 23 November 2018.

HY/2013/04 site shoreline interfacing with open waters was inspected during ET's regular weekly site inspections on 19 November 2018 (between 14:50 and 15:00) and 28 November 2018 (between 14:20 and 15:00). On 19 November 2018, it was observed that the silt curtain at Box Culvert D was installed properly, however the silt curtain at Box Culvert C was not reinstated. The Contractor was reminded to reinstate the silt curtain at Box Culvert C as soon as possible. Subsequently, the silt curtain at Box Culvert C was removed and the observation was closed on 28 November 2018. There were no other observations (including the appearance of the open waters) in relation to the same shoreline on 19 and 28 November 2018.

It was concluded that the exceedances were not due to HY/2013/04.

*Actions Taken in the event of Non-compliance*

Actions were taken under Event and Action Plan (EAP):

1. In situ measurement was repeated to confirm findings;

2. After considering the above-mentioned investigation results, it appears that it was unlikely that the 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 exceedance was unlikely to be contract related, as such, Actions 5-7 under the EAP are not considered applicable.

### 9.2.4 Water Quality Exceedance – 26 November 2018

On 26 November 2018, 2 no. AL exceedances of suspended solids at stations SR10A(N) and SR10B(N2) were recorded during mid-flood tide.

According to the Contractor of HY/2013/04, all marine-based segment deliveries were completed in January 2018 and no marine-based works were conducted under the contract on 26 November 2018. Furthermore, there was no visible observation of any discharge or accumulation of organic matter at the active works areas within HY/2013/04 site area on 26 November 2018.

HY/2013/04 site shoreline interfacing with open waters was inspected during ET's regular weekly site inspections on 19 November 2018 (between 14:50 and 15:00) and 28 November 2018 (between 14:20 and 15:00). On 19 November 2018, it was observed that the silt curtain at Box Culvert D was installed properly, however the silt curtain at Box Culvert C was not reinstated. The Contractor was reminded to reinstate the silt curtain at Box Culvert C as soon as possible. Subsequently, the silt curtain at Box Culvert C was removed and the observation was closed on 28 November 2018. There were no other observations (including the appearance of the open waters) in relation to the same shoreline on 19 and 28 November 2018.

It was concluded that the exceedances were not due to HY/2013/04.

*Actions Taken in the event of Non-compliance*

Actions were taken under Event and Action Plan (EAP):

1. In situ measurement was repeated to confirm findings;

2. After considering the above-mentioned investigation results, it appears that it was unlikely that the 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 exceedance was unlikely to be contract related, as such, Actions 5-7 under the EAP are not considered applicable.

### 9.2.5 Water Quality Exceedance – 7 December 2018

On 7 December 2018, 1 no. AL exceedance of suspended solids at station SR6 was recorded during mid-flood tide.

According to the Contractor of HY/2013/04, all marine-based segment deliveries were completed in January 2018 and no marine-based works were conducted under the contract on 7 December 2018. Furthermore, there was no visible observation of any discharge or accumulation of organic matter at the active works areas within HY/2013/04 site area on 7 December 2018.

HY/2013/04 site shoreline interfacing with open waters was inspected during ET's regular weekly site inspections on 5 December 2018 (between 10:20 and 10:30) and 13 December 2018 (between 10:10 and 10:30). There were no observations (including with respect to the appearance of the open waters) in relation to the same shoreline during both inspections. The silt curtain was inspected and was found to be structurally intact.

It was concluded that the exceedance was not due to HY/2013/04.

*Actions Taken in the event of Non-compliance*

Actions were taken under Event and Action Plan (EAP):

1. In situ measurement was repeated to confirm findings;

2. After considering the above-mentioned investigation results, it appears that it was unlikely that the 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 exceedance was unlikely to be contract related, as such, Actions 5-7 under the EAP are not considered applicable.

### 9.2.6 Water Quality Exceedance – 10 December 2018

On 10 December 2018, 1 no. AL exceedance of suspended solids at station SR6 was recorded during mid-ebb tide.

According to the Contractor of HY/2013/04, all marine-based segment deliveries were completed in January 2018 and no marine-based works were conducted under the contract on 12 December 2018. Furthermore, there was no visible observation of any discharge or accumulation of organic matter at the active works areas within HY/2013/04 site area on 12 December 2018.

HY/2013/04 site shoreline interfacing with open waters was inspected during ET's regular weekly site inspections on 5 December 2018 (between 10:20 and 10:30) and 13 December 2018 (between 10:10 and 10:30). There were no observations (including with respect to the appearance of the open waters) in relation to the same shoreline during both inspections. The silt curtain was inspected and was found to be structurally intact.

It was concluded that the exceedance was not due to HY/2013/04.

*Actions Taken in the event of Non-compliance*

Actions were taken under Event and Action Plan (EAP):

1. In situ measurement was repeated to confirm findings;

2. After considering the above-mentioned investigation results, it appears that it was unlikely that the exceedance was attributed to active construction activities of this Contract;

3. EPD, 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 exceedance was unlikely to be contract related, as such, Actions 5-7 under the EAP are not considered applicable.

### 9.2.7 Water Quality Exceedance – 12 December 2018

On 12 December 2018, 4 no. AL exceedances of suspended solids at stations IS8, SR4(N), IS(Mf)9 and IS7 were recorded during mid-flood tide.

According to the Contractor of HY/2013/04, all marine-based segment deliveries were completed in January 2018 and no marine-based works were conducted under the contract on 12 December 2018. Furthermore, there was no visible observation of any discharge or accumulation of organic matter at the active works areas within HY/2013/04 site area on 12 December 2018.

HY/2013/04 site shoreline interfacing with open waters was inspected during ET's regular weekly site inspections on 5 December 2018 (between 10:20 and 10:30) and 13 December 2018 (between 10:10 and 10:30). There were no observations (including with respect to the appearance of the open waters) in relation to the same shoreline during both inspections. The silt curtain was inspected and was found to be structurally intact.

It was concluded that the exceedances were not due to HY/2013/04.

*Actions Taken in the event of Non-compliance*

Actions were taken under Event and Action Plan (EAP):

1. In situ measurement was repeated to confirm findings;

2. After considering the above-mentioned investigation results, it appears that it was unlikely that the 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 exceedance was unlikely to be contract related, as such, Actions 5-7 under the EAP are not considered applicable.

## 9.3 Chinese White Dolphin Exceedance

### 9.3.1 Chinese White Dolphin Exceedance – September to November 2018

***(a) Causes of Exceedance***

- During CWD monitoring in the reporting period, no adverse impact from the activities of HZMB HKBCF project on dolphin was noticeable from general observations.
- After review of all available and relevant data, including the raw data and analyses of other parameters included in the EM&A, no significant variation is detected in key environmental parameters.
- As confirmed with Engineer's Representative, there were no marine transportation and no marine-based works performed under Contract Nos. HY/2013/01, HY/2013/02 and HY/2013/03 in September–November 2018.
- Also, according to the Contractor of HY/2013/04, all marine-based segment deliveries were completed in January 2018 and no marine-based works were conducted under the contract in September–November 2018. Moreover, the localised silt curtain at Box Culvert C under HY/2013/04 were removed on 28 November 2018.
- Current mitigation measures were being upheld. Dolphin Watching Plans under Contract Nos. HY/2013/01 and HY/2013/04 were implemented in September–November 2018. There was no failure or reduction of dolphin-specific mitigation measures.
- It was concluded that the HZMB construction work is one of the contributing factors affecting the dolphins. It was also concluded the contribution of impacts due to individual HZMB contracts and processes cannot be separated from the other activities within the dolphin habitat.

***(b) Action required under the action plan***

Please refer to the corresponding Event and Action Plan.

***(c) Action taken under the action plan***

*1) Statistical data analysis has been repeated to confirm findings*

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).

For the comparison between the baseline period and the present quarter (24$^{th}$ quarter of the impact phase being assessed), the p-values for the differences in average dolphin

encounter rates of STG and ANI were 0.0029 and 0.0143 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.

For comparison between the baseline period and the cumulative quarters in impact phase (i.e. first 24 quarters of the impact phase being assessed), the p-values for the differences in average dolphin encounter rates of STG and ANI were 0.000000 and 0.000000 respectively. Even if the alpha value is set at 0.00001, significant differences were still detected in both the average dolphin encounter rates of STG and ANI (i.e. between the two periods and the locations).

2) *All available and relevant data, including raw data and statistical analysis results of other parameters covered in the EM&A have been reviewed*

The AFCD monitoring data during September to November 2018 has been reviewed by the dolphin specialist. During the same quarter, no dolphin was sighted from 172.60 km of survey effort on primary lines in NEL, while nine groups of 22 dolphins were sighted from 216.88 km of survey effort on primary lines in NWL. This review has confirmed that the low occurrence of dolphins reported by the monitoring surveys in autumn 2018 in NEL and NWL survey area is accurate.

Furthermore, for water quality monitoring during this reporting period, the following exceedances were recorded and investigated:

- During September 2018, 184 exceedances of water quality (consisting of 153 Action Level and 29 Limit Level exceedances of dissolved oxygen and two Action Level exceedances of suspended solids) were recorded. **Following investigations, it was concluded that the exceedances were not related to the HZMB HKBCF project.**
- During October 2018, two exceedances of water quality (consisting of one Action Level exceedance of suspended solids and one Action Level exceedance of turbidity) were recorded. **Following investigations, it was concluded that the exceedances were not related to the HZMB HKBCF project.**
- During November 2018, five exceedances of water quality (all Action Level exceedances of suspended solids) were recorded. **Following investigations, it was concluded that the exceedances were not related to the HZMB HKBCF project.**

3) *Identification of source of impact was carried out*

During this reporting period of dolphin monitoring, no adverse impact on dolphin from the works activities of HZMB HKBCF project was noticeable from general observations. Nevertheless, dolphin mitigation measures were being upheld and the Dolphin Watching Plan was implemented from the start of the works of the Project.

It is also noted that another ongoing project has expanded extensively in scale and now occupies considerable areas of NWL; it has prevented the successful completion of some of the transect lines and is in addition to the existing pressures the dolphins faced in the Lantau habitat before the HZMB development started (e.g. boat traffic, habitat degradation, pollution, competition with fisheries). The same project has already been noted as influencing a large part of NWL, which dolphins seem to have entirely vacated.

Investigation reports into previous dolphin monitoring exceedances prepared by the ET for Contract No. HY/2010/02 had concluded that there were ongoing construction works, both Project related and not, which were known to impact dolphins. While no adverse impact was observed from HZMB HKBCF activities on dolphins during this reporting period, the long-term impacts of these works cannot be assessed although expanding the scope of monitoring areas will provide better data on impacts outside the NEL and NWL zones.

*4) The IEC, ER and Contractor have been informed of findings*

ET of HY/2013/04 notified the exceedance as follows:

- 18 April 2019 (Notification No. 201809-201811D_NOE)
- 20 May 2019 (Notification No. 201809-201811D_NOE_r1)

*5) Monitoring data have been checked*

See Point (2) above.

*6) Repeated review to ensure all the dolphin protective measures are fully and properly implemented and advise on additional measures if necessary*

Site inspection of the silt curtain integrity was conducted during weekly site inspection. The appropriate mitigation monitoring was in place depending on site activities (i.e., Dolphin Exclusion Zone (DEZ)/Dolphin Watching Plan (DWP) for silt curtain deployment and all other Project activities, respectively).

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 that the contribution of impacts due to the HZMB works as a whole (or individual contracts) cannot be quantified nor separate from the other stress factors.

***(d) ET's conclusions and recommendations for mitigation***

Current mitigation measures for CWD were implemented fully, and the Contractor was reminded to consistently implement existing mitigation measures.

Investigation reports into previous dolphin monitoring exceedances prepared by the ET for Contract No. HY/2010/02 have noted that the current monitoring works under the EM&A programmes have already provided a high level of monitoring effort, that additional monitoring in the monitoring areas was not considered necessary, and that existing data can be reviewed and alternative analytical methods can be explored to determine any new insight to the dolphin distribution pattern.

***(e) Contractor's actions to implement the mitigation***

- Although this exceedance was considered not solely caused by HZMB HKBCF Project, the Contractor is reminded to fully implement all relevant mitigation measures identified in the Updated EM&A Manual.
- It was recommended that the marine works of HZMB projects should be accelerated and completed as soon as possible so as to reduce the overall duration of impacts and allow the dolphin population to recover as early as possible.

### 9.3.2 Chinese White Dolphin Exceedance – December 2018 to February 2019

***(a) Causes of Exceedance***

- During CWD monitoring in the reporting period, no adverse impact from the activities of HZMB HKBCF project on dolphin was noticeable from general observations.
- After review of all available and relevant data, including the raw data and analyses of other parameters included in the EM&A, no significant variation is detected in key environmental parameters.
- As confirmed with Engineer's Representative, there were no works under the other HKBCF contracts (i.e. HY/2013/01, HY/2013/02, HY/2013/03 and HY/2014/05) during December 2018 – February 2019, and the EM&A programmes under the abovementioned contracts were terminated as per EPD's memo dated 1 February 2019.

- Also, according to the Contractor of HY/2013/04, all marine-based segment deliveries were completed in January 2018 and no marine-based works were conducted under the contract during December 2018 – February 2019. Moreover, the localised silt curtains under HY/2013/04 were removed on 4 January 2019.
- Current mitigation measures were being upheld until completion of the removal of localised silt curtains under HY/2013/04 on 4 January 2019. During December 2018 – February 2019, Dolphin Watching Plans under Contract No. HY/2013/01 and HY/2013/04 were implemented until 1 February 2019 and until 4 January 2019 respectively. There was no failure or reduction of dolphin-specific mitigation measures.
- It was concluded that the HZMB construction work is one of the contributing factors affecting the dolphins. It was also concluded the contribution of impacts due to individual HZMB contracts and processes cannot be separated from the other activities within the dolphin habitat.

***(b) Action required under the action plan***

Please refer to the corresponding Event and Action Plan

***(c) Action taken under the action plan***

*1) Statistical data analysis has been repeated to confirm findings*

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).

For the comparison between the baseline period and the present quarter (25$^{th}$ quarter of the impact phase being assessed), the p-values for the differences in average dolphin encounter rates of STG and ANI were 0.0041 and 0.0221 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.

For comparison between the baseline period and the cumulative quarters in impact phase (i.e. first 25 quarters of the impact phase being assessed), the p-values for the differences in average dolphin encounter rates of STG and ANI were 0.000000 and 0.000000 respectively. Even if the alpha value is set at 0.00001, significant differences were still detected in both the average dolphin encounter rates of STG and ANI (i.e. between the two periods and the locations).

*2) All available and relevant data, including raw data and statistical analysis results of other parameters covered in the EM&A have been reviewed*

The AFCD monitoring data during December 2018 to February 2019 has been reviewed by the dolphin specialist engaged under this Contract. During the same quarter, no dolphin was sighted from 83.03 km of survey effort on primary lines in NEL, while only four groups of 14 dolphins were sighted from 127.29 km of survey effort on primary lines in NWL. This review has confirmed that the low occurrence of dolphins reported by the monitoring surveys in winter 2018-19 in NEL and NWL survey area is accurate.

Furthermore, for water quality monitoring during this reporting period, the following exceedances were recorded and investigated:

- During December 2018, six exceedances of water quality (consisting of five Action Level exceedances and one Limit Level exceedance of suspended solids) were

recorded. **Following investigations, it was concluded that the exceedances were not related to the HZMB HKBCF project.**

- During January 2019, **no Action and Limit Level exceedances were recorded.**
- During February 2019, the water quality monitoring programme was temporarily suspended, therefore no water quality monitoring was conducted, no water quality monitoring results were recorded, and **no Action and Limit Level exceedances were recorded.**

3) *Identification of source of impact was carried out*

During this reporting period of dolphin monitoring, no adverse impact on dolphin from the works activities of HZMB HKBCF project was noticeable from general observations. Nevertheless, dolphin mitigation measures were being upheld until completion of the removal of localised silt curtains on 4 January 2019 and the Dolphin Watching Plan was implemented from the start of the works of the Project until 4 January 2019.

It is also noted that another ongoing project has expanded extensively in scale and now occupies considerable areas of NWL; it has prevented the successful completion of some of the transect lines and is in addition to the existing pressures the dolphins faced in the Lantau habitat before the HZMB development started (e.g. boat traffic, habitat degradation, pollution, competition with fisheries). The same project has already been noted as influencing a large part of NWL, which dolphins seem to have entirely vacated.

Investigation reports into previous dolphin monitoring exceedances prepared by the ET for Contract No. HY/2010/02 had concluded that there were ongoing construction works, both Project related and not, which were known to impact dolphins. While no adverse impact was observed from HZMB HKBCF activities on dolphins during this reporting period, the long-term impacts of these works cannot be assessed although expanding the scope of monitoring areas will provide better data on impacts outside the NEL and NWL zones.

4) *The IEC, ER and Contractor have been informed of findings*

ET of HY/2013/04 notified the exceedance as follows:

- 18 April 2019 (Notification No. 201812-201902D_NOE)
- 22 May 2019 (Notification No. 201812-201902D_NOE_r1)

5) *Monitoring data have been checked*

See Point (2) above.

6) *Repeated review to ensure all the dolphin protective measures are fully and properly implemented and advise on additional measures if necessary*

Site inspection of the silt curtain integrity was conducted during weekly site inspection. The appropriate mitigation monitoring was in place depending on site activities (i.e., Dolphin Exclusion Zone (DEZ)/Dolphin Watching Plan (DWP) for silt curtain deployment and all other Project activities, respectively). These activities continued until completion of the removal of localised silt curtains under Contract No. HY/2013/04 on 4 January 2019.

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 that the contribution of impacts due to the HZMB works as a whole (or individual contracts) cannot be quantified nor separate from the other stress factors.

***(d) ET's conclusions and recommendations for mitigation***

Current mitigation measures for CWD were implemented fully, and the Contractor was reminded to consistently implement existing mitigation measures.

Investigation reports into previous dolphin monitoring exceedances prepared by the ET for Contract No. HY/2010/02 have noted that the current monitoring works under the EM&A programmes have already provided a high level of monitoring effort, that additional monitoring in the monitoring areas was not considered necessary, and that existing data can be reviewed and alternative analytical methods can be explored to determine any new insight to the dolphin distribution pattern.

***(e) Contractor's actions to implement the mitigation***

- Although this exceedance was considered not solely caused by HZMB HKBCF Project, the Contractor is reminded to fully implement all relevant mitigation measures identified in the Updated EM&A Manual.
- It was recommended that the marine works of HZMB projects should be accelerated and completed as soon as possible so as to reduce the overall duration of impacts and allow the dolphin population to recover as early as possible.

# 10 Record on Environmental Complaints Received / Notification of Summons and Successful Prosecution

## 10.1 Overall Summary

Environmental complaints investigated and reported by the ET of this Contract during the reporting period are summarised in **Table 10.1** below.

**Table 10.1: Summary of Environmental Complaints for the Reporting Period reported by this Contract**

| Log No. | Environmental Complaint Ref. No. | Date of Complaint Receipt | Description |
|---|---|---|---|
| - | ENPO-C0082 | 22 May 2015 | Air Quality and Noise |
| 001 | ENPO-C0086 | 13 July 2015 | Noise |
| 002 | ENPO-C0100 | 22 September 2016 | Water Quality |
| 003 | ENPO-C0102 | 10 November 2016 | Water Quality |
| 004 | ENPO-C0107 | 14 December 2016 | Noise |
| 005 | ENPO-C0113 | 27 March 2017 | Noise and Water Quality |
| 005a | ENPO-C0127 | 27 October 2017 | Water Quality |
| 006 | ENPO-C0128 | 23 November 2017 | Air Quality |
| 007 | ENPO-C0129 | 29 December 2017 | Air Quality and Water Quality |
| 008 | ENPO-C0134 | 10 March 2018 | Air Quality and Water Quality |
| 009 | ENPO-C0135 | 22 June 2018 | Water Quality |
| 010 | ENPO-C0139 | 3 October 2018 | Air Quality |

## 10.2 Air Quality Complaint

### 10.2.1 Air Quality Complaint – received on 23 November 2017

The complaint was about dust dispersion from HZMB HKBCF Island works site. According to the complainant, a large amount of dust was generated due to water spray not being provided at every part of the site and was most serious near the toll gate.

The complaint was investigated by the ET of the Contract.

As informed by the Contractor of HY/2013/04, watering of all main haul roads was provided in accordance with the HY/2013/04 site watering plan (as presented in ET's investigation report). This plan schedules water spraying for 8 times per day which follows the recommended mitigation measures in the Updated EM&A Manual.

During ET's regular weekly site inspection on 20 November 2017 (between 14:00 and 15:00) and 29 November 2017 (between 14:00 and 15:30), the haul roads were observed to be watered and no fugitive dust generation from HY/2013/04 works was observed. Photos of these mitigation measures are presented in ET's investigation report. There were no observations referring to air quality mitigation measures associated with watering of site areas.

It is also noted that HY/2013/04 works do not include construction of any toll gates or vehicle clearance plazas.

It was concluded that the complaint was unlikely to be related to HY/2013/04.

#### 10.2.2 Air Quality Complaint – received on 3 October 2018

The complaint referred to a large amount of dust generated due to lack of water spraying on dirt road at HKBCF Island site. As informed by EPD, the location under complaint was near the exit/entrance of Contract No. HY/2013/04 as advised by the complainant.

The relevant mitigation measures for access roads for the HZMB HKBCF Island site, as required in the EMIS and statutory requirements in the Air Pollution Control (Construction Dust) Regulations and other applicable environmental legislation, are consolidated as follows:

- Immediately before leaving a construction site, every vehicle shall be washed to remove any dusty materials from its body and wheels and to ensure that no earth, mud or debris is deposited by them on roads.
- 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.
- Every main haul road shall be paved with concrete, bituminous materials, hardcores or metal plates, and kept clear of dusty materials, or sprayed with water or a dust suppression chemical so as to maintain the entire road surface wet.
- 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.
- The Contractor should undertake proper watering on all exposed spoil (with at least 8 times per day) throughout the construction phase.

The Contractor's site watering record for 2 and 3 October 2018 as checked by ET was normal with watering provided 8 times per day.

As informed by the Contractor of HY/2013/04, water spray was provided by water truck for the HY/2013/04 site on the morning of 3 October 2018.

During ET's regular weekly site inspection on 3 October 2018 (between 14:00 and 15:00), a site observation regarding air quality was made, namely dust emission was observed along haul road near bridge D12 area; the Contractor was reminded to provide water spraying to ensure wet surface. Other haul roads within HY/2013/04 site were found to have been provided with water spray.

The vehicular entrance of and the wheel wash facility at the vehicular exit of HY/2013/04 site boundary were also inspected and found to be operating normally with no fugitive dust observed.

### 10.3 Noise Complaint

#### 10.3.1 Noise Complaint – received on 13 July 2015

The complaint was in relation to construction noise nuisance in the vicinity of Tung Chung New Development Pier. According to the complainant, construction noise was generated at the HKBCF site near Hong Kong SkyCity Marriott Hotel during night-time period of the past 10 days.

After investigation, it was concluded that the complaint was not relevant to Contract No. HY/2013/04.

#### 10.3.2 Noise Complaint – received on 14 December 2016

The complaint was about hammering noise during night-time period from unidentified sources possibly from construction sites of HZMB. According to the complainant, in the preceding month hammering noise was heard during the early morning hours possibly from nearby construction sites. While the complainant was not sure about the exact source of this noise, he suspected that it was most likely from HZMB site works.

As informed by the Contractor of HY/2013/04, works conducted under Contract No. HY/2013/04 during restricted hours between mid-November and mid-December 2016 involved transport of concrete segments to HZMB HY/2013/04 site using tug boat and barge (marine-based) and crane and tractor with trailer (land-based). Such activity commenced after 1:30am in the morning. No hammering works were conducted by the Contract during restricted hours.

It was noted that the Contractor obtained valid Construction Noise Permits (CNP nos. GW-RS1064-16 and GW-RS1192-16) permitting the use of certain powered mechanical equipment (PME) during restricted hours including the period of mid-November to mid-December 2016. The abovementioned activity was permitted in these CNPs.

Based on the investigation findings above, the complaint is considered invalid under HY/2013/04.

### 10.4 Water Quality Complaint

#### 10.4.1 Water Quality Complaint – received on 22 September 2016

The complaint was about whitish effluent discharged from HZMB construction site. According to the complainant, two barges which commenced from Tuen Mun had discharged whitish effluent into the open waters opposite Casing No. 54–55 of HZMB HKBCF Island construction site between 18:00 and 04:00 hours on a daily basis.

After investigation, it was concluded that the complaint was not relevant to Contract No. HY/2013/04.

#### 10.4.2 Water Quality Complaint – received on 10 November 2016

The complaint was about muddy water being observed as a works barge “長盛 308” was travelling east from the HZMB Scenic Hill site area to open waters opposite Tung Chung Ferry Pier on 7 November 2016. According to the complainant, the barge was carrying muddy water. A photo of the observation was also provided by the complainant.

As informed by the Contractor of HY/2013/04, no marine barges were operated and no marine works from HKBCF contract site were conducted under this contract on 7 November 2016.

Based on the investigation findings above, the complaint is considered invalid under HY/2013/04.

#### 10.4.3 Water Quality Complaint – received on 27 October 2017

The complaint was about muddy water discharge from HZMB HKBCF Island works site. According to the complainant, this had continued for one week and occurred at C3 (HY/2013/03) site.

The complaint was investigated by the ET of the Contract.

As informed by the Contractor of HY/2013/04, there was no ongoing discharge of wastewater from the HY/2013/04 site during the period described in the complaint.

The Contractor has obtained a discharge licence under the WPCO for treatment and disposal of wastewater (Licence No. WT00028782-2017). The discharge licence and most recently-received results for monthly sampling under the licence were included in ET's investigation report.

During ET's regular weekly site inspection on 23 October 2017, HY/2013/04 site shoreline interfacing with open waters was inspected. Land-based works at the shoreline for Box Culverts C and D were in progress. Bunds were provided near the shoreline to contain potential site runoff. No surface runoff was observed near the shoreline. Wastewater treatment facilities were provided near Box Culverts C and D to treat site runoff before discharge from the contract site. No discharge was observed at the discharge points or along the same shoreline interfacing with open waters. Silt curtain was provided at each box culvert for marine work areas. Photos of these mitigation measures were included in ET's investigation report. A location plan showing the discharge points was also included in ET's investigation report.

During the abovementioned site inspection, silty water was observed immediately outside the perimeter of a silt curtain for Box Culvert D, and the Contractor was reminded to inspect the silt curtain to ensure that its structural integrity is intact. Subsequently, the Contractor inspected the silt curtain to confirm its structural integrity and no silty water outside the silt curtain was observed. There were no other observations referring to water quality mitigation measures associated with that shoreline.

### 10.4.4 Water Quality Complaint – received on 22 June 2018

The complaint was about discharge of muddy water from HKBCF. According to site photos provided by HyD, it is noticed that there was muddy water discharged via as-constructed box culverts/outfall structures at various parts of seawall on 13 June 2018.

This investigation reports the findings with respect to Box Culverts C and D which are located inside HY/2013/04 works site. It is noted that more than one HKBCF contract site was subject to the present complaint.

It is noted that the construction of Box Culverts C and D is divided into two parts, with HY/2013/04 and the adjacent HZMB HKBCF contract each responsible for the part inside its respective site boundary. The general HY/2013/04 site arrangement map showing the locations of Box Culverts C and D relative to these contracts is provided in ET's investigation report.

As informed by the Contractor of HY/2013/04, land-based construction of the main structure of Box Culverts C and D (including the outfalls) were completed by May 2018 and no further works inside the main structures were conducted. Since then, land-based reinstatement of the seawall at ground level were in progress.

Prior to the subject incident, ET conducted weekly site inspection on 11 June 2018, during which the HY/2013/04 site shoreline interfacing with open waters was inspected. There was no observation regarding any overflow of site runoff or presence of silty water in the open waters associated with that shoreline, including at Box Culverts C and D. Silt curtains at Box Culverts C and D were observed as secured with no leakage of muddy water into the open waters. No HY/2013/04 site works were observed which may be a potential cause of muddy water discharge. Relevant photos are presented in ET's investigation report.

It is noted that amber rainstorm warning signal was issued during the daytime on 13 June 2018 from 15:00 to 18:15. The relevant record from the Hong Kong Observatory is presented in ET's investigation report.

The Contractor confirmed that prior to the heavy rain on 13 June 2018 it had inspected the silt curtains which were functioning properly with no leakage of muddy water into the open waters. Photo provided by the Contractor is presented in ET's investigation report.

After the heavy rain, the silt curtains were inspected and readjusted to ensure no leakage of site runoff into the open waters. Photo taken by the Contractor on 16 June 2018 is also presented in ET's investigation report.

ET conducted weekly site inspection on 20 June 2018, during which the HY/2013/04 site shoreline interfacing with open waters was inspected. There was no observation regarding any overflow of site runoff or presence of silty water in the open waters associated with that shoreline. Silt curtains at Box Culverts C and D were observed as secured with no leakage of muddy water into the open waters. According to the Contractor, the opening in the silt curtain at Box Culvert C was repaired by 20 June 2018. Relevant photos are presented in ET's investigation report.

Following receipt of the subject complaint, ET conducted weekly site inspections on 27 June 2018, during which the HY/2013/04 site shoreline interfacing with open waters was inspected. There was no observation regarding any overflow of site runoff or presence of silty water in the open waters associated with that shoreline. Silt curtains at Box Culverts C and D were observed as secured with no leakage of muddy water into the open waters. No HY/2013/04 site works were observed which may be a potential cause of muddy water discharge. Relevant photos are presented in ET's investigation report.

As part of the regular weekly site inspection process, mitigation measures for surface runoff collection and treatment were audited. According to the Contractor's approved Site Temporary Drainage Management Plan (Section 4.1.1 for HKBCF island site), in the event of flooding on site due to heavy rainstorm, the effluent and surface water would be collected by temporary drainage channels to on-site waste water treatment facilities (including, but not limited to, sedimentation tank and Wetsep) and then discharged by discharge well on-site; furthermore, temporary drainage channel or earth bund shall be formed in front of the existing crest of sloping seawall within the site area in order to prevent the effluent from being overflowed into the sea due to heavy rainstorm. It is noted that the temporary site drainage system are not connected to Box Culverts C and D within HY/2013/04 site and therefore it is not anticipated that muddy surface runoff would flow into these box culverts. The Layout Plan for Site Temporary Drainage is presented in ET's investigation report. Throughout June 2018, no adverse observations were made in relation to muddy surface runoff, and no muddy surface runoff was observed as overflowing from the HY/2013/04 site area into these box culverts or the open waters.

It is concluded that the source of the discharged runoff is not related to this contract and may be upstream of the HY/2013/04 works area.

## 10.5 Multiple-parameter Complaints

### 10.5.1 Air Quality & Noise Complaint – received on 22 May 2015

The complaint was in relation to noise generation and dark smoke emission from plants undertaking at night-time works at HKBCF project.

The Contractor was currently establishing the temporary site office and storage area in works area WA3 (Siu Ho Wan). The Contractor confirmed that there were no site activities including any plant and equipment mobilization to HZMB HKBCF island on 21 May 2015 during night-time.

Based on the investigation stated above, the complaint was considered an invalid complaint under HY/2013/04.

### 10.5.2 Air Quality & Water Quality Complaint – received on 29 December 2017

The complaint was about effectiveness of mitigation measures for dust and mud on roads related to HZMB HKBCF Island site works.

The complaint was investigated by the ET of the Contract.

This investigation reviewed the effectiveness of mitigation measures implemented by the Contractor of HY/2013/04 to control any potential dust or mud nuisance attributed to vehicles leaving the HY/2013/04 site boundary.

The relevant mitigation measures for access roads for the HZMB HKBCF Island site, as required in the EMIS and statutory requirements in the Air Pollution Control (Construction Dust) Regulations and other applicable environmental legislation, are consolidated as follows:

- Immediately before leaving a construction site, every vehicle shall be washed to remove any dusty materials from its body and wheels and to ensure that no earth, mud or debris is deposited by them on roads.
- 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.
- Every main haul road shall be paved with concrete, bituminous materials, hardcores or metal plates, and kept clear of dusty materials, or sprayed with water or a dust suppression chemical so as to maintain the entire road surface wet.
- 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.
- The Contractor should undertake proper watering on all exposed spoil (with at least 8 times per day) throughout the construction phase.

In early January 2018 RE had requested the Contractor of HY/2013/04 to provide a wheel washing facility at the HY/2013/04 site boundary exit for vehicles to adjacent HKBCF contract site. A map showing the general location of the HKBCF contract sites is presented in ET's investigation report.

As informed by the Contractor of HY/2013/04, water spray was provided by site workers as an interim measure at the HY/2013/04 site boundary entrance/exit for vehicles leaving HY/2013/04 site in the direction of HZMB HKBCF Island site exit. The wheel washing facility was subsequently completed and implemented on 27 January 2018. Contractor's photos showing the operation of the wheel wash facility on that day are presented in ET's investigation report.

Also, watering of all main haul roads was provided in accordance with the HY/2013/04 site watering plan (as presented in ET's investigation report). This plan schedules water spraying for at least 8 times per day which follows the recommended mitigation measures in the Updated EM&A Manual and Environmental Permit.

Before operation of the wheel wash facility, ET conducted regular weekly site inspections on 10, 15 and 24 January 2018 with extra focus on the implementation status of all air quality and water quality mitigation measures including haul roads and washing of vehicles leaving HY/2013/04 site. The following observations were made:

- 10 January 2018 (14:00-15:00): Water spray was provided for haul roads in the HY/2013/04 site area. Water spray from two hoses was provided by the Contractor to wash the wheels of vehicles leaving HY/2013/04 and entering HY/2013/02 site towards HZMB HKBCF Island site exit. No specific observations referring to air or water quality mitigation measures associated with wheel washing facility.
- 15 January 2018 (14:30-15:30): Water spray was provided for haul roads in the HY/2013/04 site area. Water spray from two hoses was provided by the Contractor to wash the wheels of vehicles leaving HY/2013/04 and entering HY/2013/02 site towards HZMB HKBCF Island site exit. An air quality observation regarding effectiveness of water spray was made; subsequently the Contractor displayed a temporary stop sign to ensure vehicles were being properly washed at this location and the observation was closed. Also, an air quality observation regarding dry haul road at Bridge D1 was observed; subsequently, the Contractor provide water spray.
- 24 January 2018 (14:00-15:00): Water spray was provided for haul roads in the HY/2013/04 site area. Water spray from two hoses was provided by the Contractor to wash the wheels of vehicles leaving HY/2013/04 and entering HY/2013/02 site towards HZMB HKBCF Island site exit. No specific observations referring to air or water quality mitigation measures associated with wheel washing facility.

Following commencement of operation of the wheel wash facility, ET conducted regular weekly site inspections on 31 January, 9 and 12 February 2018 with extra focus on the implementation status of all air quality and water quality mitigation measures including haul roads and washing of vehicles leaving HY/2013/04 site. The following observations were made:

- 31 January 2018 (14:30-15:00): Water spray provided for haul roads in the HY/2013/04 site area. Wheel wash facility was in operation. No specific observations referring to air or water quality mitigation measures associated with wheel washing facility.
- 9 February 2018 (14:00-15:00): Water spray was provided for haul roads in the HY/2013/04 site area. Wheel wash facility was in operation. No specific observation referring to air or water quality mitigation measures associated with wheel washing facility and access roads was observed.
- 12 February 2018 (14:00-15:00): Wheel wash facility was in operation; no specific observation referring to air or water quality mitigation measures associated with the wheel wash facility was observed. Water spray was provided for haul roads in the HY/2013/04 site area. An air quality observation regarding fugitive dust generated when vehicles passed through the haul road between wheel washing facilities and Box Culvert C was observed. The Contractor was reminded to provide watering on haul road frequently.

### 10.5.3 Air Quality & Water Quality Complaint – received on 10 March 2018

The complaint was about the regular absence of site staff at the wheel wash facility to clean the wheels of vehicles leaving HZMB HKBCF Island site after 19:00. A video of the area concerned was provided by the complainant.

The complaint was investigated by the ET of the Contract.

The relevant mitigation measures for washing of site vehicles for the HZMB HKBCF Island site, as required in the EMIS and statutory requirements in the Air Pollution Control (Construction Dust) Regulations and other applicable environmental legislation, are consolidated as follows:

- Immediately before leaving a construction site, every vehicle shall be washed to remove any dusty materials from its body and wheels and to ensure that no earth, mud or debris is deposited by them on roads.
- 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 wheel washing facility at the HY/2013/04 site boundary entrance/exit for vehicles leaving HY/2013/04 site in the direction of HZMB HKBCF Island site exit was implemented by the Contractor on 27 January 2018. A plan of the wheel washing facility is presented in ET's investigation report. As informed by the Contractor of HY/2013/04, wheel washing facility was staffed by site workers with water hose between 07:00 and 19:00 only on each working day.

During ET's regular weekly site inspection on 14 March 2018 (between 14:00 and 15:00), the haul road in the vicinity of the wheel wash facility was observed to be watered and no fugitive dust generation from HY/2013/04 works was observed. The additional signage mentioned above was also provided. Photos of implementation of these measures at the wheel wash facility are presented in ET's investigation report. There were no observations referring to air quality mitigation measures associated with watering of site areas.

The Contractor was reminded to properly implement all necessary air and water quality mitigation measures identified in the Updated EM&A Manual. All site vehicles leaving HY/2013/04 site should be properly washed at the wheel washing facilities at HY/2013/04 site exit to prevent muddy trail on the access roads and public roads thereafter.

The Contractor has agreed to provide 24 hours site workers with manual water spray at the wheel washing facility on each working day to ensure all vehicles have been washed before leaving the site.

### 10.5.4 Noise & Water Quality Complaint – received on 27 March 2017

The complaint covered noise and water quality aspects, as follows:

- Noise: The complaint was about very loud noise which according to the complainant's observations were likely to originate from works near the HZMB HKBCF Island and which continued until late night hours.
- Water quality: The complaint was about pollutant in the open waters from the complainant's residence. A photo was also provided by the complainant. According to the complainant, the pollution appeared to be caused by HZMB-related works.

As informed by the Contractor of HY/2013/04:

1. On 26 March 2017, works were conducted under Contract No. HY/2013/04 until 5pm and no further works were performed during evening and night-time hours on that day. It is noted that the Contractor obtained a valid Construction Noise Permit (CNP no. GW-RS1064-16) permitting the use of certain powered mechanical equipment (PME) during restricted hours between 1 November 2016 and 30 April 2017.
2. On 27 March 2017, no marine-based transportation was conducted under Contract No. HY/2013/04.

Based on the investigation findings above, the complaint is considered invalid under HY/2013/04.

# 11 Review of the Validity of EIA Predictions

## 11.1 Air Quality

A total of four exceedances of the 24-hour TSP Limit Levels were recorded and investigated by the ET of this Contract from 1 October 2018 to 31 January 2020. Of these, one Limit Level exceedance was recorded at AM2, four Limit Level exceedances were recorded at AM3C and three Limit Level exceedances were recorded at AM7B. It was concluded that these exceedances were not due to the Contract. It was noted that other nearby concurrent projects were under construction at various stages throughout the Contract works period.

Also, all 1-hour TSP results recorded by the ET of this Contract were below the Action and Limit Level from 1 October 2018 to 31 January 2020.

The approved EIA Report had predicted that with the implementation of dust mitigation measures, in particular watering frequency of eight times per day, the predicted cumulative 1-hour, 24-hour and annual TSP levels at all ASRs would comply with the TM-EIA and HKAQO (which correspond to the Limit Levels for the HKBCF Project), and therefore no adverse cumulative dust impact would be caused.

Therefore, the air quality monitoring results were in line with the predictions of the approved EIA Report.

Besides the abovementioned period reported under this Contract, the other contracts responsible for reporting air quality monitoring results during the reporting period are presented in **Table 4.2**.

## 11.2 Noise

All noise monitoring results recorded by the ET of this Contract were below the Limit Level from 1 October 2018 to 31 January 2020. Also, since no documented noise complaint was received from any one of the sensitive receivers during the same period, there was no Action Level exceedance.

The approved EIA Report had predicted that with the implementation of noise mitigation measures, the construction noise from the Project works would meet the stipulated criterion at the noise sensitive receivers (NSRs).

Besides the abovementioned period reported under this Contract, the other contracts responsible for reporting noise monitoring results during the reporting period are presented in **Table 4.3**.

## 11.3 Water Quality

This report reviews the validity of such predictions during the period in which this Contract was responsible for the water quality monitoring programme for the HKBCF project (i.e. October 2018 to May 2020), which was after completion of dredging, reclamation and seawall works undertaken by other HZMB Contracts.

A total of 12 Action Limit exceedances (one turbidity and 11 suspended solids) and one Limit Level exceedance (suspended solids) for water quality were recorded and investigated by the ET of this Contract during the reporting period. Following investigations, it was concluded that the exceedances were not related to the HZMB HKBCF project.

The approved EIA Report had predicted that with the implementation of the recommended mitigation measures, no residual adverse impacts on water quality would be expected from the HZMB HKBCF and HKLR projects including reclamation works. Furthermore, no significant impacts were predicted for the operational stage.

While some water quality exceedances were recorded, these were investigated and found to be not related to the HZMB HKBCF project works. Furthermore, the weekly site inspections ensured that all the environmental mitigation measures recommended in the approved EIA Report and Updated EM&A Manual were effectively implemented, and any deficiencies were promptly identified and followed-up by the Contractor.

It was noted that other nearby concurrent projects were under construction at various stages throughout the Contract works period.

Besides the abovementioned period reported under this Contract, the other contracts responsible for reporting water quality monitoring results during the reporting period were Contract Nos. HY/2010/02 (Jul 2015 – Aug 2017) and HY/2013/01 (Sep 2017 – Sep 2018).

## 11.4 Chinese White Dolphin

Two Limit Level exceedances of impact dolphin monitoring were recorded and investigated by the ET of this Contract during the reporting period. Following investigations, 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 that the contribution of impacts due to the HZMB works as a whole (or individual contracts) cannot be quantified nor separate from the other stress factors.

The approved EIA Report had predicted that with the implementation of the recommended mitigation measures, the cumulative impacts to Chinese White Dolphin in terms of disturbance, noise, marine traffic is considered to be minimal and the impact is considered to be low, and no residual impact is expected. More specifically, it was predicted that the loss of dolphin habitat would be contributed mostly by HKBCF reclamation works and would be largely be carried forward to the operational phase, but would also be significantly reduced by effective mitigation measures such as the establishment of Brothers Islands Marine Park, which was officially designated under Marine Parks Ordinance in December 2016. Additional dolphin habitat loss from other nearby concurrent projects was also predicted, although the quantity, locations, size and scheduling of these other projects in reality have differed from those mentioned in the approved EIA Report. For example, the “Expansion of Hong Kong International Airport into a Three Runway System” had not yet been officially announced when the HZMB HKBCF EIA Report was approved by EPD in 2009.

Furthermore, the weekly site inspections ensured that all the environmental mitigation measures recommended in the approved EIA Report and Updated EM&A Manual were effectively implemented, and any deficiencies were promptly identified and followed-up by the Contractor.

Overall, the dolphin monitoring results were in line with the predictions of the approved EIA Report.

Besides the abovementioned period reported under this Contract, the other contracts responsible for reporting water quality monitoring results during the reporting period were Contract Nos. HY/2010/02 (Jul 2015 – Aug 2017) and HY/2013/01 (Sep 2017 – Sep 2018).

## 11.5 Waste Management

Mitigation measures on waste management had been implemented in accordance with the Waste Management Plan for the Contract which was submitted under the EP.

Regular weekly site inspections were conducted by the ET of this Contract to audit the implementation of the recommended mitigation measures, and any issues or observations identified were followed up and rectified by the Contractor. No adverse events regarding waste management under this Contract were observed during the reporting period. Moreover, no complaints regarding waste management under this Contract were received.

Furthermore, the Contractor was registered as a chemical waste producer for the Contract. Sufficient numbers of receptacles were available for general refuse collection and sorting. The C&D materials were disposed of at public filling reception facilities while C&D wastes were disposed of at landfill.

Regarding marine sediment, as a practical means, the disposal operation was managed by a single HKBCF contractor who was also responsible for application of dumping permit and its subsequent extension applications from EPD. Contract No. HY/2013/03 was assigned to coordinate and arrange for disposal of extracted marine sediment from this Contract at the allocated dumping site, with the last batch disposal on 30 August 2017.

The Approved EIA Report had predicted that with the implementation of recommended mitigation measures, residual impacts would not be anticipated for both the construction and operational phases.

## 11.6 Fisheries

The recommended mitigation measures for fisheries consisted of a water quality monitoring and audit programme with implementation measures, which was duly implemented. Among these measures, the Brothers Islands Marine Park was officially designated under Marine Parks Ordinance in December 2016, as mentioned in **Section 11.4**.

The Approved EIA Report had predicted that there would be minor changes in water quality, all of which would comply with Water Quality Objectives during the operation phase, and that the impacts on the fish and shrimp spawning ground in North Lantau waters and Tung Chung Bay (i.e. the next nearest sites of fisheries sensitive receivers) would not be significant, with impacts on other more distant sites to be even less.

## 11.7 Landscape and Visual

Mitigation measures on landscape and visual for construction and operation phases under the Contract, which were adopted during the detail design stage, were implemented in accordance with the Landscape and Visual Plan for the Contract which was submitted under the EP.

During the construction phase, bi-weekly site audits were conducted by the ET of this Contract to audit the implementation of the recommended mitigation measures, and any issues or observations identified were followed up and rectified by the Contractor. No adverse events regarding landscape and visual under this Contract were observed during the construction phase. Moreover, no complaints regarding landscape and visual under this Contract were received.

Furthermore, mitigation measures on landscape and visual during the 12-month establishment period under the HZMB HKBCF project had been implemented in accordance with the Landscape and Visual Plan for the HZMB HKBCF project which was submitted under the EP.

Bi-monthly site inspections during the 12-month establishment period were conducted by the ET of Contract Nos. HY/2013/01, HY/2013/02, HY/2013/03 and HY/2014/05 to audit the implementation of the recommended mitigation measures, and any issues or observations identified were followed up and rectified by the relevant maintenance Contractor. Overall, the planting of the recommended tree and plant species was observed to be satisfactory. No adverse events regarding landscape and visual were observed during the establishment period.

The Approved EIA Report had predicted that with the implementation of the proposed mitigation measures during construction and operation phases, the overall residual impacts are considered as acceptable.

## 11.8 Conclusion

The environmental monitoring results indicated that the construction activities in general were in compliance with the relevant environmental requirements and were environmentally acceptable. The weekly site inspections ensured that all the environmental mitigation measures recommended in the approved EIA Report and Updated EM&A Manual were effectively implemented. Despite the minor deficiencies found during site audits, the relevant Contractor had taken appropriate actions to rectify deficiencies within a reasonable timeframe. Therefore, the effectiveness and efficiency of the mitigation measures were considered high for most of the time.

For air quality and water quality parameters under impact monitoring, some exceedances were recorded and investigated, and found to be not related to the Contract. For Chinese White Dolphin parameters under impact monitoring, some exceedances were recorded and investigated, and there was no evidence that indicated that the reduced number of dolphins in NWL and NEL was related solely to Project works. For all noise parameters under impact monitoring, the measured levels were in line with the approved EIA Report generally.

This indicates that the mitigation measures were effectively implemented.

# 12 Review of the EM&A Programme

The environmental monitoring methodology was considered well established as the monitoring results were found in line with the EIA predictions.

Effective follow up actions were promptly taken once environmental deficiencies were noted. The EM&A programme was considered successfully and adequately conducted during the course of the reporting period.

# 13 Conclusions

## 13.1 Conclusions

### General

The EM&A programme for this Contract, as recommended in the Updated EM&A Manual, commenced on 13 July 2015 and continued throughout the reporting period until 31 May 2020.

The proposal for termination of the construction phase EM&A programme for this Contract including weekly site audits was certified by the ET Leader on 6 March 2020, verified by the IEC on 9 March 2020, approved by EPD on 9 April 2020 and implemented on 20 April 2020.

During this Contract, the monitoring and reporting responsibilities of air quality, noise, water quality and Chinese White Dolphin due to the Project were initially performed by the ETs of other HKBCF Contracts. The ET of this Contract assumed this responsibility of both conducting and reporting on the monitoring due to the Project during the following periods:

| Monitoring Parameter | Phase | Period reported by this Contract |
|---|---|---|
| Air (1-hour TSP) | Construction | 1 Oct 2018 – 31 Jan 2020 (AMS2, AMS3C & AMS7B)(A1)(A2)(A3) |
| Air (24-hour TSP) | Construction | 1 Oct 2018 – 31 Jan 2020 (AMS2, AMS3C & AMS7B)(A1)(A2)(A3) |
| Noise | Construction | 1 Oct 2018 – 31 Jan 2020 (NMS2 & NMS3C)(N1)(N2)(N3) |
| Water Quality | Construction | 1 Oct 2018 – 26 Nov 2018(W1)<br>3 – 14 Dec 2018(W2)<br>2 – 4 Jan 2019(W3)(W4) |
| | Post-construction | 1 – 31 May 2019 |
| | Operational (first year) | 1 Jun 2019 – 31 May 2020 |
| Chinese White Dolphin | Construction | 1 Oct 2018 – 28 Feb 2019(CWD1) |
| | Post-construction | 1 Mar 2019 – 29 Feb 2020 |
| Landscape and Visual | Establishment Works | 24 Feb 2019 – 23 Oct 2019 (HY/2013/01, HY/2013/03 & HY/2014/05)<br>20 Feb 2019 – 4 Oct 2019 (HY/2013/02) |
| Weekly Environmental Site Inspections | Construction | 13 Jul 2015 – 20 Apr 2020 |

Remark:

(A1) The remaining air quality monitoring works at AMS2, AMS3C and AMS7B under this Contract were suspended from 1 February 2020. The ET of Contract No. HY/2019/01 "HZMB HKBCF – Phase 2 and Other Works" is required and continues the full implementation of environmental air quality monitoring commencing on 1 February 2020.

(A2) The air quality monitoring station AMS6 is covered by Contract No. HY/2011/03 "Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road (HZMB HKLR) – Section between Scenic Hill and HKBCF" during the reporting period.

(A3) Besides the abovementioned period reported under this Contract, the other contracts responsible for reporting air quality monitoring results during the reporting period are as follows:

AMS2: HY/2010/02 (Jul 2015 – Aug 2017), HY/2013/01 (Sep 2017 – Sep 2018), HY/2019/01 (Feb 2020 – May 2020)

AMS3B: HY/2010/02 (Jul 2015 – Aug 2017), HY/2013/01 (Sep 2017 – 15 Aug 2018)

AMS3C: HY/2019/01 (Feb 2020 – May 2020)

AMS6: HY/2011/03 (Jul 2015 – May 2020)

AMS7: HY/2010/02 (Jan 2016 – Jan 2018)

AMS7A: HY/2010/02 (Jul 2015 – Dec 2015)

AMS7B: HY/2010/02 (Jan 2016 – Aug 2017), HY/2013/01 (Sep 2017 – Sep 2018), HY/2019/01 (Feb 2020 – May 2020)

(N1) The remaining noise monitoring works at NMS2 and NMS3C under this Contract were suspended from 1 February 2020. The ET of Contract No. HY/2019/01 "HZMB HKBCF – Phase 2 and Other Works" is required and continues the full implementation of environmental noise monitoring commencing on 1 February 2020.

(N2) A proposal to terminate impact monitoring for noise at NMS2 and NMS3C was justified by the ET Leader of this Contract and verified by the IEC on 13 August 2019, and approved by EPD on 3 September 2019. Therefore, the last noise monitoring event at NMS2 and NMS3C to be reported under this Contract was conducted on 2 September 2019.

(N3) Besides the abovementioned period reported under this Contract, the other contracts responsible for reporting construction noise monitoring results during the reporting period are as follows:

NMS2: HY/2010/02 (Jul 2015 – Aug 2017), HY/2013/01 (Sep 2017 – Sep 2018), HY/2019/01 (Feb 2020 – May 2020)

NMS3B: HY/2010/02 (Jul 2015 – Aug 2017), HY/2013/01 (Sep 2017 – 15 Aug 2018)

NMS3C: HY/2013/01 (20 Aug 2018 – 30 Sep 2018), HY/2019/01 (Feb 2020 – May 2020)

(W1) A proposal by ET to temporarily suspend the water quality monitoring under the EM&A programme during a scheduled period of no marine works under HZMB HKBCF was verified by IEC on 26 October 2018 and approved by EPD on 21 November 2018. Subsequently, the water quality monitoring programme was temporarily suspended by ET after completion of water quality monitoring on 26 November 2018.

(W2) The water quality monitoring programme was resumed on 3 December 2018 to align with the Contractor's tentative schedule of marine works, and again temporarily suspended after completion of water quality monitoring on 14 December 2018 after the Contractor confirmed that no marine works were scheduled for the remainder of the reporting month.

(W3) The water quality monitoring programme was resumed on 2 January 2019 to align with the Contractor's tentative schedule of marine works and temporarily suspended at the completion of water quality monitoring on 4 January 2019 after the Contractor confirmed that marine works in the form of removal of the silt curtain was completed.

(W4) Besides the abovementioned periods reported under this Contract, the other contracts responsible for reporting water quality monitoring results during the reporting period are as follows:

HY/2010/02 (Jul 2015 – Aug 2017)

HY/2013/01 (Sep 2017 – Sep 2018)

(CWD1) Besides the abovementioned periods reported under this Contract, the other contracts responsible for reporting dolphin monitoring results during the reporting period are as follows:

HY/2010/02 (Jul 2015 – Aug 2017)

HY/2013/01 (Sep 2017 – Sep 2018)

In particular, the results of 1-hr TSP, 24-hr TSP, noise level (as $L_{eq}$), water quality, Chinese White Dolphin, and landscape and visual under monitoring were checked against established Action and Limit levels by the responsible ET.

### Air Quality

All 1-hour TSP results recorded by the ET of this Contract were below the Action and Limit Level during the reporting period.

A total of four Action Level exceedances of the 24-hour TSP were recorded and investigated by the ET of this Contract during the reporting period. It was concluded that these exceedances were not due to the Contract.

### Noise

All noise monitoring results recorded by the ET of this Contract were below the Limit Level during the reporting period. Also, since no documented noise complaint was received from any

one of the sensitive receivers during the reporting period, there was no Action Level exceedance.

**Water Quality**

A total of 12 Action Limit exceedances (one for turbidity and 11 for suspended solids) and one Limit Level exceedance (suspended solids) for water quality were recorded and investigated by the ET of this Contract during the reporting period. Following investigations, it was concluded that the exceedances were not related to the HZMB HKBCF project.

**Chinese White Dolphin**

Two Limit Level exceedances of impact dolphin monitoring were recorded and investigated by the ET of this Contract during the reporting period. Following investigations, 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 that the contribution of impacts due to the HZMB HKBCF project as a whole (or individual contracts) cannot be quantified nor separate from the other stress factors.

**Landscape Establishment Monitoring**

During the reporting period, bi-monthly landscape establishment monitoring for Contract Nos. HY/2013/01, HY/2013/02, HY/2013/03 and HY/2014/05 was conducted.

As coordinated between IEC and EPD, the monitoring reports for landscape establishment for Contract Nos. HY/2013/01 (for 24 Feb 2019 – 23 Oct 2019), HY/2013/02 (20 Feb 2019 – 4 Oct 2019), HY/2013/03 (for 24 Feb 2019 – 23 Oct 2019) and HY/2014/05 (24 Feb 2019 – 23 Oct 2019) were covered in the individual monthly and quarterly EM&A reports for this Contract which have already been submitted to EPD.

**Record of Complaints**

There were 12 complaints received in relation to the environmental impact for this Contract during the reporting period. After investigations, it was concluded that the exceedances were not related to the HZMB HKBCF project.

**Notifications of Summons and Successful Prosecutions**

There were no notifications of summons or prosecutions received under this Contract during the reporting period.

**Implementation of Mitigation Measures**

Mitigation measures were implemented by the Contractor to minimise the environmental impacts due to construction activities. From observations made during site audits and results of impact monitoring, it was considered that the mitigation measures recommended in the Updated EM&A Manual were largely effective and efficient in controlling the environmental pollution caused by the construction works and first year of operation of the Project. The Contractor was reminded to ensure that all mitigation measures recommended in the Updated EM&A Manual are properly implemented within the Project site area.

Therefore, the EM&A Programme was considered to be successful in cost-effectively identifying deterioration and initiating prompt and effective mitigatory action when necessary, despite the recording of some exceedances.

