

**Contract No. HY/2012/08
Tuen Mun – Chek Lap Kok Link –
Northern Connection Sub-sea Tunnel
Section**

*Seventh Annual Environmental Monitoring &
Audit (EM&A) Report*

07 October 2021

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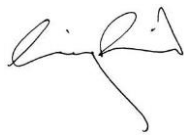
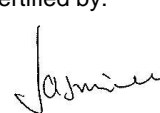


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*Seventh Annual Environmental Monitoring & Audit
(EM&A) Report*

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|--|------------------------------------|--|---------|----------|----------|
| Client: DBJV | | Project No: 0212330 | | | |
| Summary: This document presents the Seventh Annual EM&A Report for Tuen Mun – Chek Lap Kok Link Northern Connection Sub-sea Tunnel Section. | | Date: 07 October 2021 | | | |
| | | Approved by:  | | | |
| | | Mr Craig Reid Partner | | | |
| | | Certified by:  | | | |
| | | Dr Jasmine Ng ET Leader | | | |
| | | | | | |
| | 7 th Annual EM&A Report | VAR | JN | CAR | 07/10/21 |
| Revision | Description | By | Checked | Approved | Date |
| <p>This report has been prepared by Environmental Resources Management the trading name of 'ERM Hong-Kong, Limited', with all reasonable skill, care and diligence within the terms of the Contract with the client, incorporating our General Terms and Conditions of Business and taking account of the resources devoted to it by agreement with the client.</p> <p>We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.</p> | | <p>Distribution</p> <p><input type="checkbox"/> Internal</p> <p><input checked="" type="checkbox"/> Public</p> <p><input type="checkbox"/> Confidential</p> | | | |
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Ref.: HYDHZMBEEM00_0_8574L.21

08 October 2021

AECOM
Supervising Officer Representative's Office
No.8 Mong Fat Street, Tuen Mun,
New Territories, Hong Kong

By Fax (2293 6300) and By Post

Attention: Roger Man

Dear Mr. Man,

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

**Contract No. HY/2012/08 TM-CLKL Northern Connection Sub-sea Tunnel
Section
Seventh Annual Environmental Monitoring & Audit (EM&A) Report**

Reference is made to the Seventh Annual EM&A Report (Nov. 2019 – Oct. 2020) (ET's ref.: "0212330_7th Annual EM&A_20211007.doc" dated 7 October 2021) certified by the ET Leader and provided to us via e-mail on 7 October 2021.

Please be informed that we have no further comments on the captioned Report. However, as mentioned in our letters for the First, Second, Third, Fourth, Fifth and sixth Annual EM&A Report (our ref. HYDHZMBEEM00_0_4359L.16, HYDHZMBEEM00_0_5396L.17, HYDHZMBEEM00_0_6338L.18, HYDHZMBEEM00_0_7021L.18, HYDHZMBEEM00_0_7600L.19 and HYDHZMBEEM00_0_8369L.21), we would like to draw your attention that the ET shall supplement the Report with respect to the following observation:

1. Detailed review, analysis and evaluation of dolphin monitoring data covering annual period as per sections 1.5.1.6 and 12.9.1.1 (vi) of the EM&A Manual for TM-CLKL with level of details not less than the same part in your submitted quarterly EM&A Report and AFCD's annual marine mammal monitoring reports applicable to the dolphin monitoring.

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

Yours sincerely,



Brian Tam
Independent Environmental Checker
Tuen Mun – Chek Lap Kok Link

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c.c. HyD – Mr. Stephen Wong (By Fax: 3188 6614)
HyD – Mr. Tony Wong (By Fax: 3188 6614)
AECOM – Mr. Conrad Ng (By Fax: 3922 9797)
ERM – Dr. Jasmine Ng (By Fax: 2723 5660)
Dragages – Bouygues JV - Mr. Bryan Lee (By Fax: 2293 7499)

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EXECUTIVE SUMMARY

Under *Contract No. HY/2012/08*, Dragages – Bouygues Joint Venture (DBJV) is commissioned by the Highways Department (HyD) to undertake the design and construction of the Northern Connection Sub-sea Tunnel Section of the Tuen Mun – Chek Lap Kok Link Project (TM-CLK Link Project) while AECOM Asia Company Limited was appointed by HyD as the Supervising Officer. For implementation of the environmental monitoring and audit (EM&A) programme under the Contract, ERM-Hong Kong, Limited (ERM) has been appointed as the Environmental Team (ET) in accordance with *Environmental Permit No. EP-354/2009/A*. Ramboll Hong Kong Limited was employed by HyD as the Independent Environmental Checker (IEC) and Environmental Project Office (ENPO). Subsequent applications for variation of environmental permits (VEP), *EP-354/2009/B*, *EP-354/2009/C* and *EP-354/2009/D*, were granted on 28 January 2014, 10 December 2014 and 13 March 2015, respectively.

The construction phase of the Contract commenced on 1 November 2013 and will tentatively be completed in 2020. The impact monitoring of the EM&A programme, including air quality, water quality, marine ecological monitoring and environmental site inspections, were commenced on 1 November 2013.

This is the Seventh Annual EM&A report presenting the EM&A works carried out during the period from 1 November 2019 to 31 October 2020 for the *Contract No. HY/2012/08 Northern Connection Sub-sea Tunnel Section* (the “Contract”) in accordance with the Updated EM&A Manual of the TM-CLK Link Contract. As informed by the Contractor, the major activities in the reporting year included:

Construction Activities Undertaken

Land-based Works

- Construction of Thermal barrier – TBM tunnel;
- Construction of Walkway Corbel & Cover – TBM Tunnel;
- Road & Drainage works – Portion N-A, Portion S-A, Portion S-B, Portion S-C, Northern Landfall;
- Gantry Crane Removal – Portion N-A;
- C&C Tunnel RC structure – Portion S-A;
- Backfilling – Portion S-A & S-C;
- Water Treatment Facilities Dismantling – Portion S-C;
- Roofing System Installation – Portion S-A;
- Fireboard installation – Tunnel;
- UU installation – Portion S-A, S-B & S-C and Northern Landfall;
- Carpark Formation – Portion S-A, S-B & S-C and Northern Landfall;
- Carpark canopies installation – Portion S-A, S-B & S-C;
- Hard paving and footpath – Pump Sump Area at Northern Landfall;
- Installation of green roof system – South Ventilation Building; and
- Reinstatement at Box culvert.

Marine-based Works

- Seawall Modification Works – Portion S-B.
-

A summary of monitoring and audit activities conducted in the reporting period is listed below:

| | |
|--|--------------|
| 24-hour TSP Monitoring | 114 sessions |
| 1-hour TSP Monitoring | 114 sessions |
| Impact Water Quality Monitoring | 25 sessions |
| Impact Dolphin Monitoring | 14 sessions |
| Post-Construction Water Quality Monitoring | 12 sessions |
| Operational Phase Water Quality Monitoring | 5 sessions |
| Operational Phase Dolphin Monitoring | 10 sessions |
| Joint Environmental Site Inspection | 47 sessions |

Implementation of Marine Mammal Exclusion Zone

Daily marine mammal exclusion zone was in effect during the period of silt curtain installation in open waters between November and December 2019. No sighting of the Indo-Pacific humpback dolphin *Sousa chinensis* (i.e. Chinese White Dolphin) was recorded in November and December 2019 during the exclusion zone monitoring.

No marine works were undertaken since 30 December 2019, therefore, daily 250 m marine mammal exclusion zone monitoring was not undertaken since 30 December 2019.

No Passive Acoustic Monitoring (PAM) was implemented in the reporting period.

Summary of Breaches of Action/Limit Levels

Breaches of Action and Limit Levels for Air Quality

Twenty (20) Action Level exceedances and six (6) Limit Level exceedances of 1-hour TSP were recorded in the air quality monitoring of this reporting period. No Action Level and Limit Level exceedances of 24-hour TSP was recorded in the air quality monitoring of this reporting period.

Breaches of Action and Limit Levels for Water Quality

One (1) Action Level exceedance for depth-averaged suspended solids was recorded from the water quality monitoring in this reporting period.

Dolphin Monitoring

Whilst three (3) Limit Level exceedances were recorded for three (3) sets of quarterly impact dolphin monitoring data between November 2019 and May 2020, no unacceptable impact from the construction activities of the TM-CLKL

Northern Connection Sub-sea Tunnel Section on Chinese White Dolphins was noticeable from general observations during dolphin monitoring in this reporting period.

One (1) Limit Level exceedance was recorded for one (1) set of quarterly post-construction (operational) dolphin monitoring data between June and October 2020.

Environmental Complaints, Non-compliance & Summons

No environmental complaint, non-compliance with EIA recommendations, EP conditions and other requirements and environmental summons associated with the construction of this Contract was recorded in this reporting period.

Review of EM&A programme

The EM&A requirements have been reviewed and were considered as adequate and effective. No change to the requirements was considered to be necessary. The recommended environmental mitigation measures were also considered to be effective and efficient in reducing the potential environmental impacts associated with the construction of the Contract. No change was thus considered necessary.

Overall, the EM&A results indicated that the Contract has not caused unacceptable environmental impacts. This is in agreement with the assessment presented in the EIA Report.

1.1

BACKGROUND

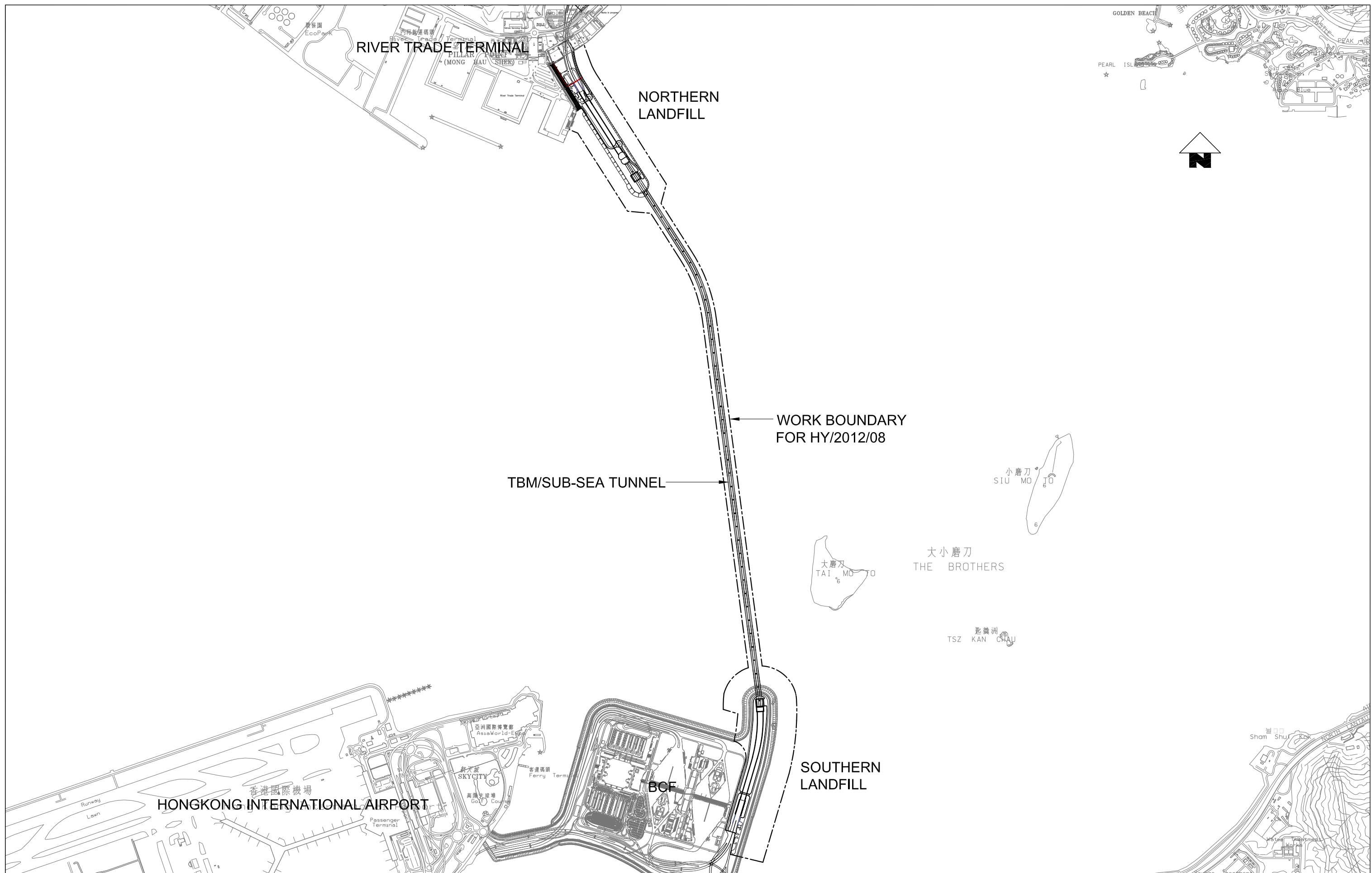
According to the findings of the Northwest New Territories (NWNT) Traffic and Infrastructure Review conducted by the Transport Department, Tuen Mun Road, Ting Kau Bridge, Lantau Link and North Lantau Highway would be operating beyond capacity after 2016. This forecast has been based on the estimated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

An Environmental Impact Assessment (EIA) of TM-CLKL (the Project) was prepared in accordance with the EIA Study Brief (No. ESB-175/2007) and the *Technical Memorandum of the Environmental Impact Assessment Process (EIAO-TM)*. The EIA Report was submitted under the Environmental Impact Assessment Ordinance (EIAO) in August 2009. Subsequent to the approval of the EIA Report (EIAO Register Number AEIAR-146/2009), an Environmental Permit (EP-354/2009) for TM-CLKL was granted by the Director of Environmental Protection (DEP) on 4 November 2009, and EP variation (VEP) (EP-354/2009A) was issued on 8 December 2010. Subsequent applications for variation of environmental permits (VEP), EP-354/2009/B, EP-354/2009/C and EP-354/2009/D, were granted on 28 January 2014, 10 December 2014 and 13 March 2015, respectively.

Under *Contract No. HY/2012/08*, Dragages – Bouygues Joint Venture (DBJV) is commissioned by the Highways Department (HyD) to undertake the design and construction of the Northern Connection Sub-sea Tunnel Section of TM-CLKL while AECOM Asia Company Limited was appointed by HyD as the Supervising Officer. For implementation of the environmental monitoring and audit (EM&A) programme under the Contract, ERM-Hong Kong, Limited (ERM) has been appointed as the Environmental Team (ET). Ramboll Hong Kong Limited was employed by HyD as the Independent Environmental Checker (IEC) and Environmental Project Office (ENPO).

Layout of the Contract components is presented in *Figure 1.1*.

The construction phase of the Contract commenced on 1 November 2013 and will tentatively be completed in 2020. The impact monitoring phase of the EM&A programme, including air quality, water quality, marine ecological monitoring and environmental site inspections, were commenced on 1 November 2013.



| | |
|-------------|-------------|
| Designed By | PKV |
| Drawn By | DAI |
| Approved By | SPo |
| Date | 11SEP2013 |
| Rev. | Description |
| A | FIRST ISSUE |
| | 11SEP13 |
| | PKV |
| | Checked |

Main Contractor

Dragages - Bouygues Joint Venture 寶嘉 - 布依格聯營

Client

HIGHWAYS DEPARTMENT

Contractor's Designer

Arup & Partners
Hong Kong Limited

Project

Contract No. HY/2012/08
Tuen Mun - Chek Lap Kok Link -
Northern Connection Sub-Sea Tunnel Section

Drawing Title

Figure 1.1

| | |
|--------------|---------------------------------|
| Drawing no. | TMCLKL8-DBJ-GEN-DWG-00174 |
| Scale | 1:25000 @ A3 |
| CADD Ref. | TMCLKL8-DBJ-GEN-DWG-00174-DFT-A |
| Issue Status | DFT (DRAFT) |
| Revision | A |

1.2 SCOPE OF REPORT

This is the Seventh Annual EM&A Report under the *Contract No. HY/2012/08 Tuen Mun – Chek Lap Kok Link – Northern Connection Sub-sea Tunnel Section*. This report presents a summary of the environmental monitoring and audit works from 1 November 2019 to 31 October 2020.

1.3 ORGANIZATION STRUCTURE

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

Table 1.1 *Contact Information of Key Personnel*

| Party | Position | Name | Telephone | Fax |
|---|------------------------------|----------------|-----------|-----------|
| Highways Department | Engr 24/SD | Ken T.M. Cheng | 2762 4062 | 3188 6614 |
| SOR (AECOM Asia Company Limited) | Chief Resident Engineer | Roger Man | 2293 6388 | 2293 6300 |
| ENPO / IEC (Ramboll Hong Kong Ltd.) | ENPO Leader | Y.H. Hui | 3465 2850 | 3465 2899 |
| | IEC | Manson Yeung | 9700 6767 | 3465 2899 |
| Contractor (Dragages – Bouygues Joint Venture) | Deputy Environmental Manager | Bryan Lee | 2293 7323 | 2293 7499 |
| | 24-hour hotline | | 2293 7330 | |
| ET (ERM-HK) | ET Leader | Jasmine Ng | 2271 3311 | 2723 5660 |

1.4 SUMMARY OF CONSTRUCTION WORKS

With reference to DBJV's information, details of major construction works carried out in this reporting period are summarized in *Table 1.2*.

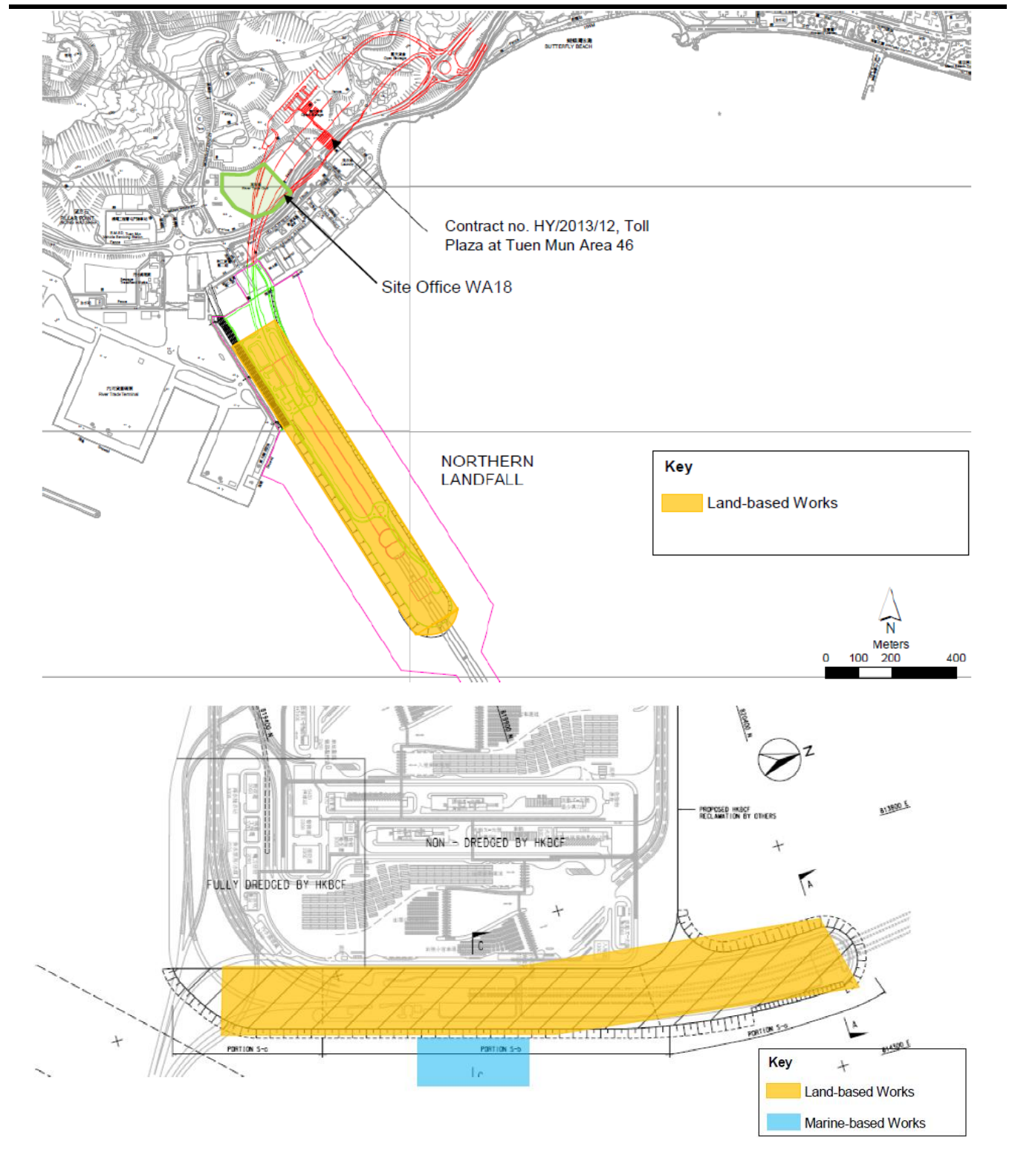
The general layout plan of the site showing the detailed works areas is shown in *Figure 1.2*. The Environmental Sensitive Receivers in the vicinity of the Project are shown in *Figure 1.3*.

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

Table 1.2 Summary of Construction Activities Undertaken during the Reporting Period

| Construction Activities Undertaken |
|--|
| <i>Land-based Works</i> |
| <ul style="list-style-type: none"> • Construction of Thermal barrier – TBM tunnel; • Construction of Walkway Corbel & Cover – TBM Tunnel; • Road & Drainage works – Portion N-A, Portion S-A, Portion S-B, Portion S-C, Northern Landfall; • Gantry Crane Removal – Portion N-A; • C&C Tunnel RC structure – Portion S-A; • Backfilling – Portion S-A & S-C; • Water Treatment Facilities Dismantling – Portion S-C; • Roofing System Installation – Portion S-A; • Fireboard installation –Tunnel; • UU installation - Portion S-A, S-B & S-C and Northern Landfall; • Carpark Formation - Portion S-A, S-B & S-C and Northern Landfall; • Carpark canopies installation - Portion S-A, S-B & S-C; • Hard paving and footpath - Pump Sump Area at Northern Landfall; • Installation of green roof system - South Ventilation Building; and • Reinstatement at Box culvert. |
| <i>Marine-based Works</i> |
| <ul style="list-style-type: none"> • Seawall Modification Works – Portion S-B. |

Figure 1.2 Locations of Construction Activities – November 2019 to October 2020



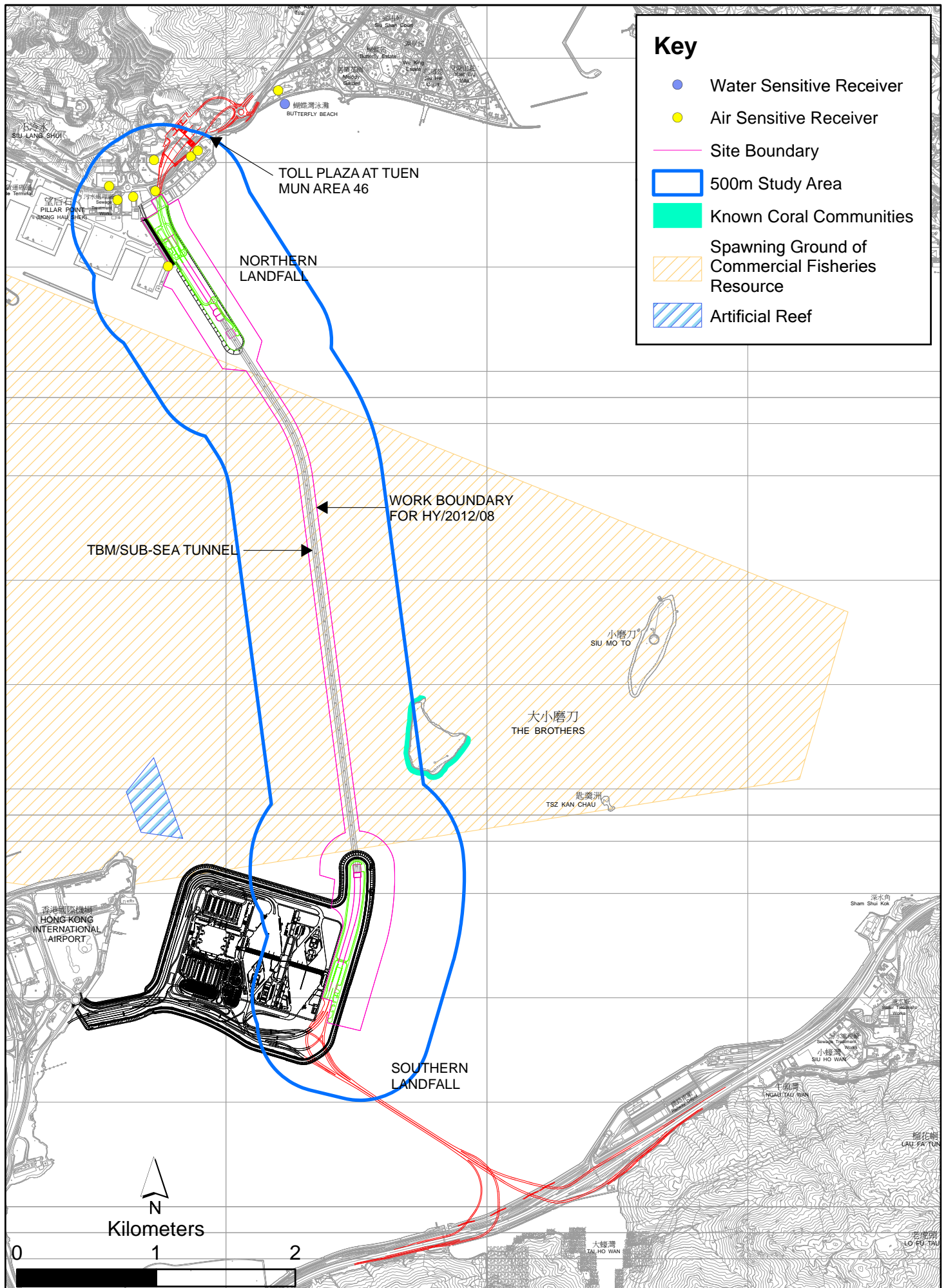


Figure 1.3 Environmental Sensitive Receivers in the vicinity of Contract No. HY/2012/08 Tuen Mun - Chek Lap Kok Link - Northern Connection Sub-Sea Tunnel Section

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

2.1 AIR QUALITY

2.1.1 *Monitoring Requirements and Equipment*

In accordance with the Updated EM&A Manual and the *Enhanced TSP Monitoring Plan* ⁽¹⁾, impact 1-hour TSP monitoring was conducted three (3) times in every six (6) days and impact 24-hour TSP monitoring was carried out once in every six (6) days when the highest dust impact was expected. 1-hr and 24-hr TSP monitoring frequency was increased to three times per day every three days and daily every three days respectively as excavation works for launching shaft commenced on 24 October 2014.

Excavation works for launching shaft were completed and notification of change on air quality monitoring frequency was submitted to EPD on 14 September 2020. 1-hr and 24-hr TSP monitoring frequency was changed to three times per day every six days and daily every six days, respectively, since 14 September 2020.

High volume samplers (HVSs) were used to carry out the 1-hour and 24-hour TSP monitoring in the reporting period at the five (5) air quality monitoring stations in accordance with the requirements stipulated in the Updated EM&A Manual (*Figure 2.1; Table 2.1*). Wind anemometer was installed at the rooftop of ASR5 for logging wind speed and wind direction. Details of the equipment deployed are provided in *Table 2.2*.

(1) ERM (2013) Enhanced TSP Monitoring Plan. Submitted on 28 October 2013 and subsequently approved by EPD on 1 November 2013.

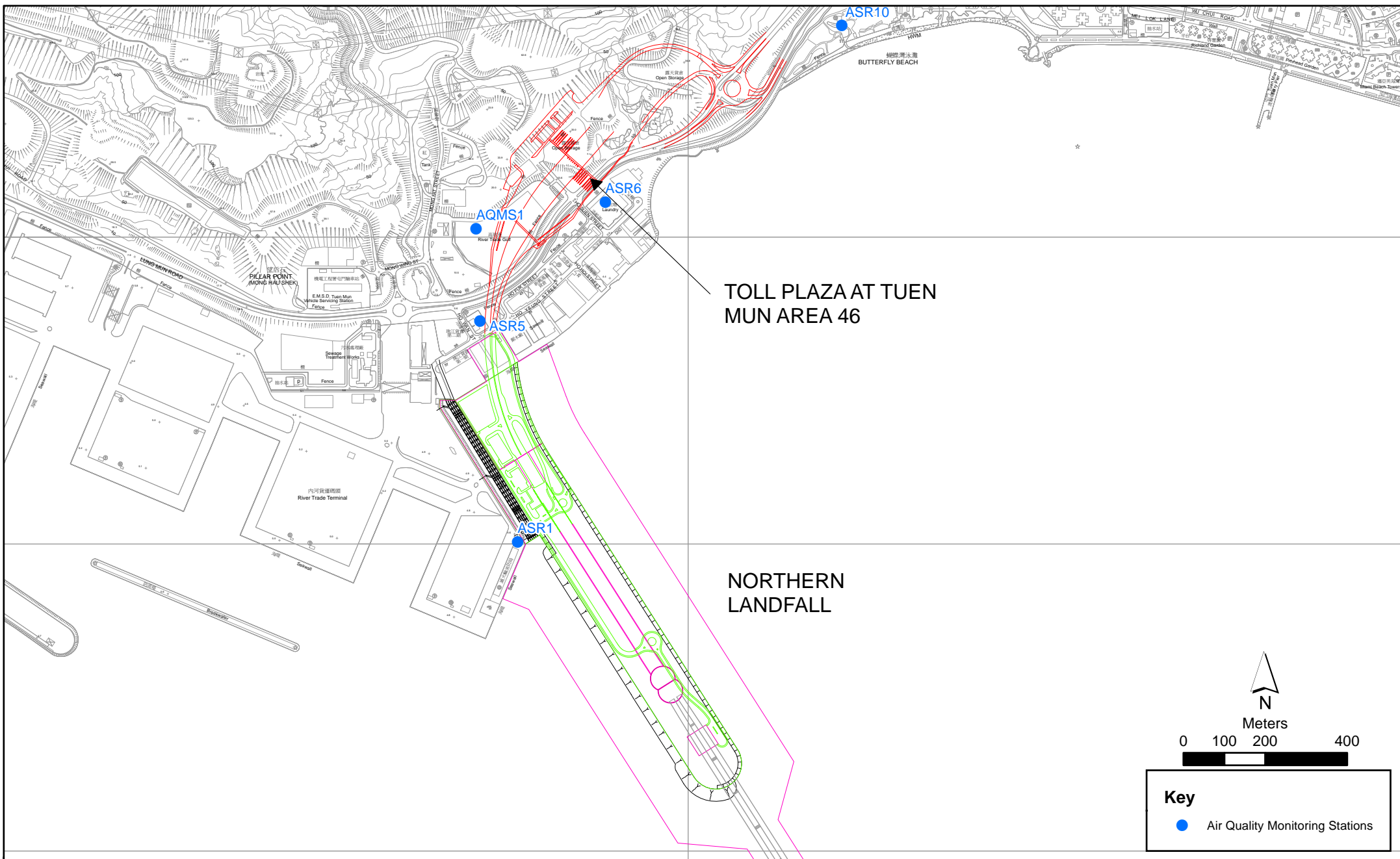


Figure 2.1

Air Quality Monitoring Stations for the Enhanced TSP Monitoring

Table 2.1 *Locations of Impact Air Quality Monitoring Stations and Monitoring Dates in this Reporting Period*

| Monitoring Station | Location | Description | Parameters & Frequency |
|---------------------------|---------------------------|--------------------|---|
| ASR1 | Tuen Mun Fireboat Station | Office | TSP monitoring |
| ASR5 | Pillar Point Fire Station | Office | <ul style="list-style-type: none"> 1-hour Total Suspended Particulates (1-hour TSP, $\mu\text{g}/\text{m}^3$), 3 times in every 6 days |
| AQMS1 | Previous River Trade Golf | Bare ground | <ul style="list-style-type: none"> 24-hour Total Suspended Particulates (24-hour TSP, $\mu\text{g}/\text{m}^3$), daily for 24-hour in every 6 days |
| ASR6 | Butterfly Beach Laundry | Office | |
| ASR10 | Butterfly Beach Park | Recreational uses | Enhanced TSP monitoring (commenced on 24 October 2014) <ul style="list-style-type: none"> 1-hour Total Suspended Particulates (1-hour TSP, $\mu\text{g}/\text{m}^3$), 3 times in every 3 days 24-hour Total Suspended Particulates (24-hour TSP, $\mu\text{g}/\text{m}^3$), daily for 24-hour in every 3 days |

Table 2.2 *Air Quality Monitoring Equipment*

| Equipment | Brand and Model |
|--|--|
| High Volume Sampler (1-hour TSP and 24-hour TSP) | Tisch Environmental Mass Flow Controlled Total Suspended Particulate (TSP) High Volume Sampler (Model No. TE-5170) |
| Wind Meter | Davis (Model: Vantage Pro 2 (S/N: AS160104014)) |
| Wind Anemometer for calibration | Lutron (Model No. AM-4201) |

2.1.2 *Action & Limit Levels*

The Action and Limit Levels of the air quality monitoring are provided in *Appendix C*. The Event and Action plan is presented in *Appendix F*.

2.1.3 *Results and Observations*

Impact air quality monitoring was conducted at all designated monitoring stations in the reporting period under acceptable weather conditions. The major dust sources in the reporting period include construction activities under the Contract as well as nearby traffic emissions.

The monitoring results for 1-hour TSP and 24-hour TSP are summarized in *Tables 2.3* and *2.4*, respectively. Baseline and impact monitoring results are presented graphically in *Appendix D*. The detailed impact air quality monitoring data and meteorological information were reported in the *Seventy-Third to Eighty-Fourth Monthly EM&A Reports*.

Table 2.3 Summary of 1-hour TSP Monitoring Results in this Reporting Period

| Month/Year | Station | Average ($\mu\text{g}/\text{m}^3$) | Range ($\mu\text{g}/\text{m}^3$) | Action Level ($\mu\text{g}/\text{m}^3$) | Limit Level ($\mu\text{g}/\text{m}^3$) |
|------------------|---------|--------------------------------------|------------------------------------|---|--|
| November 2019 to | ASR 1 | 131 | 13 - 747 | 331 | 500 |
| | ASR 5 | 155 | 13 - 534 | 340 | 500 |
| October 2020 | AQMS1 | 101 | 13 - 303 | 335 | 500 |
| | ASR6 | 113 | 14 - 1454 | 338 | 500 |
| | ASR10 | 69 | 13 - 407 | 337 | 500 |

Table 2.4 Summary of 24-hour TSP Monitoring Results in this Reporting Period

| Month/Year | Station | Average ($\mu\text{g}/\text{m}^3$) | Range ($\mu\text{g}/\text{m}^3$) | Action Level ($\mu\text{g}/\text{m}^3$) | Limit Level ($\mu\text{g}/\text{m}^3$) |
|------------------|---------|--------------------------------------|------------------------------------|---|--|
| November 2019 to | ASR 1 | 83 | 22 - 207 | 213 | 260 |
| | ASR 5 | 91 | 30 - 196 | 238 | 260 |
| October 2020 | AQMS1 | 61 | 24 - 131 | 213 | 260 |
| | ASR6 | 68 | 20 - 149 | 238 | 260 |
| | ASR10 | 48 | 18 - 138 | 214 | 260 |

In this reporting period, a total of 114 monitoring events were undertaken. Twenty (20) Action Level exceedances and six (6) Limit Level exceedances of 1-hour TSP were recorded in the air quality monitoring in this reporting period. No Action Level and Limit Level exceedances of 24-hour TSP was recorded in the air quality monitoring in this reporting period. Summary of exceedances for Air Quality Impact Monitoring in this reporting period is detailed in *Table 2.15*.

As shown in *Table 2.5*, the annual average 1-hour TSP and 24-hour TSP level in the reporting period were generally lower than the corresponding average levels of baseline at most monitoring stations. The annual average 1-hour TSP was higher than the corresponding average levels of baseline at ASR1 and ASR5.

In order to determine any significant air quality impacts caused by construction activities from this Contract, one-way ANOVA (with setting α at 0.05) was conducted to examine whether the observed differences are significant between reporting period and baseline monitoring. For 1-hour TSP, the average results of monitoring stations AQMS1, ASR6 and ASR10 in the reporting period were significantly lower than the average results of baseline monitoring while the average results of monitoring stations ASR1 and ASR5 in the reporting period were slightly higher than the average results of baseline monitoring (AQMS1: $F_{1,383} = 15.44, p < 0.01$, ASR6: $F_{1,383} = 2.18, p = 0.141$, ASR1: $F_{1,374} = 0.188, p = 0.665$, ASR10: $F_{1,383} = 98.13, p < 0.01$ and ASR5: $F_{1,383} = 1.93, p = 0.166$). For 24-hour TSP, the average results of all monitoring stations in the reporting period were significantly lower than the average results of baseline monitoring (AQMS1: $F_{1,131} = 92.66, p < 0.01$, ASR6: $F_{1,131} = 136.02, p < 0.01$, ASR1: $F_{1,126} = 13.43, p < 0.01$, ASR10: $F_{1,131} = 150.81, p < 0.01$ and ASR5: $F_{1,131} = 48.48, p < 0.01$). In the reporting period, 1-hour and 24-hour TSP were varied across sampling months (see *Appendix D*) and these variations were however not consistent throughout the reporting period.

Table 2.5 Summary of Average Levels of TSP Level of Baseline Monitoring and Reporting Period (in $\mu\text{g}/\text{m}^3$)

| Monitoring Station | Average Baseline Monitoring | Average Impact Monitoring |
|--------------------|-----------------------------|---------------------------|
| ASR1(1-hour TSP) | 125 | 131 |
| ASR1(24-hour TSP) | 128 | 83 |
| ASR5(1-hour TSP) | 138 | 155 |
| ASR5(24-hour TSP) | 167 | 91 |
| AQMS1(1-hour TSP) | 131 | 101 |
| AQMS1(24-hour TSP) | 127 | 61 |
| ASR6(1-hour TSP) | 135 | 113 |
| ASR6(24-hour TSP) | 166 | 68 |
| ASR10(1-hour TSP) | 134 | 69 |
| ASR10(24-hour TSP) | 129 | 48 |

Further to the One-way ANOVA, Linear Regression was conducted to examine any relationship between TSP levels and time (i.e. number of days after construction works commencement) during this yearly monitoring period at each monitoring station. Linear regression analysis makes assumptions of equal variance and normal distribution of data. Therefore, the significance level of the test was set at 1 % (i.e. $p = 0.01$) to reduce the chance of committing a Type 1 error. If a significant regression relationship was found between TSP level and time (i.e. $p < 0.01$), r^2 value from the analysis would be further assessed. This value represents the proportion of the total variation in the dependent variable (i.e. TSP level) that is accounted for by the fitted regression line and is referred to as the coefficient of determination. An r^2 value of 1 indicates a perfect relationship (or fit) whereas a value of 0 indicates that there is no relationship (or no fit) between the dependent and independent variables. As there are no specific criteria to indicate how meaningful an r^2 value is, for the purposes of this EM&A programme a value of 0.60 was adopted to indicate a meaningful regression. If $r^2 < 0.60$ then it was considered that there was a weak relationship between TSP level and time or none at all. If the regression analysis indicated $r^2 > 0.60$ then it had been interpreted that there was in fact a strong relationship between the dependent and independent variables (i.e. a strong temporal trend of increasing / decreasing TSP level with time).

As shown in Table 2.6, results of the regression analysis indicated that there was no significant ($r^2 < 0.60$) relationship between TSP level and time during this yearly monitoring period. As such, it is considered that there is no apparent trend of increasing / decreasing TSP level during the reporting period.

Table 2.6 Linear Regression Result of TSP Monitoring

| Parameter | Station | R ² | F-ratio | p-value | Intercept | Coefficient |
|-------------|---------|----------------|--------------------|--------------|-----------|-------------|
| 1-hour TSP | AQMS1 | <u>0.124</u> | $F_{1,341} = 48.3$ | <0.001 | 500.2 | -0.169 |
| | ASR6 | <u>0.001</u> | $F_{1,341} = 0.36$ | <u>0.126</u> | 186.0 | -0.031 |
| | ASR1 | <u>0.137</u> | $F_{1,332} = 52.3$ | <0.001 | 960.0 | -0.351 |
| | ASR10 | <u>0.106</u> | $F_{1,341} = 40.4$ | <0.001 | 379.1 | -0.131 |
| | ASR5 | <u>0.141</u> | $F_{1,341} = 55.6$ | <0.001 | 875.3 | -0.304 |
| 24-hour TSP | AQMS1 | <u>0.261</u> | $F_{1,117} = 41.0$ | <0.001 | 337.2 | -0.117 |
| | ASR6 | <u>0.236</u> | $F_{1,117} = 37.8$ | <0.001 | 403.8 | -0.142 |

| Parameter | Station | R ² | F-ratio | p-value | Intercept | Coefficient |
|-----------|---------|----------------|---------------------------|---------|-----------|-------------|
| | ASR1 | <u>0.301</u> | F _{1,112} = 47.9 | <0.001 | 645.0 | -0.238 |
| | ASR10 | <u>0.136</u> | F _{1,117} = 18.2 | <0.001 | 243.0 | -0.083 |
| | ASR5 | <u>0.320</u> | F _{1,117} = 54.7 | <0.001 | 597.1 | -0.214 |

Note:

1. Dependent variable is set as TSP levels (in µg/m³) and independent variable is set as number of day of construction works.

2. R² <0.6 and p-value >0.01 (i.e. showing the regression insignificant) are underlined.

2.2 WATER QUALITY MONITORING

The baseline water quality monitoring undertaken by the Hong Kong – Zhuhai – Macao Bridge Hong Kong Projects (HZMB) between 6 and 31 October 2011 included all monitoring stations for the Project. Thus, the baseline monitoring results and Action/Limit Levels presented in HZMB Baseline Monitoring Report ⁽¹⁾ are adopted for this Project.

2.2.1 Monitoring Requirements & Equipment

The Seawall Modification Works has commenced on 12 August 2019.

In accordance with the approved Environmental Review Report dated 21 March 2018 for the Change in Design of Vertical Seawall to Sloping Seawall on Southern Landfall, Updated Impact water quality monitoring programme and water quality monitoring stations IS17, SR7 and IS(Mf)11 specified under the EM&A Manual for HZMB HKBCF project were adopted.

The Action and Limit Levels of the water quality monitoring were adopted from the EM&A Manual for HZMB HKBCF project.

Impact water quality monitoring was carried out three (3) days per week during the construction period between 1 November 2019 and 30 December 2019 at the water quality monitoring stations in *Figure 2.2a* and *Table 2.7*.

According to the Updated EM&A Manual, a post-construction water quality monitoring shall be carried out upon completion of all marine-based construction activities. Post-construction water quality monitoring was undertaken three days per week for at least 4 weeks in accordance with the Updated EM&A Manual. The proposal for post-construction water quality monitoring was approved by EPD on 5 March 2020. The post-construction water quality monitoring was conducted between 17 March 2020 and 11 April 2020. Locations of water quality monitoring stations presented in *Figures 2.2a* and *2.2b* and in *Table 2.8*.

According to the Updated EM&A Manual, an operational phase water quality monitoring shall be performed monthly during the first year of Project operation at all designated monitoring stations including control stations. The operational phase water quality monitoring shall be ceased after

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

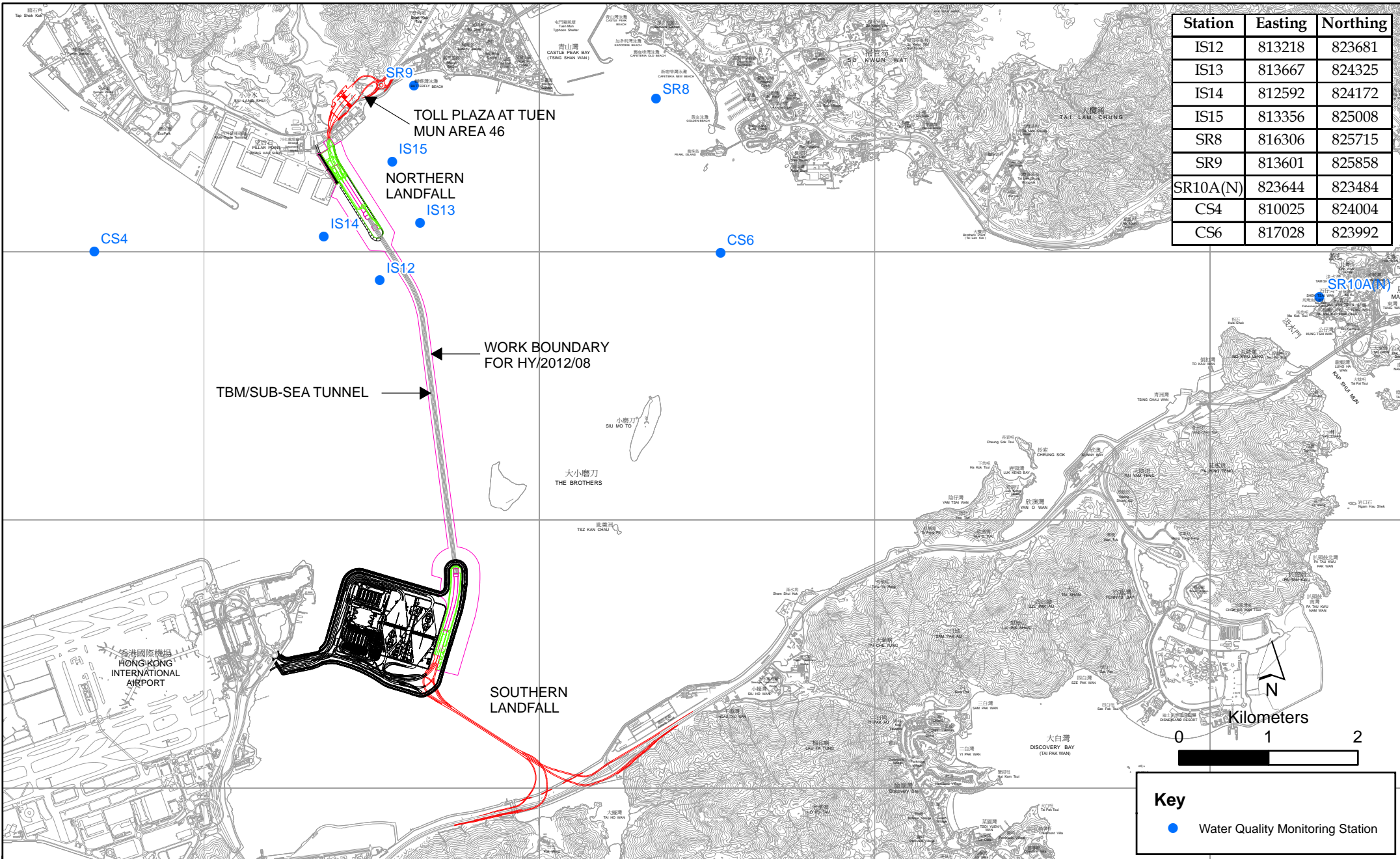


Figure 2.2a

Water Quality Monitoring Station

Key

- Water Quality Monitoring Station



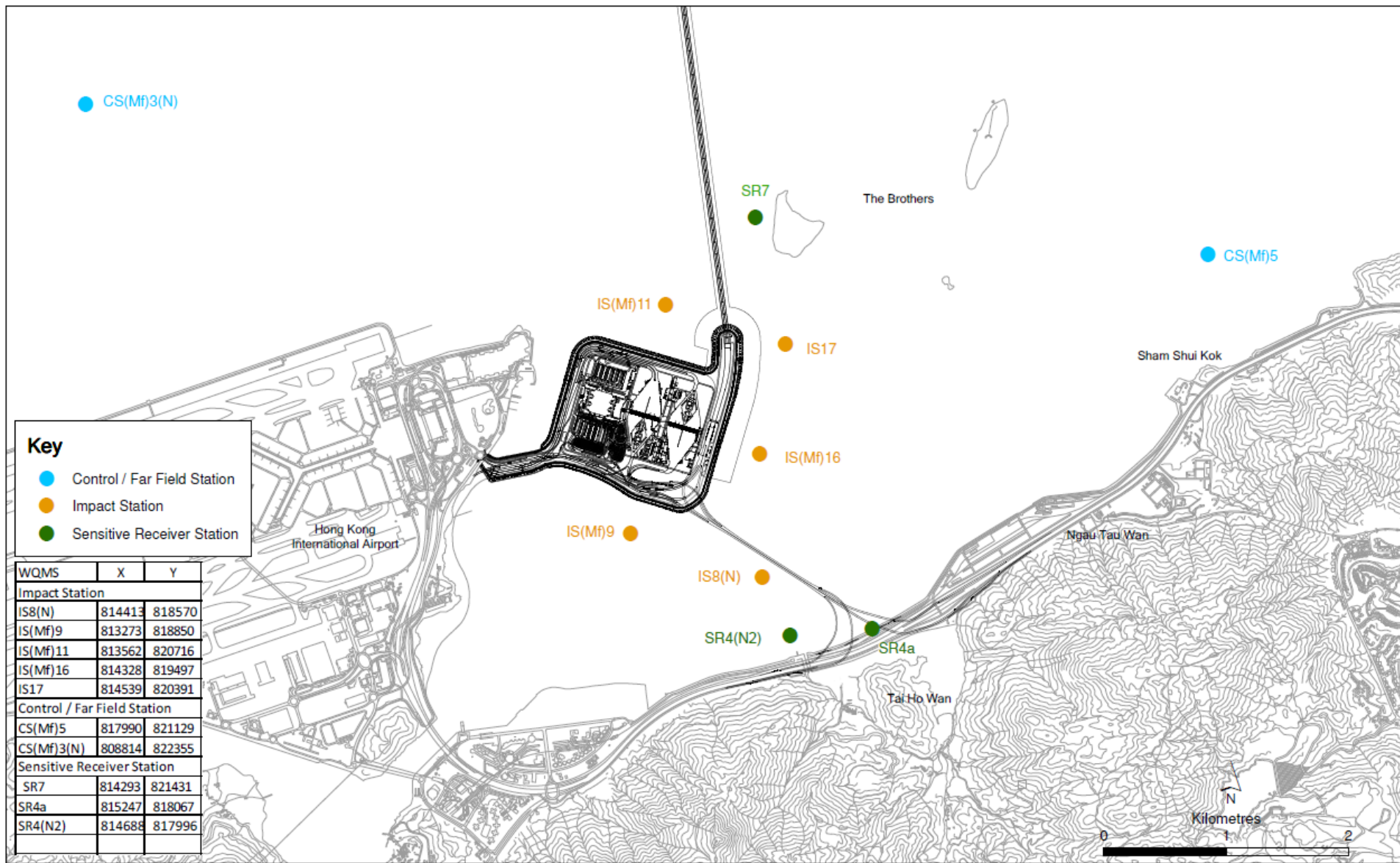


Figure 2.2b

Water Quality Monitoring Stations

the first year of operation of the Project subject to the first year review. Operational phase water quality monitoring commenced in June 2020. Locations of water quality monitoring stations presented in *Figure 2.2c* and in *Table 2.9*.

Table 2.7 *Locations of Impact Water Quality Monitoring Stations and the Corresponding Monitoring Requirements*

| Station ID | Type | Coordinates | | *Parameters, unit | Depth | Frequency |
|------------|---|-------------|----------|--|---|--|
| | | Easting | Northing | | | |
| IS(Mf)11 | Impact Station (Close to HKBCF construction site) 8 | 813562 | 820716 | <ul style="list-style-type: none"> • Temperature(°C) • pH(pH unit) • Turbidity (NTU) • Water depth (m) • Salinity (ppt) | 3 water depths: 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted. | Impact monitoring: 3 days per week, at mid-flood and mid-ebb tides during the construction period of the Contract. |
| IS17 | Impact Station (Close to HKBCF construction site) | 814539 | 820391 | | | |
| SR7 | Sensitive receivers (Tai Mo Do) | 814293 | 821431 | | | |
| IS(Mf)9 | Impact Station (Close to HKBCF construction site) | 813273 | 818850 | | | |
| IS(Mf)16 | Impact Station (Close to HKBCF construction site) | 814328 | 819497 | | | |
| IS8(N) | Impact Station (Close to HKBCF construction site) | 814413 | 818570 | | | |
| SR4(N2) | Sensitive receiver (Tai Ho Inlet) | 814688 | 817859 | | | |
| SR4a | Sensitive receiver | 815247 | 818067 | | | |
| CS(Mf)3(N) | Control Station | 808814 | 822355 | | | |
| CS(Mf)5 | Control Station | 817990 | 821129 | | | |

***Notes:**

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

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

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

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

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

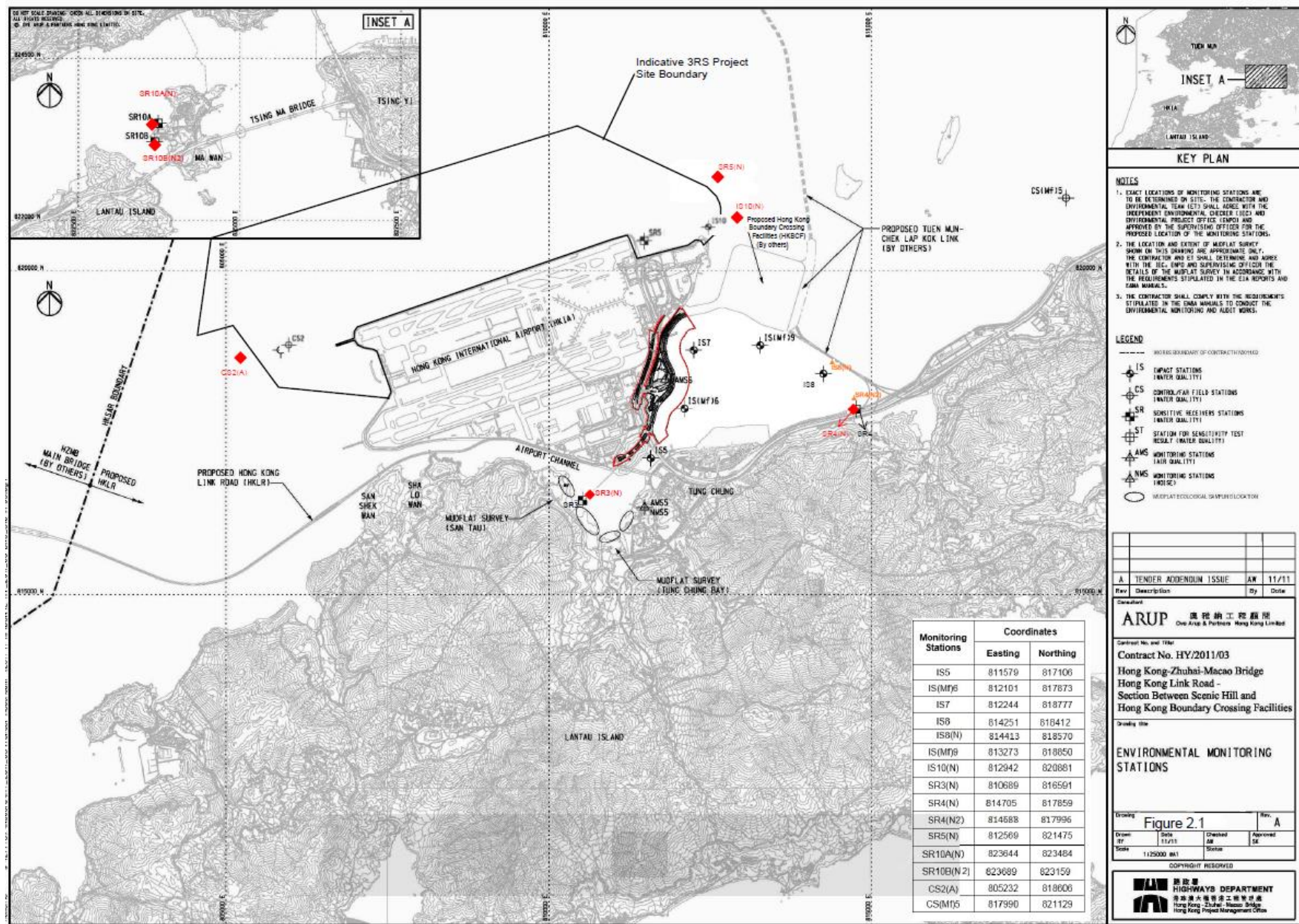


Figure 2.2c

Operational Phase Water Quality Monitoring Stations SR3(N), CS2(A), SR4(N2) & CS(Mf)5

(Source from Contract No. HY/2011/03 EM&A Report)

Environmental Resources Management



Table 2.8 *Locations of Post-Construction Water Quality Monitoring Stations and the Corresponding Monitoring Requirements*

| Station ID | Type | Coordinates | | *Parameters, unit | Depth | Frequency |
|------------|---|-------------|----------|--|---|--|
| | | Easting | Northing | | | |
| IS(Mf)11 | Impact Station (Close to HKBCF construction site) | 813562 | 820716 | <ul style="list-style-type: none"> • Temperature(°C) • pH(pH unit) • Turbidity (NTU) • Water depth (m) • Salinity (ppt) | 3 water depths: 1m below sea | Post construction monitoring: 3 days per week, at mid-flood and mid- ebb tides for four weeks. |
| IS17 | Impact Station (Close to HKBCF construction site) | 814539 | 820391 | <ul style="list-style-type: none"> • DO (mg/L and % of saturation) • SS (mg/L) | surface, mid- depth and 1m above sea bed. | |
| SR7 | Sensitive receivers (Tai Mo Do) | 814293 | 821431 | | If the water depth is less than 3m, mid- depth sampling only. If water depth less than 6m, mid- depth may be omitted. | |
| IS(Mf)9 | Impact Station (Close to HKBCF construction site) | 813273 | 818850 | | | |
| IS(Mf)16 | Impact Station (Close to HKBCF construction site) | 814328 | 819497 | | | |
| IS8(N) | Impact Station (Close to HKBCF construction site) | 814413 | 818570 | | | |
| SR4(N2) | Sensitive receiver (Tai Ho Inlet) | 814688 | 817996 | | | |
| SR4a | Sensitive receiver | 815247 | 818067 | | | |
| CS(Mf)3(N) | Control Station | 808814 | 822355 | | | |
| CS(Mf)5 | Control Station | 817990 | 821129 | | | |

| Station ID | Type | Coordinates | | *Parameters, unit | Depth | Frequency |
|------------|--|-------------|--------|-------------------|-------|-----------|
| | | | | | | |
| IS12 | Impact Station (Close to TMCLKL construction site) | 813218 | 823681 | | | |
| IS13 | Impact Station (Close to TMCLKL construction site) | 813667 | 824325 | | | |
| IS14 | Impact Station (Close to TMCLK construction site) | 812592 | 824172 | | | |
| IS15 | Impact Station (Close to TMCLK construction site) | 813356 | 825008 | | | |
| SR8 | Sensitive receiver (Gazettal beaches in Tuen Mun) | 816306 | 825715 | | | |
| SR9 | Sensitive receiver (Butterfly Beach) | 813601 | 825858 | | | |
| SR10A(N) | Sensitive receiver (Ma Wan FCZ) | 823644 | 823484 | | | |
| CS4 | Control Station | 810025 | 824004 | | | |
| CS6 | Control Station | 817028 | 823992 | | | |

*Notes:

In addition to the parameters presented monitoring location/position, time, water depth, sampling depth, tidal stages, weather conditions and any special phenomena or works underway nearby were also recorded. Water Quality Monitoring Station CS(Mf)3 was relocated to CS(Mf)3(N) since 2 May 2017.

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

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

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

Water Quality Monitoring Station SR10A was relocated to SR10A(N) since 5 March 2020.

Table 2.9 *Locations of Operational Phase Water Quality Monitoring Stations and the Corresponding Monitoring Requirements*

| Station ID | Type | Coordinates | | *Parameters, unit | Depth | Frequency |
|------------|---|-------------|----------|--|--|--|
| | | Easting | Northing | | | |
| IS(Mf)11 | Impact Station (Close to HKBCF construction site) | 813562 | 820716 | <ul style="list-style-type: none"> • Temperature(°C) • pH(pH unit) • Turbidity (NTU) • Water depth (m) • Salinity (ppt) | 3 water depths: 1m below sea | Monthly at each station, at mid- flood and mid-ebb |

| Station ID | Type | Coordinates | | *Parameters, unit | Depth | Frequency |
|------------|-----------------------------------|-------------|--------|---------------------------------|--|---|
| SR4(N2) | Sensitive receiver (Tai Ho Inlet) | 814688 | 817996 | • DO (mg/L and % of saturation) | surface, mid-depth and 1m above sea bed. | tides during the first year of Project operation. |
| CS2(A) | Control Station | 805232 | 818606 | • SS (mg/L) | | |
| CS(Mf)5 | Control Station | 817990 | 821129 | | If the water depth is less than 3m, mid-depth sampling only. If water depth is less than 6m, mid-depth may be omitted. | |

***Notes:**

In addition to the parameters presented monitoring location/position, time, water depth, sampling depth, tidal stages, weather conditions and any special phenomena or works underway nearby were also recorded. With reference to the EM&A Report under Contract No. HY/2011/03, water quality monitoring station SR3 was relocated to SR3(N) since 1 September 2017.

With reference to the EM&A Report under Contract No. HY/2011/03, water quality monitoring station SR4 was relocated to SR4(N) since 1 January 2018.

With reference to the EM&A Report under Contract No. HY/2011/03, water quality monitoring station SR4(N) was relocated to SR4(N2) since 21 August 2019.

With reference to the EM&A Report under Contract No. HY/2011/03, water quality monitoring station CS2 was relocated to CS2(A) since 23 August 2017.

Table 2.10 summarizes the equipment used in the impact, post construction and operational phase water quality monitoring programme.

Table 2.10 Water Quality Monitoring Equipment

| Equipment | Model | Qty. |
|-----------------------|-------------------------------------|------|
| Multi-Parameters | YSI ProDss 18A104824 | 1 |
| Multi-Parameters | YSI ProDss 0001C6A7 | 1 |
| Multi-Parameters | YSI ProDss 17H105557 | 1 |
| Multi-Parameters | YSI ProDss 17E100747 | 1 |
| Multi-Parameters | YSI ProDss 16H104234 | 1 |
| Multi-Parameters | YSI ProDss 16H104233 | 1 |
| Multi-Parameters | YSI ProDss 00019CB2 | 1 |
| Positioning Equipment | Furuno GP-170 | 1 |
| Water Depth Detector | Lowrance Mark 5x / Garmin Striker 4 | 1 |

2.2.2 Action & Limit Levels

The Action and Limit Levels of the water quality monitoring is provided in Appendix C. The Event and Action plan is presented in Appendix F.

2.2.3 *Results and Observations*

During this reporting period, major marine works included Seawall Modification Works at Portion S-B.

Impact water quality monitoring was conducted between 1 November 2019 and 30 December 2019 at all designated monitoring stations under favourable weather conditions.

In this reporting period, a total of 25 monitoring events were undertaken for impact water quality monitoring in which one (1) Action Level exceedance for depth-averaged suspended solids was recorded from the water quality monitoring in this reporting period. Summary of exceedances for Water Quality Impact Monitoring in this reporting period is detailed in *Table 2.16*.

A total of 12 monitoring events were undertaken for post-construction water quality monitoring. Post-construction monitoring results are presented graphically in *Appendix E* and detailed post-construction water quality monitoring data were reported in the *Seventy-Seventh* and *Seventy-Eighth Monthly EM&A Reports*.

A total of 5 monitoring events were undertaken for operational phase water quality monitoring. Operational phase monitoring results are presented graphically in *Appendix E* and detailed operational phase water quality monitoring data were reported in the *Eightieth to Eighty-Fourth Monthly EM&A Reports*.

2.3 *DOLPHIN MONITORING*

2.3.1 *Monitoring Requirements*

Impact dolphin monitoring is required to be conducted by a qualified dolphin specialist team to evaluate whether there have been any effects on the dolphins. In order to fulfil the EM&A requirements and make good use of available resources, Contract No. HY/2012/08 has taken over the responsibility for implementation of dolphin monitoring from HZMB HKLR Contract No. HY/2011/03 since October 2019.

According to the EM&A Manual, Operational Phase Monitoring on dolphin monitoring shall be undertaken based upon the frequency of forty-eight, one-day survey events at a frequency of 2 per month over a period of 24 months following cessation of the construction. Post construction (operational) phase dolphin monitoring commenced since June 2019.

2.3.2 *Monitoring Equipment*

Table 2.11 summarize the equipment used for the impact and operational phase dolphin monitoring.

Table 2.11 Dolphin Monitoring Equipment

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

2.3.3 Monitoring Parameter, Frequencies & Duration

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

2.3.4 Monitoring Location

The impact and operational phase dolphin monitoring were carried out in the NEL and NWL along the line transect as depicted in Figure 2.3. The co-ordinates of all transect lines are shown in Table 2.12 below.

Table 2.12 Impact and Operational Phase Dolphin Monitoring Line Transect Co-ordinates

| Line No. | Easting | Northing | Line No. | Easting | Northing | | |
|----------|-------------|----------|----------|---------|-------------|--------|--------|
| 1 | Start Point | 804671 | 815456 | 13 | Start Point | 816506 | 819480 |
| 1 | End Point | 804671 | 831404 | 13 | End Point | 816506 | 824859 |
| 2 | Start Point | 805476 | 820800* | 14 | Start Point | 817537 | 820220 |
| 2 | End Point | 805476 | 826654 | 14 | End Point | 817537 | 824613 |
| 3 | Start Point | 806464 | 821150* | 15 | Start Point | 818568 | 820735 |
| 3 | End Point | 806464 | 822911 | 15 | End Point | 818568 | 824433 |
| 4 | Start Point | 807518 | 821500* | 16 | Start Point | 819532 | 821420 |
| 4 | End Point | 807518 | 829230 | 16 | End Point | 819532 | 824209 |
| 5 | Start Point | 808504 | 821850* | 17 | Start Point | 820451 | 822125 |
| 5 | End Point | 808504 | 828602 | 17 | End Point | 820451 | 823671 |
| 6 | Start Point | 809490 | 822150* | 18 | Start Point | 821504 | 822371 |
| 6 | End Point | 809490 | 825352 | 18 | End Point | 821504 | 823761 |
| 7 | Start Point | 810499 | 822000* | 19 | Start Point | 822513 | 823268 |
| 7 | End Point | 810499 | 824613 | 19 | End Point | 822513 | 824321 |

| Line No. | | Easting | Northing | Line No. | | Easting | Northing |
|----------|-------------|---------|----------|----------|-------------|---------|----------|
| 8 | Start Point | 811508 | 821123 | 20 | Start Point | 823477 | 823402 |
| 8 | End Point | 811508 | 824254 | 20 | End Point | 823477 | 824613 |
| 9 | Start Point | 812516 | 821303 | 21 | Start Point | 805476 | 827081 |
| 9 | End Point | 812516 | 824254 | 21 | End Point | 805476 | 830562 |
| 10 | Start Point | 813525 | 821176 | 22 | Start Point | 806464 | 824033 |
| 10 | End Point | 813525 | 824657 | 22 | End Point | 806464 | 829598 |
| 11 | Start Point | 814556 | 818853 | 23 | Start Point | 814559 | 821739 |
| 11 | End Point | 814556 | 820992 | 23 | End Point | 814559 | 824768 |
| 12 | Start Point | 815542 | 818807 | 24* | Start Point | 805476* | 815900* |
| 12 | End Point | 815542 | 824882 | 24* | End Point | 805476* | 819100* |

Remarks: The coordinates of several starting and ending points have been revised since August 2017 due to the presence of a work zone to the north of the airport platform with intense construction activities in association with the construction of the third runway expansion for the Hong Kong International Airport. Co-ordinates in red and marked with asterisk are revised co-ordinates of transect line.

2.3.5 *Action & Limit Levels*

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

2.3.6 *Results & Observations*

In this reporting period, a total of 14 monitoring events were undertaken for dolphin impact monitoring and a total of 10 monitoring events were undertaken for operational phase dolphin monitoring.

Whilst three (3) Limit Level exceedances were recorded for three (3) sets of quarterly impact dolphin monitoring data between November 2019 and May 2020, no unacceptable impact from the construction activities of the TM-CLKL Northern Connection Sub-sea Tunnel Section on Chinese White Dolphins was noticeable from general observations during dolphin monitoring in this reporting period.

One (1) Limit Level exceedance was recorded for one (1) set of quarterly post-construction (operational) dolphin monitoring data between June 2020 and October 2020.

In the reporting period, no unacceptable impact from the activities of this Contract on Chinese White Dolphins was noticeable from the general observations.

2.3.7 *Implementation of Marine Mammal Exclusion Zone*

Daily marine mammal exclusion zone was in effect during the period of silt curtain installation in open waters between November and December 2019.

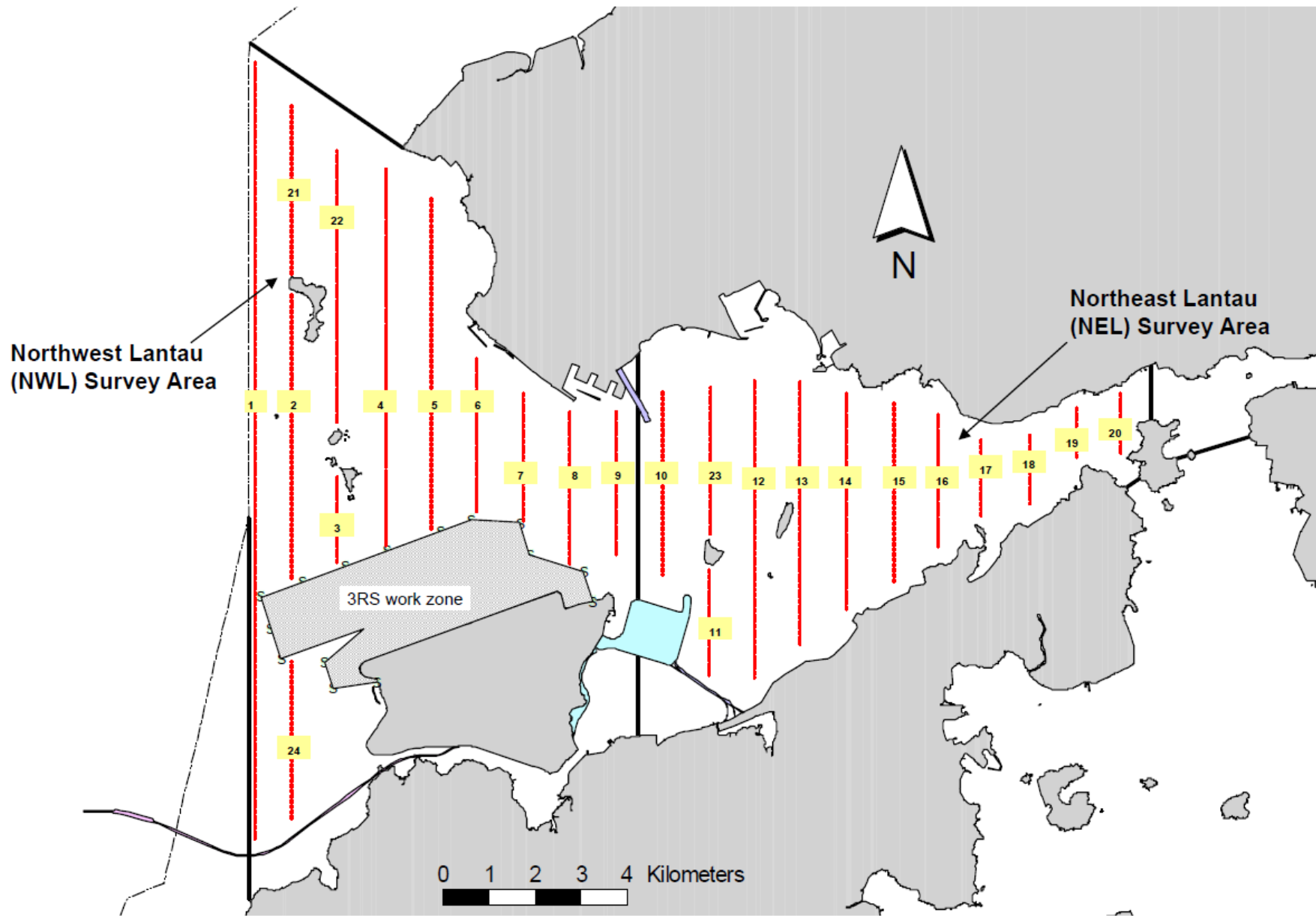


Figure 2.3

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

No sighting of the Indo-Pacific humpback dolphin *Sousa chinensis* (i.e. Chinese White Dolphin) was recorded in November and December 2019 during the exclusion zone monitoring.

No marine works were undertaken since 30 December 2019, therefore, daily 250 m marine mammal exclusion zone monitoring was not undertaken since 30 December 2019.

No Passive Acoustic Monitoring (PAM) was implemented in the reporting period.

2.4 EM&A SITE INSPECTION

Site inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures under the Contract. Forty-seven (47) site inspections were carried out in the reporting period. Key observations were summarized in the *Seventy-Third to Eighty-Fourth Monthly EM&A Reports*.

2.5 WASTE MANAGEMENT STATUS

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

Wastes generated during this reporting period include mainly construction wastes (inert and non-inert) and recyclable materials. Reference has been made to the waste flow table prepared by the Contractor (*Appendix H*). The quantities of different types of wastes are summarized in *Table 2.13*.

Table 2.13 Quantities of Different Waste Generated in the Reporting Period

| Month/Year | Inert Construction Waste (a) (tonnes) | Inert Construction Waste Re-used (tonnes) | Non-inert Construction Waste (b) (tonnes) | Recyclable Materials (c) (kg) | Chemical Wastes (kg) | Marine Sediment (m ³) | |
|----------------|---------------------------------------|---|---|-------------------------------|----------------------|-----------------------------------|------------|
| | | | | | | Category L | Category M |
| | | | | | | November 2019 | 6,215 |
| December 2019 | 4,216 | 0 | 441 | 0 | 0 | 0 | 0 |
| January 2020 | 174,690 | 0 | 2,540 | 0 | 0 | 0 | 0 |
| February 2020 | 1,455 | 0 | 349 | 0 | 0 | 0 | 0 |
| March 2020 | 3,252 | 0 | 1,226 | 0 | 0 | 0 | 0 |
| April 2020 | 4,200 | 0 | 521 | 23,440 | 6,400 | 0 | 0 |
| May 2020 | 7,015 | 0 | 536 | 6,740 | 600 | 0 | 0 |
| June 2020 | 2,670 | 0 | 303 | 740 | 1,000 | 0 | 0 |
| July 2020 | 1,440 | 0 | 140 | 0 | 0 | 0 | 0 |
| August 2020 | 1,159 | 0 | 110 | 1,060 | 0 | 0 | 0 |
| September 2020 | 74 | 0 | 100 | 0 | 0 | 0 | 0 |
| October 2020 | 253 | 0 | 145 | 0 | 0 | 0 | 0 |
| Total | 206,639 | 0 | 6,936 | 305,610 | 9,000 | 0 | 0 |

The Contractor was advised to properly maintain on site C&D materials and waste collection, sorting and recording system, dispose of C&D materials and wastes at designated ground and maximize reuse/ recycle of C&D materials and wastes. The Contractor was also reminded to properly maintain the site tidiness and dispose of the wastes accumulated on site regularly and properly.

For chemical waste containers, the Contractor was reminded to treat properly and store temporarily in designated chemical waste storage area on site in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.

2.6

ENVIRONMENTAL LICENSES AND PERMITS

The status of environmental licensing and permit is summarized in *Table 2.14* below.

Table 2.14 Summary of Environmental Licensing and Permit Status

| License/ Permit | License or Permit No. | Date of Issue | Date of Expiry | License/ Permit Holder | Remarks |
|-------------------------------------|-----------------------|---------------|-------------------------|------------------------|--|
| Environmental Permit | EP-354/2009/D | 13-Mar-15 | Throughout the Contract | HyD | Application for VEP on 3 March 2015 to supersede EP-354/2009/C |
| Construction Dust Notification | 363510 | 19-Aug-13 | Throughout the Contract | DBJV | Northern Landfall |
| Construction Dust Notification | 403620 | 10-Jun-16 | Throughout the Contract | DBJV | Southern Landfall |
| Chemical Waste Registration | 5213-422-D2516-02 | 18-Jan-17 | Throughout the Contract | DBJV | Northern Landfall |
| Chemical Waste Registration | 5213-951-D2591-01 | 25-May-16 | Throughout the Contract | DBJV | Southern Landfall |
| Construction Waste Disposal Account | 7018108 | 28-Aug-13 | Throughout the Contract | DBJV | Waste disposal in Contract No. HY/2012/08 |
| Construction Waste Disposal Account | 7021715 | 4-Oct-19 | 14-Jan-20 | DBJV | Vessel Disposal |
| Waste Water Discharge License | WT00031435-2018 | 2-Aug-18 | 31-Aug-23 | DBJV | Southern Landfall |
| Waste Water Discharge License | WT00034060-2019 | 25-Jul-19 | 30-Jun-24 | DBJV | Northern Landfall (4 Discharge Point) |
| Construction Noise Permit | GW-RW0406-18 | 17-Oct-19 | 15-Apr-20 | DBJV | Urmston Road in front of Pillar Point |
| Construction Noise Permit | GW-RW0181-20 | 29-Apr-20 | 14-Oct-20 | DBJV | Urmston Road in front of Pillar Point |
| Construction Noise Permit | GW-RW0374-19 | 20-Aug-19 | 19-Feb-20 | DBJV | WA23 @ Tsing Yi |
| Construction Noise Permit | GW-RW0144-20 | 14-Apr-20 | 31-Aug-20 | DBJV | WA23 Tsing Yi Storage Area |
| Construction Noise Permit | GW-RS0766-19 | 2-Sep-19 | 25-Feb-20 | DBJV | Southern Landfall |
| Construction Noise Permit | GW-RS1137-19 | 26-Dec-19 | 5-Jun-20 | DBJV | Southern Landfall |
| Construction Noise Permit | GW-RS0418-20 | 22-Jun-20 | 21-Dec-20 | DBJV | Southern Landfall |
| Construction Noise Permit | GW-RW0497-19 | 17-Oct-19 | 15-Apr-20 | DBJV | Northern Landfall |

Notes:

HyD = Highways Department

DBJV = Dragages - Bouygues Joint Venture

| License/ Permit | License or Permit No. | Date of Issue | Date of Expiry | License/ Permit Holder | Remarks |
|-----------------|-----------------------|---------------|----------------|------------------------|---------|
|-----------------|-----------------------|---------------|----------------|------------------------|---------|

VEP = Variation of Environmental Permit

2.7 **IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES**

In response to the EM&A site audit findings mentioned in *Section 2.4* of this report, the Contractor has carried out the corrective actions.

A summary of the Implementation Schedule of Environmental Mitigation Measures (EMIS) is presented in *Appendix B*. The necessary mitigation measures relevant to this Contract were implemented properly.

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

In this reporting period, a total of 114 air quality monitoring events were undertaken in which twenty (20) Action Level exceedances and six (6) Limit Level exceedances of 1-hour TSP were recorded in the air quality monitoring of this reporting period. No Action Level and Limit Level exceedances of 24-hour TSP was recorded in the air quality monitoring of this reporting period (*Table 2.15*).

Table 2.15 *Summary of Exceedances for Air Quality Impact Monitoring in this Reporting Year*

| Station | Exceedance Level | Number of Exceedances | |
|--|------------------|-----------------------|-----------|
| | | 1-hr TSP | 24-hr TSP |
| AQMS1 | Action Level | 0 | 0 |
| | Limit Level | 0 | 0 |
| ASR1 | Action Level | 7 | 0 |
| | Limit Level | 4 | 0 |
| ASR5 | Action Level | 9 | 0 |
| | Limit Level | 1 | 0 |
| ASR6 | Action Level | 3 | 0 |
| | Limit Level | 1 | 0 |
| ASR10 | Action Level | 1 | 0 |
| | Limit Level | 0 | 0 |
| Total number of Action level Exceedances: | | 20 | 0 |
| Total number of Limit level Exceedances: | | 6 | 0 |

For marine water quality impact monitoring, a total of 25 monitoring events were undertaken in which one (1) Action Level exceedance for depth-averaged suspended solids was recorded from the water quality monitoring in this reporting period (*Table 2.16*).

Table 2.16 *Summary of Exceedances for Marine Water Quality Impact Monitoring in this Reporting Period*

| Station | Exceedance Level ^(a) | DO (Surface and Middle) | DO (Bottom) | Turbidity (depth-averaged) | SS (depth-averaged) |
|------------------------------|---------------------------------|-------------------------|-------------|----------------------------|---------------------|
| IS(Mf)11 | AL | 0 | 0 | 0 | 0 |
| | LL | 0 | 0 | 0 | 0 |
| SR7 | AL | 0 | 0 | 0 | 0 |
| | LL | 0 | 0 | 0 | 0 |
| IS17 | AL | 0 | 0 | 0 | 0 |
| | LL | 0 | 0 | 0 | 0 |
| IS(Mf)16 | AL | 0 | 0 | 0 | 1 |
| | LL | 0 | 0 | 0 | 0 |
| IS(Mf)9 | AL | 0 | 0 | 0 | 0 |
| | LL | 0 | 0 | 0 | 0 |
| IS8(N) | AL | 0 | 0 | 0 | 0 |
| | LL | 0 | 0 | 0 | 0 |
| SR4(N2) | AL | 0 | 0 | 0 | 0 |
| | LL | 0 | 0 | 0 | 0 |
| SR4a | AL | 0 | 0 | 0 | 0 |
| | LL | 0 | 0 | 0 | 0 |
| Total AL Exceedances: | | 0 | 0 | 0 | 1 |
| Total LL Exceedances: | | 0 | 0 | 0 | 0 |

There were a total of three (3) Limit Level exceedances recorded for three (3) sets of quarterly impact dolphin monitoring data between November 2019 and May 2020, no unacceptable impact from the construction activities of the TM-CLKL Northern Connection Sub-sea Tunnel Section on Chinese White Dolphins was noticeable from general observations during dolphin monitoring in this reporting period.

One (1) Limit Level exceedance was recorded for one (1) set of quarterly post-construction (operational) dolphin monitoring data between June 2020 and October 2020.

Detailed investigation findings are presented in *the Twenty-First to Twenty-Seventh Quarterly EM&A Reports*.

Cumulative statistics are provided in *Appendix G*.

2.9

SUMMARY OF COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

The Environmental Complaint Handling Procedure is provided in *Figure 2.4*.

No non-compliance event was recorded during the reporting period.

No environmental complaint, non-compliance with EIA recommendations, EP conditions and other requirements and environmental summons associated with the construction of this Contract was recorded in this reporting period.

Statistics on complaints, notifications of summons and successful prosecutions are summarized in *Appendix G*.

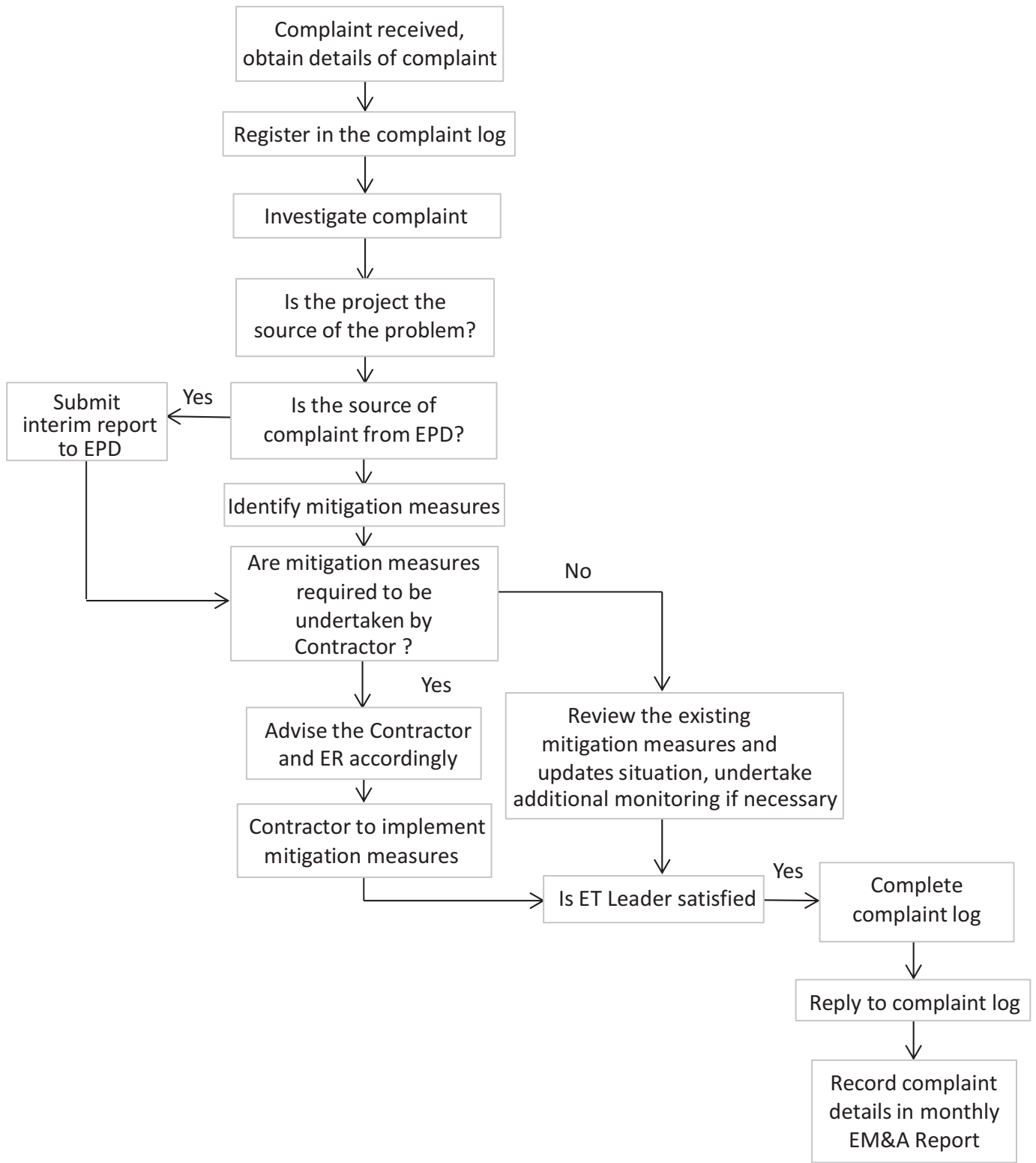


Figure 2.4

Environmental Complaint Handling Procedure

Findings of the EM&A activities undertaken during the period from 1 November 2019 to 31 October 2020 were compared with the relevant EIA predictions where appropriate to provide a review of the validity of the EIA predictions and identify potential shortcomings in the EIA recommendations.

2.10.1

Air Quality

Based on the findings presented in TM-CLKL EIA study, the major sources of dust nuisance arising from the Northern Connection are related to excavation, wind erosion from reclaimed areas, open sites and stockpiling areas. Therefore, during these construction activities, the TSP monitoring frequency will be increased at all air quality monitoring stations such that any deteriorating air quality can be readily detected and timely action taken to rectify the situation. Comparison of EIA prediction, average baseline monitoring and average impact monitoring results of TSP is presented in *Table 2.17*.

Table 2.17 *Comparison of EIA prediction and EM&A Results on Air Quality*

| Station | EIA Predicted Maximum | Maximum Impact Monitoring | Average Impact Monitoring | Maximum Baseline Monitoring | Average Baseline Monitoring |
|-----------------|-----------------------|---------------------------|---------------------------|-----------------------------|-----------------------------|
| ASR1 (1-hour) | 195 | 747 | 131 | 182 | 125 |
| ASR1 (24-hour) | 148 | 207 | 83 | 173 | 128 |
| ASR5 (1-hour) | 235 | 534 | 155 | 211 | 138 |
| ASR5 (24-hour) | 133 | 196 | 91 | 249 | 167 |
| AQMS1 (1-hour) | N/A | 303 | 101 | 196 | 131 |
| AQMS1 (24-hour) | N/A | 131 | 61 | 211 | 127 |
| ASR6 (1-hour) | 226 | 1454 | 113 | 226 | 135 |
| ASR6 (24-hour) | 153 | 149 | 68 | 221 | 166 |
| ASR10 (1-hour) | 189 | 407 | 69 | 215 | 134 |
| ASR10 (24-hour) | 112 | 138 | 48 | 181 | 129 |

As shown in *Table 2.17*, maximum 1-hour TSP at ASR1, ASR5, ASR6 and ASR10 and 24-hour TSP impact monitoring levels at ASR1, ASR5 and ASR10 were higher than their corresponding EIA predicted maximum levels. Occasional exceedances were recorded at these stations during impact monitoring period. However, they were not project-related upon investigation. It also appeared that the construction activities of the Contract did not cause significant impact on air quality with similar average TSP levels between the baseline and impact monitoring. The EIA has concluded that no adverse residual construction dust impacts will occur after implementation of

mitigation measures. Thus, the monitoring results are considered to be in line with the EIA prediction.