# Figures

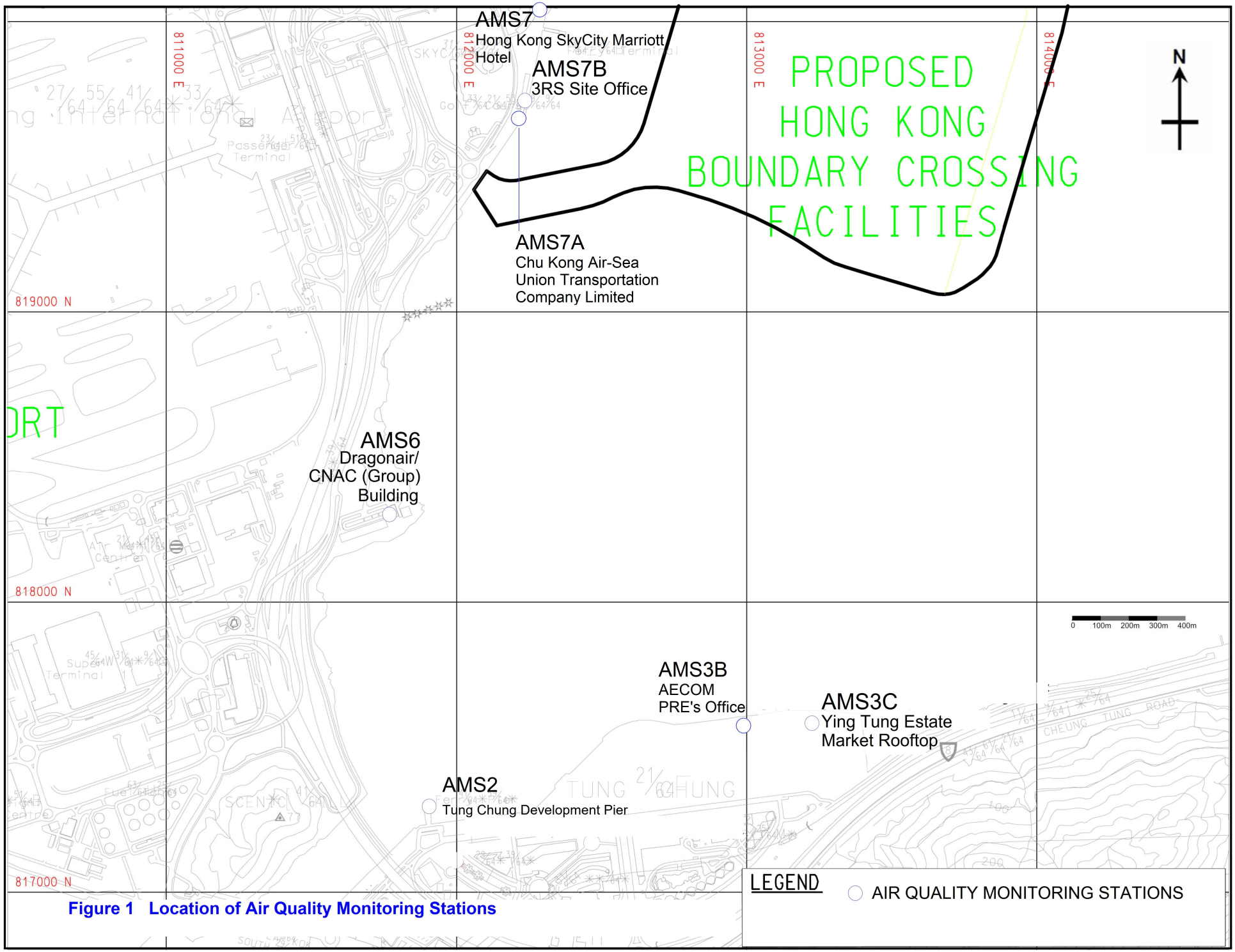



**Figure 1 Location of Air Quality Monitoring Stations**

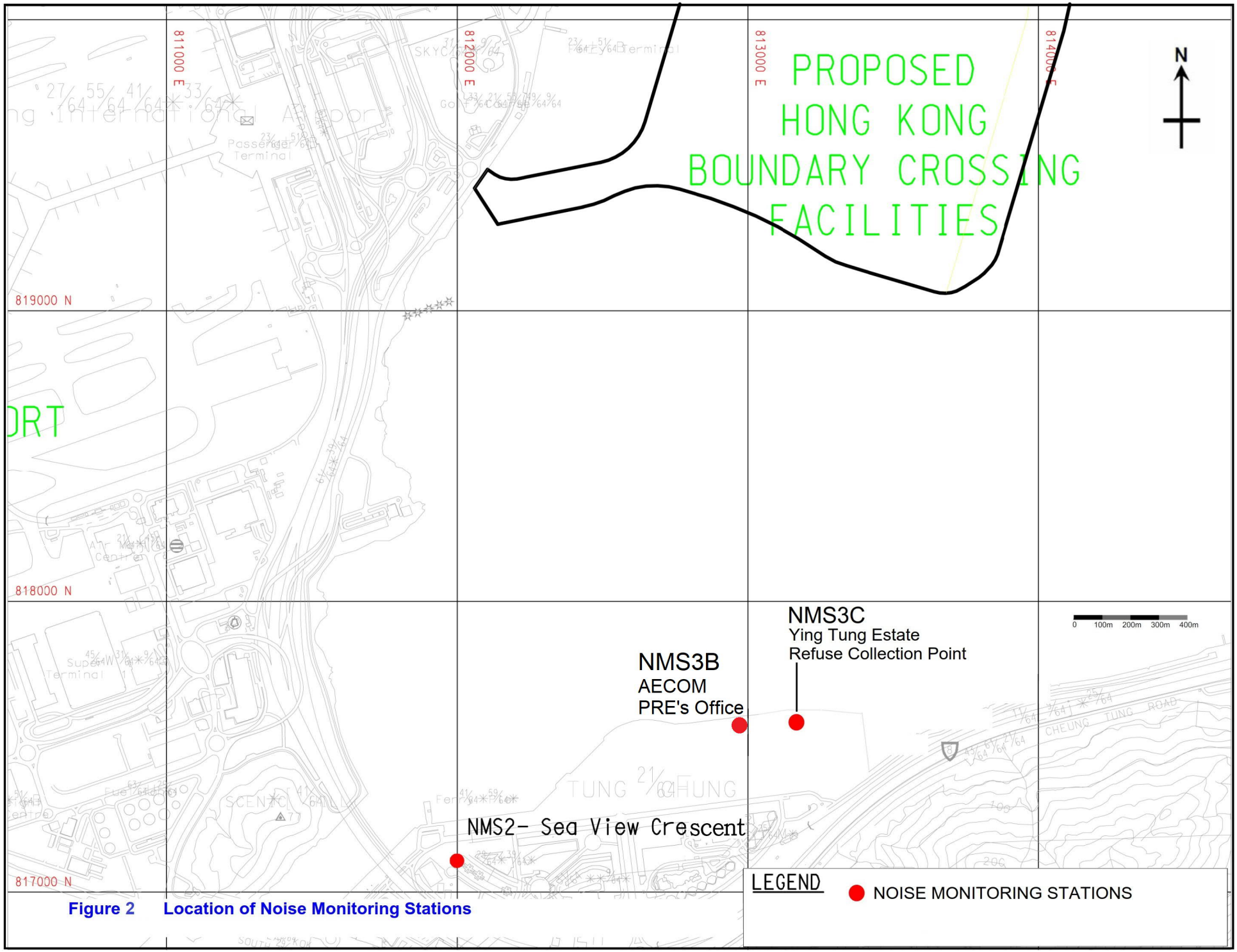



**Figure 2 Location of Noise Monitoring Stations**


| Station | East | North |
|---|---|---|
| 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 | 820881 |
| IS(Mf)11 | 813562 | 820716 |
| IS(Mf)16 | 814328 | 819497 |
| IS17 | 814539 | 820391 |
| SR3 | 810525 | 816456 |
| SR3(N) | 810689 | 816591 |
| SR4(N) | 814705 | 817859 |
| SR5 | 811489 | 820455 |
| SR5(N) | 812569 | 821475 |
| SR6 | 805837 | 821818 |
| SR7 | 814293 | 821431 |
| SR10A | 823741 | 823495 |
| SR10A(N) | 823644 | 823484 |
| SR10B(N) | 823683 | 823187 |
| SR10B(N2) | 823689 | 823159 |
| 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 |

FIGURE 3.1– LOCATION OF WATER QUALITY MONITORING STATIONS (CONSTRUCTION PHASE)

LEGEND

IS — IMPACT STATIONS

CS — CONTROL / FAR FIELD STATIONS

SR — SENSITIVE RECEIVERS STATIONS


| 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 |
| **IS8(N)** | **814413** | **818570** |
| **SR4(N2)** | **814688** | **817996** |

FIGURE 3.2 – LOCATION OF WATER QUALITY MONITORING STATIONS (POST-CONSTRUCTION PHASE)

LEGEND

IS — IMPACT STATIONS

CS — CONTROL / FAR FIELD STATIONS

SR — SENSITIVE RECEIVERS STATIONS


| Station | East | North |
|---|---|---|
| SR2(A) | 807810 | 817189 |
| SR3(N) | 810689 | 816591 |
| CS2(A) | 805232 | 818606 |
| CS(Mf)5 | 817990 | 821129 |

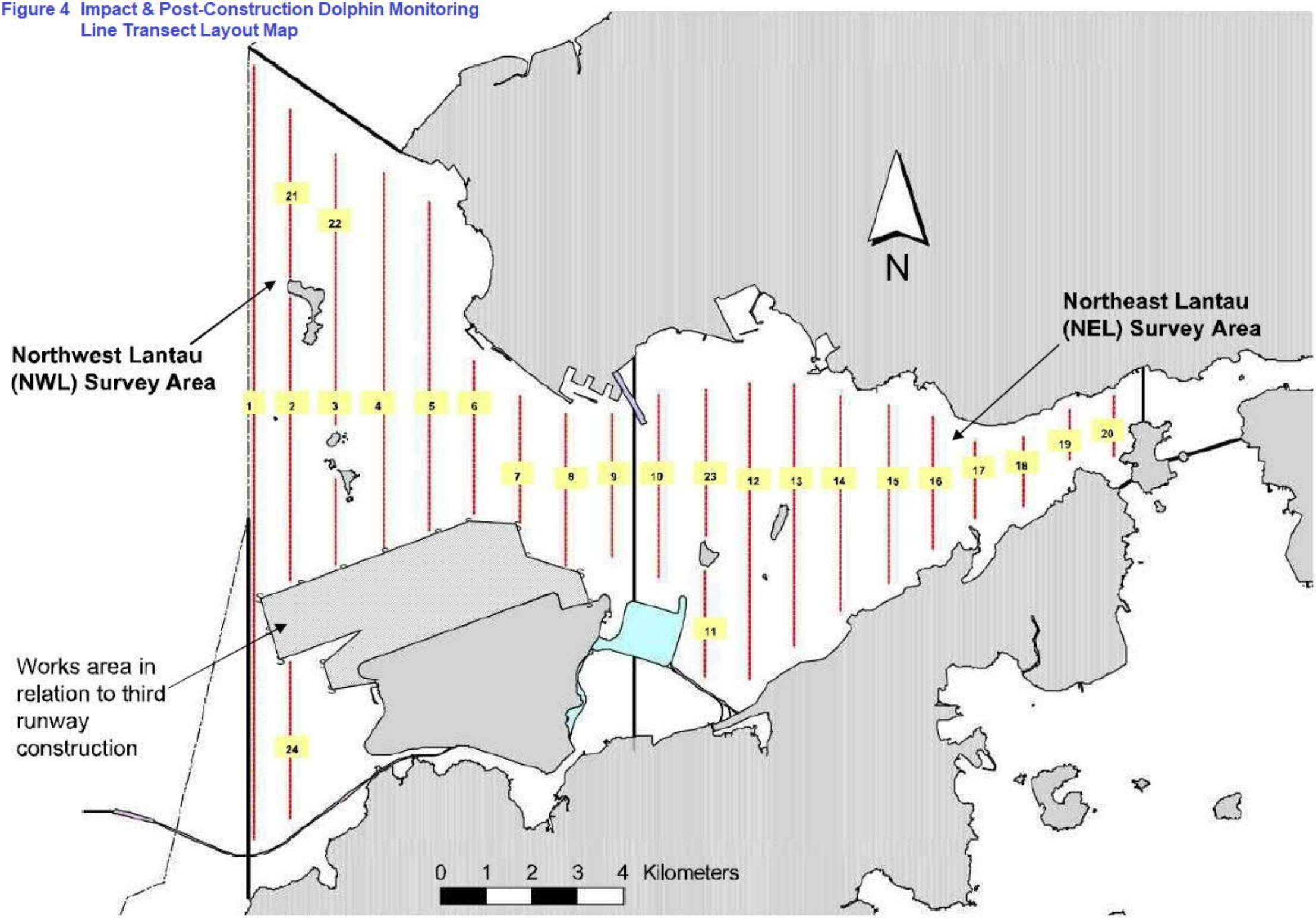
FIGURE 3.3 – LOCATION OF WATER QUALITY MONITORING STATIONS (IMPACT OPERATIONAL PHASE)

LEGEND

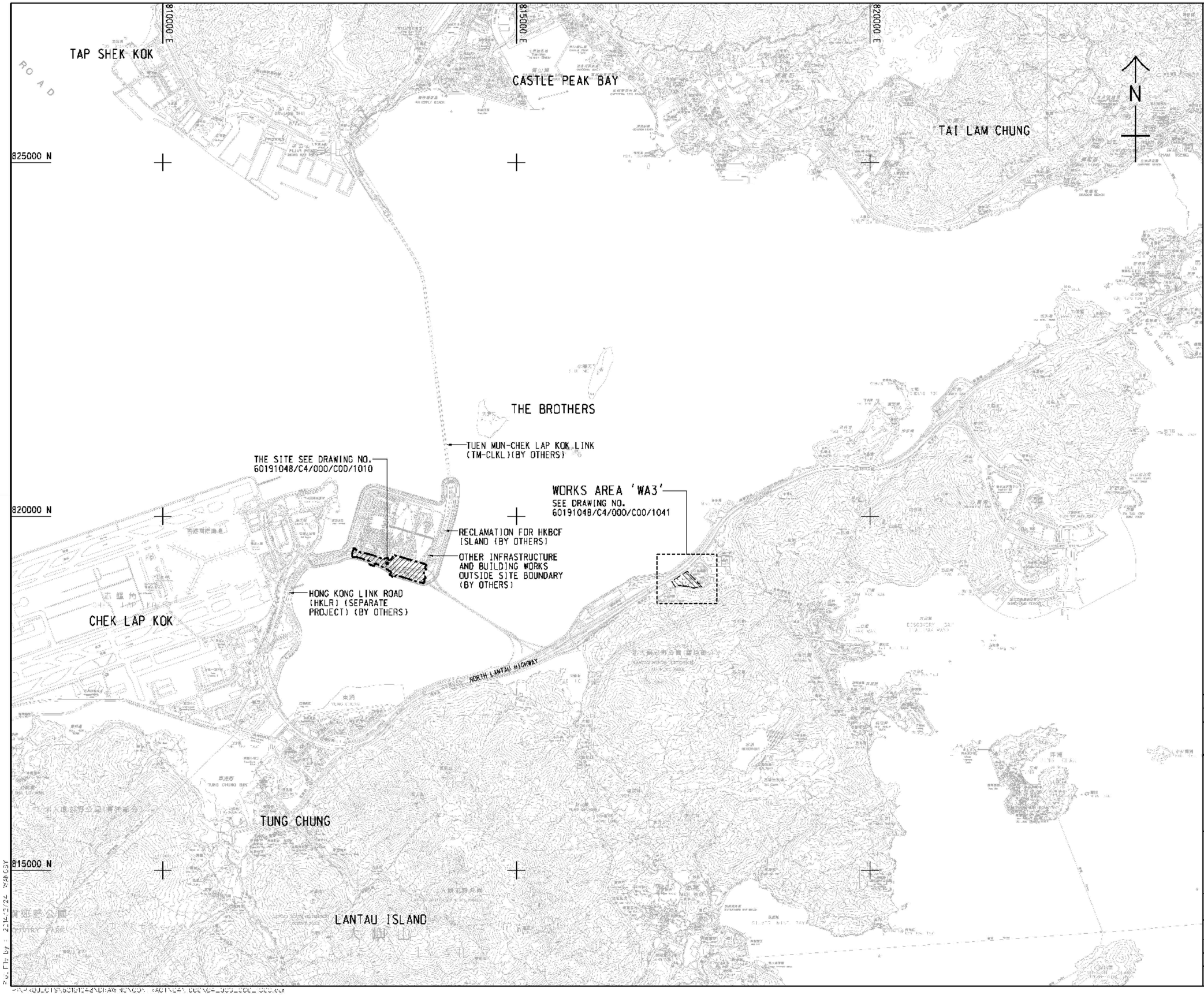
CS CONTROL STATIONS

SR SENSITIVE RECEIVERS STATIONS

Figure 4 Impact & Post-Construction Dolphin 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.

## LEGEND:

SITE BOUNDARY

WORKS AREA

| | | | | |
|---|---|---|---|---|
| - | TENDER DRAWING | BWCW | SCI | FEB.14 |
| REV. | DESCRIPTION | O.S. CHECKED | P.S. APPROVED | DATE |

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
- INFRASTRUCTURE WORKS STAGE II (SOUTHERN PORTION)

# SITE LOCATION PLAN

AECOM
Rogers Stirk Harbour + Partners
BURO HAPPOLD ATKINS ADI
Aedas

DRG.NO. 圖紙編號 60191048/C4/000/C00/1000

| | | |
|---|---|---|
| DESIGNED BY 設計 BWCW | CONTRACT NO. 合約編號 HY/2013/04 | P. DIR. APPROVED 署長 TKH |
| DRAWN BY 繪圖 WSY | STATUS 狀況 | |
| SCALE 比例 A1 1 : 25000 | | |
| DIMENSIONS ARE IN 尺寸單位 METRES | © COPYRIGHT RESERVED 版 權 所 有 | |

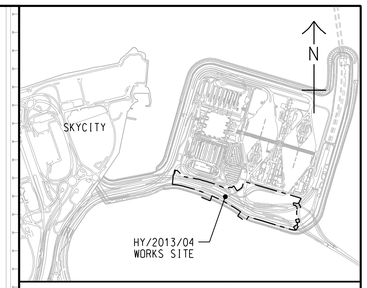
Plotted by : 2014/2/24 WSYCSY

P:\PROJECTS\60191048\DRAWINGS\ACTIVE\C00\C04_000_C00_1000.dgn

812800 E
813200 E
813600 E
820000 N
819600 N
819400 N

BRIDGE D1
BRIDGE D8
BOX CULVERT C
DEPRESSED ROAD DRAINAGE
PUMP HOUSE CUM SWITCH ROOM
BRIDGE D9a
BRIDGE D14a
BRIDGE D10
BRIDGE D14b
BRIDGE D9b
BRIDGE D11
BRIDGE D9c
BRIDGE D16N
BRIDGE D16S
BRIDGE D15
BRIDGE D13
BRIDGE D12a
BRIDGE D12b
BOX CULVERT D
M.J.

A




## LOCATION PLAN
SCALE 1 : 25000

## LEGEND:

- SITE BOUNDARY
- AT-GRADE WORKS LIMIT
- M.J. — MOVEMENT JOINT
- BRIDGE
- BUILDING/FACILITIES
- AT-GRADE ROAD
- BOX CULVERT

| REV. 修訂 | DESCRIPTION 內容摘要 | CHECKED 複核 | DATE 日期 |
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| A | TENDER ADDENDUM NO. 3 | BWCW SCI | MAY.14 |
| – | TENDER DRAWING | BWCW SCI | FEB.14 |

D.C. P.D.

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
- INFRASTRUCTURE WORKS STAGE II (SOUTHERN PORTION)

# GENERAL ARRANGEMENT

AECOM
Rogers Stirk Harbour + Partners
BURO HAPPOLD ATKINS ADI
Aedas

DRG.NO. 圖紙編號 60191048/C4/000/C00/1002B

| | | | |
|---|---|---|---|
| DESIGNED BY 設計 | BWCW | CONTRACT NO. 合約編號 | HY/2013/04 |
| DRAWN BY 繪圖 | WSY | P. Dir. APPROVED 批准人 | TKH |
| SCALE 比例 | A1 1 : 2000 | STATUS 階段 | WORKING DRAWING |
| DIMENSIONS ARE IN 尺寸單位 | METRES | | |



Plot File by : 2014/5/7 WANGSY

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|---|---|---|
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| 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 | 817620.269 | 819000.620 |
| 313 | 817445.362 | 819013.131 |
| 314 | 817450.595 | 819032.307 |
| 315 | 817495.828 | 819059.595 |
| 316 | 817522.110 | 819075.388 |
| 317 | 817566.404 | 819028.472 |
| 318 | 817568.506 | 819008.526 |
| 319 | 817531.155 | 819001.066 |
| 320 | 817533.346 | 818991.306 |

A

817200 E

817400 E

817600 E

819200 N

819000 N

NORTH LANTAU HIGHWAY

CHEUNG TUNG ROAD

小濛灣污水處理廠
Siu Ho Wan Sewage Treatment Works

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/2013/02

WORKS AREA OCCUPIED BY CONTRACT NO. HY/2013/01

WORKS AREA OCCUPIED BY CONTRACT NO. HY/2013/03

10m WIDE COMMON ACCESS TO BE MAINTAINED BY CONTRACT NO. HY/2010/02

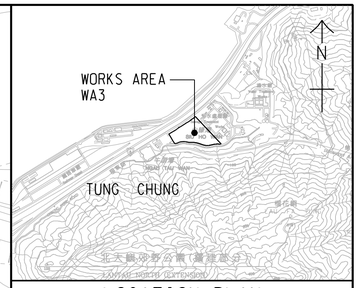
301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320

WORKS AREA OCCUPIED BY CONTRACT NO. HY/2010/02

10m WIDE COMMON ACCESS TO BE CONSTRUCTED AND INITIALLY MAINTAINED BY CONTRACT NO. HY/2013/01. UPON COMMENCEMENT OF CONTRACT NO. HY/2013/03. THE MAINTENANCE RESPONSIBILITY SHALL BE TRANSFERRED FROM CONTRACT NO. HY/2013/01 TO CONTRACT NO. HY/2013/03.

WORKS AREA OCCUPIED BY CONTRACT NO. HY/2013/04

WORKS AREA OCCUPIED BY CONTRACT NO. HY/2014/05




## 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
- PORTION 3.10 (A)

| REV. 修訂 | DESCRIPTION 內容摘要 | D.E. P.E. CHECKED 查核 | DATE 日期 |
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| A | TENDER ADDENDUM NO. 2 | BWCW SCI | APR.14 |
| - | TENDER DRAWING | BWCW SCI | FEB.14 |

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
- INFRASTRUCTURE WORKS STAGE II (SOUTHERN PORTION)

# WORKS AREA WA3

AECOM
Rogers Stirk Harbour + Partners
BURO HAPPOLD ATKINS ADI
Aedas

DRG.NO. 圖紙編號 60191048/C4/000/C00/1041B

| | | |
|---|---|---|
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| SCALE 比例 A1 1 : 1000 | | |
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Plot File by : 2014/4/11 WANGSY

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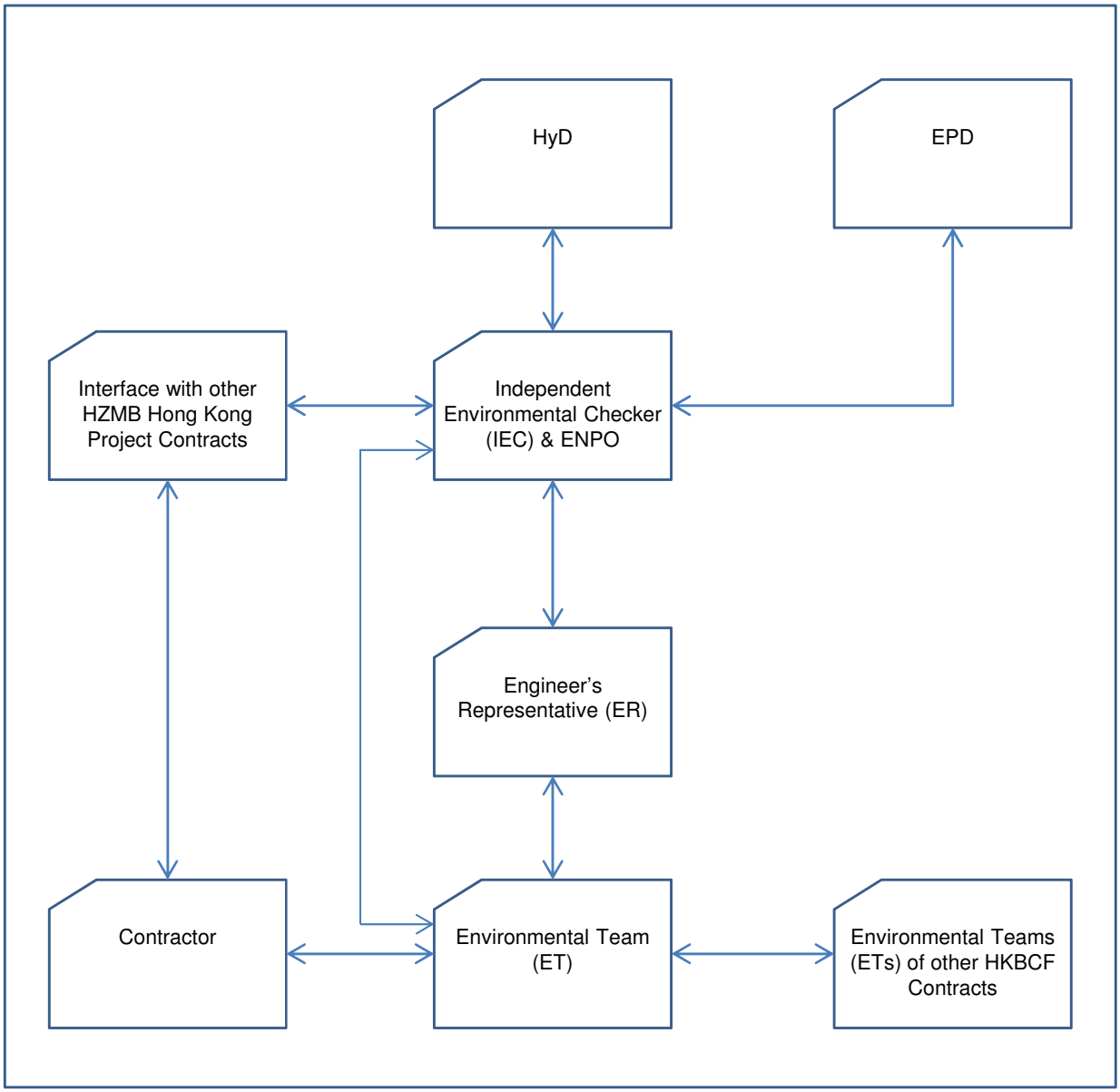
# Appendix B. Project Organization for Environmental Works

## Project Organisation for Environmental Works



# Appendix C. Construction Programme

# HY/2013/04 - Hong Kong Boundary Crossing Facilities Infrastructure Works Stage II (Southern Portion)



| Activity ID | Activity Name | Milestone |
|---|---|---|
| **Essential Works Updates - Tier 1 - 26 C** | | |
| **Contract Key Dates** | | |
| CON.KD.0005 | Letter of Acceptance (LOA) | Letter of Acceptance (LOA) |
| CON.KD.0010 | Commencement Date | Commencement Date |
| CON.KD.0020 | Completion of the whole of the Works (1520) | 11-May-19, Completion of the whole of the Works (1520) |
| **Possession Dates** | | |
| CON.PD.1010 | Site Possession of Portion A1 (61) - 8 | Site Possession of Portion A1 (61) - 8 |
| CON.PD.1020 | Site Possession of Portion A2 (61) | Site Possession of Portion A2 (61) |
| CON.PD.1050 | Site Possession of Portion A5 (61) | Site Possession of Portion A5 (61) |
| CON.PD.1060 | Site Possession of Portion A6 (61) | Site Possession of Portion A6 (61) |
| CON.PD.1070 | Site Possession of Portion B1-5 (92) | Site Possession of Portion B1-5 (92) |
| CON.PD.1080 | Site Possession of Portion B2 (123) | Site Possession of Portion B2 (123) |
| CON.PD.1130 | Site Possession of Portion B5 (123) | Site Possession of Portion B5 (123) |
| CON.PD.1140 | Site Possession of Portion C1 (184) | 06-Oct-16 Site Possession of Portion C1 (184) |
| CON.PD.1150 | Site Possession of Portion C2 (184) | Site Possession of Portion C2 (184) |
| CON.PD.1160 | Site Possession of Portion D1 (183) | Site Possession of Portion D1 (183) |
| CON.PD.1180 | Site Possession of Portion D3 (183) | Site Possession of Portion D3 (183) |
| CON.PD.1190 | Site Possession of Portion A1 (61) - 2 | Site Possession of Portion A1 (61) - 2 |
| CON.PD.1200 | Site Possession of Portion A1 (61) - 5 | Site Possession of Portion A1 (61) - 5 |
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| CON.PD.1230 | Site Possession of Portion C1 -2 (184) | Site Possession of Portion C1 -2 (184) |
| CON.PD.1240 | Site Possession of Portion B1 -1 (92) | Site Possession of Portion B1 -1 (92) |
| CON.PD.1250 | Site Possession of Portion B1 -2 (92) | Site Possession of Portion B1 -2 (92) |
| CON.PD.1260 | Site Possession of Portion A1 (61) - 7 | Site Possession of Portion A1 (61) - 7 |
| CON.PD.1270 | Site Possession of Portion B1-3 (92) | Site Possession of Portion B1-3 (92) |
| CON.PD.1280 | Site Possession of Portion B1-4 (92) | Site Possession of Portion B1-4 (92) |
| CON.PD.1290 | Site Possession of Portion C1 -3 (184) | Site Possession of Portion C1 -3 (184) |
| **Site Access Dates** | | |
| CON.PD.1030 | Site Access of Portion A3 (476) | 06-Oct-16 Site Access of Portion A3 (476) |
| CON.PD.1040 | Site Access of Portion A4 (627) | 29-Nov-16 Site Access of Portion A4 (627) |
| CON.PD.1090 | Site Access of Portion B3 (476) | 06-Oct-16 Site Access of Portion B3 (476) |
| CON.PD.1100 | Site Access of Portion B4 (627) | 29-Nov-16 Site Access of Portion B4 (627) |
| CON.PD.1170 | Site Access of Portion D2 (488) | 06-Oct-16 Site Access of Portion D2 (488) |
| **Contractual Key Dates - Stage / Section (** | | |
| CON.FOT.KD01 | KD01 - Achievement of Stage 1A (525) | 06-Oct-16, KD01 - Achievement of Stage 1A (525) |
| CON.FOT.KD02 | KD02 - Achievement of Stage 1B (650) | 22-Dec-16, KD02 - Achievement of Stage 1B (650) |
| CON.FOT.KD03 | KD03 - Achievement of Stage 2 (525) | 06-Oct-16, KD03 - Achievement of Stage 2 (525) |
| CON.FOT.KD04 | KD04 - Achievement of Stage 3 (465) | 06-Oct-16, KD04 - Achievement of Stage 3 (465) |
| CON.FOT.KD05 | KD05 - Achievement of Stage 4 (615) | 17-Nov-16, KD05 - Achievement of Stage 4 (615) |
| CON.FOT.KD06 | KD06 - Achievement of Stage 5 (615) | 17-Nov-16, KD06 - Achievement of Stage 5 (615) |
| CON.FOT.KD07 | KD07 - Achievement of Stage 6 (270) | 06-Oct-16, KD07 - Achievement of Stage 6 (270) |
| CON.FOT.KD08 | KD08 - Completion of Section I of the Works (795) | 16-May-17, KD08 - Completion of Section I of the Works (795) |
| CON.FOT.KD09 | KD09 - Completion of Section II of the Works (803) | 24-May-17, KD09 - Completion of Section II of the Works (803) |
| CON.FOT.KD10 | KD10 - Completion of Section III of the Works (803) | 24-May-17, KD10 - Completion of Section III of the Works (803) |
| CON.FOT.KD11 | KD11 - Completion of Section IV of the Works (565) | 06-Oct-16, KD11 - Completion of Section IV of the Works (565) |
| CON.FOT.KD12 | KD12 - Completion of Section V of the Works (803) | 24-May-17, KD12 - Completion of Section V of the Works (803) |
| CON.FOT.KD13 | KD13 - Completion of Section VI of the Works (465) | 06-Oct-16, KD13 - Completion of Section VI of the Works (465) |
| CON.FOT.KD14 | KD14 - Completion of Section VII of the Works (1155) | 11-May-18, KD14 - Completion of Section VII of the Works (1155) |
| CON.FOT.KD15 | KD15 - Completion of Section VIIIA of the Works (795) | 16-May-17, KD15 - Completion of Section VIIIA of the Works (795) |
| CON.FOT.KD16 | KD16 - Completion of Section VIIIB of the Works (1155) | 11-May-18, KD16 - Completion of Section VIIIB of the Works (1155) |
| CON.FOT.KD17 | KD17 - Achievement of Stage 7 (718) | 28-Feb-17, KD17 - Achievement of Stage 7 (718) |
| CON.FOT.KD17A | KD17A - Completion of Section VIIIC of the Works (795) | 16-May-17, KD17A - Completion of Section VIIIC of the Works (795) |
| CON.FOT.KD18 | KD18 - Completion of Section VIIID of the Works (1155) | 11-May-18, KD18 - Completion of Section VIIID of the Works (1155) |
| CON.FOT.KD19 | KD19 - Completion of Section IXA of the Works (1160) | 16-May-18, KD19 - Completion of Section IXA of the Works (1160) |
| CON.FOT.KD20 | KD20 - Completion of Section IXB of the Works (1520) | 11-May-19, KD20 - Completion of Section IXB of the Works (1520) |
| **Contractual Handover Dates to Employer** | | |
| CON.HD.1190 | Handover of Portion A1 (KD8+28 days) | 13-Jun-17, Handover of Portion A1 (KD8+28 days) |
| CON.HD.1200 | Handover of Portion A2 (KD8+28 days) | 13-Jun-17, Handover of Portion A2 (KD8+28 days) |
| CON.HD.1210 | Handover of Portion A3 (KD9+28 days) | 21-Jun-17, Handover of Portion A3 (KD9+28 days) |
| CON.HD.1220 | Handover of Portion A4 (KD10+28 days) | 21-Jun-17, Handover of Portion A4 (KD10+28 days) |
| CON.HD.1240 | Handover of Portion A5 (KD13+0 days) | 06-Oct-16, Handover of Portion A5 (KD13+0 days) |

2015 2016 2017 2018 2019 2020 2021

中國建築工程(香港)有限公司
CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG) LTD.

Current Milestone
Late Bar
Actual Work

## HY/2013/04 - Detailed Works Programme

Detailed Works Programme (IWP) Rev. 04

| Date | Revision | Chec... | Approved |
|---|---|---|---|
| 09-Sep-15 | Detailed Works Programme ... | WN/WC | ET |
| 17-Oct-15 | Detailed Works Programme ... | WN/WC | ET |
| 29-Oct-15 | Detailed Works Programme ... | WN/WC | ET |
| 25-Nov-15 | Detailed Works Programme ... | WN/WC | ET |

# HY/2013/04 - Hong Kong Boundary Crossing Facilities Infrastructure Works Stage II (Southern Portion)

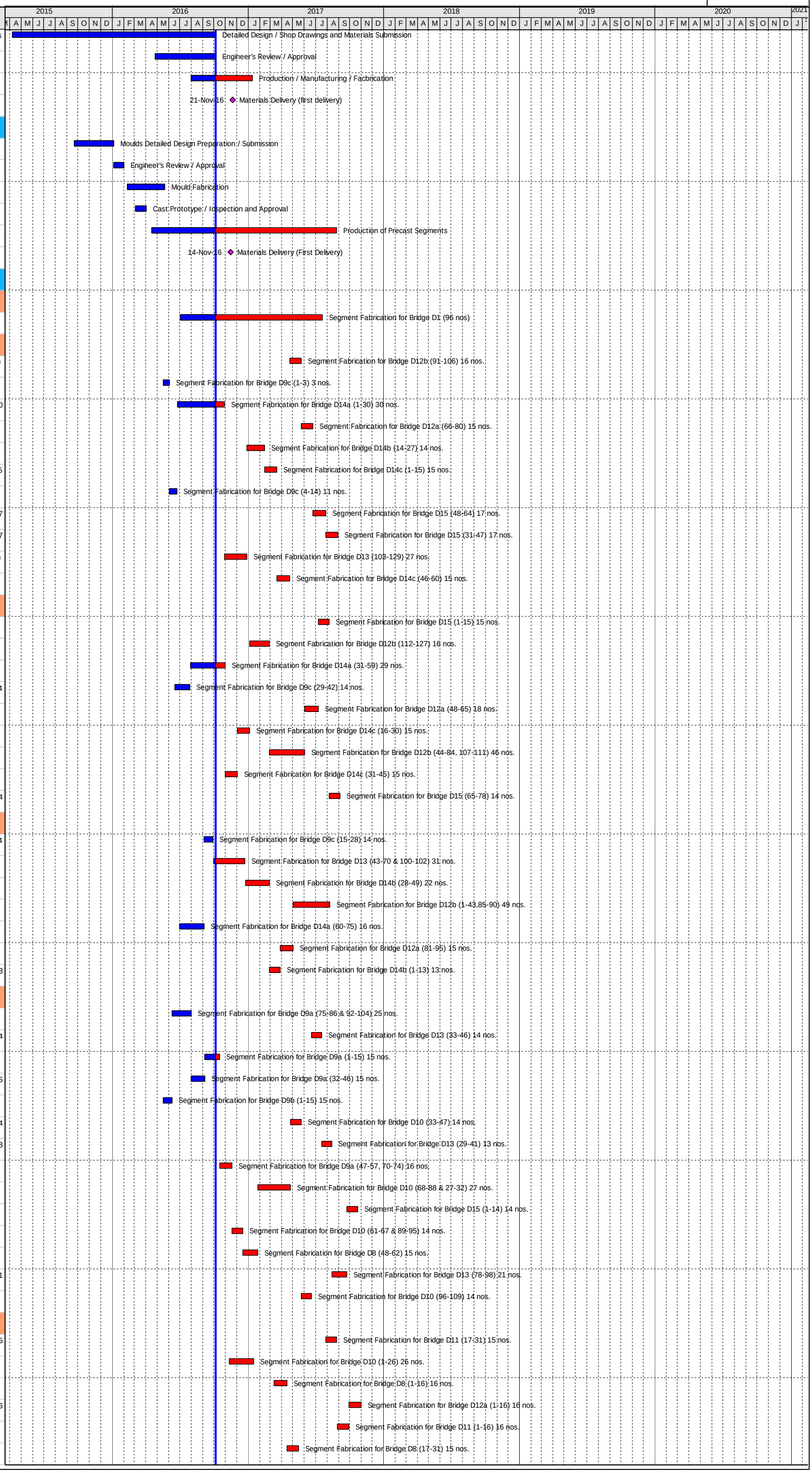


| Activity ID | Activity Name | Gantt |
|---|---|---|
| CON.HD.1250 | Handover of Portion A6 (KD14+28 days) | 08-Jun-18, Handover of Portion A6 (KD14+28 days) |
| CON.HD.1260 | Handover of Portion B1 (KD8+28 days) | 13-Jun-17, Handover of Portion B1 (KD8+28 days) |
| CON.HD.1270 | Handover of Portion B2 (KD8+28 days) | 13-Jun-17, Handover of Portion B2 (KD8+28 days) |
| CON.HD.1280 | Handover of Portion B3 (KD11+28 days) | 02-Nov-16, Handover of Portion B3 (KD11+28 days) |
| CON.HD.1290 | Handover of Portion B4 (KD12+28 days) | 21-Jun-17, Handover of Portion B4 (KD12+28 days) |
| CON.HD.1300 | Handover of Portion B5 (KD14+28days) | 08-Jun-18, Handover of Portion B5 (KD14+28days) |
| CON.HD.1310 | Handover of Portion C1 (KD8+28 days) | 13-Jun-17, Handover of Portion C1 (KD8+28 days) |
| CON.HD.1320 | Handover of Portion C2 (KD13+0 days) | 06-Oct-16, Handover of Portion C2 (KD13+0 days) |
| CON.HD.1330 | Handover of Portion D1 (KD8+28 days) | 13-Jun-17, Handover of Portion D1 (KD8+28 days) |
| CON.HD.1340 | Handover of Portion D2 (KD8+28 days) | 13-Jun-17, Handover of Portion D2 (KD8+28 days) |
| CON.HD.1350 | Handover of Portion D3 (KD8+28 days) | 13-Jun-17, Handover of Portion D3 (KD8+28 days) |
| **Contractor Planned Completion: Key Dat** | | |
| CON.SC.KD01 | KD01 - Achievement of Stage 1A (525) | 19-Jun-18, KD01 - Achievement of Stage 1A (525) |
| CON.SC.KD02 | KD02 - Achievement of Stage 1B (650) | 03-May-18, KD02 - Achievement of Stage 1B (650) |
| CON.SC.KD03 | KD03 - Achievement of Stage 2 (525) | 19-Jun-18, KD03 - Achievement of Stage 2 (525) |
| CON.SC.KD04 | KD04 - Achievement of Stage 3 (465) | 12-Jun-17, KD04 - Achievement of Stage 3 (465) |
| CON.SC.KD05 | KD05 - Achievement of Stage 4 (615) | 20-Aug-18, KD05 - Achievement of Stage 4 (615) |
| CON.SC.KD06 | KD06 - Achievement of Stage 5 (615) | 03-Aug-17, KD06 - Achievement of Stage 5 (615) |
| CON.SC.KD07 | KD07 - Achievement of Stage 6 (270) | 14-Nov-17, KD07 - Achievement of Stage 6 (270) |
| CON.SC.KD08 | KD08 - Completion of Section I of the Works (795) | 04-Jul-18, KD08 - Completion of Section I of the Works (795) |
| CON.SC.KD09 | KD09 - Completion of Section II of the Works (803) | 21-Aug-18, KD09 - Completion of Section II of the Works (803) |
| CON.SC.KD10 | KD10 - Completion of Section III of the Works (803) | 21-Aug-18, KD10 - Completion of Section III of the Works (803) |
| CON.SC.KD11 | KD11 - Completion of Section IV of the Works (565) | 10-Apr-18, KD11 - Completion of Section IV of the Works (565) |
| CON.SC.KD12 | KD12 - Completion of Section V of the Works (803) | 21-Aug-18, KD12 - Completion of Section V of the Works (803) |
| CON.SC.KD13 | KD13 - Completion of Section VI of the Works (465) | 29-Jun-17, KD13 - Completion of Section VI of the Works (465) |
| CON.SC.KD14 | KD14 - Completion of Section VII of the Works (1155) | 28-Aug-19, KD14 - Completion of Section VII of the Works ( |
| CON.SC.KD15 | KD15 - Completion of Section VIIIA of the Works (795) | 03-Aug-18, KD15 - Completion of Section VIIIA of the Works (795) |
| CON.SC.KD16 | KD16 - Completion of Section VIIIB of the Works (1155) | 28-Aug-19, KD16 - Completion of Section VIIIB of the Work |
| CON.SC.KD17 | KD17 - Achievement of Stage 7 (718) | 03-Jul-18, KD17 - Achievement of Stage 7 (718) |
| CON.SC.KD17A | KD17A - Completion of Section VIIIC of the Works (795) | 03-Aug-18, KD17A - Completion of Section VIIIC of the Works (795) |
| CON.SC.KD18 | KD18 - Completion of Section VIIID of the Works (1155) | 28-Aug-19, KD18 - Completion of Section VIIID of the Work |
| CON.SC.KD19 | KD19 - Completion of Section IXA of the Works (1160) | 03-Aug-19, KD19 - Completion of Section IXA of the Works (11 |
| CON.SC.KD20 | KD20 - Completion of Section IXB of the Works (1520) | 27-Aug-20, KD20 |
| **Preliminaries and General Requiremer** | | |
| **Insurance** | | |
| CON.PR.1010 | Arrange and Secure Professional Indemnity Insurances and submit copy to Engineer | Arrange and Secure Professional Indemnity Insurances and submit copy to Engineer |
| **Programme** | | |
| **Initial Works Programme** | | |
| CON.PR.1020.10 | Prepare & Submit Initial Works Programme (IWP) | Prepare & Submit Initial Works Programme (IWP) |
| CON.PR.1020.20 | Engineer's Approval | Engineer's Approval |
| **Provisional Programme for Piling Works** | | |
| CON.PR.1030.10 | Prepare Detailed Piling Schedule (refer to IWP) | Prepare Detailed Piling Schedule (refer to IWP) |
| CON.PR.1030.20 | Engineer's Approval | Engineer's Approval |
| **3 Months Rolling Programme** | | |
| CON.PR.1040.10 | Prepare 3 Months Rolling Programme | Prepare 3 Months Rolling Programme |
| CON.PR.1040.20 | Engineer's Approval | Engineer's Approval |
| **Detailed Works Programme** | | |
| CON.PR.1050.10 | Prepare Detailed Works Programme (DWP) | Prepare Detailed Works Programme (DWP) |
| CON.PR.1050.20 | Engineer's Approval | Engineer's Approval |
| **Safety & Health** | | |
| CON.PR.1060.10 | Draft Safety Plan | Draft Safety Plan |
| CON.PR.1060.20 | Finalized Safety Plan | Finalized Safety Plan |
| **Environmental Management Plan** | | |
| CON.PR.1080.10 | Draft Envirionmental Management Plan | Draft Environmental Management Plan |
| CON.PR.1080.20 | Finalized EMP | Finalized EMP |
| **Sub-Contractor Management Plan** | | |
| CON.PR.1080.50 | Draft Subcontractor Management Plan | Draft Subcontractor Management Plan |
| CON.PR.1080.60 | Engineer's Approval | Engineer's Approval |
| **Temporary Facilities** | | |
| CON.PR.0130 | Site Possession / Access to Works Area WA3 | Site Possession / Access to Works Area WA3 |
| CON.PR.0140 | Survey / Setting Out | Survey / Setting Out |
| CON.PR.0150.10 | Site Formation / Site Clearing | Site Formation / Site Clearing |
| CON.PR.0160 | Contractor's Site Office | Contractor's Site Office |
| CON.PR.0170 | External Works - Paving, Drainage and Fencing | External Works - Paving, Drainage and Fencing |
| **Contractors Design & Procurement** | | |
| **Bridge Bearings** | | |

# HY/2013/04 - Hong Kong Boundary Crossing Facilities Infrastructure Works Stage II (Southern Portion)



| Activity ID | Activity Name |
|---|---|
| PROC.MA.1610 | Detailed Design / Shop Drawings and Materials Submission |
| PROC.MA.1615 | Engineer's Review / Approval |
| PROC.MA.1650 | Production / Manufacturing / Facbrication |
| PROC.MA.1670 | Materials Delivery (first delivery) |
| **Precast Concrete - Segments** | |
| PROC.MA.1760 | Moulds Detailed Design Preparation / Submission |
| PROC.MA.1765 | Engineer's Review / Approval |
| PROC.MA.1770 | Mould Fabrication |
| PROC.MA.1780 | Cast Prototype / Inspection and Approval |
| PROC.MA.2570 | Production of Precast Segments |
| PROC.MA.2590 | Materials Delivery (First Delivery) |
| **Segment Fabrication and Post Pouring** | |
| **Segment Fabrication Type A** | |
| Fab.A1.001 | Segment Fabrication for Bridge D1 (96 nos) |
| **Segment Fabrication Type C1** | |
| Fab.TC1.0010 | Segment Fabrication for Bridge D12b (91-106) 16 nos. |
| Fab.TC1.0020 | Segment Fabrication for Bridge D9c (1-3) 3 nos. |
| Fab.TC1.0030 | Segment Fabrication for Bridge D14a (1-30) 30 nos. |
| Fab.TC1.0040 | Segment Fabrication for Bridge D12a (66-80) 15 nos. |
| Fab.TC1.0050 | Segment Fabrication for Bridge D14b (14-27) 14 nos. |
| Fab.TC1.0060 | Segment Fabrication for Bridge D14c (1-15) 15 nos. |
| Fab.TC1.0080 | Segment Fabrication for Bridge D9c (4-14) 11 nos. |
| Fab.TC2.00060 | Segment Fabrication for Bridge D15 (48-64) 17 nos. |
| Fab.TC3.0060 | Segment Fabrication for Bridge D15 (31-47) 17 nos. |
| Fab.TC4.0030 | Segment Fabrication for Bridge D13 (103-129) 27 nos. |
| Fab.TC4.0060 | Segment Fabrication for Bridge D14c (46-60) 15 nos. |
| **Segment Fabrication Type C2** | |
| Fab.TC1.0070 | Segment Fabrication for Bridge D15 (1-15) 15 nos. |
| Fab.TC2.00010 | Segment Fabrication for Bridge D12b (112-127) 16 nos. |
| Fab.TC2.00020 | Segment Fabrication for Bridge D14a (31-59) 29 nos. |
| Fab.TC2.00030 | Segment Fabrication for Bridge D9c (29-42) 14 nos. |
| Fab.TC2.00040 | Segment Fabrication for Bridge D12a (48-65) 18 nos. |
| Fab.TC2.00050 | Segment Fabrication for Bridge D14c (16-30) 15 nos. |
| Fab.TC3.0010 | Segment Fabrication for Bridge D12b (44-84, 107-111) 46 nos. |
| Fab.TC3.0050 | Segment Fabrication for Bridge D14c (31-45) 15 nos. |
| Fab.TC4.0070 | Segment Fabrication for Bridge D15 (65-78) 14 nos. |
| **Segment Fabrication Type C3** | |
| Fab.TC3.0020 | Segment Fabrication for Bridge D9c (15-28) 14 nos. |
| Fab.TC3.0030 | Segment Fabrication for Bridge D13 (43-70 & 100-102) 31 nos. |
| Fab.TC3.0040 | Segment Fabrication for Bridge D14b (28-49) 22 nos. |
| Fab.TC4.0010 | Segment Fabrication for Bridge D12b (1-43,85-90) 49 nos. |
| Fab.TC4.0020 | Segment Fabrication for Bridge D14a (60-75) 16 nos. |
| Fab.TC4.0040 | Segment Fabrication for Bridge D12a (81-95) 15 nos. |
| Fab.TC4.0050 | Segment Fabrication for Bridge D14b (1-13) 13 nos. |
| **Segment Fabrication Type D2** | |
| Fab.T1.0020 | Segment Fabrication for Bridge D9a (75-86 & 92-104) 25 nos. |
| Fab.T1.0040 | Segment Fabrication for Bridge D13 (33-46) 14 nos. |
| Fab.T1.0050 | Segment Fabrication for Bridge D9a (1-15) 15 nos. |
| Fab.T2.0010 | Segment Fabrication for Bridge D9a (32-46) 15 nos. |
| Fab.T2.0030 | Segment Fabrication for Bridge D9b (1-15) 15 nos. |
| Fab.T2.0040 | Segment Fabrication for Bridge D10 (33-47) 14 nos. |
| Fab.T2.0050 | Segment Fabrication for Bridge D13 (29-41) 13 nos. |
| Fab.T3.0030 | Segment Fabrication for Bridge D9a (47-57, 70-74) 16 nos. |
| Fab.T3.0040 | Segment Fabrication for Bridge D10 (68-88 & 27-32) 27 nos. |
| Fab.T3.0070 | Segment Fabrication for Bridge D15 (1-14) 14 nos. |
| Fab.T4.0020 | Segment Fabrication for Bridge D10 (61-67 & 89-95) 14 nos. |
| Fab.T4.0040 | Segment Fabrication for Bridge D8 (48-62) 15 nos. |
| Fab.T4.0050 | Segment Fabrication for Bridge D13 (78-98) 21 nos. |
| Fab.T4.0060 | Segment Fabrication for Bridge D10 (96-109) 14 nos. |
| **Segment Fabrication Type D3** | |
| Fab.T1.0010 | Segment Fabrication for Bridge D11 (17-31) 15 nos. |
| Fab.T1.0030 | Segment Fabrication for Bridge D10 (1-26) 26 nos. |
| Fab.T1.0060 | Segment Fabrication for Bridge D8 (1-16) 16 nos. |
| Fab.T1.0070 | Segment Fabrication for Bridge D12a (1-16) 16 nos. |
| Fab.T2.0020 | Segment Fabrication for Bridge D11 (1-16) 16 nos. |
| Fab.T2.0060 | Segment Fabrication for Bridge D8 (17-31) 15 nos. |



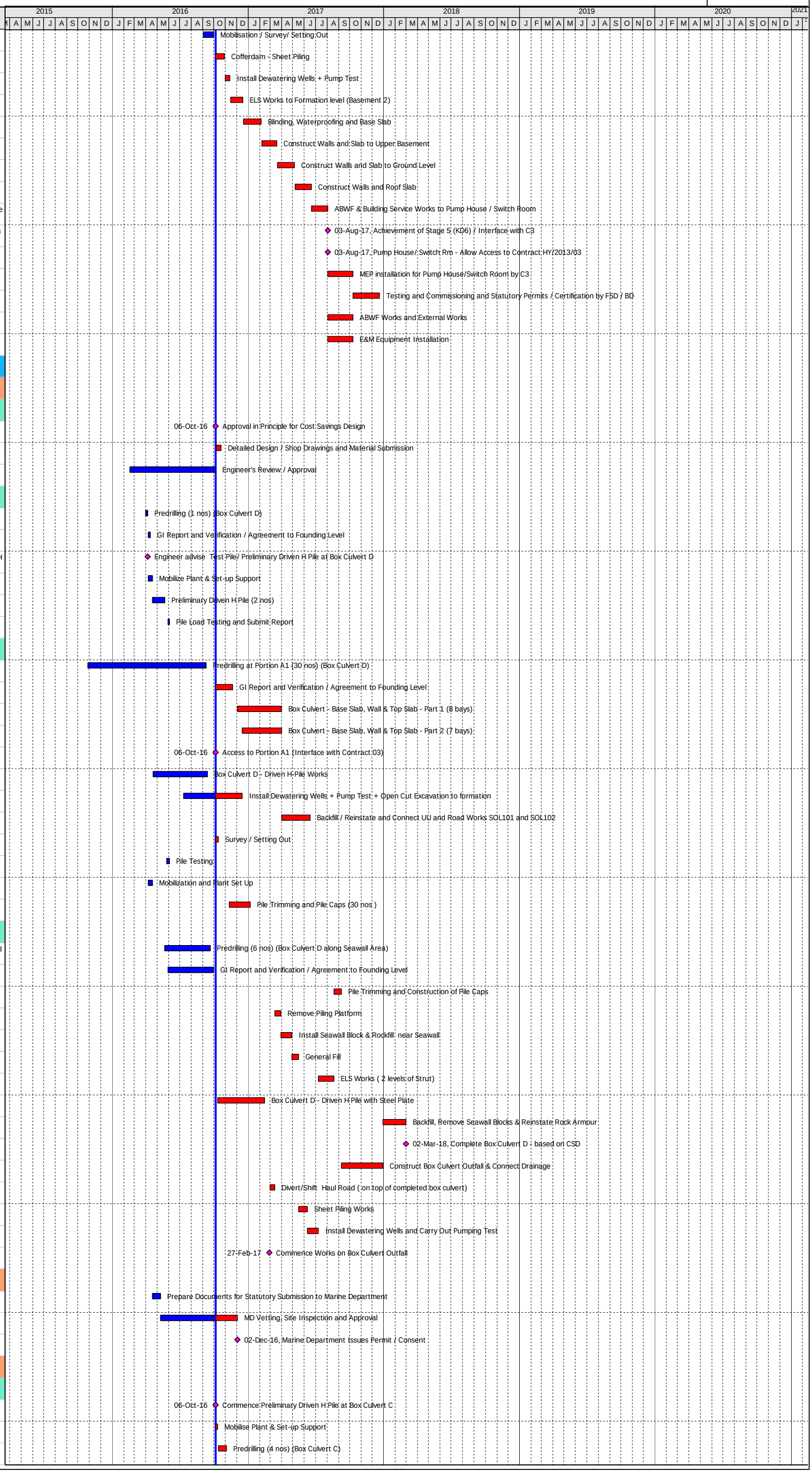
| Activity ID | Activity Name |
|---|---|
| Fab.T2.0080 | Segment Fabrication for Bridge D10 (47-60) 14 nos. |
| Fab.T3.0005 | Segment Fabrication for Bridge D9a (16-31) 16 nos. |
| Fab.T3.0010 | Segment Fabrication for Bridge D9b (38-44) 7 nos. |
| Fab.T3.0020 | Segment Fabrication for Bridge D9b (16-30) 15 nos. |
| Fab.T3.0050 | Segment Fabrication for Bridge D8 (32-47) 16 nos. |
| Fab.T3.0080 | Segment Fabrication for Bridge D9b (31-37) 7 nos. |
| Fab.T4.0010 | Segment Fabrication for Bridge D9a (58-69, 87-91) 17 nos |
| Fab.T4.0030 | Segment Fabrication for Bridge D13 (15-28 & 71-77) 22 nos. |
| **Pier Segment - Type C -1** | |
| Fab.T3.00120 | Pier Segment for Bridge D9c - 3 Nos |
| Fab.T3.00130 | Pier Segment for Bridge D13 - 4 Nos |
| Fab.T3.00140 | Pier Segment for Bridge D14b - 4 Nos |
| Fab.T3.00150 | Pier Segment for Bridge D12a - 4 Nos |
| Fab.T3.00160 | Pier Segment for Bridge D14c - 4 Nos |
| Fab.T3.00170 | Pier Segment for Bridge D12b - 4 Nos |
| Fab.T3.00180 | Pier Segment for Bridge D15 - 4 Nos |
| Fab.T3.00260 | Pier Segment for Bridge D15 - 4 Nos |
| Fab.T3.0090 | Pier Segment for Bridge D14a - 6 Nos |
| **Pier Segment - Type D- 1** | |
| Fab.T2.0070 | Segment Fabrication for Bridge D12a (18-31) 14 nos. |
| Fab.T3.00100 | Pier Segment for Bridge D9b - 4 Nos |
| Fab.T3.00190 | Pier Segment for Bridge D9a - 5 Nos |
| Fab.T3.00200 | Pier Segment for Bridge D11 - 3 Nos |
| Fab.T3.00210 | Pier Segment for Bridge D10 - 5 Nos |
| Fab.T3.00220 | Pier Segment for Bridge D8 - 5 Nos |
| Fab.T3.00230 | Pier Segment for Bridge D13 - 6 Nos |
| Fab.T3.00240 | Pier Segment for Bridge D12a - 4 Nos |
| Fab.T3.00250 | Pier Segment for Bridge D15 - 1 Nos |
| Fab.T3.00280 | Pier Segment for Bridge D10 - 5 Nos |
| Fab.T3.00290 | Pier Segment for Bridge D9a - 5 Nos |
| Fab.T3.0060 | Segment Fabrication for Bridge D12a (33-46) 14 nos. |
| **E&M Works and Building Services for Pu** | |
| PROC.SC.1285 | Detailed Design and Material/ Equipment Submisison & Statutory Approval (FSD/EMSD) |
| PROC.SC.1287 | Engineer's Review / Approval |
| PROC.SC.1290 | Procurement and Manufacturing of Materials |
| PROC.SC.1300 | Materials Delivery (first delivery) |
| PROC.SC.1310 | Draft Operation and Maintenance (O&M) Manual |
| PROC.SC.1320 | Engineer's Review on Draft O&M Manual |
| PROC.SC.1330 | Draft Testing and Commissioning (T&C) Procedure |
| PROC.SC.1340 | Final T&C Procedure |
| PROC.SC.1350 | Engineer's Review on Draft T&C Procedure |
| PROC.SC.1360 | Engineer's Approval on Final T&C Procedure |
| PROC.SC.2840 | Final O&M Manual with as-fitted drawings |
| PROC.SC.2850 | Engineer's Approval on Final O&M Manual with as-fitted drawings |
| **Steel Structures for Sign Gantry / High M** | |
| PROC.MA.1990 | Detailed Design / Material Submission |
| PROC.MA.1995 | Engineer's Review / Approval |
| PROC.MA.2010 | Manufacture of Steel Structures |
| PROC.MA.2020 | Material Delivery (first delivery) |
| **Roads and Bridge Lighting** | |
| PROC.MA.2840 | Lighting Arrangement Detailed Design / Material Submission and Approval (within 12 |
| PROC.MA.2845 | Engineer's Review / Approval |
| PROC.MA.2850 | Manufacture of Road and Bridge Lighting |
| PROC.MA.2860 | Material Delivery (first delivery) |
| **Irrigation System** | |
| PROC.SC.1178 | The Engineer confirm Landscape Works/ Irrigation Work (31 Dec 2015) |
| PROC.SC.1180 | Detailed Design / Material Submission |
| PROC.SC.1185 | Engineer's Review / Approval |
| PROC.SC.1190 | Procurement and Shipment of Irrigation Materials/Equipment |
| **Soft Landscaping** | |
| PROC.SC.2760 | Propose Nursery for Landscape Materials |
| PROC.SC.2780 | Joint Inspection and Engineer's approval |
| PROC.SC.2790 | Landscape Materials Growing |
| PROC.SC.2810 | Materials Delivery (first delivery) |
| **Construction / Installation** | |
| **Initial Works / Site Establishment & Mai** | |