2.10.2 *Water Quality*

As identified in the EIA Report, key water quality issues during construction phase may be caused by dredging and filling works for the reclamation of the Project. Thus, marine water quality monitoring should be carried out during the construction phase to ensure that any unacceptable increase in suspended solids / turbidity or unacceptable decrease in dissolved oxygen due to dredging and filling activities could be readily detected and timely action could be taken to rectify the situation.

According to the EIA prediction, no SS exceedance is anticipated from this Project at the water sensitive receivers in the vicinity of the Contract works area (WSR 12, WSR 13 and WSR 47a). SS exceedance was recorded during impact monitoring period. However, it was not project-related upon investigation.

According to the Updated EM&A Manual, a post-construction water quality monitoring shall be carried out upon completion of all marine-based construction activities. Post-construction water quality monitoring was undertaken three days per week for at least 4 weeks in accordance with the Updated EM&A Manual. The proposal for post-construction water quality monitoring was approved by EPD on 5 March 2020. The post-construction water quality monitoring was conducted between 17 March 2020 and 11 April 2020.

A total of 12 monitoring events were undertaken for post-construction water quality monitoring. Post-construction monitoring results are presented graphically in *Appendix E* and detailed post-construction water quality monitoring data were reported in the *Seventy-Seventh* and *Seventy-Eighth Monthly EM&A Reports*.

According to the Updated EM&A Manual, an operational phase water quality monitoring shall be performed monthly during the first year of Project operation at all designated monitoring stations including control stations. The operational phase water quality monitoring shall be ceased after the first year of operation of the Project subject to the first year review. Operational phase water quality monitoring commenced in June 2020.

A total of 5 monitoring events were undertaken for operational phase water quality monitoring. Operational phase monitoring results are presented graphically in *Appendix E* and detailed operational phase water quality monitoring data were reported in the *Eightieth* to *Eighty-Fourth Monthly EM&A Reports*.

2.10.3 *Marine Ecology*

Impact monitoring on marine ecology was undertaken during the monitoring period. According to the baseline results in the *Appendix F* of the approved EIA Report, the dolphin groups were largely sighted near Lung Kwu Chau and the waters between Lung Kwu Chau and Black Points and infrequently along the alignment of this Contract. Two-way ANOVAs with repeated measures were conducted to compare results of average encounter rate of sightings (STG) and average encounter rate of dolphins (ANI) between baseline and impact periods. The STG and ANI in impact monitoring period were lower than that before the commencement of this Contract (see *Section 2.3.6*) and the distribution pattern was also different between the impact monitoring period and before the commencement (i.e. transition period in 2012 – 2013) of this Contract. In addition, the habitat use pattern between impact monitoring in this reporting period and before the commencement of this Contract is different. During the present impact and operational phase monitoring period in 2019-20, the most heavily utilized habitats by Chinese White Dolphins were only found on both northwestern end of the North Lantau region, mainly to the north and east of Lung Kwu Chau. Dolphin usage of NWL waters declined during the present and previous phase monitoring periods. The monitoring results in this reporting period are considered to be in line with the EIA predictions, and the review of monitoring data suggested that no unacceptable impacts was noted from the marine dredging and reclamation activities under this Contract. It is essential to monitor the dolphin usage in North Lantau region for the rest of impact monitoring period to keep track on the trend of dolphin ranging pattern.

2.10.4 *Waste Management*

For wastes generated from the construction activities including C&D materials (inert and non-inert), chemical wastes, recyclable materials and marine sediments (both categories L and M), the types of wastes generated were in line with the EIA predictions. The wastes were disposed of in accordance with the recommendations of the EIA.

2.11 *SUMMARY OF MONITORING METHODOLOGY AND EFFECTIVENESS*

The EM&A monitoring programme has been reviewed and was considered effective and adequate to cater for the nature of works in progress. No change to the monitoring programme was considered necessary.

The EM&A programme will be evaluated as appropriate in the next reporting period and improvements in the EM&A programme will be recommended if deemed necessary.

2.12

SUMMARY OF MITIGATION MEASURES

The mitigation measures stipulated in the Updated EM&A Manual were undertaken by the Contractor in the reporting period. The mitigation measures were reviewed and considered effective. No addition or change on mitigation measures was considered necessary.

3 *REVIEW OF EM&A PROGRAMME*

3.1 *SITE INSPECTIONS & AUDITS*

Weekly joint environmental site inspections have been conducted in the reporting period to assess the effectiveness of the environmental controls established by the Contractor and the implementation of the environmental mitigation measures recommended in the EIA Report. Findings of the site inspections confirmed that the environmental mitigation measures recommended in the EIA Report were properly implemented by the Contractor, and the recommended mitigation measures have been working effectively. There was no non-compliance recorded during the site inspections and environmental performance complied with environmental requirements.

The requirements for site inspections and audits have been reviewed and were considered as adequate. No change to the requirements was considered to be necessary.

The recommended environmental mitigation measures are also considered to be effective and efficient in reducing the potential environmental impacts associated with the construction phase of the Project. No change was thus considered necessary.

3.2 *AIR QUALITY MONITORING*

Construction phase air quality monitoring was conducted during this reporting period when land-based construction works were undertaken. Twenty (20) Action Level exceedances and six (6) Limit Level exceedances of 1-hour TSP were recorded in the air quality monitoring of this reporting period. No Action Level and Limit Level exceedances of 24-hour TSP were recorded in the air quality monitoring of this reporting period.

The monitoring programme has been reviewed and was considered to be adequate to cater for the nature of works. No change to the requirements was considered to be necessary.

3.3 *MARINE WATER QUALITY MONITORING*

One (1) Action Level exceedance for depth-averaged suspended solids was recorded from the water quality monitoring in this reporting period.

The monitoring programme has been reviewed and was considered to be adequate to cater for the nature of works. No change to the requirements was considered to be necessary.

3.4 *WASTE MANAGEMENT*

The waste inspection and audit programme has been implemented during this reporting period. Wastes generated from construction activities have been managed in accordance with the recommendations in the EIA Report, the EM&A Manual, the WMP and other relevant legislative requirements.

The requirements for construction waste management have been reviewed and were considered as adequate. No change to the requirements was considered to be necessary.

3.5 *MARINE ECOLOGY MONITORING*

Daily marine mammal exclusion zone was in effect during the period of silt curtain installation in open waters between November and December 2019. No sighting of the Indo-Pacific humpback dolphin *Sousa chinensis* (i.e. Chinese White Dolphin) was recorded in November and December 2019 during the exclusion zone monitoring.

No marine works were undertaken since 30 December 2019, therefore, daily 250 m marine mammal exclusion zone monitoring was not undertaken since 30 December 2019.

No Passive Acoustic Monitoring (PAM) was implemented in the reporting period.

3.6 *SUMMARY OF RECOMMENDATIONS*

Findings of the EM&A programme indicate that the recommended mitigation measures have been properly implemented and working effectively. The EM&A programme has been reviewed and was considered as adequate and effective. No change to the EM&A programme was considered to be necessary.

The EM&A programme will be evaluated as appropriate in the next reporting period and improvements in the EM&A programme will be recommended if deemed necessary.

This Seventh Annual EM&A Report presents the findings of the EM&A activities undertaken during the period from 1 November 2019 to 31 October 2020, in accordance with the Updated EM&A Manual and the requirements of EP-354/2009/D.

Air quality (including 1-hour TSP and 24-hour TSP) and dolphin monitoring were carried out in the reporting period. Twenty (20) Action Level exceedances and six (6) Limit Level exceedances of 1-hour TSP were recorded in the air quality monitoring of this reporting period. No Action Level and Limit Level exceedances of 24-hour TSP were recorded in the air quality monitoring of this reporting period. The Contractor was reminded to ensure that all dust mitigation measures are provided at the construction sites.

One (1) Action Level exceedance for depth-averaged suspended solids was recorded from the water quality monitoring in this reporting period.

Whilst three (3) Limit Level exceedances were recorded for three (3) sets of quarterly impact dolphin monitoring data between November 2019 and May 2020, no unacceptable impact from the construction activities of the TM-CLKL Northern Connection Sub-sea Tunnel Section on Chinese White Dolphins was noticeable from general observations during dolphin monitoring in this reporting period.

One (1) Limit Level exceedance was recorded for one (1) set of quarterly post-construction (operational) dolphin monitoring data between June 2020 and October 2020.

Forty-seven (47) weekly environmental site inspections were carried out in the reporting period. Recommendations on remedial actions provided for the deficiencies identified during the site audits were properly implemented by the Contractor. No non-compliance event was recorded during the reporting period.

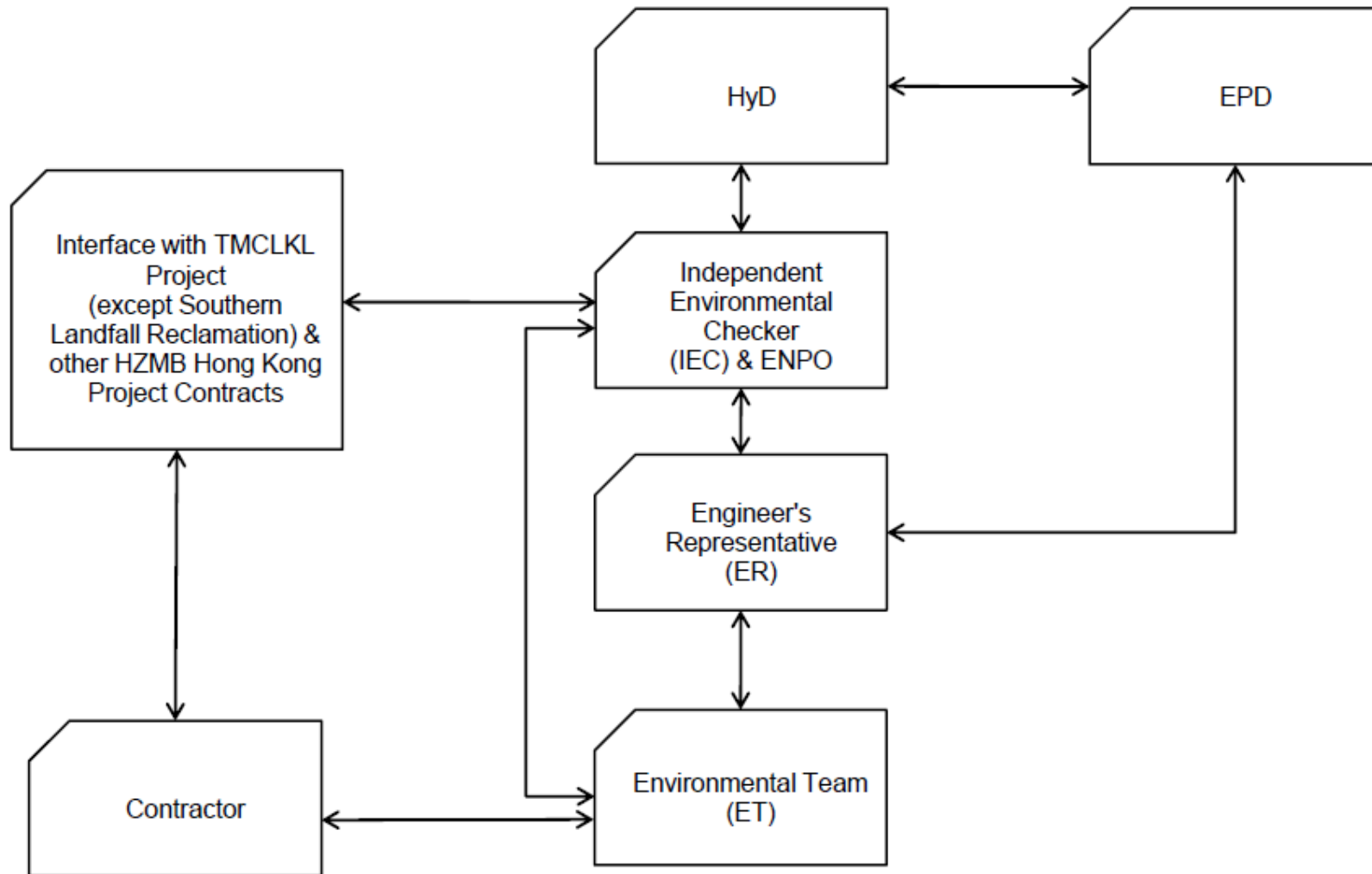
No environmental complaint, non-compliance with EIA recommendations, EP conditions and other requirements and environmental summons associated with the construction of this Contract was recorded in this reporting period.

The review of monitoring data suggested that the construction works under this Contract have proceeded in an environmentally acceptable manner in this reporting period.

The monitoring programme has been reviewed and was considered as adequate to cater for the nature of works in progress. Change to the monitoring programme was thus not recommended at this stage. The ET will keep track on the construction works to confirm compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

Appendix A

Project Organization for Environmental Works



↔ Line of Communication

Appendix B

Environmental Mitigation and Enhancement Measure Implementation Schedules

Contract No. HY/2012/08
Tuen Mun – Chek Lap Kok Link
Northern Connection Sub-sea Tunnel Section
Environmental Mitigation and Enhancement Measure Implementation Schedule

| EIA Reference | EM&A Manual Reference | Environmental Protection Measures | Location/ Timing | Implementation Agent | Relevant Standard or Requirement | Implementation Stages | | | Status * |
|--------------------|-----------------------|---|--|----------------------|---|-----------------------|---|---|----------|
| | | | | | | D | C | O | |
| Air Quality | | | | | | | | | |
| 4.8.1 | 3.8 | An effective watering programme of twice daily watering with complete coverage, is estimated to reduce by 50%. This is recommended for all areas in order to reduce dust levels to a minimum; | All areas / throughout construction period | Contractor | TMEIA Avoid smoke impacts and disturbance | | Y | | ✓ |
| 4.8.1 | 3.8 | Watering of the construction sites in Lantau for 8 times/day and in Tuen Mun for 12 times/day to reduce dust emissions by 87.5% and 91.7% respectively and shall be undertaken. | All areas / throughout construction period | Contractor | TMEIA Avoid dust generation | | Y | | ✓ |
| 4.8.1 | 3.8 | The Contractor shall, to the satisfaction of the Engineer, install effective dust suppression measures and take such other measures as may be necessary to ensure that at the Site boundary and any nearby sensitive receiver, dust levels are kept to acceptable levels. | All areas / throughout construction period | Contractor | TMEIA Avoid dust generation | | Y | | ✓ |
| 4.8.1 | 3.8 | The Contractor shall not burn debris or other materials on the works areas. | All areas / throughout construction period | Contractor | TMEIA Avoid dust generation | | Y | | ✓ |
| 4.8.1 | 3.8 | In hot, dry or windy weather, the watering programme shall maintain all exposed road surfaces and dust sources wet. | All unpaved haul roads / throughout construction period in hot, dry or windy weather | Contractor | TMEIA Avoid smoke impacts and disturbance | | Y | | ✓ |
| 4.8.1 | 3.8 | Where breaking of oversize rock/concrete is required, watering shall be implemented to control dust. Water spray shall be used during the handling of fill material at the site and at active cuts, excavation and fill sites where dust is likely to be created. | All areas / throughout construction period | Contractor | TMEIA Avoid dust generation | | Y | | <> |
| 4.8.1 | 3.8 | Open dropping heights for excavated materials shall be controlled to a maximum height of 2m to minimise the fugitive dust arising from unloading. | All areas / throughout construction period | Contractor | TMEIA Avoid dust generation | | Y | | ✓ |
| 4.8.1 | 3.8 | During transportation by truck, materials shall not be loaded to a level higher than the side and tail boards, and shall be dampened or covered before transport. | All areas / throughout construction period | Contractor | TMEIA Avoid dust generation | | Y | | ✓ |
| 4.8.1 | 3.8 | Materials having the potential to create dust shall not be loaded to a level higher than the side and tail boards, and shall be covered by a clean tarpaulin. The tarpaulin shall be properly secured and shall extend at least 300mm over the edges of the side and tail boards. | All areas / throughout construction period | Contractor | TMEIA Avoid dust generation | | Y | | <> |

Legend: D=Design, C=Construction, O=Operation

Note: Funding Agent for all mitigation measures will be the Highways Department of the Hong Kong SAR Government

Contract No. HY/2012/08
Tuen Mun – Chek Lap Kok Link
Northern Connection Sub-sea Tunnel Section
Environmental Mitigation and Enhancement Measure Implementation Schedule

| EIA Reference | EM&A Manual Reference | Environmental Protection Measures | Location/ Timing | Implementation Agent | Relevant Standard or Requirement | Implementation Stages | | | Status * |
|----------------------------------|-----------------------|---|---|----------------------|----------------------------------|-----------------------|---|---|----------|
| | | | | | | D | C | O | |
| 4.8.1 | 3.8 | No earth, mud, debris, dust and the like shall be deposited on public roads. Wheel washing facility shall be usable prior to any earthworks excavation activity on the site. | All site exits / throughout construction period | Contractor | TMEIA Avoid dust | | Y | | ✓ |
| 4.8.1 | 3.8 | Areas of exposed soil shall be minimised to areas in which works have been completed shall be restored as soon as is practicable. | All exposed surfaces / throughout construction period | Contractor | TMEIA Avoid dust generation | | Y | | ✓ |
| 4.8.1 | 3.8 | All stockpiles of aggregate or spoil shall be enclosed or covered and water applied in dry or windy condition. | All areas / throughout construction period | Contractor | TMEIA Avoid dust generation | | Y | | ↔ |
| 4.11 | Section 3 | EM&A in the form of 1 hour and 24 hour dust monitoring and site audit. | All representative existing ASRs / throughout construction period | Contractor | EM&A Manual | | Y | | ✓ |
| WATER QUALITY | | | | | | | | | |
| <i>Marine Works (Sequence A)</i> | | | | | | | | | |
| 6.1 | Annex A | Construction of seawalls to be advanced by at least 200m before the main reclamation dredging and filling can commence. The protection by advanced seawall is a dynamic process depending on the progress of the construction activities and the stage when such protection could be realised is illustrated in Figure 6.2a and detailed in Appendix D6a. The part of the works where such measures can be undertaken for the majority of the time includes the following locations: - TM-CLKL northern reclamation; | All areas/ prior to dredging and backfilling works | Contractor | TM-EIAO | | Y | | ✓ |
| Figure 6.2a Appendix D6a | | | | | | | | | |
| 6.1 | - | a maximum of 50% public fill to be used for all seawall filling below +2.5mPD for TM-CLKL southern and northern landfalls. | TM-CLKL seawall filling | Contractor | TM-EIAO | | Y | | ✓ |
| 6.1 | - | a maximum of 30% public fill to be used for reclamation filling below +2.5mPD for TM-CLKL southern landfall | TM-CLKL southern landfall reclamation filling | Contractor | TM-EIAO | | Y | | N/A |
| 6.1 | - | a maximum of 100% public fill to be used for reclamation filling below +2.5mPD for TM-CLKL northern landfall | TM-CLKL northern landfall reclamation filling | Contractor | TM-EIAO | | Y | | ✓ |
| 6.1 | - | Use of cage type silt curtains round allgrab dredgers during the HKBCF, HKLR and TM-CLKL southern reclamation works. | All areas dredging works | Contractor | TM-EIAO | | Y | | ✓ |

Legend: D=Design, C=Construction, O=Operation

Note: Funding Agent for all mitigation measures will be the Highways Department of the Hong Kong SAR Government

Contract No. HY/2012/08
Tuen Mun – Chek Lap Kok Link
Northern Connection Sub-sea Tunnel Section
Environmental Mitigation and Enhancement Measure Implementation Schedule

| EIA Reference | EM&A Manual Reference | Environmental Protection Measures | Location/ Timing | Implementation Agent | Relevant Standard or Requirement | Implementation Stages | | | Status * |
|---------------|--|--|--|----------------------|---|-----------------------|---|---|----------|
| | | | | | | D | C | O | |
| | Figure 1.1 of Annex C | A layer of floating type silt curtain will be applied when dredging and reclamation works are being undertaken at Portion N-a as shown in Figure 1.1 of Annex C of the EM&A Manual. | All areas/ through out marine works | Contractor | TM-EIAO | | Y | | ✓ |
| 6.1 | - | Trailer suction hopper dredgers shall not allow mud to overflow. | All areas/ throughout construction period | Contractor | Marine Fill Committee Guidelines. DASO permit conditions. | | Y | | ✓ |
| 6.1 | - | The use of Lean Material Overboard (LMOB) systems shall be prohibited. | All areas/ throughout construction period | Contractor | Marine Fill Committee Guidelines. DASO permit conditions. | | Y | | ✓ |
| 6.1 | Annex A Figure 6.2b Appendix D6b | For other parts of the reclamation works construction of seawalls to be advanced by at least 200m before the main reclamation dredging and filling can commence. It should be noted that the protection by advanced seawall is a dynamic process depending on the progress of the construction activities and the stage when such protection could be realised is illustrated in Figure 6.2b and detailed in Appendices D6b. The part of the works where such measures can be undertaken for the majority of the time includes the following locations: - TM-CLKL northern reclamation; - Reclamation filling for Portion D of HKBCF; Reclamation filling for FSD berth of HKBCF; and - Reclamation dredging and filling for Portion 1 of HKLR; | TM-CLKL northern landfill, Portion D of HKBCF and HKLR | Contractor | TM-EIAO | | Y | | ✓ |
| 6.1 | - | The filling material for the other parts of the works are the same as Sequence A; | All other areas/backfilling works | Contractor | TM-EIAO | | Y | | N/A |
| 6.1 | 5.7 | Cage type silt curtain (with steel enclosure) shall be used for grab dredgers working in the site of HKBCF and TM- CLKL southern reclamation. Cage type silt curtains will be applied round all grab dredgers at other works area. | HKBCF, HKLR and TM-CLKL grab dredging | Contractor | TM-EIAO | | Y | | ✓ |
| 6.1 | Annex A | A layer of floating type silt curtain will be applied around all works as defined in Appendix D6b. | All areas/ through out marine works | Contractor | TM-EIAO | | Y | | ✓ |

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*Contract No. HY/2012/08
Tuen Mun – Chek Lap Kok Link
Northern Connection Sub-sea Tunnel Section
Environmental Mitigation and Enhancement Measure Implementation Schedule*

| EIA Reference | EM&A Manual Reference | Environmental Protection Measures | Location/ Timing | Implementation Agent | Relevant Standard or Requirement | Implementation Stages | | | Status * |
|-----------------------------|-----------------------|--|---|----------------------|----------------------------------|-----------------------|---|---|----------|
| | | | | | | D | C | O | |
| 6.1 | - | TM-CLKL northern landfall: - Reclamation filling shall not proceed until at least 200m section of leading seawall at both the east and west sides of the reclamation are formed above +2.5 mPD, except for 100m gaps for marine access; | All areas/ through out marine works | Contractor | TM-EIAO | | Y | | ✓ |
| <i>General Marine Works</i> | | | | | | | | | |
| 6.1 | - | Use of TMB for the construction of the submarine tunnel. | Tunnel works / Construction phase | Contractor | TM-EIAO | | Y | | N/A |
| 6.1 | - | Export dredged spoils from NWWCZ. | All areas as much as possible / dredging activities | Contractor | DASO Permit conditions | | Y | | ✓ |
| 6.1 | - | Where public fill is proposed for filling below +2.5mPD, the fine content in the public fill will be controlled to 25% | All areas/ backfilling works | Contractor | TM-EIAO | | Y | | N/A |
| 6.1 | - | Where sand fill is proposed for filling below +2.5mPD, the fine content in the sand fill will be controlled to 5%. | All areas/ backfilling works | Contractor | TM-EIAO | | Y | | N.A |

Legend: D=Design, C=Construction, O=Operation

Note: Funding Agent for all mitigation measures will be the Highways Department of the Hong Kong SAR Government

*Contract No. HY/2012/08
Tuen Mun – Chek Lap Kok Link
Northern Connection Sub-sea Tunnel Section
Environmental Mitigation and Enhancement Measure Implementation Schedule*

| EIA Reference | EM&A Manual Reference | Environmental Protection Measures | Location/ Timing | Implementation Agent | Relevant Standard or Requirement | Implementation Stages | | | Status * |
|---------------|-----------------------|--|---|----------------------|---|-----------------------|---|---|----------|
| | | | | | | D | C | O | |
| 6.1 | - | Mechanical grabs shall be designed and maintained to avoid spillage and should seal tightly while being lifted. | All areas/ throughout construction period | Contractor | Marine Fill Committee Guidelines. DASO permit conditions. | | Y | | ✓ |
| 6.1 | - | Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material. | All areas/ throughout construction period | Contractor | Marine Fill Committee Guidelines. DASO permit conditions. | | Y | | ✓ |
| 6.1 | - | Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes. | All areas/ throughout construction period | Contractor | Marine Fill Committee Guidelines. DASO permit conditions. | | Y | | ✓ |
| 6.1 | - | Loading of barges and hoppers shall be controlled to prevent splashing of dredged material to the surrounding water. Barges or hoppers shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation. | All areas/ throughout construction period | Contractor | Marine Fill Committee Guidelines. DASO permit conditions. | | Y | | ✓ |
| 6.1 | - | Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved. | All areas/ throughout construction period | Contractor | Marine Fill Committee Guidelines. DASO permit conditions. | | Y | | ✓ |
| 6.1 | - | Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; | All areas/ throughout construction period | Contractor | Marine Fill Committee Guidelines. DASO permit conditions. | | Y | | N/A |

Legend: D=Design, C=Construction, O=Operation

Note: Funding Agent for all mitigation measures will be the Highways Department of the Hong Kong SAR Government

Contract No. HY/2012/08
Tuen Mun – Chek Lap Kok Link
Northern Connection Sub-sea Tunnel Section
Environmental Mitigation and Enhancement Measure Implementation Schedule

| EIA Reference | EM&A Manual Reference | Environmental Protection Measures | Location/ Timing | Implementation Agent | Relevant Standard or Requirement | Implementation Stages | | | Status * |
|-------------------|-----------------------|--|---|----------------------|---|-----------------------|---|---|----------|
| | | | | | | D | C | O | |
| 6.1 | - | All vessels shall be sized such that adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash. | All areas/ throughout construction period | Contractor | Marine Fill Committee Guidelines. DASO permit conditions. | | Y | | N/A |
| 6.1 | - | The works shall not cause foam, oil, grease, litter or other objectionable matter to be present in the water within and adjacent to the works site. | All areas/ throughout construction period | Contractor | Marine Fill Committee Guidelines. DASO permit conditions. | | Y | | ✓ |
| 6.1 | 5.2 | Silt curtain shall have proved effectiveness from the producer and shall be fully maintained throughout the works by the contractor. | All areas/ throughout construction period | Contractor | TM-EIAO | | Y | | ✓ |
| 6.1 | - | The daily maximum production rates shall not exceed those assumed in the water quality assessment. | All areas/ throughout construction period | Contractor | TM-EIAO | | Y | | ✓ |
| 6.1 | - | The dredging and filling works shall be scheduled to spread the works evenly over a working day. | All areas/ throughout construction period | Contractor | TM-EIAO | | Y | | ✓ |
| <i>Land Works</i> | | | | | | | | | |
| 6.1 | - | Wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters. | All areas/ throughout construction period | Contractor | TM-EIAO | | Y | | ✓ |
| 6.1 | - | Sewage effluent and discharges from on- site kitchen facilities shall be directed to Government sewer in accordance with the requirements of the WPCO or collected for disposal offsite. The use of soakaways shall be avoided. | All areas/ throughout construction period | Contractor | TM-EIAO | | Y | | ✓ |
| 6.1 | - | 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. | All areas/ throughout construction period | Contractor | TM-EIAO | | Y | | ↔ |
| 6.1 | - | Silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm. | All areas/ throughout construction period | Contractor | TM-EIAO | | Y | | ✓ |
| 6.1 | - | Temporary access roads should be surfaced with crushed stone or gravel. | All areas/ throughout construction period | Contractor | TM-EIAO | | Y | | ✓ |

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|---------------|-----------------------|---|---|----------------------|----------------------------------|-----------------------|---|---|----------|
| | | | | | | D | C | O | |
| 6.1 | - | Rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities. | All areas/ throughout construction period | Contractor | TM-EIAO | | Y | | ✓ |
| 6.1 | - | Measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system. | All areas/ throughout construction period | Contractor | TM-EIAO | | Y | | ✓ |
| 6.1 | - | Open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms. | All areas/ throughout construction period | Contractor | TM-EIAO | | Y | | ✓ |
| 6.1 | 5.8 | Manholes (including any newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers. | All areas/ throughout construction period | Contractor | TM-EIAO | | Y | | ✓ |
| 6.1 | - | Discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system. | All areas/ throughout construction period | Contractor | TM-EIAO | | Y | | ✓ |
| 6.1 | - | All vehicles and plant should be cleaned before they leave the construction site to ensure that no earth, mud or debris is deposited by them on roads. A wheel washing bay should be provided at every site exit. | All areas/ throughout construction period | Contractor | TM-EIAO | | Y | | ✓ |
| 6.1 | - | Wheel wash overflow shall be directed to silt removal facilities before being discharged to the storm drain. | All areas/ throughout construction period | Contractor | TM-EIAO | | Y | | ✓ |
| 6.1 | - | Section of construction road between the wheel washing bay and the public road should be surfaced with crushed stone or coarse gravel. | All areas/ throughout construction period | Contractor | TM-EIAO | | Y | | ✓ |
| 6.1 | - | Wastewater generated from concreting, plastering, internal decoration, cleaning work and other similar activities, shall be screened to remove large objects. | All areas/ throughout construction period | Contractor | TM-EIAO | | Y | | ✓ |
| 6.1 | - | Vehicle and plant servicing areas, vehicle wash bays and lubrication facilities shall be located under roofed areas. The drainage in these covered areas shall be connected to foul sewers via a petrol interceptor in accordance with the requirements of the WPCO or collected for off site disposal. | All areas/ throughout construction period | Contractor | TM-EIAO | | Y | | N/A |
| 6.1 | - | The Contractor shall prepare an oil / chemical cleanup plan and ensure that leakages or spillages are contained and cleaned up immediately. | All areas/ throughout construction period | Contractor | TM-EIAO | | Y | | ↔ |

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|---------------|-----------------------|--|---|----------------------------------|----------------------------------|-----------------------|---|---|----------|
| | | | | | | D | C | O | |
| 6.1 | - | Waste oil should be collected and stored for recycling or disposal, in accordance with the Waste Disposal Ordinance. | All areas/ throughout construction period | Contractor | TM-EIAO Waste Disposal Ordinance | | Y | | ✓ |
| 6.1 | - | All fuel tanks and chemical storage areas should be provided with locks and be sited on sealed areas. The storage areas should be surrounded by bunds with a capacity equal to 110% of the storage capacity of the largest tank. | All areas/ throughout construction period | Contractor | TM-EIAO | | Y | | ↔ |
| 6.1 | - | Surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system. | All areas/ throughout construction period | Contractor | TM-EIAO | | Y | | ✓ |
| 6.1 | - | Roadside gullies to trap silt and grit shall be provided prior to discharging the stormwater into the marine environment. The sumps will be maintained and cleaned at regular intervals. | Roadside/design and operation | Design Consultant/ Contractor | TM-EIAO | Y | | Y | ✓ |
| 6.1 | Section 5 | All construction works shall be subject to routine audit to ensure implementation of all EIA recommendations and good working practice. | All areas/ throughout construction period | Contractor | EM&A Manual | | Y | | ✓ |

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|---------------------------------|-----------------------|---|---|---|----------------------------------|-----------------------|---|---|---------------------------------|
| | | | | | | D | C | O | |
| <i>Water Quality Monitoring</i> | | | | | | | | | |
| 6.1 | Section 5 | Water quality monitoring shall be undertaken for suspended solids, turbidity, and dissolved oxygen. Nutrients and metal parameters shall also be measured for Mf sediment operations (only HKBCF and HKLR required handling of Mf sediment) during baseline, backfilling and post construction period. One year operation phase water quality monitoring at designated stations. | Designated monitoring stations as defined in EM&A Manual, Section 5/ Before, through-out marine construction period, post construction and monthly operational phase water quality monitoring for a year. | Contractor | EM&A Manual | | Y | Y | ✓ |
| ECOLOGY | | | | | | | | | |
| 8.14 | 6.3 | Specification for and implement pre, during and post construction dolphin abundance monitoring. | All Areas/Detailed Design/ during construction works/ post construction | Design Consultant/ Contractor | TMEIA | Y | Y | Y | ✓ |
| 8.14 | 6.3,6.5 | Specification and implementation of 250m dolphin exclusion zone. | All dredging and reclamation areas/Detailed Design/ during all reclamation and dredging works | Design Consultant/ Contractor | TMEIA | Y | Y | | ✓ |
| 8.15 | 6.3, 6.5 | Specification and deployment of an artificial reef of an area of 3,600m ² in an area where fishing activities are prohibited. | Area of prohibited fishing activities/Detailed Design/ towards end of construction period | TM-CLKL/ HKBCF Design Consultant/ TM-CLKL/ HKBCF Contractor | TMEIA | Y | | Y | N/A. To be implemented by AFCD. |
| 8.14 | 6.3, 6.5 | Specification and implementation of marine vessel control specifications | All areas/Detailed Design/ during construction works | Design Consultant/ Contractor | TMEIA | Y | Y | | ✓ |
| 8.14 | 6.3, 6.5 | Design and implementation of acoustic decoupling methods for dredging and reclamation works | All areas/ Detailed Design/ during dredging and reclamation works | Design Consultant/ Contractor | TMEIA | Y | Y | | ✓ |
| 8.15 | 6.3, 6.4 | Pre-construction phase survey and coral translocation | Detailed Design/Prior to construction | Design Consultant/ Contractor | TMEIA | Y | Y | | ✓ |
| 8.15 | 6.5 | Audit coral translocation success | Post translocation | Contractor | TMEIA | | Y | | ✓ |

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|-----------------------------|-----------------------|---|--|----------------------------------|----------------------------------|-----------------------|---|---|----------|
| | | | | | | D | C | O | |
| 7.13 | 6.5 | The loss of habitat shall be supplemented by enhancement planting in accordance with the landscape mitigation schedule. | All areas / As soon as accessible | Contractor | TMEIA | | Y | | N/A. |
| 7.13 | 6.5 | Spoil heaps shall be covered at all times. | All areas / Throughout construction period | Contractor | TMEIA | | Y | | ✓ |
| 7.13 | 6.5 | Avoid damage and disturbance to the remaining and surrounding natural habitat | All areas / Throughout construction period | Contractor | TMEIA | | Y | | ✓ |
| 7.13 | 6.5 | Placement of equipment in designated areas within the existing disturbed land | All areas / Throughout construction period | Contractor | TMEIA | | Y | | ✓ |
| 7.13 | 6.5 | Disturbed areas to be reinstated immediately after completion of the works. | All areas / Throughout construction period | Contractor | TMEIA | | Y | | ✓ |
| 7.13 | 6.5 | Construction activities should be restricted to the proposed works boundary. | All areas / Throughout construction period | Contractor | TMEIA | | Y | | ✓ |
| LANDSCAPE AND VISUAL | | | | | | | | | |
| 10.9 | 7.6 | The colour and shape of the toll control buildings, ventilation building and administration building shall adopt a design which could blend it into the vicinity elements, and the details will be developed in detailed design stage (DM2) | All areas/detailed design | Design Consultant | TMEIA | Y | | | N/A |
| 10.9 | 7.6 | Aesthetic design of the viaduct, retaining wall and other structures will be developed under ACABAS submission (DM5) | All areas/detailed design | Design Consultant | TMEIA | Y | | | N/A |
| 10.9 | 7.6 | Screening of construction works by hoardings around works area in visually unobtrusive colours, to screen works (CM5) | All areas/detailed design/ during construction/post construction | Design Consultant/ Contractor | TMEIA | Y | Y | | ✓ |
| 10.9 | 7.6 | Control night-time lighting and glare by hooding all lights (CM6) | All areas/detailed design/ during construction | Design Consultant/ Contractor | TMEIA | Y | Y | | N/A |
| 10.9 | 7.6 | Ensure no run-off into water body adjacent to the Project Area (CM7) | All areas/detailed design/ during construction | Design Consultant/ Contractor | TMEIA | Y | Y | | ✓ |
| 10.9 | 7.6 | Avoidance of excessive height and bulk of buildings and structures (CM8) | All areas/detailed design/ during construction | Design Consultant/ Contractor | TMEIA | Y | Y | | ✓ |
| 10.9 | 7.6 | Aesthetically pleasing design (visually unobtrusive and non-reflective) as regard to the form, material and finishes shall be incorporated to all buildings, engineering structures and associated infrastructure facilities (OM5) | All areas/detailed design/ during construction / during operation | Design Consultant/ Contractor | TMEIA | Y | Y | Y | N/A |
| 10.9 | 7.6 | Avoidance of excessive height and bulk of buildings and structures (OM6) | All areas/detailed design/ during construction / during operation | Design Consultant/ Contractor | TMEIA | Y | Y | Y | N/A |
| WASTE | | | | | | | | | |

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|---------------|-----------------------|---|--|----------------------|---|-----------------------|---|---|----------|
| | | | | | | D | C | O | |
| 12.6 | | The Contractor shall identify a coordinator for the management of waste. | Contract mobilisation | Contractor | TMEIA | | Y | | ✓ |
| 12.6 | | The Contractor shall prepare and implement a Waste Management Plan which specifies procedures such as a ticketing system, to facilitate tracking of loads and to ensure that illegal disposal of wastes does not occur, and protocols for the maintenance of records of the quantities of wastes generated, recycled and disposed. A recording system for the amount of waste generated, recycled and disposed (locations) should be established. | Contract mobilisation | Contractor | TMEIA, Works Branch Technical Circular No. 5/99 for the Trip-ticket System for Disposal of Construction and Demolition Material | | Y | | ✓ |
| 12.6 | | The Contractor shall apply for and obtain the appropriate licenses for the disposal of public fill, chemical waste and effluent discharges. | Contract mobilisation | Contractor | TMEIA, Land (Miscellaneous Provisions) Ordinance (Cap 28); Waste Disposal Ordinance (Cap 354); Dumping at Sea Ordinance (Cap 466); Water Pollution Control Ordinance. | | Y | | ✓ |
| 12.6 | 8.1 | Training shall be provided to workers about the concepts of site cleanliness and appropriate waste management procedures including waste reduction, reuse and recycling. | Contract Mobilisation | Contractor | TMEIA | | Y | | ✓ |
| 12.6 | 8.1 | The extent of cutting operation should be optimised where possible. Earth retaining structures and bored pile walls should be proposed to minimise the extent of cutting. | All areas / throughout construction period | Contractor | TMEIA | | Y | | ✓ |
| 12.6 | 8.1 | The surplus surcharge should be transferred to a fill bank | Reclamation areas / after surcharge works | Contractor | TMEIA | | Y | | N/A |
| 12.6 | 8.1 | Rock armour from the existing seawall should be reused on the new sloping seawall as far as possible | All areas / throughout construction period | Contractor | TMEIA | | Y | | ✓ |
| 12.6 | 8.1 | The site and surroundings shall be kept tidy and litter free. | All areas / throughout construction period | Contractor | TMEIA | | Y | | ◁▷ |
| 12.6 | 8.1 | No waste shall be burnt on site. | All areas / throughout construction period | Contractor | TMEIA | | Y | | ✓ |
| 12.6 | 8.1 | Provisions to be made in contract documents to allow and promote the use of recycled aggregates where appropriate. | Detailed Design | Design Consultant | TMEIA | Y | | | ✓ |

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|---------------|-----------------------|---|---|----------------------|----------------------------------|-----------------------|---|---|----------|
| | | | | | | D | C | O | |
| 12.6 | 8.1 | The Contractor shall be prohibited from disposing of C&D materials at any sensitive locations. The Contractor should propose the final disposal sites in the EMP and WMP for approval before implementation. | All areas / throughout construction period | Contractor | TMEIA | | Y | | ✓ |
| 12.6 | 8.1 | Stockpiled material shall be covered by tarpaulin and /or watered as appropriate to prevent windblown dust/ surface run off. | All areas / throughout construction period | Contractor | TMEIA | | Y | | ✓ |
| 12.6 | 8.1 | Excavated material in trucks shall be covered by tarpaulins to reduce the potential for spillage and dust generation. | All areas / throughout construction period | Contractor | TMEIA | | Y | | ✓ |
| 12.6 | 8.1 | Wheel washing facilities shall be used by all trucks leaving the site to prevent transfer of mud onto public roads. | All areas / throughout construction period | Contractor | TMEIA | | Y | | ✓ |
| 12.6 | 8.1 | Dredged marine mud shall be disposed of in a gazetted marine disposal ground under the requirements of the Dumping at Seas Ordinance. | Reclamation areas / throughout dredging works | Contractor | TMEIA | | Y | | ✓ |
| 12.6 | 8.1 | Standard formwork or pre-fabrication should be used as far as practicable so as to minimise the C&D materials arising. The use of more durable formwork/plastic facing for construction works should be considered. The use of wooden hoardings should be avoided and metal hoarding should be used to facilitate recycling. Purchasing of construction materials should avoid over-ordering and wastage. | All areas / throughout construction period | Contractor | TMEIA | | Y | | ✓ |

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|---------------|-----------------------|---|--|----------------------|----------------------------------|-----------------------|---|---|----------|
| | | | | | | D | C | O | |
| 12.6 | 8.1 | The Contractor should recycle as many C&D materials (this is a waste section) as possible on-site. The public fill and C&D waste should be segregated and stored in separate containers or skips to facilitate the reuse or recycling of materials and proper disposal. Where practicable, the concrete and masonry should be crushed and used as fill materials. Steel reinforcement bar should be collected for use by scrap steel mills. Different areas of the sites should be considered for segregation and storage activities. | All areas / throughout construction period | Contractor | TMEIA | | Y | | ✓ |
| 12.6 | 8.1 | All falsework will be steel instead of wood. | All areas / throughout construction period | Contractor | TMEIA | | Y | | ✓ |
| 12.6 | 8.1 | Chemical waste producers should register with the EPD. Chemical waste should be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes as follows: - suitable for the substance to be held, - resistant to corrosion, maintained in good conditions and securely closed; - Having a capacity of <450L unless the specifications have been approved by the EPD; and - Displaying a label in English and Chinese according to the instructions prescribed in Schedule 2 of the Regulations. - Clearly labelled and used solely for the storage of chemical wastes; - Enclosed with at least 3 sides; - Impermeable floor and bund with capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in the area, whichever is greatest; - Adequate ventilation; - Sufficiently covered to prevent rainfall | All areas / throughout construction period | Contractor | TMEIA | | Y | | <> |

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|--------------------------|-----------------------|--|--|----------------------|----------------------------------|-----------------------|---|---|----------|
| | | | | | | D | C | O | |
| | | entering (water collected within the bund must be tested and disposed of as chemical waste, if necessary); and - Incompatible materials are adequately separated. | | | | | | | |
| 12.6 | 8.1 | Waste oils, chemicals or solvents shall not be disposed of to drain, | All areas / throughout construction period | Contractor | TMEIA | | Y | | ↔ |
| 12.6 | 8.1 | Adequate numbers of portable toilets should be provided for on-site workers. Portable toilets should be maintained in reasonable states, which will not deter the workers from utilising them. | All areas / throughout construction period | Contractor | TMEIA | | Y | | ✓ |
| 12.6 | 8.1 | Night soil should be regularly collected by licensed collectors. | All areas / throughout construction period | Contractor | TMEIA | | Y | | N/A |
| 12.6 | 8.1 | General refuse arising on-site should be stored in enclosed bins or compaction units separately from C&D and chemical wastes. Sufficient dustbins shall be provided for storage of waste as required under the Public Cleansing and Prevention of Nuisances By-laws. In addition, general refuse shall be cleared daily and shall be disposed of to the nearest licensed landfill or refuse transfer station. Burning of refuse on construction sites is prohibited. | All areas / throughout construction period | Contractor | TMEIA | | Y | | ↔ |
| 12.6 | 8.1 | All waste containers shall be in a secure area on hardstanding; | All areas / throughout construction period | Contractor | TMEIA | | Y | | ✓ |
| 12.6 | 8.1 | Training shall be provided to workers about the concepts of site cleanliness and appropriate waste management procedure, including waste reduction, reuse and recycling. | All areas / throughout construction period | Contractor | TMEIA | | Y | | ✓ |
| 12.6 | 8.1 | Office wastes can be reduced by recycling of paper if such volume is sufficiently large to warrant collection. Participation in a local collection scheme by the Contractor should be advocated. Waste separation facilities for paper, aluminium cans, plastic bottles, etc should be provided on-site. | Site Offices/ throughout construction period | Contractor | TMEIA | | Y | | ✓ |
| 12.6 | Section 8 | EM&A of waste handling, storage, transportation, disposal procedures and documentation through the site audit programme shall be undertaken. | All areas / throughout construction period | Contractor | EM&A Manual | | Y | | ✓ |
| CULTURAL HERITAGE | | | | | | | | | |
| 11.8 | Section 9 | EM&A in the form of audit of the mitigation measures | All areas / throughout construction period | Highways Department | EIAO-TM | | Y | | N/A |

*** Remarks:**

✓ Compliance of Mitigation Measures

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|---------------|-----------------------|-----------------------------------|------------------|----------------------|----------------------------------|-----------------------|---|---|----------|
| | | | | | | D | C | O | |

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

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Appendix C

Summary of Action and Limit Levels

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

| Parameters | Action | Limit |
|---|--|--------------|
| 24 Hour TSP Level in $\mu\text{g}/\text{m}^3$ | ASR1 = 213 ASR5 = 238 AQMS1 = 213 ASR6 = 238 ASR10 = 214 | 260 |
| 1 Hour TSP Level in $\mu\text{g}/\text{m}^3$ | ASR1 = 331 ASR5 = 340 AQMS1 = 335 ASR6 = 338 ASR10 = 337 | 500 |

Table C2 *Action and Limit Levels for Water Quality*

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

Notes:

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

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

Table C3 *Action and Limit Levels for Impact Dolphin Monitoring*

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

Notes:

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

Table C4 *Derived Value of Action Level (AL) and Limit Level (LL)*

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

Appendix D

Impact Air Quality Monitoring Results

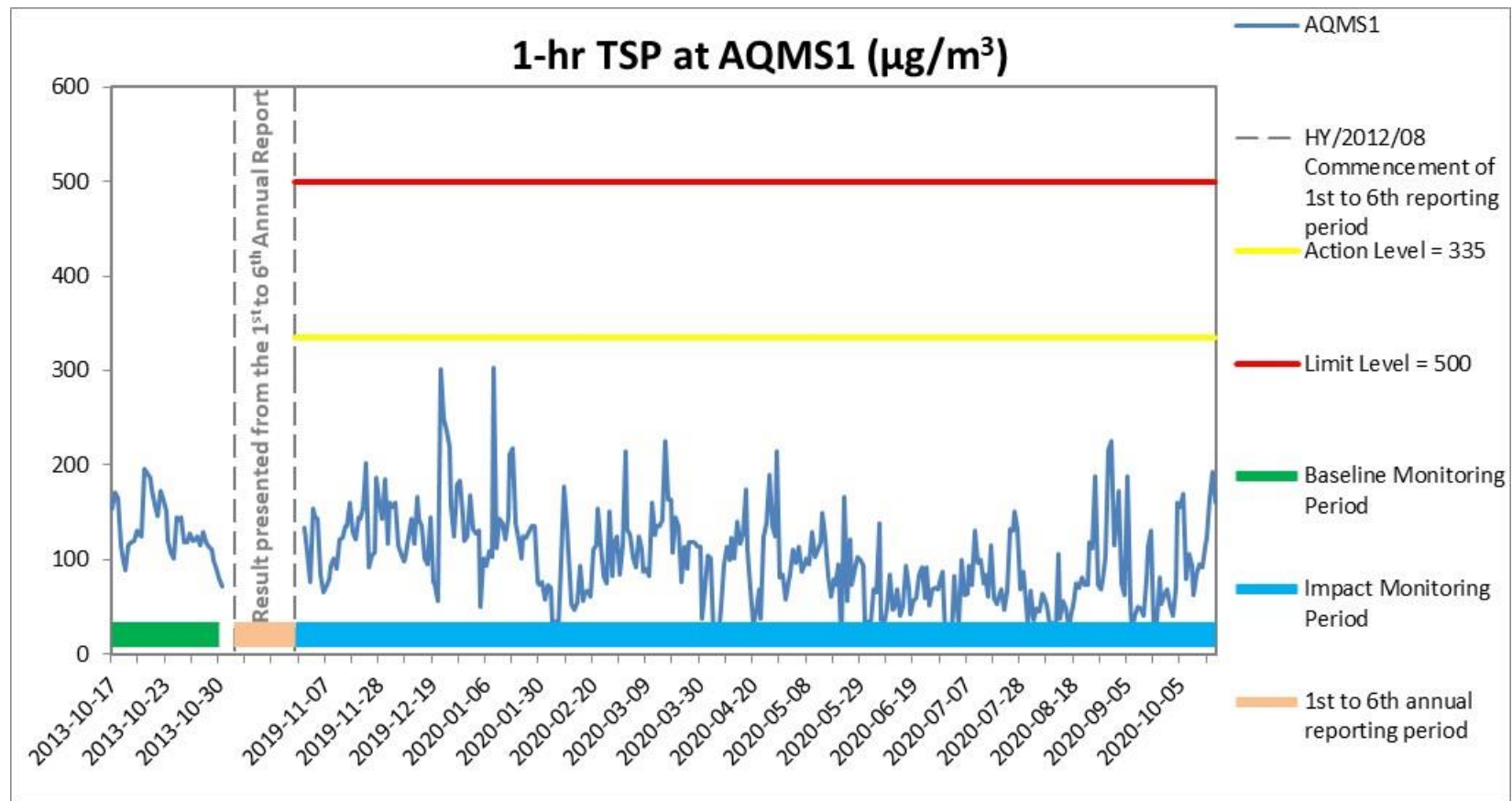


Figure D.1 Baseline & Impact Monitoring - 1-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at AQMS1 between 17 October 2013 and 31 October 2020 during Baseline & Impact Monitoring period. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major land-based construction activities included: Construction of Thermal barrier - TBM tunnel; Construction of Walkway Corbel & Cover - TBM Tunnel; Road & Drainage works - Portion N-A, Portion S-A, Portion S-B, Portion S-C, Northern Landfall; Gantry Crane Removal - Portion N-A; C&C Tunnel RC structure - Portion S-A; Backfilling - Portion S-A & S-C; Water Treatment Facilities Dismantling - Portion S-C; Roofing System Installation - Portion S-A; Fireboard installation - Tunnel; UU installation - Portion S-A, S-B & S-C and Northern Landfall; Carpark Formation - Portion S-A, S-B & S-C and Northern Landfall; Carpark canopies installation - Portion S-A, S-B & S-C; Hard paving and footpath - Pump Sump Area at Northern Landfall; Installation of green roof system - South Ventilation Building; and Reinstatement at Box Culvert.