# HY/2013/04 - Hong Kong Boundary Crossing Facilities Infrastructure Works Stage II (Southern Portion)

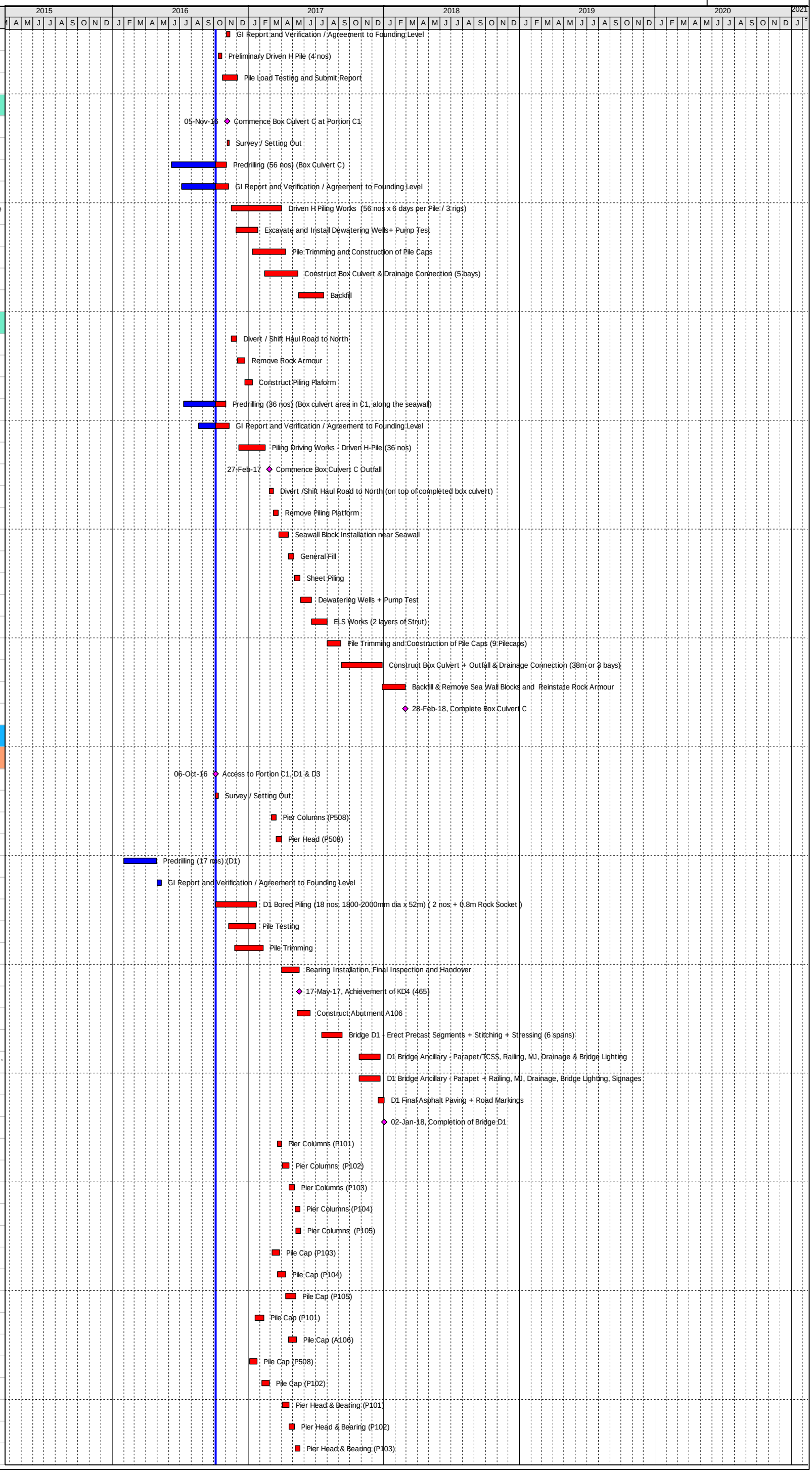


| Activity ID | Activity Name |
|---|---|
| **Mobilisation and Site Establlishment** | |
| CONS.A1.0100 | Site Possession / Access to Portion A1, A2, A5 & A6 |
| CONS.A1.0110 | Mobilisation, Site Clearing and Site Set-up |
| CONS.A1.0120 | Install Temporary Facilities / Hygiene Facilities |
| **Gates and Haul Road Construction (as per Dw** | |
| CONS.A1.1010 | Site Possession / Access to Portion A1 |
| CONS.A1.1020 | Survey/ Setting Out |
| CONS.A1.1030 | Construct Gate 1 at Haul Road |
| CONS.B1.1010 | Site Possession / Access to Portion B1 |
| CONS.B1.1020 | Mobilisation, Site Survey and Setting Out |
| CONS.B1.1030 | Construct Gate 3 and Temporary Haul Road |
| CONS.B2.1010 | Site Possession / Access to Portion B2 & B5 |
| CONS.B2.1020 | Site Survey / Setting out |
| CONS.B2.1030 | Construct Temporary Haul Road |
| **Preliminary Bored Pile with Additional Instrum** | |
| CONS.A1.0180 | Commence Preliminary Bored Pile at Abutment A1101 |
| CONS.A1.0190 | Mobilise Plant & Set-up Support |
| CONS.A1.0195.1 | Predrilling to Preliminary Bored Pile (D11) |
| CONS.A1.0195.2 | GI Report and Verification / Agreement to Founding Level |
| CONS.A1.0200 | Preliminary Bored Piling with Additional Instrumentation at Abutment A1101 (1 no. |
| CONS.A1.0210 | Pile Curing |
| CONS.A1.0220 | Pile Load Testing & Submit Report |
| **Replacement Preliminary Bored Pile and Load** | |
| CONS.A1.0195.6 | GI Report and Verification / Agreement to Founding Level |
| CONS.A1.0195.7 | Engineer's Representative confirmed the replacement bored pile at Pier P908-P1 |
| CONS.A1.0280 | Commence Replacement Preliminary Bored Pile at Abutment A1004 |
| CONS.A1.0290 | Mobilise Plant & Set-up Support |
| CONS.A1.0300 | Replacement Preliminary Bored Piling - Pier P908 |
| CONS.A1.0310 | Pile Curing |
| CONS.A1.0320 | Pile Load Testing & Submit Report |
| **Preliminary Bored Pile and Load Testing at Abu** | |
| CONS.C1.0400 | Commence Preliminary Bored Pile at Abutment A106 |
| CONS.C1.0410 | Mobilise Plant & Set-up Support |
| CONS.C1.0415.1 | Predrilling to Preliminary Bored Pile (D1) |
| CONS.C1.0415.2 | GI Report and Verification / Agreement to Founding Level |
| CONS.C1.0420 | Preliminary Bored Piling - Abutment A106 (1 no. 2000mm dia x 52m) |
| CONS.C1.0430 | Pile Curing |
| CONS.C1.0440 | Pile Load Testing and Submit Report |
| **Prelimnary Driven H Piles and Load Testing** | |
| CONS.A1.4360 | Test Pile approved, commence permanent driven h-pile |
| CONS.C1.0510 | Engineer select Preliminary Test Pile (Driven H Pile) |
| CONS.C1.0520 | Mobilise Plant & Set-up Support |
| CONS.C1.0530.1 | Pre-drilling (2 nos) (Sign Gantry - Preliminary Pile) |
| CONS.C1.0530.2 | GI Report and Verification / Agreement to Founding Level |
| CONS.C1.0540 | Preliminary Driven H Pile (2 nos) |
| CONS.C1.0550 | Pile Load Testing and Submit Report |
| **Preliminary Pre-Bored H-Pile and Load Testing** | |
| CONS.A1.0195.3 | Predrilling to Preliminary Pre-Bored H-Pile - 1 no. |
| CONS.A1.0195.4 | GI Report and Verification / Agreement to Founding Level |
| CONS.A1.0230 | Engineer select Preliminary Test Pile (Pre-Bored H-Pile) |
| CONS.A1.0240 | Mobilise Plant & Set-up Support |
| CONS.A1.0250 | Preliminary Pre-Bored H-Piling - 1 no. |
| CONS.A1.0270 | Pile Load Testing & Submit Report |
| **Treatment for Bored Piling Excavated Materials** | |
| CONS.EX.1010 | Set-up Stockpile for Excavated Marine Mud |
| CONS.EX.1020 | Pilot Test for Marine Mud Treatment |
| CONS.EX.1030 | Solidification / Stabilisation / Approval Method |
| CONS.EX.1040 | Set-up Treatment Facilities and Storage Yard |
| CONS.EX.1050 | Full Scale Solidification / Stabilization Treatment and Verification Testing |
| CONS.EX.1060 | Decommissioning of Treatment Facilities |
| **Site Set Up at Portion C1** | |
| CONS.C1.1010 | Site Possession / Access to Portion C1 and C2 |
| CONS.C1.1020 | Site Possession / Access to Portion D1 and D3 |
| CONS.C1.1030 | Site Set-Up |
| **Pump House cum Switch Room** | |
| CONS.C1.5110 | Commence Pump House Cum Switch Room (2B+ GF) |

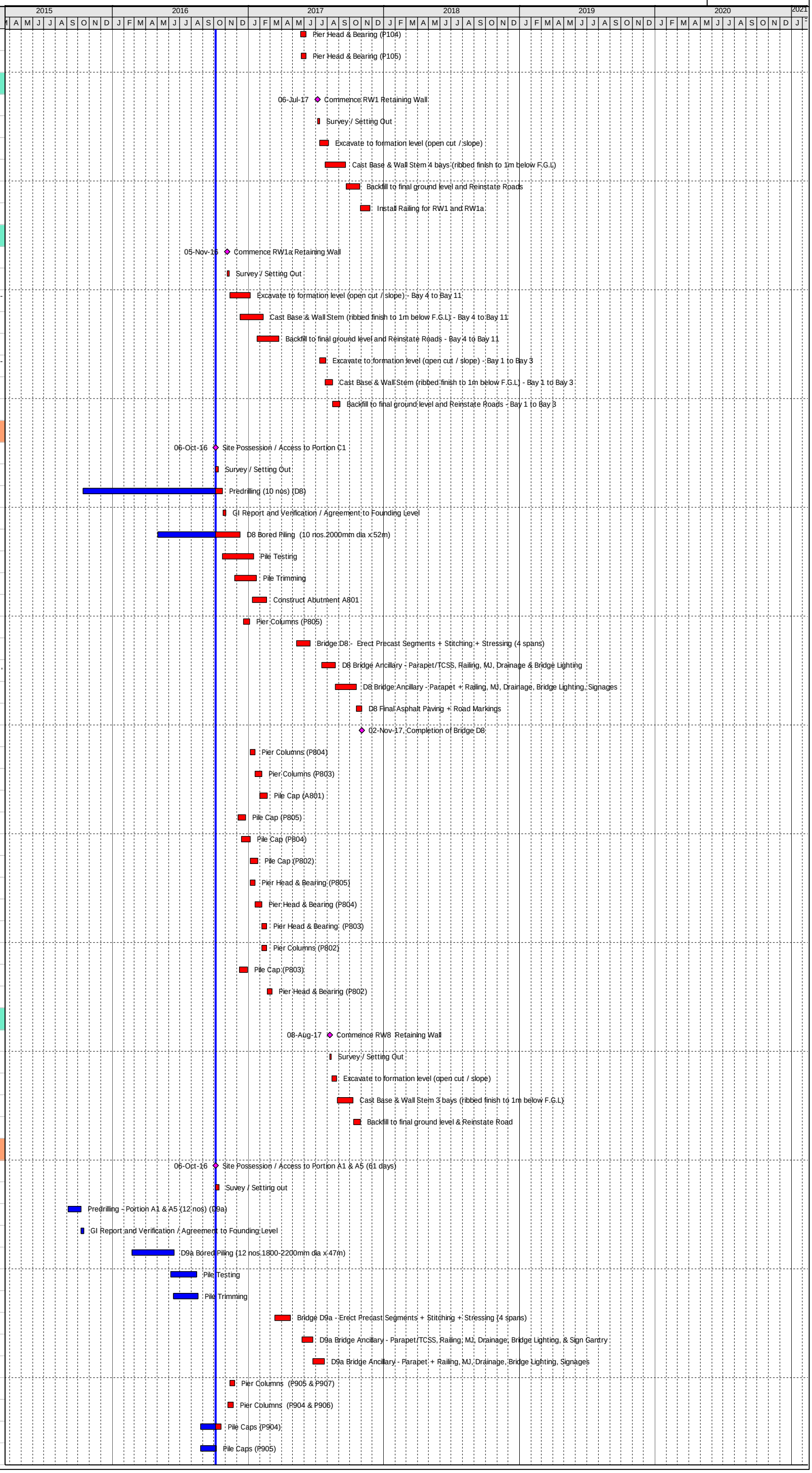
| Activity ID | Activity Name |
|---|---|
| CONS.C1.5120 | Mobilisation / Survey/ Setting Out |
| CONS.C1.5125 | Cofferdam - Sheet Piling |
| CONS.C1.5130 | Install Dewatering Wells + Pump Test |
| CONS.C1.5140 | ELS Works to Formation level (Basement 2) |
| CONS.C1.5150 | Blinding, Waterproofing and Base Slab |
| CONS.C1.5160 | Construct Walls and Slab to Upper Basement |
| CONS.C1.5170 | Construct Walls and Slab to Ground Level |
| CONS.C1.5200 | Construct Walls and Roof Slab |
| CONS.C1.5205 | ABWF & Building Service Works to Pump House / Switch Room |
| CONS.C1.5210 | Achievement of Stage 5 (KD6) / Interface with C3 |
| CONS.C1.5215 | Pump House/ Switch Rm - Allow Access to Contract HY/2013/03 |
| CONS.C1.5225 | MEP installation for Pump House/Switch Room by C3 |
| CONS.C1.5235 | Testing and Commissioning and Statutory Permits / Certification by FSD / BD |
| CONS.C1.5245 | ABWF Works and External Works |
| CONS.C1.5255 | E&M Equipment Installation |
| **Box Culverts** | |
| **Box Culvert D - Cost Savings Design** | |
| **Contractors Design** | |
| AD.A1.0001 | Approval in Principle for Cost Savings Design |
| AD.A1.0100 | Detailed Design / Shop Drawings and Material Submission |
| AD.A1.0110 | Engineer's Review / Approval |
| **Preliminary Driven Pile and Load Test** | |
| AD.A1.0470.30 | Predrilling (1 nos) (Box Culvert D) |
| AD.A1.0470.40 | GI Report and Verification / Agreement to Founding Level |
| AD.A1.0510 | Engineer advise Test Pile/ Preliminary Driven H Pile at Box Culvert D |
| AD.A1.0520 | Mobilize Plant & Set-up Support |
| AD.A1.0530 | Preliminary Driven H Pile (2 nos) |
| AD.A1.0540 | Pile Load Testing and Submit Report |
| **Box Culvert D - 15 Bays** | |
| AD.A1.1055.30 | Predrilling at Portion A1 (30 nos) (Box Culvert D) |
| AD.A1.1055.40 | GI Report and Verification / Agreement to Founding Level |
| AD.A1.1095.30 | Box Culvert - Base Slab, Wall & Top Slab - Part 1 (8 bays) |
| AD.A1.1095.40 | Box Culvert - Base Slab, Wall & Top Slab - Part 2 (7 bays) |
| AD.A1.1110 | Access to Portion A1 (Interface with Contract 03) |
| AD.A1.1120 | Box Culvert D - Driven H-Pile Works |
| AD.A1.1130 | Install Dewatering Wells + Pump Test + Open Cut Excavation to formation |
| AD.A1.1150 | Backfill / Reinstate and Connect UU and Road Works SOL101 and SOL102 |
| AD.A1.1160 | Survey / Setting Out |
| AD.A1.1170 | Pile Testing |
| AD.A1.1180 | Mobilization and Plant Set Up |
| AD.A1.2250 | Pile Trimming and Pile Caps (30 nos ) |
| **Box Culvert D - 3 Bays and Outfall** | |
| AD.B1.1180.30 | Predrilling (6 nos) (Box Culvert D along Seawall Area) |
| AD.B1.1180.40 | GI Report and Verification / Agreement to Founding Level |
| AD.B1.2235 | Pile Trimming and Construction of Pile Caps |
| AD.B1.2250 | Remove Piling Platform |
| AD.B1.2260 | Install Seawall Block & Rockfill near Seawall |
| AD.B1.2270 | General Fill |
| AD.B1.2280 | ELS Works ( 2 levels of Strut) |
| AD.B1.2330 | Box Culvert D - Driven H Pile with Steel Plate |
| AD.B1.2350 | Backfill, Remove Seawall Blocks & Reinstate Rock Armour |
| AD.B1.2360 | Complete Box Culvert D - based on CSD |
| AD.B1.2370 | Construct Box Culvert Outfall & Connect Drainage |
| AD.B1.2380 | Divert/Shift Haul Road ( on top of completed box culvert) |
| AD.B1.2390 | Sheet Piling Works |
| AD.B1.2400 | Install Dewatering Wells and Carry Out Pumping Test |
| AD.B1.2410 | Commence Works on Box Culvert Outfall |
| **MDN Application for Marine Plants** | |
| CONS.OF.1010 | Prepare Documents for Statutory Submission to Marine Department |
| CONS.OF.1020 | MD Vetting, Site Inspection and Approval |
| CONS.OF.1030 | Marine Department Issues Permit / Consent |
| **Box Culvert C (Portion C1)** | |
| **Preliminary Driven Piles and Load Testing** | |
| CONS.C1.0450 | Commence Preliminary Driven H Pile at Box Culvert C |
| CONS.C1.0460 | Mobilise Plant & Set-up Support |
| CONS.C1.0470. | Predrilling (4 nos) (Box Culvert C) |



| Activity ID | Activity Name |
|---|---|
| CONS.C1.0470.. | GI Report and Verification / Agreement to Founding Level |
| CONS.C1.0480 | Preliminary Driven H Pile (4 nos) |
| CONS.C1.0500 | Pile Load Testing and Submit Report |
| **Box Culvert C - Bay 4-8** | |
| CONS.C1.1040 | Commence Box Culvert C at Portion C1 |
| CONS.C1.1045 | Survey / Setting Out |
| CONS.C1.1055.. | Predrilling (56 nos) (Box Culvert C) |
| CONS.C1.1055.. | GI Report and Verification / Agreement to Founding Level |
| CONS.C1.1060 | Driven H Piling Works (56 nos x 6 days per Pile / 3 rigs) |
| CONS.C1.1070 | Excavate and Install Dewatering Wells+ Pump Test |
| CONS.C1.1090 | Pile Trimming and Construction of Pile Caps |
| CONS.C1.1100 | Construct Box Culvert & Drainage Connection (5 bays) |
| CONS.C1.1110 | Backfill |
| **Box Culvert C - Bay 1-3 and Outfall** | |
| CONS.C1.1120 | Divert / Shift Haul Road to North |
| CONS.C1.1150 | Remove Rock Armour |
| CONS.C1.1160 | Construct Piling Plaform |
| CONS.C1.1170.. | Predrilling (36 nos) (Box culvert area in C1, along the seawall) |
| CONS.C1.1170.. | GI Report and Verification / Agreement to Founding Level |
| CONS.C1.1180 | Piling Driving Works - Driven H-Pile (36 nos) |
| CONS.C1.8480 | Commence Box Culvert C Outfall |
| CONS.C1.8485 | Divert /Shift Haul Road to North (on top of completed box culvert) |
| CONS.C1.8490 | Remove Piling Platform |
| CONS.C1.8500 | Seawall Block Installation near Seawall |
| CONS.C1.8510 | General Fill |
| CONS.C1.8530 | Sheet Piling |
| CONS.C1.8540 | Dewatering Wells + Pump Test |
| CONS.C1.8550 | ELS Works (2 layers of Strut) |
| CONS.C1.8560 | Pile Trimming and Construction of Pile Caps (9 Pilecaps) |
| CONS.C1.8570 | Construct Box Culvert + Outfall & Drainage Connection (38m or 3 bays) |
| CONS.C1.8580 | Backfill & Remove Sea Wall Blocks and Reinstate Rock Armour |
| CONS.C1.8590 | Complete Box Culvert C |
| **Bridge Works** | |
| **Bridge D1 in Portion C1, D1 and D3 (Interface** | |
| CONS.C1.1130 | Access to Portion C1, D1 & D3 |
| CONS.C1.1140 | Survey / Setting Out |
| CONS.C1.2100 | Pier Columns (P508) |
| CONS.C1.2200 | Pier Head (P508) |
| CONS.C1.2200.1 | Predrilling (17 nos) (D1) |
| CONS.C1.2200.2 | GI Report and Verification / Agreement to Founding Level |
| CONS.C1.2210 | D1 Bored Piling (18 nos. 1800-2000mm dia x 52m) ( 2 nos + 0.8m Rock Socket ) |
| CONS.C1.2215 | Pile Testing |
| CONS.C1.2220 | Pile Trimming |
| CONS.C1.2225.3 | Bearing Installation, Final Inspection and Handover |
| CONS.C1.2226 | Achievement of KD4 (465) |
| CONS.C1.2230 | Construct Abutment A106 |
| CONS.C1.2250 | Bridge D1 - Erect Precast Segments + Stitching + Stressing (6 spans) |
| CONS.C1.2260 | D1 Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage & Bridge Lighting |
| CONS.C1.2265 | D1 Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages |
| CONS.C1.2270 | D1 Final Asphalt Paving + Road Markings |
| CONS.C1.2280 | Completion of Bridge D1 |
| CONS.C1.2299 | Pier Columns (P101) |
| CONS.C1.8850 | Pier Columns (P102) |
| CONS.C1.8860 | Pier Columns (P103) |
| CONS.C1.8870 | Pier Columns (P104) |
| CONS.C1.8880 | Pier Columns (P105) |
| CONS.C1.8950 | Pile Cap (P103) |
| CONS.C1.8960 | Pile Cap (P104) |
| CONS.C1.8970 | Pile Cap (P105) |
| CONS.C1.8980 | Pile Cap (P101) |
| CONS.C1.8990 | Pile Cap (A106) |
| CONS.C1.9000 | Pile Cap (P508) |
| CONS.C1.9010 | Pile Cap (P102) |
| CONS.C1.9020 | Pier Head & Bearing (P101) |
| CONS.C1.9030 | Pier Head & Bearing (P102) |
| CONS.C1.9040 | Pier Head & Bearing (P103) |



| Activity ID | Activity Name |
|---|---|
| CONS.C1.9050 | Pier Head & Bearing (P104) |
| CONS.C1.9060 | Pier Head & Bearing (P105) |
| **RW1 (51m / 4 bays)** | |
| CONS.C2.3140 | Commence RW1 Retaining Wall |
| CONS.C2.3150 | Survey / Setting Out |
| CONS.C2.3160 | Excavate to formation level (open cut / slope) |
| CONS.C2.3170 | Cast Base & Wall Stem 4 bays (ribbed finish to 1m below F.G.L) |
| CONS.C2.3180 | Backfill to final ground level and Reinstate Roads |
| CONS.C2.3250 | Install Railing for RW1 and RW1a |
| **RW1a (176m / 11 bays)** | |
| CONS.C2.3200 | Commence RW1a Retaining Wall |
| CONS.C2.3210 | Survey / Setting Out |
| CONS.C2.3220 | Excavate to formation level (open cut / slope) - Bay 4 to Bay 11 |
| CONS.C2.3230 | Cast Base & Wall Stem (ribbed finish to 1m below F.G.L) - Bay 4 to Bay 11 |
| CONS.C2.3240 | Backfill to final ground level and Reinstate Roads - Bay 4 to Bay 11 |
| CONS.C2.3370 | Excavate to formation level (open cut / slope) - Bay 1 to Bay 3 |
| CONS.C2.3380 | Cast Base & Wall Stem (ribbed finish to 1m below F.G.L) - Bay 1 to Bay 3 |
| CONS.C2.3390 | Backfill to final ground level and Reinstate Roads - Bay 1 to Bay 3 |
| **Bridge D8** | |
| CONS.C1.2285 | Site Possession / Access to Portion C1 |
| CONS.C1.2288 | Survey / Setting Out |
| CONS.C1.2290.1 | Predrilling (10 nos) (D8) |
| CONS.C1.2290.2 | GI Report and Verification / Agreement to Founding Level |
| CONS.C1.2300 | D8 Bored Piling (10 nos.2000mm dia x 52m) |
| CONS.C1.2305 | Pile Testing |
| CONS.C1.2310 | Pile Trimming |
| CONS.C1.2320 | Construct Abutment A801 |
| CONS.C1.2322 | Pier Columns (P805) |
| CONS.C1.2340 | Bridge D8 - Erect Precast Segments + Stitching + Stressing (4 spans) |
| CONS.C1.2350 | D8 Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage & Bridge Lighting |
| CONS.C1.2355 | D8 Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages |
| CONS.C1.2360 | D8 Final Asphalt Paving + Road Markings |
| CONS.C1.2370 | Completion of Bridge D8 |
| CONS.C1.8820 | Pier Columns (P804) |
| CONS.C1.8830 | Pier Columns (P803) |
| CONS.C1.8900 | Pile Cap (A801) |
| CONS.C1.8910 | Pile Cap (P805) |
| CONS.C1.8920 | Pile Cap (P804) |
| CONS.C1.8930 | Pile Cap (P802) |
| CONS.C1.9070 | Pier Head & Bearing (P805) |
| CONS.C1.9080 | Pier Head & Bearing (P804) |
| CONS.C1.9090 | Pier Head & Bearing (P803) |
| CONS.C2.3420 | Pier Columns (P802) |
| CONS.C2.3460 | Pile Cap (P803) |
| CONS.C2.3490 | Pier Head & Bearing (P802) |
| **RW8 (35m / 3 bays)** | |
| CONS.C2.3320 | Commence RW8 Retaining Wall |
| CONS.C2.3330 | Survey / Setting Out |
| CONS.C2.3340 | Excavate to formation level (open cut / slope) |
| CONS.C2.3350 | Cast Base & Wall Stem 3 bays (ribbed finish to 1m below F.G.L) |
| CONS.C2.3360 | Backfill to final ground level & Reinstate Road |
| **Bridge D9a in Portion A1 & A5** | |
| CONS.A5.2010 | Site Possession / Access to Portion A1 & A5 (61 days) |
| CONS.A5.2015 | Suvey / Setting out |
| CONS.A5.2020.1 | Predrilling - Portion A1 & A5 (12 nos) (D9a) |
| CONS.A5.2020.2 | GI Report and Verification / Agreement to Founding Level |
| CONS.A5.2030 | D9a Bored Piling (12 nos.1800-2200mm dia x 47m) |
| CONS.A5.2035 | Pile Testing |
| CONS.A5.2040 | Pile Trimming |
| CONS.A5.2065 | Bridge D9a - Erect Precast Segments + Stitching + Stressing (4 spans) |
| CONS.A5.2070 | D9a Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage, Bridge Lighting, & Sign Gantry |
| CONS.A5.2080 | D9a Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages |
| CONS.A5.2090 | Pier Columns (P905 & P907) |
| CONS.A5.2110 | Pier Columns (P904 & P906) |
| CONS.A5.2140 | Pile Caps (P904) |
| CONS.A5.2150 | Pile Caps (P905) |



# HY/2013/04 - Hong Kong Boundary Crossing Facilities Infrastructure Works Stage II (Southern Portion)

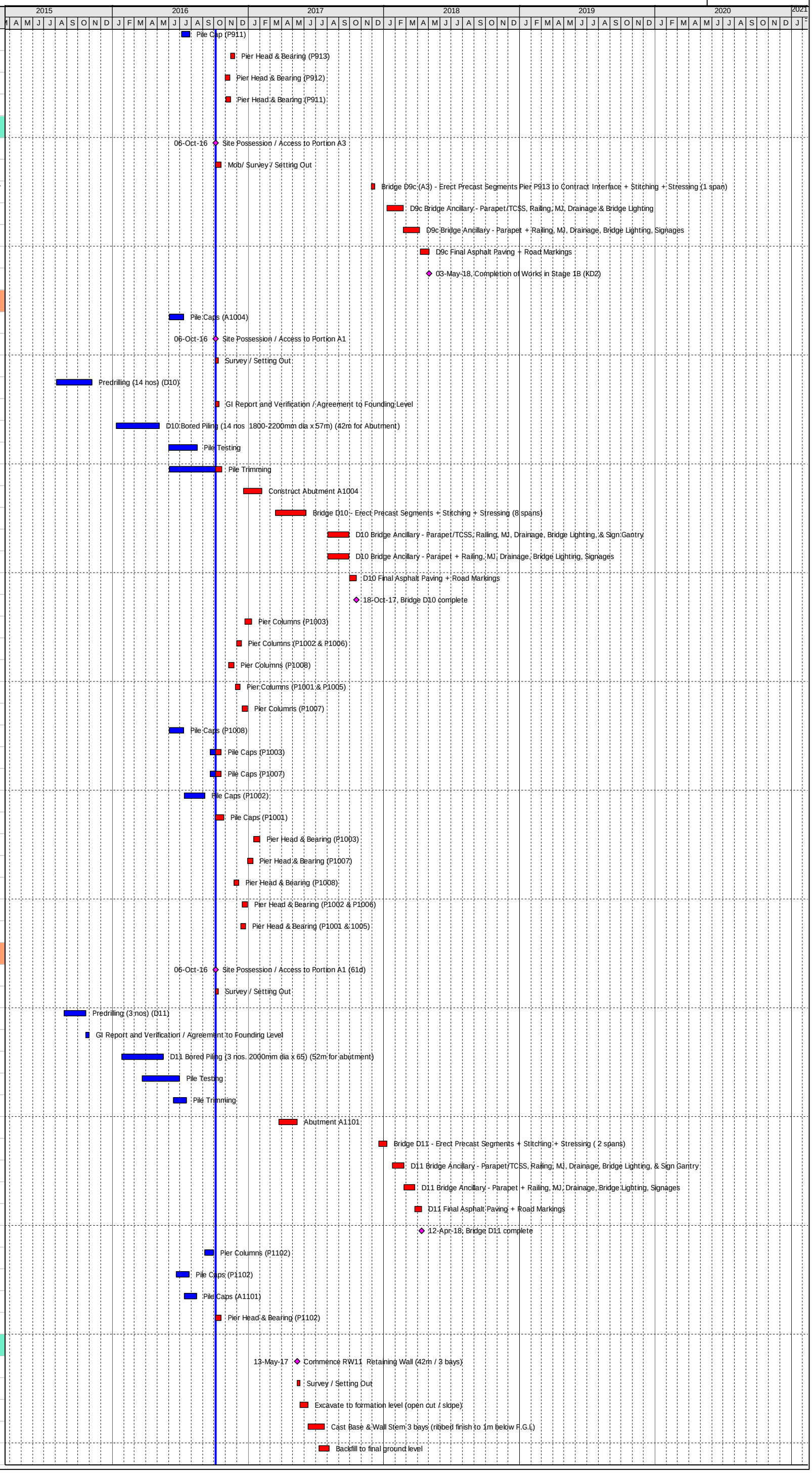


| Activity ID | Activity Name |
|---|---|
| CONS.A5.2160 | Pier Head & Bearing (P905 & P907) |
| CONS.A5.2180 | Pier Head & Bearing (P904 & P906) |
| **Bridge D9a in Portion C1 & C2** | |
| CONS.C2.3010 | Site Possession / Access to Portion C1 & C2 (184 days) |
| CONS.C2.3015 | Survey / Setting Out |
| CONS.C2.3020. | Predrilling - Portion C1 & C2 (8 nos) (D9a) |
| CONS.C2.3020. | GI Report and Verification / Agreement to Founding Level |
| CONS.C2.3030 | D9a in Portion C1 & C2 Bored Piling (8 nos.1800-2200mm dia x 47m) |
| CONS.C2.3035 | Pile Testing |
| CONS.C2.3040 | Pile Trimming |
| CONS.C2.3070 | Construct Abutment A901 |
| CONS.C2.3080 | Bridge D9a (C1 & C2) - Erect Precast Segments + Stitching + Stressing (2 spans) |
| CONS.C2.3085 | D9a (C1 & C2) Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage, Bridge Lighting, & Sign |
| CONS.C2.3095 | Completion of Works in Section VI (KD13) |
| CONS.C2.3100 | Bridge D9a (C1 & C2) - Erect Precast Segments + Stitching + Stressing (1 span) |
| CONS.C2.3110 | D9a Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage, Bridge Lighting, & Sign Gantry |
| CONS.C2.3115 | D9a Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages |
| CONS.C2.3120 | D9a Final Asphalt Paving + Road Markings |
| CONS.C2.3130 | Completion of Bridge D9a |
| CONS.C2.3400 | Pier Columns (P902) |
| CONS.C2.3410 | Pier Columns (P903) |
| CONS.C2.3440 | Pile Caps (P902) |
| CONS.C2.3450 | Pile Caps (P903) |
| CONS.C2.3470 | Pier Head & Bearing (P902) |
| CONS.C2.3480 | Pier Head & Bearing (P903) |
| CONS.C2.3560 | Pile Caps (A901) |
| **Bridge D9b** | |
| CONS.A1.1105 | Access to Portion A1 |
| CONS.A1.1108 | Survey / Setting Out |
| CONS.A1.1110.1 | Predrilling (8 nos incl. 4 nos for P910) (D9b) |
| CONS.A1.1110.2 | GI Report and Verification / Agreement to Founding Level |
| CONS.A1.1120 | D9b Bored Piling (8 nos. 2000mm dia x 49m) including 4 for P910 |
| CONS.A1.1125 | Pile Testing |
| CONS.A1.1130 | Pile Trimming |
| CONS.A1.1160 | Bridge D9b - Erect Precast Segments + Stitching + Stressing (3 spans) |
| CONS.A1.1170 | D9b Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage & Bridge Lighting |
| CONS.A1.1175 | D9b Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages |
| CONS.A1.1180 | D9b Final Asphalt Paving + Road Markings |
| CONS.A1.1190 | Bridge D9b complete |
| CONS.A1.8750 | Pier Columns (P908) |
| CONS.A1.8760 | Pier Columns (P909) |
| CONS.A1.8770 | Pier Columns (P910) - A (Portal) |
| CONS.A1.8780 | Pier Columns (P910) - B (Portal) |
| CONS.A1.9230 | Pile Caps (P908) |
| CONS.A1.9240 | Pile Caps (P909) |
| CONS.A1.9250 | Pile Caps (P910 - A) |
| CONS.A1.9260 | Pile Caps (P910 - B) |
| CONS.A1.9270 | Pier Head & Bearing (P908) |
| CONS.A1.9280 | Pier Head & Bearing (P909) |
| **Bridge D9c** | |
| CONS.A1.1192 | Site Possession / Access to Portion A1 & A2 |
| CONS.A1.1194 | Survey / Setting Out |
| CONS.A1.1200.1 | Predrilling (8 nos) (D9c) |
| CONS.A1.1200.2 | GI Report and Verification / Agreement to Founding Level |
| CONS.A1.1210 | D9c Bored Piling (8 nos. 2000mm dia x 62m) |
| CONS.A1.1215 | Pile Testing |
| CONS.A1.1220 | Pile Trimming |
| CONS.A1.1240 | Bridge D9c - Construct Deck (Cast in Situ) (1 span, P910 to P911) |
| CONS.A1.1250 | Bridge D9c - Erect Precast Segments Pier P911 to Pier P913 + Stitching + Stressing (2 spans) |
| CONS.A1.1260 | D9c Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage & Bridge Lighting |
| CONS.A1.1270 | D9c Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages |
| CONS.A1.8790 | Pier Columns (P913) |
| CONS.A1.8800 | Pier Columns (P912) |
| CONS.A1.8810 | Pier Columns (P911) |
| CONS.A1.9190 | Pile Cap (P913) |
| CONS.A1.9200 | Pile Cap (P912) |

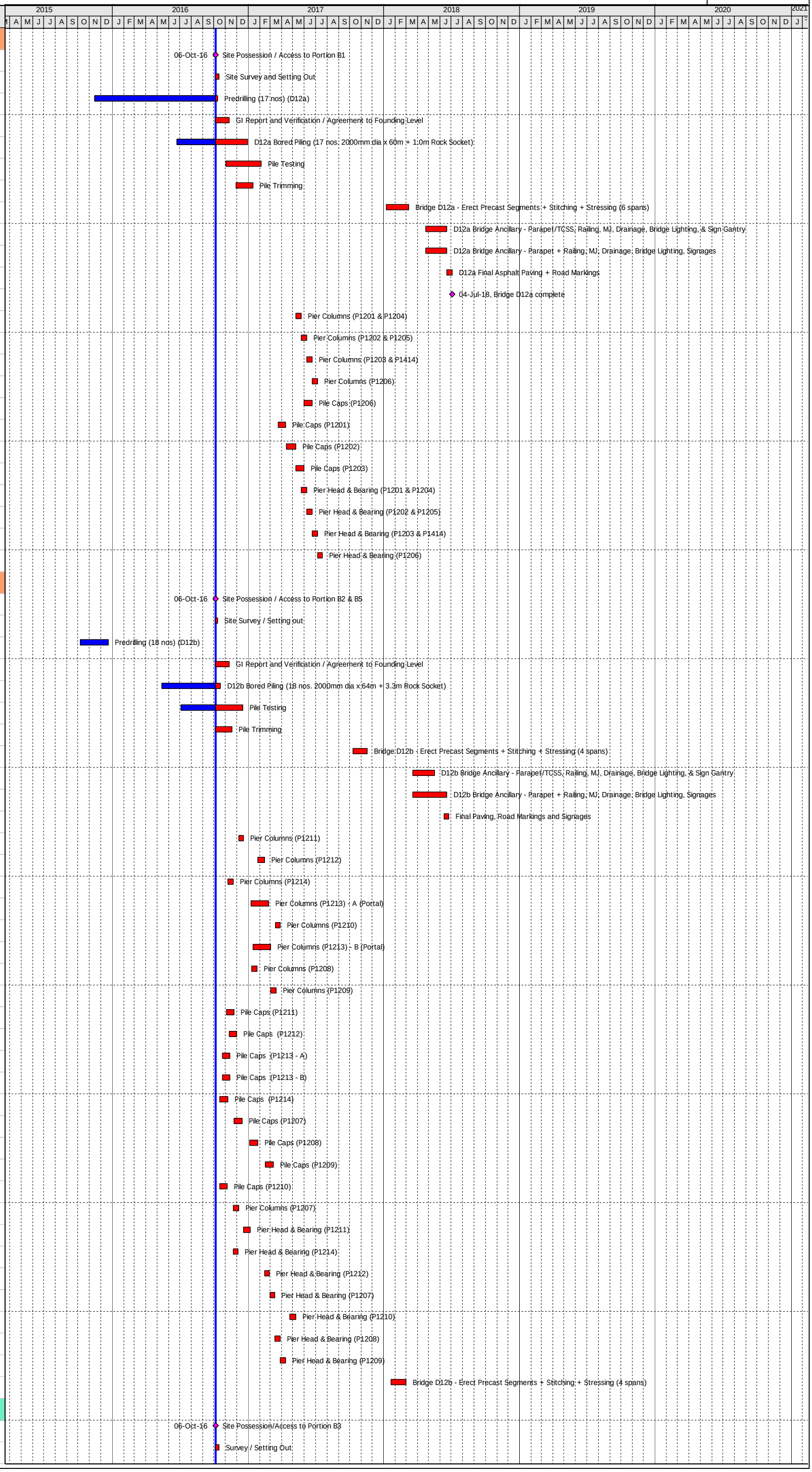
# HY/2013/04 - Hong Kong Boundary Crossing Facilities Infrastructure Works Stage II (Southern Portion)



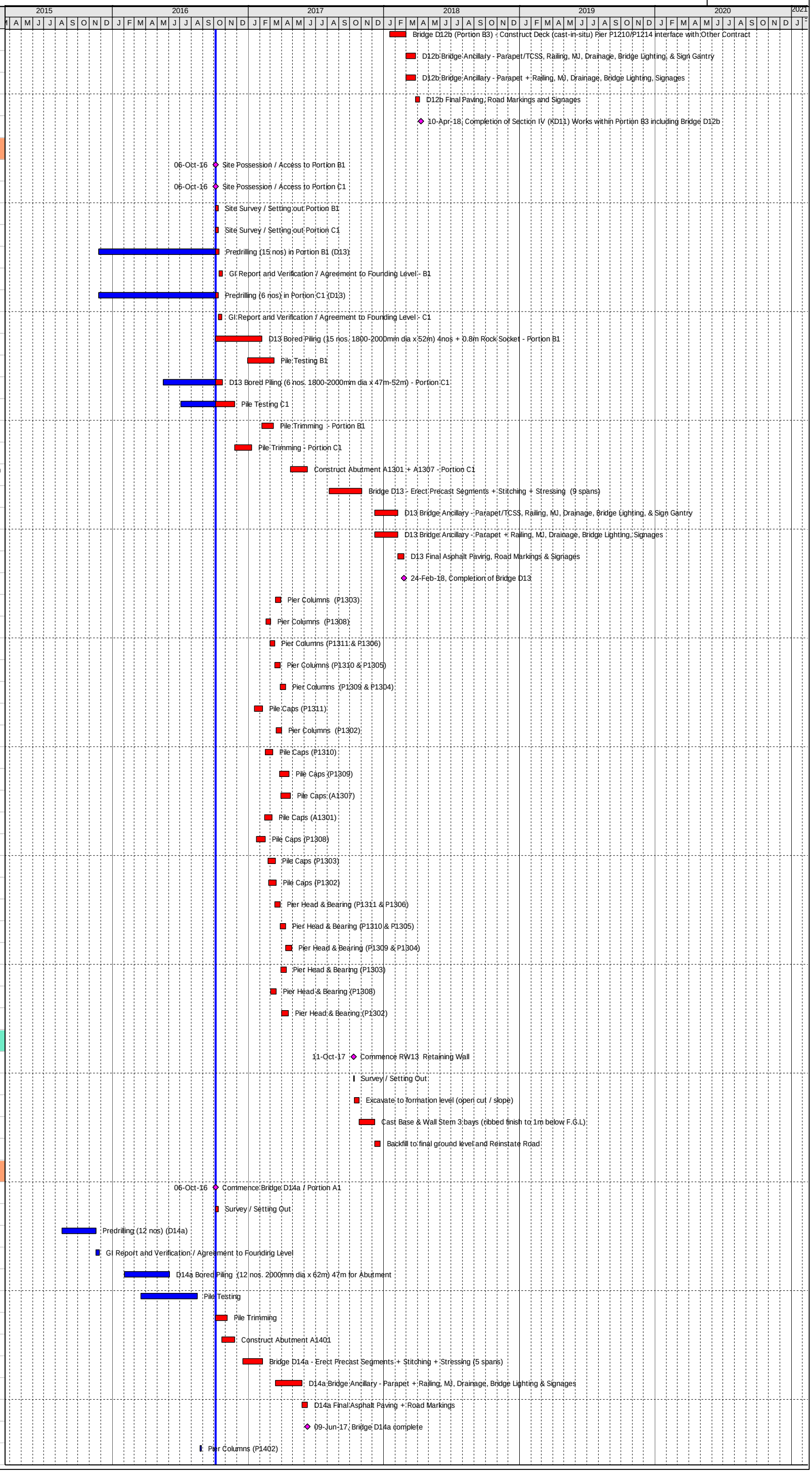
| Activity ID | Activity Name |
|---|---|
| CONS.A1.9210 | Pile Cap (P911) |
| CONS.A1.9310 | Pier Head & Bearing (P913) |
| CONS.A1.9320 | Pier Head & Bearing (P912) |
| CONS.A1.9330 | Pier Head & Bearing (P911) |
| **Bridge D9c in Portion A3 (Interface with Cont** | |
| CONS.A3.1010 | Site Possession / Access to Portion A3 |
| CONS.A3.1020 | Mob/ Survey / Setting Out |
| CONS.A3.1030 | Bridge D9c (A3) - Erect Precast Segments Pier P913 to Contract Interface + Stitching + |
| CONS.A3.1040 | D9c Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage & Bridge Lighting |
| CONS.A3.1045 | D9c Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages |
| CONS.A3.1050 | D9c Final Asphalt Paving + Road Markings |
| CONS.A3.1060 | Completion of Works in Stage 1B (KD2) |
| **Bridge D10** | |
| CONS.A1.10120 | Pile Caps (A1004) |
| CONS.A1.1284 | Site Possession / Access to Portion A1 |
| CONS.A1.1286 | Survey / Setting Out |
| CONS.A1.1290.1 | Predrilling (14 nos) (D10) |
| CONS.A1.1290.2 | GI Report and Verification / Agreement to Founding Level |
| CONS.A1.1300 | D10 Bored Piling (14 nos 1800-2200mm dia x 57m) (42m for Abutment) |
| CONS.A1.1305 | Pile Testing |
| CONS.A1.1310 | Pile Trimming |
| CONS.A1.1315 | Construct Abutment A1004 |
| CONS.A1.1340 | Bridge D10 - Erect Precast Segments + Stitching + Stressing (8 spans) |
| CONS.A1.1350 | D10 Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage, Bridge Lighting, & Sign Gantry |
| CONS.A1.1355 | D10 Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages |
| CONS.A1.1360 | D10 Final Asphalt Paving + Road Markings |
| CONS.A1.1370 | Bridge D10 complete |
| CONS.A1.8830 | Pier Columns (P1003) |
| CONS.A1.8840 | Pier Columns (P1002 & P1006) |
| CONS.A1.8850 | Pier Columns (P1008) |
| CONS.A1.8860 | Pier Columns (P1001 & P1005) |
| CONS.A1.8870 | Pier Columns (P1007) |
| CONS.A1.9110 | Pile Caps (P1008) |
| CONS.A1.9120 | Pile Caps (P1003) |
| CONS.A1.9130 | Pile Caps (P1007) |
| CONS.A1.9140 | Pile Caps (P1002) |
| CONS.A1.9160 | Pile Caps (P1001) |
| CONS.A1.9350 | Pier Head & Bearing (P1003) |
| CONS.A1.9360 | Pier Head & Bearing (P1007) |
| CONS.A1.9370 | Pier Head & Bearing (P1008) |
| CONS.A1.9380 | Pier Head & Bearing (P1002 & P1006) |
| CONS.A1.9400 | Pier Head & Bearing (P1001 & 1005) |
| **Bridge D11** | |
| CONS.A1.1375 | Site Possession / Access to Portion A1 (61d) |
| CONS.A1.1378 | Survey / Setting Out |
| CONS.A1.1380.1 | Predrilling (3 nos) (D11) |
| CONS.A1.1380.2 | GI Report and Verification / Agreement to Founding Level |
| CONS.A1.1390 | D11 Bored Piling (3 nos. 2000mm dia x 65) (52m for abutment) |
| CONS.A1.1395 | Pile Testing |
| CONS.A1.1400 | Pile Trimming |
| CONS.A1.1405 | Abutment A1101 |
| CONS.A1.1430 | Bridge D11 - Erect Precast Segments + Stitching + Stressing ( 2 spans) |
| CONS.A1.1440 | D11 Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage, Bridge Lighting, & Sign Gantry |
| CONS.A1.1445 | D11 Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages |
| CONS.A1.1450 | D11 Final Asphalt Paving + Road Markings |
| CONS.A1.1460 | Bridge D11 complete |
| CONS.A1.8900 | Pier Columns (P1102) |
| CONS.A1.9070 | Pile Caps (P1102) |
| CONS.A1.9080 | Pile Caps (A1101) |
| CONS.A1.9420 | Pier Head & Bearing (P1102) |
| **RW11 (42m / 3 bays)** | |
| CONS.A1.3320 | Commence RW11 Retaining Wall (42m / 3 bays) |
| CONS.A1.3330 | Survey / Setting Out |
| CONS.A1.3340 | Excavate to formation level (open cut / slope) |
| CONS.A1.3350 | Cast Base & Wall Stem 3 bays (ribbed finish to 1m below F.G.L) |
| CONS.A1.3360 | Backfill to final ground level |



| Activity ID | Activity Name |
|---|---|
| **Bridge D12a** | |
| CONS.B1.1835 | Site Possession / Access to Portion B1 |
| CONS.B1.1837 | Site Survey and Setting Out |
| CONS.B1.1840.1 | Predrilling (17 nos) (D12a) |
| CONS.B1.1840.2 | GI Report and Verification / Agreement to Founding Level |
| CONS.B1.1850 | D12a Bored Piling (17 nos. 2000mm dia x 60m + 1.0m Rock Socket) |
| CONS.B1.1855 | Pile Testing |
| CONS.B1.1860 | Pile Trimming |
| CONS.B1.1890 | Bridge D12a - Erect Precast Segments + Stitching + Stressing (6 spans) |
| CONS.B1.1900 | D12a Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage, Bridge Lighting, & Sign Gantry |
| CONS.B1.1905 | D12a Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages |
| CONS.B1.1910 | D12a Final Asphalt Paving + Road Markings |
| CONS.B1.1920 | Bridge D12a complete |
| CONS.B1.2020 | Pier Columns (P1201 & P1204) |
| CONS.B1.2040 | Pier Columns (P1202 & P1205) |
| CONS.B1.2050 | Pier Columns (P1203 & P1414) |
| CONS.B1.2070 | Pier Columns (P1206) |
| CONS.B1.2440 | Pile Caps (P1206) |
| CONS.B1.2450 | Pile Caps (P1201) |
| CONS.B1.2460 | Pile Caps (P1202) |
| CONS.B1.2470 | Pile Caps (P1203) |
| CONS.B1.2480 | Pier Head & Bearing (P1201 & P1204) |
| CONS.B1.2500 | Pier Head & Bearing (P1202 & P1205) |
| CONS.B1.2520 | Pier Head & Bearing (P1203 & P1414) |
| CONS.B1.2530 | Pier Head & Bearing (P1206) |
| **Bridge D12b** | |
| CONS.B2.2015 | Site Possession / Access to Portion B2 & B5 |
| CONS.B2.2018 | Site Survey / Setting out |
| CONS.B2.2020.1 | Predrilling (18 nos) (D12b) |
| CONS.B2.2020.2 | GI Report and Verification / Agreement to Founding Level |
| CONS.B2.2030 | D12b Bored Piling (18 nos. 2000mm dia x 64m + 3.3m Rock Socket) |
| CONS.B2.2035 | Pile Testing |
| CONS.B2.2040 | Pile Trimming |
| CONS.B2.2070 | Bridge D12b - Erect Precast Segments + Stitching + Stressing (4 spans) |
| CONS.B2.2080 | D12b Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage, Bridge Lighting, & Sign Gantry |
| CONS.B2.2085 | D12b Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages |
| CONS.B2.2090 | Final Paving, Road Markings and Signages |
| CONS.B2.2100 | Pier Columns (P1211) |
| CONS.B2.2110 | Pier Columns (P1212) |
| CONS.B2.2120 | Pier Columns (P1214) |
| CONS.B2.2130 | Pier Columns (P1213) - A (Portal) |
| CONS.B2.2140 | Pier Columns (P1210) |
| CONS.B2.2150 | Pier Columns (P1213) - B (Portal) |
| CONS.B2.2160 | Pier Columns (P1208) |
| CONS.B2.2170 | Pier Columns (P1209) |
| CONS.B2.2190 | Pile Caps (P1211) |
| CONS.B2.2200 | Pile Caps (P1212) |
| CONS.B2.2210 | Pile Caps (P1213 - A) |
| CONS.B2.2220 | Pile Caps (P1213 - B) |
| CONS.B2.2230 | Pile Caps (P1214) |
| CONS.B2.2240 | Pile Caps (P1207) |
| CONS.B2.2250 | Pile Caps (P1208) |
| CONS.B2.2260 | Pile Caps (P1209) |
| CONS.B2.2270 | Pile Caps (P1210) |
| CONS.B2.2280 | Pier Columns (P1207) |
| CONS.B2.2290 | Pier Head & Bearing (P1211) |
| CONS.B2.2300 | Pier Head & Bearing (P1214) |
| CONS.B2.2320 | Pier Head & Bearing (P1212) |
| CONS.B2.2340 | Pier Head & Bearing (P1207) |
| CONS.B2.2350 | Pier Head & Bearing (P1210) |
| CONS.B2.2360 | Pier Head & Bearing (P1208) |
| CONS.B2.2370 | Pier Head & Bearing (P1209) |
| CONS.B2.2380 | Bridge D12b - Erect Precast Segments + Stitching + Stressing (4 spans) |
| **Bridge D12b (cast in-situ) in Portion B3 (Inter** | |
| CONS.B3.2110 | Site Possession/Access to Portion B3 |
| CONS.B3.2120 | Survey / Setting Out |

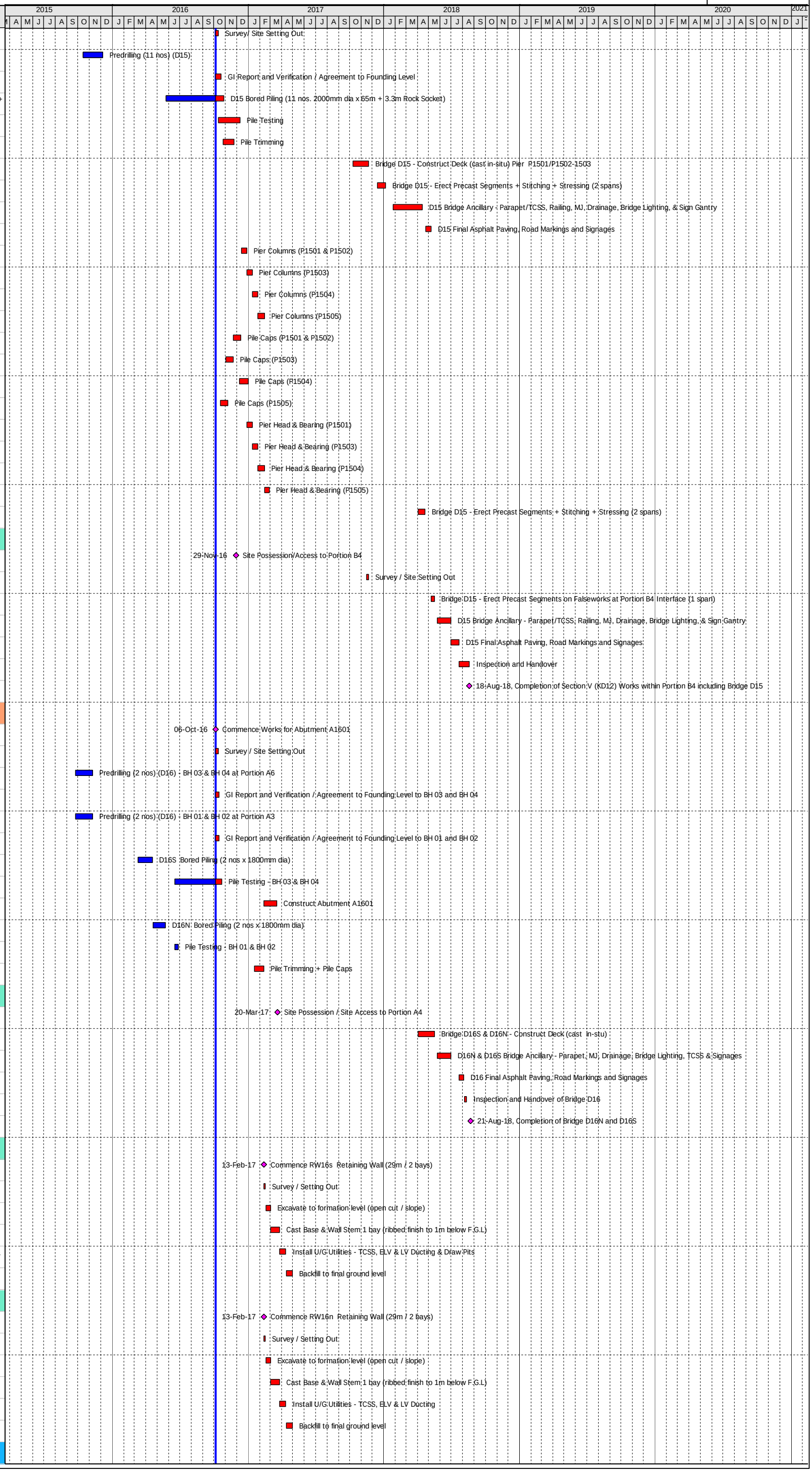


| Activity ID | Activity Name |
|---|---|
| CONS.B3.2130 | Bridge D12b (Portion B3) - Construct Deck (cast-in-situ) Pier P1210/P1214 interface with |
| CONS.B3.2140 | D12b Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage, Bridge Lighting, & Sign Gantry |
| CONS.B3.2145 | D12b Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages |
| CONS.B3.2150 | D12b Final Paving, Road Markings and Signages |
| CONS.B3.2160 | Completion of Section IV (KD11) Works within Portion B3 including Bridge D12b |
| **Bridge D13 in Portion B1 and Portion C1** | |
| CONS.B1.1925 | Site Possession / Access to Portion B1 |
| CONS.B1.1926 | Site Possession / Access to Portion C1 |
| CONS.B1.1928 | Site Survey / Setting out Portion B1 |
| CONS.B1.1929 | Site Survey / Setting out Portion C1 |
| CONS.B1.1930.1 | Predrilling (15 nos) in Portion B1 (D13) |
| CONS.B1.1930.2 | GI Report and Verification / Agreement to Founding Level - B1 |
| CONS.B1.1932.1 | Predrilling (6 nos) in Portion C1 (D13) |
| CONS.B1.1932.2 | GI Report and Verification / Agreement to Founding Level - C1 |
| CONS.B1.1940 | D13 Bored Piling (15 nos. 1800-2000mm dia x 52m) 4nos + 0.8m Rock Socket - Portion B1 |
| CONS.B1.1942 | Pile Testing B1 |
| CONS.B1.1946 | D13 Bored Piling (6 nos. 1800-2000mm dia x 47m-52m) - Portion C1 |
| CONS.B1.1948 | Pile Testing C1 |
| CONS.B1.1950 | Pile Trimming - Portion B1 |
| CONS.B1.1952 | Pile Trimming - Portion C1 |
| CONS.B1.1960 | Construct Abutment A1301 + A1307 - Portion C1 |
| CONS.B1.1980 | Bridge D13 - Erect Precast Segments + Stitching + Stressing (9 spans) |
| CONS.B1.1990 | D13 Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage, Bridge Lighting, & Sign Gantry |
| CONS.B1.1995 | D13 Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages |
| CONS.B1.2000 | D13 Final Asphalt Paving, Road Markings & Signages |
| CONS.B1.2010 | Completion of Bridge D13 |
| CONS.B1.2190 | Pier Columns (P1303) |
| CONS.B1.2200 | Pier Columns (P1308) |
| CONS.B1.2210 | Pier Columns (P1311 & P1306) |
| CONS.B1.2220 | Pier Columns (P1310 & P1305) |
| CONS.B1.2230 | Pier Columns (P1309 & P1304) |
| CONS.B1.2330 | Pile Caps (P1311) |
| CONS.B1.2340 | Pier Columns (P1302) |
| CONS.B1.2350 | Pile Caps (P1310) |
| CONS.B1.2360 | Pile Caps (P1309) |
| CONS.B1.2370 | Pile Caps (A1307) |
| CONS.B1.2380 | Pile Caps (A1301) |
| CONS.B1.2390 | Pile Caps (P1308) |
| CONS.B1.2400 | Pile Caps (P1303) |
| CONS.B1.2410 | Pile Caps (P1302) |
| CONS.B1.2560 | Pier Head & Bearing (P1311 & P1306) |
| CONS.B1.2580 | Pier Head & Bearing (P1310 & P1305) |
| CONS.B1.2600 | Pier Head & Bearing (P1309 & P1304) |
| CONS.B1.2610 | Pier Head & Bearing (P1303) |
| CONS.B1.2620 | Pier Head & Bearing (P1308) |
| CONS.B1.2630 | Pier Head & Bearing (P1302) |
| **RW13 (40m / 3 bays)** | |
| CONS.C2.3260 | Commence RW13 Retaining Wall |
| CONS.C2.3270 | Survey / Setting Out |
| CONS.C2.3280 | Excavate to formation level (open cut / slope) |
| CONS.C2.3290 | Cast Base & Wall Stem 3 bays (ribbed finish to 1m below F.G.L) |
| CONS.C2.3300 | Backfill to final ground level and Reinstate Road |
| **Bridge D14a** | |
| CONS.A1.1464 | Commence Bridge D14a / Portion A1 |
| CONS.A1.1466 | Survey / Setting Out |
| CONS.A1.1470.1 | Predrilling (12 nos) (D14a) |
| CONS.A1.1470.2 | GI Report and Verification / Agreement to Founding Level |
| CONS.A1.1480 | D14a Bored Piling (12 nos. 2000mm dia x 62m) 47m for Abutment |
| CONS.A1.1485 | Pile Testing |
| CONS.A1.1490 | Pile Trimming |
| CONS.A1.1515 | Construct Abutment A1401 |
| CONS.A1.1520 | Bridge D14a - Erect Precast Segments + Stitching + Stressing (5 spans) |
| CONS.A1.1530 | D14a Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting & Signages |
| CONS.A1.1540 | D14a Final Asphalt Paving + Road Markings |
| CONS.A1.1550 | Bridge D14a complete |
| CONS.A1.8940 | Pier Columns (P1402) |



| Activity ID | Activity Name |
|---|---|
| CONS.A1.8950 | Pier Columns (P1403) |
| CONS.A1.8960 | Pier Columns (P1404) |
| CONS.A1.8970 | Pier Columns (P1405) |
| CONS.A1.8980 | Pier Columns (P1406) |
| CONS.A1.9000 | Pile Caps (A1401) |
| CONS.A1.9010 | Pile Caps (P1402) |
| CONS.A1.9020 | Pile Caps (P1403) |
| CONS.A1.9030 | Pile Caps (P1404) |
| CONS.A1.9040 | Pile Caps (P1405) |
| CONS.A1.9050 | Pile Caps (P1406) |
| CONS.A1.9440 | Pier Head & Bearing (P1402) |
| CONS.A1.9450 | Pier Head & Bearing (P1403) |
| CONS.A1.9460 | Pier Head & Bearing (P1404) |
| CONS.A1.9470 | Pier Head & Bearing (P1405) |
| CONS.A1.9480 | Pier Head & Bearing (P1406) |
| **RW14A (29m / 2 bays)** | |
| CONS.A1.3380 | Commence RW14a Retaining Wall (29m / 2 bays) |
| CONS.A1.3390 | Survey / Setting Out |
| CONS.A1.3400 | Excavate to formation level (open cut / slope) |
| CONS.A1.3410 | Cast Base & Wall Stem 2 bays (ribbed finish to 1m below F.G.L) |
| CONS.A1.3420 | Backfill to final ground level |
| **Bridge D14b in Portion A1 and Portion B1** | |
| CONS.B1.1654 | Access to Portion B1 |
| CONS.B1.1656 | Survey / Setting Out |
| CONS.B1.1660.1 | Predrilling (6 nos) (D14b) |
| CONS.B1.1660.2 | GI Report and Verification / Agreement to Founding Level |
| CONS.B1.1670 | D14b Bored Piling (6 nos. 2000-2200mm dia x 62m) (2nos +2.3m Rock Socket) |
| CONS.B1.1675 | Pile Testing / Coring Test for Socket Bored Pile |
| CONS.B1.1680 | Pile Trimming |
| CONS.B1.1710 | Bridge D14b - Erect Precast Segments + Stitching + Stressing (3 spans) |
| CONS.B1.1720 | D14b Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting & Signages |
| CONS.B1.1730 | D14b Final Asphalt Paving + Road Markings |
| CONS.B1.1740 | Bridge D14b complete |
| CONS.B1.2090 | Pier Columns (P1407) |
| CONS.B1.2100 | Pier Columns (P1408) |
| CONS.B1.2110 | Pier Columns (P1409) |
| CONS.B1.2290 | Pile Caps (P1407) |
| CONS.B1.2300 | Pile Caps (P1408) |
| CONS.B1.2310 | Pile Caps (P1409) |
| CONS.B1.2640 | Pier Head & Bearing (P1407) |
| CONS.B1.2650 | Pier Head & Bearing (P1408) |
| CONS.B1.2660 | Pier Head & Bearing (P1409) |
| **Bridge D14c** | |
| CONS.B1.1744 | Site Possession / Access to Portion B1 |
| CONS.B1.1746 | Survey / Setting Out |
| CONS.B1.1750.1 | Predrilling (11 nos) (D14c) |
| CONS.B1.1750.2 | GI Report and Verification / Agreement to Founding Level |
| CONS.B1.1760 | D14c Bored Piling (11 nos. 2000-2200mm dia x 67m + 2.3m Rock Socket) |
| CONS.B1.1765 | Pile Testing |
| CONS.B1.1770 | Pile Trimming |
| CONS.B1.1795 | Bridge D14c - Construct Deck (cast in-situ) Pier P1409 to P1410 |
| CONS.B1.1800 | Bridge D14c - Erect Precast Segments + Stitching + Stressing (4 spans) |
| CONS.B1.1810 | D14c Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting & Signages |
| CONS.B1.1820 | D14c Final Asphalt Paving + Road Markings |
| CONS.B1.1830 | Bridge D14c complete |
| CONS.B1.2120 | Pier Columns (P1410) |
| CONS.B1.2130 | Pier Columns (P1411 & P1413) |
| CONS.B1.2140 | Pier Columns (P1412) |
| CONS.B1.2250 | Pile Caps (P1410) |
| CONS.B1.2260 | Pile Caps (P1411) |
| CONS.B1.2270 | Pile Caps (P1412) |
| CONS.B1.2670 | Pier Head & Bearing (P1410) |
| CONS.B1.2680 | Pier Head & Bearing (P1411 & P1413) |
| CONS.B1.2690 | Pier Head & Bearing (P1412) |
| **Bridge D15** | |
| CONS.B5.2104 | Site Possession/Access to Portion B5 |

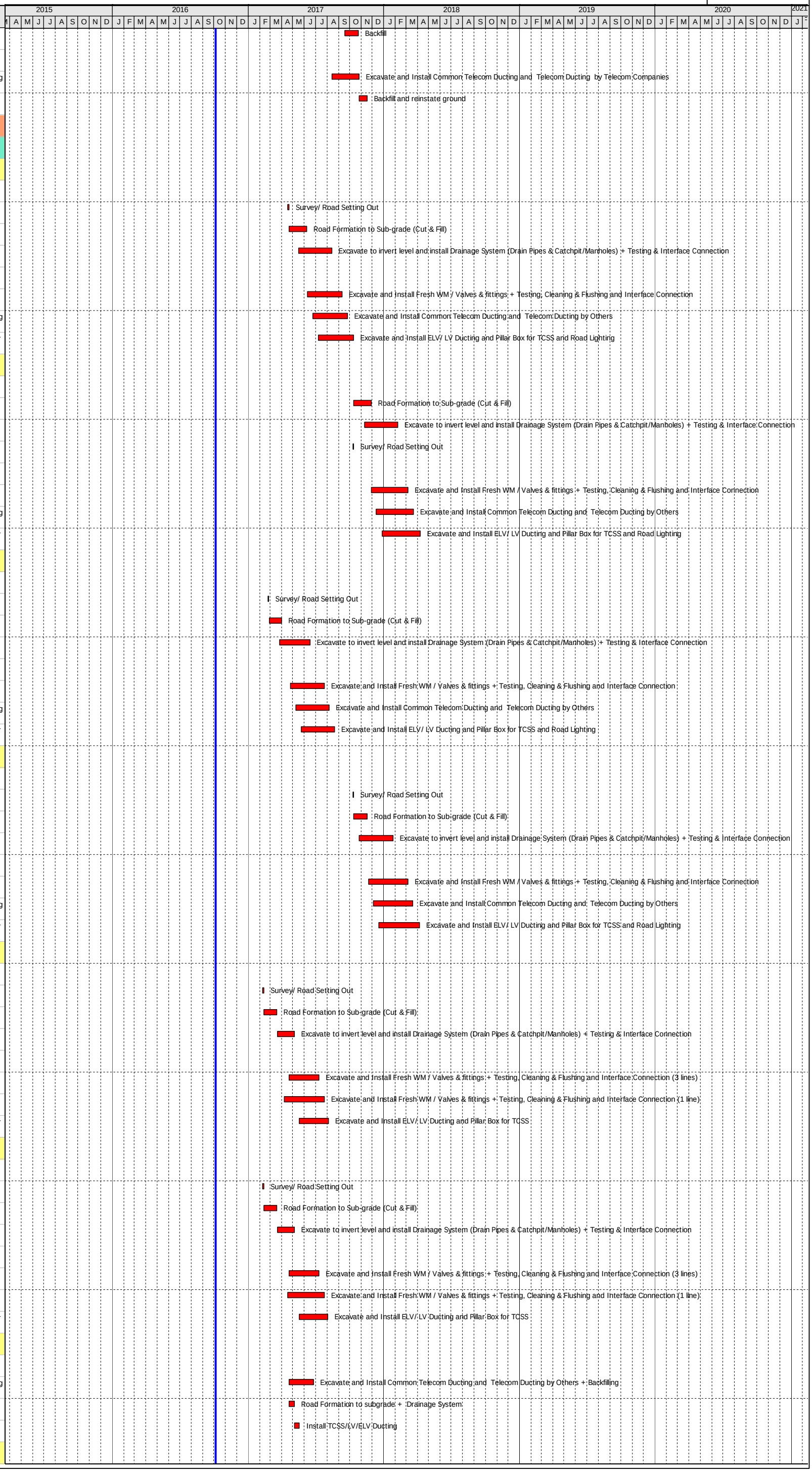
| Activity ID | Activity Name |
|---|---|
| CONS.B5.2106 | Survey/ Site Setting Out |
| CONS.B5.2110.1 | Predrilling (11 nos) (D15) |
| CONS.B5.2110.2 | GI Report and Verification / Agreement to Founding Level |
| CONS.B5.2120 | D15 Bored Piling (11 nos. 2000mm dia x 65m + 3.3m Rock Socket) |
| CONS.B5.2125 | Pile Testing |
| CONS.B5.2130 | Pile Trimming |
| CONS.B5.2150 | Bridge D15 - Construct Deck (cast in-situ) Pier P1501/P1502-1503 |
| CONS.B5.2160 | Bridge D15 - Erect Precast Segments + Stitching + Stressing (2 spans) |
| CONS.B5.2170 | D15 Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage, Bridge Lighting, & Sign Gantry |
| CONS.B5.2180 | D15 Final Asphalt Paving, Road Markings and Signages |
| CONS.B5.2190 | Pier Columns (P1501 & P1502) |
| CONS.B5.2210 | Pier Columns (P1503) |
| CONS.B5.2220 | Pier Columns (P1504) |
| CONS.B5.2230 | Pier Columns (P1505) |
| CONS.B5.2250 | Pile Caps (P1501 & P1502) |
| CONS.B5.2260 | Pile Caps (P1503) |
| CONS.B5.2270 | Pile Caps (P1504) |
| CONS.B5.2280 | Pile Caps (P1505) |
| CONS.B5.2290 | Pier Head & Bearing (P1501) |
| CONS.B5.2310 | Pier Head & Bearing (P1503) |
| CONS.B5.2320 | Pier Head & Bearing (P1504) |
| CONS.B5.2330 | Pier Head & Bearing (P1505) |
| CONS.B5.2340 | Bridge D15 - Erect Precast Segments + Stitching + Stressing (2 spans) |
| **Bridge D15 in Portion B4 (Interface with Cont** | |
| CONS.B4.2170 | Site Possession/Access to Portion B4 |
| CONS.B4.2180 | Survey / Site Setting Out |
| CONS.B4.2190 | Bridge D15 - Erect Precast Segments on Falseworks at Portion B4 Interface (1 span) |
| CONS.B4.2200 | D15 Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage, Bridge Lighting, & Sign Gantry |
| CONS.B4.2210 | D15 Final Asphalt Paving, Road Markings and Signages |
| CONS.B4.2220 | Inspection and Handover |
| CONS.B4.2230 | Completion of Section V (KD12) Works within Portion B4 including Bridge D15 |
| **Bridge D16S and D16N and Abutment A1601 in** | |
| CONS.A4.2230 | Commence Works for Abutment A1601 |
| CONS.A4.2240 | Survey / Site Setting Out |
| CONS.A4.2250.1 | Predrilling (2 nos) (D16) - BH 03 & BH 04 at Portion A6 |
| CONS.A4.2250.2 | GI Report and Verification / Agreement to Founding Level to BH 03 and BH 04 |
| CONS.A4.2250.3 | Predrilling (2 nos) (D16) - BH 01 & BH 02 at Portion A3 |
| CONS.A4.2250.4 | GI Report and Verification / Agreement to Founding Level to BH 01 and BH 02 |
| CONS.A4.2260 | D16S Bored Piling (2 nos x 1800mm dia) |
| CONS.A4.2265 | Pile Testing - BH 03 & BH 04 |
| CONS.A4.2280 | Construct Abutment A1601 |
| CONS.A4.2340 | D16N Bored Piling (2 nos x 1800mm dia) |
| CONS.A4.2350 | Pile Testing - BH 01 & BH 02 |
| CONS.A4.2360 | Pile Trimming + Pile Caps |
| **Bridge D16S and D16N in Portion A4** | |
| CONS.A4.2285 | Site Possession / Site Access to Portion A4 |
| CONS.A4.2290 | Bridge D16S & D16N - Construct Deck (cast in-stu) |
| CONS.A4.2300 | D16N & D16S Bridge Ancillary - Parapet, MJ, Drainage, Bridge Lighting, TCSS & Signages |
| CONS.A4.2310 | D16 Final Asphalt Paving, Road Markings and Signages |
| CONS.A4.2320 | Inspection and Handover of Bridge D16 |
| CONS.A4.2330 | Completion of Bridge D16N and D16S |
| **RW16S (15m / 1 bay) in Portion A6** | |
| CONS.A1.3500 | Commence RW16s Retaining Wall (29m / 2 bays) |
| CONS.A1.3510 | Survey / Setting Out |
| CONS.A1.3520 | Excavate to formation level (open cut / slope) |
| CONS.A1.3530 | Cast Base & Wall Stem 1 bay (ribbed finish to 1m below F.G.L) |
| CONS.A1.3540 | Install U/G Utilities - TCSS, ELV & LV Ducting & Draw Pits |
| CONS.A1.3550 | Backfill to final ground level |
| **RW16N (15m / 1 bay) in Portion A6** | |
| CONS.A1.3440 | Commence RW16n Retaining Wall (29m / 2 bays) |
| CONS.A1.3450 | Survey / Setting Out |
| CONS.A1.3460 | Excavate to formation level (open cut / slope) |
| CONS.A1.3470 | Cast Base & Wall Stem 1 bay (ribbed finish to 1m below F.G.L) |
| CONS.A1.3480 | Install U/G Utilities - TCSS, ELV & LV Ducting |
| CONS.A1.3490 | Backfill to final ground level |
| **Depressed Road RC Structure** | |



| Activity ID | Activity Name |
|---|---|
| | **Stage 1- Depressed Road RC Structure (Bay 9** |
| CONS.C1.8670 | Commence Works on Depressed Road (after removal of falsework D10, D14a) |
| CONS.C1.8699 | Excavate to formation level (open cut) |
| CONS.C1.8720 | Construct- base slab |
| CONS.C1.8730 | Construct - wall (Plan ad Ribbed Finishes) |
| CONS.C1.8740 | Backfill and Compaction |
| | **Stage 2 - Depressed Road RC Structure (Bay 1** |
| CONS.C1.8671 | Commence Works on Depressed Road (after removal of falseworks D13, D8, D9a) |
| CONS.C1.8690 | Excavate to formation level (open cut) |
| CONS.C1.8721 | Construct- base slab |
| CONS.C1.8731 | Construct - wall (Plan ad Ribbed Finishes) |
| CONS.C1.8741 | Backfill and Compaction |
| | **Sign Gantry** |
| | **Sign Gantry Footings at Grade in Portion A1** |
| | **DS303 (Driven H Pile)** |
| CONS.A1.4380. | Predrilling (12 nos) (DS303) |
| CONS.A1.4380. | GI Report and Verification / Agreement to Founding Level |
| CONS.A1.4390 | Piling Works - Driven H Pile (12 nos) |
| CONS.A1.4410 | Excavation, Pile Trimming + Cast Pile Caps ( 3 nos) |
| CONS.A1.4420 | Backfill Foundation |
| | **Sign Gantry Footing at Grade in Portion C1 & P** |
| | **DS302 (610mm dia. Prebored H Pile)** |
| CONS.D1.3380 | Commence Foundation / Footing for Sign Gantry |
| CONS.D1.3390 | Mobilisation/ Survey / Setting Out |
| CONS.D1.3400. | Predrilling for Prebored H Pile (8 nos) (DS302) |
| CONS.D1.3400. | GI Report and Verification / Agreement to Founding Level |
| CONS.D1.3410 | Pre-bored Socket H-Pile (8 nos) |
| CONS.D1.3420 | Pile Testing |
| CONS.D1.3430 | Excavation, Pile Trimming + Pile Caps ( 2 nos) |
| CONS.D1.3440 | Backfill Foundation |
| | **GT408 (Driven H Pile)** |
| CONS.C1.4030. | Predrilling (8 nos) (GT408) |
| CONS.C1.4030. | GI Report and Verification / Agreement to Founding Level |
| CONS.C1.4040 | Piling Works - Driven H Pile (8 nos) |
| CONS.C1.4060 | Excavation, Pile Trimming + Cast Pile Caps ( 2 nos) |
| CONS.C1.4070 | Backfill Foundation |
| | **DS44 (Driven H Pile)** |
| CONS.C1.4100. | Predrilling (8 nos) (DS44) |
| CONS.C1.4100. | GI Report and Verification / Agreement to Founding Level |
| CONS.C1.4110 | Piling Works - Driven H Pile (8 nos) |
| CONS.C1.4130 | Excavation, Pile Trimming + Cast Pile Caps ( 2 nos) |
| CONS.C1.4140 | Backfill Foundation |
| | **DS261 (Driven H Pile)** |
| CONS.C1.4170. | Predrilling (8 nos) (DS261) |
| CONS.C1.4170. | GI Report and Verification / Agreement to Founding Level |
| CONS.C1.4180 | Piling Works - Driven H Pile (8 nos) |
| CONS.C1.4200 | Excavation, Pile Trimming + Cast Pile Caps ( 2 nos) |
| CONS.C1.4210 | Backfill Foundation |
| | **ADS301 (Driven H Pile)** |
| CONS.C1.4240. | Predrilling (12 nos) (ADS301) |
| CONS.C1.4240. | GI Report and Verification / Agreement to Founding Level |
| CONS.C1.4250 | Piling Works - Driven H Pile (12 nos) |
| CONS.C1.4270 | Excavation, Pile Trimming + Cast Pile Caps ( 3 nos) |
| CONS.C1.4280 | Backfill Foundation |
| | **FADS303 (Driven H Pile)** |
| CONS.C1.4310. | Predrilling (8 nos) (FADS303) |
| CONS.C1.4310. | GI Report and Verification / Agreement to Founding Level |
| CONS.C1.4320 | Piling Works - Driven H Pile (8 nos) |
| CONS.C1.4340 | Excavation, Pile Trimming + Cast Pile Caps ( 2 nos) |
| CONS.C1.4350 | Backfill Foundation |
| | **Erection of Sign Gantry and High Mast for TCS** |
| CONS.C1.4360 | Erection of Sign Gantry & High Mast Structure and Associated Conduits for TCSS Works |
| | **Drainage and U/G Utilities** |
| CONS.RW.2300 | Handover area to CLP for HV Cable Laying |
| CONS.RW.3870 | Excavate and Install HV Cable Ducting on Carriageway (West of Pump House - Portion |
| CONS.RW.3880 | Excavate and Install HV Cable Ducting on Carriageway (East of Pump House - Portion A |

| Activity ID | Activity Name |
|---|---|
| CONS.RW.3890 | Excavate and Install HV Cable Ducting on Carriageway (East of Pump House - Portion B |
| CONS.RW.3900 | Excavate and Install HV Cable Ducting on Carriageway (West of Pump House - Portion |
| **Drainage and U/G Utilities (West of Pump Hou** | |
| **Drainage & UU** | |
| **Road SOL 101 / 105 (Phase 1)** | |
| **Drainage System** | |
| CONS.RW.22 | Survey/ Road Setting Out |
| CONS.RW.22 | Road Formation to Sub-grade (Cut & Fill) |
| CONS.RW.22 | Excavate to invert level and install Drainage System (Drain Pipes & Catchpit/Manholes) + |
| **Installation of Underground Utilities** | |
| CONS.RW.23 | Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and |
| CONS.RW.23 | Excavate and Install Common Telecom Ducting and Telecom Ducting by Others |
| CONS.RW.23 | Excavate and Install ELV/ LV Ducting and Pillar Box for TCSS |
| **Road SOL 101 / 105 (Phase 2)** | |
| **Drainage System** | |
| CONS.RW.34 | Survey/ Road Setting Out |
| CONS.RW.34 | Road Formation to Sub-grade (Cut & Fill) |
| CONS.RW.34 | Excavate to invert level and install Drainage System (Drain Pipes & Catchpit/Manholes) + |
| **Installation of Underground Utilities** | |
| CONS.RW.34 | Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and |
| CONS.RW.34 | Excavate and Install Common Telecom Ducting and Telecom Ducting by Others |
| CONS.RW.34 | Excavate and Install ELV/ LV Ducting and Pillar Box for TCSS |
| **Road SOL 102 /106 /111 and the neigboring la** | |
| **Drainage System** | |
| CONS.RW.24 | Survey/ Road Setting Out |
| CONS.RW.24 | Road Formation to Sub-grade (Cut & Fill) |
| CONS.RW.24 | Excavate to invert level and install Drainage System (Drain Pipes & Catchpit/Manholes) + |
| **Installation of Underground Utilities** | |
| CONS.RW.29 | Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and |
| CONS.RW.29 | Excavate and Install Common Telecom Ducting and Telecom Ducting by Others |
| CONS.RW.29 | Excavate and Install ELV/ LV Ducting and Pillar Box for TCSS |
| **Road SOL 102 /106 /111 and the neigboring la** | |
| **Drainage System** | |
| CONS.RW.34 | Survey/ Road Setting Out |
| CONS.RW.34 | Road Formation to Sub-grade (Cut & Fill) |
| CONS.RW.34 | Excavate to invert level and install Drainage System (Drain Pipes & Catchpit/Manholes) + |
| **Installation of Underground Utilities** | |
| CONS.RW.35 | Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and |
| CONS.RW.35 | Excavate and Install Common Telecom Ducting and Telecom Ducting by Others |
| CONS.RW.35 | Excavate and Install ELV/ LV Ducting and Pillar Box for TCSS |
| **Road SOL 104 (Phase 1)** | |
| **Drainage System** | |
| CONS.RW.24 | Survey/ Road Setting Out |
| CONS.RW.24 | Road Formation to Sub-grade (Cut & Fill) |
| CONS.RW.24 | Excavate to invert level and install Drainage System (Drain Pipes & Catchpit/Manholes) + |
| **Installation of Underground Utilities** | |
| CONS.RW.24 | Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and |
| CONS.RW.24 | Excavate and Install Flush WM / Valves & fittings + Testing, Cleaning & Flushing and |
| CONS.RW.24 | Excavate and Install ELV/ LV Ducting and Pillar Box for TCSS |
| **Road SOL 104 (Phase 2)** | |
| **Drainage System** | |
| CONS.RW.35 | Survey/ Road Setting Out |
| CONS.RW.35 | Road Formation to Sub-grade (Cut & Fill) |
| CONS.RW.35 | Excavate to invert level and install Drainage System (Drain Pipes & Catchpit/Manholes) + |
| **Installation of Underground Utilities** | |
| CONS.RW.35 | Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and |
| CONS.RW.35 | Excavate and Install Flush WM / Valves & fittings + Testing, Cleaning & Flushing and |
| CONS.RW.35 | Excavate and Install ELV/ LV Ducting and Pillar Box for TCSS |
| **Undergound Utilties (ELV, Fresh WM & Teleco** | |
| **Work in Portion D1 and D2** | |
| **Sewage Rising main at Portion D1** | |
| CONS.RM.101 | Commence Works on Rising Main |
| CONS.RM.102 | Site Survey / Setting Out Sewerage Alignment |
| CONS.RM.103 | Excavate to Invert Level & Install 2 Sewage Rising Main DN100 CHC & CHD |
| CONS.RM.104 | Construct Thrust Block |
| CONS.RM.105 | Gravity Flow Testing |

| Activity ID | Activity Name |
|---|---|
| CONS.RM.106 | Backfill |
| **Telecom Crossing at Portion D2 and D1** | |
| CONS.RW.28( | Excavate and Install Common Telecom Ducting and Telecom Ducting by Telecom Companies |
| CONS.RW.28 | Backfill and reinstate ground |
| **Drainage and U/G Utilities (East of Pump Hous** | |
| **Drainage & UU** | |
| **Road SOL 101 / 109 / 114 (Phase 1)** | |
| **Drainage System** | |
| CONS.RE.101 | Survey/ Road Setting Out |
| CONS.RE.102 | Road Formation to Sub-grade (Cut & Fill) |
| CONS.RE.103 | Excavate to invert level and install Drainage System (Drain Pipes & Catchpit/Manholes) + |
| **Installation of Underground Utilities** | |
| CONS.RE.106 | Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and |
| CONS.RE.107 | Excavate and Install Common Telecom Ducting and Telecom Ducting by Others |
| CONS.RE.108 | Excavate and Install ELV/ LV Ducting and Pillar Box for TCSS and Road Lighting |
| **Road SOL 101 / 109 / 114 (Phase 2)** | |
| **Drainage System** | |
| CONS.RE.420 | Road Formation to Sub-grade (Cut & Fill) |
| CONS.RE.421 | Excavate to invert level and install Drainage System (Drain Pipes & Catchpit/Manholes) + |
| CONS.RE.422 | Survey/ Road Setting Out |
| **Installation of Underground Utilities** | |
| CONS.RE.423 | Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and |
| CONS.RE.424 | Excavate and Install Common Telecom Ducting and Telecom Ducting by Others |
| CONS.RE.425 | Excavate and Install ELV/ LV Ducting and Pillar Box for TCSS and Road Lighting |
| **Road SOL 102 and the area outside the carriage** | |
| **Drainage System** | |
| CONS.RE.197 | Survey/ Road Setting Out |
| CONS.RE.198 | Road Formation to Sub-grade (Cut & Fill) |
| CONS.RE.199 | Excavate to invert level and install Drainage System (Drain Pipes & Catchpit/Manholes) + |
| **Installation of Underground Utilities** | |
| CONS.RE.289 | Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and |
| CONS.RE.290 | Excavate and Install Common Telecom Ducting and Telecom Ducting by Others |
| CONS.RE.291 | Excavate and Install ELV/ LV Ducting and Pillar Box for TCSS and Road Lighting |
| **Road SOL 102 and the area outside the carriage** | |
| **Drainage System** | |
| CONS.RE.426 | Survey/ Road Setting Out |
| CONS.RE.427 | Road Formation to Sub-grade (Cut & Fill) |
| CONS.RE.428 | Excavate to invert level and install Drainage System (Drain Pipes & Catchpit/Manholes) + |
| **Installation of Underground Utilities** | |
| CONS.RE.429 | Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and |
| CONS.RE.430 | Excavate and Install Common Telecom Ducting and Telecom Ducting by Others |
| CONS.RE.431 | Excavate and Install ELV/ LV Ducting and Pillar Box for TCSS and Road Lighting |
| **Road SOL 107 / 113 (Phase 1)** | |
| **Drainage System** | |
| CONS.RE.200 | Survey/ Road Setting Out |
| CONS.RE.201 | Road Formation to Sub-grade (Cut & Fill) |
| CONS.RE.202 | Excavate to invert level and install Drainage System (Drain Pipes & Catchpit/Manholes) + |
| **Installation of Underground Utilities** | |
| CONS.RE.204 | Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and |
| CONS.RE.205 | Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and |
| CONS.RE.206 | Excavate and Install ELV/ LV Ducting and Pillar Box for TCSS |
| **Road SOL 107 / 113 (Phase 2)** | |
| **Drainage System** | |
| CONS.RE.432 | Survey/ Road Setting Out |
| CONS.RE.433 | Road Formation to Sub-grade (Cut & Fill) |
| CONS.RE.434 | Excavate to invert level and install Drainage System (Drain Pipes & Catchpit/Manholes) + |
| **Installation of Underground Utilities** | |
| CONS.RE.435 | Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and |
| CONS.RE.436 | Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and |
| CONS.RE.437 | Excavate and Install ELV/ LV Ducting and Pillar Box for TCSS |
| **Road SOL 108 / 106 & SOL 110** | |
| **Adjacent to Road SOL 108 / 106, Abutment A9** | |
| CONS.RE.207 | Excavate and Install Common Telecom Ducting and Telecom Ducting by Others + Backfilling |
| CONS.RE.216 | Road Formation to subgrade + Drainage System |
| CONS.RE.219 | Install TCSS/LV/ELV Ducting |
| **Portion A1 and A2 - Sub-Base Area** | |

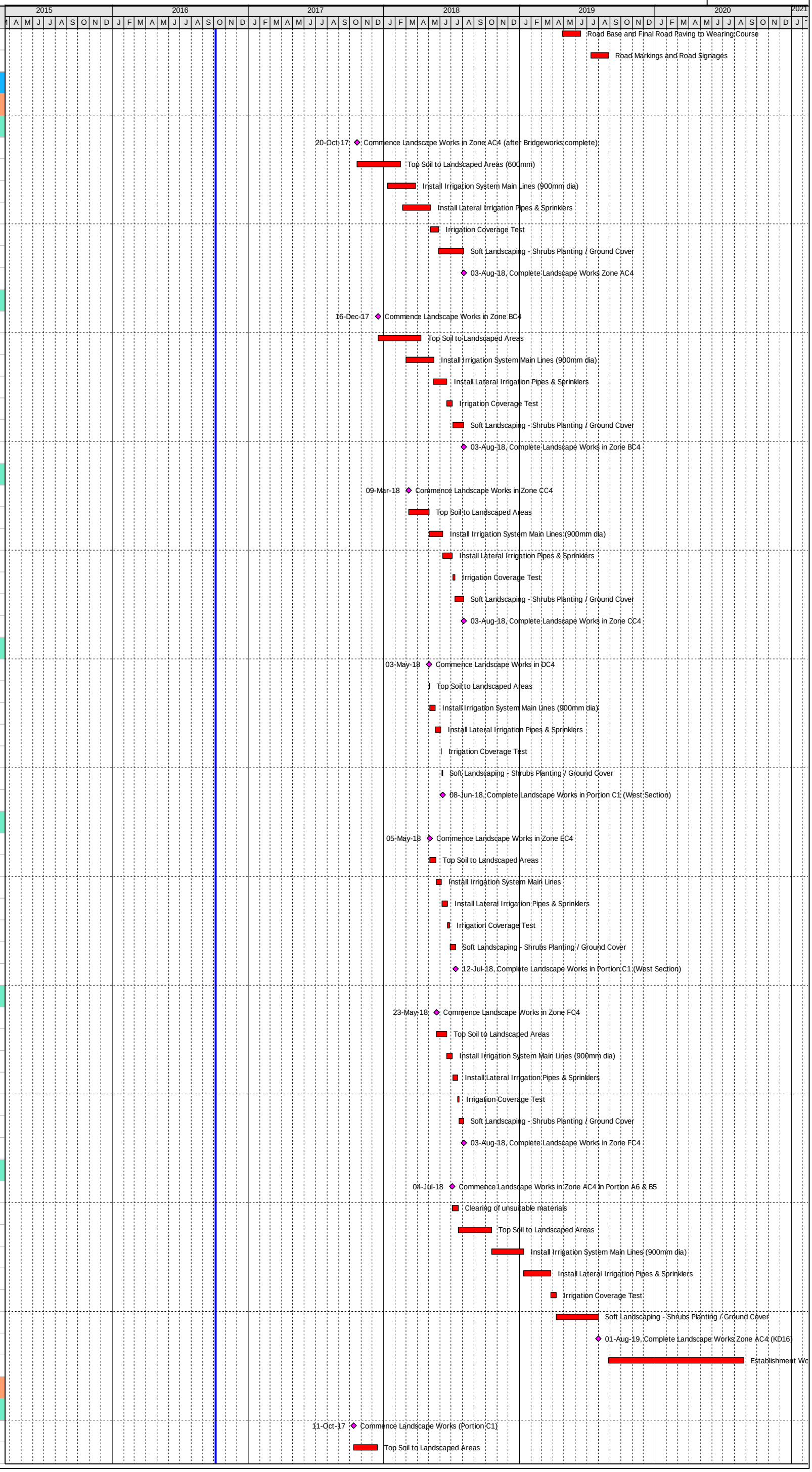


| Activity ID | Activity Name |
|---|---|
| CONS.A1.4430 | Demobilisation of Temporary Facilities on Site |
| CONS.A1.4440 | Site Survey / Site Clearing |
| CONS.A1.4450 | Area to Formation Level |
| CONS.A1.4460 | Sub-Base Material Topping (Area 29,963 m2 x 100mm thk Subbase) |
| **Area 3 (in Portion A6)** | |
| **Drainage System** | |
| CONS.RE.4660 | Survey/ Road Setting Out |
| CONS.RE.4670 | Road Formation to Sub-grade (Cut & Fill) |
| CONS.RE.4680 | Excavate to invert level and install Drainage System (Drain Pipes & Catchpit/Manholes) + |
| **Installation of Underground Utilities** | |
| CONS.RE.4690 | Excavate and Install ELV/ LV Ducting and Pillar Box for TCSS |
| CONS.RE.4700 | Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and |
| CONS.RE.4710 | Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and |
| **Roadworks** | |
| **Area 1 (West of Pump House) (Portion C1)** | |
| **Road Works** | |
| **Road SOL 101 / 105 (Phase 1)** | |
| **Kerbing and Footings for Railing, Fencing, Sign** | |
| CONS.RW.30( | Excavate and Construct Footings for Road Lightings / Railing / Fencing and Signages |
| CONS.RW.30: | Road Formation to Sub-base |
| CONS.RW.30( | Construct Precast Road Kerbings |
| **Road Works to Road Base and Base Course** | |
| CONS.RW.30: | Road Formation to Road Base |
| CONS.RW.30( | Road Formation to Base Course |
| **Installation of Railing and Fencing + Road Ligl** | |
| CONS.RW.30: | Install Road Railing and Fencing |
| CONS.RW.30( | Install Road Lighting and Signages |
| **Final Paving and Road Markings** | |
| CONS.RW.29: | Cleaning and Rectification Works |
| CONS.RW.29( | Final Road Paving (Wearing Course) |
| CONS.RW.29: | Road Markings and Road Signages |
| **Road SOL 101 / 105 (Phase 2)** | |
| **Kerbing and Footings for Railing, Fencing, Sign** | |
| CONS.RW.36: | Road Formation to Sub-base |
| CONS.RW.36( | Construct Precast Road Kerbings |
| **Road Works to Road Base and Base Course** | |
| CONS.RW.36: | Road Formation to Road Base |
| CONS.RW.36( | Road Formation to Base Course |
| **Installation of Railing and Fencing + Road Ligl** | |
| CONS.RW.36: | Install Road Railing and Fencing |
| CONS.RW.36( | Install Road Lighting and Signages |
| **Final Paving and Road Markings** | |
| CONS.RW.35: | Cleaning and Rectification Works |
| CONS.RW.36( | Final Road Paving (Wearing Course) |
| CONS.RW.36: | Road Markings and Road Signages |
| **Road SOL 102 /106 /111 (Phase 1)** | |
| **Kerbing and Footings for Railing, Fencing, Sign** | |
| CONS.RW.32: | Excavate and Construct Footings for Road Lightings / Railing / Fencing and Signages |
| CONS.RW.32( | Road Formation to Sub-base |
| CONS.RW.32: | Construct Precast Road Kerbings |
| **Road Works to Road Base and Base Course** | |
| CONS.RW.32: | Road Formation to Road Base |
| CONS.RW.32( | Road Formation to Base Course |
| **Installation of Railing and Fencing + Road Ligl** | |
| CONS.RW.32: | Install Road Railing and Fencing |
| CONS.RW.32( | Install Road Lighting and Signages |
| **Final Paving and Road Markings** | |
| CONS.RW.32: | Final Road Paving (Wearing Course) |
| CONS.RW.32( | Road Markings and Road Signages |
| **Road SOL 102 /106 /111 (Phase 2)** | |
| **Kerbing and Footings for Railing, Fencing, Sign** | |
| CONS.RW.37: | Excavate and Construct Footings for Road Lightings / Railing / Fencing and Signages |
| CONS.RW.37( | Road Formation to Sub-base |
| CONS.RW.37: | Construct Precast Road Kerbings |
| **Road Works to Road Base and Base Course** | |
| CONS.RW.36: | Road Formation to Road Base |

| Activity ID | Activity Name |
|---|---|
| CONS.RW.37( | Road Formation to Base Course |
| | **Installation of Railing and Fencing + Road Ligl** |
| CONS.RW.37: | Install Road Railing and Fencing |
| CONS.RW.37: | Install Road Lighting and Signages |
| | **Final Paving and Road Markings** |
| CONS.RW.37: | Final Road Paving (Wearing Course) |
| CONS.RW.37( | Road Markings and Road Signages |
| | **Road SOL 104 (Phase 1)** |
| | **Kerbing and Footings for Railing, Fencing, Sign** |
| CONS.RW.33: | Excavate and Construct Footings for Road Lightings / Railing / Fencing and Signages |
| CONS.RW.33: | Road Formation to Sub-base |
| CONS.RW.33( | Construct Precast Road Kerbings |
| | **Road Works to Road Base and Base Course** |
| CONS.RW.33: | Road Formation to Road Base |
| CONS.RW.33( | Road Formation to Base Course |
| | **Installation of Railing and Fencing + Road Ligl** |
| CONS.RW.33: | Install Road Railing and Fencing |
| CONS.RW.33( | Install Road Lighting and Signages |
| | **Final Paving and Road Markings** |
| CONS.RW.33( | Final Road Paving (Wearing Course) |
| CONS.RW.33: | Road Markings and Road Signages |
| | **Road SOL 104 (Phase 2)** |
| | **Kerbing and Footings for Railing, Fencing, Sign** |
| CONS.RW.38( | Excavate and Construct Footings for Road Lightings / Railing / Fencing and Signages |
| CONS.RW.38: | Road Formation to Sub-base |
| CONS.RW.38( | Construct Precast Road Kerbings |
| | **Road Works to Road Base and Base Course** |
| CONS.RW.38: | Road Formation to Road Base |
| CONS.RW.38( | Road Formation to Base Course |
| | **Installation of Railing and Fencing + Road Ligl** |
| CONS.RW.38: | Install Road Railing and Fencing |
| CONS.RW.38( | Install Road Lighting and Signages |
| | **Final Paving and Road Markings** |
| CONS.RW.37( | Final Road Paving (Wearing Course) |
| CONS.RW.37: | Road Markings and Road Signages |
| | **Area 2 (East of Pump House Portion C1, A1, A2** |
| | **Road Works** |
| | **Road SOL 101 / 109 / 114 (Phase 1)** |
| | **Kerbing and Footings for Railing, Fencing, Sign** |
| CONS.RE.384 | Excavate and Construct Footings for Road Lightings / Railing / Fencing and Signages |
| CONS.RE.385 | Road Formation to Sub-base |
| CONS.RE.386 | Construct Precast Road Kerbings |
| | **Road Works to Road Base and Base Course** |
| CONS.RE.372 | Road Formation to Road Base |
| CONS.RE.373 | Road Formation to Base Course |
| | **Installation of Railing and Fencing + Road Ligl** |
| CONS.RE.374 | Install Road Railing and Fencing |
| CONS.RE.375 | Install Road Lighting and Signages |
| | **Road SOL 101 / 109 / 114 (Phase 2)** |
| | **Kerbing and Footings for Railing, Fencing, Sign** |
| CONS.RE.442 | Excavate and Construct Footings for Road Lightings / Railing / Fencing and Signages |
| CONS.RE.443 | Road Formation to Sub-base |
| CONS.RE.444 | Construct Precast Road Kerbings |
| | **Road Works to Road Base and Base Course** |
| CONS.RE.438 | Road Formation to Road Base |
| CONS.RE.439 | Road Formation to Base Course |
| | **Installation of Railing and Fencing + Road Ligl** |
| CONS.RE.440 | Install Road Railing and Fencing |
| CONS.RE.441 | Install Road Lighting and Signages |
| | **Road SOL 102 (Phase 1)** |
| | **Kerbing and Footings for Railing, Fencing, Sign** |
| CONS.RE.415 | Excavate and Construct Footings for Road Lightings / Railing / Fencing and Signages |
| CONS.RE.416 | Construct Precast Road Kerbings |
| CONS.RE.417 | Road Formation to Sub-base |
| | **Road Works to Road Base and Base Course** |
| CONS.RE.410 | Road Formation to Road Base |

| Activity ID | Activity Name |
|---|---|
| CONS.RE.411 | Road Formation to Base Course |
| | **Installation of Railing and Fencing + Road Ligl** |
| CONS.RE.418 | Install Road Railing and Fencing |
| CONS.RE.419 | Install Road Lighting and Signages |
| | **Final Paving and Road Markings** |
| CONS.RE.402 | Final Road Paving (Wearing Course) |
| CONS.RE.403 | Road Markings and Road Signages |
| | **Road SOL 102 (Phase 2)** |
| | **Kerbing and Footings for Railing, Fencing, Sign** |
| CONS.RE.449 | Excavate and Construct Footings for Road Lightings / Railing / Fencing and Signages |
| CONS.RE.450 | Construct Precast Road Kerbings |
| CONS.RE.451 | Road Formation to Sub-base |
| | **Road Works to Road Base and Base Course** |
| CONS.RE.447 | Road Formation to Road Base |
| CONS.RE.448 | Road Formation to Base Course |
| | **Installation of Railing and Fencing + Road Ligl** |
| CONS.RE.452 | Install Road Railing and Fencing |
| CONS.RE.453 | Install Road Lighting and Signages |
| | **Final Paving and Road Markings** |
| CONS.RE.445 | Final Road Paving (Wearing Course) |
| CONS.RE.446 | Road Markings and Road Signages |
| | **Road SOL 107 / 113 (Phase 1)** |
| | **Kerbing and Footings for Railing, Fencing, Sign** |
| CONS.RE.393 | Excavate and Construct Footings for Road Lightings / Railing / Fencing and Signages |
| CONS.RE.394 | Road Formation to Sub-base |
| CONS.RE.395 | Construct Precast Road Kerbings |
| | **Road Works to Road Base and Base Course** |
| CONS.RE.396 | Road Formation to Road Base |
| CONS.RE.397 | Road Formation to Base Course |
| | **Installation of Railing and Fencing + Road Ligl** |
| CONS.RE.398 | Install Road Railing and Fencing |
| CONS.RE.399 | Install Road Lighting and Signages |
| | **Final Paving and Road Markings** |
| CONS.RE.400 | Final Road Paving (Wearing Course) |
| CONS.RE.401 | Road Markings and Road Signages |
| | **Road SOL 107 / 113 (Phase 2)** |
| | **Kerbing and Footings for Railing, Fencing, Sign** |
| CONS.RE.454 | Excavate and Construct Footings for Road Lightings / Railing / Fencing and Signages |
| CONS.RE.455 | Road Formation to Sub-base |
| CONS.RE.456 | Construct Precast Road Kerbings |
| | **Road Works to Road Base and Base Course** |
| CONS.RE.457 | Road Formation to Road Base |
| CONS.RE.458 | Road Formation to Base Course |
| | **Installation of Railing and Fencing + Road Ligl** |
| CONS.RE.459 | Install Road Railing and Fencing |
| CONS.RE.460 | Install Road Lighting and Signages |
| | **Final Paving and Road Markings** |
| CONS.RE.461 | Final Road Paving (Wearing Course) |
| CONS.RE.462 | Road Markings and Road Signages |
| | **Road SOL 108 / 106 & SOL 110** |
| | **Adjacent to Road SOL 108 / 106, Abutment A9(** |
| CONS.RE.362 | Excavate and Construct footing for Railing and Road lighting |
| CONS.RE.363 | Road formation to Subbase |
| CONS.RE.364 | Construct Precast Road Kerbings |
| CONS.RE.365 | Road formation to Road base and Base course |
| CONS.RE.366 | Install Road Lighting, Railing and Signages |
| CONS.RE.367 | Final Road Paving and Road markings (KD13 - Completion of Section VI) |
| | **Portion A1 and A2 - Sub-Base Area** |
| CONS.A1.8710 | Demobilisation of Temporary Facilities on Site |
| CONS.A1.8720 | Site Survey / Site Clearing |
| CONS.A1.8730 | Area to Formation Level |
| CONS.A1.8740 | Sub-Base Material Topping (Area 29,963 m2 x 100mm thk Subbase) |
| | **Area 3 (in Portion A6)** |
| | **Final Paving and Road Markings** |
| | **Portion A6 - Final Paving and Road Markings** |
| CONS.RE.3780 | Road Clearing |

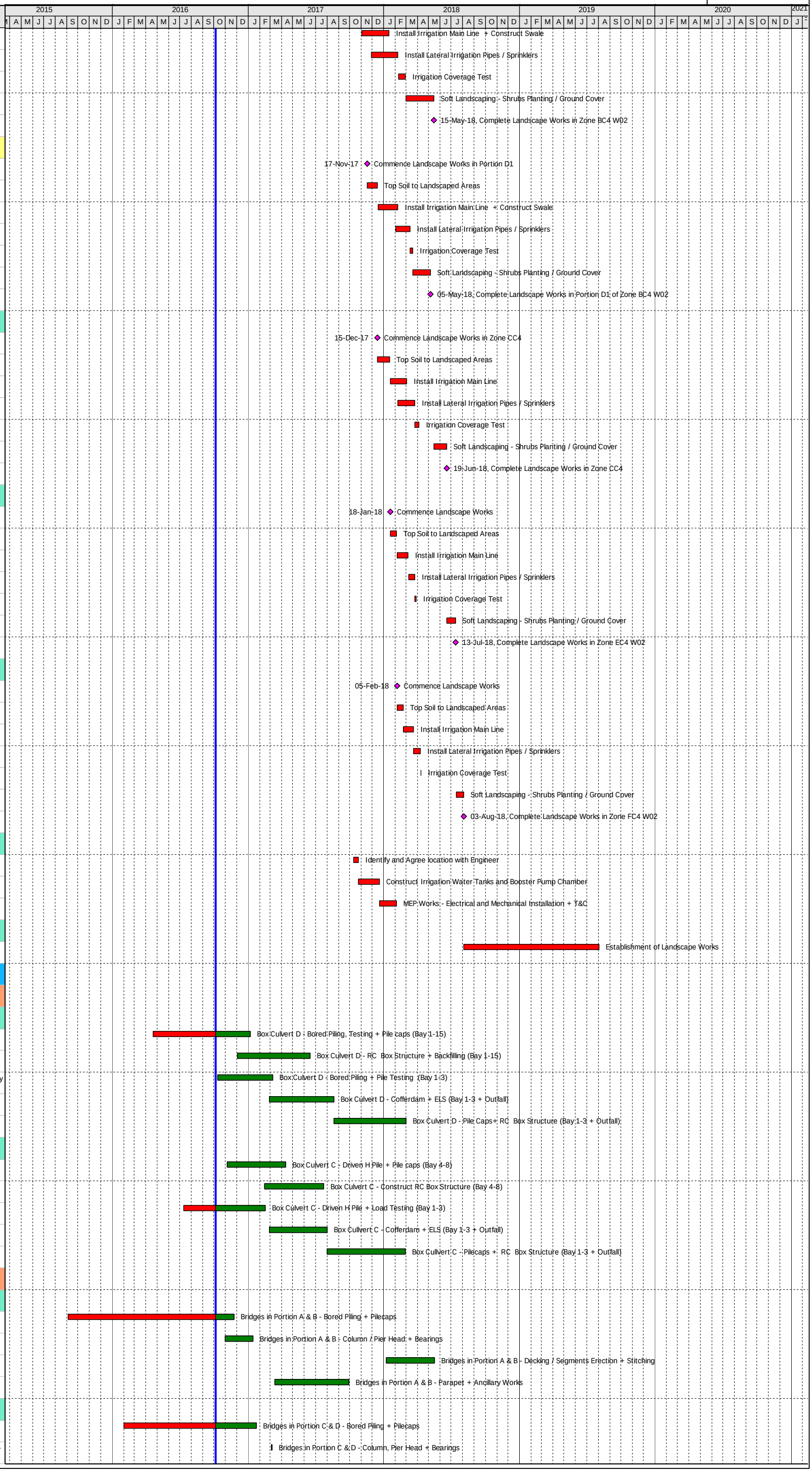
| Activity ID | Activity Name |
|---|---|
| CONS.RE.3790 | Road Base and Final Road Paving to Wearing Course |
| CONS.RE.3800 | Road Markings and Road Signages |
| **Landscaping and Irrigation System** | |
| **Landscaping - Water Meter W04** | |
| **Zone AC4** | |
| CONS.A1.8120 | Commence Landscape Works in Zone AC4 (after Bridgeworks complete) |
| CONS.A1.8130 | Top Soil to Landscaped Areas (600mm) |
| CONS.A1.8140 | Install Irrigation System Main Lines (900mm dia) |
| CONS.A1.8150 | Install Lateral Irrigation Pipes & Sprinklers |
| CONS.A1.8160 | Irrigation Coverage Test |
| CONS.A1.8170 | Soft Landscaping - Shrubs Planting / Ground Cover |
| CONS.A1.8180 | Complete Landscape Works Zone AC4 |
| **Zone BC4** | |
| CONS.A1.8200 | Commence Landscape Works in Zone BC4 |
| CONS.A1.8210 | Top Soil to Landscaped Areas |
| CONS.A1.8220 | Install Irrigation System Main Lines (900mm dia) |
| CONS.A1.8230 | Install Lateral Irrigation Pipes & Sprinklers |
| CONS.A1.8240 | Irrigation Coverage Test |
| CONS.A1.8250 | Soft Landscaping - Shrubs Planting / Ground Cover |
| CONS.A1.8260 | Complete Landscape Works in Zone BC4 |
| **Zone CC4** | |
| CONS.A1.8280 | Commence Landscape Works in Zone CC4 |
| CONS.A1.8290 | Top Soil to Landscaped Areas |
| CONS.A1.8300 | Install Irrigation System Main Lines (900mm dia) |
| CONS.A1.8310 | Install Lateral Irrigation Pipes & Sprinklers |
| CONS.A1.8320 | Irrigation Coverage Test |
| CONS.A1.8330 | Soft Landscaping - Shrubs Planting / Ground Cover |
| CONS.A1.8340 | Complete Landscape Works in Zone CC4 |
| **Zone DC4** | |
| CONS.A1.8360 | Commence Landscape Works in DC4 |
| CONS.A1.8370 | Top Soil to Landscaped Areas |
| CONS.A1.8380 | Install Irrigation System Main Lines (900mm dia) |
| CONS.A1.8390 | Install Lateral Irrigation Pipes & Sprinklers |
| CONS.A1.8400 | Irrigation Coverage Test |
| CONS.A1.8410 | Soft Landscaping - Shrubs Planting / Ground Cover |
| CONS.A1.8420 | Complete Landscape Works in Portion C1 (West Section) |
| **Zone EC4** | |
| CONS.A1.8440 | Commence Landscape Works in Zone EC4 |
| CONS.A1.8450 | Top Soil to Landscaped Areas |
| CONS.A1.8460 | Install Irrigation System Main Lines |
| CONS.A1.8470 | Install Lateral Irrigation Pipes & Sprinklers |
| CONS.A1.8480 | Irrigation Coverage Test |
| CONS.A1.8490 | Soft Landscaping - Shrubs Planting / Ground Cover |
| CONS.A1.8500 | Complete Landscape Works in Portion C1 (West Section) |
| **Zone FC4** | |
| CONS.A1.8520 | Commence Landscape Works in Zone FC4 |
| CONS.A1.8530 | Top Soil to Landscaped Areas |
| CONS.A1.8540 | Install Irrigation System Main Lines (900mm dia) |
| CONS.A1.8550 | Install Lateral Irrigation Pipes & Sprinklers |
| CONS.A1.8560 | Irrigation Coverage Test |
| CONS.A1.8570 | Soft Landscaping - Shrubs Planting / Ground Cover |
| CONS.A1.8580 | Complete Landscape Works in Zone FC4 |
| **Landscape Softworks in Portion A6 and B5** | |
| CONS.A1.8590 | Commence Landscape Works in Zone AC4 in Portion A6 & B5 |
| CONS.A1.8595 | Clearing of unsuitable materials |
| CONS.A1.8600 | Top Soil to Landscaped Areas |
| CONS.A1.8610 | Install Irrigation System Main Lines (900mm dia) |
| CONS.A1.8620 | Install Lateral Irrigation Pipes & Sprinklers |
| CONS.A1.8630 | Irrigation Coverage Test |
| CONS.A1.8640 | Soft Landscaping - Shrubs Planting / Ground Cover |
| CONS.A1.8650 | Complete Landscape Works Zone AC4 (KD16) |
| CONS.A1.8660 | Establishment Works for Landscape Softworks in Portion A6 and B5 |
| **Landscaping - Water Meter W02** | |
| **Zone BC4** | |
| CONS.C1.8200 | Commence Landscape Works (Portion C1) |
| CONS.C1.8210 | Top Soil to Landscaped Areas |