Ref: 0212330_Impact AQM graphs_7thAnnual_REV a.xlsx



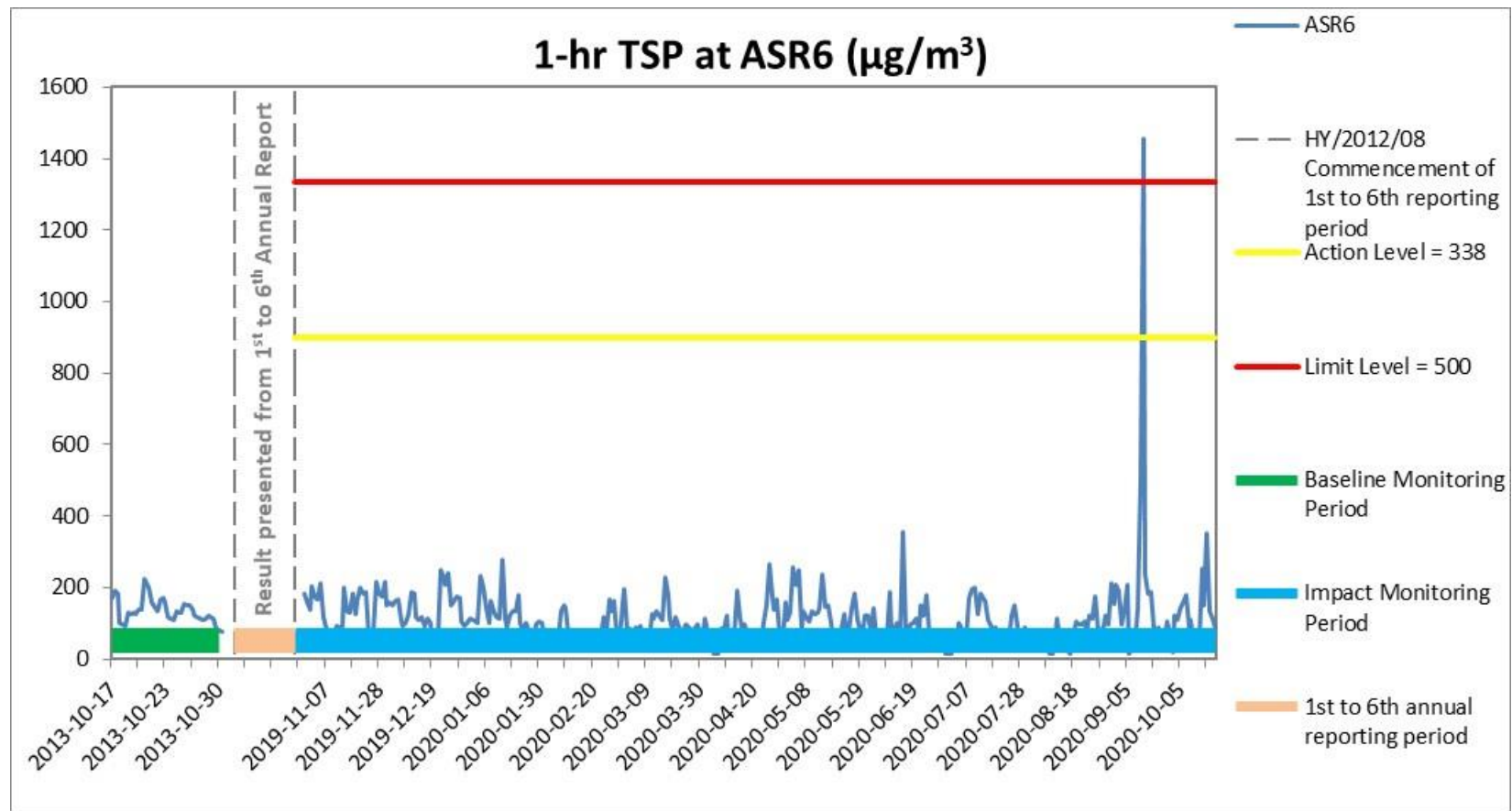


Figure D.2 Baseline & Impact Monitoring - 1-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR6 between 17 October 2013 and 31 October 2020 during Baseline & Impact Monitoring period. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major land-based construction activities included: Construction of Thermal barrier - TBM tunnel; Construction of Walkway Corbel & Cover - TBM Tunnel; Road & Drainage works - Portion N-A, Portion S-A, Portion S-B, Portion S-C, Northern Landfall; Gantry Crane Removal - Portion N-A; C&C Tunnel RC structure - Portion S-A; Backfilling - Portion S-A & S-C; Water Treatment Facilities Dismantling - Portion S-C; Roofing System Installation - Portion S-A; Fireboard installation - Tunnel; UU installation - Portion S-A, S-B & S-C and Northern Landfall; Carpark Formation - Portion S-A, S-B & S-C and Northern Landfall; Carpark canopies installation - Portion S-A, S-B & S-C; Hard paving and footpath - Pump Sump Area at Northern Landfall; Installation of green roof system - South Ventilation Building; and Reinstatement at Box Culvert.



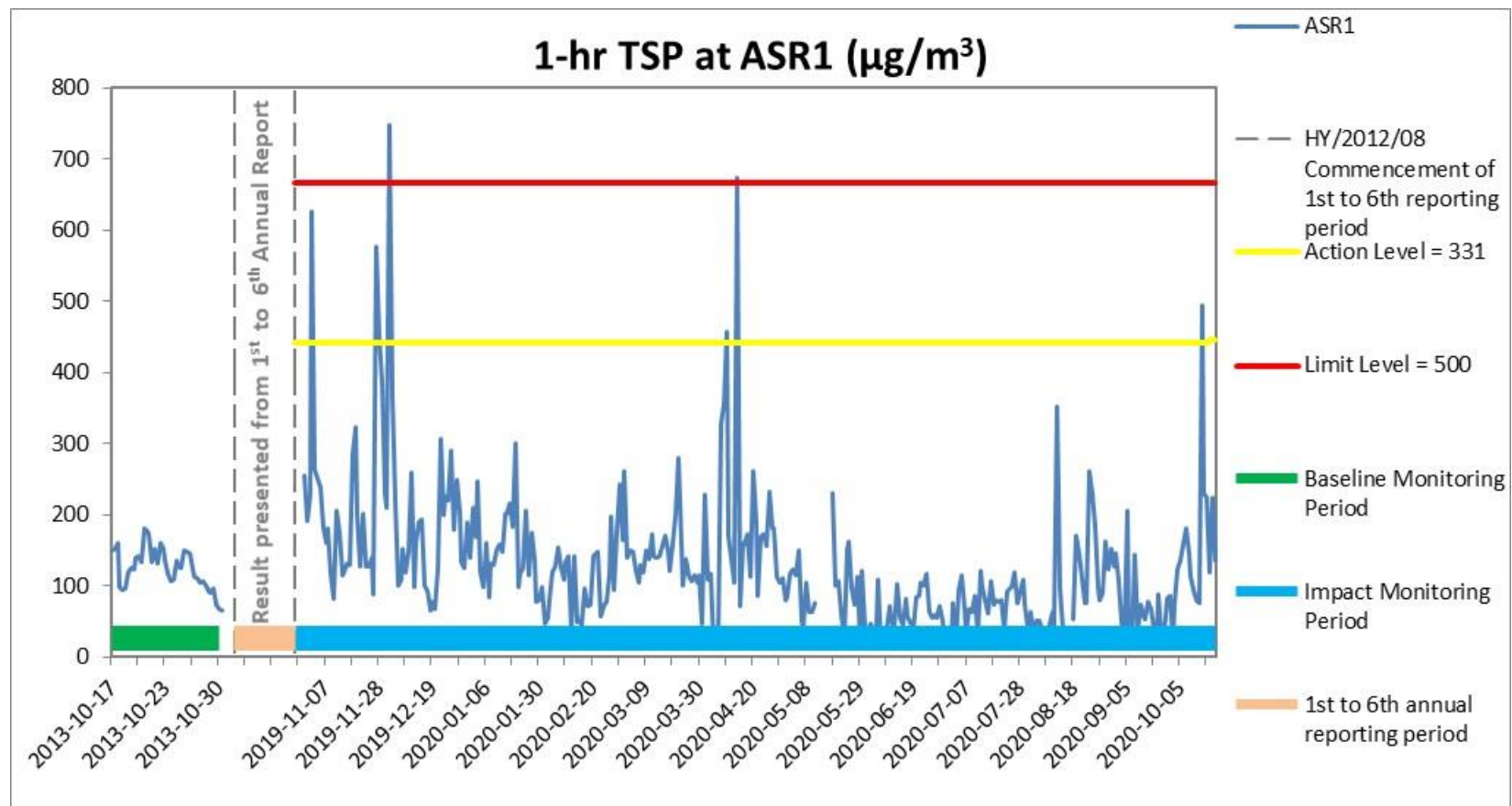


Figure D.3 Baseline & Impact Monitoring - 1-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR1 between 17 October 2013 and 31 October 2020 during Baseline & Impact Monitoring period. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major land-based construction activities included: Construction of Thermal barrier - TBM tunnel; Construction of Walkway Corbel & Cover - TBM Tunnel; Road & Drainage works - Portion N-A, Portion S-A, Portion S-B, Portion S-C, Northern Landfall; Gantry Crane Removal - Portion N-A; C&C Tunnel RC structure - Portion S-A; Backfilling - Portion S-A & S-C; Water Treatment Facilities Dismantling - Portion S-C; Roofing System Installation - Portion S-A; Fireboard installation - Tunnel; UU installation - Portion S-A, S-B & S-C and Northern Landfall; Carpark Formation - Portion S-A, S-B & S-C and Northern Landfall; Carpark canopies installation - Portion S-A, S-B & S-C; Hard paving and footpath - Pump Sump Area at Northern Landfall; Installation of green roof system - South Ventilation Building; and Reinstatement at Box Culvert.

Ref: 0212330_Impact AQM graphs_7thAnnual_REV a.xlsx



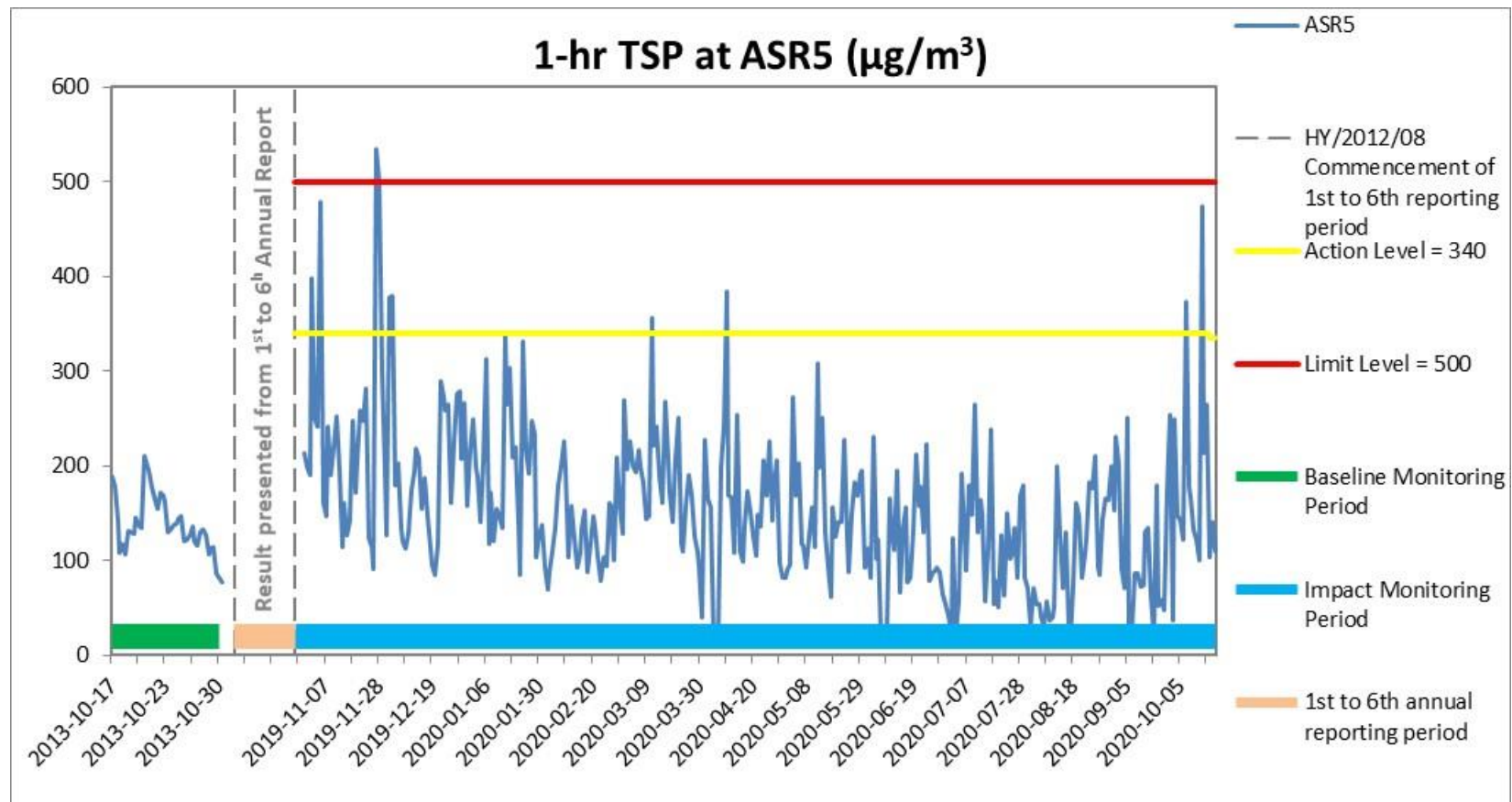


Figure D.4 Baseline & Impact Monitoring – 1-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR5 between 17 October 2013 and 31 October 2020 during Baseline & Impact Monitoring period. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major land-based construction activities included: Construction of Thermal barrier – TBM tunnel; Construction of Walkway Corbel & Cover – TBM Tunnel; Road & Drainage works – Portion N-A, Portion S-A, Portion S-B, Portion S-C, Northern Landfall; Gantry Crane Removal – Portion N-A; C&C Tunnel RC structure – Portion S-A; Backfilling – Portion S-A & S-C; Water Treatment Facilities Dismantling – Portion S-C; Roofing System Installation – Portion S-A; Fireboard installation – Tunnel; UU installation – Portion S-A, S-B & S-C and Northern Landfall; Carpark Formation – Portion S-A, S-B & S-C and Northern Landfall; Carpark canopies installation – Portion S-A, S-B & S-C; Hard paving and footpath – Pump Sump Area at Northern Landfall; Installation of green roof system – South Ventilation Building; and Reinstatement at Box Culvert.

Ref: 0212330_Impact AQM graphs_7thAnnual_REV a.xlsx



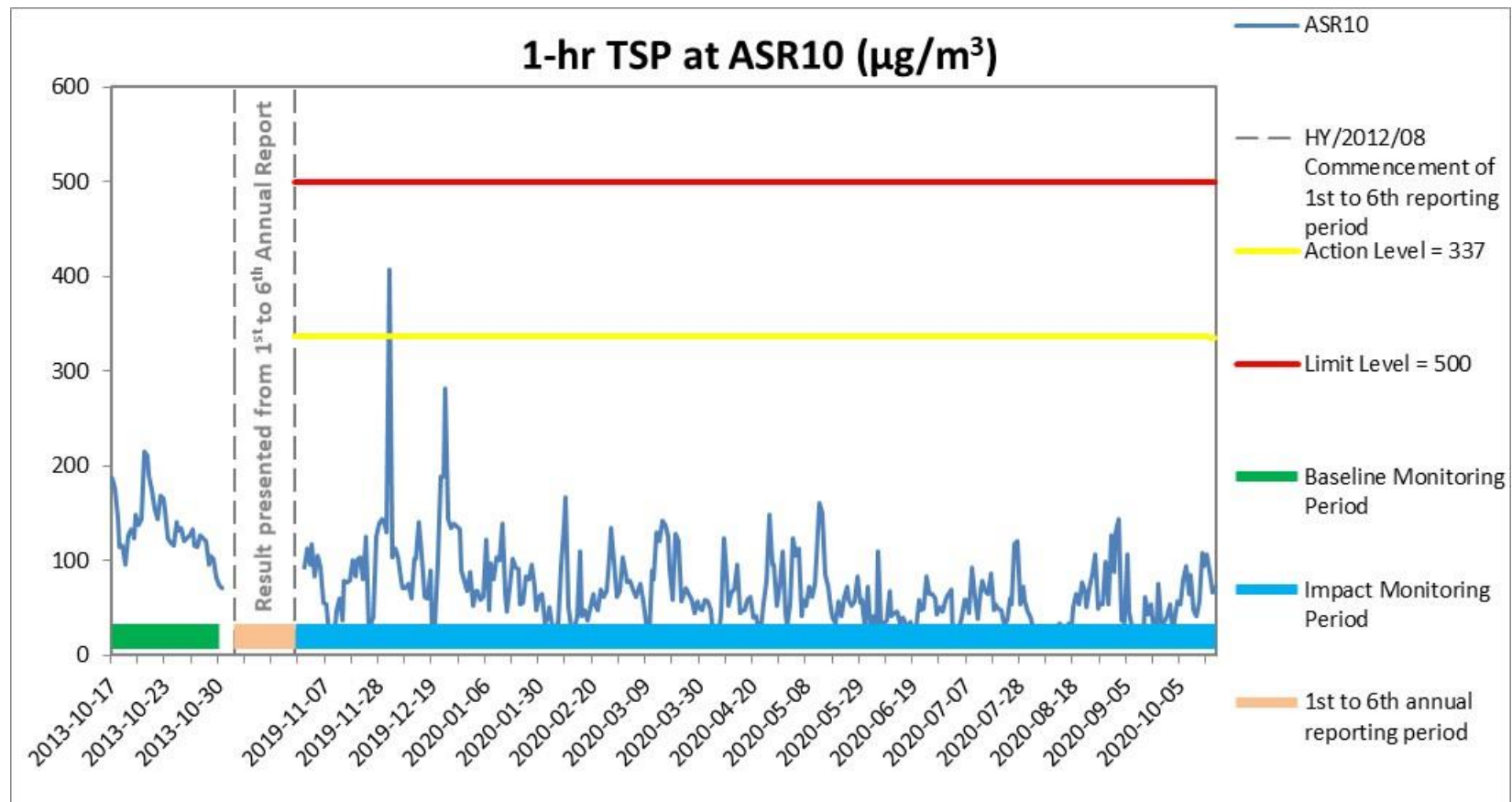


Figure D.5 Baseline & Impact Monitoring - 1-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR10 between 17 October 2013 and 31 October 2020 during Baseline & Impact Monitoring period. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major land-based construction activities included: Construction of Thermal barrier - TBM tunnel; Construction of Walkway Corbel & Cover - TBM Tunnel; Road & Drainage works - Portion N-A, Portion S-A, Portion S-B, Portion S-C, Northern Landfall; Gantry Crane Removal - Portion N-A; C&C Tunnel RC structure - Portion S-A; Backfilling - Portion S-A & S-C; Water Treatment Facilities Dismantling - Portion S-C; Roofing System Installation - Portion S-A; Fireboard installation - Tunnel; UU installation - Portion S-A, S-B & S-C and Northern Landfall; Carpark Formation - Portion S-A, S-B & S-C and Northern Landfall; Carpark canopies installation - Portion S-A, S-B & S-C; Hard paving and footpath - Pump Sump Area at Northern Landfall; Installation of green roof system - South Ventilation Building; and Reinstatement at Box Culvert.

Ref: 0212330_Impact AQM graphs_7thAnnual_REV a.xlsx



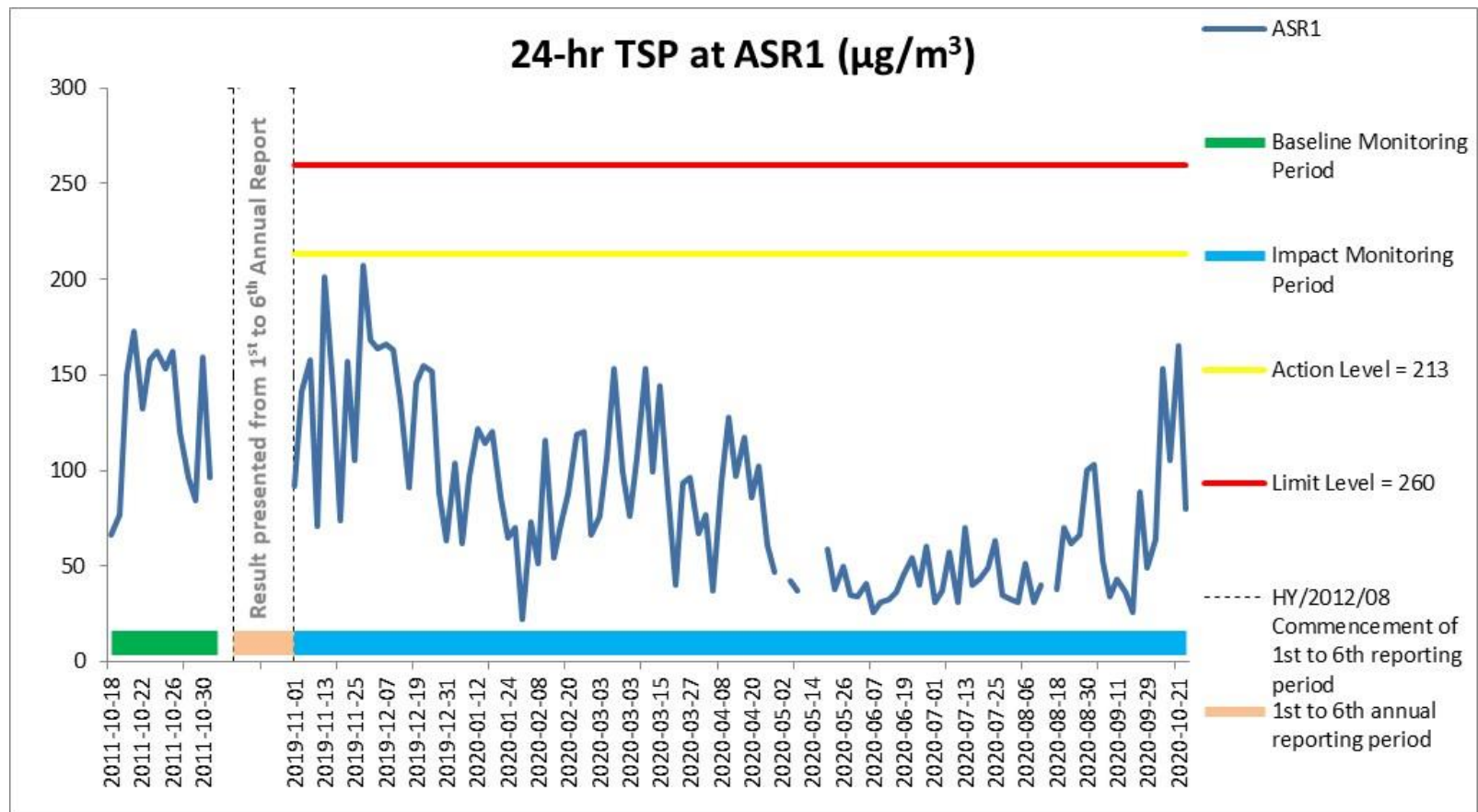


Figure D.6 Baseline & Impact Monitoring - 24-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR1 between 17 October 2013 and 31 October 2020 during Baseline & Impact Monitoring period. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major land-based construction activities included: Construction of Thermal barrier - TBM tunnel; Construction of Walkway Corbel & Cover - TBM Tunnel; Road & Drainage works - Portion N-A, Portion S-A, Portion S-B, Portion S-C, Northern Landfall; Gantry Crane Removal - Portion N-A; C&C Tunnel RC structure - Portion S-A; Backfilling - Portion S-A & S-C; Water Treatment Facilities Dismantling - Portion S-C; Roofing System Installation - Portion S-A; Fireboard installation - Tunnel; UU installation - Portion S-A, S-B & S-C and Northern Landfall; Carpark Formation - Portion S-A, S-B & S-C and Northern Landfall; Carpark canopies installation - Portion S-A, S-B & S-C; Hard paving and footpath - Pump Sump Area at Northern Landfall; Installation of green roof system - South Ventilation Building; and Reinstatement at Box Culvert.



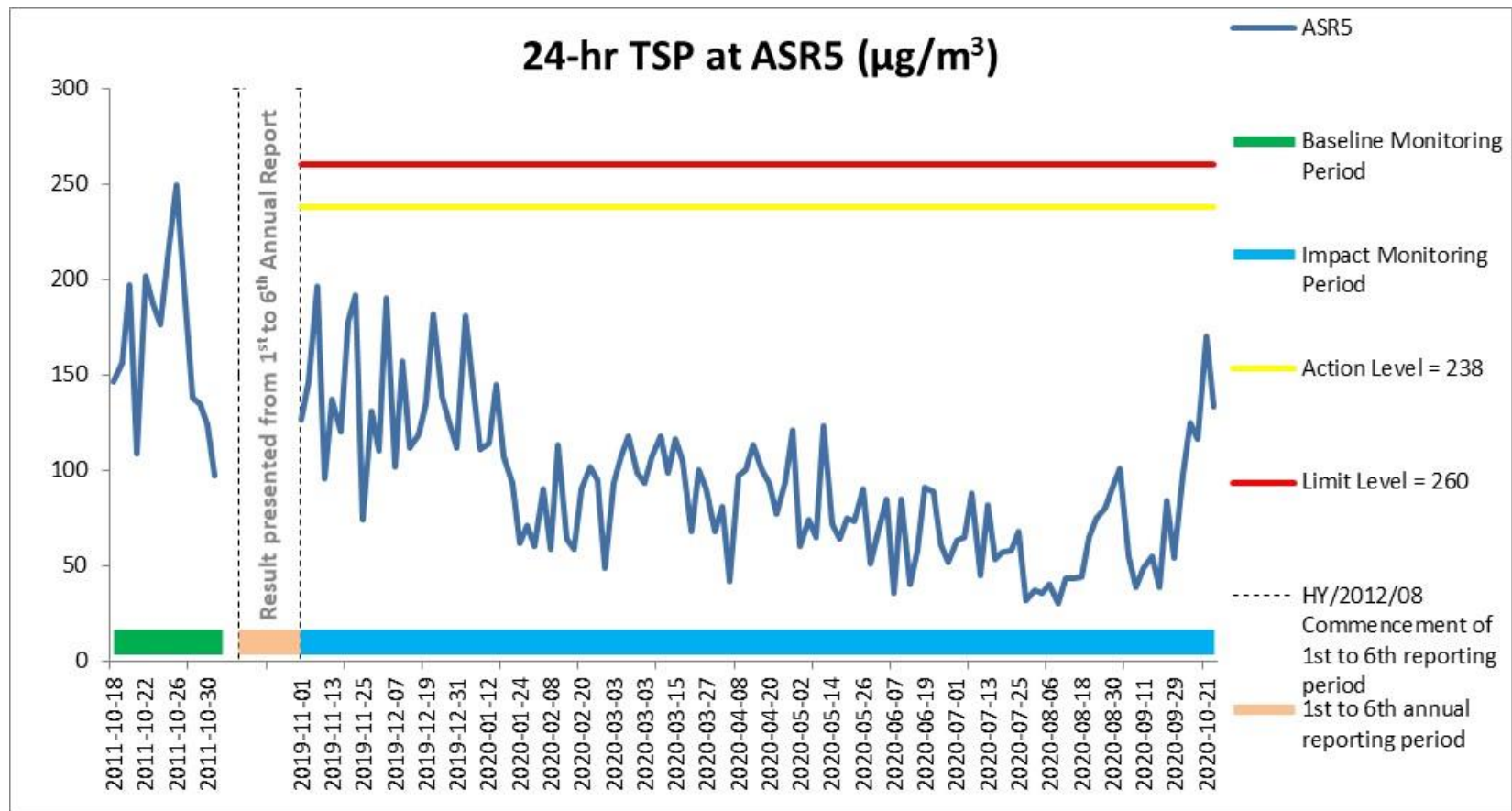


Figure D.7 Baseline & Impact Monitoring - 24-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR5 between 17 October 2013 and 31 October 2020 during Baseline & Impact Monitoring period. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major land-based construction activities included: Construction of Thermal barrier - TBM tunnel; Construction of Walkway Corbel & Cover - TBM Tunnel; Road & Drainage works - Portion N-A, Portion S-A, Portion S-B, Portion S-C, Northern Landfall; Gantry Crane Removal - Portion N-A; C&C Tunnel RC structure - Portion S-A; Backfilling - Portion S-A & S-C; Water Treatment Facilities Dismantling - Portion S-C; Roofing System Installation - Portion S-A; Fireboard installation - Tunnel; UU installation - Portion S-A, S-B & S-C and Northern Landfall; Carpark Formation - Portion S-A, S-B & S-C and Northern Landfall; Carpark canopies installation - Portion S-A, S-B & S-C; Hard paving and footpath - Pump Sump Area at Northern Landfall; Installation of green roof system - South Ventilation Building; and Reinstatement at Box Culvert.



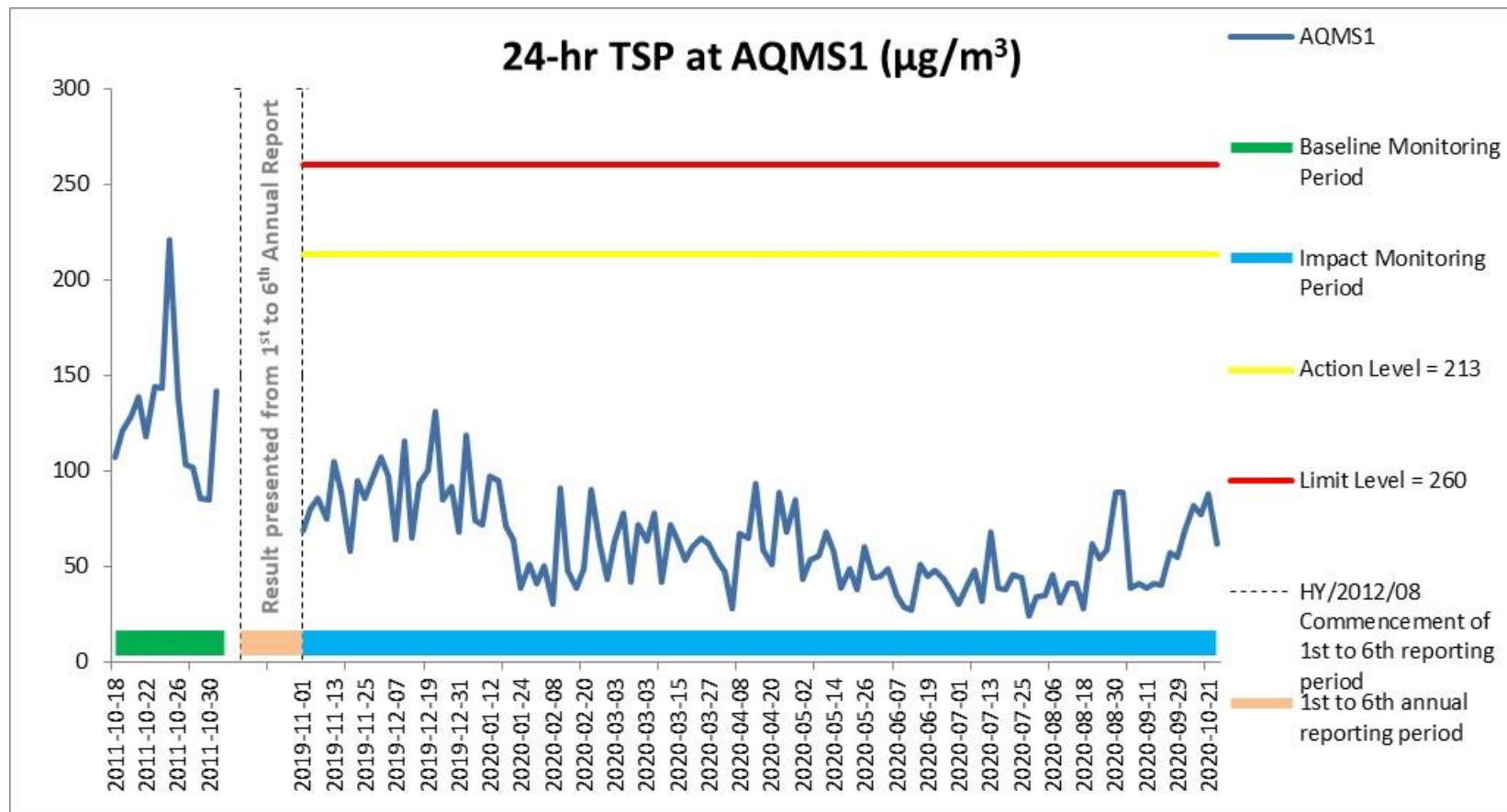


Figure D.8 Baseline & Impact Monitoring - 24-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at AQMS1 between 17 October 2013 and 31 October 2020 during Baseline & Impact Monitoring period. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major land-based construction activities included: Construction of Thermal barrier - TBM tunnel; Construction of Walkway Corbel & Cover - TBM Tunnel; Road & Drainage works - Portion N-A, Portion S-A, Portion S-B, Portion S-C, Northern Landfall; Gantry Crane Removal - Portion N-A; C&C Tunnel RC structure - Portion S-A; Backfilling - Portion S-A & S-C; Water Treatment Facilities Dismantling - Portion S-C; Roofing System Installation - Portion S-A; Fireboard installation - Tunnel; UU installation - Portion S-A, S-B & S-C and Northern Landfall; Carpark Formation - Portion S-A, S-B & S-C and Northern Landfall; Carpark canopies installation - Portion S-A, S-B & S-C; Hard paving and footpath - Pump Sump Area at Northern Landfall; Installation of green roof system - South Ventilation Building; and Reinstatement at Box Culvert.



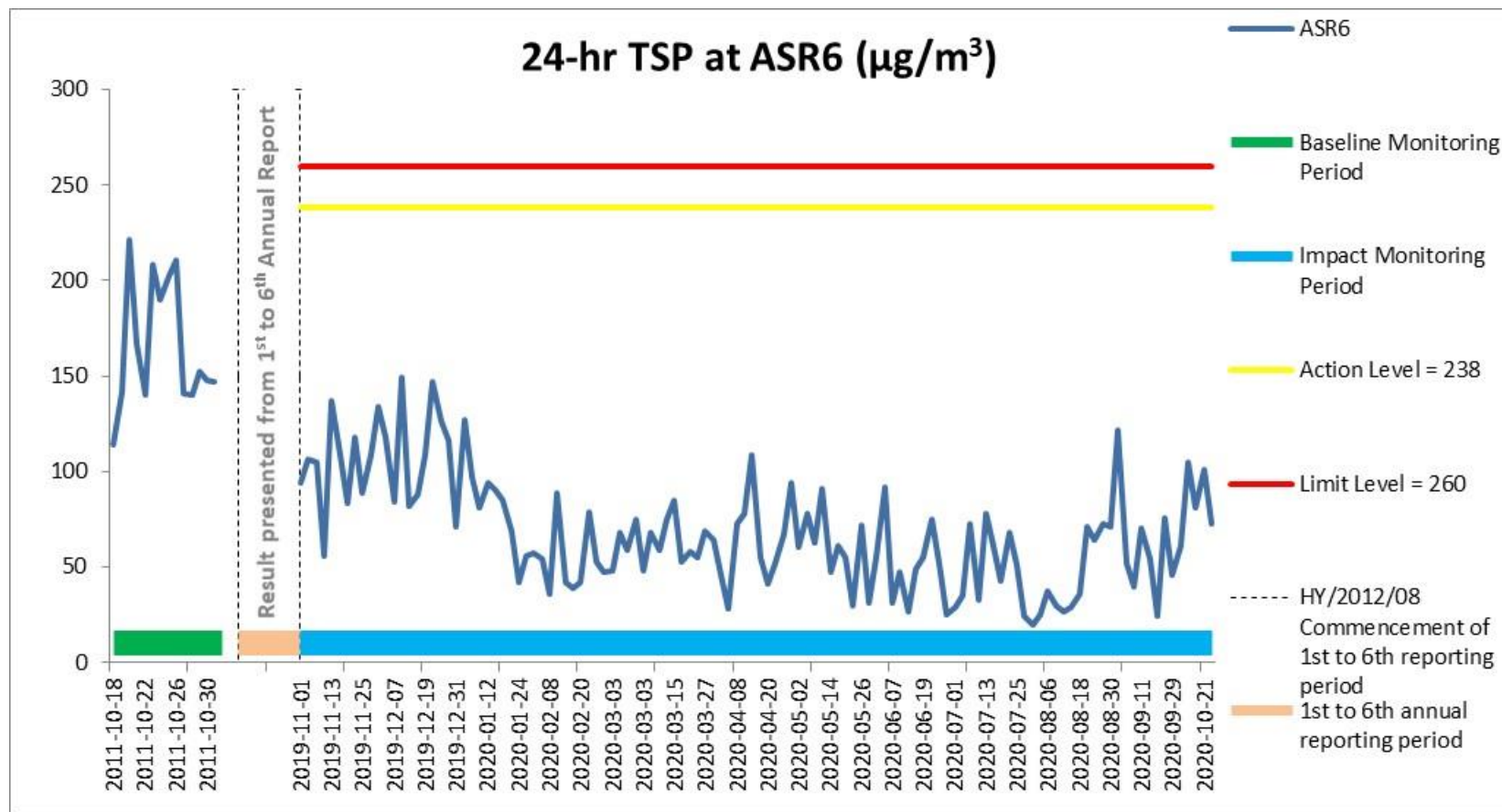


Figure D.9 Baseline & Impact Monitoring - 24-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR6 between 17 October 2013 and 31 October 2020 during Baseline & Impact Monitoring period. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major land-based construction activities included: Construction of Thermal barrier - TBM tunnel; Construction of Walkway Corbel & Cover - TBM Tunnel; Road & Drainage works - Portion N-A, Portion S-A, Portion S-B, Portion S-C, Northern Landfall; Gantry Crane Removal - Portion N-A; C&C Tunnel RC structure - Portion S-A; Backfilling - Portion S-A & S-C; Water Treatment Facilities Dismantling - Portion S-C; Roofing System Installation - Portion S-A; Fireboard installation - Tunnel; UU installation - Portion S-A, S-B & S-C and Northern Landfall; Carpark Formation - Portion S-A, S-B & S-C and Northern Landfall; Carpark canopies installation - Portion S-A, S-B & S-C; Hard paving and footpath - Pump Sump Area at Northern Landfall; Installation of green roof system - South Ventilation Building; and Reinstatement at Box Culvert.