# HY/2013/04 - Hong Kong Boundary Crossing Facilities Infrastructure Works Stage II (Southern Portion)



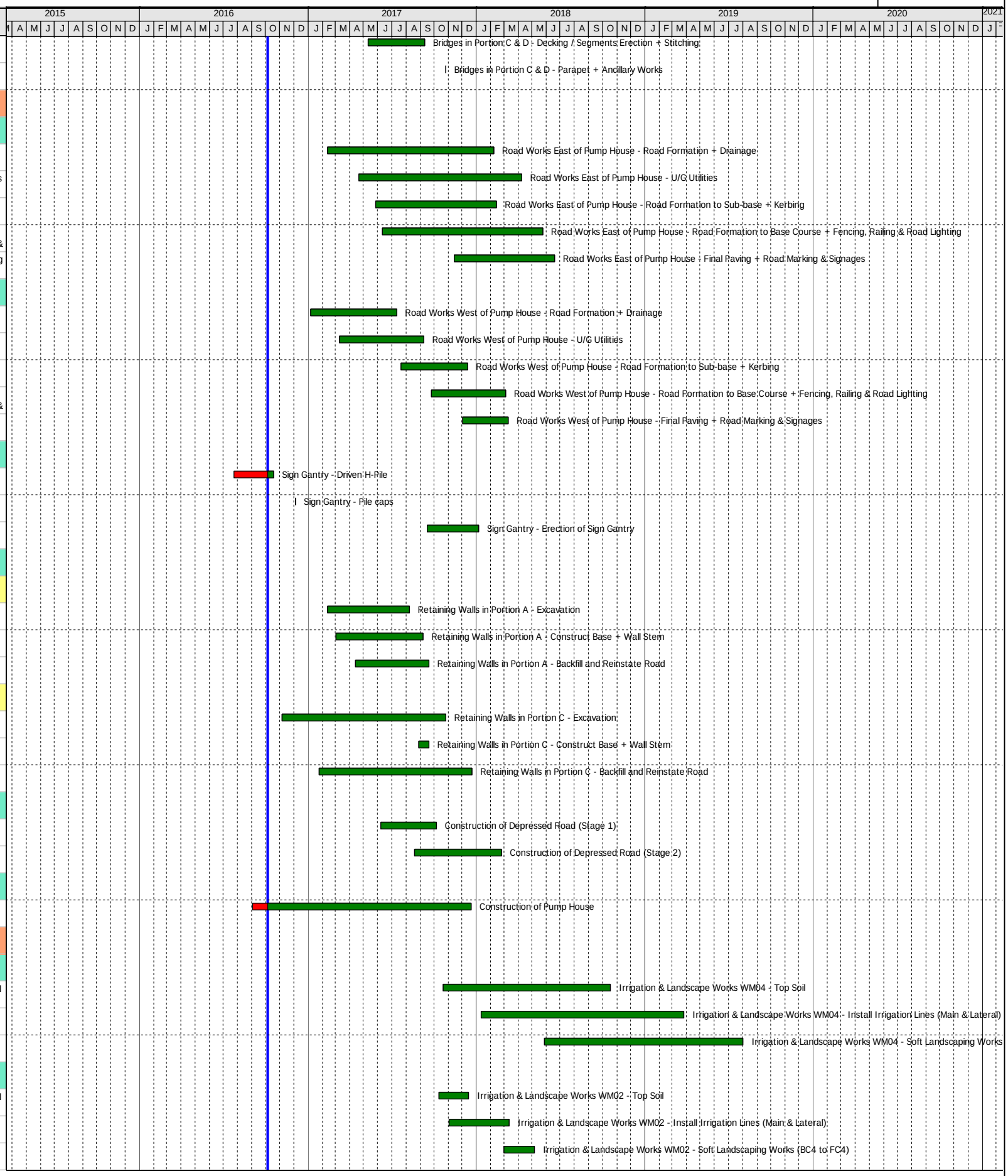
| Activity ID | Activity Name |
|---|---|
| CONS.C1.8220 | Install Irrigation Main Line + Construct Swale |
| CONS.C1.8230 | Install Lateral Irrigation Pipes / Sprinklers |
| CONS.C1.8240 | Irrigation Coverage Test |
| CONS.C1.8250 | Soft Landscaping - Shrubs Planting / Ground Cover |
| CONS.C1.8260 | Complete Landscape Works in Zone BC4 W02 |
| **Zone BC4 in Portion D1** | |
| CONS.C1.8600 | Commence Landscape Works in Portion D1 |
| CONS.C1.8610 | Top Soil to Landscaped Areas |
| CONS.C1.8620 | Install Irrigation Main Line + Construct Swale |
| CONS.C1.8630 | Install Lateral Irrigation Pipes / Sprinklers |
| CONS.C1.8640 | Irrigation Coverage Test |
| CONS.C1.8650 | Soft Landscaping - Shrubs Planting / Ground Cover |
| CONS.C1.8660 | Complete Landscape Works in Portion D1 of Zone BC4 W02 |
| **Zone CC4** | |
| CONS.C1.8270 | Commence Landscape Works in Zone CC4 |
| CONS.C1.8280 | Top Soil to Landscaped Areas |
| CONS.C1.8290 | Install Irrigation Main Line |
| CONS.C1.8300 | Install Lateral Irrigation Pipes / Sprinklers |
| CONS.C1.8310 | Irrigation Coverage Test |
| CONS.C1.8320 | Soft Landscaping - Shrubs Planting / Ground Cover |
| CONS.C1.8330 | Complete Landscape Works in Zone CC4 |
| **Zone EC4** | |
| CONS.C1.8340 | Commence Landscape Works |
| CONS.C1.8350 | Top Soil to Landscaped Areas |
| CONS.C1.8360 | Install Irrigation Main Line |
| CONS.C1.8370 | Install Lateral Irrigation Pipes / Sprinklers |
| CONS.C1.8380 | Irrigation Coverage Test |
| CONS.C1.8390 | Soft Landscaping - Shrubs Planting / Ground Cover |
| CONS.C1.8400 | Complete Landscape Works in Zone EC4 W02 |
| **Zone FC4** | |
| CONS.C1.8410 | Commence Landscape Works |
| CONS.C1.8420 | Top Soil to Landscaped Areas |
| CONS.C1.8430 | Install Irrigation Main Line |
| CONS.C1.8440 | Install Lateral Irrigation Pipes / Sprinklers |
| CONS.C1.8450 | Irrigation Coverage Test |
| CONS.C1.8460 | Soft Landscaping - Shrubs Planting / Ground Cover |
| CONS.C1.8470 | Complete Landscape Works in Zone FC4 W02 |
| **Irrigation Water Tanks and Booster Pumps** | |
| CONS.C1.8790 | Identify and Agree location with Engineer |
| CONS.C1.8800 | Construct Irrigation Water Tanks and Booster Pump Chamber |
| CONS.C1.8810 | MEP Works - Electrical and Mechanical Installation + T&C |
| **Establishment Period (1 year)** | |
| CONS.C1.8190 | Establishment of Landscape Works |
| **Executive Summary** | |
| **Box Culverts** | |
| **Box Culvert D** | |
| BCD.ES.1010 | Box Culvert D - Bored Piling, Testing + Pile caps (Bay 1-15) |
| BCD.ES.1020 | Box Culvert D - RC Box Structure + Backfilling (Bay 1-15) |
| BCD.ES.1030 | Box Culvert D - Bored Piling + Pile Testing (Bay 1-3) |
| BCD.ES.1040 | Box Culvert D - Cofferdam + ELS (Bay 1-3 + Outfall) |
| BCD.ES.1050 | Box Culvert D - Pile Caps+ RC Box Structure (Bay 1-3 + Outfall) |
| **Box Culvert C** | |
| BCC.ES.2010 | Box Culvert C - Driven H Pile + Pile caps (Bay 4-8) |
| BCC.ES.2020 | Box Culvert C - Construct RC Box Structure (Bay 4-8) |
| BCC.ES.2030 | Box Culvert C - Driven H Pile + Load Testing (Bay 1-3) |
| BCC.ES.2040 | Box Cullvert C - Cofferdam + ELS (Bay 1-3 + Outfall) |
| BCC.ES.2050 | Box Cullvert C - Pilecaps + RC Box Structure (Bay 1-3 + Outfall) |
| **Bridge Works** | |
| **Bridges in Portion A & B** | |
| BRG.ES.1010 | Bridges in Portion A & B - Bored Piling + Pilecaps |
| BRG.ES.1020 | Bridges in Portion A & B - Column / Pier Head + Bearings |
| BRG.ES.1030 | Bridges in Portion A & B - Decking / Segments Erection + Stitching |
| BRG.ES.1040 | Bridges in Portion A & B - Parapet + Ancillary Works |
| **Bridges in Portion C & D** | |
| BRG.ES.2010 | Bridges in Portion C & D - Bored Piling + Pilecaps |
| BRG.ES.2020 | Bridges in Portion C & D - Column, Pier Head + Bearings |



# HY/2013/04 - Hong Kong Boundary Crossing Facilities Infrastructure Works Stage II (Southern Portion)



| Activity ID | Activity Name |
|---|---|
| BRG.ES.2030 | Bridges in Portion C & D - Decking / Segments Erection + Stitching |
| BRG.ES.2040 | Bridges in Portion C & D - Parapet + Ancillary Works |
| **Road Works** | |
| **Road Works - East of Pump House** | |
| RDE.ES.1010 | Road Works East of Pump House - Road Formation + Drainage |
| RDE.ES.1020 | Road Works East of Pump House - U/G Utilities |
| RDE.ES.1030 | Road Works East of Pump House - Road Formation to Sub-base + Kerbing |
| RDE.ES.1040 | Road Works East of Pump House - Road Formation to Base Course + Fencing, Railing & |
| RDE.ES.1050 | Road Works East of Pump House - Final Paving + Road Marking & Signages |
| **Road Works - West of Pump House** | |
| RDW.ES.2010 | Road Works West of Pump House - Road Formation + Drainage |
| RDW.ES.2020 | Road Works West of Pump House - U/G Utilities |
| RDW.ES.2030 | Road Works West of Pump House - Road Formation to Sub-base + Kerbing |
| RDW.ES.2040 | Road Works West of Pump House - Road Formation to Base Course + Fencing, Railing & |
| RDW.ES.2050 | Road Works West of Pump House - Final Paving + Road Marking & Signages |
| **Sign Gantry** | |
| SGW.ES.1010 | Sign Gantry - Driven H-Pile |
| SGW.ES.1020 | Sign Gantry - Pile caps |
| SGW.ES.1030 | Sign Gantry - Erection of Sign Gantry |
| **Retaining Walls** | |
| **Retaining Walls in Portion A (East)** | |
| RWW.ES.1040 | Retaining Walls in Portion A - Excavation |
| RWW.ES.1050 | Retaining Walls in Portion A - Construct Base + Wall Stem |
| RWW.ES.1060 | Retaining Walls in Portion A - Backfill and Reinstate Road |
| **Retaining Walls in Portion C (West)** | |
| RWW.ES.1010 | Retaining Walls in Portion C - Excavation |
| RWW.ES.1020 | Retaining Walls in Portion C - Construct Base + Wall Stem |
| RWW.ES.1030 | Retaining Walls in Portion C - Backfill and Reinstate Road |
| **Depressed Road** | |
| DRE.ES.1010 | Construction of Depressed Road (Stage 1) |
| DRW.ES.1010 | Construction of Depressed Road (Stage 2) |
| **Pump House** | |
| PHO.ES.1010 | Construction of Pump House |
| **Irrigation and Landscape** | |
| **Landscape Works - Water Meter O4** | |
| LSW.ES.1010 | Irrigation & Landscape Works WM04 - Top Soil |
| LSW.ES.1020 | Irrigation & Landscape Works WM04 - Install Irrigation Lines (Main & Lateral) |
| LSW.ES.1030 | Irrigation & Landscape Works WM04 - Soft Landscaping Works (AC4 to FC4) |
| **Landscape Works - Water Meter 02** | |
| LSW.ES.2010 | Irrigation & Landscape Works WM02 - Top Soil |
| LSW.ES.2020 | Irrigation & Landscape Works WM02 - Install Irrigation Lines (Main & Lateral) |
| LSW.ES.2030 | Irrigation & Landscape Works WM02 - Soft Landscaping Works (BC4 to FC4) |



# Appendix D. Action and Limit Levels

## Appendix D – Action and Limit Levels

### *Air Quality*

The same baseline and Action/Limit Levels for air quality, as derived from the baseline monitoring data recorded at and AMS3 and AMS7, apply with the abovementioned relocations to AMS3C and AMS7B respectively.

**Table D.1: Action and Limit Levels for 1-hour TSP**

| Monitoring Station | Action Level, µg/m$^3$ | Limit Level, µg/m$^3$ |
|---|---|---|
| AMS3C – Ying Tung Estate Market Rooftop | 368 | 500 |
| AMS6 – Dragonair / CNAC (Group) Building (HKIA) | 360 | 500 |
| AMS7B – 3RS Site Offices | 370 | 500 |

**Table D.2: Action and Limit Levels for 24-hour TSP**

| Monitoring Station | Action Level, µg/m$^3$ | Limit Level, µg/m$^3$ |
|---|---|---|
| AMS3C – Ying Tung Estate Market Rooftop | 167 | 260 |
| AMS6 – Dragonair / CNAC (Group) Building (HKIA) | 173 | 260 |
| AMS7B – 3RS Site Offices | 183 | 260 |

### *Construction Noise*

**Table D.3: 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 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.

* Day time noise Limit Level of 70 dB(A) applies to education institutions, while 65 dB(A) applies during the school examination period. The Limit Level of 70 dB(A), which was applied for NMS3 (being a school), will also be applied for NMS3B and NMS3C.

## *Water Quality*

### Table D.4: Action and Limit Levels for Water Quality

| Parameters | Action | Limit |
|---|---|---|
| DO in mg $L^{-1}$ | Surface and Middle | Surface and Middle |
| (Surface, Middle & Bottom) | 5.0 | 4.2 (except 5 mg/L for FCZ) |
| | Bottom | Bottom |
| | 4.7 | 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 |

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.

## *Chinese White Dolphin*

### Table D.5: 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 D.6: 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)] | |

# Appendix E. 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;<br>2. Inform IEC and ER;<br>3. Repeat measurement to confirm finding;<br>4. Increase monitoring frequency to daily. | 1. Check monitoring data submitted by ET;<br>2. Check Contractor's working method. | 1. Notify Contractor. | 1. Rectify any unacceptable practice;<br>2. Amend working methods if appropriate. |
| 2. Exceedance for two or more consecutive samples | 1. Identify source;<br>2. Inform IEC and ER;<br>3. Advise the ER on the effectiveness of the proposed remedial measures;<br>4. Repeat measurement s to confirm findings;<br>5. Increase monitoring frequency to daily;<br>6. Discuss with IEC and Contractor on remedial actions required;<br>7. If exceedance continues, arrange meeting with IEC and ER;<br>8. If exceedance stops, cease additional monitoring. | 1. Check monitoring data submitted by ET;<br>2. Check Contractor's working method;<br>3. Discuss with ET and Contractor on possible remedial measures;<br>4. Advise the ER on the effectiveness of the proposed remedial measures;<br>5. Supervise Implementation of remedial measures. | 1. Confirm receipt of notification of failure in writing;<br>2. Notify Contractor;<br>3. Ensure remedial measures properly implemented. | 1. Submit proposals for remedial to ER within 3 working days of notification;<br>2. Implement the agreed proposals;<br>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;<br>2. Inform ER, Contractor and EPD;<br>3. Repeat measurement to confirm finding;<br>4. Increase monitoring frequency to daily;<br>5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results. | 1. Check monitoring data submitted by ET;<br>2. Check Contractor's working method;<br>3. Discuss with ET and Contractor on possible remedial measures;<br>4. Advise the ER on the effectiveness of the proposed remedial measures;<br>5. Supervise implementation of remedial measures. | 1. Confirm receipt of notification of failure in writing;<br>2. Notify Contractor;<br>3. Ensure remedial measures properly implemented. | 1. Take immediate action to avoid further exceedance;<br>2. Submit proposals for remedial actions to IEC within 3 working days of notification;<br>3. Implement the agreed proposals;<br>4. Amend proposal if appropriate. |
| 2. Exceedance for two or more consecutive samples | 1. Notify IEC, ER, Contractor and EPD;<br>2. Identify source;<br>3. Repeat measurement to confirm findings;<br>4. Increase monitoring frequency to daily;<br>5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented;<br>6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken;<br>7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results;<br>8. If exceedance stops, cease additional monitoring. | 1. Discuss amongst ER, ET, and Contractor on the potential remedial actions;<br>2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly;<br>3. Supervise the implementation of remedial measures. | 1. Confirm receipt of notification of failure in writing;<br>2. Notify Contractor;<br>3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented;<br>4. Ensure remedial measures properly implemented;<br>5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated. | 1. Take immediate action to avoid further exceedance;<br>2. Submit proposals for remedial actions to IEC within 3 working days of notification;<br>3. Implement the agreed proposals;<br>4. Resubmit proposals if problem still not under control;<br>5. Stop the relevant portion of works as determined by the 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;<br>2. Identify source, investigate the causes of exceedance and propose remedial measures;<br>3. Report the results of investigation to the IEC, ER and Contractor;<br>4. Discuss with the Contractor and formulate remedial measures;<br>5 Increase monitoring frequency to check mitigation effectiveness. | 1. Review the analysed results submitted by the ET;<br>2. Review the proposed remedial measures by the Contractor and advise the ER accordingly;<br>3. Supervise the implementation of remedial measures. | 1. Confirm receipt of notification of failure in writing;<br>2. Notify Contractor;<br>3. Require Contractor to propose remedial measures for the analysed noise problem;<br>4. Ensure remedial measures are properly implemented. | 1. Submit noise mitigation proposals to IEC;<br>2. Implement noise mitigation proposals. |
| Limit Level | 1. Inform IEC, ER, EPD and Contractor;<br>2. Identify source;<br>3. Repeat measurements to confirm findings;<br>4. Increase monitoring frequency;<br>5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented;<br>6. Inform IEC, ER and EPD the causes and actions taken for the exceedances;<br>7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results;<br>8. If exceedance stops, cease additional monitoring. | 1. Discuss amongst ER, ET, and Contractor on the potential remedial actions;<br>2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly;<br>3. Supervise the implementation of remedial measures. | 1. Confirm receipt of notification of failure in writing;<br>2. Notify Contractor;<br>3. Require Contractor to propose remedial measures for the analysed noise problem;<br>4. Ensure remedial measures properly implemented;<br>5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated. | 1. Take immediate action to avoid further exceedance;<br>2. Submit proposals for remedial actions to IEC within 3 working days of notification;<br>3. Implement the agreed proposals;<br>4. Resubmit proposals if problem still not under control;<br>5. Stop the relevant portion of works as determined by the 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;<br>2. Identify source(s) of impact;<br>3. Inform IEC, contractor and ER;<br>4. Check monitoring data, all plant, equipment and Contractor's working methods;<br>5. Discuss mitigation measures with IEC, ER and Contractor;<br>6. Ensure mitigation measures are implemented;<br>7. Repeat measurement on next day of exceedance to confirm findings. | 1. Check monitoring data submitted by ET and Contractor's working methods;<br>2. Discuss with ET and Contractor on possible remedial actions;<br>3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly;<br>4. Assess the effectiveness of the implemented mitigation measures. | 1. Confirm receipt of notification of non-compliance in writing;<br>2. Discuss with IEC on the proposed mitigation measures;<br>3. Make agreement on mitigation measures to be implemented;<br>4. Ensure mitigation measures are properly implemented. | 1. Inform the ER and confirm notification of the non-compliance in writing;<br>2. Rectify unacceptable practice;<br>3. Check all plant and equipment and consider changes of working methods;<br>4. Discuss with ET and IEC on possible remedial actions and propose mitigation measures to IEC and ER;<br>5. Implement the agreed mitigation measures.<br>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;<br>2. Identify source(s) of impact;<br>3. Inform IEC, Contractor and ER;<br>4. Check monitoring data, all plant, equipment and Contractor's working methods;<br>5. Discuss mitigation measures with IEC, ER and Contractor;<br>6. Ensure mitigation measures are implemented;<br>7. Increase the monitoring frequency to daily until no exceedance of Action level;<br>8. Repeat measurement on next day of exceedance to confirm findings. | 1. Check monitoring data submitted by ET and Contractor's working method;<br>2. Discuss with ET and Contractor on possible remedial actions;<br>3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly;<br>4. Assess the effectiveness of the implemented mitigation measures. | 1. Confirm receipt of notification of non-compliance in writing;<br>2. Discuss with IEC on the proposed mitigation measures;<br>3. Make agreement on mitigation measures to be implemented;<br>4. Ensure mitigation measures are properly implemented;<br>5. Assess the effectiveness of the implemented mitigation measures. | 1. Inform the Engineer and confirm notification of the non-compliance in writing;<br>2. Rectify unacceptable practice;<br>3. Check all plant and equipment and consider changes of working methods;<br>4. Discuss with ET and IEC on possible remedial actions and propose mitigation measures to IEC and ER within 3 working days of notification;<br>5. Implement the agreed mitigation measures;<br>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;<br>2. Identify source(s) of impact;<br>3. Inform IEC, Contractor, ER and EPD;<br>4. Check monitoring data, all plant, equipment and Contractor's working methods;<br>5. Discuss mitigation measures with IEC, ER and Contractor;<br>6. Ensure mitigation measures are implemented;<br>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;<br>2. Discuss with ET and Contractor on possible remedial actions;<br>3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly;<br>4. Assess the effectiveness of the implemented mitigation measures. | 1. Confirm receipt of notification of failure in writing;<br>2. Discuss with IEC, ET and Contractor on the proposed mitigation measures;<br>3. Request Contractor to critically review the working methods;<br>4. Ensure mitigation measures are properly implemented;<br>5. Assess the effectiveness of the implemented mitigation measures. | 1. Inform the ER and confirm notification of the non-compliance in writing;<br>2. Rectify unacceptable practice;<br>3. Check all plant and equipment and consider changes of working methods;<br>4. Submit proposal of mitigation measures to ER within 3 working days of notification and discuss with ET, IEC and ER;<br>5. Implement the agreed mitigation measures;<br>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;<br>2. Identify source(s) of impact;<br>3. Inform IEC, contractor, ER and EPD;<br>4. Check monitoring data, all plant, equipment and Contractor's working methods;<br>5. Discuss mitigation measures with IEC, ER and Contractor;<br>6. Ensure mitigation measures are implemented;<br>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;<br>2. Discuss with ET and Contractor on possible remedial actions;<br>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;<br>2. Discuss with IEC, ET and Contractor on the proposed mitigation measures;<br>3. Request Contractor to critically review the working methods;<br>4. Make agreement on the mitigation measures to be implemented;<br>5. Ensure mitigation measures are properly implemented;<br>6. Assess the effectiveness of the implemented mitigation measures;<br>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;<br>2. Take immediate action to avoid further exceedance;<br>3. Rectify unacceptable practice;<br>4. Check all plant and equipment and consider changes of working methods;<br>5. Submit proposal of mitigation measures to ER within 3 working days of notification and discuss with ET, IEC and ER;<br>6. Implement the agreed mitigation measures;<br>7. Resubmit proposals of mitigation measures if problem still not under control;<br>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;<br>2. Review all available and relevant data, including raw data and statistical analysis results of other parameters covered in the EM&A, to ascertain if differences are as a result of natural variation or previously observed seasonal differences;<br>3. Identify source(s) of impact;<br>4. Inform the IEC, ER/SOR and Contractor;<br>5. Check monitoring data.<br>6. Review to ensure all the dolphin protective measures are fully and properly implemented and advise on additional measures if necessary. | 1. Check monitoring data submitted by ET and Contractor;<br>2. Discuss monitoring results and finding with the ET and the Contractor. | 1. Discuss monitoring with the IEC and any other measures proposed by the ET;<br>2. If ER/SOR is satisfied with the proposal of any other measures, ER/SOR to signify the agreement in writing on the measures to be implemented. | 1. Inform the ER/SOR and confirm notification of the non-compliance in writing;<br>2. Discuss with the ET and the IEC and propose measures to the IEC and the ER/SOR;<br>3. Implement the agreed measures. |

| EVENT | ACTION | | | |
|---|---|---|---|---|
| | ET | IEC | ER | CONTRACTOR |
| Limit Level | 1. Repeat statistical data analysis to confirm findings;<br>2. Review all available and relevant data, including raw data and statistical analysis results of other parameters covered in the EM&A, to ascertain if differences are as a result of natural variation or previously observed seasonal differences;<br>3. Identify source(s) of impact;<br>4. Inform the IEC, ER/SOR and Contractor of findings;<br>5. Check monitoring data;<br>6. Repeat review to ensure all the dolphin protective measures are fully and properly implemented and advise on additional measures if necessary.<br>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;<br>2. Discuss monitoring results and findings with the ET and the Contractor;<br>3. Attend the meeting to discuss with ET, ER/SOR and Contractor the necessity of additional dolphin monitoring and any other potential mitigation measures.<br>4. Review proposals for additional monitoring and any other mitigation measures submitted by ET and Contractor and advise ER/SOR of the results and findings accordingly.<br>5. Supervise / Audit the implementation of additional monitoring and/or any other mitigation measures and advise ER/SOR the results and findings accordingly. | 1. Attend the meeting to discuss with ET, IEC and Contractor the necessity of additional dolphin monitoring and any other potential mitigation measures.<br>2. If ER/SOR is satisfied with 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.<br>3. Supervise the implementation of additional monitoring and/or any other mitigation measures. | 1. Inform the ER/SOR and confirm notification of the non-compliance in writing;<br>2. Attend the meeting to discuss with ET, IEC and ER/SOR the necessity of additional dolphin monitoring and any other potential mitigation measures.<br>3. Jointly submit with ET to IEC a proposal of additional dolphin monitoring and/or any other mitigation measures when necessary.<br>4. Implement the agreed additional dolphin monitoring and/or any other mitigation measures. |

**Action Plan for Landscape and Visual**

| EVENT | ACTION | | | |
|---|---|---|---|---|
| | ET | IEC | ER | CONTRACTOR |
| Conflicts occur | • Check Contractor's proposed remedial design conforms to the requirements of EP and prepare checking report(s) | • Check and endorse ET's report(s)<br>• Check and certify Contractor's proposed remedial design | • Supervise the Contractor to carry out the proposed remediation work | • Propose remedial design and carry out the proposed work |

# Appendix F. Implementation Schedule for Environmental Mitigation Measures (EMIS)

# Appendix F – Implementation Schedule of Environmental Mitigation Measures (EMIS)

| EIA Ref. | EM&A Log Ref. | Recommended Mitigation Measures | Location of the measures | Implementation Status |
|---|---|---|---|---|
| **Air Quality** | | | | |
| S5.5.6.1 | A1 | 1) The Contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation | All construction sites | V |
| S5.5.6.2 | A2 | 2) Proper watering of exposed spoil should be undertaken throughout the construction phase:<br>• Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading;<br>• Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads;<br>• A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones;<br>• The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle;<br>• Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; | All construction sites | V |
| S5.5.6.2 | A2 | • When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided as far as practicable along the site boundary with provision for public crossing. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period;<br>• The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials;<br>• Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously;<br>• Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet;<br>• Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding;<br>• Any skip hoist for material transport should be totally enclosed by impervious sheeting;<br>• Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides | All construction sites | V |
| S5.5.6.2 | A2 | • Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed;<br>• Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system; and<br>• Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies. | All construction sites | V |
| S5.5.6.3 | A3 | 3) The Contractor should undertake proper watering on all exposed spoil (with at least 8 times per day) throughout the construction phase. | All construction sites | V |
| S5.5.6.4 | A4 | 4) 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. | All construction sites | V |

| EIA Ref. | EM&A Log Ref. | Recommended Mitigation Measures | Location of the measures | Implementation Status |
|---|---|---|---|---|
| S5.5.6.4 | A5 | 5) Implement regular dust monitoring under EM&A programme during the construction stage. | Selected representative dust monitoring station | V<br>Impact air quality monitoring, reported by Contract No.:<br>• HY/2013/04 (AMS2, AMS3C, AMS7B) (1 Oct 2018 – 31 Jan 2020)<br>• HY/2019/01 (AMS2, AMS3C, AMS7B) (1 Feb 2020 – 31 May 2020)<br>• HY/2011/03 (AMS6) |
| S5.5.7.1 | A6 | The following mitigation measures should be adopted to prevent fugitive dust emissions for concrete batching plant:<br>• Loading, unloading, handling, transfer or storage of any dusty materials should be carried out in totally enclosed system;<br>• All dust-laden air or waste gas generated by the process operations should be properly extracted and vented to fabric filtering system to meet the emission limits for TSP;<br>• Vents for all silos and cement/pulverised fuel ash (PFA) weighing scale should be fitted with fabric filtering system;<br>• The materials which may generate airborne dusty emissions should be wetted by water spray system;<br>• All receiving hoppers should be enclosed on three sides up to 3m above unloading point;<br>• All conveyor transfer points should be totally enclosed;<br>• All access and route roads within the premises should be paved and wetted; and<br>• Vehicle cleaning facilities should be provided and used by all concrete trucks before leaving the premises to wash off any dust on the wheels and/or body. | Selected representative dust monitoring station | N/A |
| S5.5.2.7 | A7 | The following mitigation measures should be adopted to prevent fugitive dust emissions at barging point:<br>• All road surface within the barging facilities will be paved;<br>• Dust enclosures will be provided for the loading ramp;<br>• Vehicles will be required to pass through designated wheels wash facilities; and<br>• Continuous water spray at the loading points. | All construction sites | N/A |
| **Construction Noise (Air borne)** | | | | |
| S6.4.10 | N1 | 1) Use of good site practices to limit noise emissions by considering the following:<br>• only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme;<br>• machines and plant (such as trucks, cranes) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum;<br>• plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs;<br>• silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works;<br>• mobile plant should be sited as far away from NSRs as possible and practicable;<br>• material stockpiles, mobile container site officer and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities. | All construction sites | V |
| 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. | All construction sites | V |
| 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. | For plant items listed in Appendix 6D of the EIA report at all construction sites | V |
| S6.4.13 | N4 | 4) Select “Quiet plants” which comply with the BS 5228 Part 1 or TM standards. | For plant items listed in Appendix 6D of the EIA report at all construction sites | V |

| EIA Ref. | EM&A Log Ref. | Recommended Mitigation Measures | Location of the measures | Implementation Status |
|---|---|---|---|---|
| S6.4.14 | N5 | 5) Sequencing operation of construction plants where practicable. | All construction sites where practicable | V |
| | N6 | 6) Implement a noise monitoring under EM&A programme. | Selected representative noise monitoring station | V<br>Impact noise monitoring, reported by Contract No.:<br>• HY/2013/04 (NMS2, NMS3C) (1 Oct 2018 – 31 Jan 2020)<br>• HY/2019/01 (NMS2, NMS3C)) (1 Feb 2020 – 31 May 2020) |
| **Sediment** | | | | |
| S7.3 | S1 | 1) The requirements as recommended in ETWB TC(W) 34/2002 Management of Dredged/Excavated Sediment shall be included in the Particular Specification as appropriate. | All construction sites | V |
| **Waste Management (Construction Waste)** | | | | |
| S8.3.8 | WM1 | Construction and Demolition Material<br>The following mitigation measures should be implemented in handling the waste:<br>• Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement;<br>• Carry out on-site sorting;<br>• Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate;<br>• Adopt 'Selective Demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible;<br>• Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified; and<br>• Implement an enhanced Waste Management Plan similar to ETWB TC(W) No. 19/2005 – "Environmental Management on Construction Sites" to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction.<br>• In addition, disposal of the C&D materials onto any sensitive locations such as agricultural lands, etc. should be avoided. The Contractor shall propose the final disposal sites to the Project Proponent and get its approval before implementation. | All construction sites | V |
| S8.3.9-S8.3.11 | WM2 | C&D Waste<br>• Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Use of wooden hoardings should not be used, as in other projects. Metal hoarding should be used to enhance the possibility of recycling. The purchasing of construction materials will be carefully planned in order to avoid over ordering and wastage.<br>• The Contractor should recycle as much of the C&D materials as possible on-site. Public fill and C&D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites should be considered for such segregation and storage. | All construction sites | V |
| S8.2.12-S8.3.15 | WM3 | Chemical Waste<br>• Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, should be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.<br>• Containers used for the storage of chemical wastes should be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450 liters unless the specification has been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the regulation.<br>• The storage area for chemical wastes should be clearly labelled and used solely for the storage of chemical waste; enclosed on at least 3 sides; have an impermeable floor and bunding of sufficient capacity to accommodate 110% of the volume of the largest container or 20 % of the total volume of waste stored in that area, whichever is the greatest; have adequate ventilation; covered to prevent rainfall entering; and arranged so that incompatible materials are adequately separated. | All construction sites | V |

| EIA Ref. | EM&A Log Ref. | Recommended Mitigation Measures | Location of the measures | Implementation Status |
|---|---|---|---|---|
| | | • 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. | | |
| S8.3.16 | WM4 | Sewage<br>• Adequate numbers of portable toilets should be provided for the workers. The portable toilets should be maintained in a state, which will not deter the workers from utilizing these portable toilets. Night soil should be collected by licensed collectors regularly. | All construction sites | V |
| S8.3.17 | WM5 | General Refuse<br>• General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes.<br>• A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimize odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law.<br>• Aluminium cans are often recovered from the waste stream by individual collectors if they are segregated and made easily accessible. Separate labelled bins for their deposit should be provided if feasible.<br>• Office wastes can be reduced through the recycling of paper if volumes are large enough to warrant collection. Participation in a local collection scheme should be considered by the Contractor. In addition, waste separation facilities for paper, aluminium cans, plastic bottles etc., should be provided.<br>• Training should be provided to workers about the concepts of site cleanliness and appropriate waste management procedure, including reduction, reuse and recycling of wastes. | All construction sites | V |
| **Water Quality (Construction Phase)** | | | | |
| S9.11.1.1 | W1 | Mitigation during the marine works to reduce impacts to within acceptable levels have been recommended and will comprise a series of measures that restrict the method and sequencing of dredging/backfilling, as well as protection measures. Details of the measures are provided below.<br>• Floating type perimeter silt curtains shall be around the HKBCF site before the commencement of marine works.<br>• Silt curtain shall be fully maintained throughout the works. | Marine works | N/A |
| S9.11.1.7 | W2 | Land Works<br>General construction activities on land should also be governed by standard good working practice. Specific measures to be written into the works contracts should include:<br>• wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;<br>• sewage effluent and discharges from on-site kitchen facilities shall be directed to Government sewer in accordance with the requirements of the W PCO or collected for disposal offsite. The use of soakaways shall be avoided;<br>• storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks;<br>• silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm;<br>• temporary access roads should be surfaced with crushed stone or gravel;<br>• rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;<br>• measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;<br>• open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;<br>• manholes (including any newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers;<br>• discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system; | Land-based works areas | V |

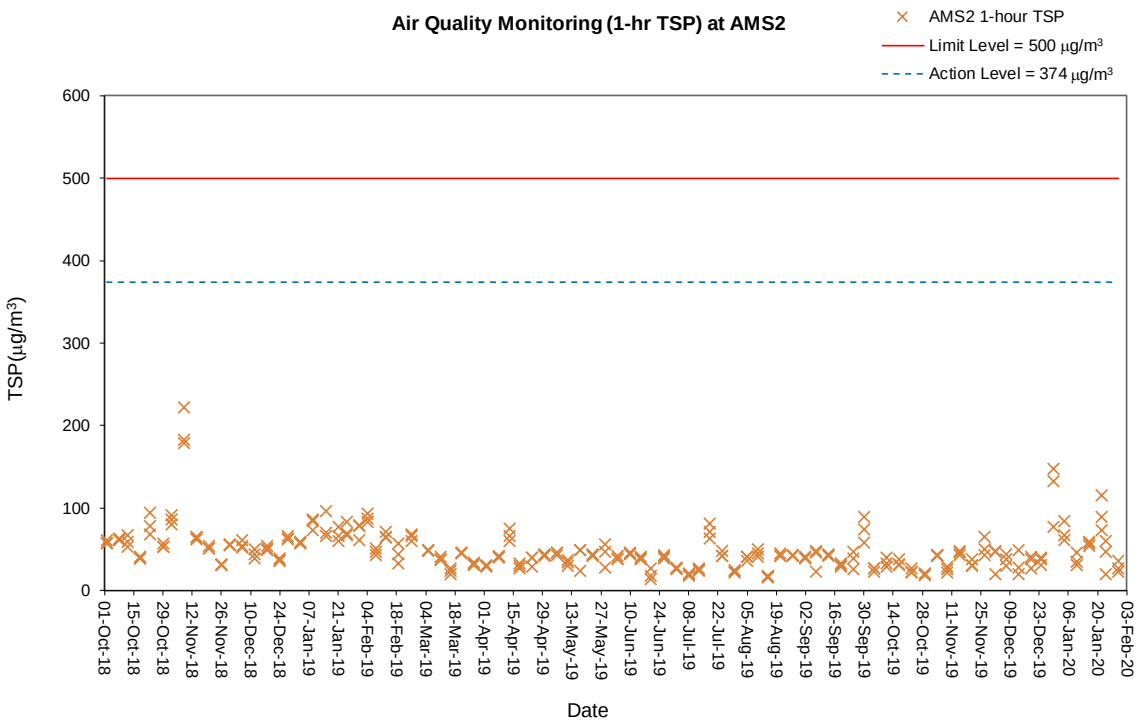
| EIA Ref. | EM&A Log Ref. | Recommended Mitigation Measures | Location of the measures | Implementation Status |
|---|---|---|---|---|
| | | • all vehicles and plant should be cleaned before they leave the construction site to ensure that no earth, mud or debris is deposited by them on roads. A wheel washing bay should be provided at every site exit;<br>• wheel wash overflow shall be directed to silt removal facilities before being discharged to the storm drain;<br>• the section of construction road between the wheel washing bay and the public road should be surfaced with crushed stone or coarse gravel;<br>• wastewater generated from concreting, plastering, internal decoration, cleaning work and other similar activities, shall be screened to remove large objects;<br>• vehicle and plant servicing areas, vehicle wash bays and lubrication facilities shall be located under roofed areas. The drainage in these covered areas shall be connected to foul sewers via a petrol interceptor in accordance with the requirements of the W PCO or collected for off site disposal;<br>• the Contractors shall prepare an oil / chemical cleanup plan and ensure that leakages or spillages are contained and cleaned up immediately;<br>• waste oil should be collected and stored for recycling or disposal, in accordance with the Waste Disposal Ordinance;<br>• all fuel tanks and chemical storage areas should be provided with locks and be sited on sealed areas. The storage areas should be surrounded by bunds with a capacity equal to 110% of the storage capacity of the largest tank; and<br>• surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system. | | |
| S9.14 | W3 | Implement a water quality monitoring programme | At identified monitoring locations | V<br>Water quality monitoring programme, reported by Contract No. HY/2013/04 during the following periods:<br>• Construction phase: Oct 2018 – Jan 2019 (and was temporarily suspended during periods when no marine works were scheduled or conducted)<br>• Post-construction phase: May 2019<br>• First year of impact operational phase: Jun 2019 – May 2020 |
| **Ecology (Construction Phase)** | | | | |
| S10.7 | E2 | • Install silt curtain during the construction.<br>Limit dredging and works fronts.<br>• Good site practices.<br>• Site runoff control. | Marine works and Land-based works areas | N/A |
| S10.7 | E4 | Watering to reduce dust generation; prevention of siltation of freshwater habitats; Site runoff should be desilted, to reduce the potential for suspended sediments, organics and other contaminants to enter streams and standing freshwater | Land-based works areas | V |
| S10.7 | E5 | Good site practices, including strictly following the permitted works hours, using quieter machines where practicable, and avoiding excessive lightings during night time | Land-based works areas | V |
| S10.7 | E6 | • Dolphin Exclusion Zone;<br>• Dolphin watching plan | Marine works | N/A |
| S10.7 | E7 | • Decouple compressors and other equipment on working vessels<br>• Avoidance of percussive piling | Marine works | N/A |
| S10.7 | E8 | • Control vessel speed<br>• Skipper training<br>• Predefined and regular routes for working vessels; avoid Brother Islands. | Marine Traffic | N/A |

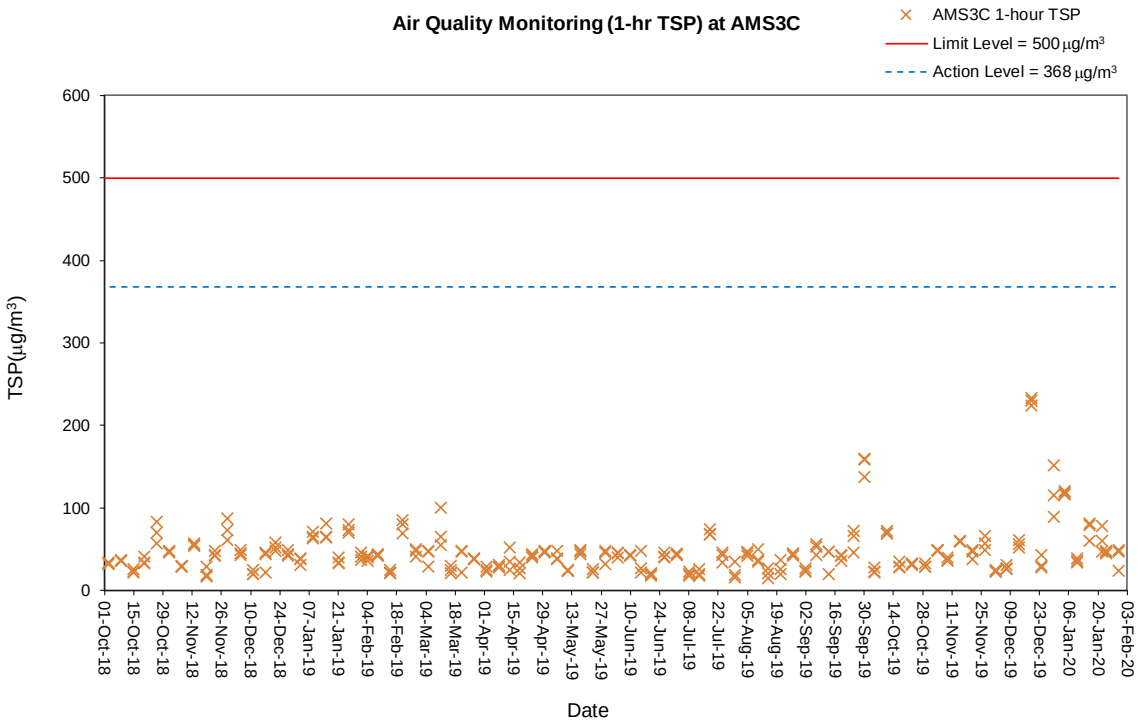
| EIA Ref. | EM&A Log Ref. | Recommended Mitigation Measures | Location of the measures | Implementation Status |
|---|---|---|---|---|
| S10.10 | E9 | • Dolphin vessel monitoring | North Lantau and West Lantau | V<br>• Construction dolphin monitoring, reported by Contract No. HY/2013/04 (Oct 2018 – Feb 2019)<br>• Post-construction dolphin monitoring, reported by Contract No. HY/2013/04 (Mar 2019 – Feb 2020) & HY/2019/01 (Mar – May 2020) |
| **Fisheries** | | | | |
| S11.7 | F4 | • Maritime Oil Spill Response Plan (MOSRP);<br>• Contingency plan. | HKBCF | V |
| **Landscape & Visual (Detailed Design Phase)** | | | | |
| S14.3.3.1 | LV1 | General design measures include:<br>• Roadside planting and planting along the edge of the HKBCF Island is proposed;<br>• 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;<br>• Protection measures for the trees to be retained during construction activities;<br>• Optimizing the sizes and spacing of the bridge columns; Fine-tuning the location of the bridge columns to avoid visually-sensitive locations;<br>• Maximizing new tree, shrub and other vegetation planting to compensate tree felled and vegetation removed;<br>• Providing planting area around peripheral of HKBCF for tree planting screening effect;<br>• Providing salt-tolerant native trees along the planter strip at affected seawall and newly reclaimed coastline;<br>• 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<br>• 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. | HKBCF | V |
| **Landscape & Visual (Construction Phase)** | | | | |
| S14.3.3.3 | LV2 | <u>Mitigate both Landscape and Visual Impacts</u><br>G1. Grass-hydroseed bare soil surface and stock pile areas.<br>G2. Add planting strip and automatic irrigation system if appropriate at some portions of bridge footbridge to screen bridge and traffic.<br>G3. Not applicable as this is for HKLR.<br>G4. 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<br>G5. Vegetation reinstatement and upgrading to disturbed areas<br>G6. Maximizing new tree shrub and other vegetation planting to compensate tree felled and vegetation removed<br>G7. Providing planting area around peripheral of HKBCF for tree planting screening effect;<br>G8. Plant salt-tolerant native and shrubs etc along the planter strip at affected seawall.<br>G9. Reserve of loose natural granite rocks for re-use. Provide new coastline to adopt “natural-look” by means of using armour rocks in the form of natural rock materials and planting strip area accommodating screen buffer to enhance “natural-look” of the new coastline. | HKBCF | V |

| EIA Ref. | EM&A Log Ref. | Recommended Mitigation Measures | Location of the measures | Implementation Status |
|---|---|---|---|---|
| S14.3.3.3 | LV3 | Mitigate Visual Impacts<br>V1. Minimize time for construction activities during construction period.<br>V2. Provide screen hoarding at the portion of the project site / works areas / storage areas near VSRs who have close low-level views to the Project during HKBCF construction. | | V |
| **EM&A** | | | | |
| S15.2.2 | EM1 | An Independent Environmental Checker needs to be employed as per the EM&A Manual. | All construction sites | V |
| S15.5 - S15.6 | EM2 | 1) An Environmental Team needs to be employed as per the EM&A Manual.<br>2) Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures.<br>3) An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in the EM&A Manual are fully complied with. | All construction sites | V |

Legend: V = implemented; x = not implemented; N/A = not applicable

# Appendix G. Graphical Plots of the Monitoring Results



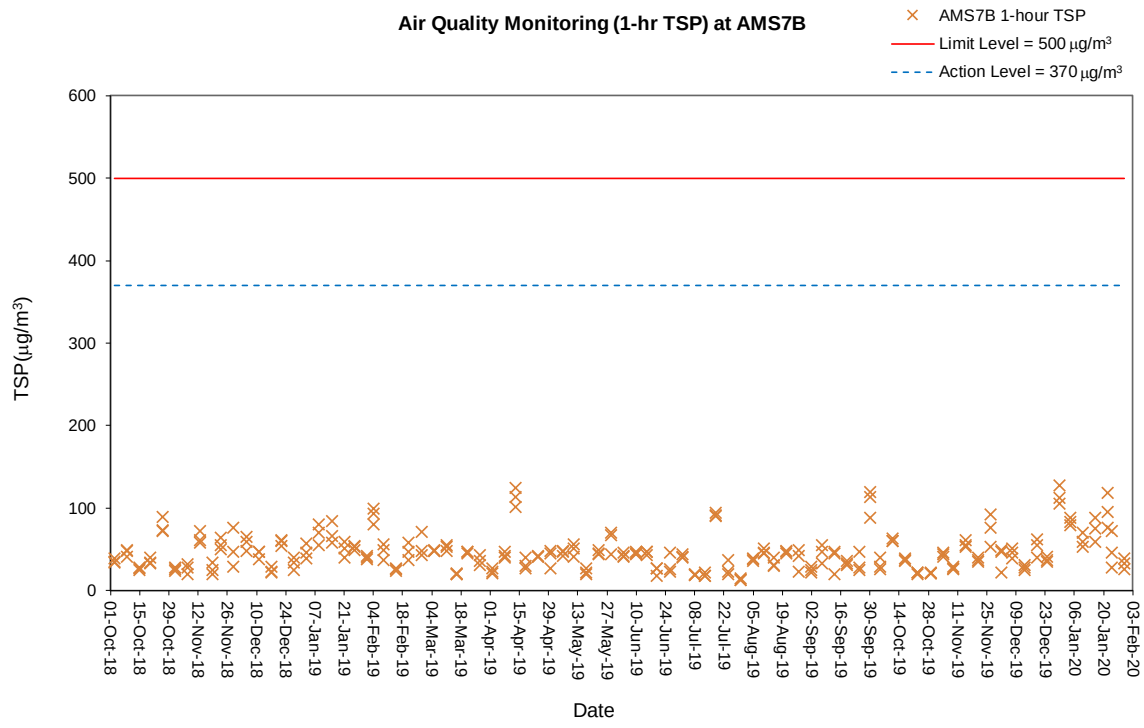



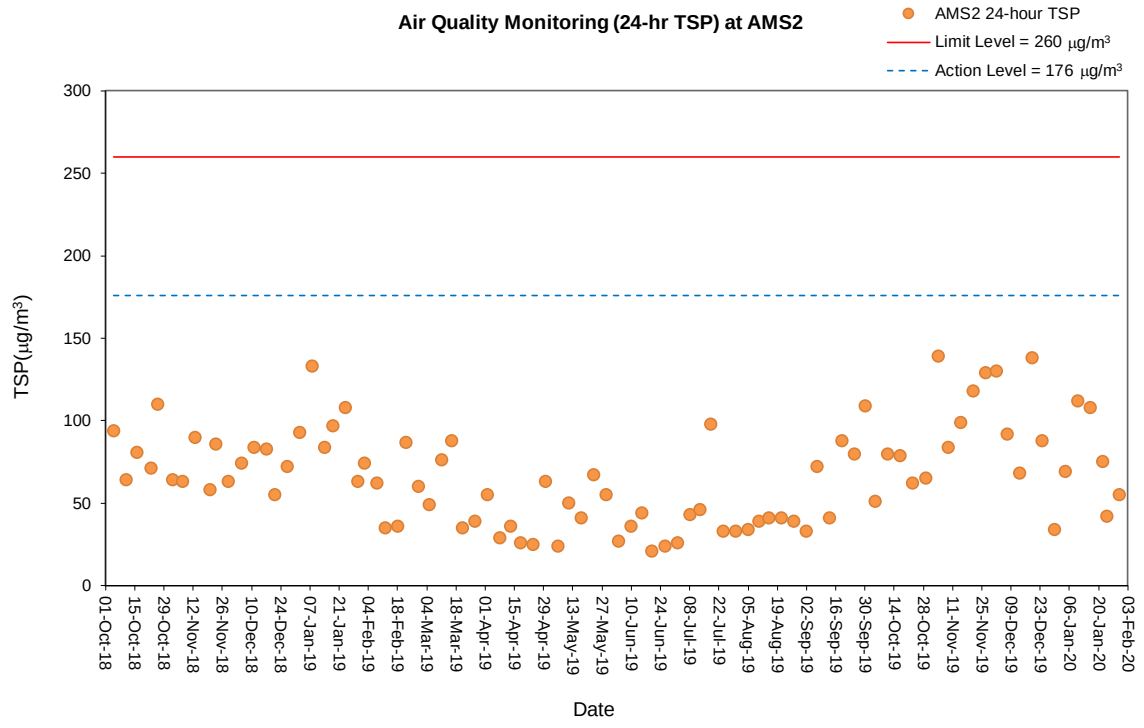

**Major site activities:**

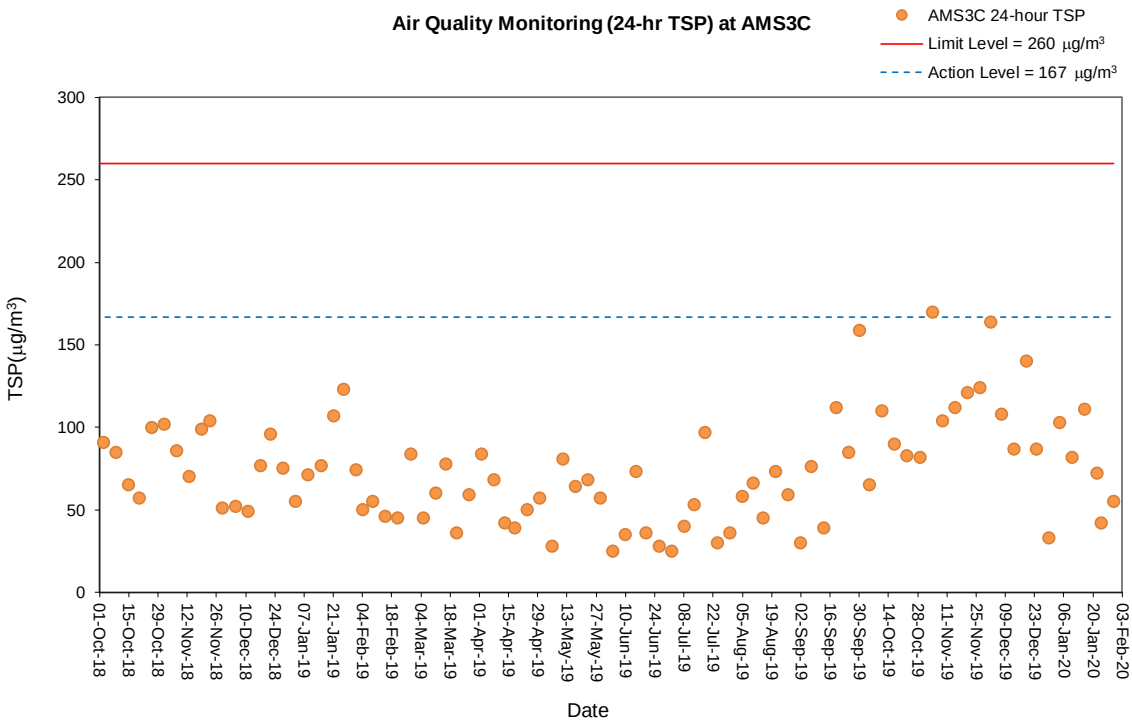
- Site formation and site office construction (Jul 2015 to Mar 2016)
- Pre-drilling and piling works (Jul 2015 to Apr 2017)
- Generation of excavated marine sediment (Feb 2016 to Feb 2017)
- Construction of loading and unloading point (May 2016 to Sep 2016)
- Bridge segment delivery (Jan 2017 to Jan 2018)
- Bridge segment erection (Feb 2017 to Nov 2019)
- Box culvert construction (Apr 2017 to Jan 2018)
- Seawall reinstatement at box culvert outfall (Aug 2018 to Jul 2019)
- Bridge deck construction and roadworks (Aug 2018 to Nov 2019)
- Drainage works, watermains laying, U-channel construction (Aug 2018 to Jan 2020)
- Construction of fill slopes and road embankment (Sep 2018 to Jan 2020)
- Site clearance works (Dec 2019 to May 2020)

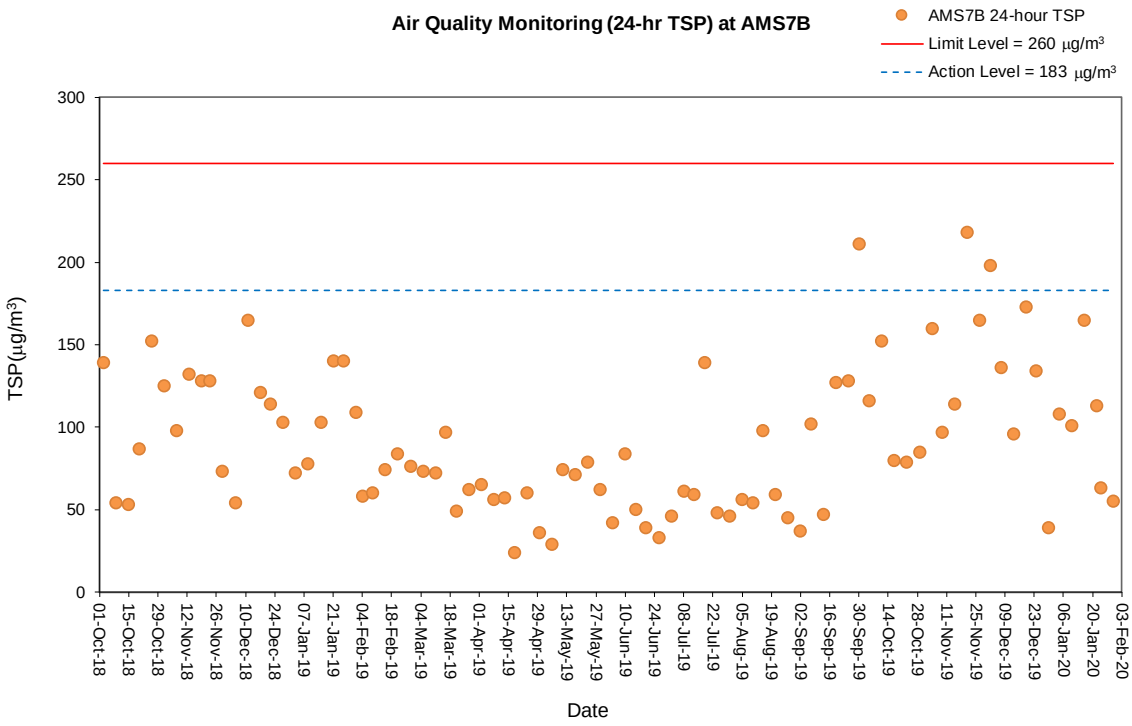
**Weather conditions:**

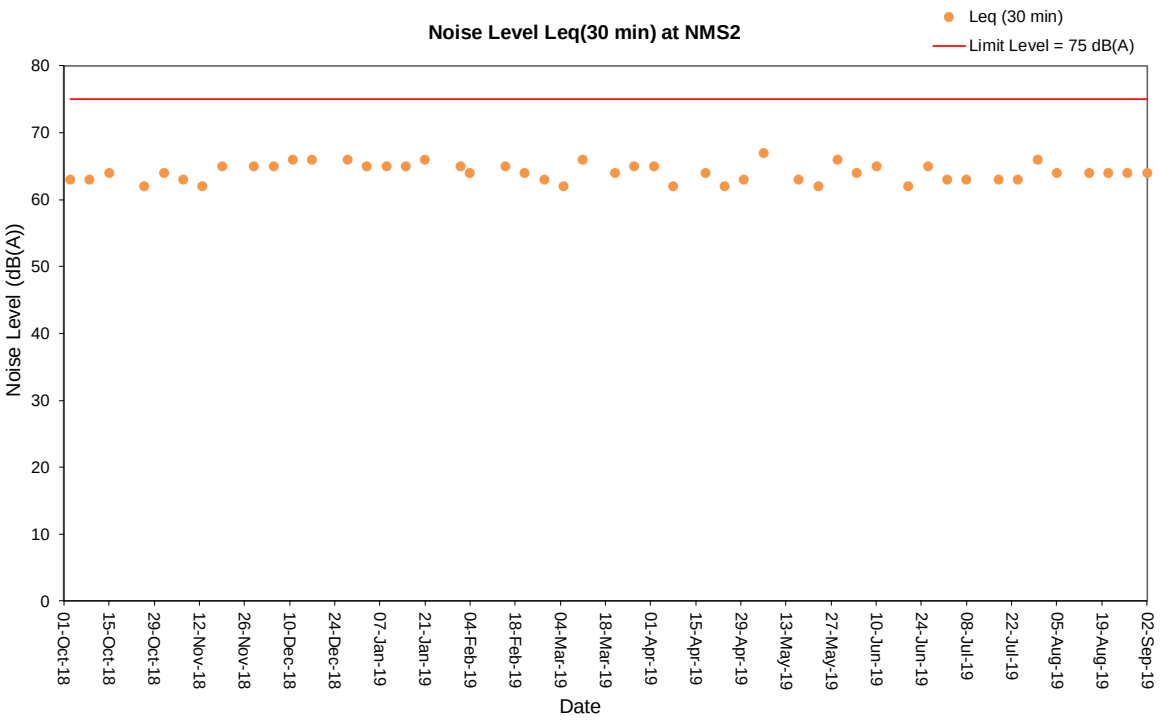
- see Table 7.2 for weather conditions during the reporting period

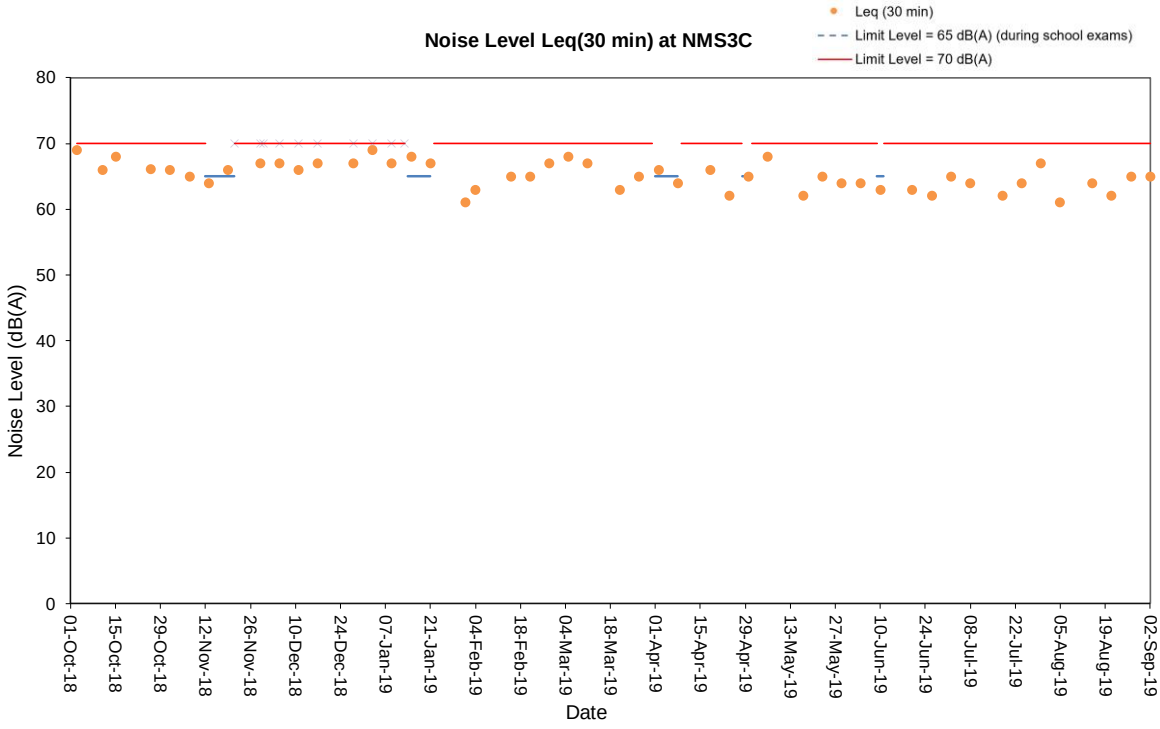

Air Quality Monitoring (1-hr TSP) at AMS7B
AMS7B 1-hour TSP
Limit Level = 500 µg/m³
Action Level = 370 µg/m³
TSP(µg/m³)
600
500
400
300
200
100
0
01-Oct-18
15-Oct-18
29-Oct-18
12-Nov-18
26-Nov-18
10-Dec-18
24-Dec-18
07-Jan-19
21-Jan-19
04-Feb-19
18-Feb-19
04-Mar-19
18-Mar-19
01-Apr-19
15-Apr-19
29-Apr-19
13-May-19
27-May-19
10-Jun-19
24-Jun-19
08-Jul-19
22-Jul-19
05-Aug-19
19-Aug-19
02-Sep-19
16-Sep-19
30-Sep-19
14-Oct-19
28-Oct-19
11-Nov-19
25-Nov-19
09-Dec-19
23-Dec-19
06-Jan-20
20-Jan-20
03-Feb-20
Date


Air Quality Monitoring (24-hr TSP) at AMS2
AMS2 24-hour TSP
Limit Level = 260 µg/m³
Action Level = 176 µg/m³
TSP(µg/m³)
300
250
200
150
100
50
0
01-Oct-18
15-Oct-18
29-Oct-18
12-Nov-18
26-Nov-18
10-Dec-18
24-Dec-18
07-Jan-19
21-Jan-19
04-Feb-19
18-Feb-19
04-Mar-19
18-Mar-19
01-Apr-19
15-Apr-19
29-Apr-19
13-May-19
27-May-19
10-Jun-19
24-Jun-19
08-Jul-19
22-Jul-19
05-Aug-19
19-Aug-19
02-Sep-19
16-Sep-19
30-Sep-19
14-Oct-19
28-Oct-19
11-Nov-19
25-Nov-19
09-Dec-19
23-Dec-19
06-Jan-20
20-Jan-20
03-Feb-20
Date


Air Quality Monitoring (24-hr TSP) at AMS3C
AMS3C 24-hour TSP
Limit Level = 260 μg/m³
Action Level = 167 μg/m³
TSP(μg/m³)
300
250
200
150
100
50
0
01-Oct-18
15-Oct-18
29-Oct-18
12-Nov-18
26-Nov-18
10-Dec-18
24-Dec-18
07-Jan-19
21-Jan-19
04-Feb-19
18-Feb-19
04-Mar-19
18-Mar-19
01-Apr-19
15-Apr-19
29-Apr-19
13-May-19
27-May-19
10-Jun-19
24-Jun-19
08-Jul-19
22-Jul-19
05-Aug-19
19-Aug-19
02-Sep-19
16-Sep-19
30-Sep-19
14-Oct-19
28-Oct-19
11-Nov-19
25-Nov-19
09-Dec-19
23-Dec-19
06-Jan-20
20-Jan-20
03-Feb-20
Date


Air Quality Monitoring (24-hr TSP) at AMS7B
AMS7B 24-hour TSP
Limit Level = 260 μg/m³
Action Level = 183 μg/m³
TSP(μg/m³)
300
250
200
150
100
50
0
01-Oct-18
15-Oct-18
29-Oct-18
12-Nov-18
26-Nov-18
10-Dec-18
24-Dec-18
07-Jan-19
21-Jan-19
04-Feb-19
18-Feb-19
04-Mar-19
18-Mar-19
01-Apr-19
15-Apr-19
29-Apr-19
13-May-19
27-May-19
10-Jun-19
24-Jun-19
08-Jul-19
22-Jul-19
05-Aug-19
19-Aug-19
02-Sep-19
16-Sep-19
30-Sep-19
14-Oct-19
28-Oct-19
11-Nov-19
25-Nov-19
09-Dec-19
23-Dec-19
06-Jan-20
20-Jan-20
03-Feb-20
Date




**Major site activities:**

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- Pre-drilling and piling works (Jul 2015 to Apr 2017)
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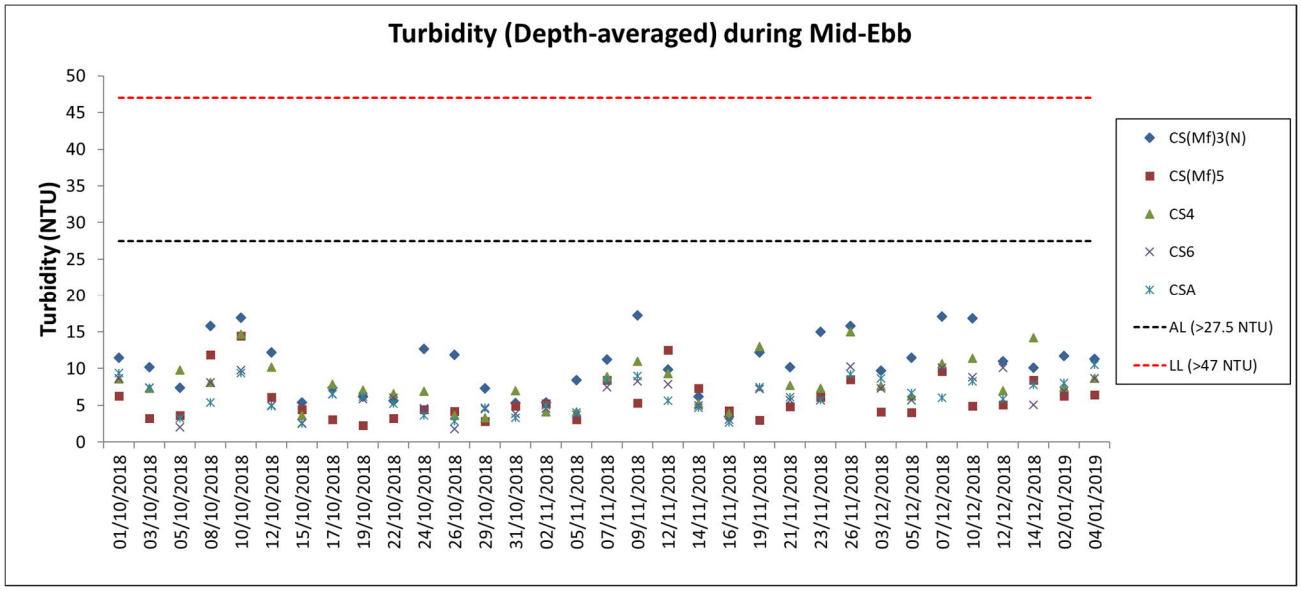
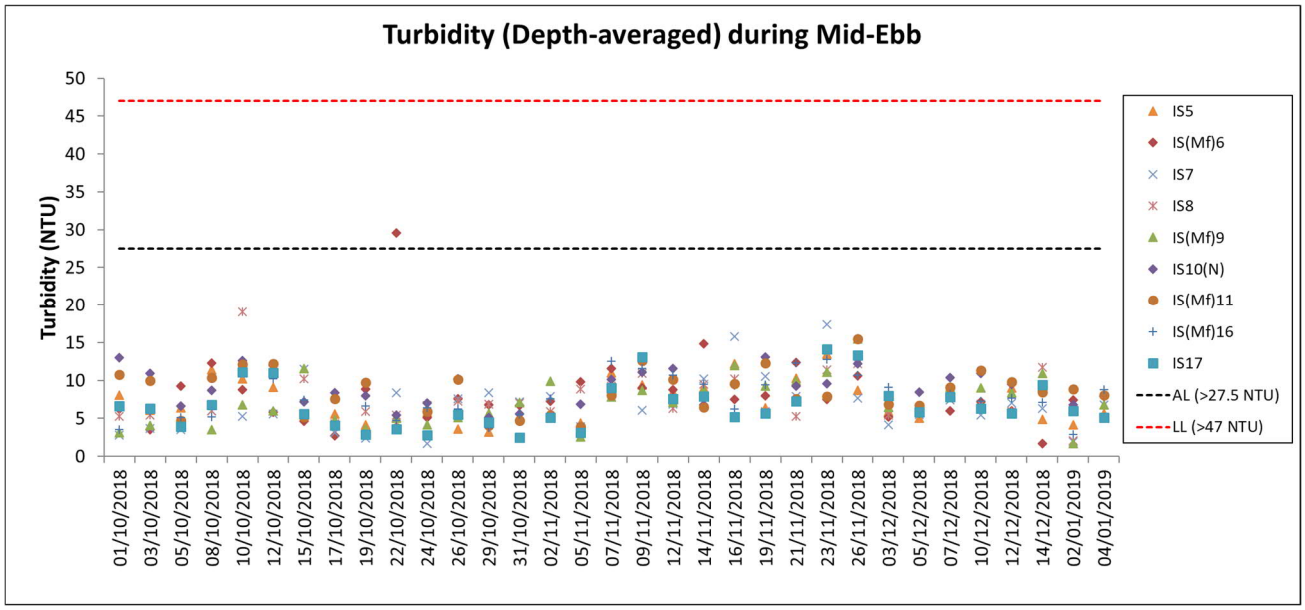
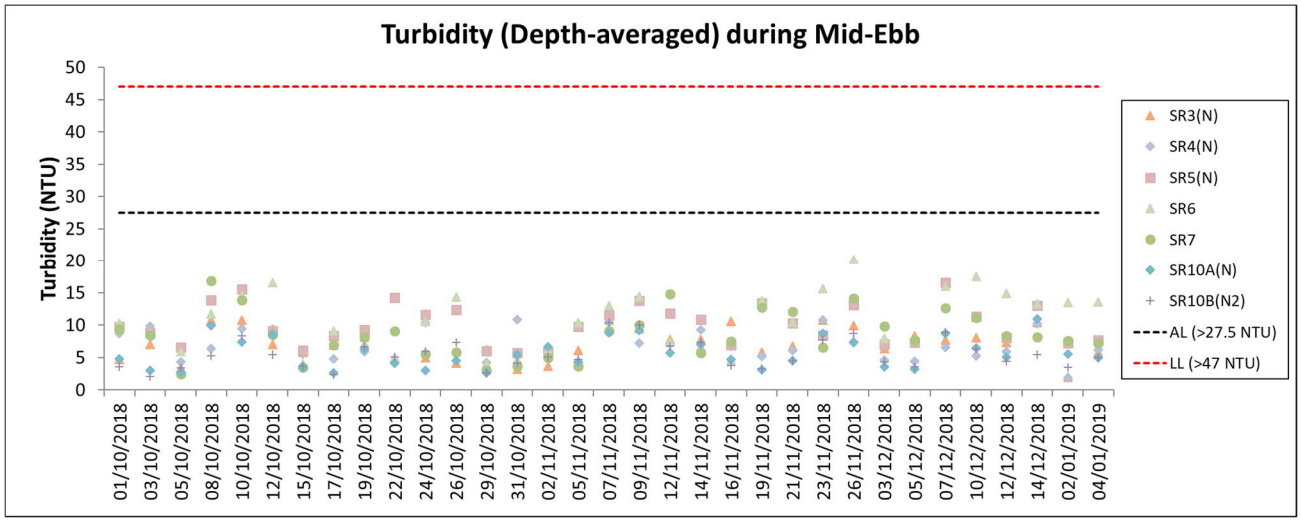
- Drainage works, watermains laying, U-channel construction (Aug 2018 to Jan 2020)
- Construction of fill slopes and road embankment (Sep 2018 to Jan 2020)
- Site clearance works (Dec 2019 to May 2020)

**Weather conditions:**

- see Table 7.2 for weather conditions during the reporting period




Major site activities:
- Site formation and site office construction (Jul 2015 to Mar 2016)
- Pre-drilling and piling works (Jul 2015 to Apr 2017)
- Generation of excavated marine sediment (Feb 2016 to Feb 2017)
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- Bridge segment erection (Feb 2017 to Nov 2019)
- Box culvert construction (Apr 2017 to Jan 2018)
- Seawall reinstatement at box culvert outfall (Aug 2018 to Jul 2019)
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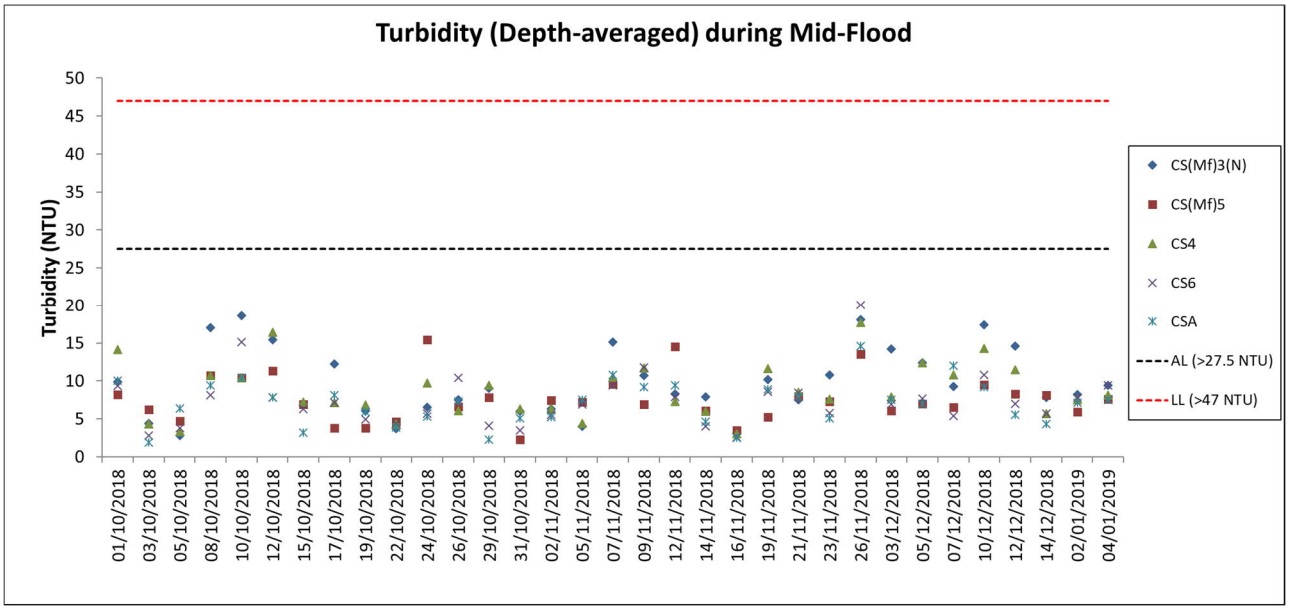
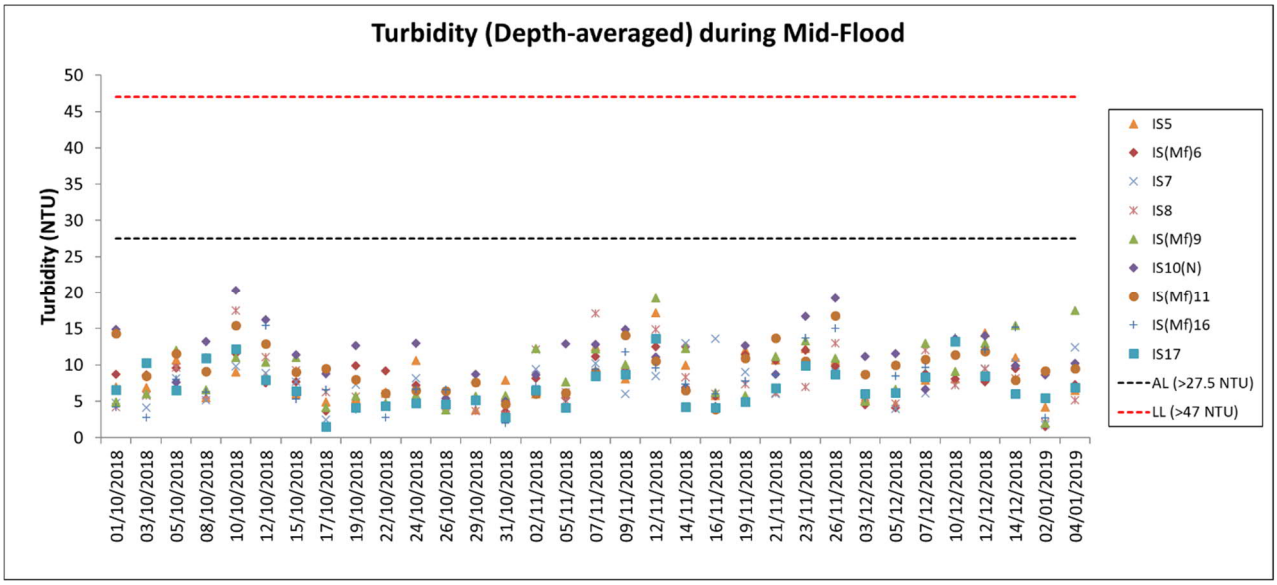
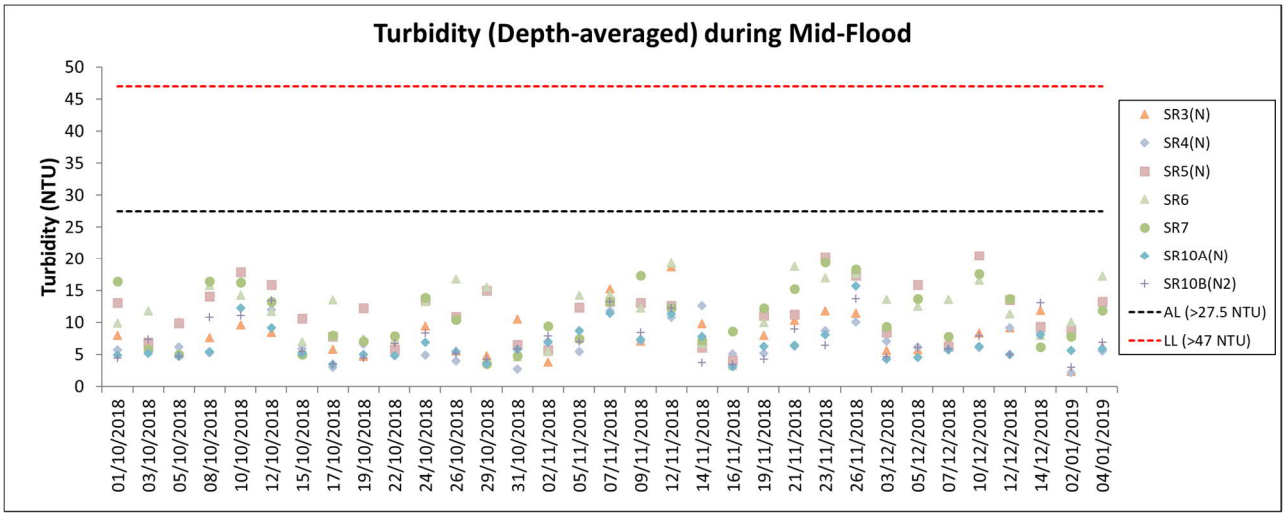
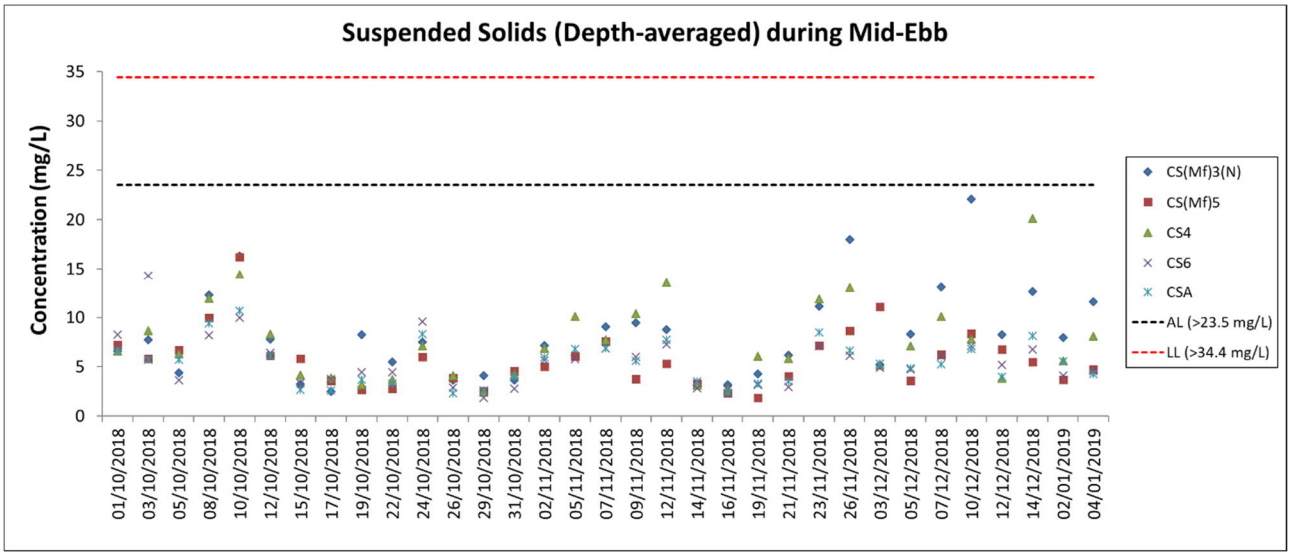
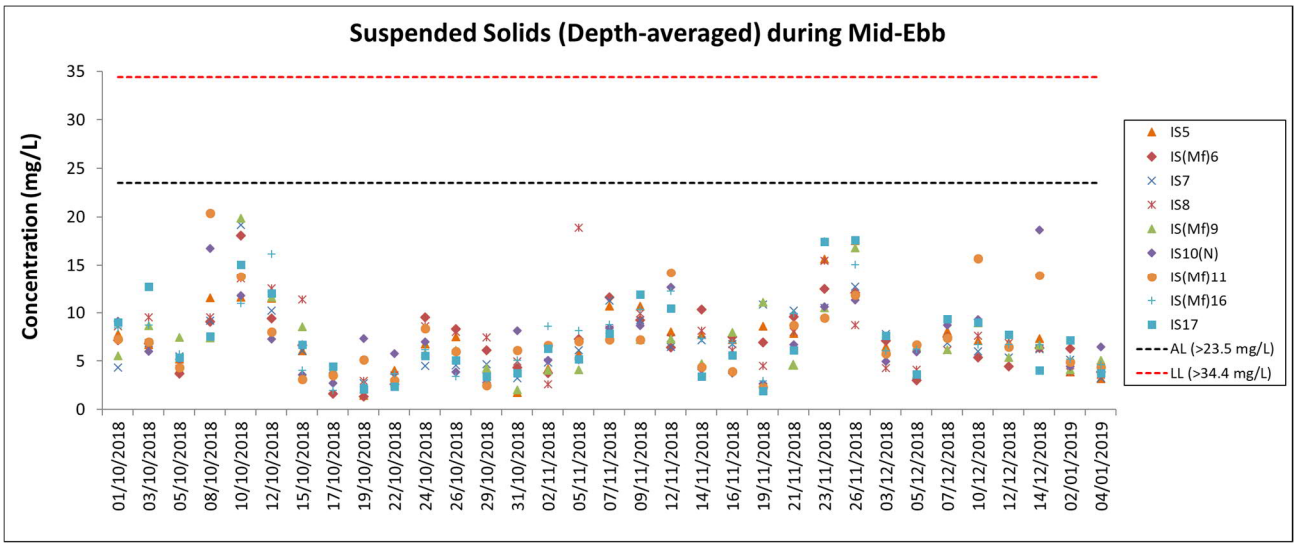
Weather conditions:
- see Table 7.2 for weather conditions during the reporting period

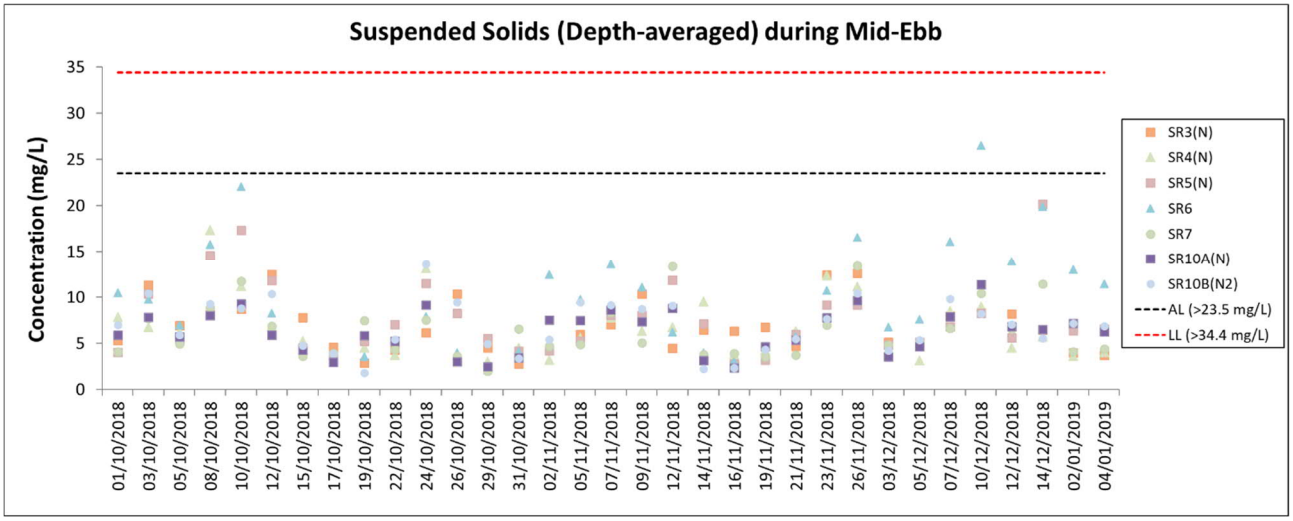

Turbidity (Depth-averaged) during Mid-Flood
Turbidity (NTU)
CS(Mf)3(N)
CS(Mf)5
CS4
CS6
CSA
AL (>27.5 NTU)
LL (>47 NTU)

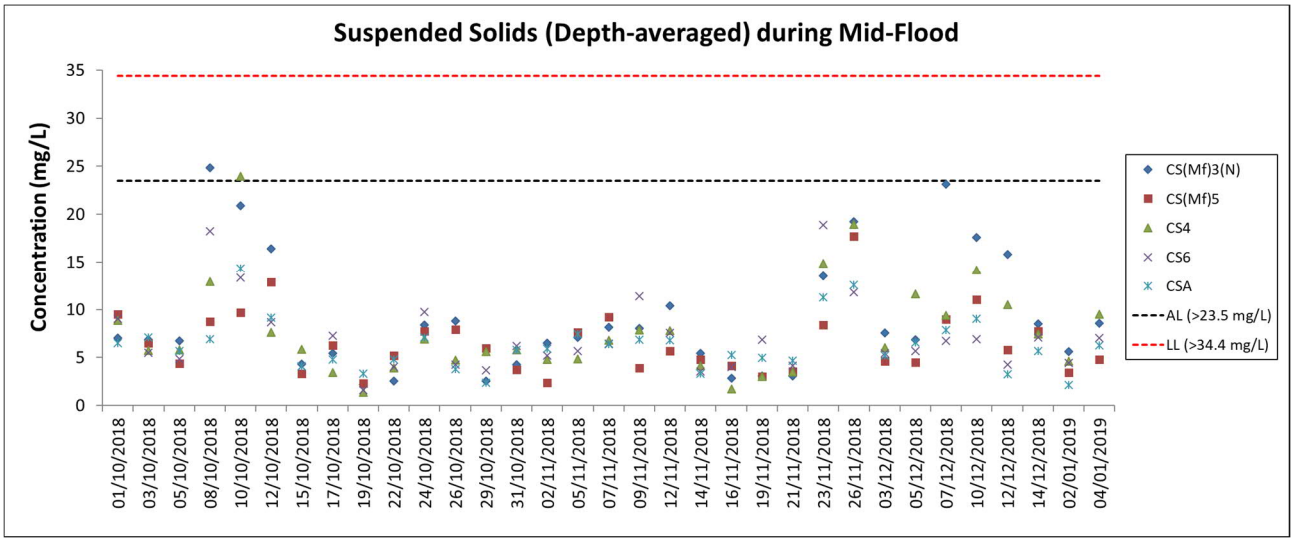

Turbidity (Depth-averaged) during Mid-Flood
Turbidity (NTU)
IS5
IS(Mf)6
IS7
IS8
IS(Mf)9
IS10(N)
IS(Mf)11
IS(Mf)16
IS17
AL (>27.5 NTU)
LL (>47 NTU)

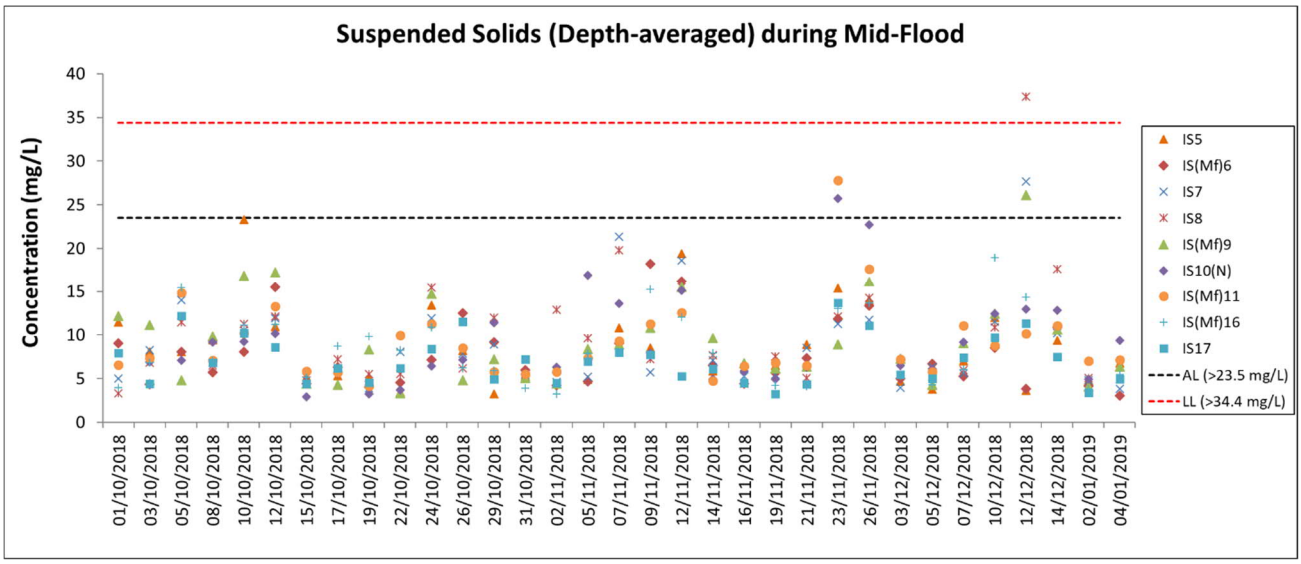

Turbidity (Depth-averaged) during Mid-Flood
Turbidity (NTU)
SR3(N)
SR4(N)
SR5(N)
SR6
SR7
SR10A(N)
SR10B(N2)
AL (>27.5 NTU)
LL (>47 NTU)

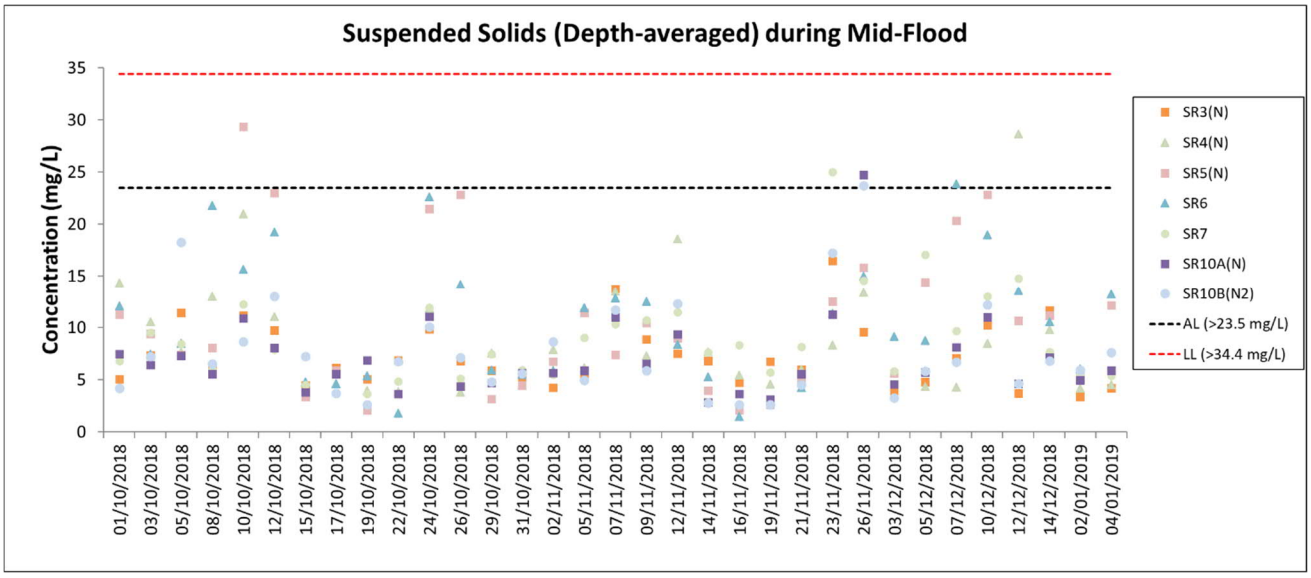

Suspended Solids (Depth-averaged) during Mid-Ebb
Concentration (mg/L)
0
5
10
15
20
25
30
35
01/10/2018
03/10/2018
05/10/2018
08/10/2018
10/10/2018
12/10/2018
15/10/2018
17/10/2018
19/10/2018
22/10/2018
24/10/2018
26/10/2018
29/10/2018
31/10/2018
02/11/2018
05/11/2018
07/11/2018
09/11/2018
12/11/2018
14/11/2018
16/11/2018
19/11/2018
21/11/2018
23/11/2018
26/11/2018
03/12/2018
05/12/2018
07/12/2018
10/12/2018
12/12/2018
14/12/2018
02/01/2019
04/01/2019
CS(Mf)3(N)
CS(Mf)5
CS4
CS6
CSA
AL (>23.5 mg/L)
LL (>34.4 mg/L)

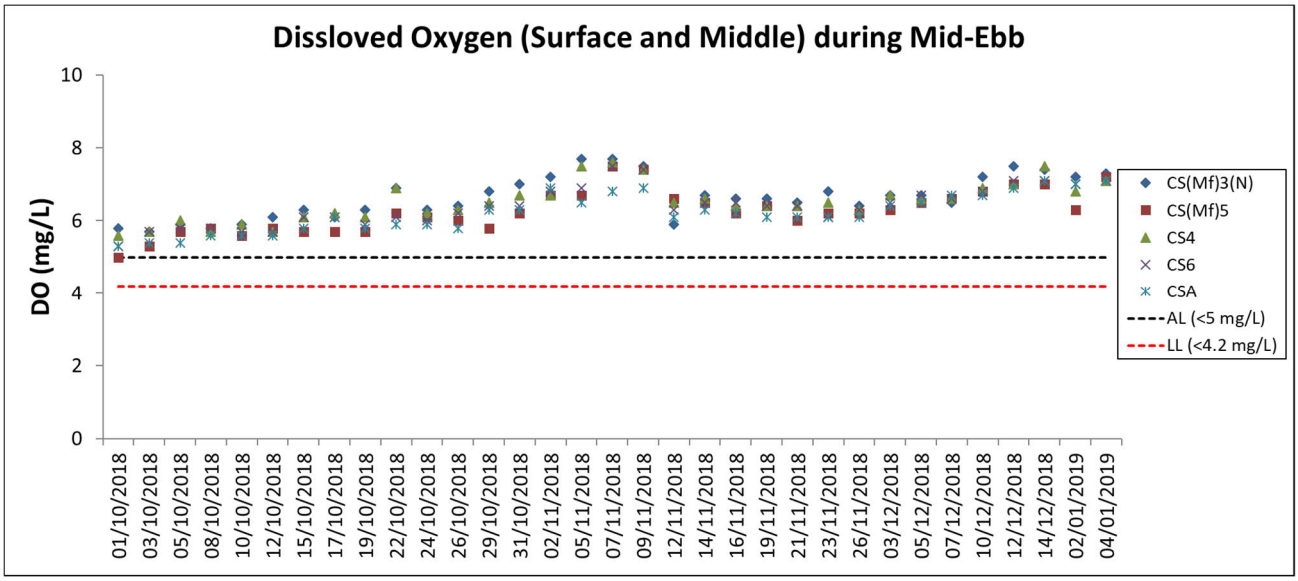

Suspended Solids (Depth-averaged) during Mid-Ebb
Concentration (mg/L)
0
5
10
15
20
25
30
35
01/10/2018
03/10/2018
05/10/2018
08/10/2018
10/10/2018
12/10/2018
15/10/2018
17/10/2018
19/10/2018
22/10/2018
24/10/2018
26/10/2018
29/10/2018
31/10/2018
02/11/2018
05/11/2018
07/11/2018
09/11/2018
12/11/2018
14/11/2018
16/11/2018
19/11/2018
21/11/2018
23/11/2018
26/11/2018
03/12/2018
05/12/2018
07/12/2018
10/12/2018
12/12/2018
14/12/2018
02/01/2019
04/01/2019
IS5
IS(Mf)6
IS7
IS8
IS(Mf)9
IS10(N)
IS(Mf)11
IS(Mf)16
IS17
AL (>23.5 mg/L)
LL (>34.4 mg/L)

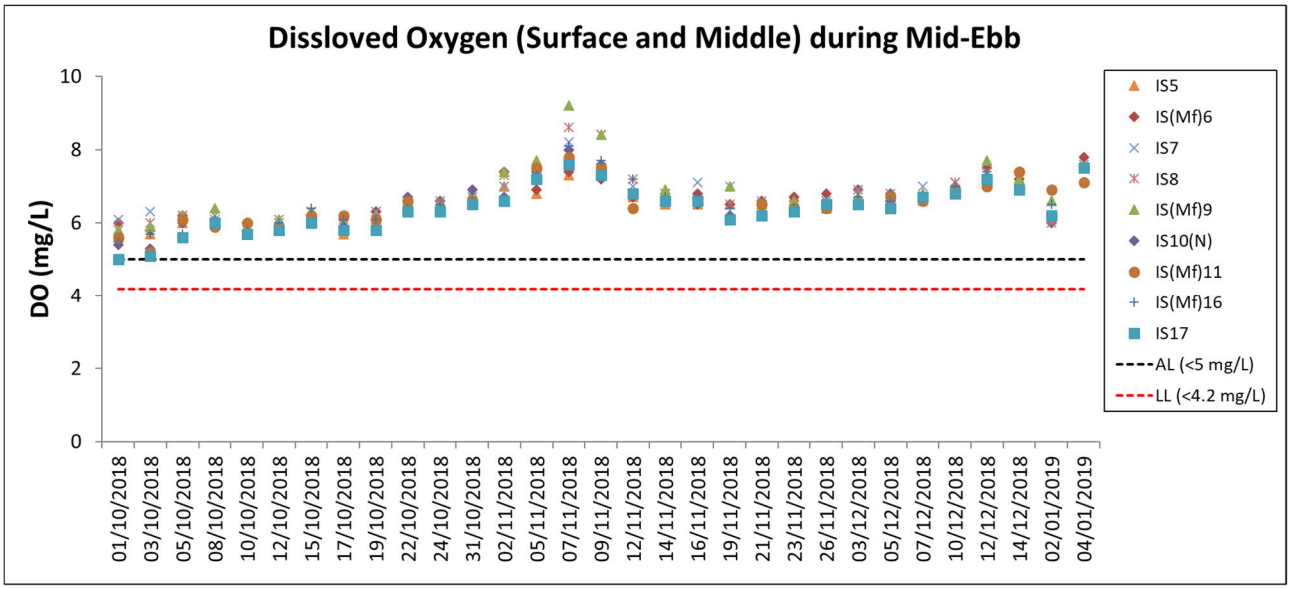

Suspended Solids (Depth-averaged) during Mid-Ebb
Concentration (mg/L)
0
5
10
15
20
25
30
35
01/10/2018
03/10/2018
05/10/2018
08/10/2018
10/10/2018
12/10/2018
15/10/2018
17/10/2018
19/10/2018
22/10/2018
24/10/2018
26/10/2018
29/10/2018
31/10/2018
02/11/2018
05/11/2018
07/11/2018
09/11/2018
12/11/2018
14/11/2018
16/11/2018
19/11/2018
21/11/2018
23/11/2018
26/11/2018
03/12/2018
05/12/2018
07/12/2018
10/12/2018
12/12/2018
14/12/2018
02/01/2019
04/01/2019
SR3(N)
SR4(N)
SR5(N)
SR6
SR7
SR10A(N)
SR10B(N2)
AL (>23.5 mg/L)
LL (>34.4 mg/L)

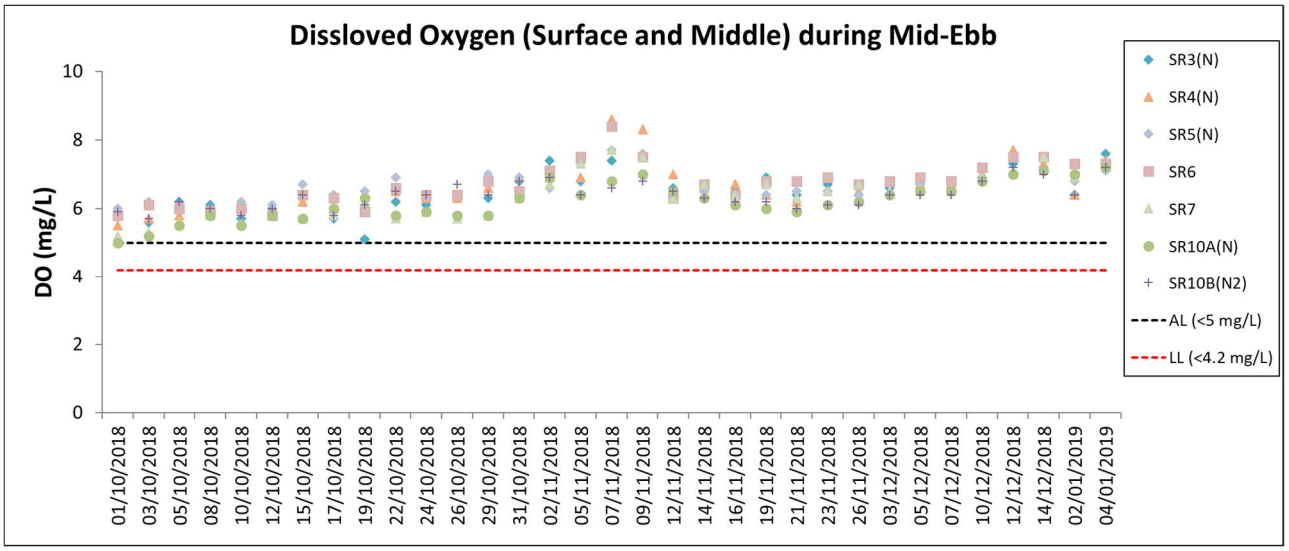

Suspended Solids (Depth-averaged) during Mid-Flood
Concentration (mg/L)
CS(Mf)3(N)
CS(Mf)5
CS4
CS6
CSA
AL (>23.5 mg/L)
LL (>34.4 mg/L)

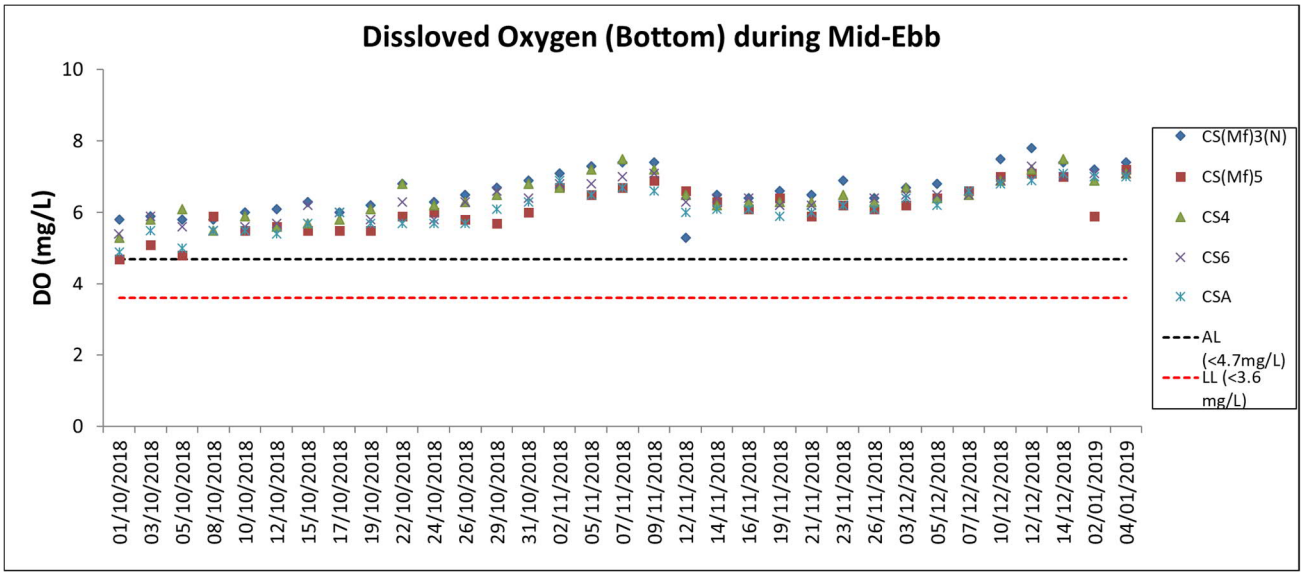

Suspended Solids (Depth-averaged) during Mid-Flood
Concentration (mg/L)
IS5
IS(Mf)6
IS7
IS8
IS(Mf)9
IS10(N)
IS(Mf)11
IS(Mf)16
IS17
AL (>23.5 mg/L)
LL (>34.4 mg/L)

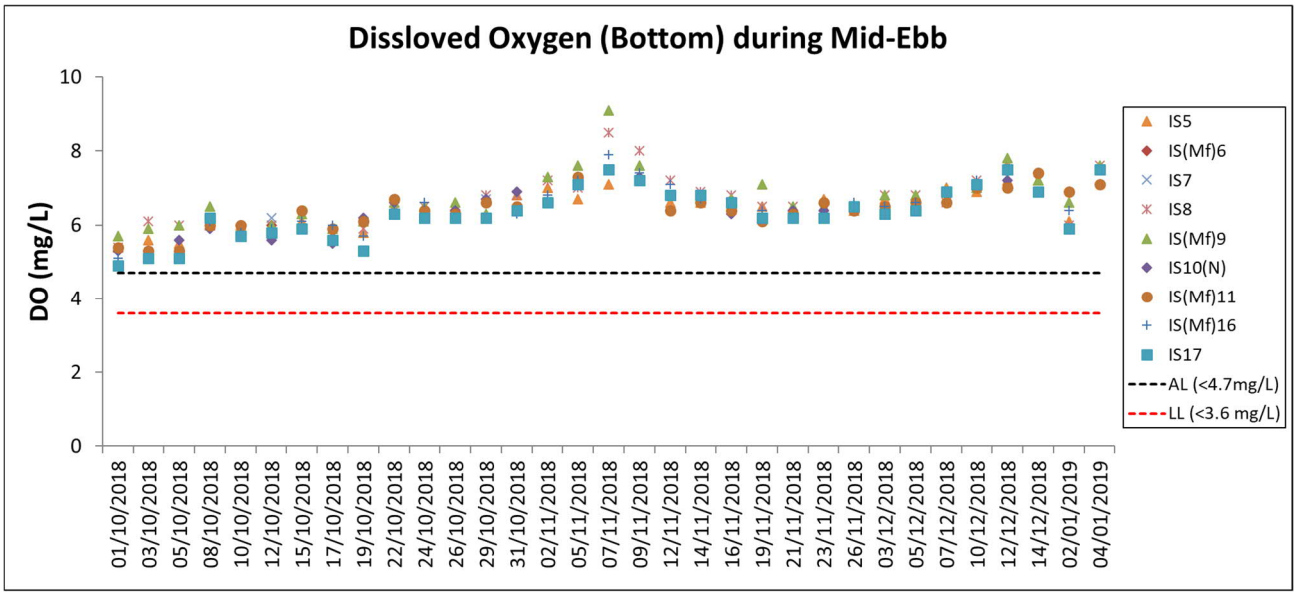

Suspended Solids (Depth-averaged) during Mid-Flood
Concentration (mg/L)
SR3(N)
SR4(N)
SR5(N)
SR6
SR7
SR10A(N)
SR10B(N2)
AL (>23.5 mg/L)
LL (>34.4 mg/L)

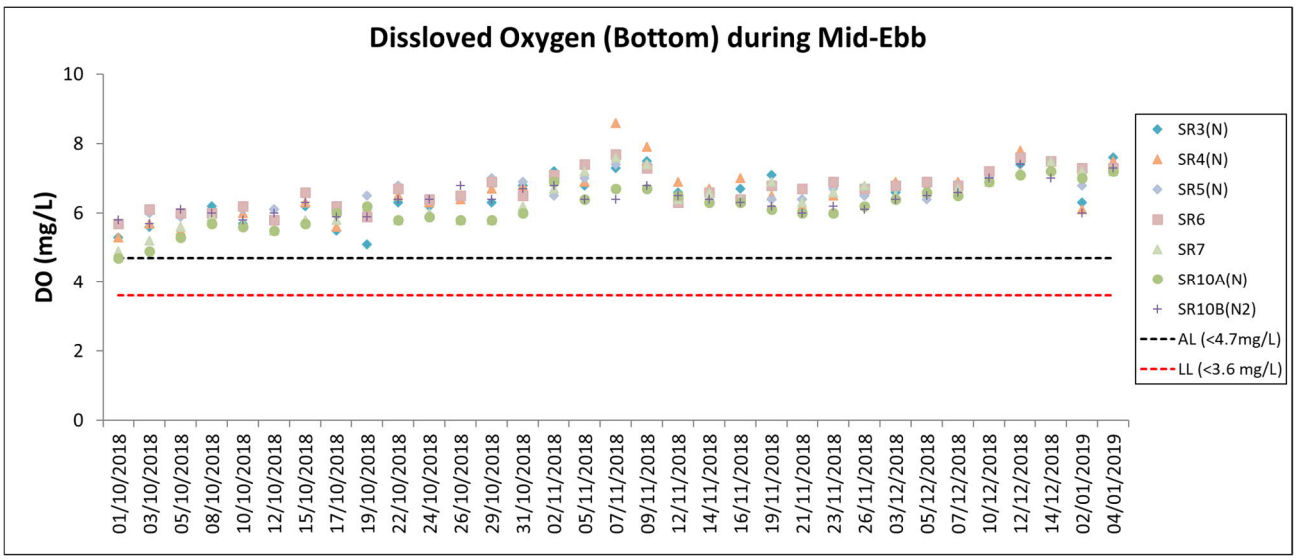

Dissloved Oxygen (Surface and Middle) during Mid-Ebb
DO (mg/L)
CS(Mf)3(N)
CS(Mf)5
CS4
CS6
CSA
AL (<5 mg/L)
LL (<4.2 mg/L)