Ref: 0212330_Impact AQM graphs_7thAnnual_REV a.xlsx



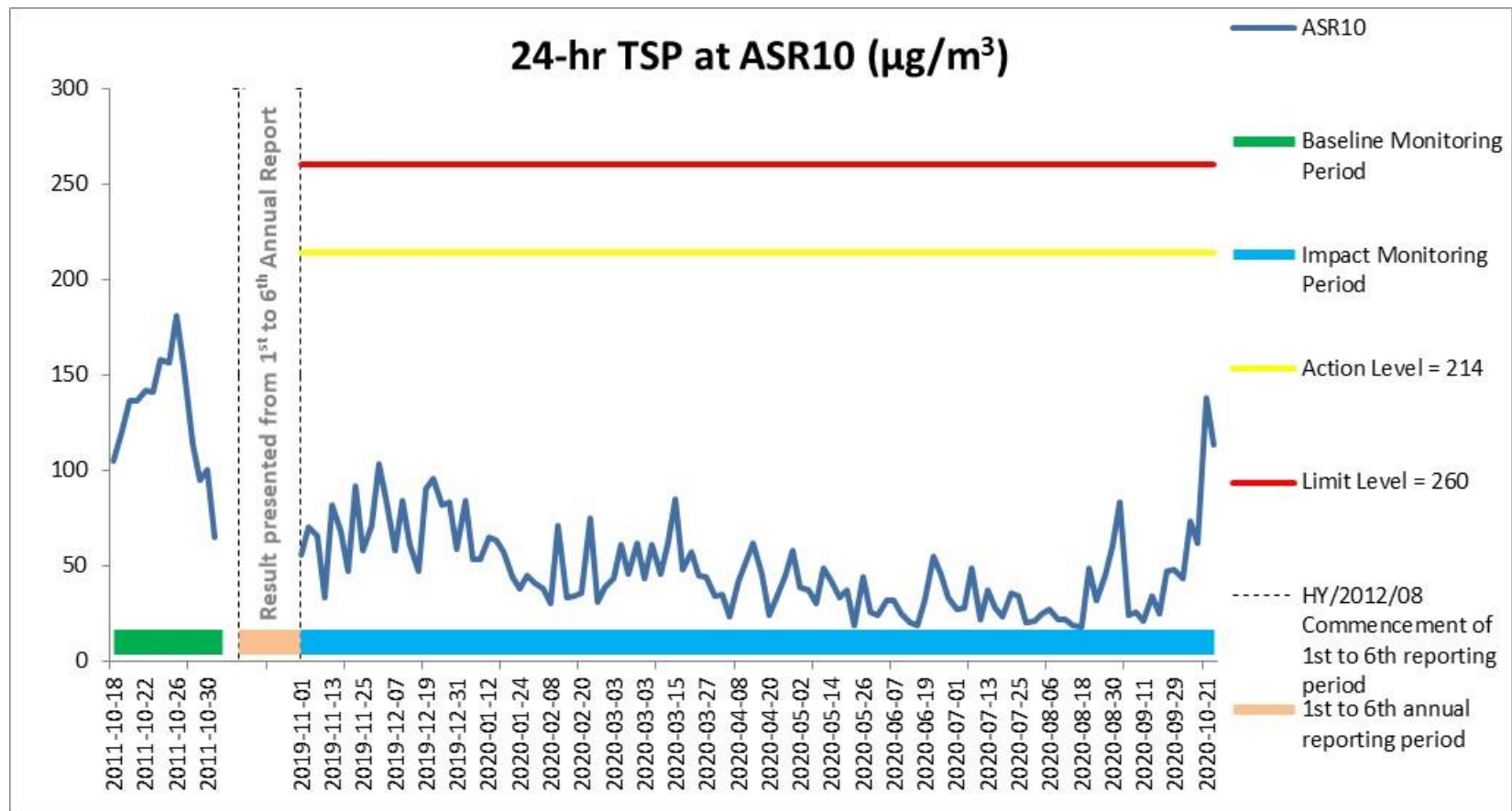


Figure D.10 Baseline & Impact Monitoring - 24-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR10 between 17 October 2013 and 31 October 2020 during Baseline & Impact Monitoring period. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major land-based construction activities included: Construction of Thermal barrier - TBM tunnel; Construction of Walkway Corbel & Cover - TBM Tunnel; Road & Drainage works - Portion N-A, Portion S-A, Portion S-B, Portion S-C, Northern Landfall; Gantry Crane Removal - Portion N-A; C&C Tunnel RC structure - Portion S-A; Backfilling - Portion S-A & S-C; Water Treatment Facilities Dismantling - Portion S-C; Roofing System Installation - Portion S-A; Fireboard installation - Tunnel; UU installation - Portion S-A, S-B & S-C and Northern Landfall; Carpark Formation - Portion S-A, S-B & S-C and Northern Landfall; Carpark canopies installation - Portion S-A, S-B & S-C; Hard paving and footpath - Pump Sump Area at Northern Landfall; Installation of green roof system - South Ventilation Building; and Reinstatement at Box Culvert.



Appendix E

Impact Water Quality
Monitoring Results, Post-
Construction Water Quality
Monitoring Results and
Operational Phase Water
Quality Monitoring Results

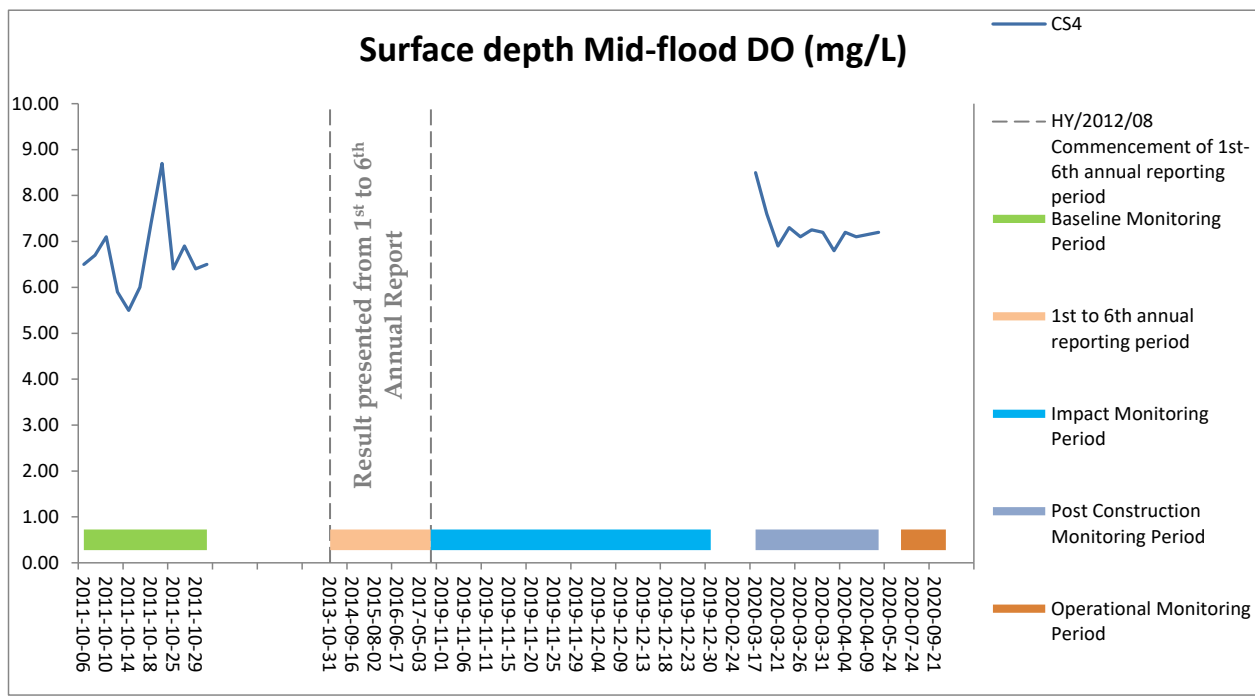
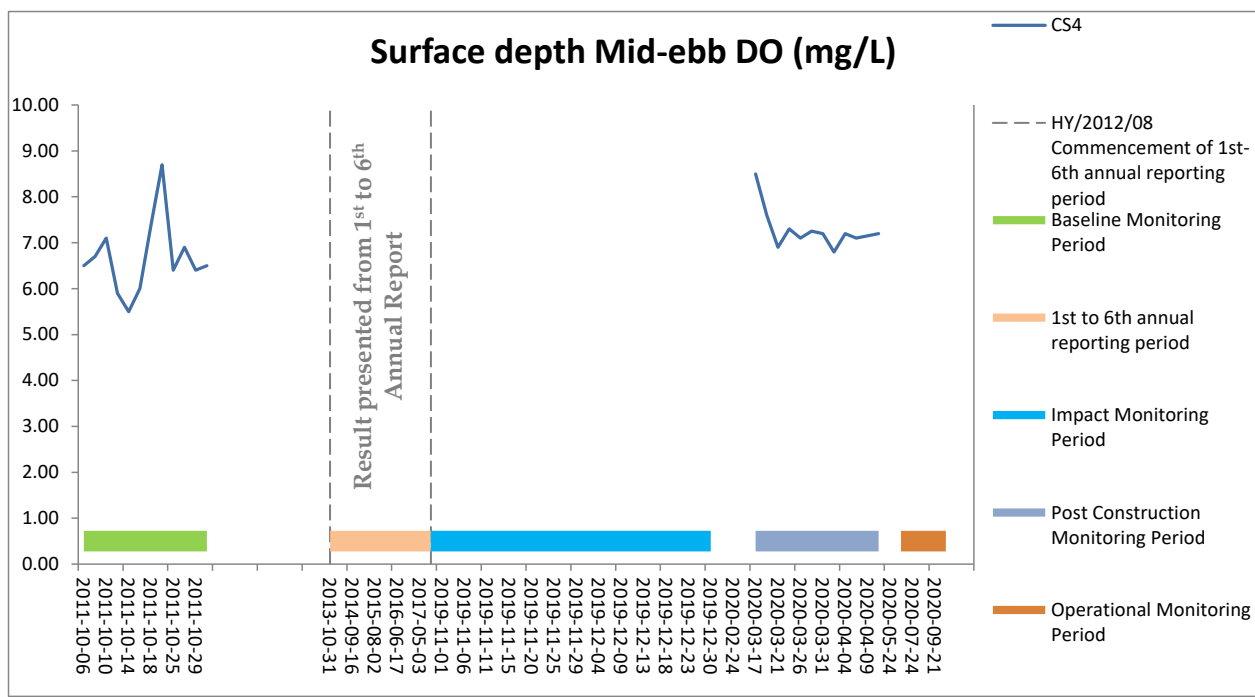


Figure E1 Baseline, Impact, Post-construction & Operational Monitoring - Mean Level of Dissolved Oxygen (mg/L) in surface waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at CS4. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

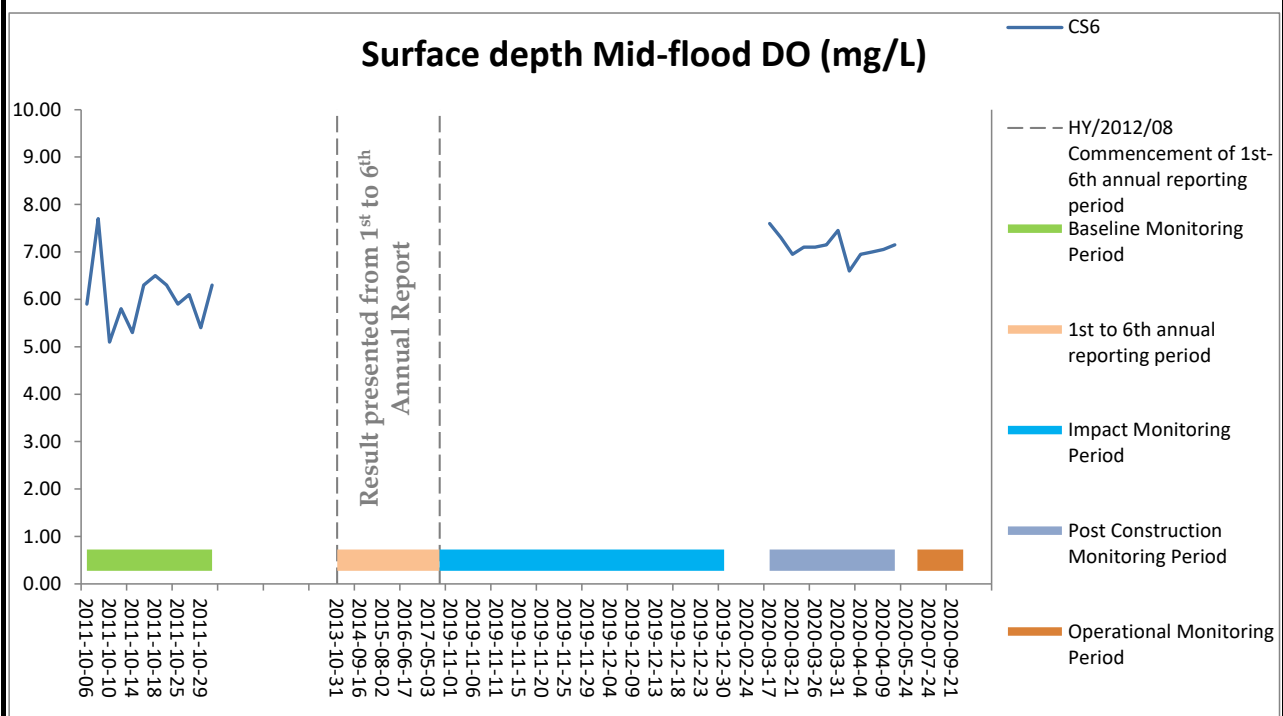
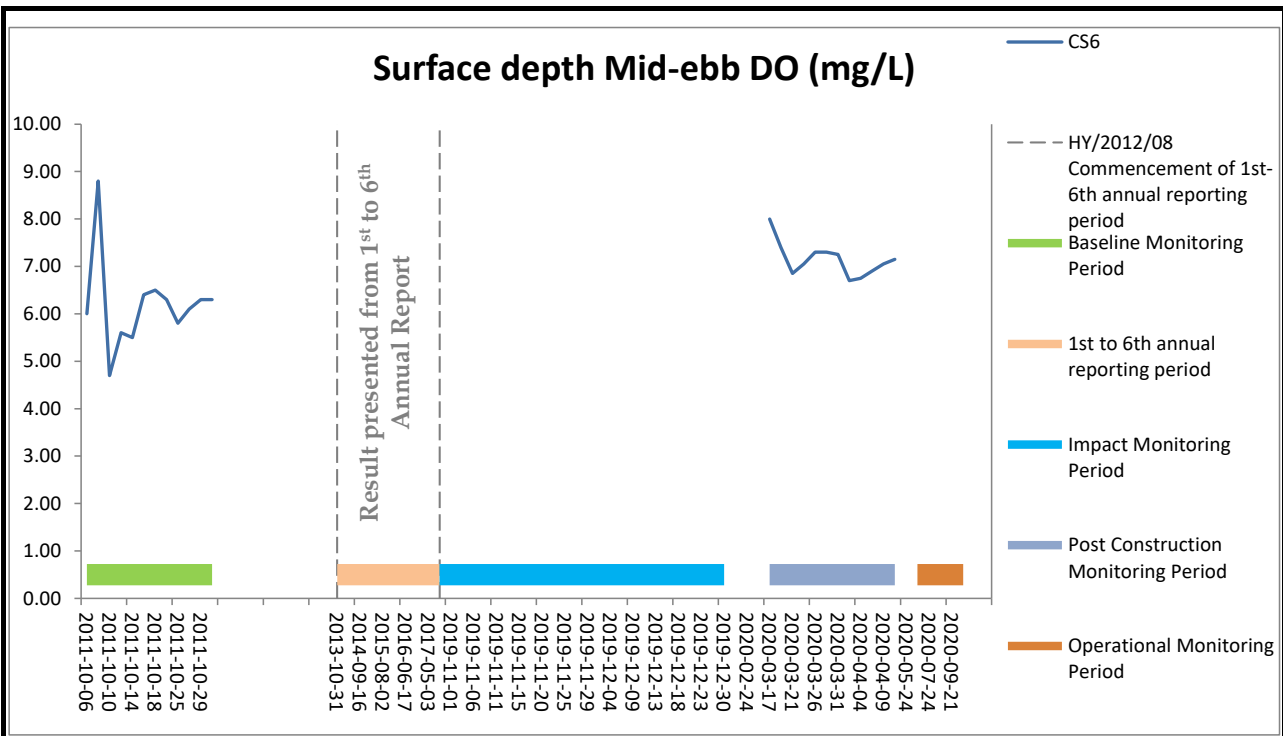


Figure E2 Baseline, Impact, Post-construction & Operational Monitoring - Mean Level of Dissolved Oxygen (mg/L) in surface waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at CS6. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



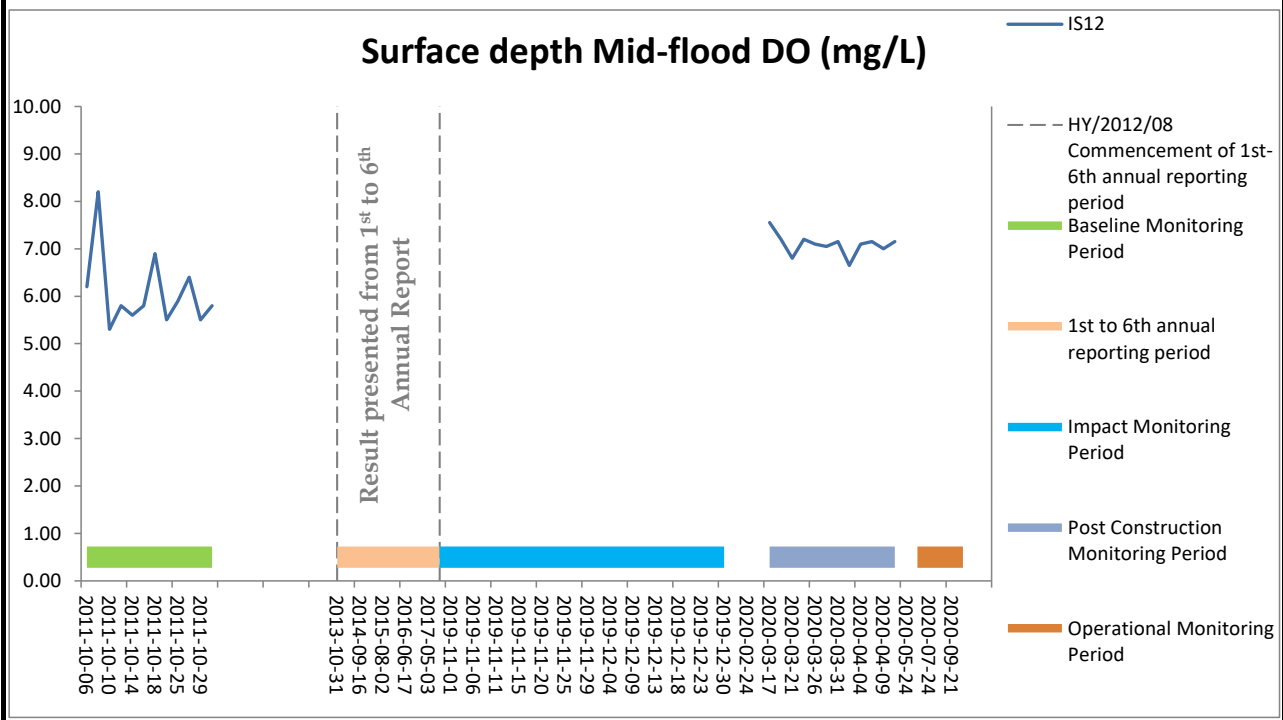
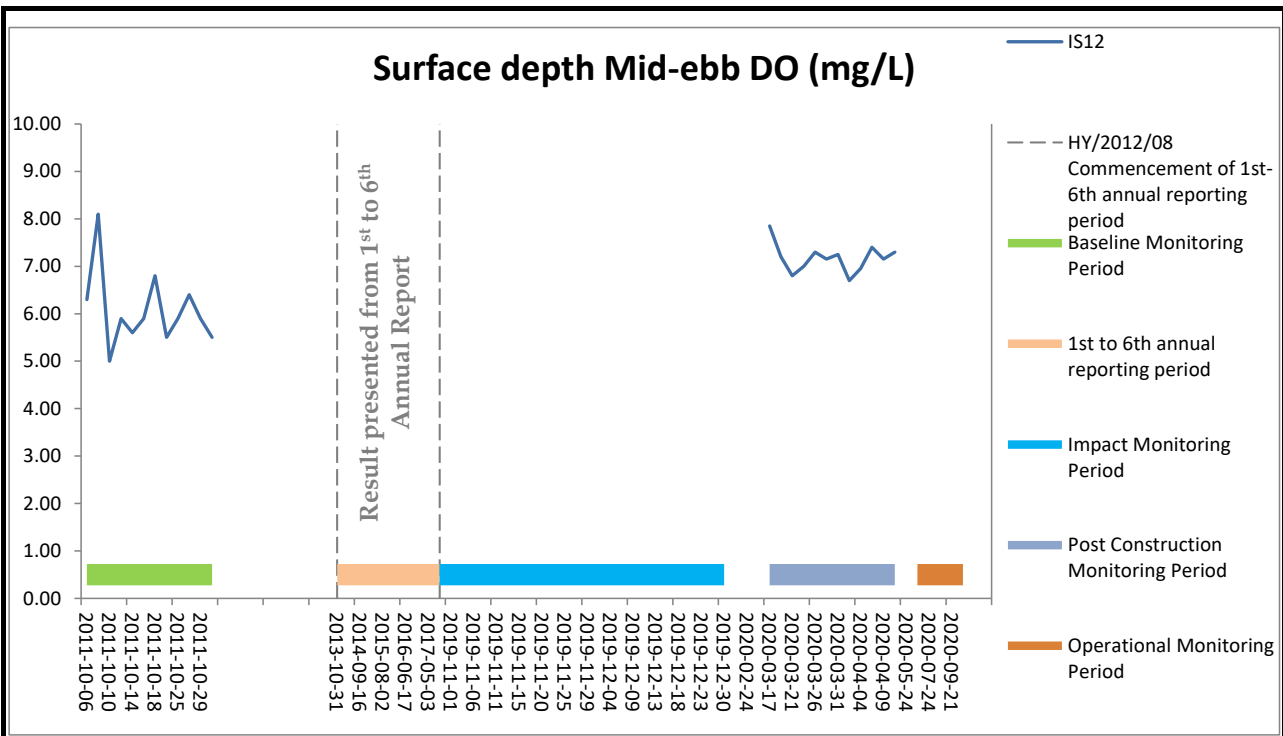


Figure E3 Baseline, Impact, Post-construction & Operational Monitoring - Mean Level of Dissolved Oxygen (mg/L) in surface waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS12. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



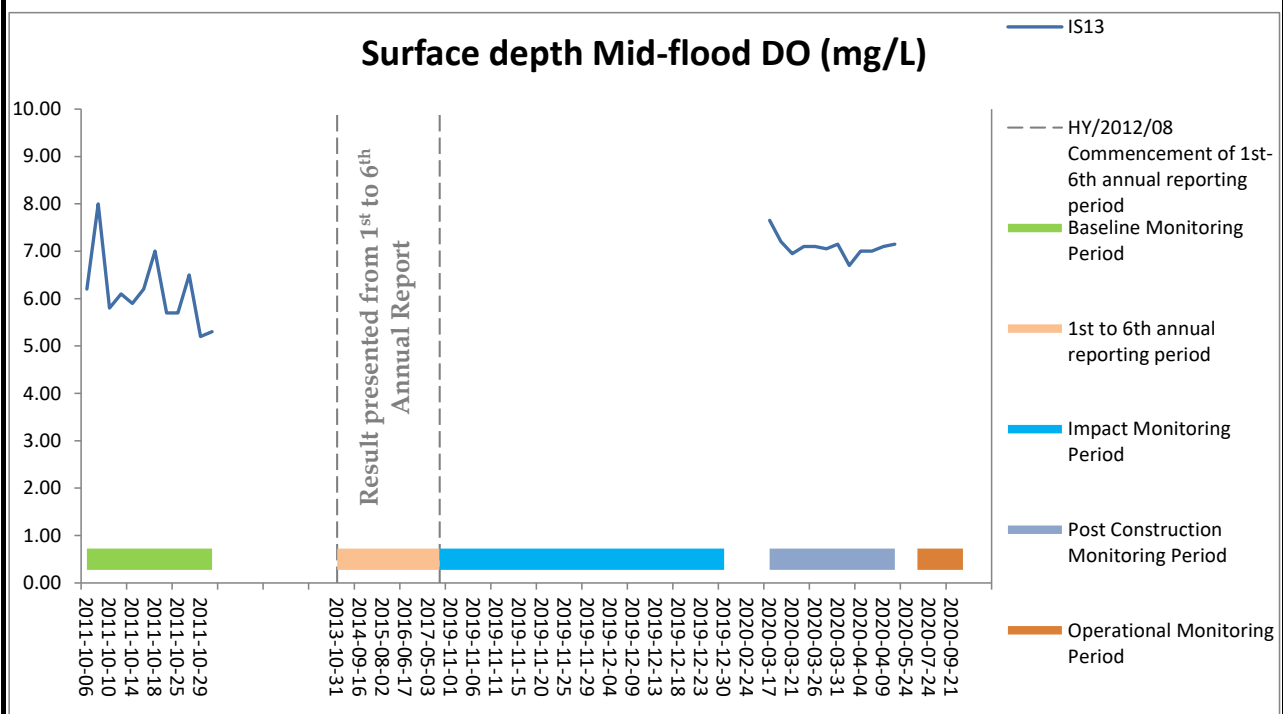
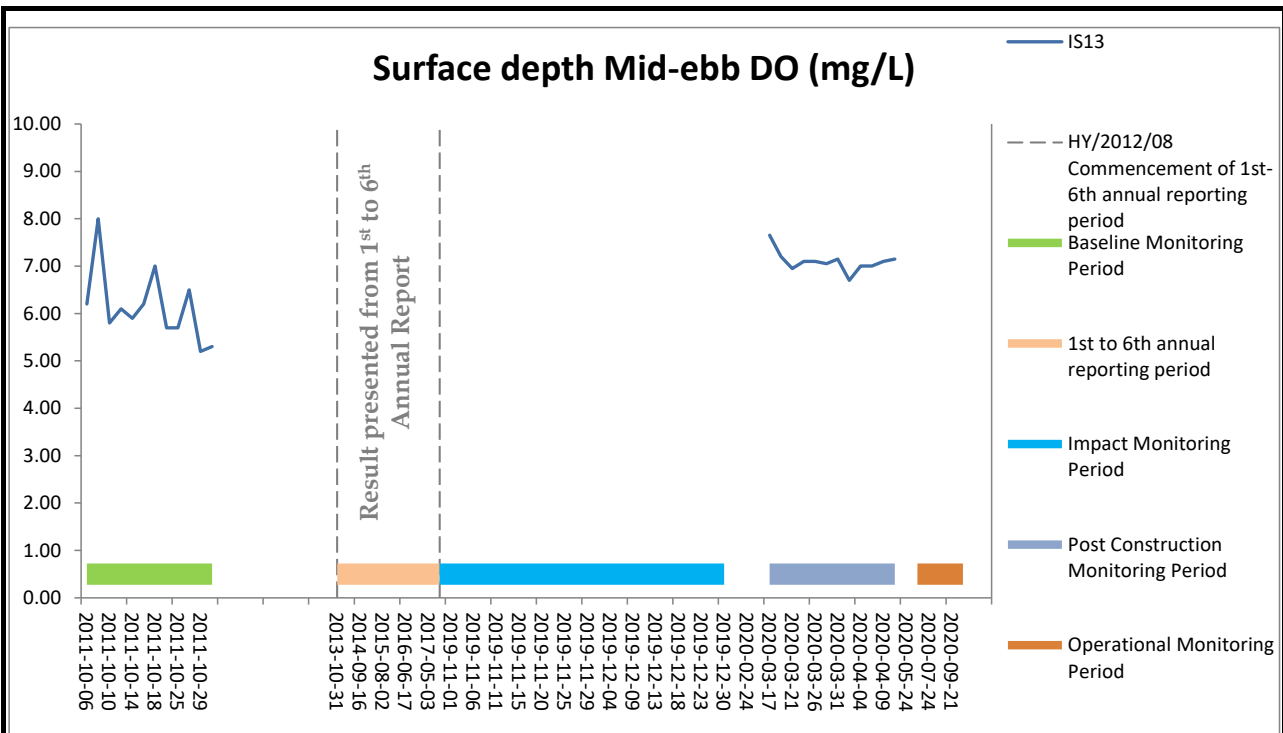
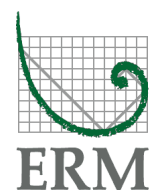


Figure E4 Baseline, Impact, Post-construction & Operational Monitoring - Mean Level of Dissolved Oxygen (mg/L) in surface waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS13. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



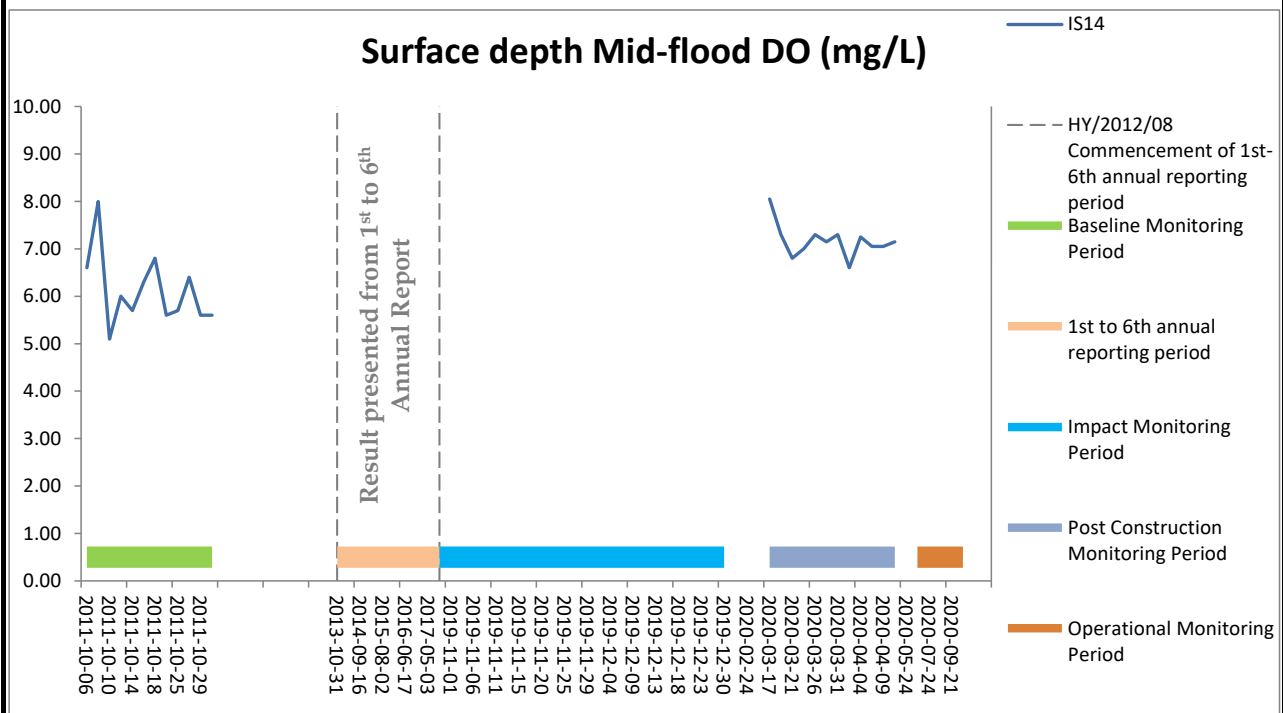
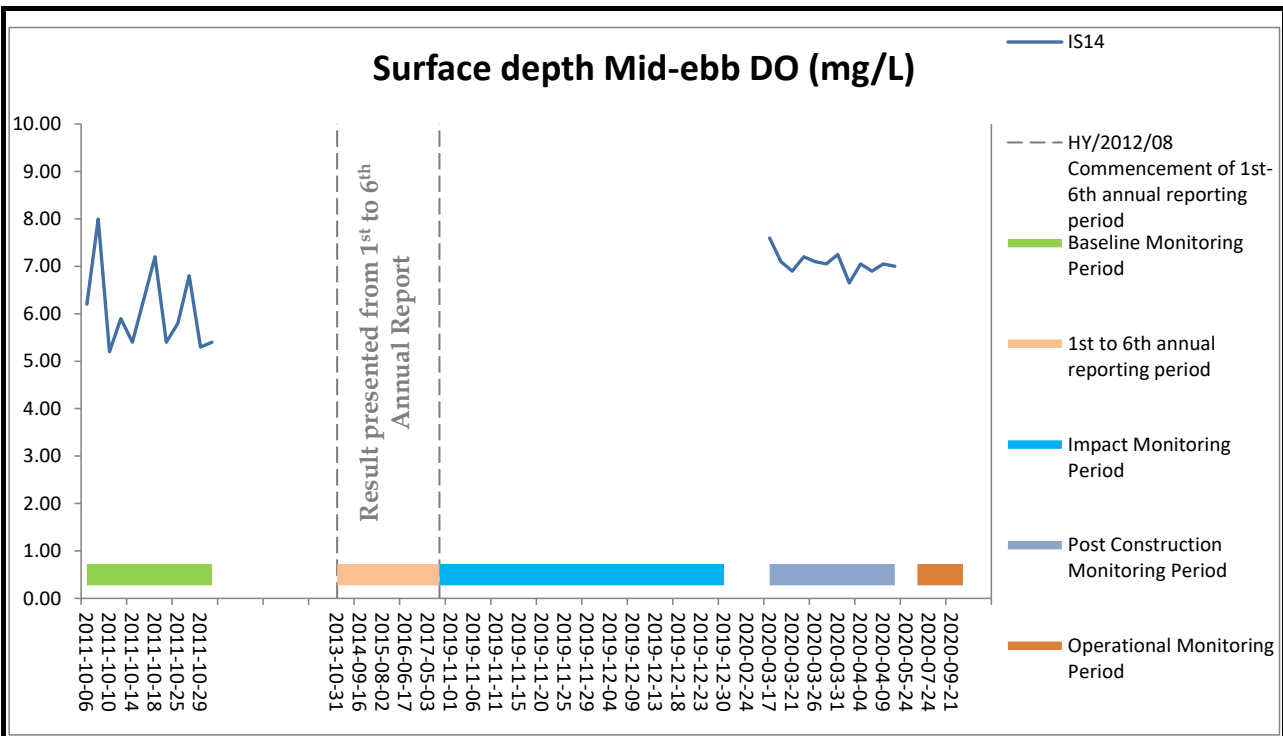


Figure E5 Baseline, Impact, Post-construction & Operational Monitoring - Mean Level of Dissolved Oxygen (mg/L) in surface waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS14. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



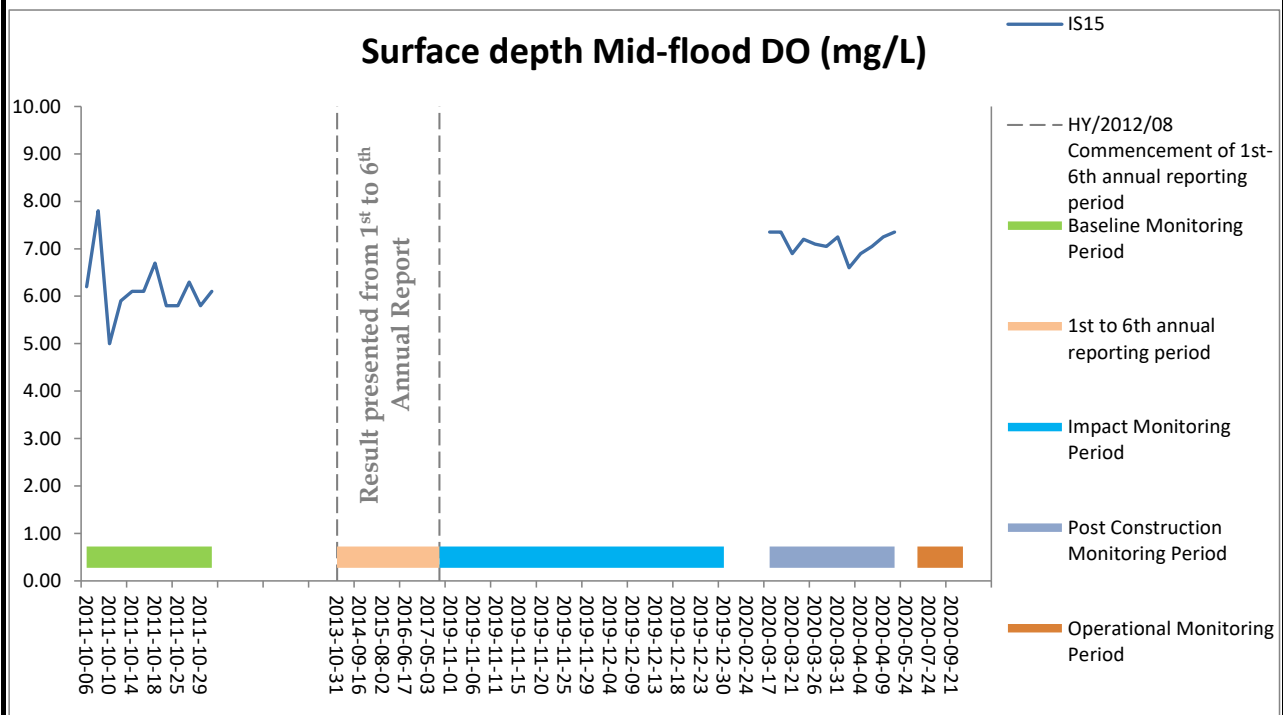
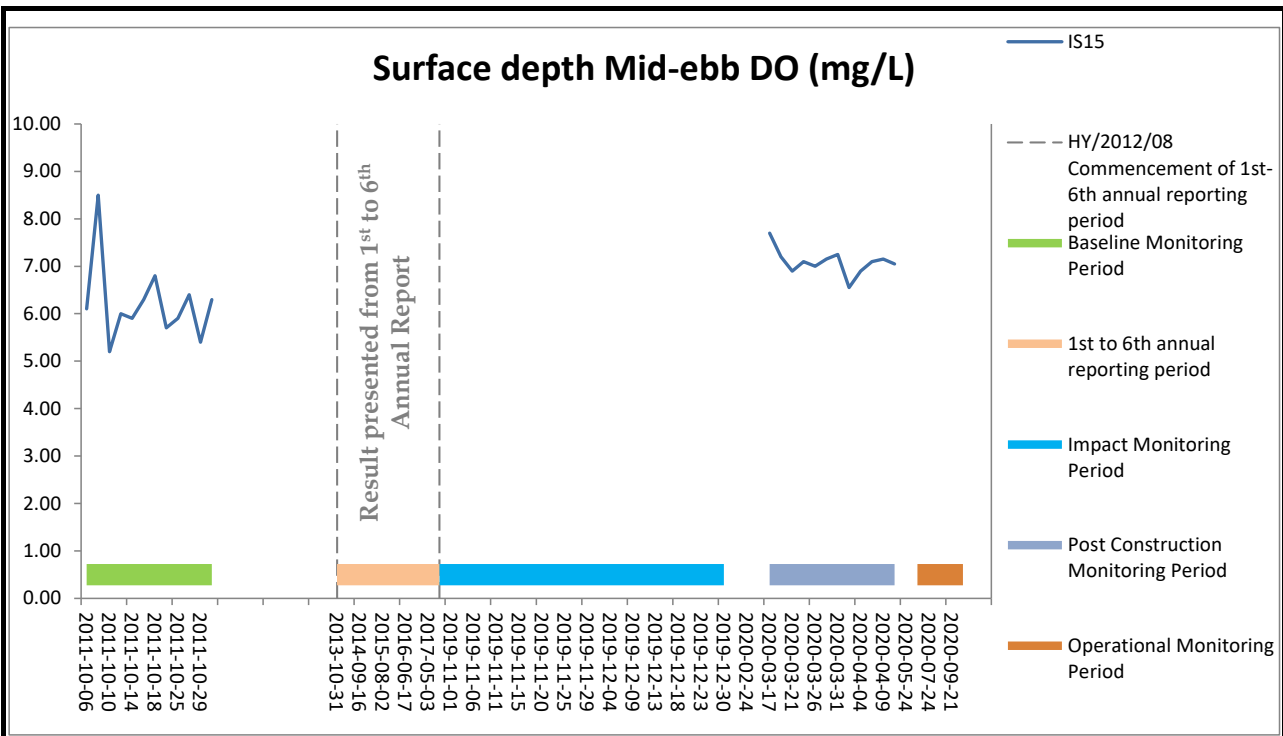


Figure E6 Baseline, Impact, Post-construction & Operational Monitoring - Mean Level of Dissolved Oxygen (mg/L) in surface waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS15. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



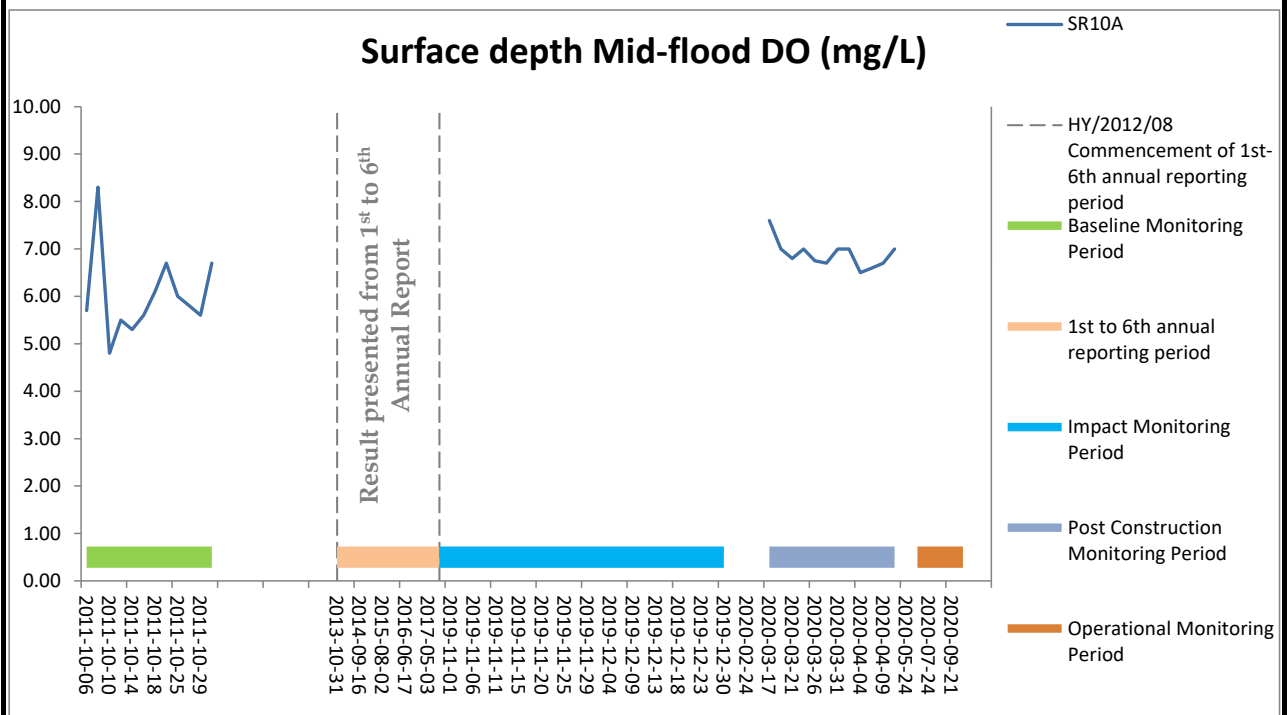
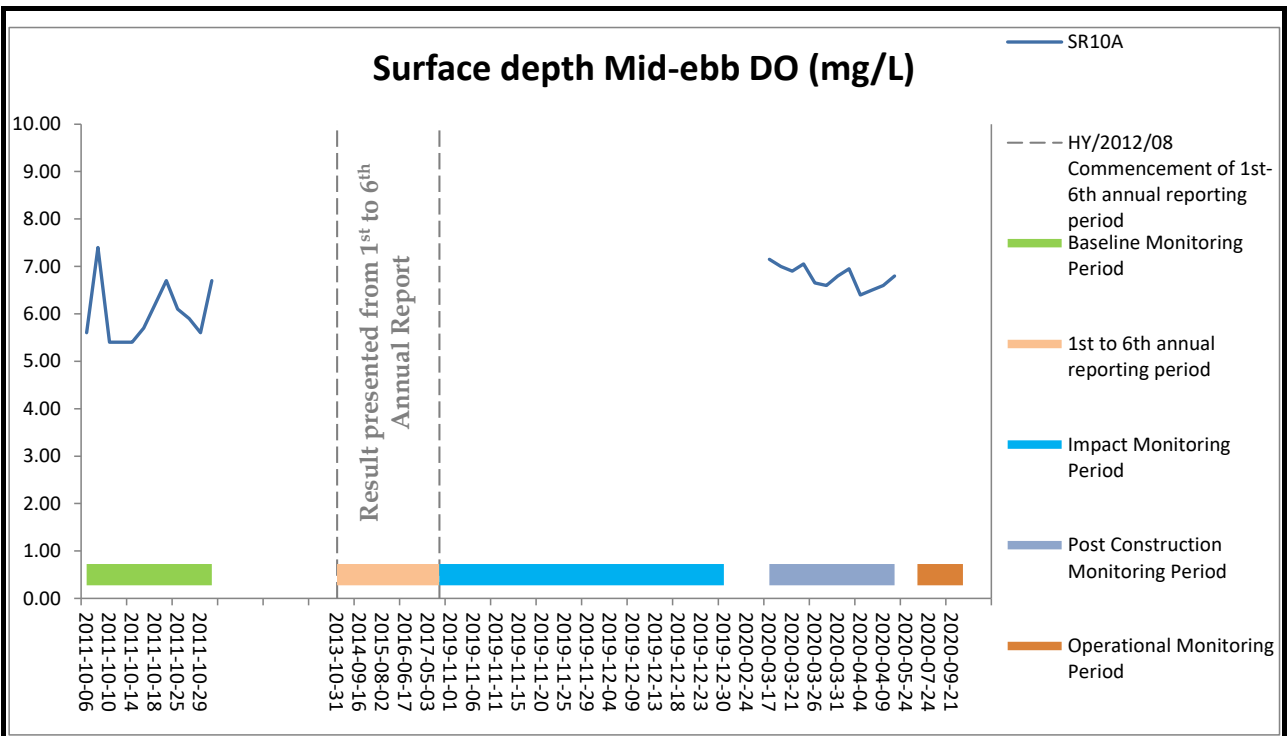