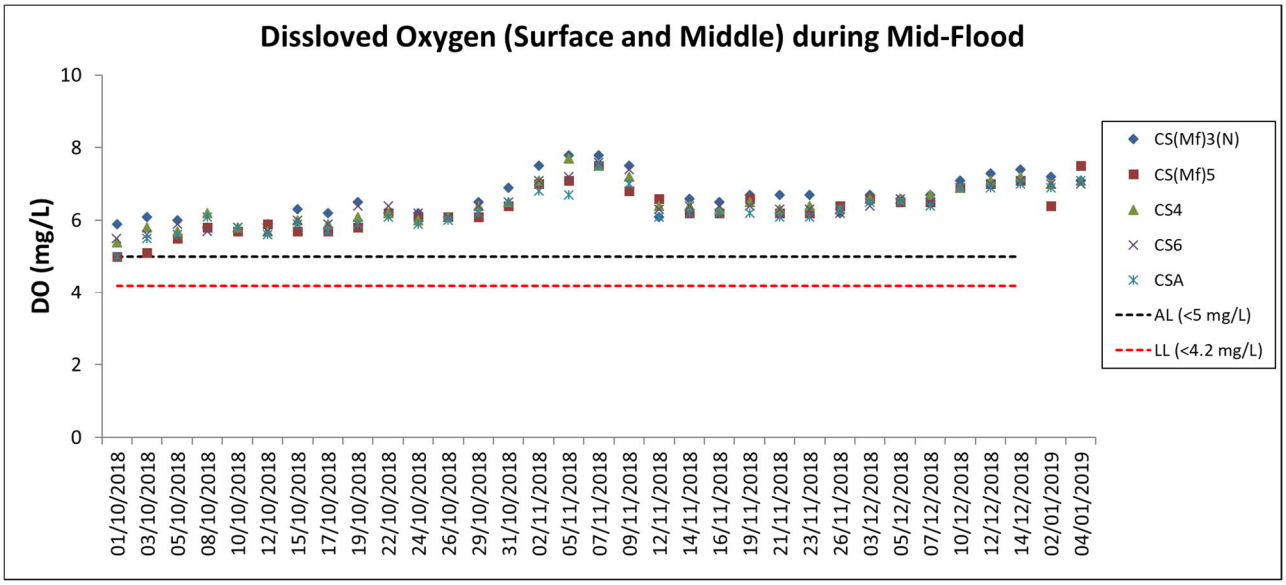

Dissloved Oxygen (Surface and Middle) during Mid-Ebb
DO (mg/L)
IS5
IS(Mf)6
IS7
IS8
IS(Mf)9
IS10(N)
IS(Mf)11
IS(Mf)16
IS17
AL (<5 mg/L)
LL (<4.2 mg/L)

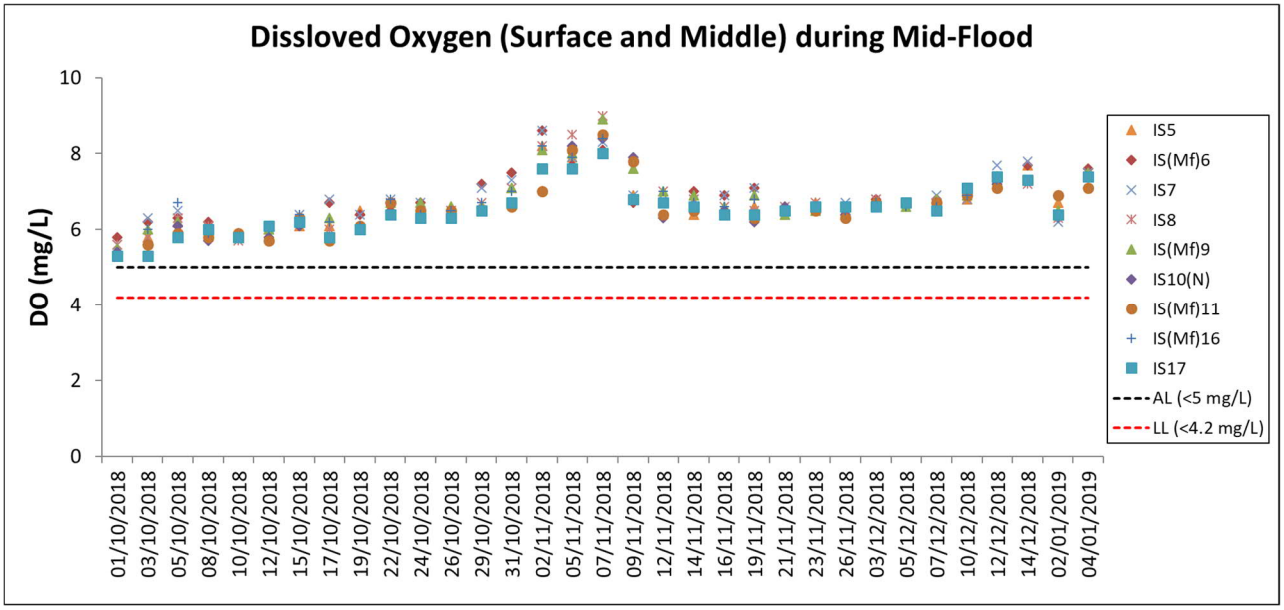

Dissloved Oxygen (Surface and Middle) during Mid-Ebb
DO (mg/L)
SR3(N)
SR4(N)
SR5(N)
SR6
SR7
SR10A(N)
SR10B(N2)
AL (<5 mg/L)
LL (<4.2 mg/L)

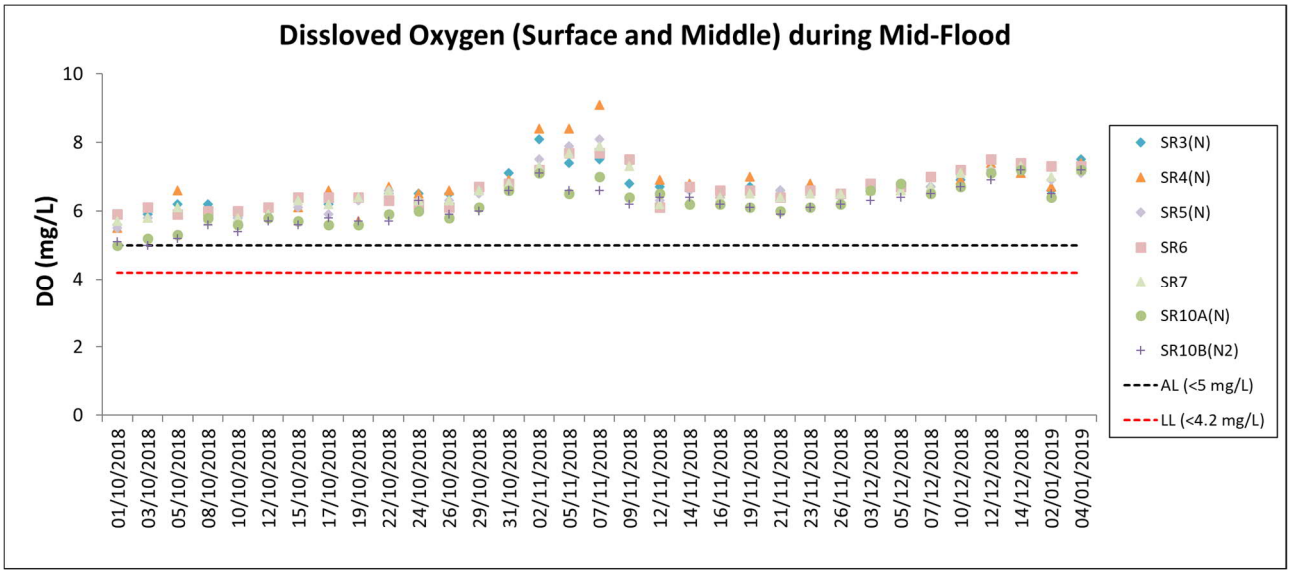

Dissloved Oxygen (Bottom) during Mid-Ebb
DO (mg/L)
CS(Mf)3(N)
CS(Mf)5
CS4
CS6
CSA
AL (<4.7mg/L)
LL (<3.6 mg/L)

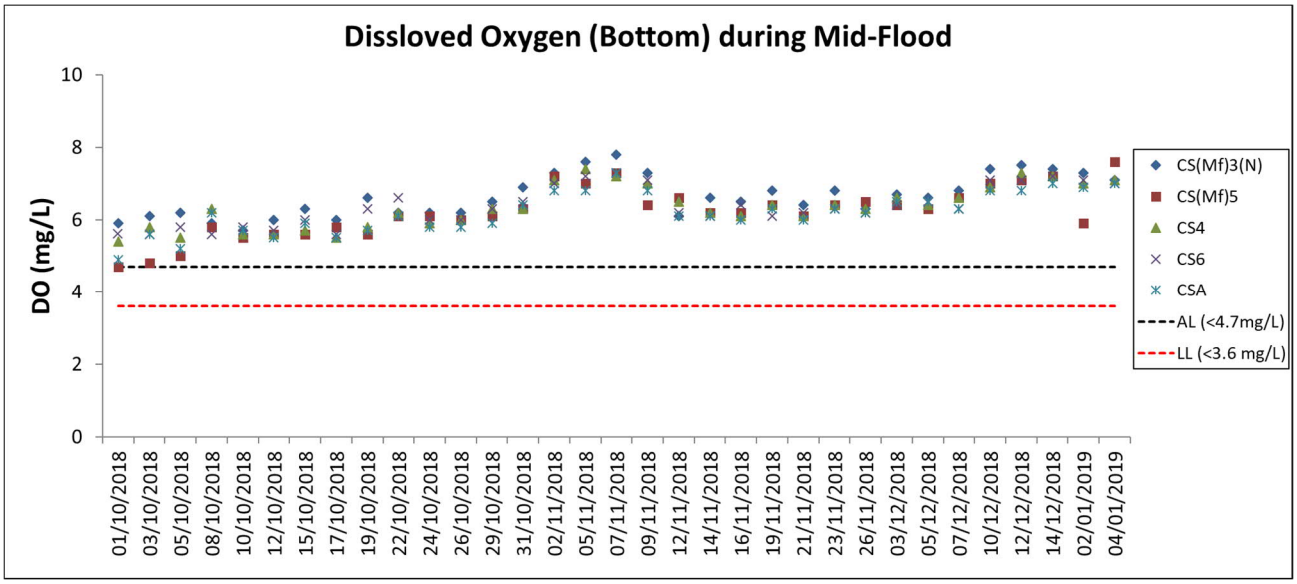

Dissloved Oxygen (Bottom) during Mid-Ebb
DO (mg/L)
IS5
IS(Mf)6
IS7
IS8
IS(Mf)9
IS10(N)
IS(Mf)11
IS(Mf)16
IS17
AL (<4.7mg/L)
LL (<3.6 mg/L)

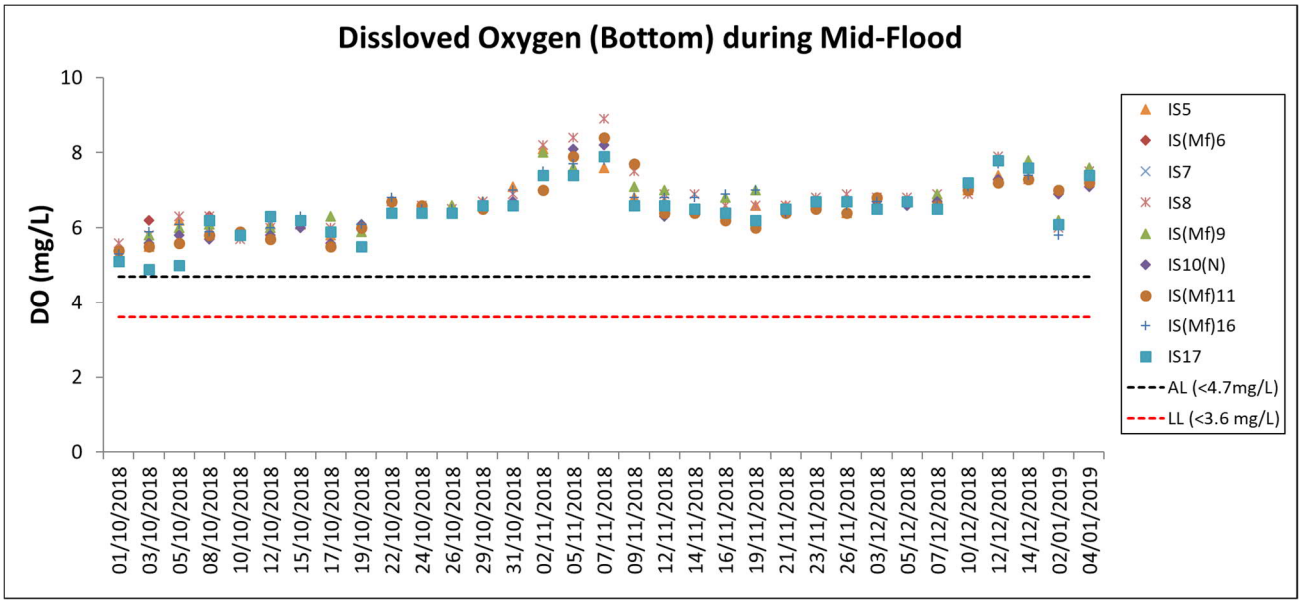

Dissloved Oxygen (Bottom) during Mid-Ebb
DO (mg/L)
SR3(N)
SR4(N)
SR5(N)
SR6
SR7
SR10A(N)
SR10B(N2)
AL (<4.7mg/L)
LL (<3.6 mg/L)

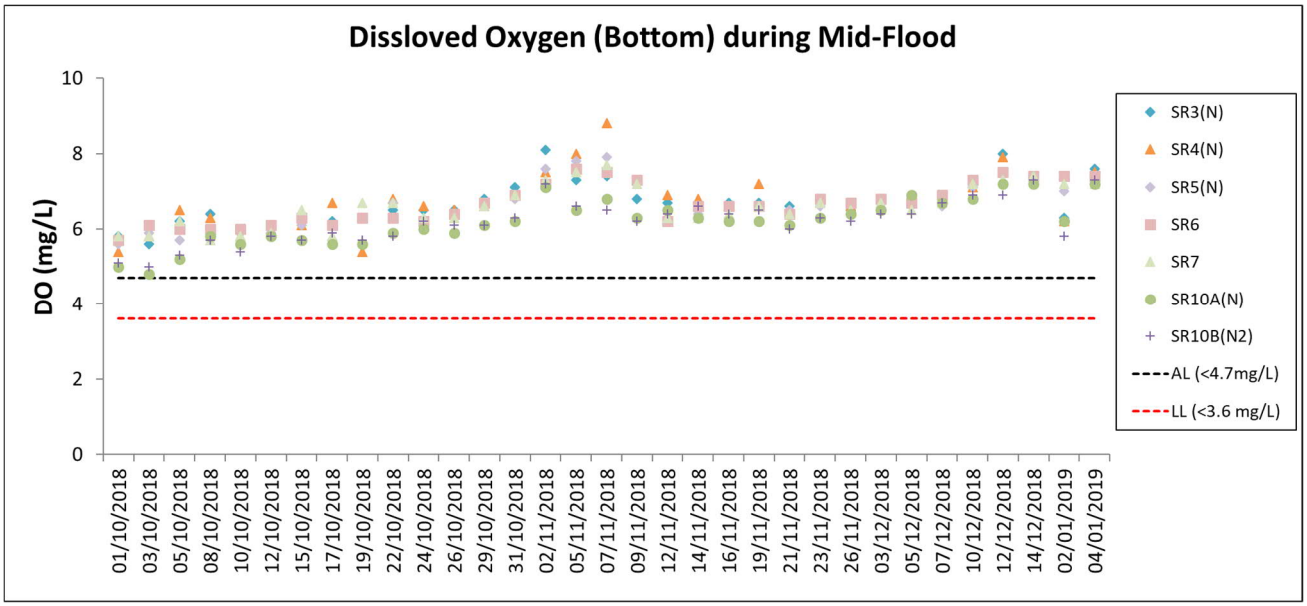

Dissloved Oxygen (Surface and Middle) during Mid-Flood
DO (mg/L)
CS(Mf)3(N)
CS(Mf)5
CS4
CS6
CSA
AL (<5 mg/L)
LL (<4.2 mg/L)

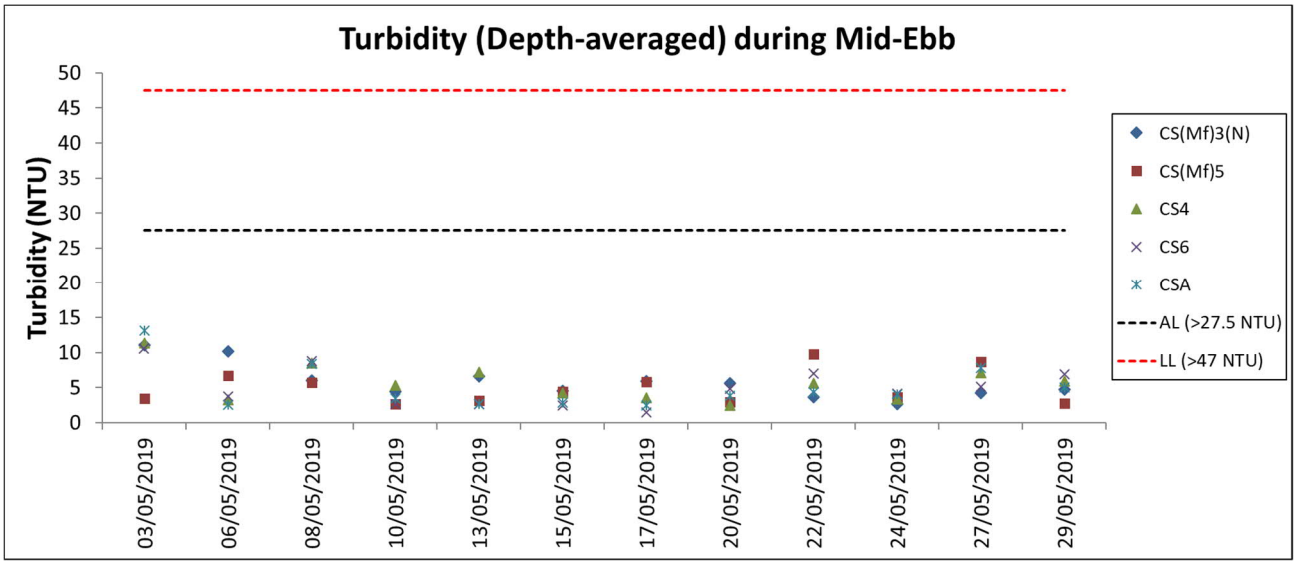

Dissloved Oxygen (Surface and Middle) during Mid-Flood
DO (mg/L)
IS5
IS(Mf)6
IS7
IS8
IS(Mf)9
IS10(N)
IS(Mf)11
IS(Mf)16
IS17
AL (<5 mg/L)
LL (<4.2 mg/L)

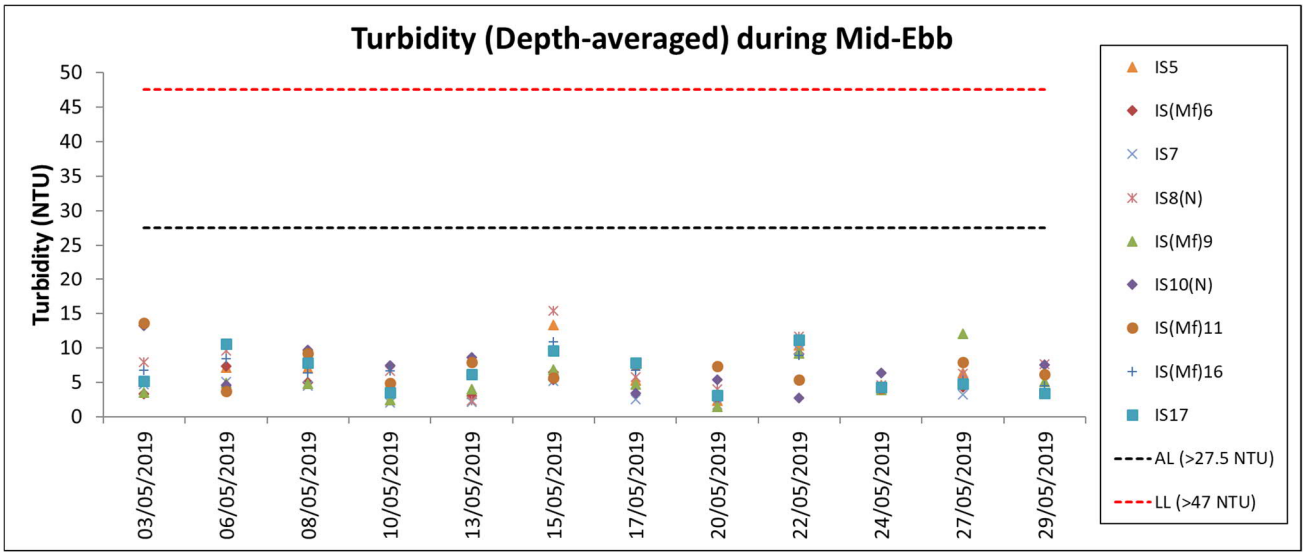

Dissloved Oxygen (Surface and Middle) during Mid-Flood
DO (mg/L)
SR3(N)
SR4(N)
SR5(N)
SR6
SR7
SR10A(N)
SR10B(N2)
AL (<5 mg/L)
LL (<4.2 mg/L)

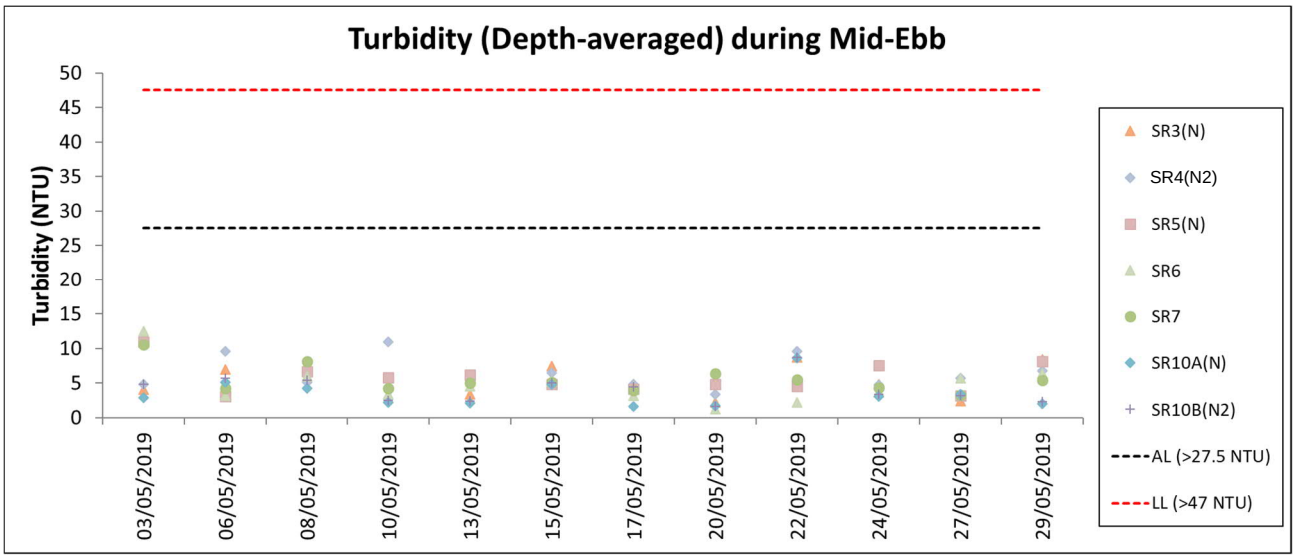

Dissloved Oxygen (Bottom) during Mid-Flood
DO (mg/L)
CS(Mf)3(N)
CS(Mf)5
CS4
CS6
CSA
AL (<4.7mg/L)
LL (<3.6 mg/L)


Dissloved Oxygen (Bottom) during Mid-Flood
DO (mg/L)
IS5
IS(Mf)6
IS7
IS8
IS(Mf)9
IS10(N)
IS(Mf)11
IS(Mf)16
IS17
AL (<4.7mg/L)
LL (<3.6 mg/L)


Dissloved Oxygen (Bottom) during Mid-Flood
DO (mg/L)
SR3(N)
SR4(N)
SR5(N)
SR6
SR7
SR10A(N)
SR10B(N2)
AL (<4.7mg/L)
LL (<3.6 mg/L)

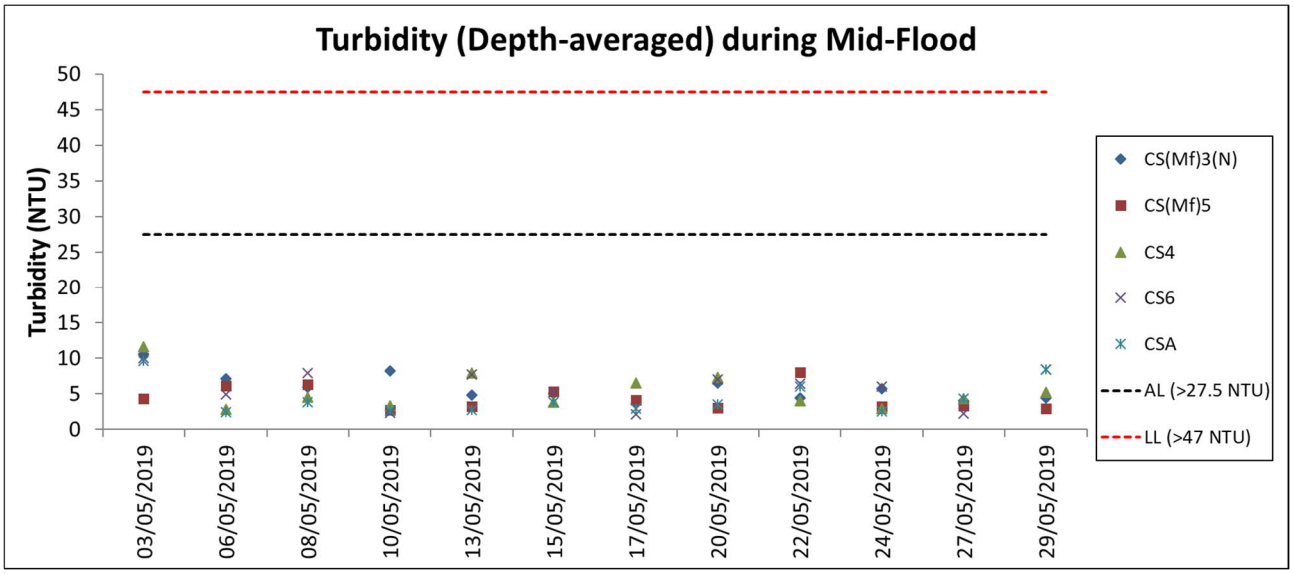


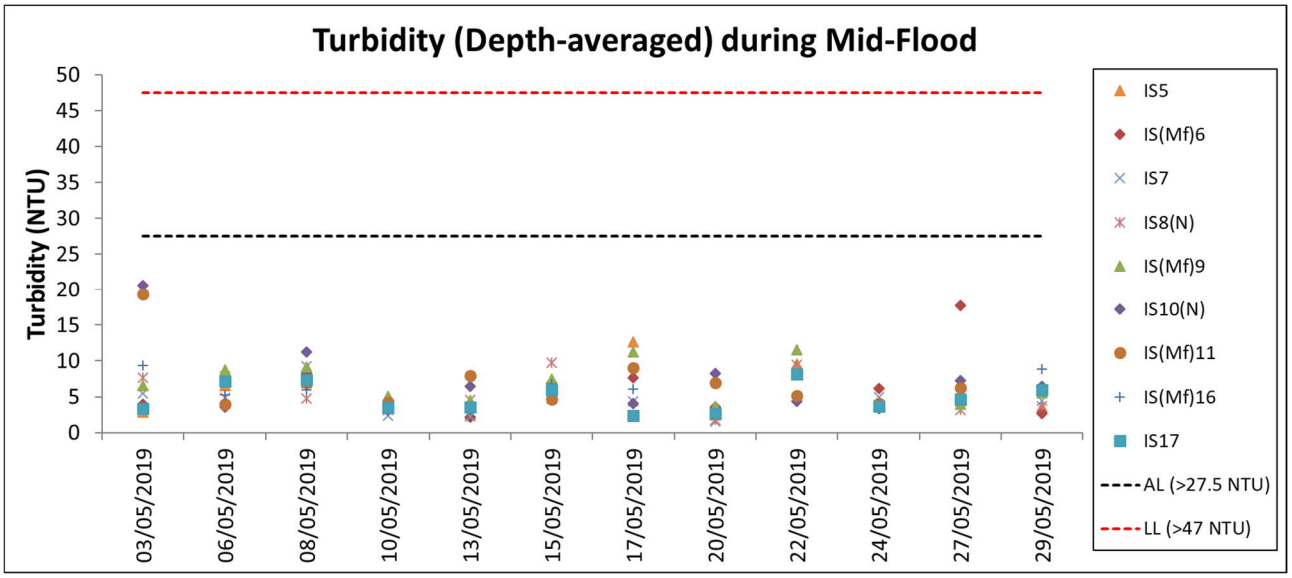



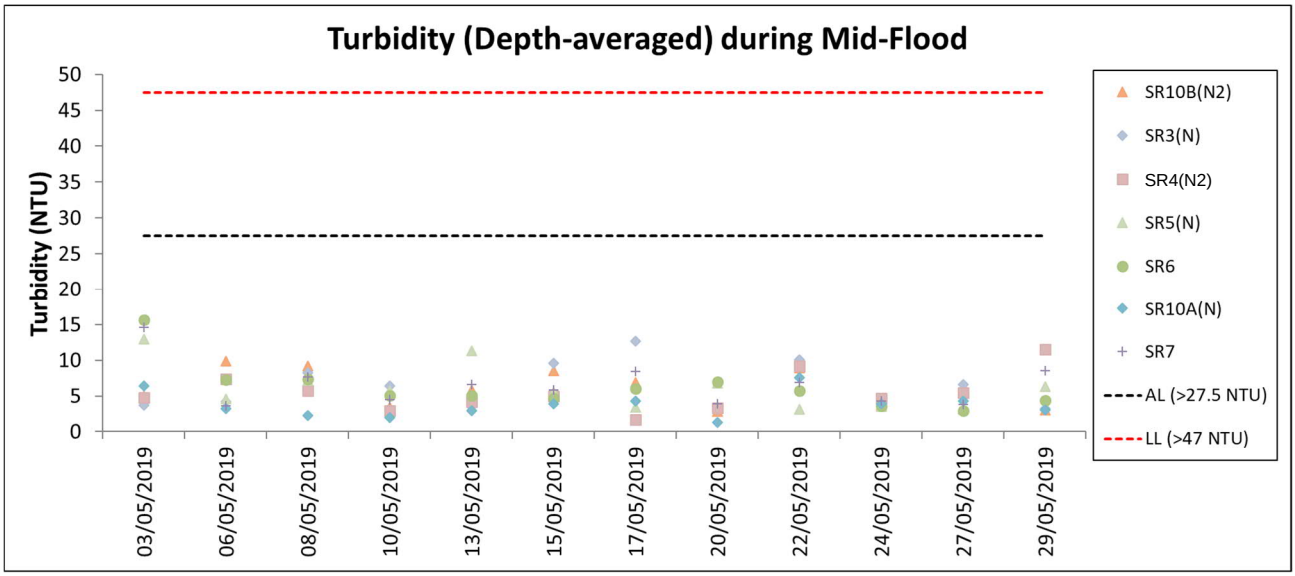



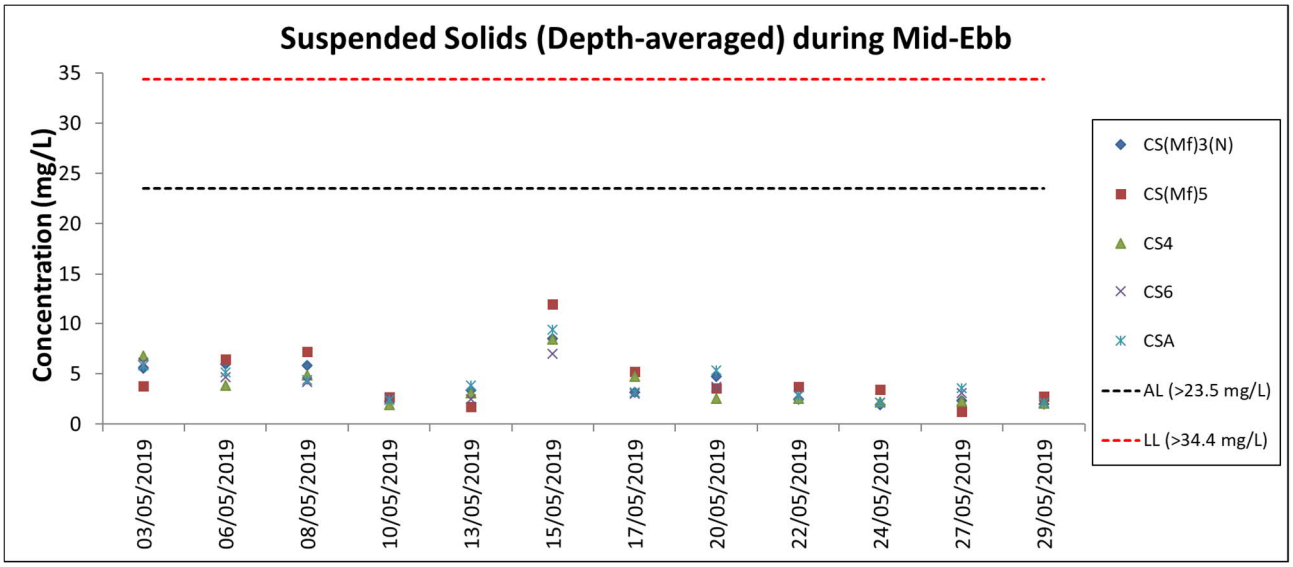

Major site activities:
- Site formation and site office construction (Jul 2015 to Mar 2016)
- Pre-drilling and piling works (Jul 2015 to Apr 2017)
- Generation of excavated marine sediment (Feb 2016 to Feb 2017)
- Construction of loading and unloading point (May 2016 to Sep 2016)
- Bridge segment delivery (Jan 2017 to Jan 2018)
- Bridge segment erection (Feb 2017 to Nov 2019)
- Box culvert construction (Apr 2017 to Jan 2018)
- Seawall reinstatement at box culvert outfall (Aug 2018 to Jul 2019)
- Bridge deck construction and roadworks (Aug 2018 to Nov 2019)
- Drainage works, watermains laying, U-channel construction (Aug 2018 to Jan 2020)
- Construction of fill slopes and road embankment (Sep 2018 to Jan 2020)
- Site clearance works (Dec 2019 to May 2020)

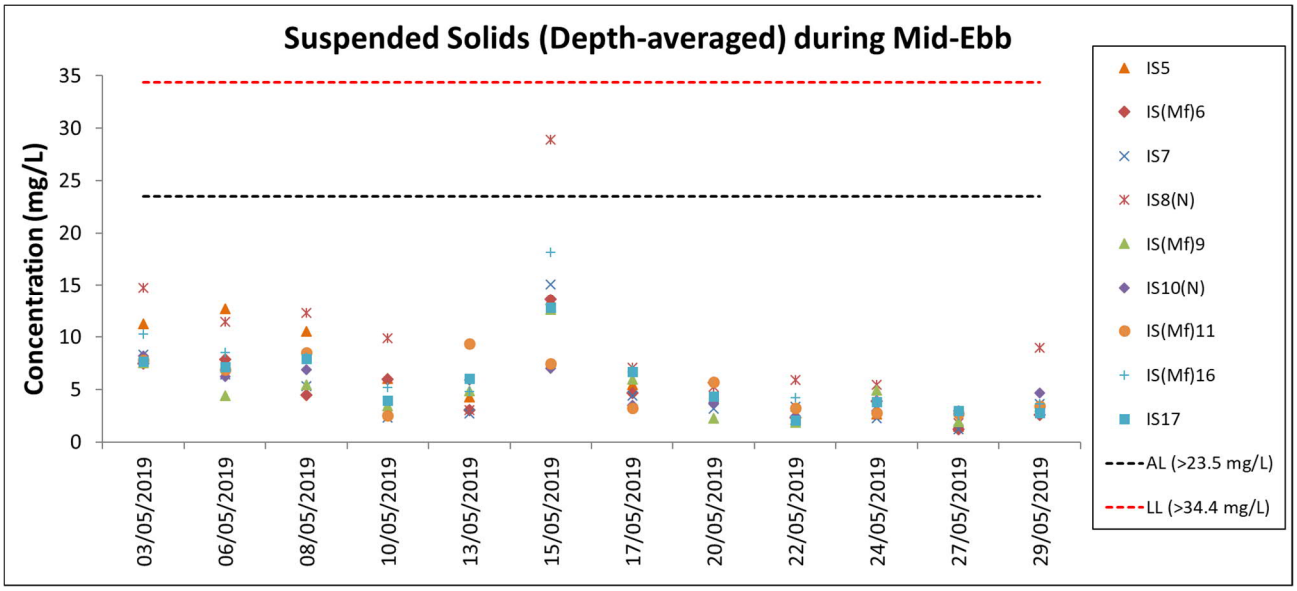
Weather conditions:
- see Table 7.2 for weather conditions during the reporting period

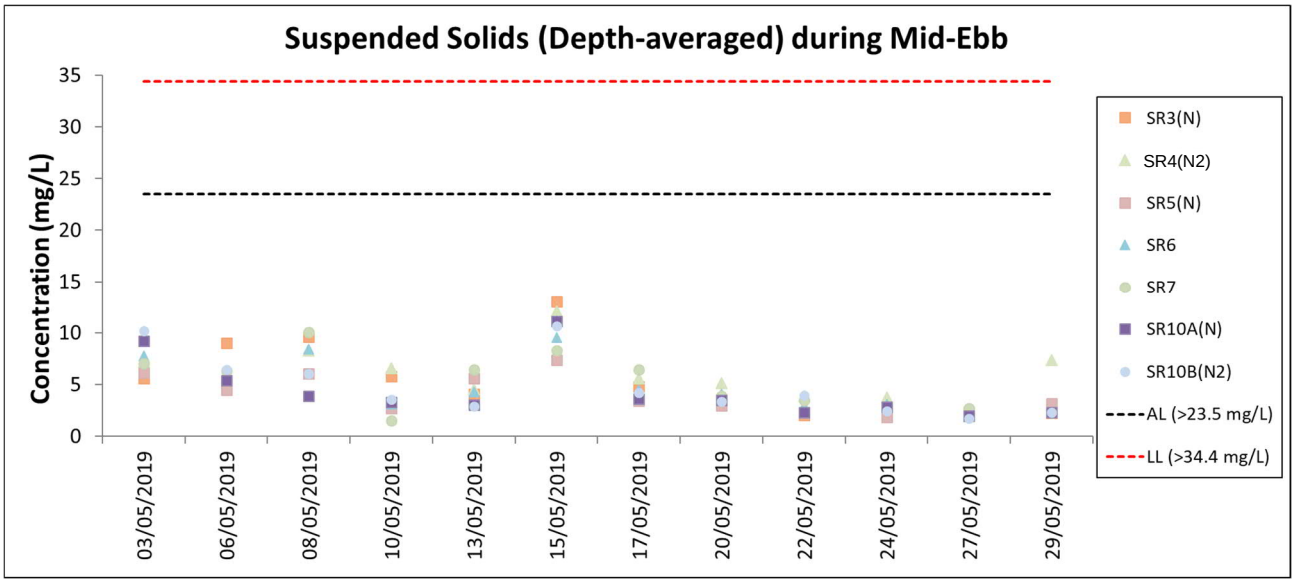

Turbidity (Depth-averaged) during Mid-Flood
Turbidity (NTU)
50
45
40
35
30
25
20
15
10
5
0
03/05/2019
06/05/2019
08/05/2019
10/05/2019
13/05/2019
15/05/2019
17/05/2019
20/05/2019
22/05/2019
24/05/2019
27/05/2019
29/05/2019
CS(Mf)3(N)
CS(Mf)5
CS4
CS6
CSA
AL (>27.5 NTU)
LL (>47 NTU)

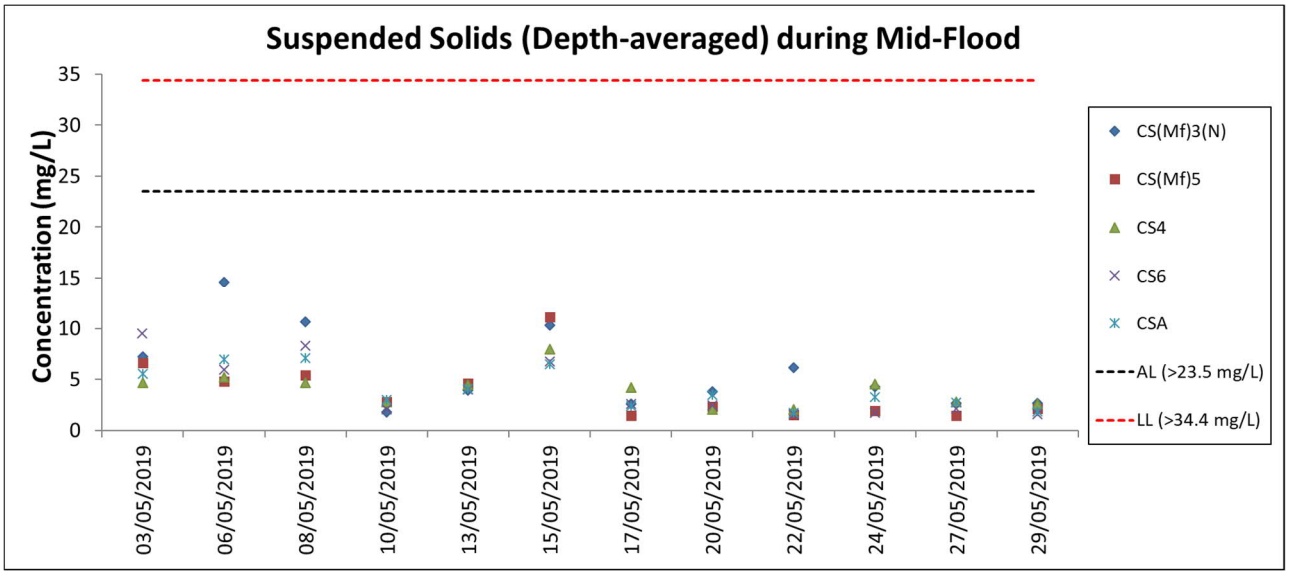

Turbidity (Depth-averaged) during Mid-Flood
Turbidity (NTU)
50
45
40
35
30
25
20
15
10
5
0
03/05/2019
06/05/2019
08/05/2019
10/05/2019
13/05/2019
15/05/2019
17/05/2019
20/05/2019
22/05/2019
24/05/2019
27/05/2019
29/05/2019
IS5
IS(Mf)6
IS7
IS8(N)
IS(Mf)9
IS10(N)
IS(Mf)11
IS(Mf)16
IS17
AL (>27.5 NTU)
LL (>47 NTU)

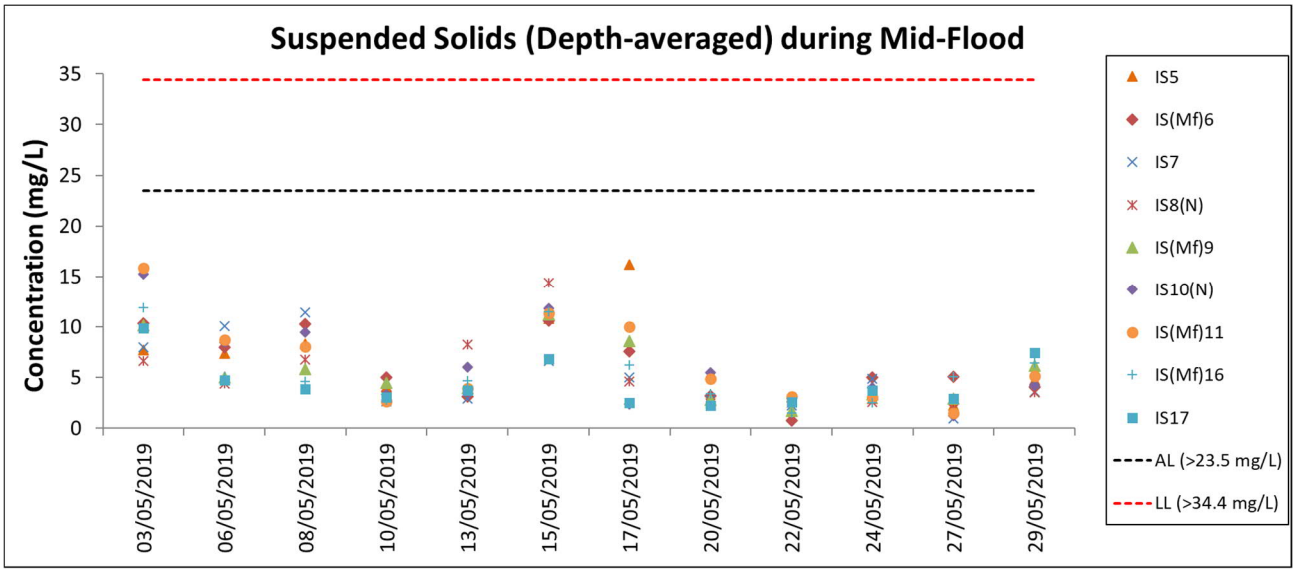

Turbidity (Depth-averaged) during Mid-Flood
Turbidity (NTU)
50
45
40
35
30
25
20
15
10
5
0
03/05/2019
06/05/2019
08/05/2019
10/05/2019
13/05/2019
15/05/2019
17/05/2019
20/05/2019
22/05/2019
24/05/2019
27/05/2019
29/05/2019
SR10B(N2)
SR3(N)
SR4(N2)
SR5(N)
SR6
SR10A(N)
SR7
AL (>27.5 NTU)
LL (>47 NTU)

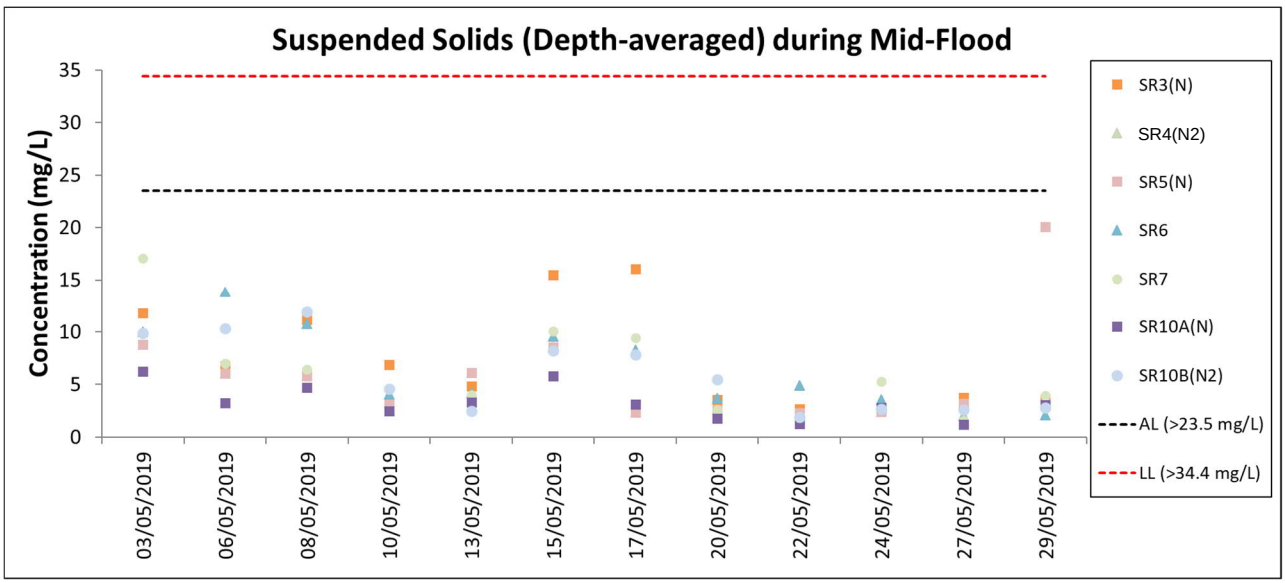

Suspended Solids (Depth-averaged) during Mid-Ebb
Concentration (mg/L)
0
5
10
15
20
25
30
35
03/05/2019
06/05/2019
08/05/2019
10/05/2019
13/05/2019
15/05/2019
17/05/2019
20/05/2019
22/05/2019
24/05/2019
27/05/2019
29/05/2019
CS(Mf)3(N)
CS(Mf)5
CS4
CS6
CSA
AL (>23.5 mg/L)
LL (>34.4 mg/L)

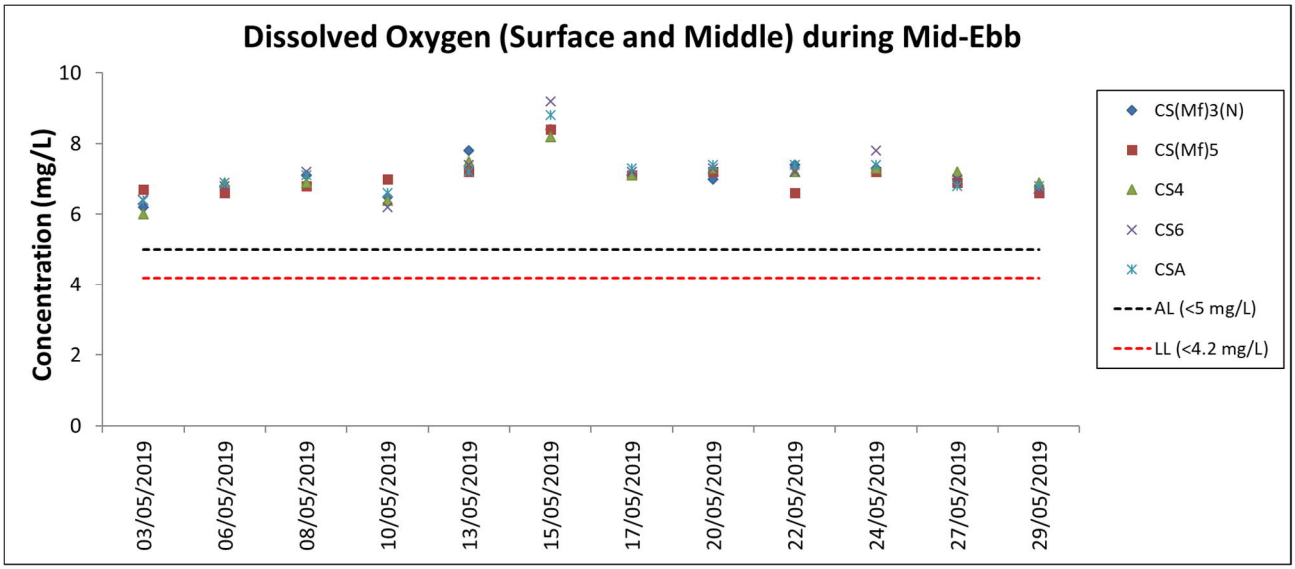

Suspended Solids (Depth-averaged) during Mid-Ebb
Concentration (mg/L)
0
5
10
15
20
25
30
35
03/05/2019
06/05/2019
08/05/2019
10/05/2019
13/05/2019
15/05/2019
17/05/2019
20/05/2019
22/05/2019
24/05/2019
27/05/2019
29/05/2019
IS5
IS(Mf)6
IS7
IS8(N)
IS(Mf)9
IS10(N)
IS(Mf)11
IS(Mf)16
IS17
AL (>23.5 mg/L)
LL (>34.4 mg/L)

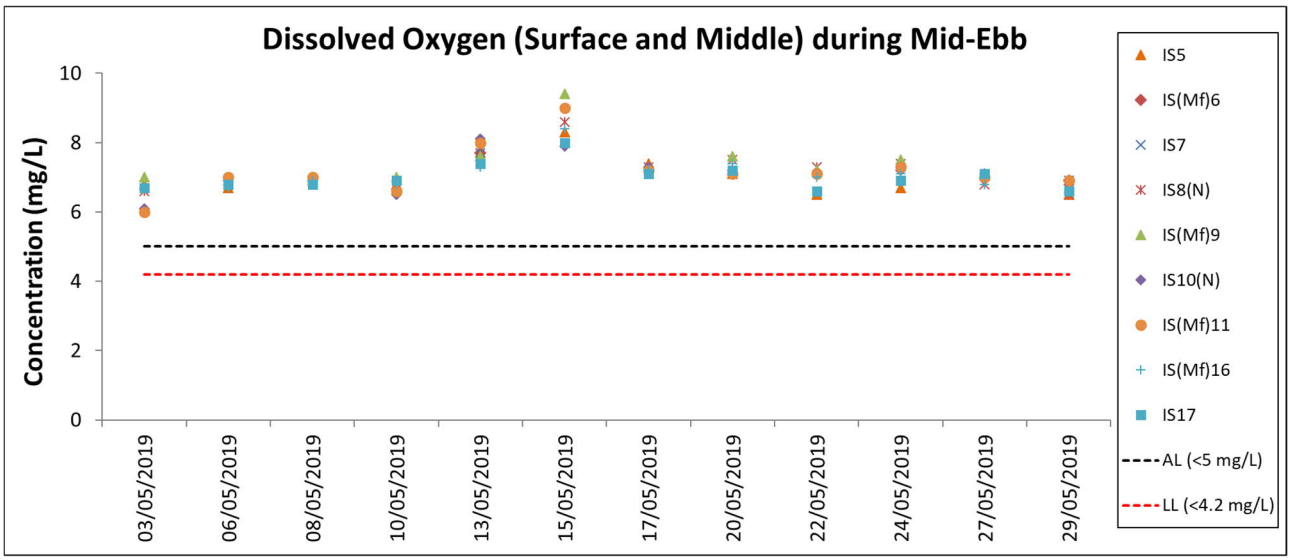

Suspended Solids (Depth-averaged) during Mid-Ebb
Concentration (mg/L)
0
5
10
15
20
25
30
35
03/05/2019
06/05/2019
08/05/2019
10/05/2019
13/05/2019
15/05/2019
17/05/2019
20/05/2019
22/05/2019
24/05/2019
27/05/2019
29/05/2019
SR3(N)
SR4(N2)
SR5(N)
SR6
SR7
SR10A(N)
SR10B(N2)
AL (>23.5 mg/L)
LL (>34.4 mg/L)

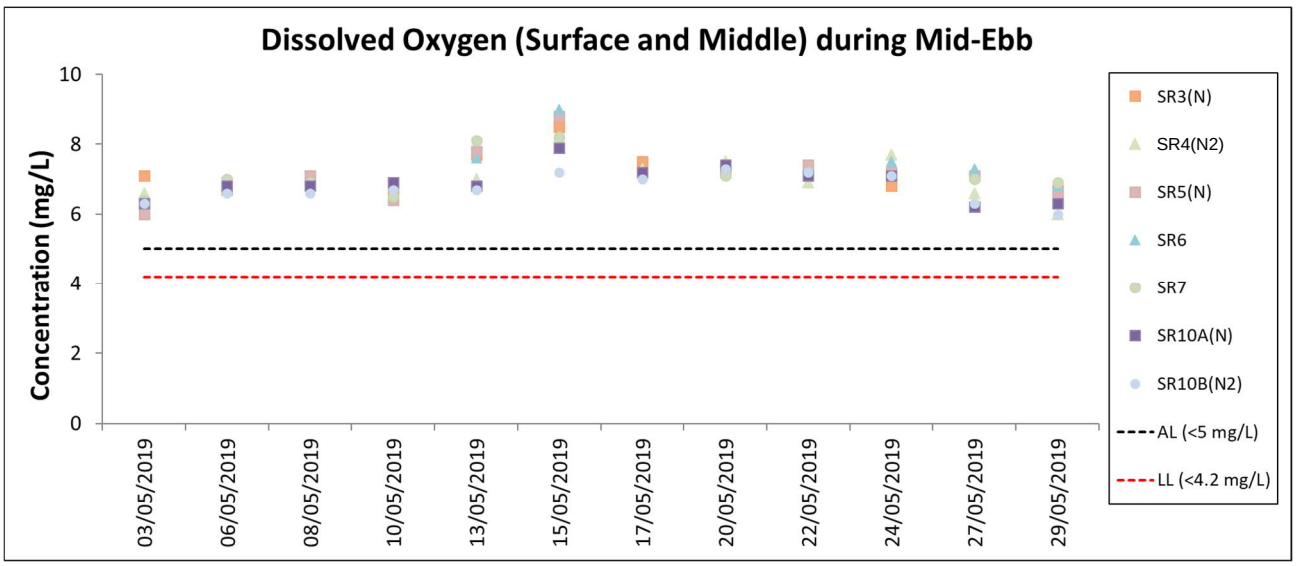

Suspended Solids (Depth-averaged) during Mid-Flood
Concentration (mg/L)
0
5
10
15
20
25
30
35
03/05/2019
06/05/2019
08/05/2019
10/05/2019
13/05/2019
15/05/2019
17/05/2019
20/05/2019
22/05/2019
24/05/2019
27/05/2019
29/05/2019
CS(Mf)3(N)
CS(Mf)5
CS4
CS6
CSA
AL (>23.5 mg/L)
LL (>34.4 mg/L)