Figure E7 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in surface waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at SR10A. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



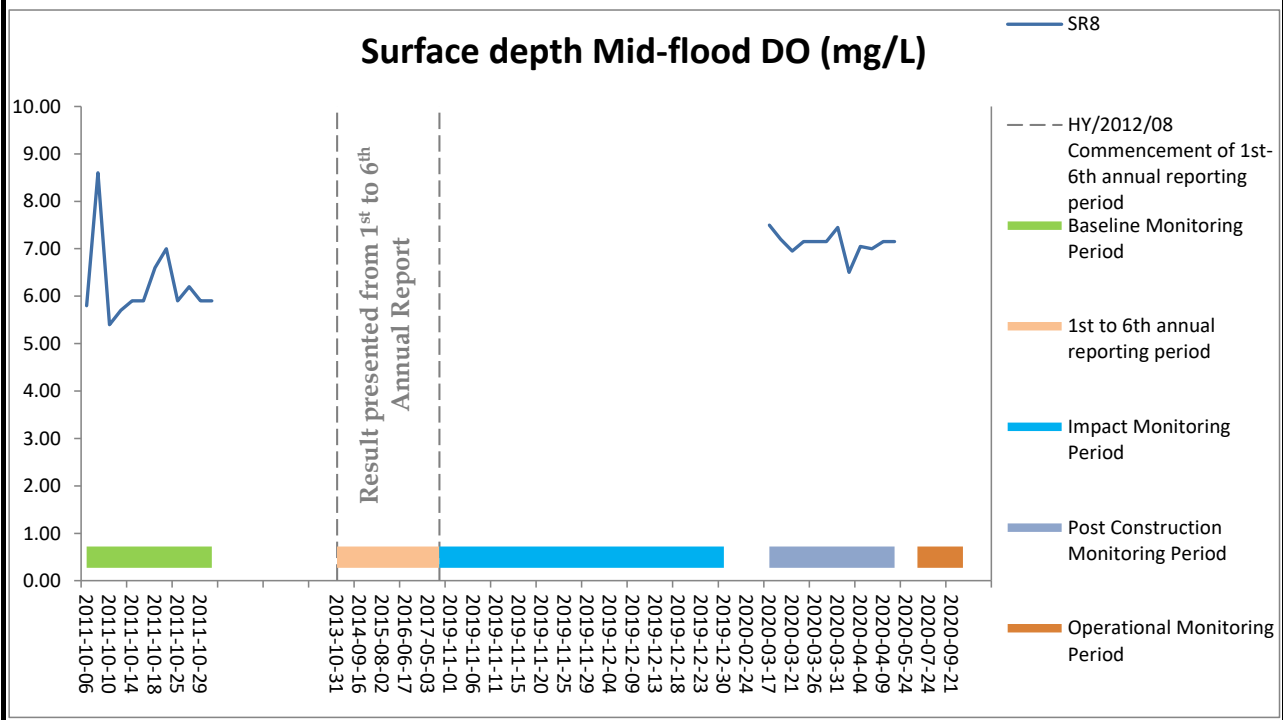
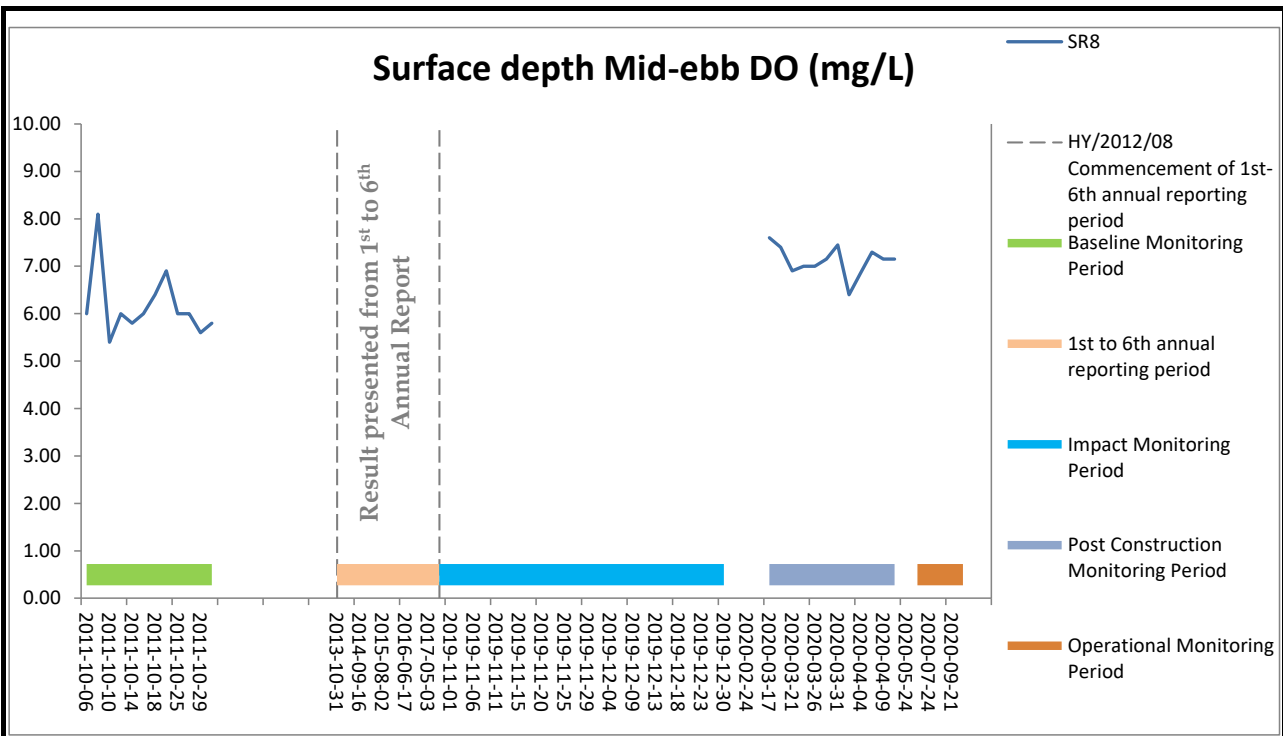


Figure E8 Baseline, Impact, Post-construction & Operational Monitoring - Mean Level of Dissolved Oxygen (mg/L) in surface waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at SR8. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



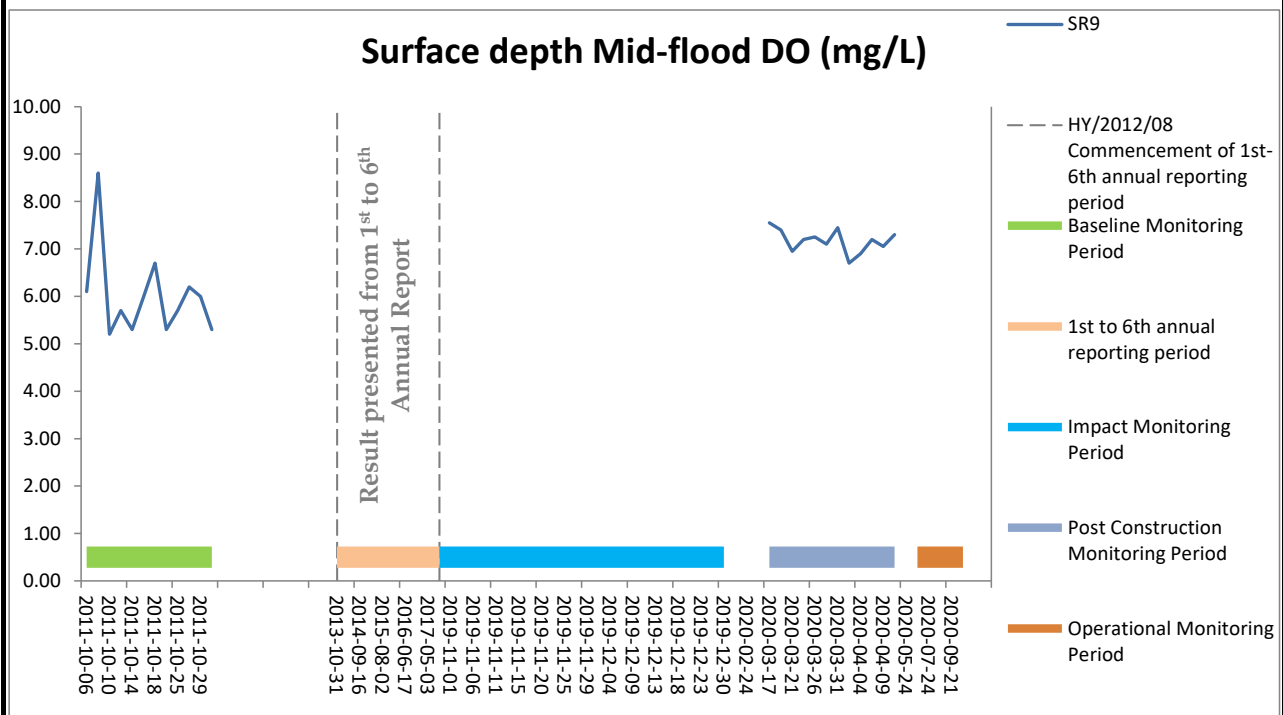
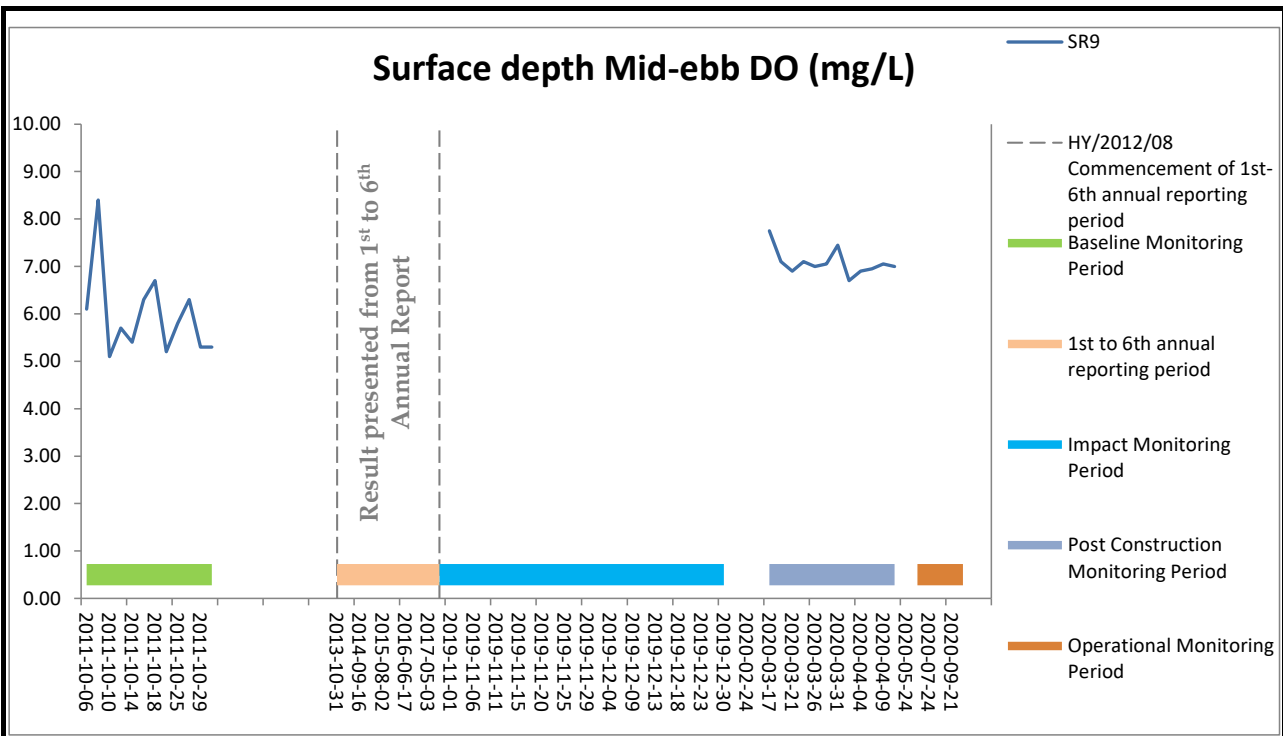


Figure E9 Baseline, Impact, Post-construction & Operational Monitoring - Mean Level of Dissolved Oxygen (mg/L) in surface waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at SR9. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



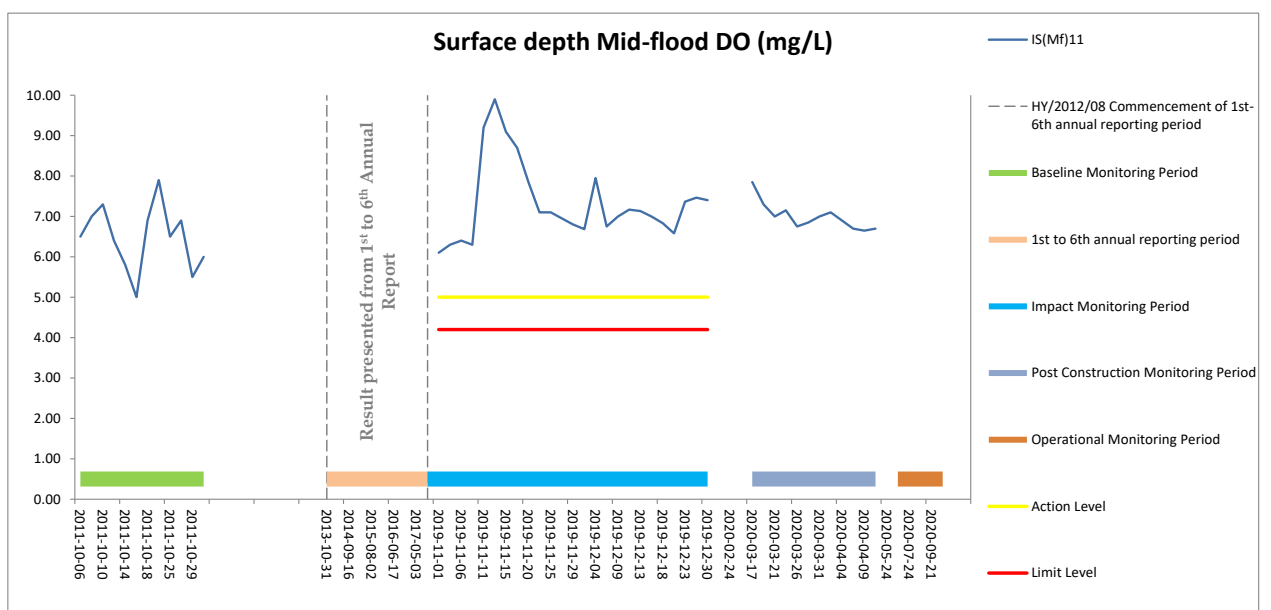
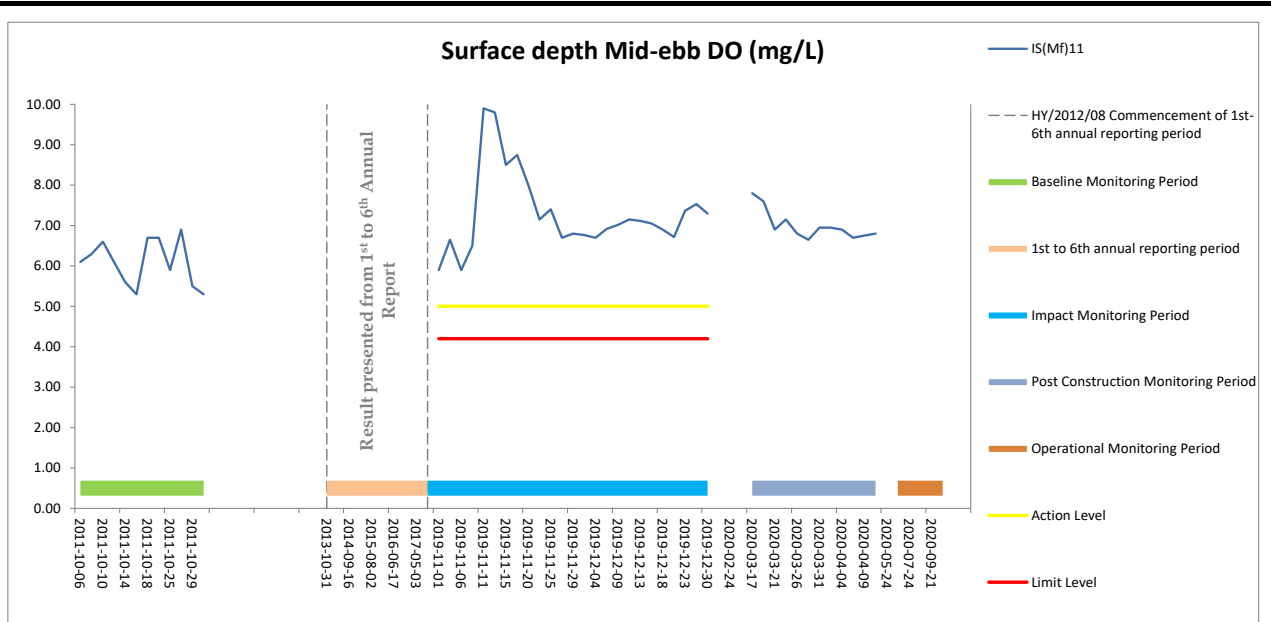


Figure E10 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in surface waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS(Mf)11. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



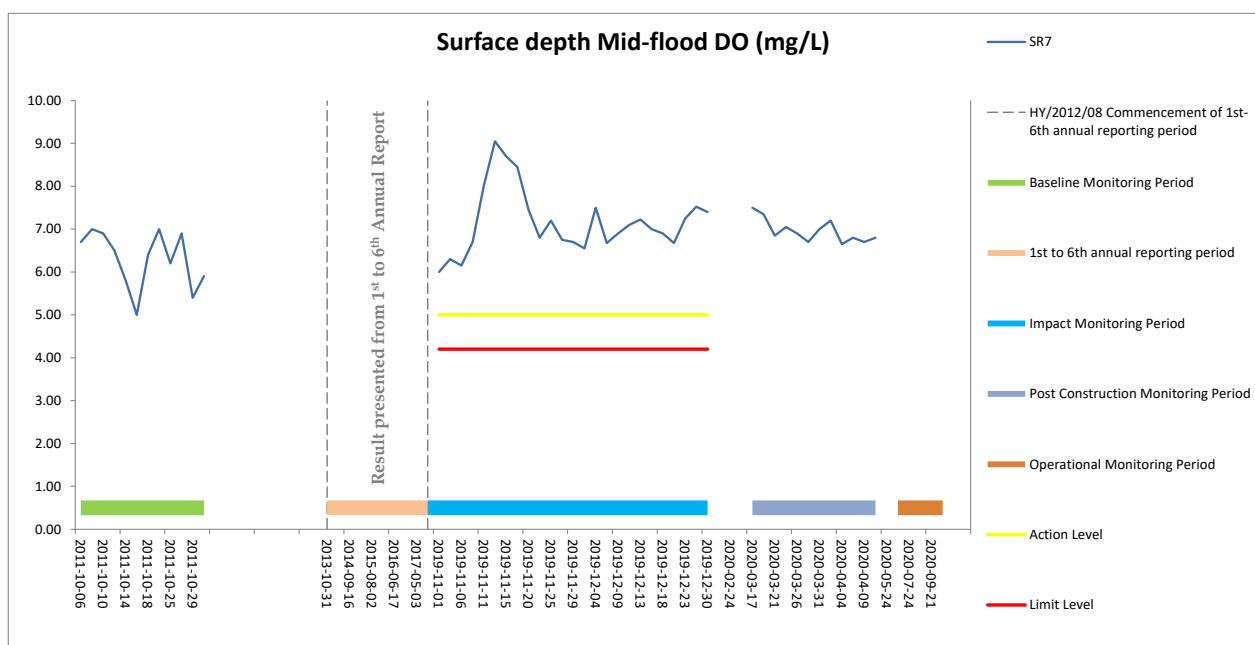
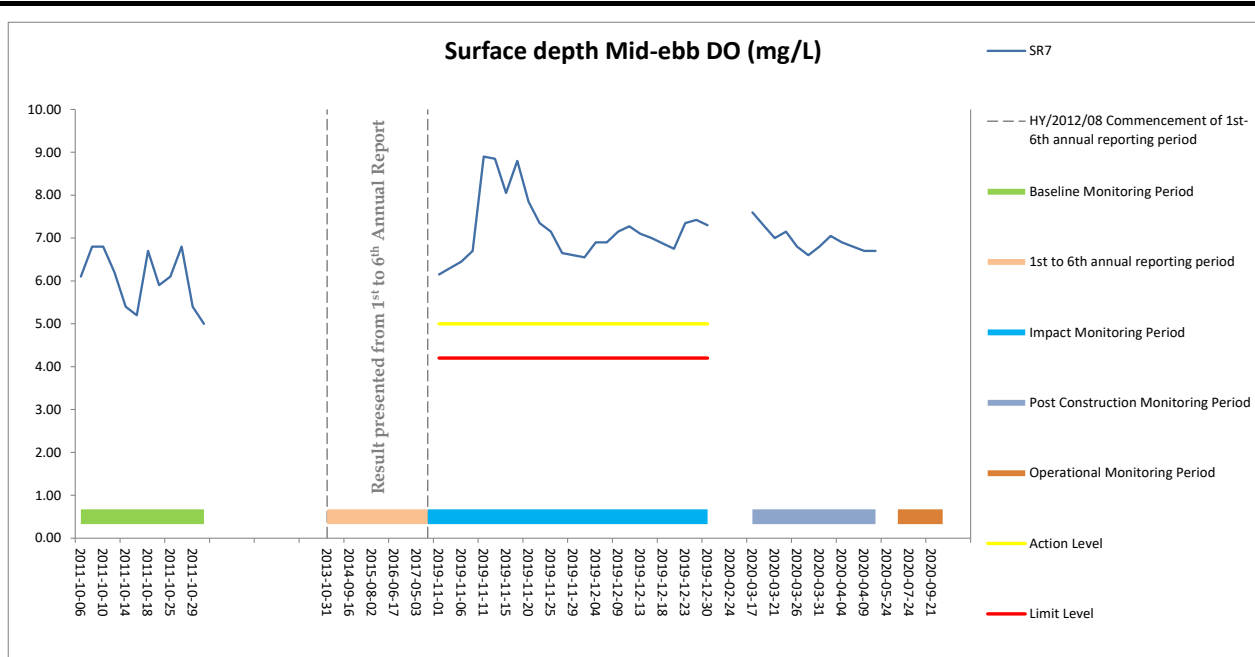


Figure E11 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in surface waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at SR7. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



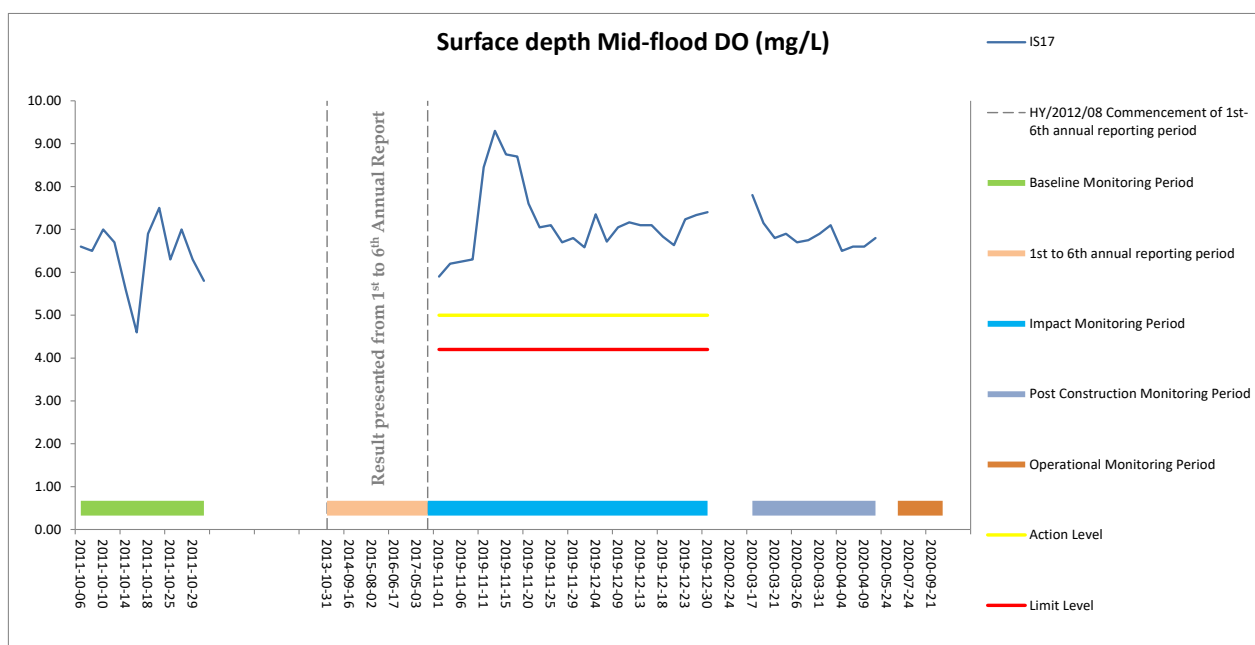
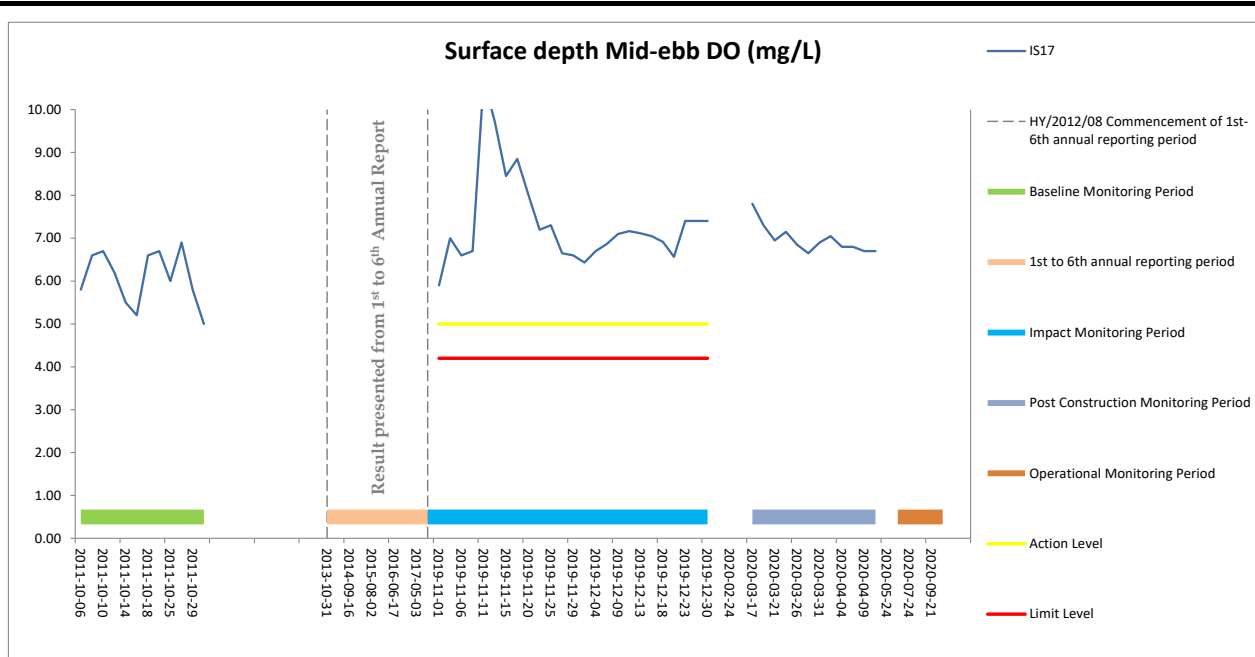


Figure E12 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in surface waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS17. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



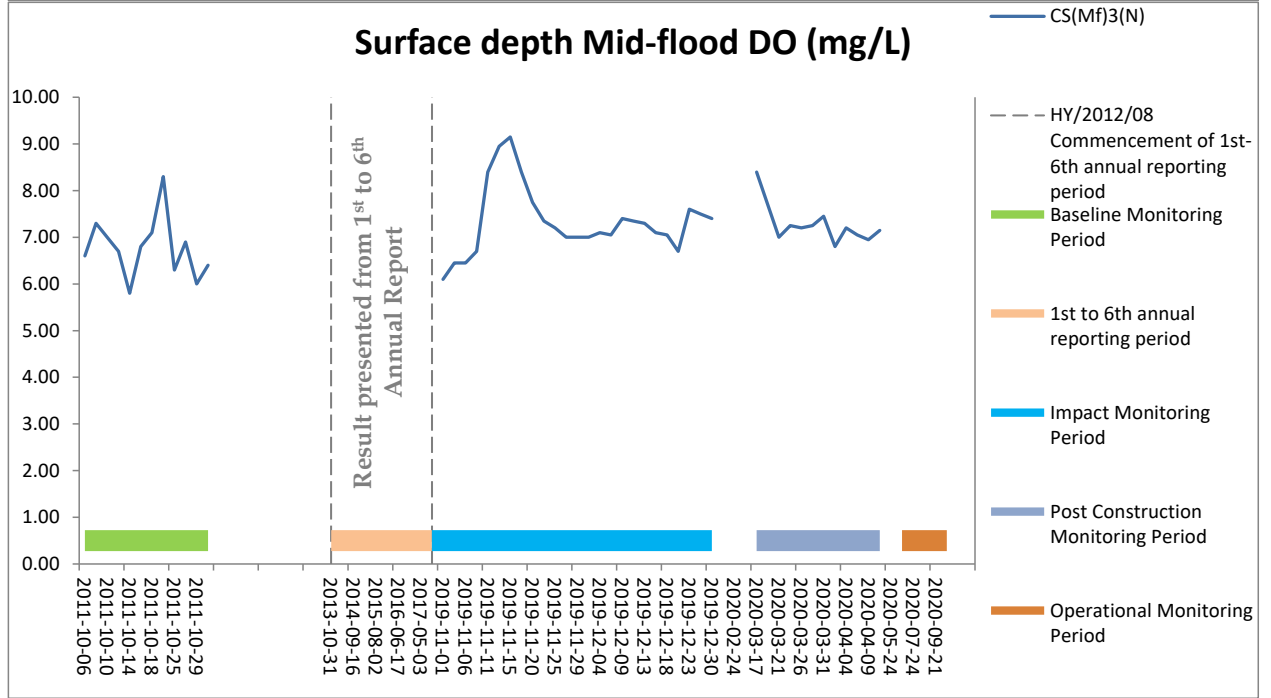
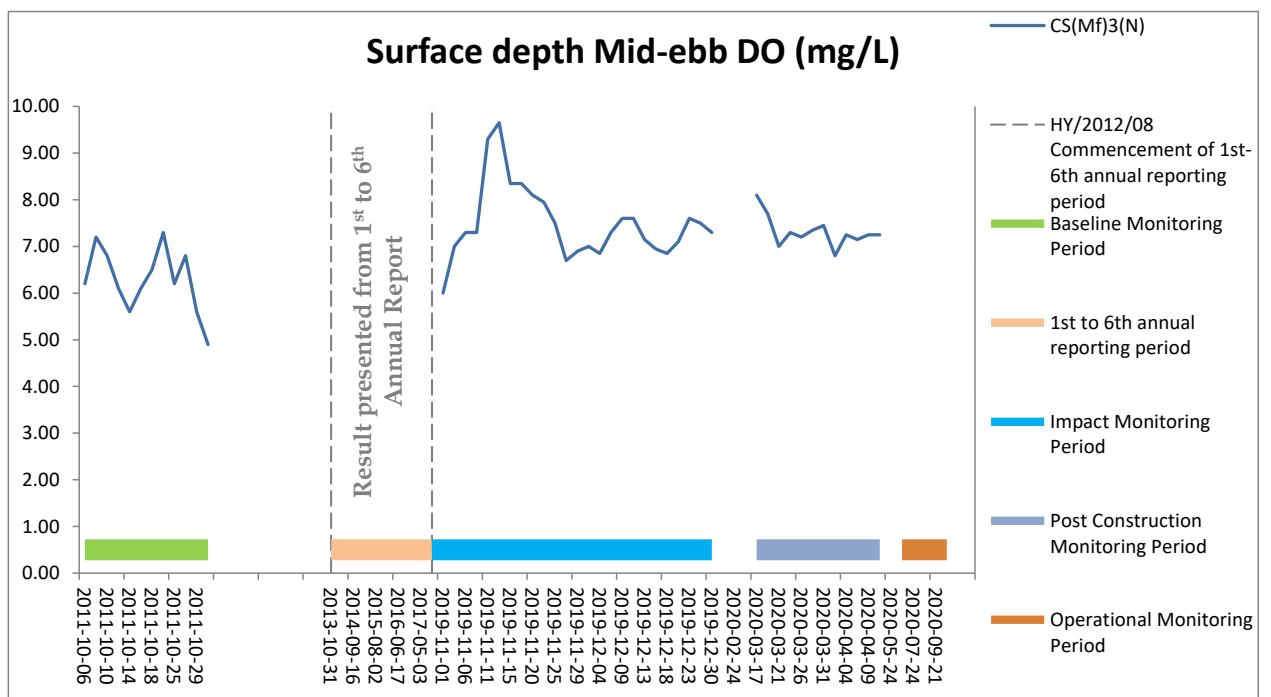


Figure E13 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in surface waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at CS(Mf)3(N). Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

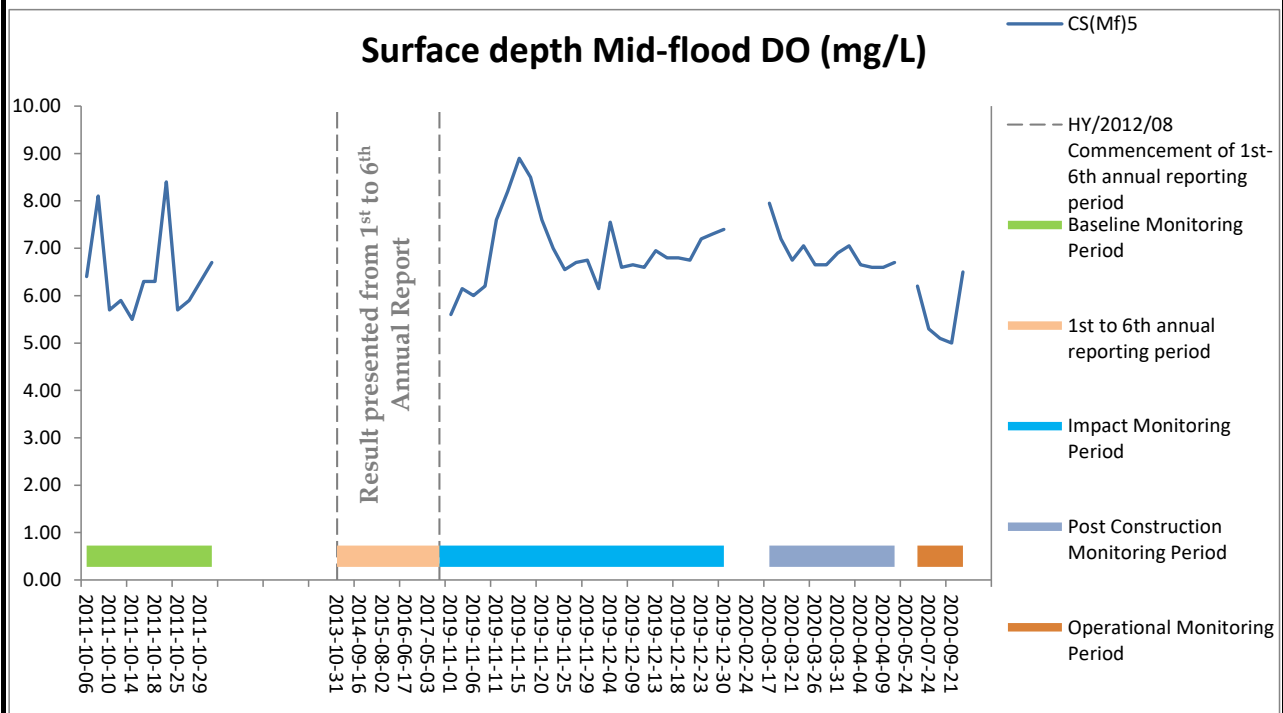
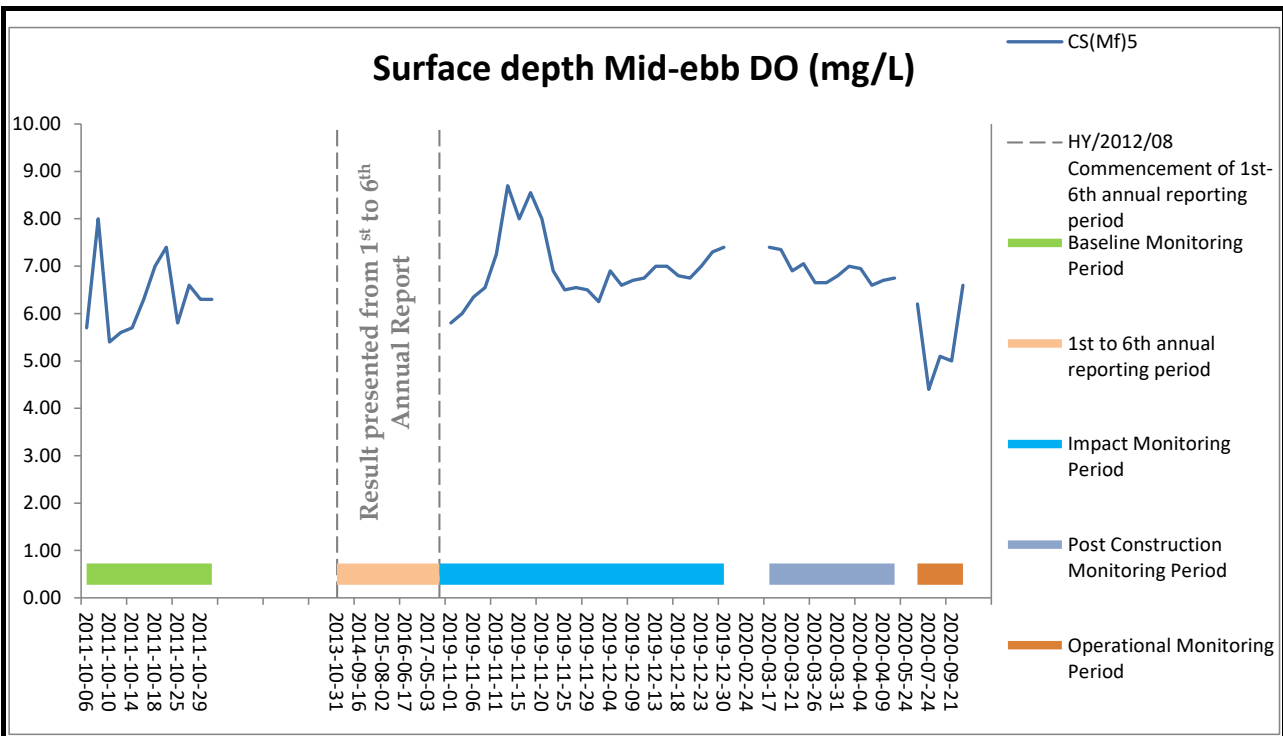


Figure E14 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in surface waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at CS(Mf)5. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



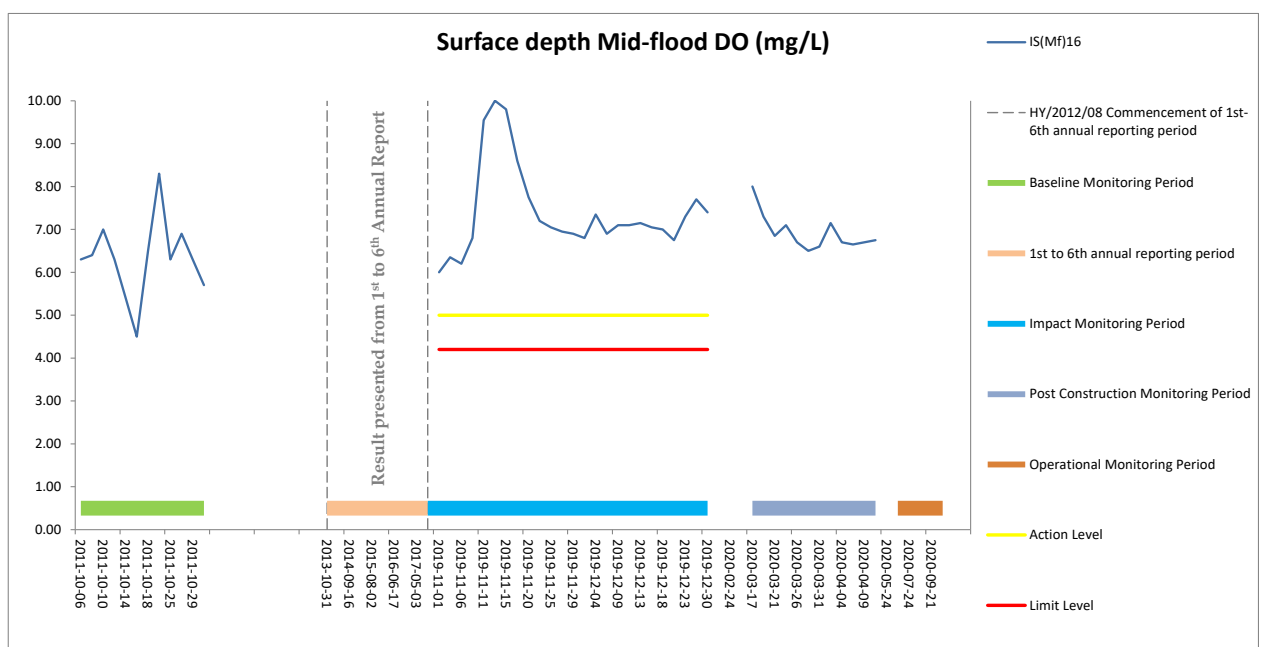
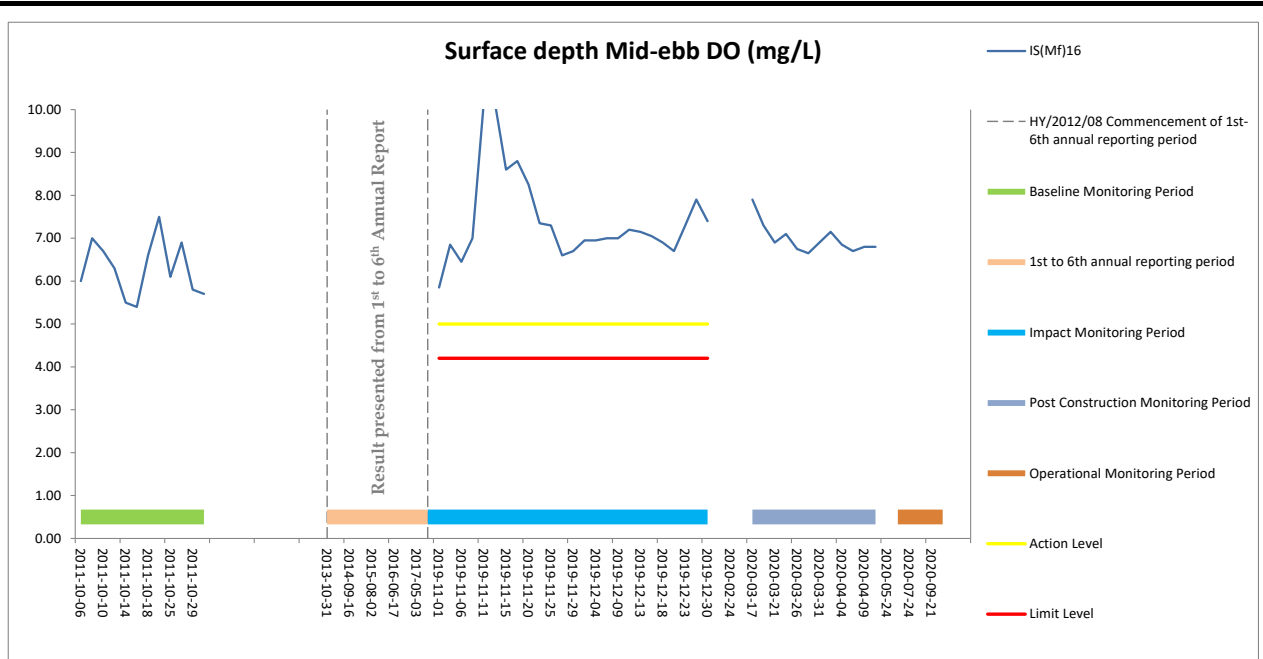
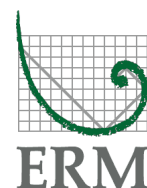


Figure E15 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in surface waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS(Mf)16. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



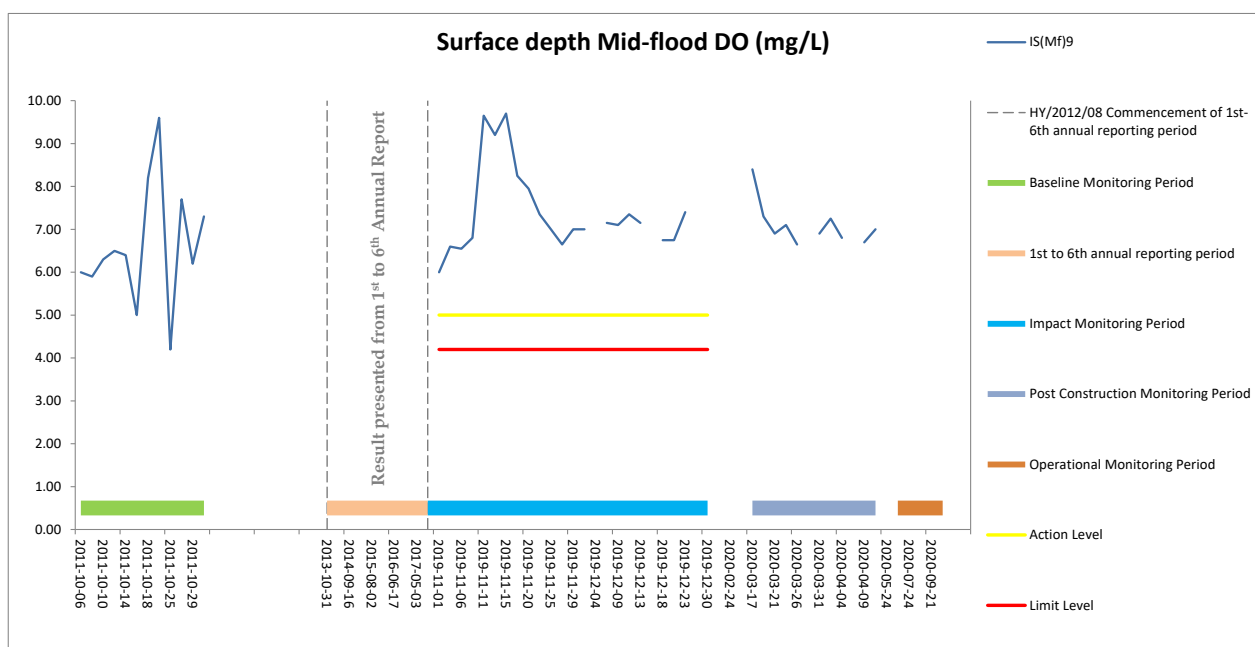
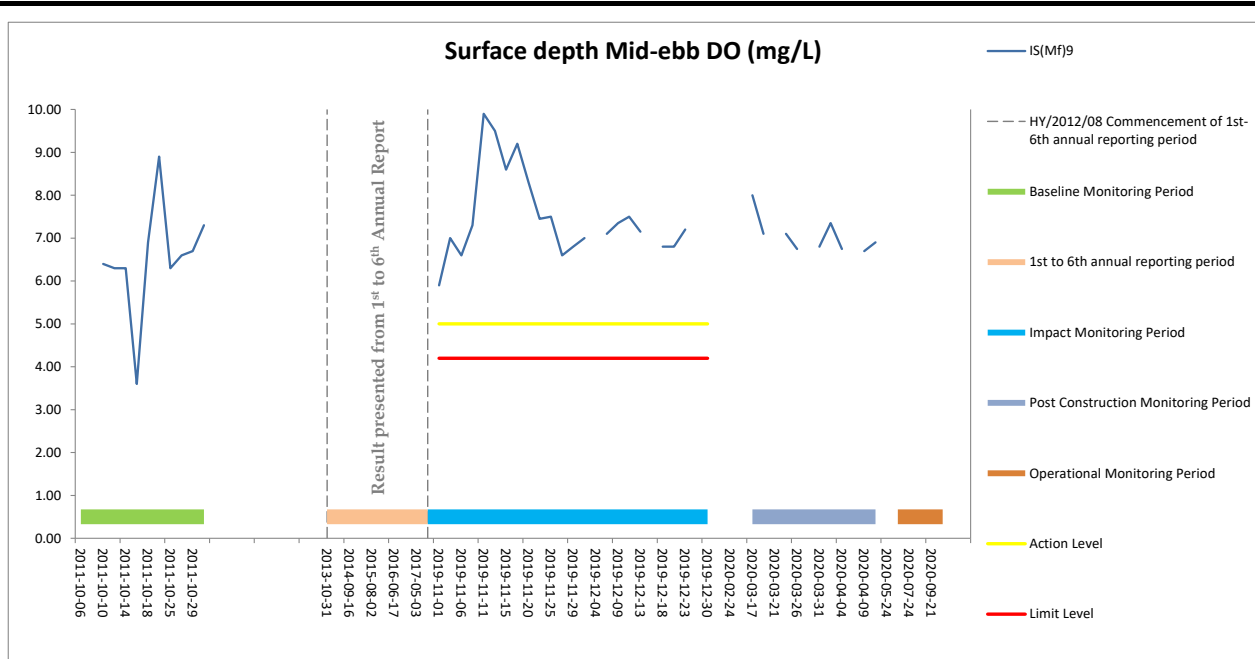


Figure E16 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in surface waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS(Mf)9. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



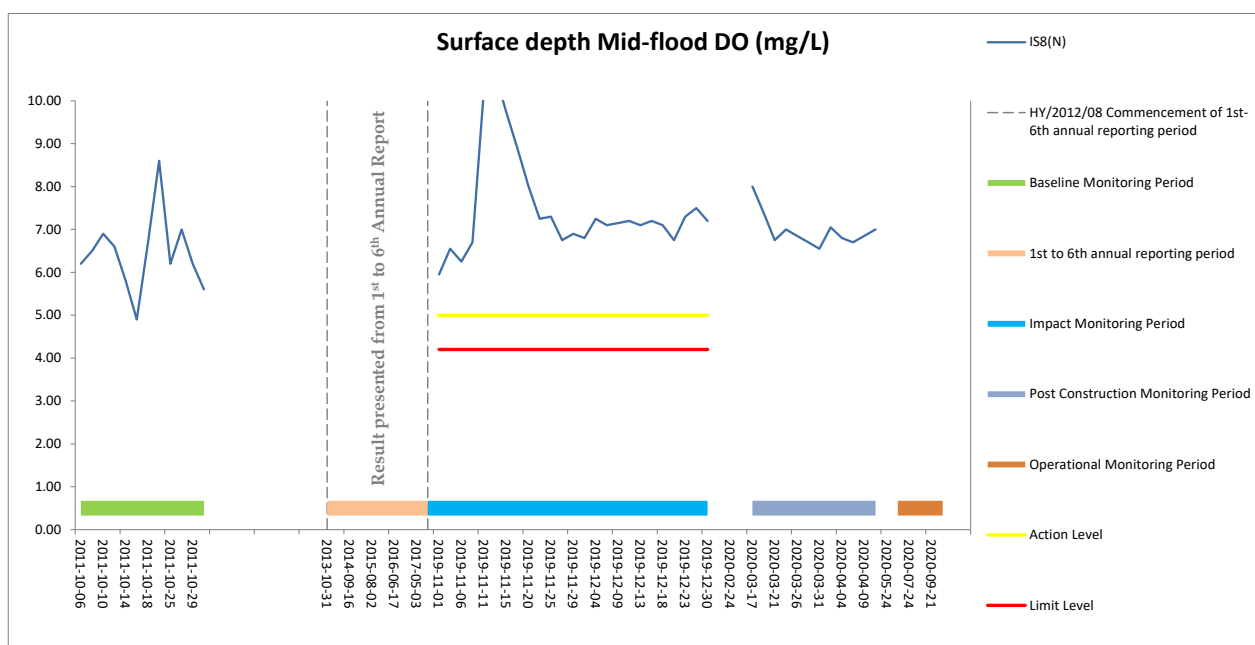
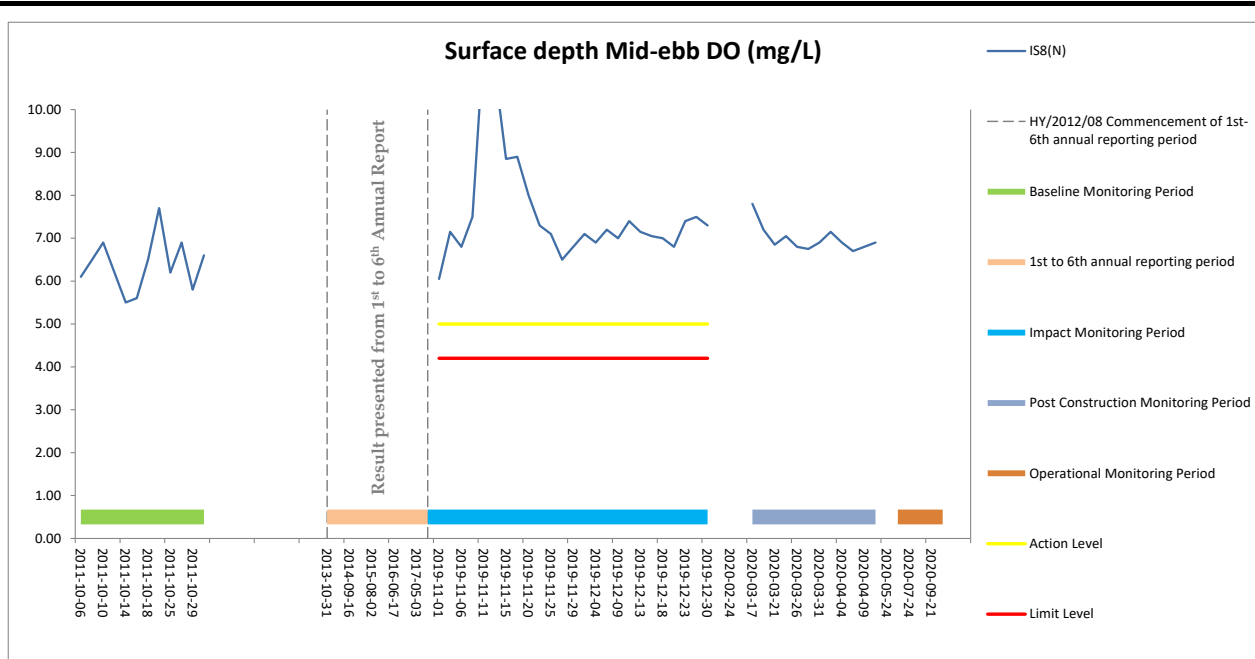


Figure E17 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in surface waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS8(N). Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



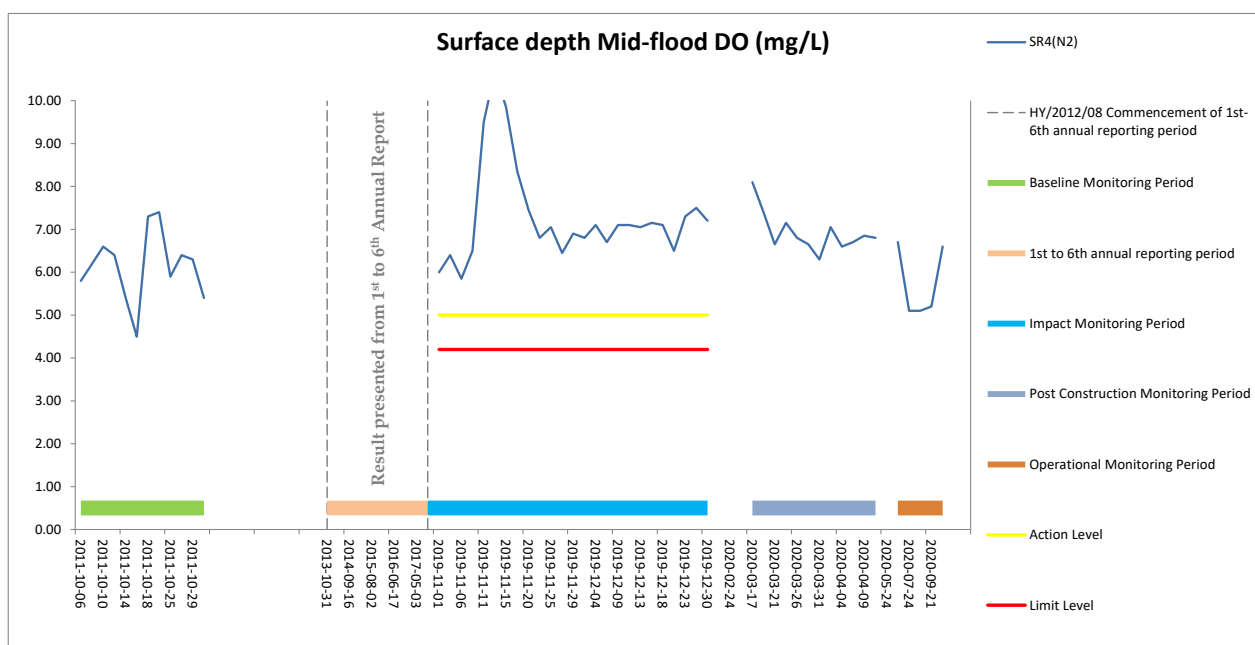
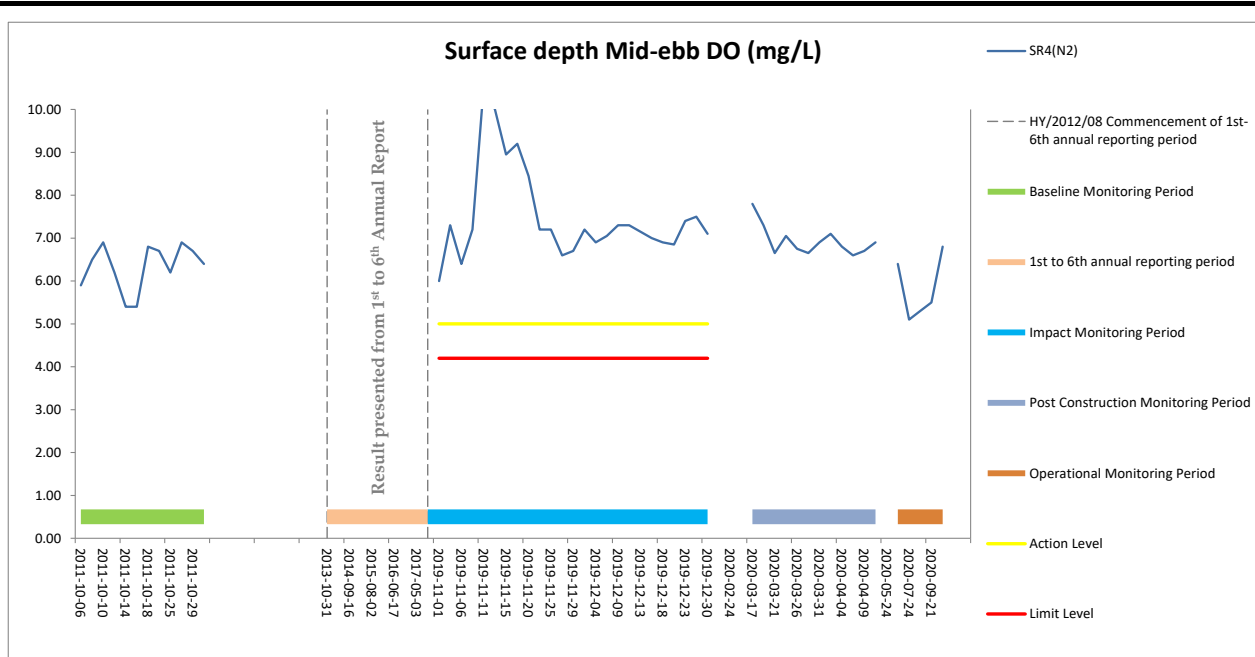


Figure E18 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in surface waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at SR4(N2). Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



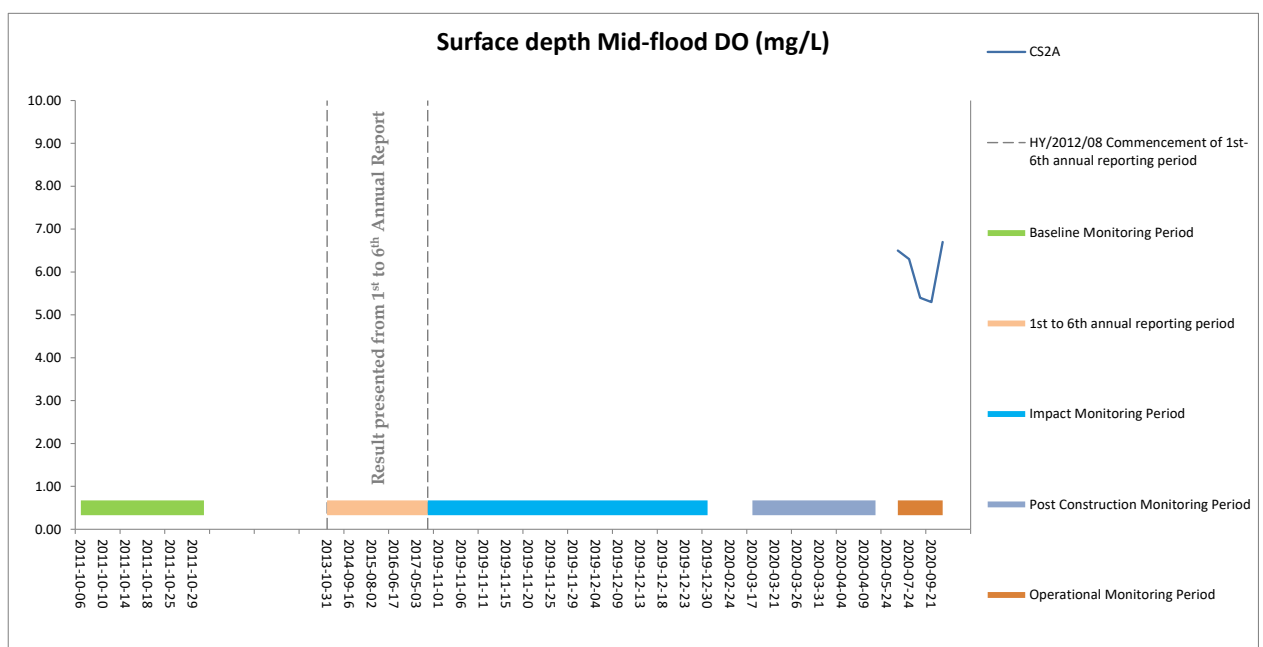
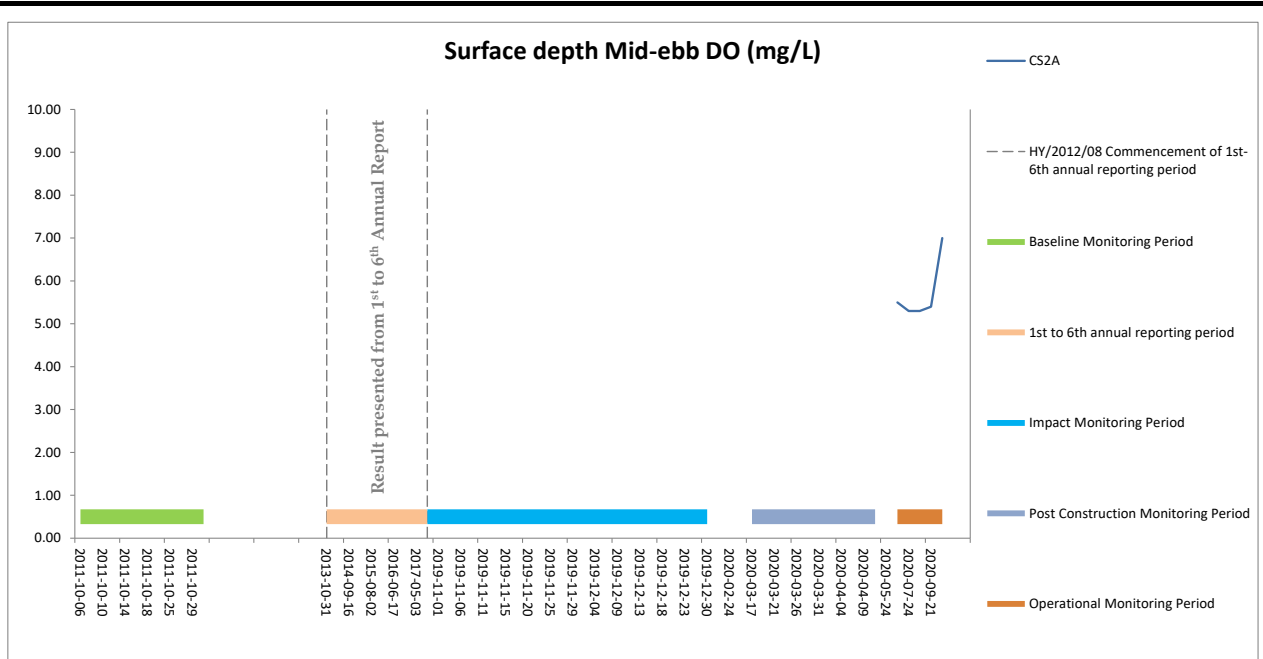


Figure E19 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in surface waters between Baseline, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at CS2A. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



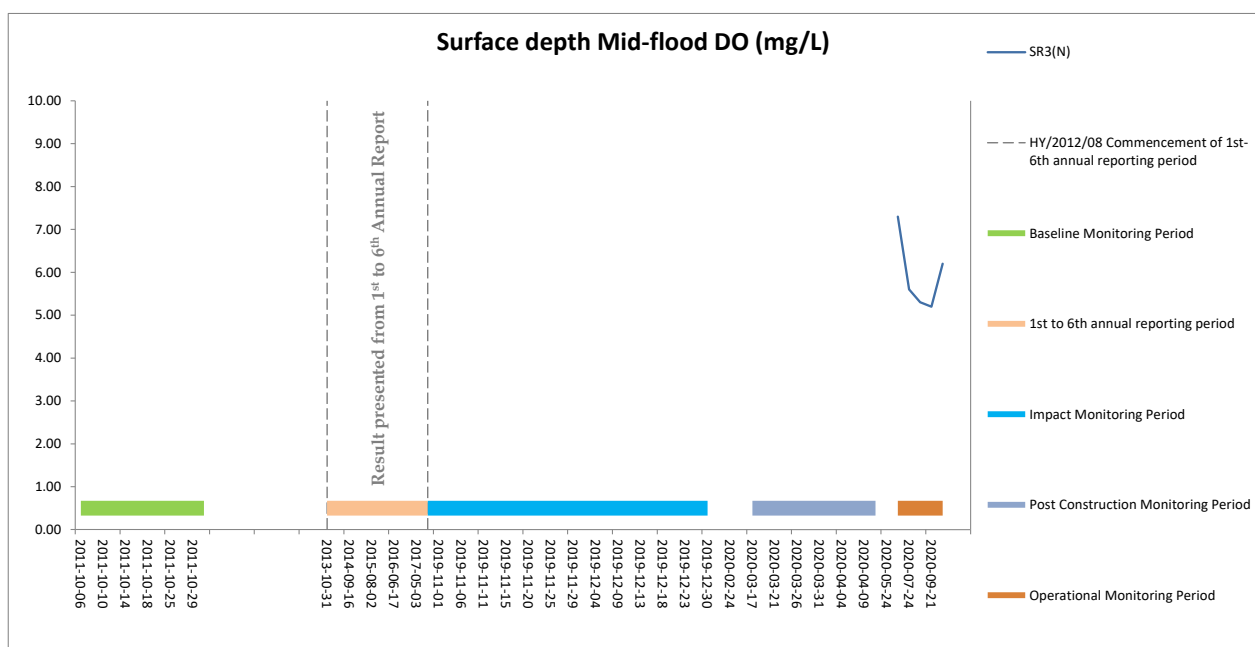
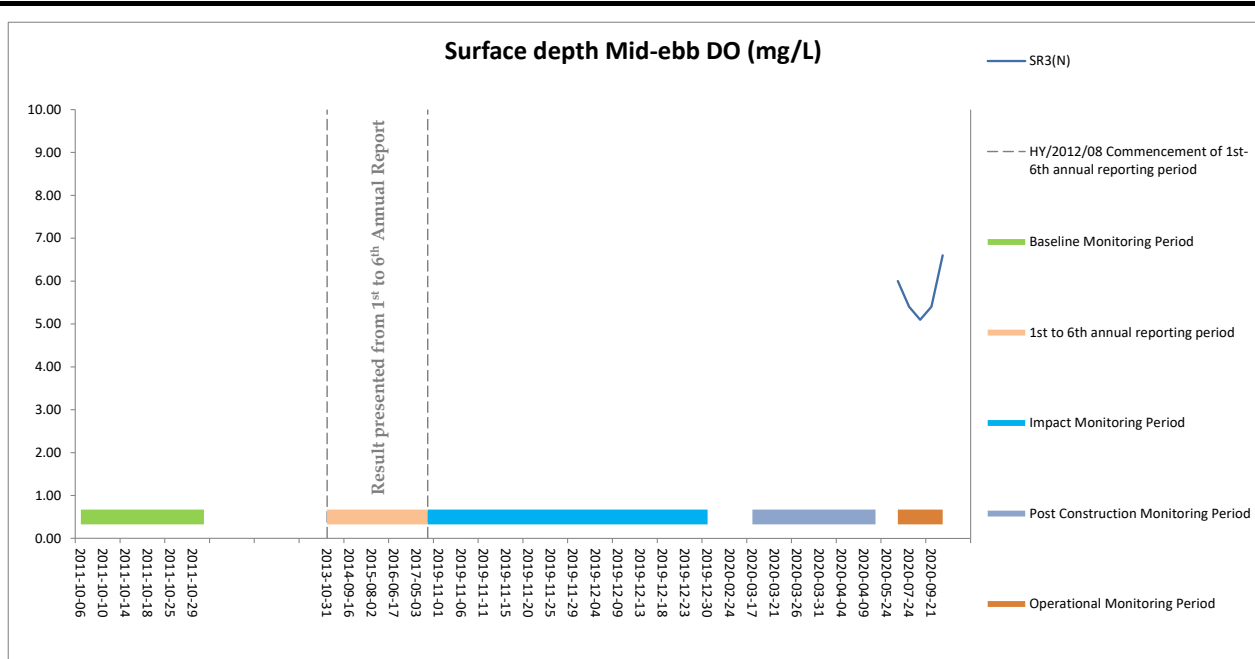


Figure E20 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in surface waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at SR3(N). Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



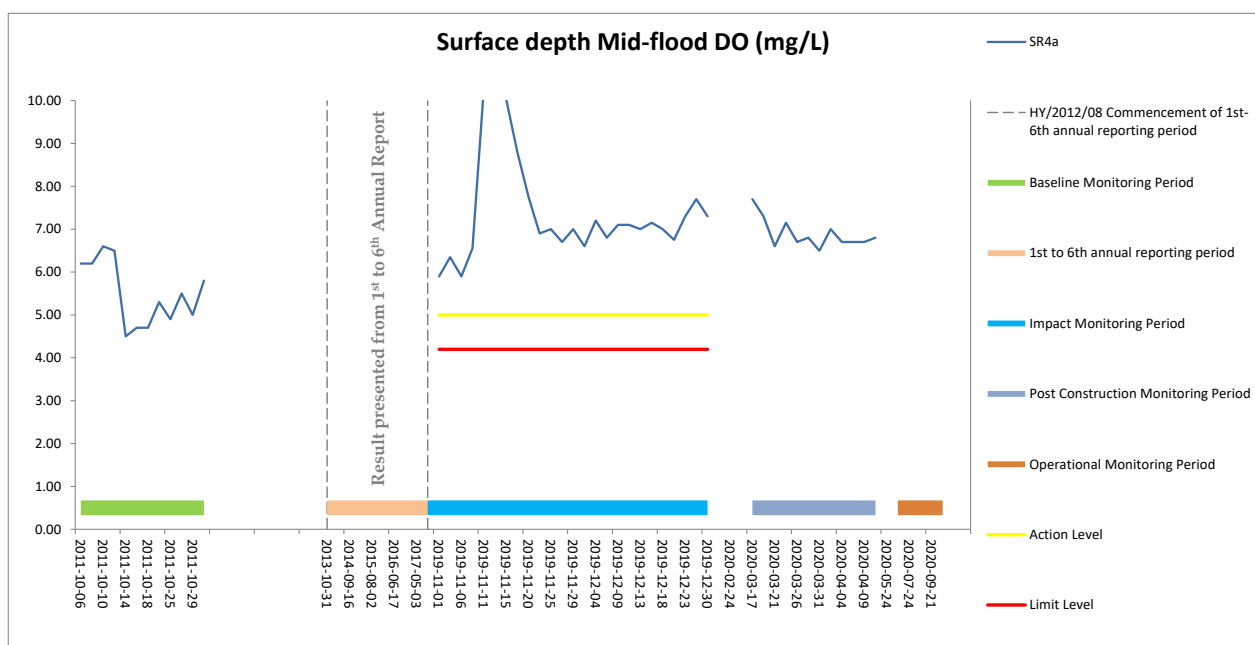
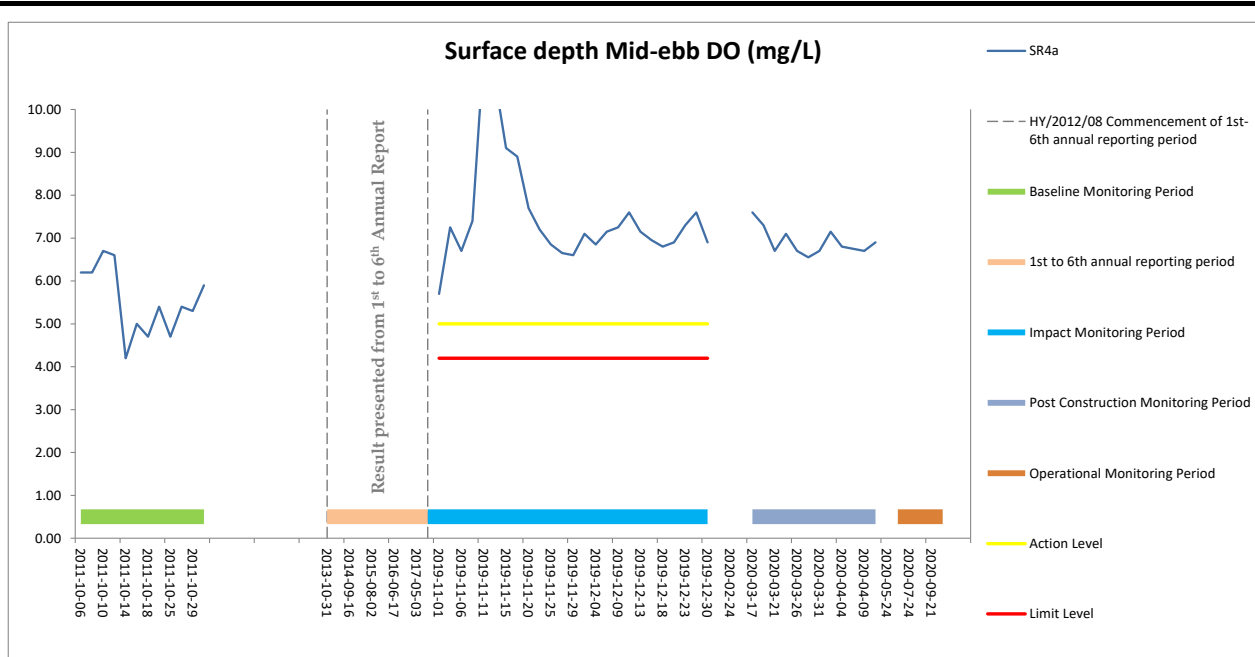
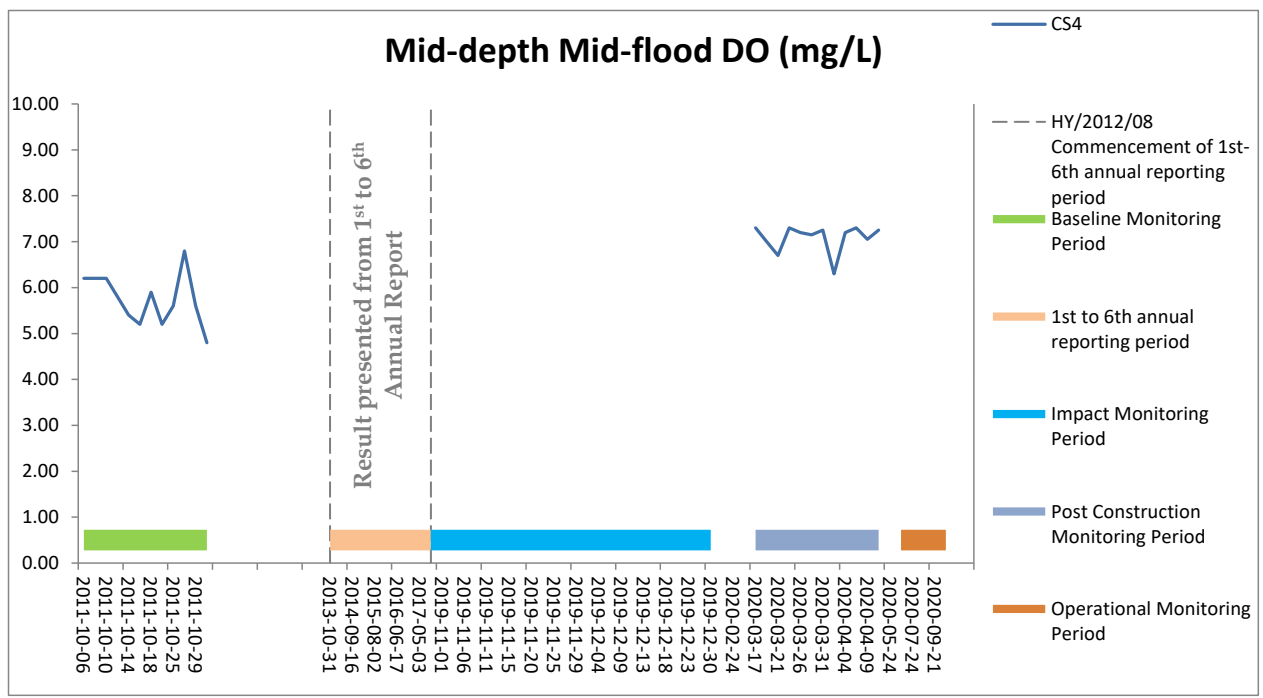
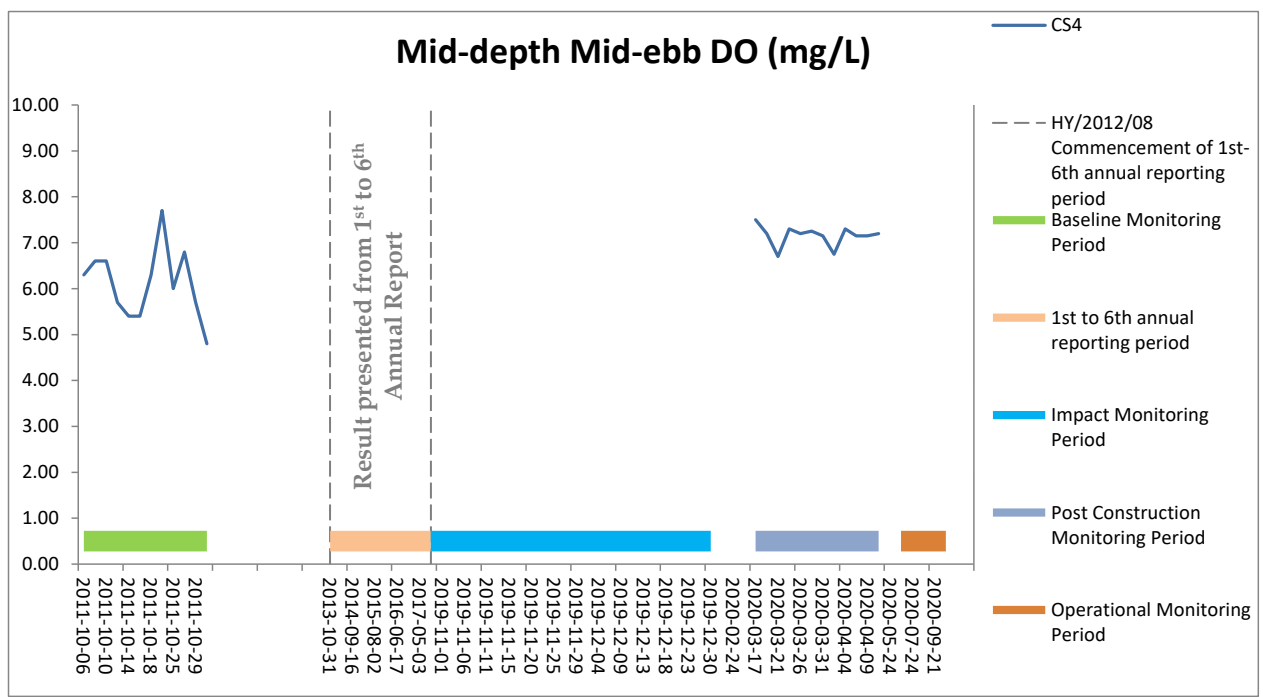


Figure E21 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in surface waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at SR4a. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B

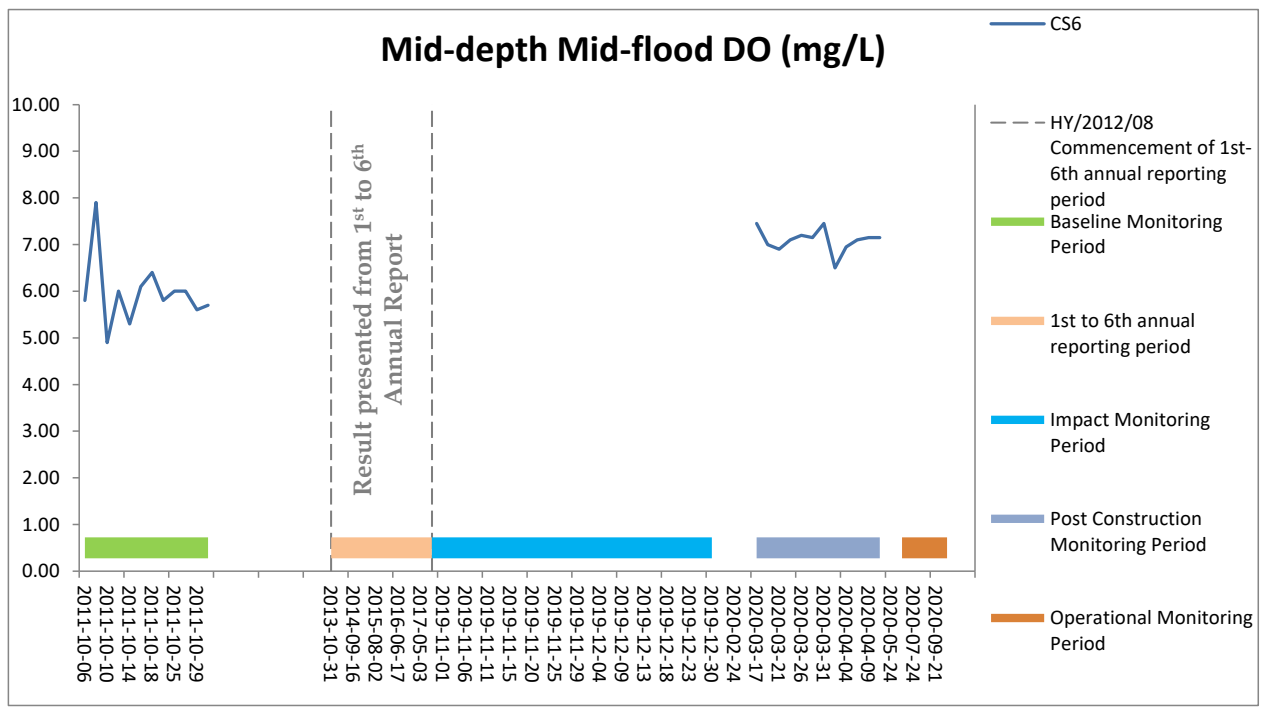
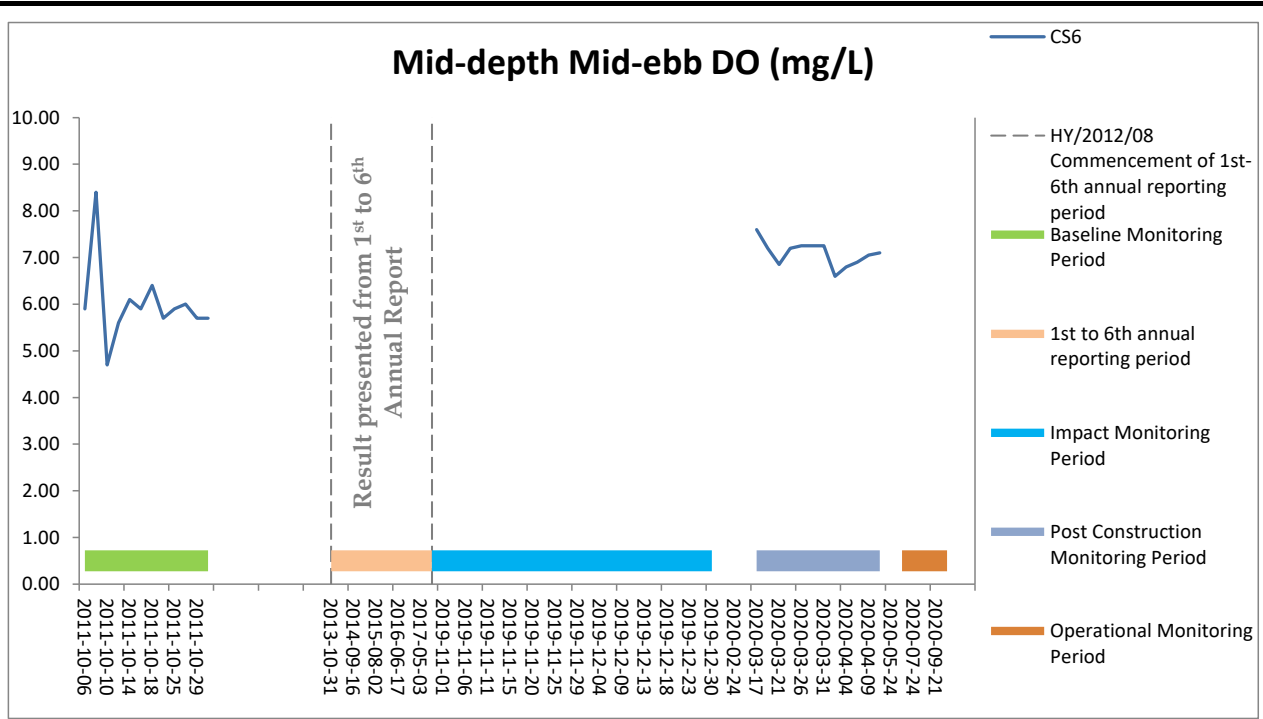




*No data for Stations SR8, SR9, SR7, IS8(N), SR4(N2), SR3(N), SR4a and IS(Mf)9 during mid-ebb tide due to shallow water depth (< 6m).