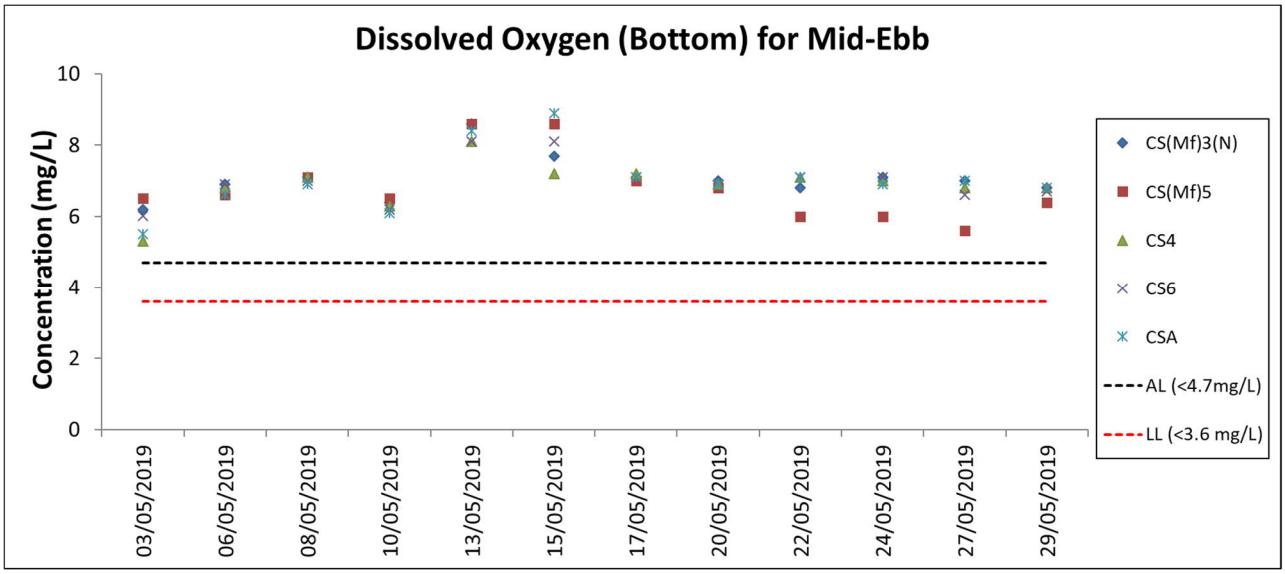

Suspended Solids (Depth-averaged) during Mid-Flood
Concentration (mg/L)
0
5
10
15
20
25
30
35
03/05/2019
06/05/2019
08/05/2019
10/05/2019
13/05/2019
15/05/2019
17/05/2019
20/05/2019
22/05/2019
24/05/2019
27/05/2019
29/05/2019
IS5
IS(Mf)6
IS7
IS8(N)
IS(Mf)9
IS10(N)
IS(Mf)11
IS(Mf)16
IS17
AL (>23.5 mg/L)
LL (>34.4 mg/L)

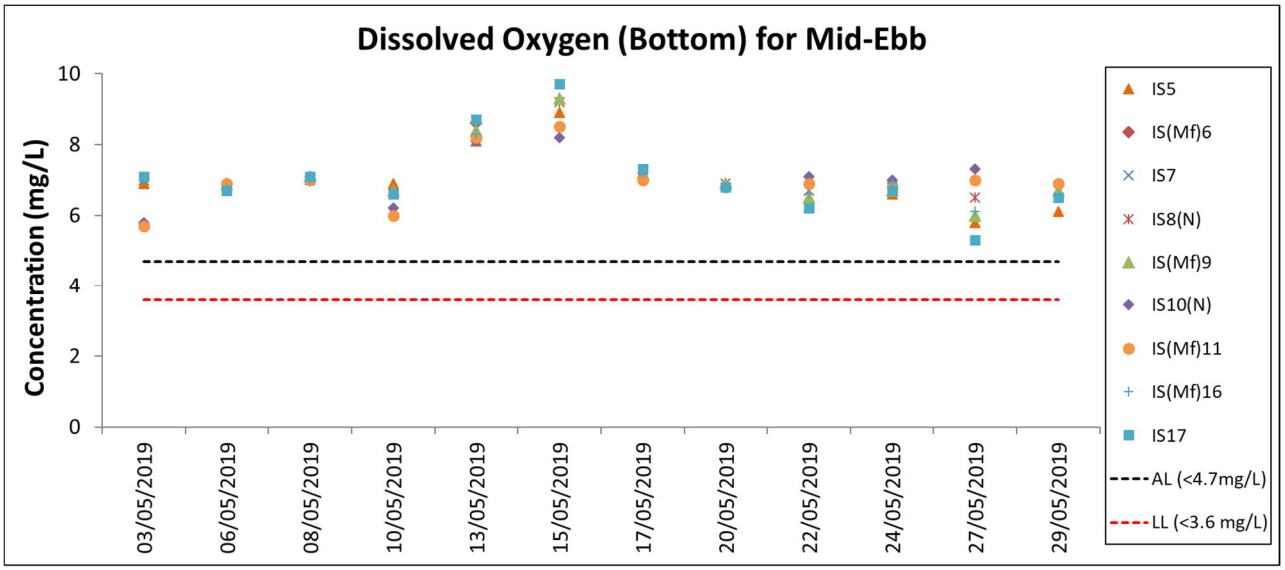

Suspended Solids (Depth-averaged) during Mid-Flood
Concentration (mg/L)
0
5
10
15
20
25
30
35
03/05/2019
06/05/2019
08/05/2019
10/05/2019
13/05/2019
15/05/2019
17/05/2019
20/05/2019
22/05/2019
24/05/2019
27/05/2019
29/05/2019
SR3(N)
SR4(N2)
SR5(N)
SR6
SR7
SR10A(N)
SR10B(N2)
AL (>23.5 mg/L)
LL (>34.4 mg/L)

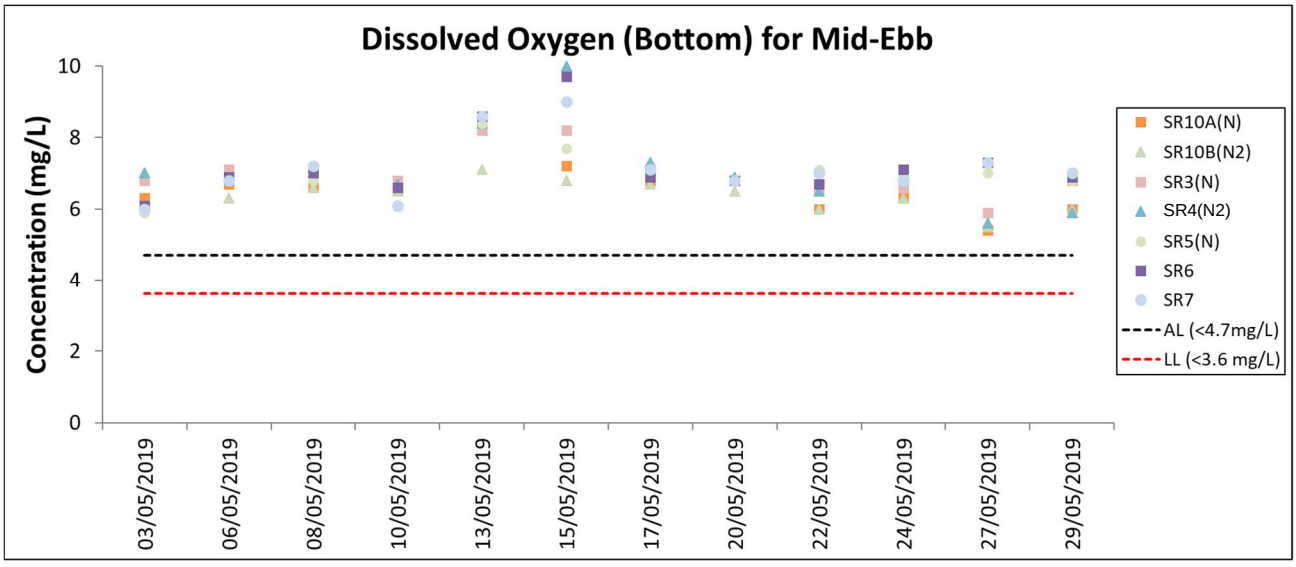

Dissolved Oxygen (Surface and Middle) during Mid-Ebb
Concentration (mg/L)
0
2
4
6
8
10
03/05/2019
06/05/2019
08/05/2019
10/05/2019
13/05/2019
15/05/2019
17/05/2019
20/05/2019
22/05/2019
24/05/2019
27/05/2019
29/05/2019
CS(Mf)3(N)
CS(Mf)5
CS4
CS6
CSA
AL (<5 mg/L)
LL (<4.2 mg/L)

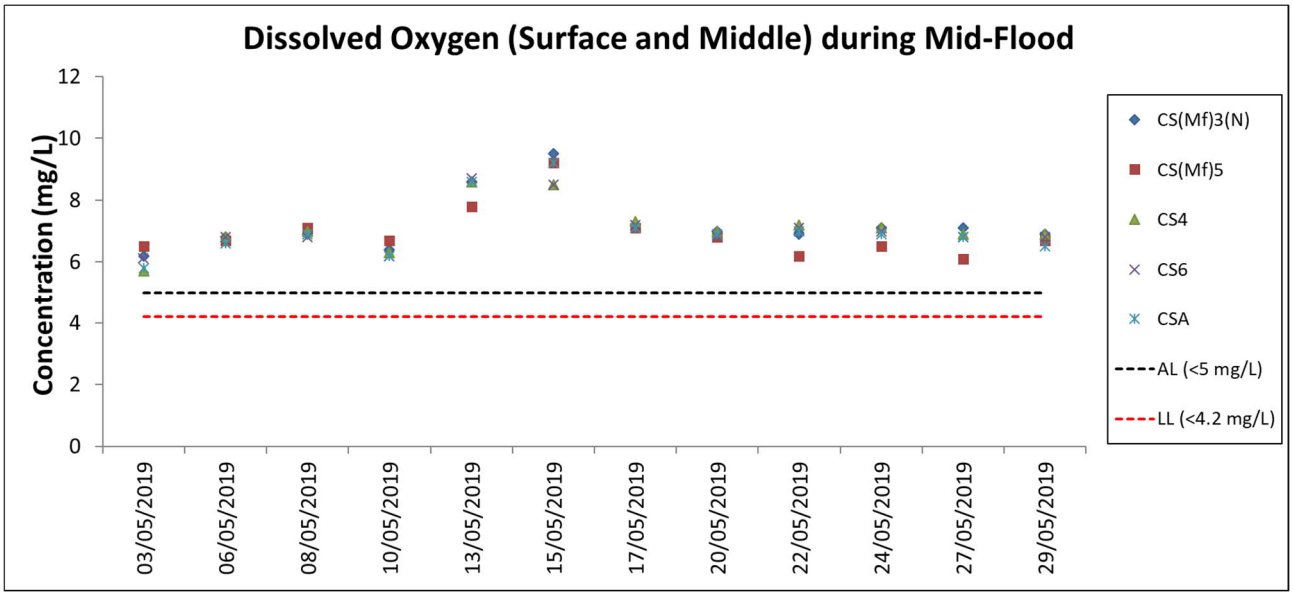

Dissolved Oxygen (Surface and Middle) during Mid-Ebb
Concentration (mg/L)
0
2
4
6
8
10
03/05/2019
06/05/2019
08/05/2019
10/05/2019
13/05/2019
15/05/2019
17/05/2019
20/05/2019
22/05/2019
24/05/2019
27/05/2019
29/05/2019
IS5
IS(Mf)6
IS7
IS8(N)
IS(Mf)9
IS10(N)
IS(Mf)11
IS(Mf)16
IS17
AL (<5 mg/L)
LL (<4.2 mg/L)

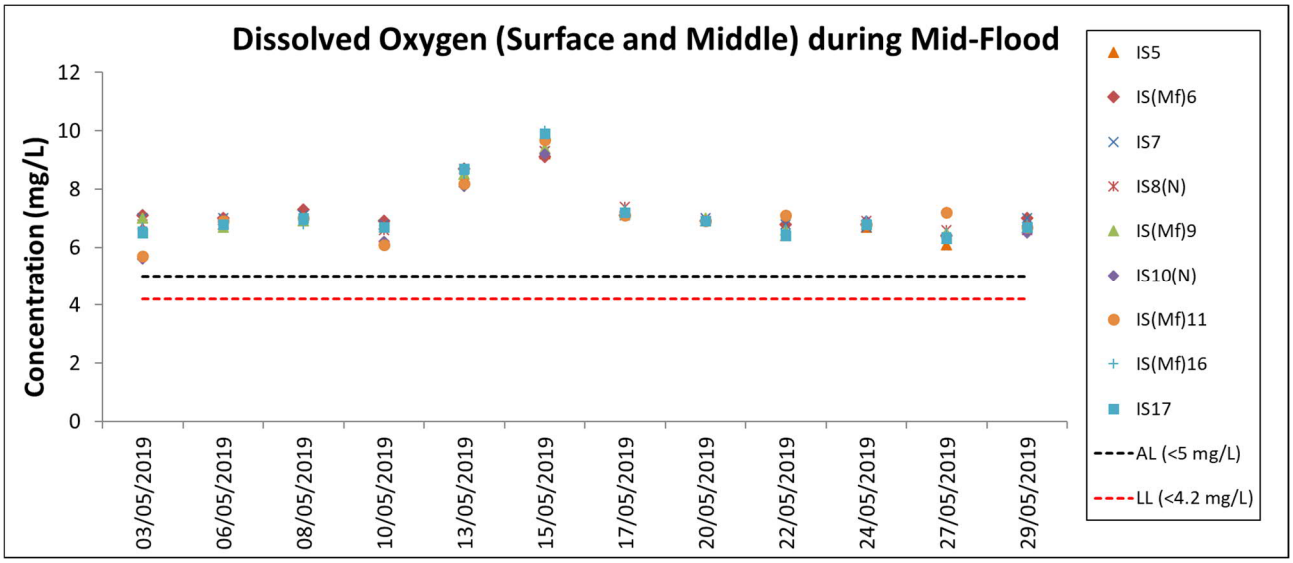

Dissolved Oxygen (Surface and Middle) during Mid-Ebb
Concentration (mg/L)
0
2
4
6
8
10
03/05/2019
06/05/2019
08/05/2019
10/05/2019
13/05/2019
15/05/2019
17/05/2019
20/05/2019
22/05/2019
24/05/2019
27/05/2019
29/05/2019
SR3(N)
SR4(N2)
SR5(N)
SR6
SR7
SR10A(N)
SR10B(N2)
AL (<5 mg/L)
LL (<4.2 mg/L)

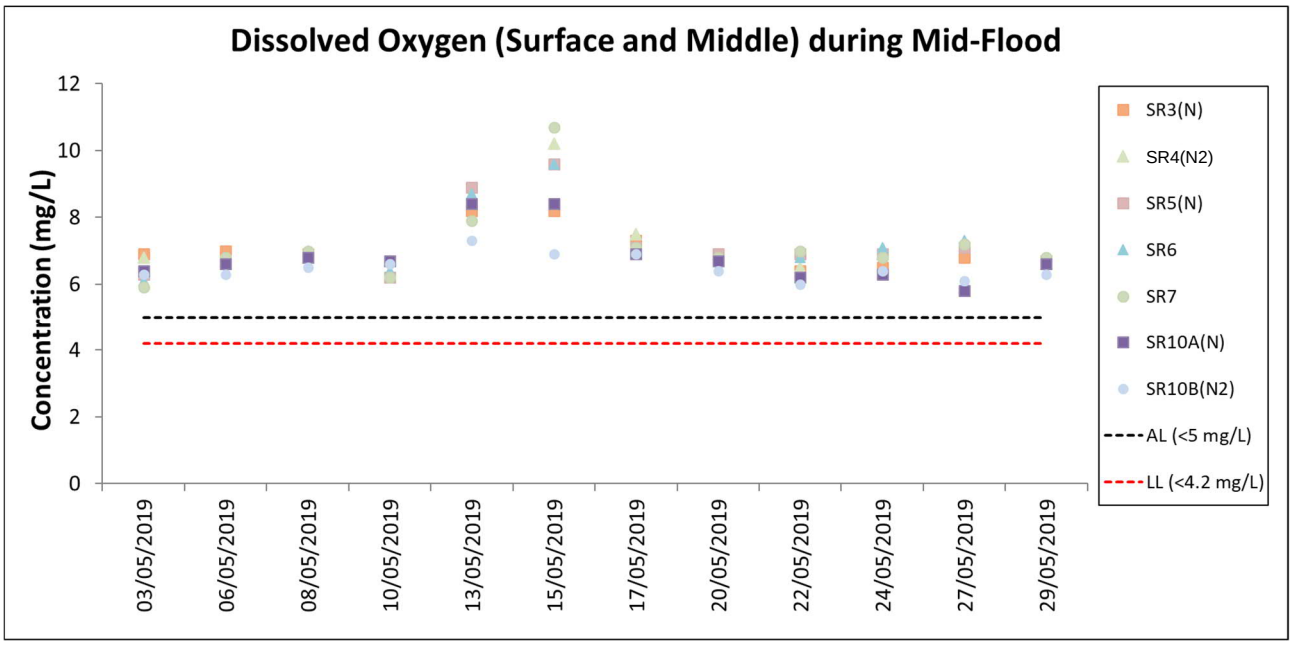

Dissolved Oxygen (Bottom) for Mid-Ebb
Concentration (mg/L)
0
2
4
6
8
10
03/05/2019
06/05/2019
08/05/2019
10/05/2019
13/05/2019
15/05/2019
17/05/2019
20/05/2019
22/05/2019
24/05/2019
27/05/2019
29/05/2019
CS(Mf)3(N)
CS(Mf)5
CS4
CS6
CSA
AL (<4.7mg/L)
LL (<3.6 mg/L)

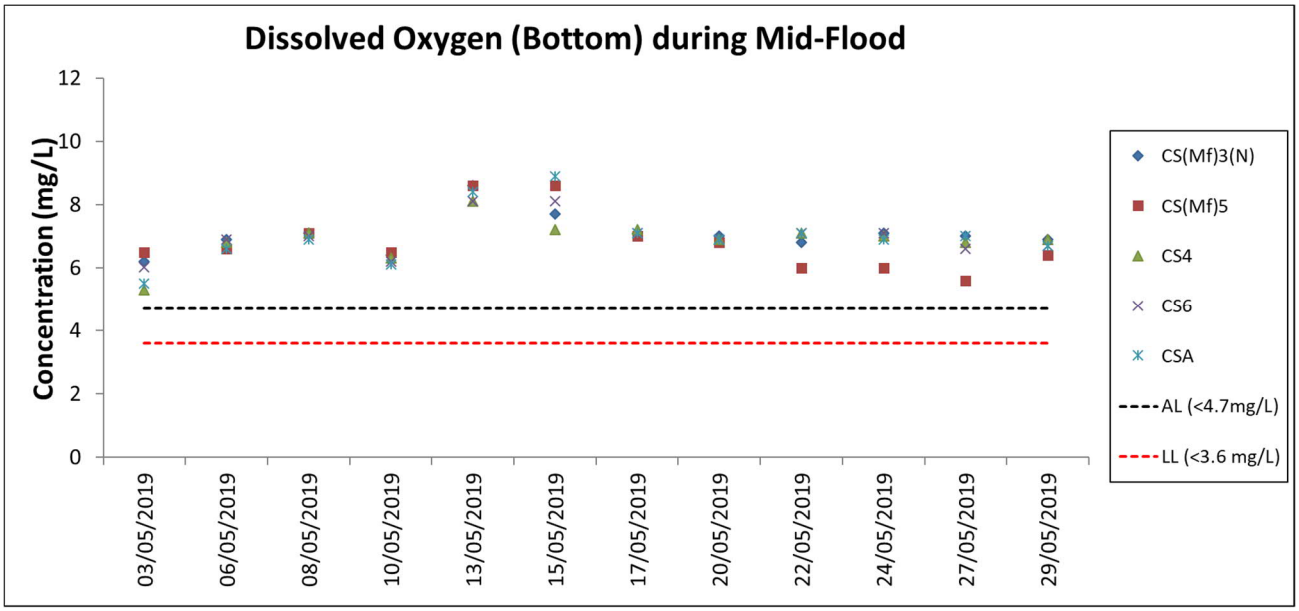

Dissolved Oxygen (Bottom) for Mid-Ebb
Concentration (mg/L)
0
2
4
6
8
10
03/05/2019
06/05/2019
08/05/2019
10/05/2019
13/05/2019
15/05/2019
17/05/2019
20/05/2019
22/05/2019
24/05/2019
27/05/2019
29/05/2019
IS5
IS(Mf)6
IS7
IS8(N)
IS(Mf)9
IS10(N)
IS(Mf)11
IS(Mf)16
IS17
AL (<4.7mg/L)
LL (<3.6 mg/L)

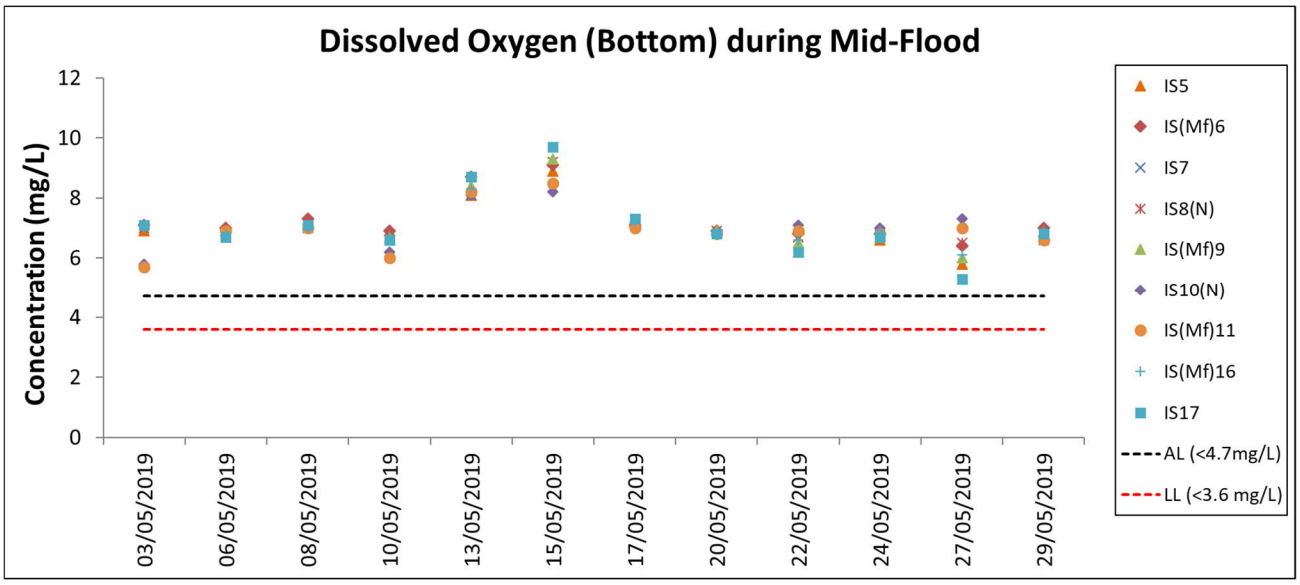

Dissolved Oxygen (Bottom) for Mid-Ebb
Concentration (mg/L)
0
2
4
6
8
10
03/05/2019
06/05/2019
08/05/2019
10/05/2019
13/05/2019
15/05/2019
17/05/2019
20/05/2019
22/05/2019
24/05/2019
27/05/2019
29/05/2019
SR10A(N)
SR10B(N2)
SR3(N)
SR4(N2)
SR5(N)
SR6
SR7
AL (<4.7mg/L)
LL (<3.6 mg/L)

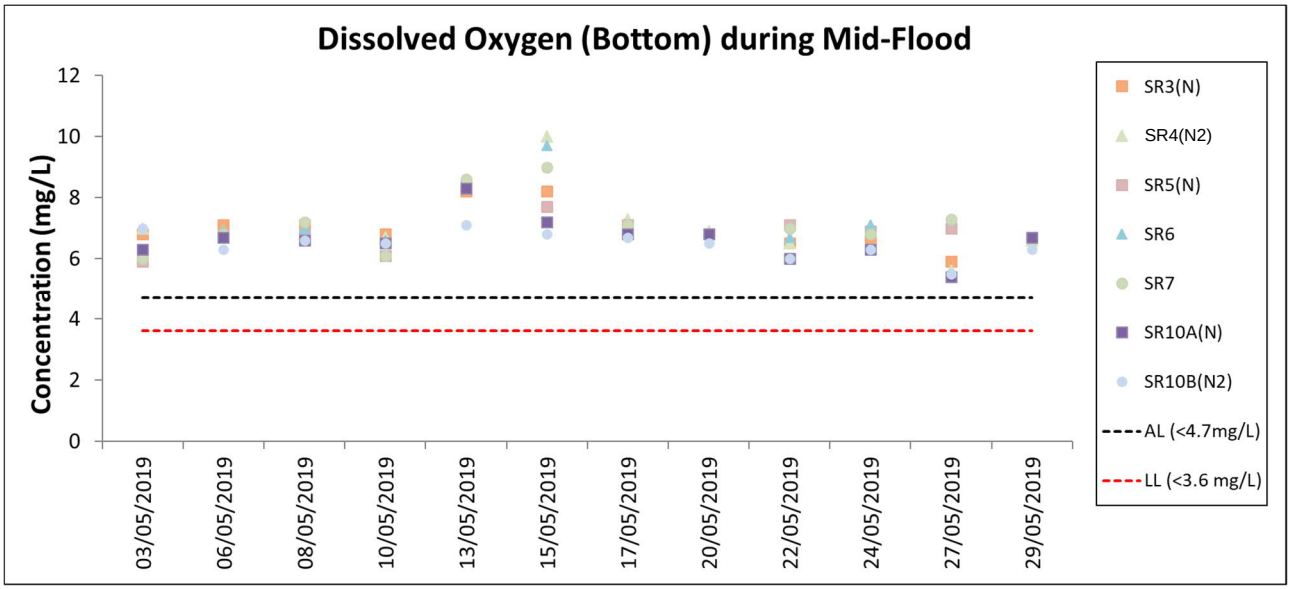

Dissolved Oxygen (Surface and Middle) during Mid-Flood
Concentration (mg/L)
0
2
4
6
8
10
12
03/05/2019
06/05/2019
08/05/2019
10/05/2019
13/05/2019
15/05/2019
17/05/2019
20/05/2019
22/05/2019
24/05/2019
27/05/2019
29/05/2019
CS(Mf)3(N)
CS(Mf)5
CS4
CS6
CSA
AL (<5 mg/L)
LL (<4.2 mg/L)

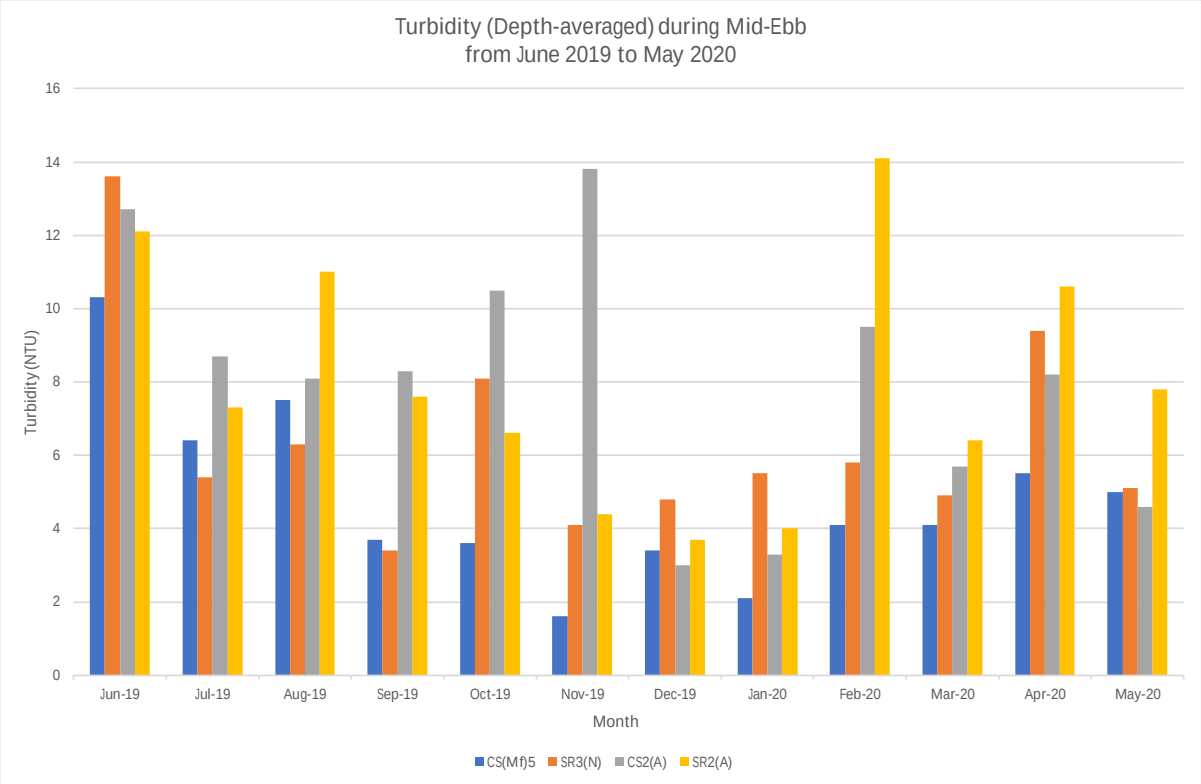

Dissolved Oxygen (Surface and Middle) during Mid-Flood
Concentration (mg/L)
0
2
4
6
8
10
12
03/05/2019
06/05/2019
08/05/2019
10/05/2019
13/05/2019
15/05/2019
17/05/2019
20/05/2019
22/05/2019
24/05/2019
27/05/2019
29/05/2019
IS5
IS(Mf)6
IS7
IS8(N)
IS(Mf)9
IS10(N)
IS(Mf)11
IS(Mf)16
IS17
AL (<5 mg/L)
LL (<4.2 mg/L)

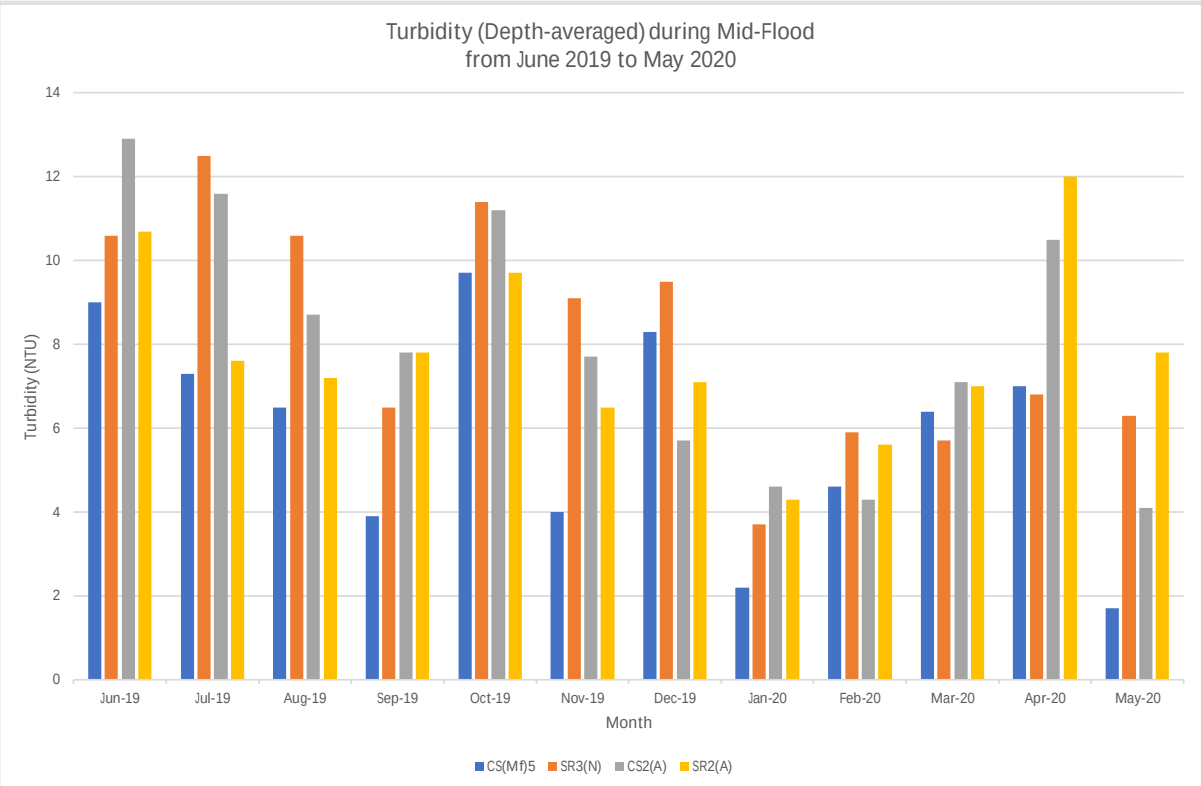

Dissolved Oxygen (Surface and Middle) during Mid-Flood
Concentration (mg/L)
0
2
4
6
8
10
12
03/05/2019
06/05/2019
08/05/2019
10/05/2019
13/05/2019
15/05/2019
17/05/2019
20/05/2019
22/05/2019
24/05/2019
27/05/2019
29/05/2019
SR3(N)
SR4(N2)
SR5(N)
SR6
SR7
SR10A(N)
SR10B(N2)
AL (<5 mg/L)
LL (<4.2 mg/L)


Dissolved Oxygen (Bottom) during Mid-Flood
Concentration (mg/L)
0
2
4
6
8
10
12
03/05/2019
06/05/2019
08/05/2019
10/05/2019
13/05/2019
15/05/2019
17/05/2019
20/05/2019
22/05/2019
24/05/2019
27/05/2019
29/05/2019
CS(Mf)3(N)
CS(Mf)5
CS4
CS6
CSA
AL (<4.7mg/L)
LL (<3.6 mg/L)


Dissolved Oxygen (Bottom) during Mid-Flood
Concentration (mg/L)
0
2
4
6
8
10
12
03/05/2019
06/05/2019
08/05/2019
10/05/2019
13/05/2019
15/05/2019
17/05/2019
20/05/2019
22/05/2019
24/05/2019
27/05/2019
29/05/2019
IS5
IS(Mf)6
IS7
IS8(N)
IS(Mf)9
IS10(N)
IS(Mf)11
IS(Mf)16
IS17
AL (<4.7mg/L)
LL (<3.6 mg/L)


Dissolved Oxygen (Bottom) during Mid-Flood
Concentration (mg/L)
0
2
4
6
8
10
12
03/05/2019
06/05/2019
08/05/2019
10/05/2019
13/05/2019
15/05/2019
17/05/2019
20/05/2019
22/05/2019
24/05/2019
27/05/2019
29/05/2019
SR3(N)
SR4(N2)
SR5(N)
SR6
SR7
SR10A(N)
SR10B(N2)
AL (<4.7mg/L)
LL (<3.6 mg/L)



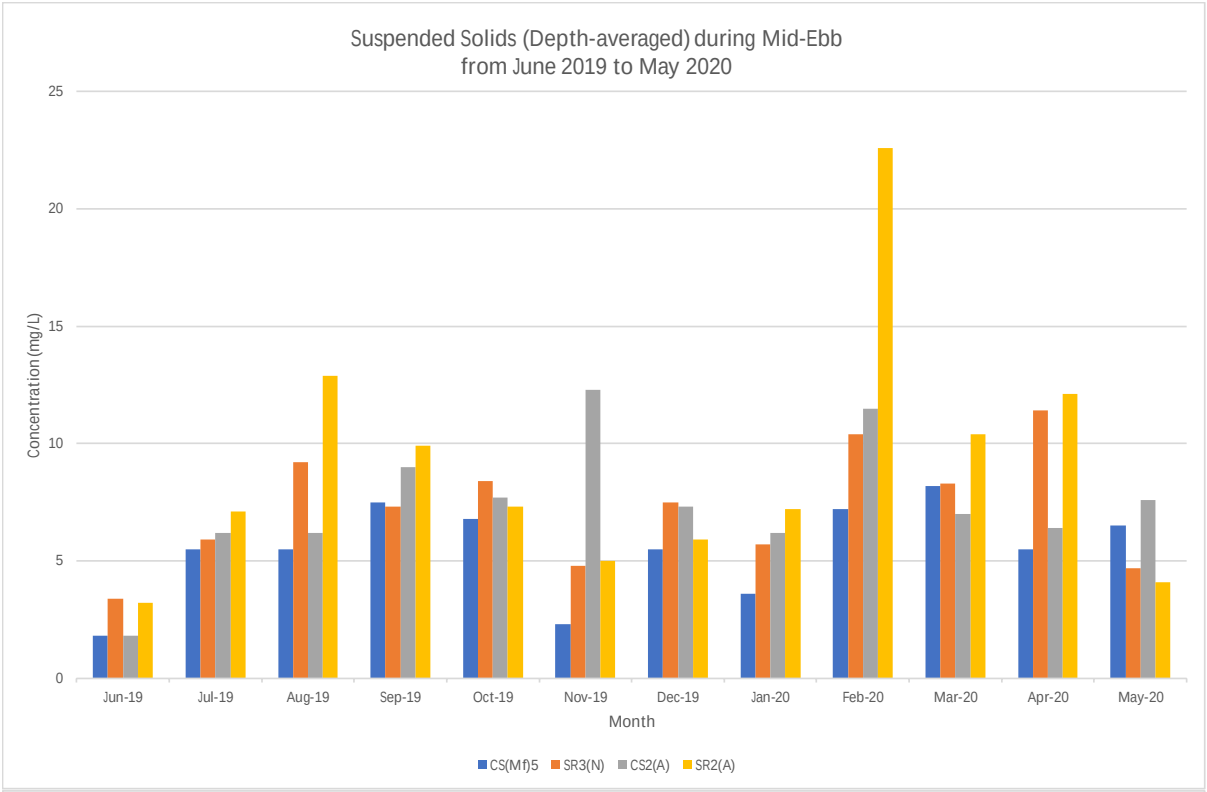



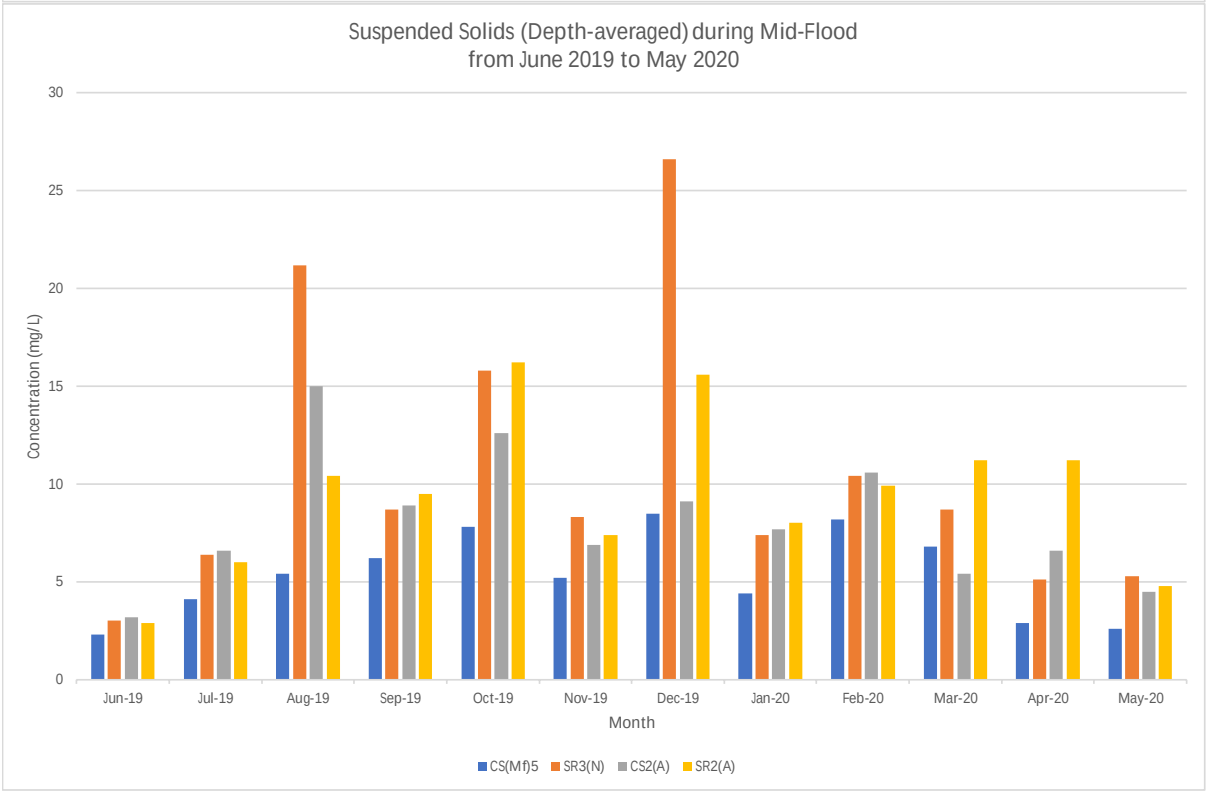

**Major site activities:**

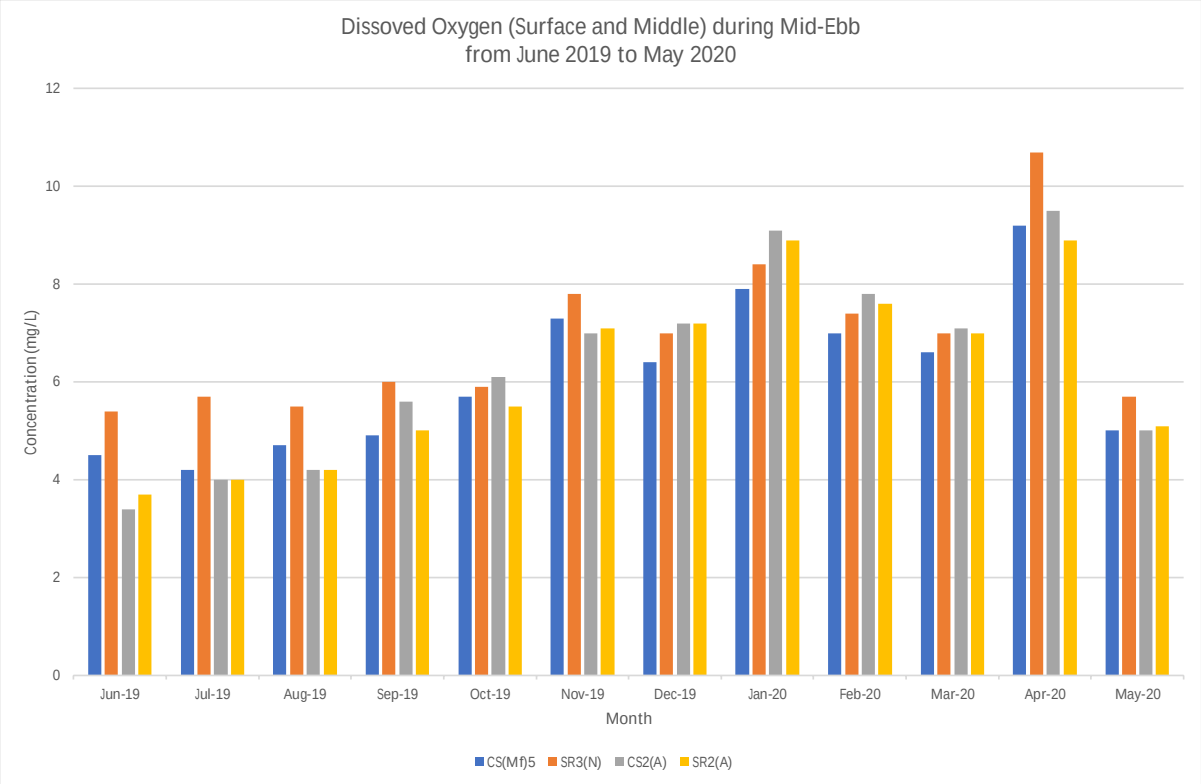
- Site formation and site office construction (Jul 2015 to Mar 2016)
- Pre-drilling and piling works (Jul 2015 to Apr 2017)
- Generation of excavated marine sediment (Feb 2016 to Feb 2017)
- Construction of loading and unloading point (May 2016 to Sep 2016)
- Bridge segment delivery (Jan 2017 to Jan 2018)
- Bridge segment erection (Feb 2017 to Nov 2019)
- Box culvert construction (Apr 2017 to Jan 2018)
- Seawall reinstatement at box culvert outfall (Aug 2018 to Jul 2019)
- Bridge deck construction and roadworks (Aug 2018 to Nov 2019)
- Drainage works, watermains laying, U-channel construction (Aug 2018 to Jan 2020)
- Construction of fill slopes and road embankment (Sep 2018 to Jan 2020)
- Site clearance works (Dec 2019 to May 2020)

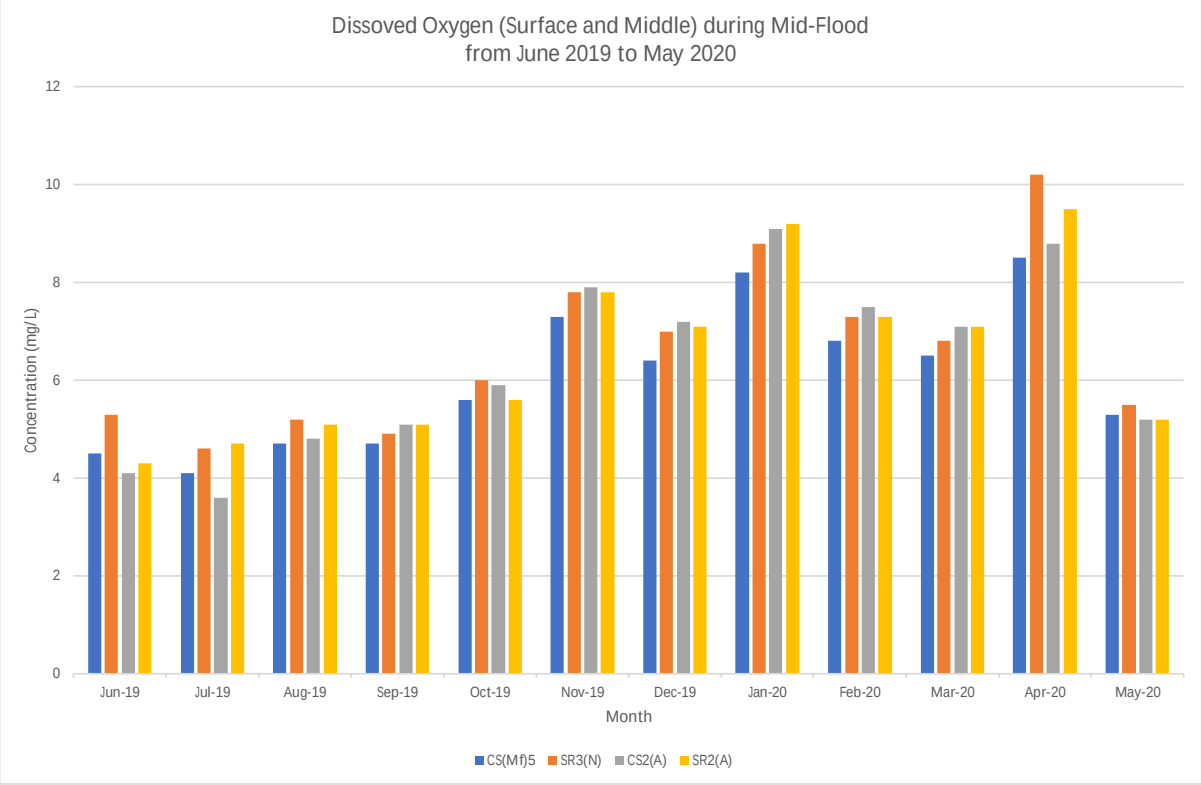
**Weather conditions:**

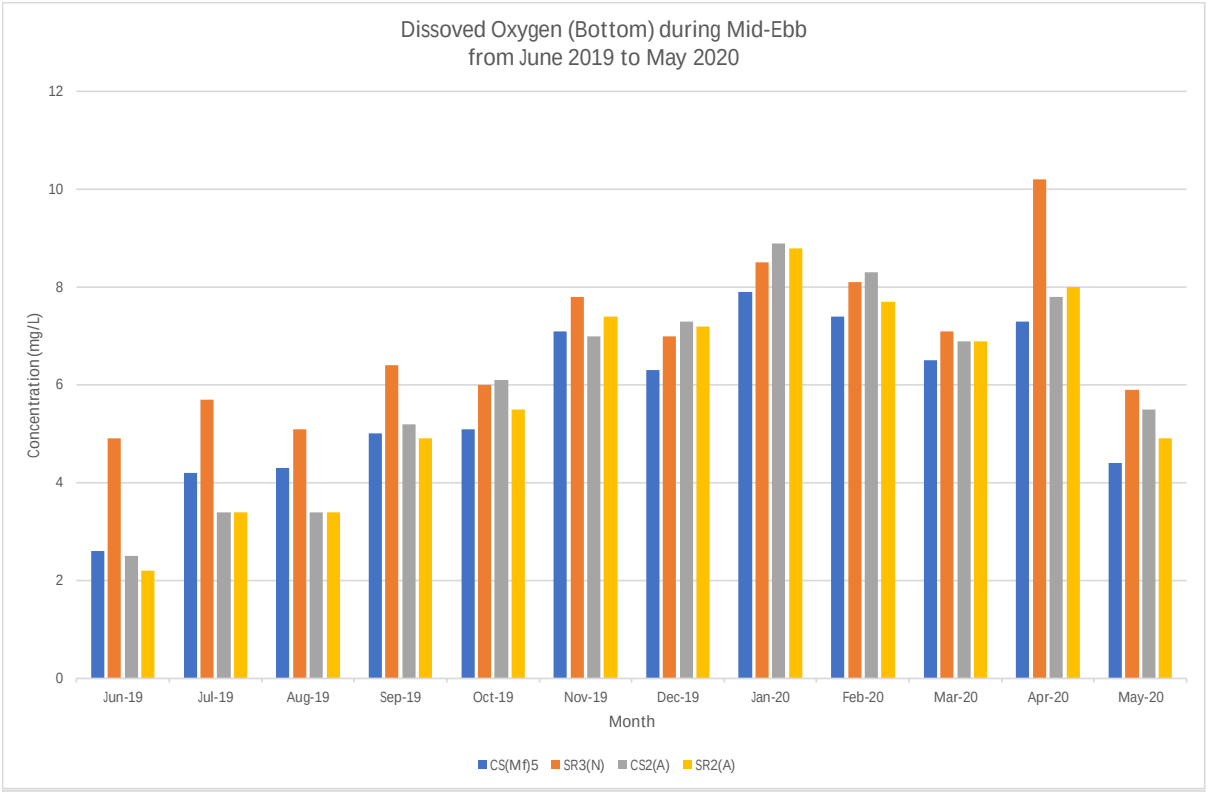
- see Table 7.2 for weather conditions during the reporting period

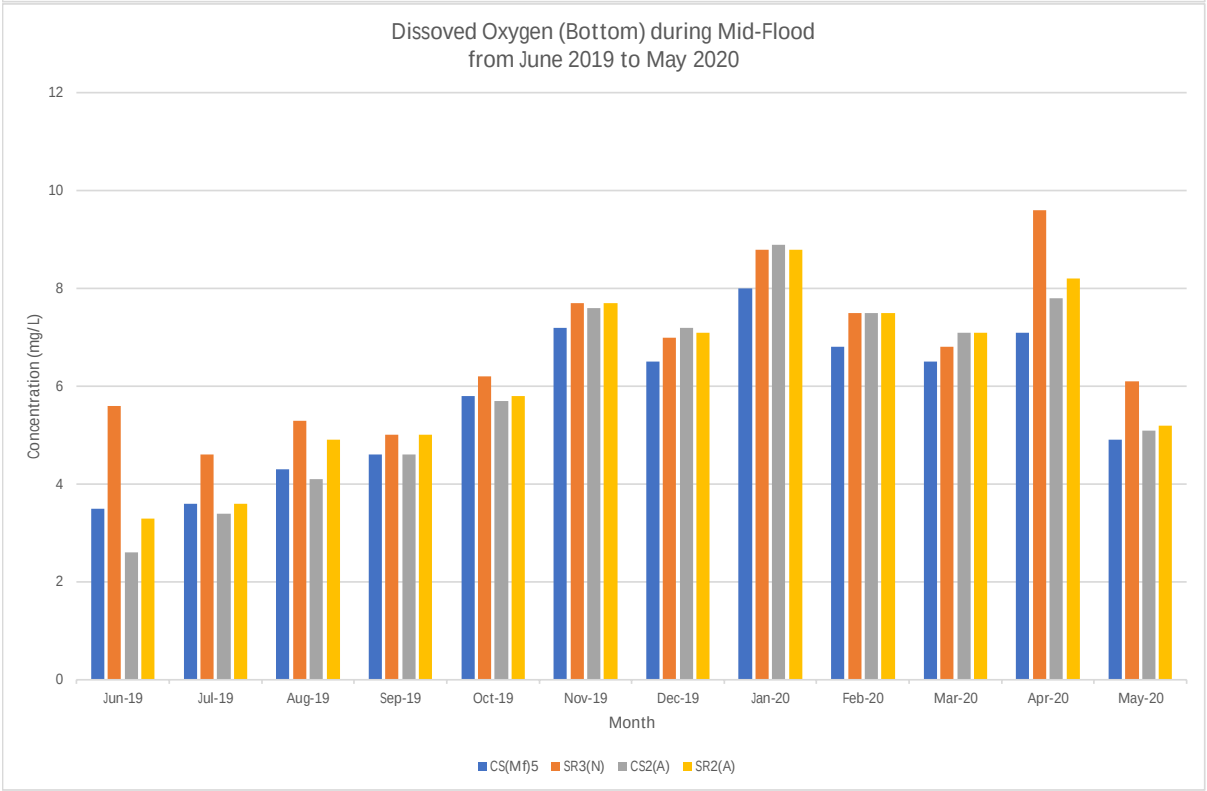

Suspended Solids (Depth-averaged) during Mid-Ebb
from June 2019 to May 2020
Concentration (mg/L)
25
20
15
10
5
0
Jun-19
Jul-19
Aug-19
Sep-19
Oct-19
Nov-19
Dec-19
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Month
CS(Mf)5
SR3(N)
CS2(A)
SR2(A)


Suspended Solids (Depth-averaged) during Mid-Flood
from June 2019 to May 2020
Concentration (mg/L)
30
25
20
15
10
5
0
Jun-19
Jul-19
Aug-19
Sep-19
Oct-19
Nov-19
Dec-19
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Month
CS(Mf)5
SR3(N)
CS2(A)
SR2(A)


Dissoved Oxygen (Surface and Middle) during Mid-Ebb
from June 2019 to May 2020
Concentration (mg/L)
0
2
4
6
8
10
12
Jun-19
Jul-19
Aug-19
Sep-19
Oct-19
Nov-19
Dec-19
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Month
CS(Mf)5
SR3(N)
CS2(A)
SR2(A)


Dissoved Oxygen (Surface and Middle) during Mid-Flood
from June 2019 to May 2020
Concentration (mg/L)
0
2
4
6
8
10
12
Jun-19
Jul-19
Aug-19
Sep-19
Oct-19
Nov-19
Dec-19
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Month
CS(Mf)5
SR3(N)
CS2(A)
SR2(A)


Dissoved Oxygen (Bottom) during Mid-Ebb
from June 2019 to May 2020
Concentration (mg/L)
0
2
4
6
8
10
12
Jun-19
Jul-19
Aug-19
Sep-19
Oct-19
Nov-19
Dec-19
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Month
CS(Mf)5
SR3(N)
CS2(A)
SR2(A)


Dissoved Oxygen (Bottom) during Mid-Flood
from June 2019 to May 2020
Concentration (mg/L)
0
2
4
6
8
10
12
Jun-19
Jul-19
Aug-19
Sep-19
Oct-19
Nov-19
Dec-19
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Month
CS(Mf)5
SR3(N)
CS2(A)
SR2(A)