Figure E22 Baseline, Impact, Post-construction & Operational Monitoring - Mean Level of Dissolved Oxygen (mg/L) in mid-depth waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at CS4. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B

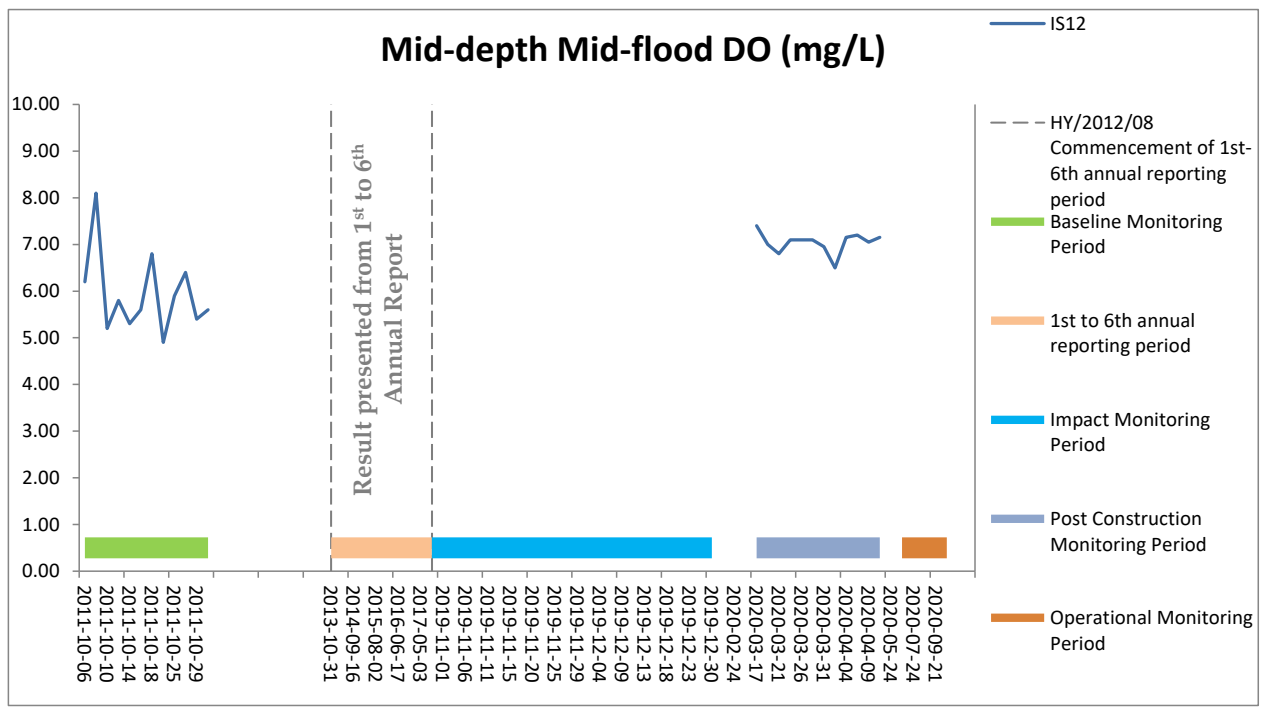
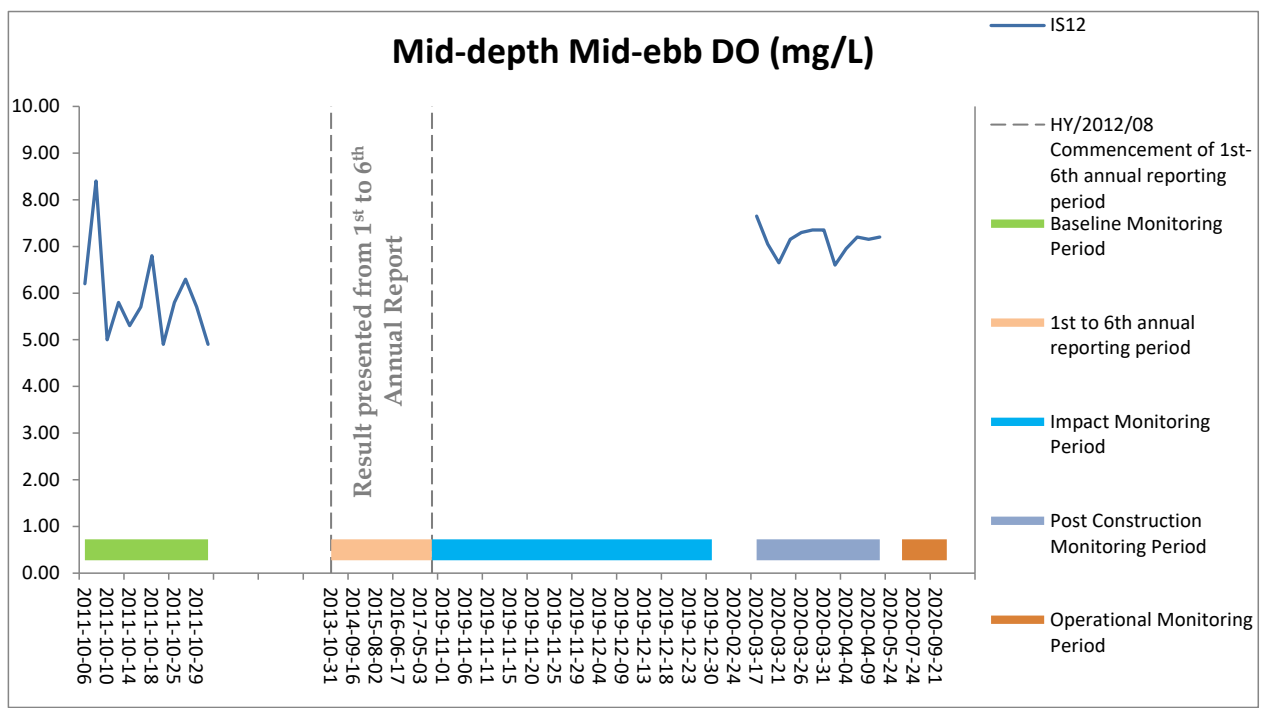




*No data for Stations SR8, SR9, SR7, IS8(N), SR4(N2), SR3(N), SR4a and IS(Mf)9 during mid-ebb tide due to shallow water depth (< 6m).

Figure E23 Baseline, Impact, Post-construction & Operational Monitoring - Mean Level of Dissolved Oxygen (mg/L) in mid-depth waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at CS6. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B

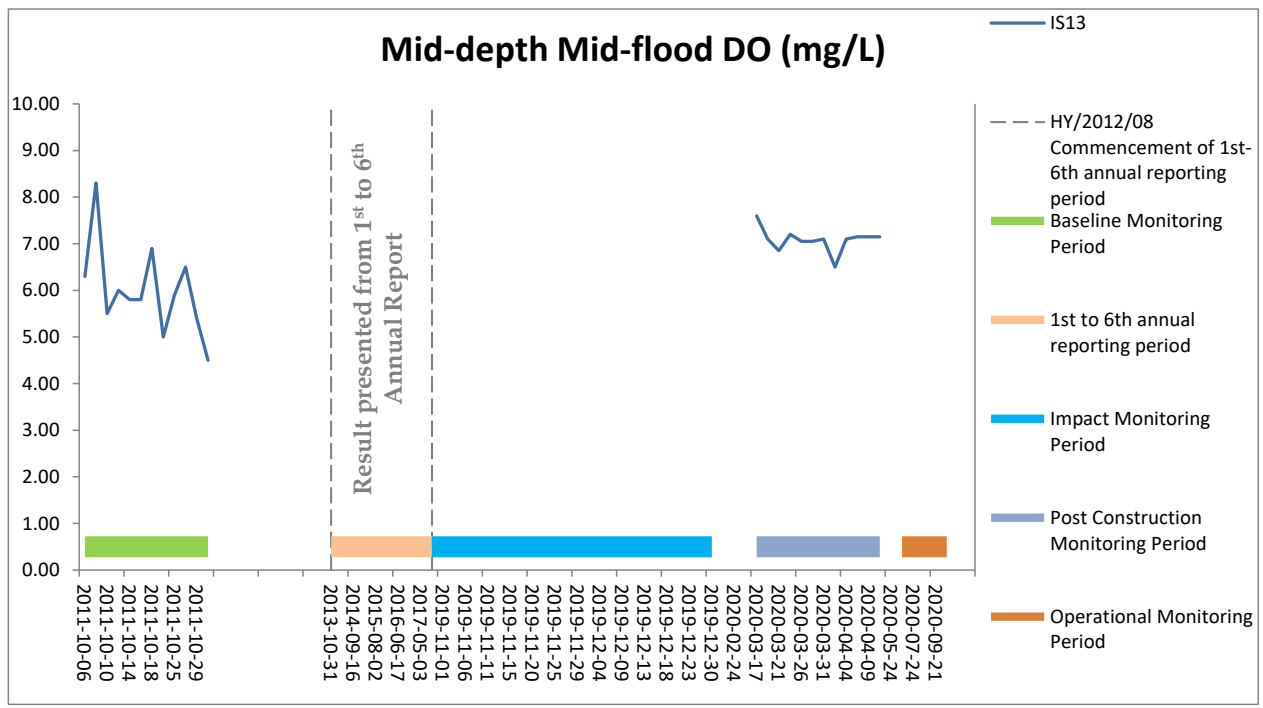
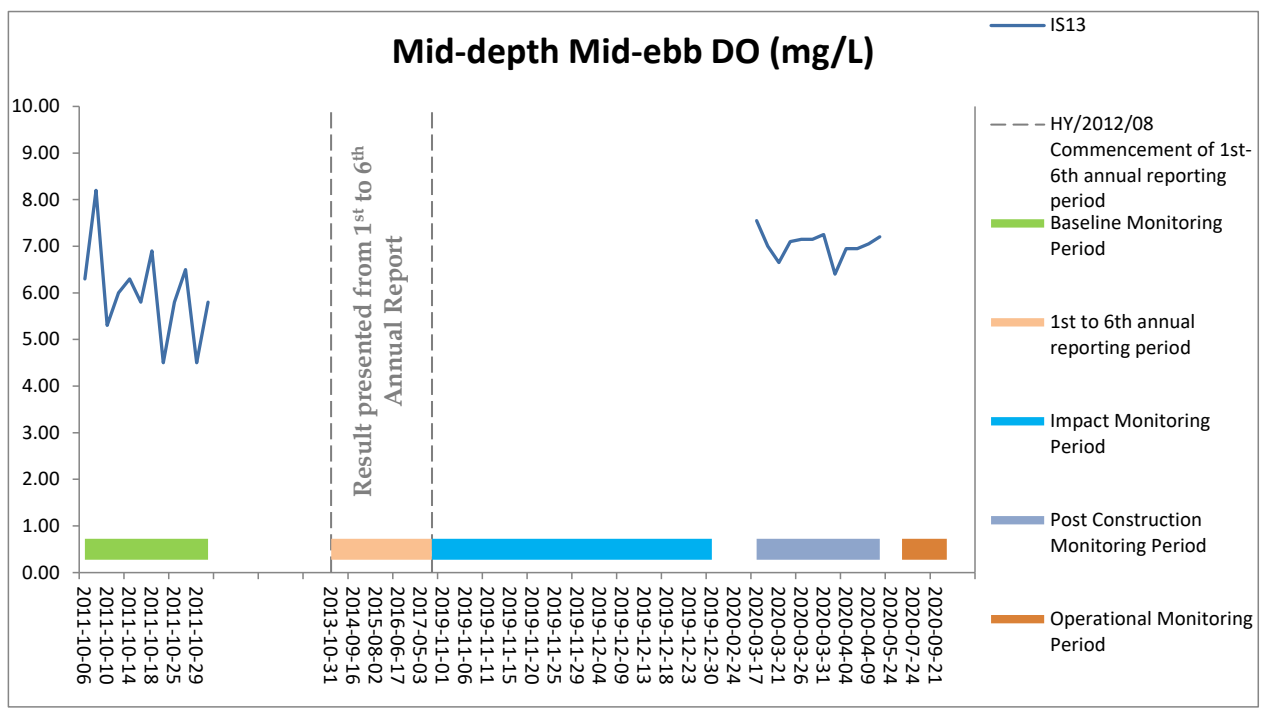




*No data for Stations SR8, SR9, SR7, IS8(N), SR4(N2), SR3(N), SR4a and IS(Mf)9 during mid-ebb tide due to shallow water depth (< 6m).

Figure E24 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in mid-depth waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS12. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B

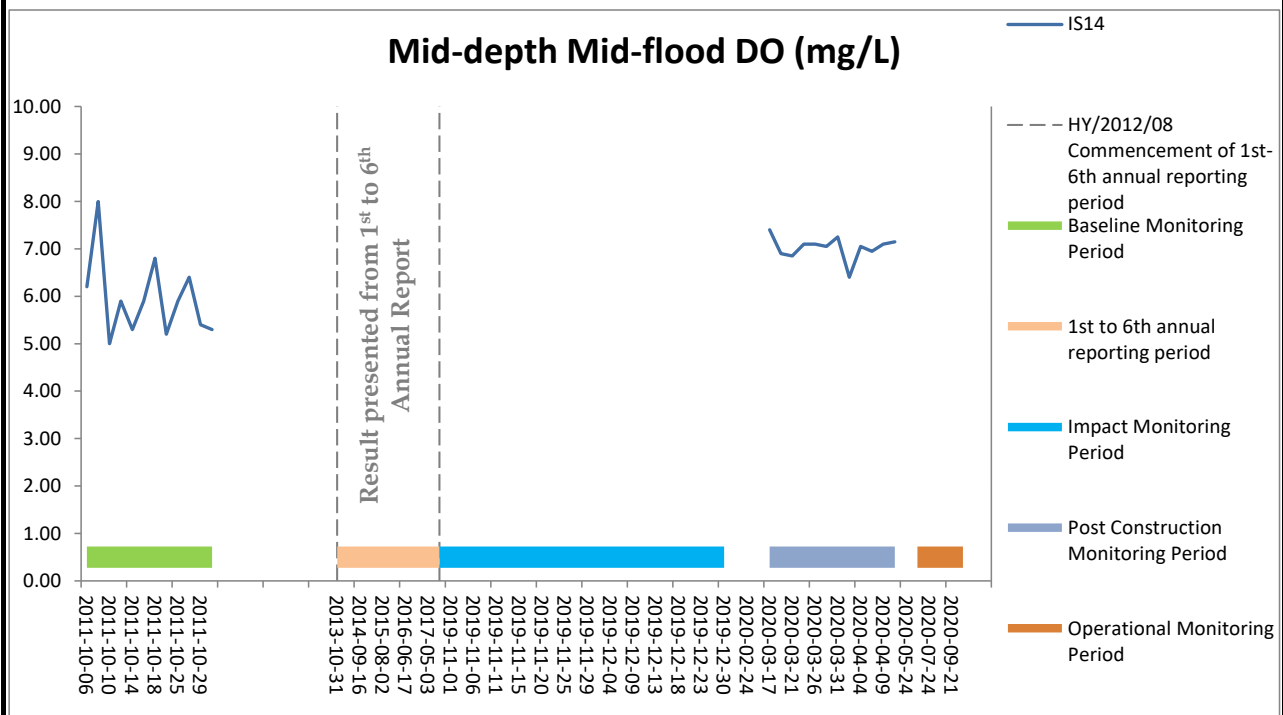
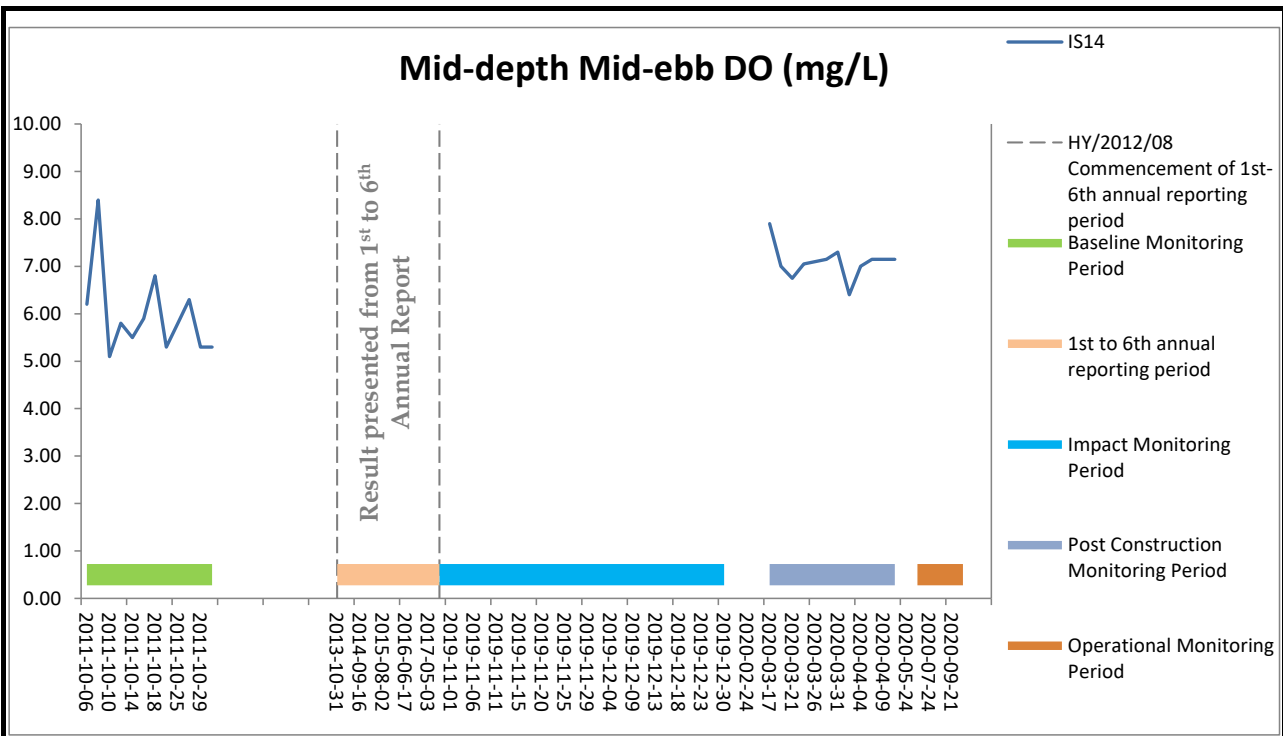




*No data for Stations SR8, SR9, SR7, IS8(N), SR4(N2), SR3(N), SR4a and IS(Mf)9 during mid-ebb tide due to shallow water depth (< 6m).

Figure E25 Baseline, Impact, Post-construction & Operational Monitoring - Mean Level of Dissolved Oxygen (mg/L) in mid-depth waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS13. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B

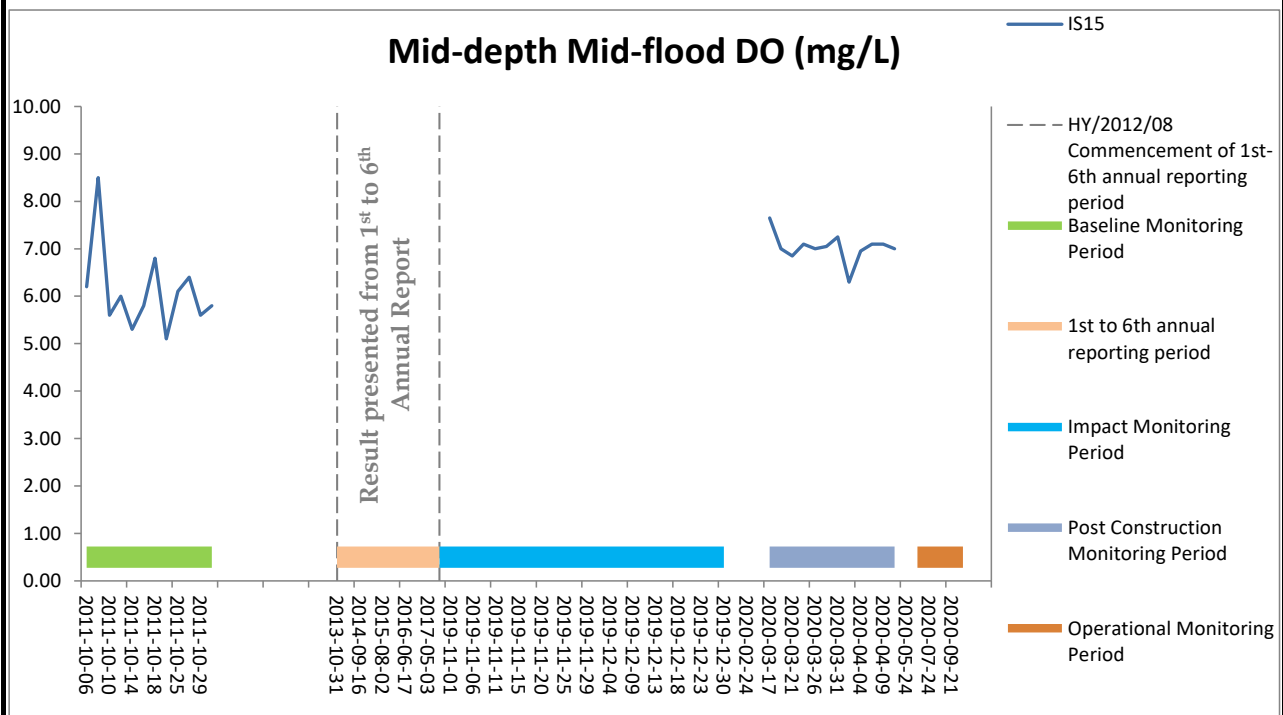
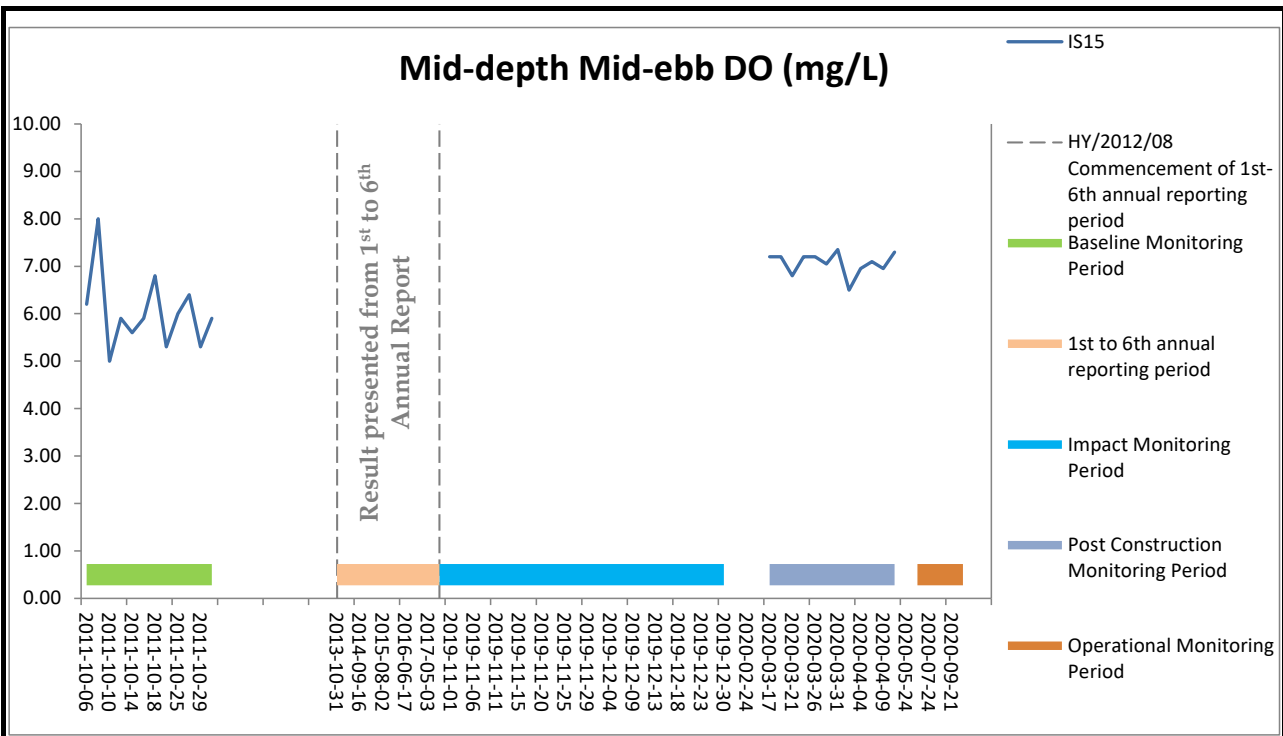




*No data for Stations SR8, SR9, SR7, IS8(N), SR4(N2), SR3(N), SR4a and IS(Mf)9 during mid-ebb tide due to shallow water depth (< 6m).

Figure E26 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in mid-depth waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS14. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B

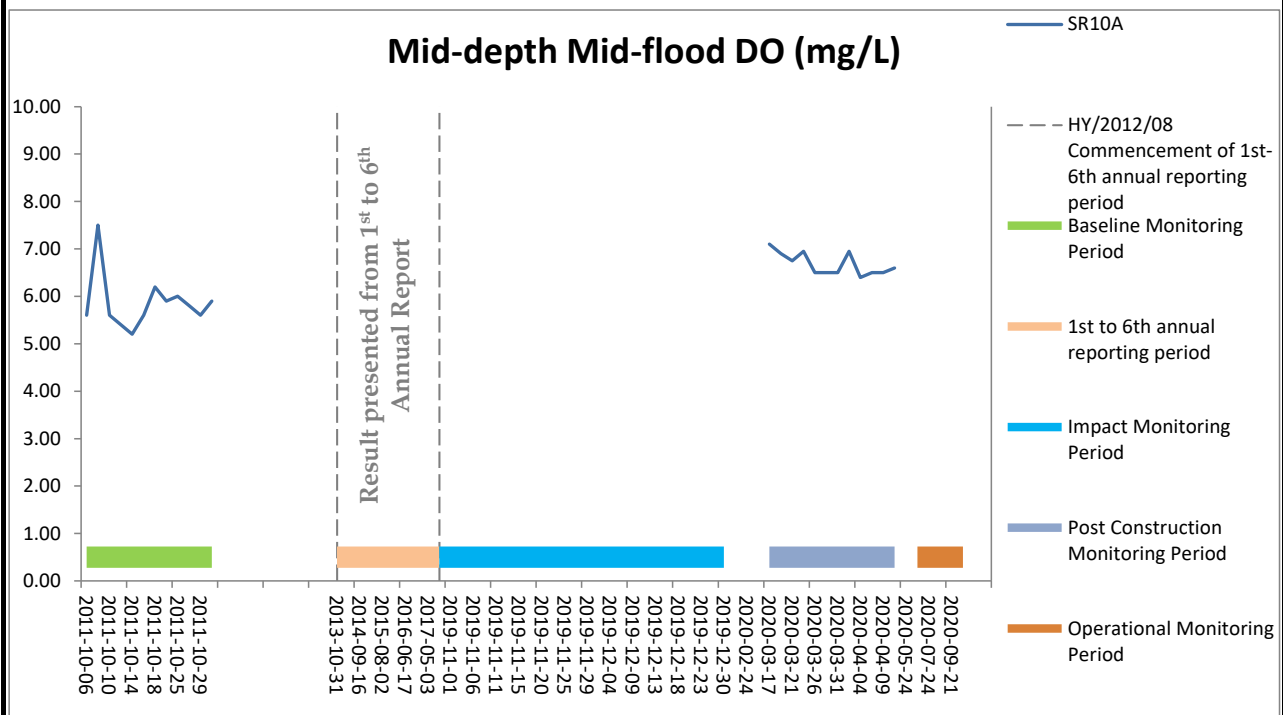
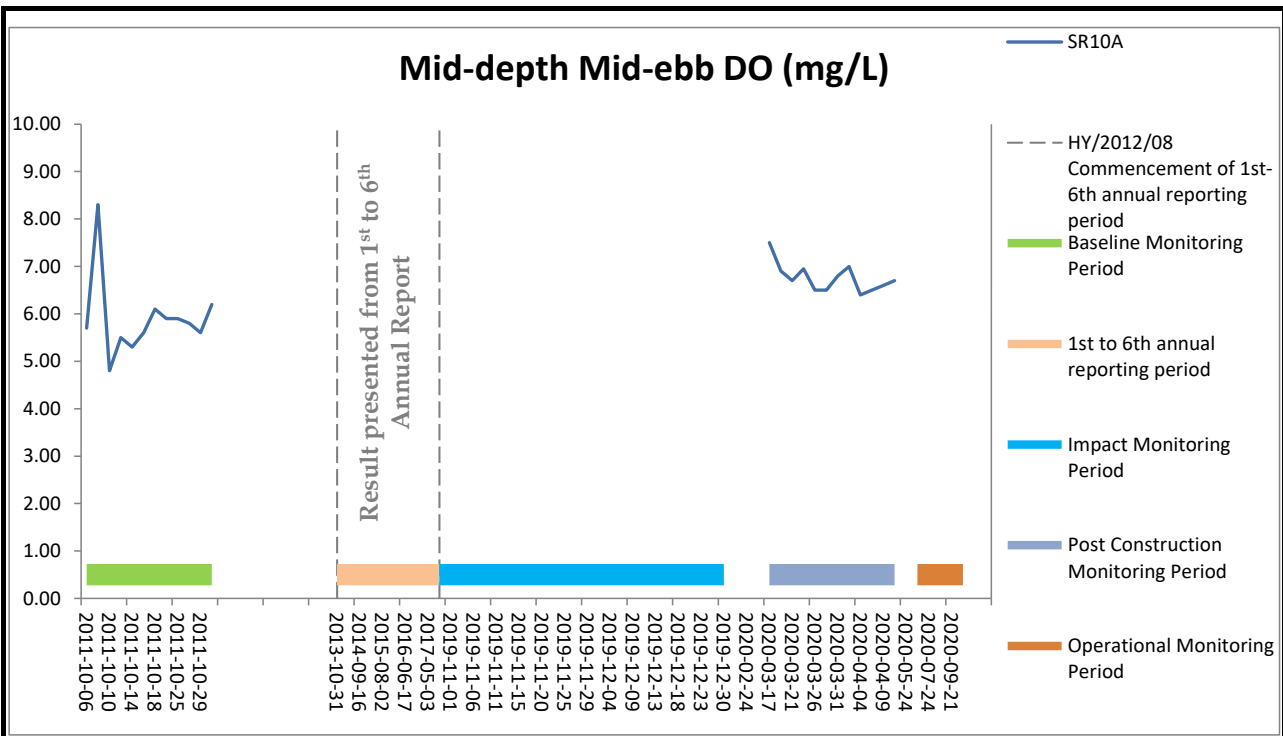




*No data for Stations SR8, SR9, SR7, IS8(N), SR4(N2), SR3(N), SR4a and IS(Mf)9 during mid-ebb tide due to shallow water depth (< 6m).

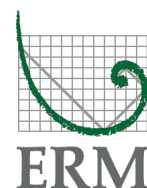
Figure E27 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in mid-depth waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS15. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B

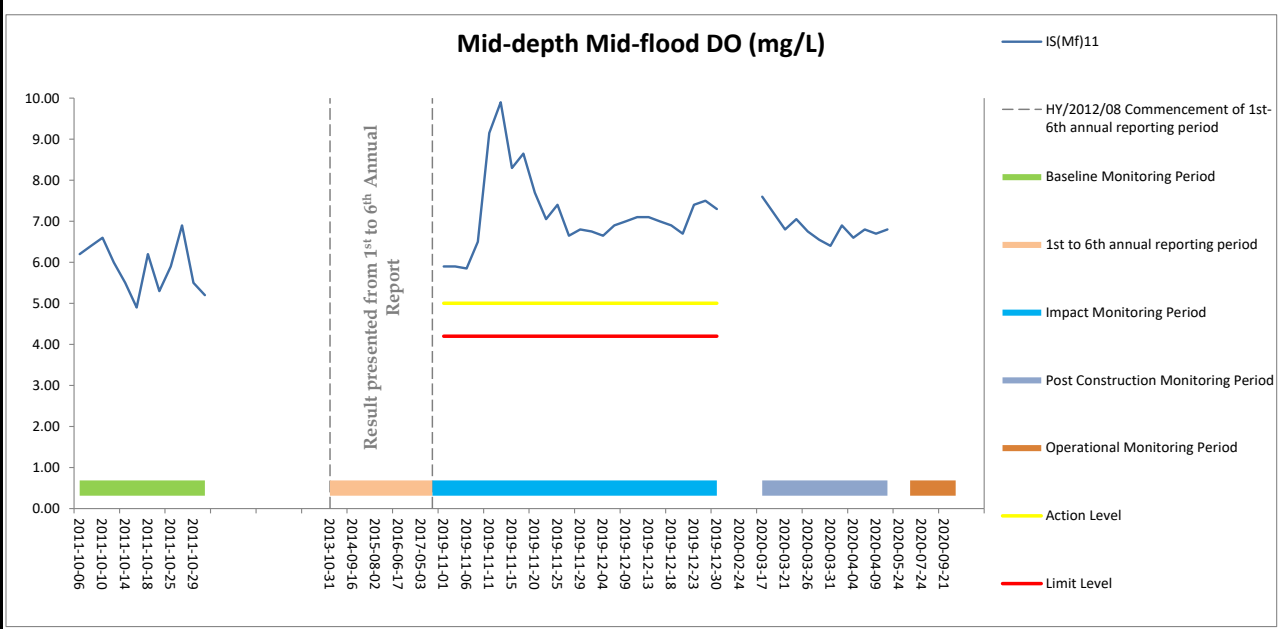
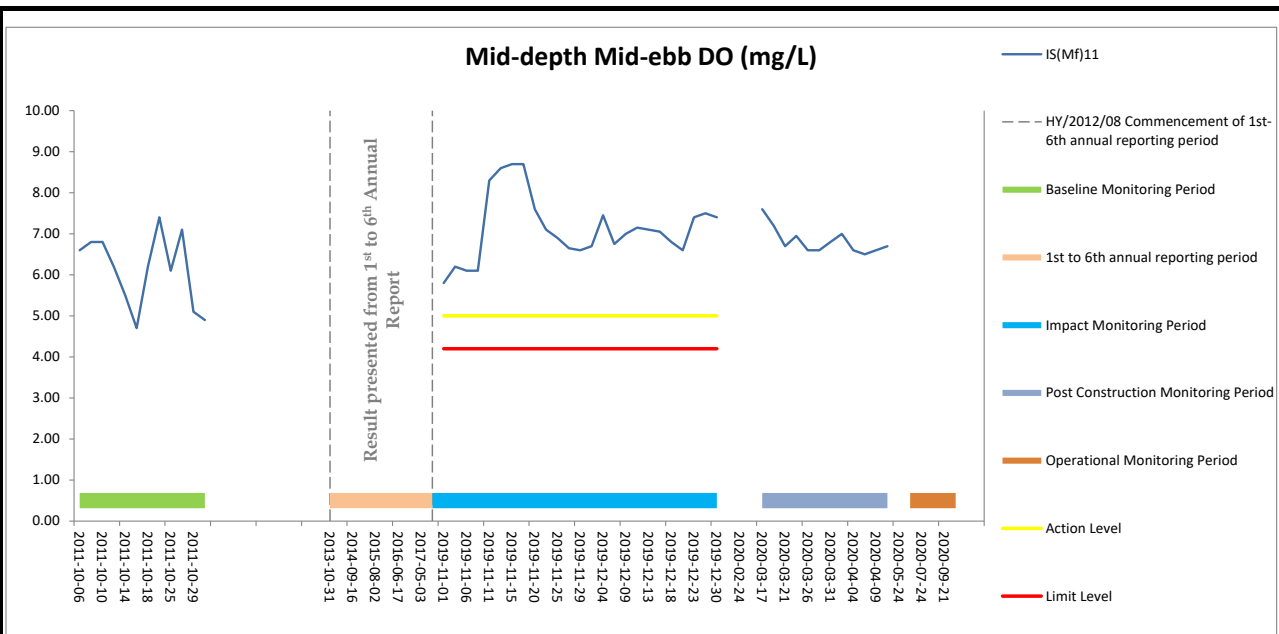




*No data for Stations SR8, SR9, SR7, IS8(N), SR4(N2), SR3(N), SR4a and IS(Mf)9 during mid-ebb tide due to shallow water depth (< 6m).

Figure E28 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in mid-depth waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at SR10A. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B

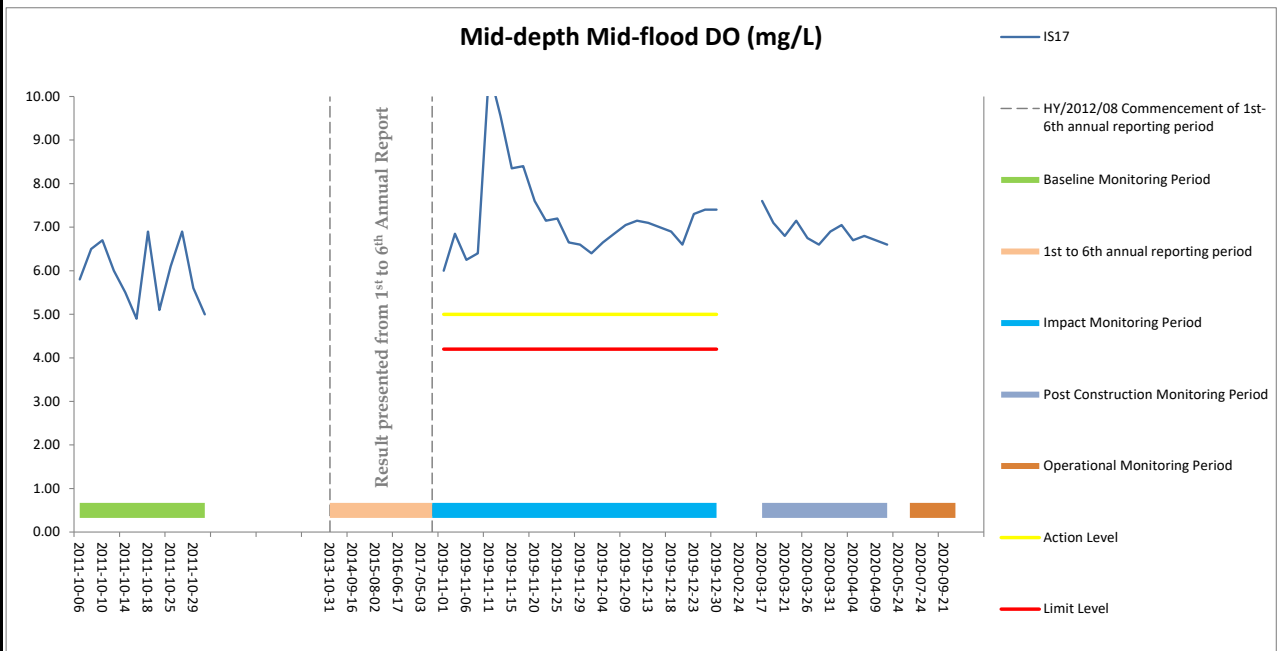
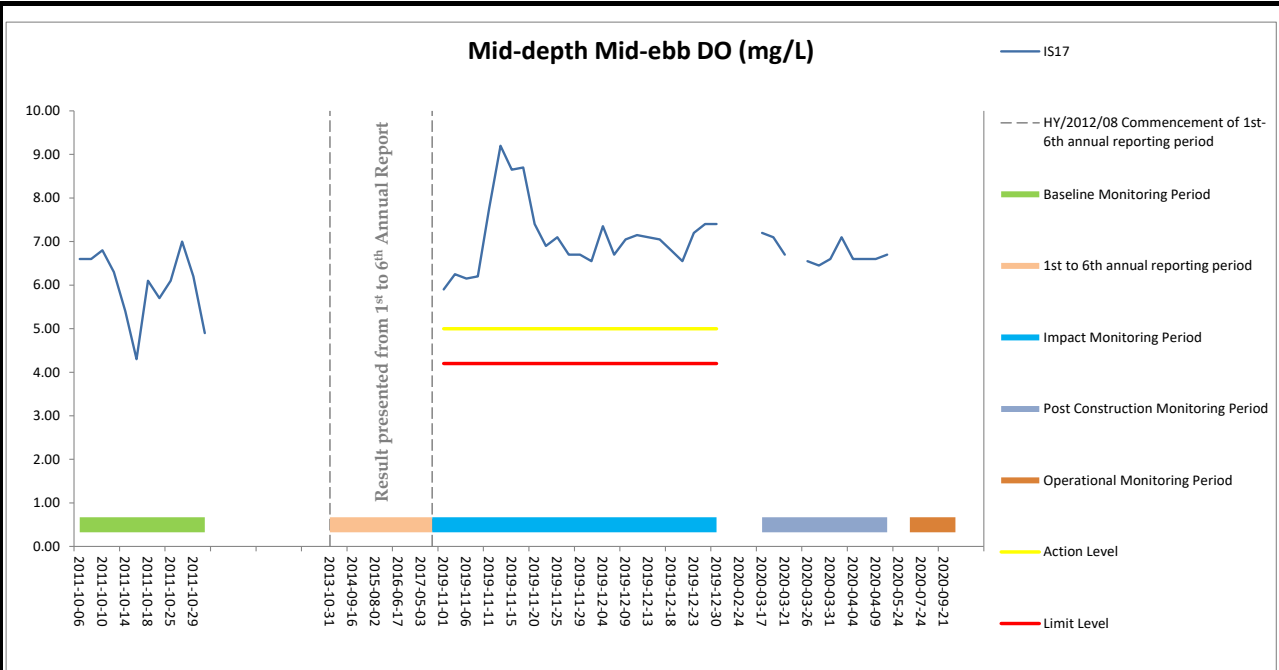




*No data for Stations SR8, SR9, SR7, IS8(N), SR4(N2), SR3(N), SR4a and IS(Mf)9 during mid-ebb tide due to shallow water depth (< 6m).

Figure E29 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in mid-depth waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS(Mf)11. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B

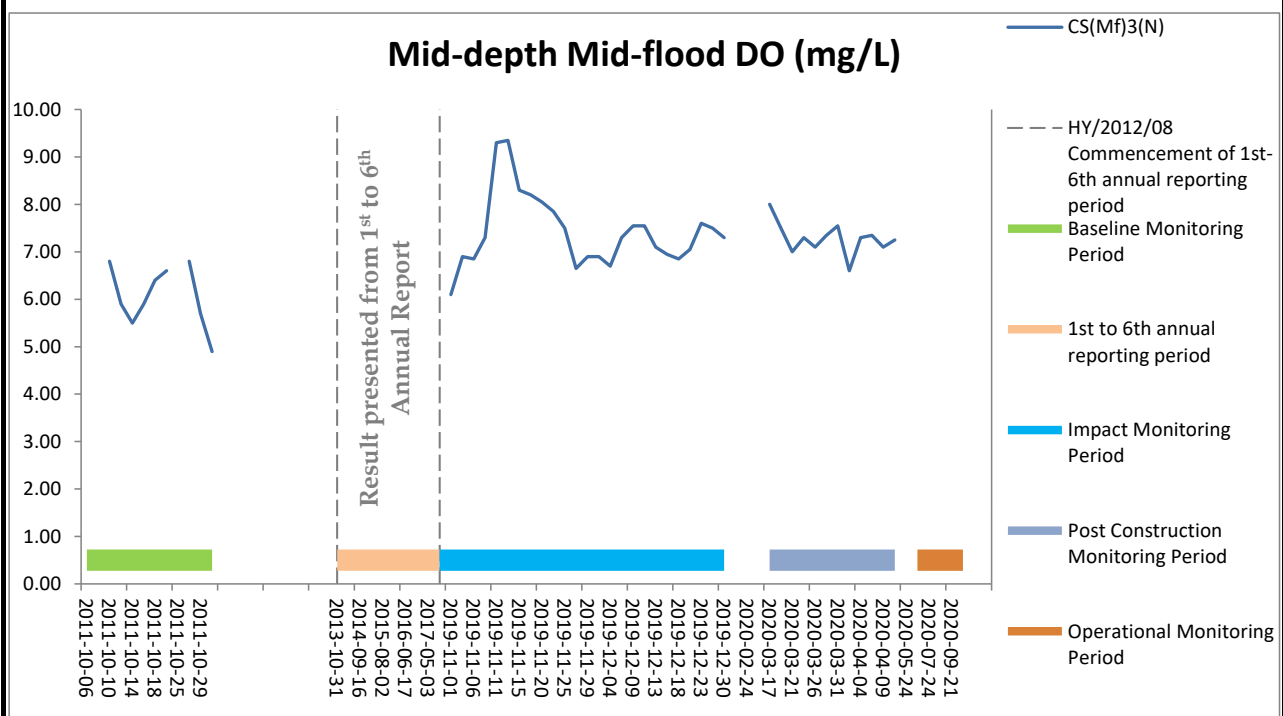
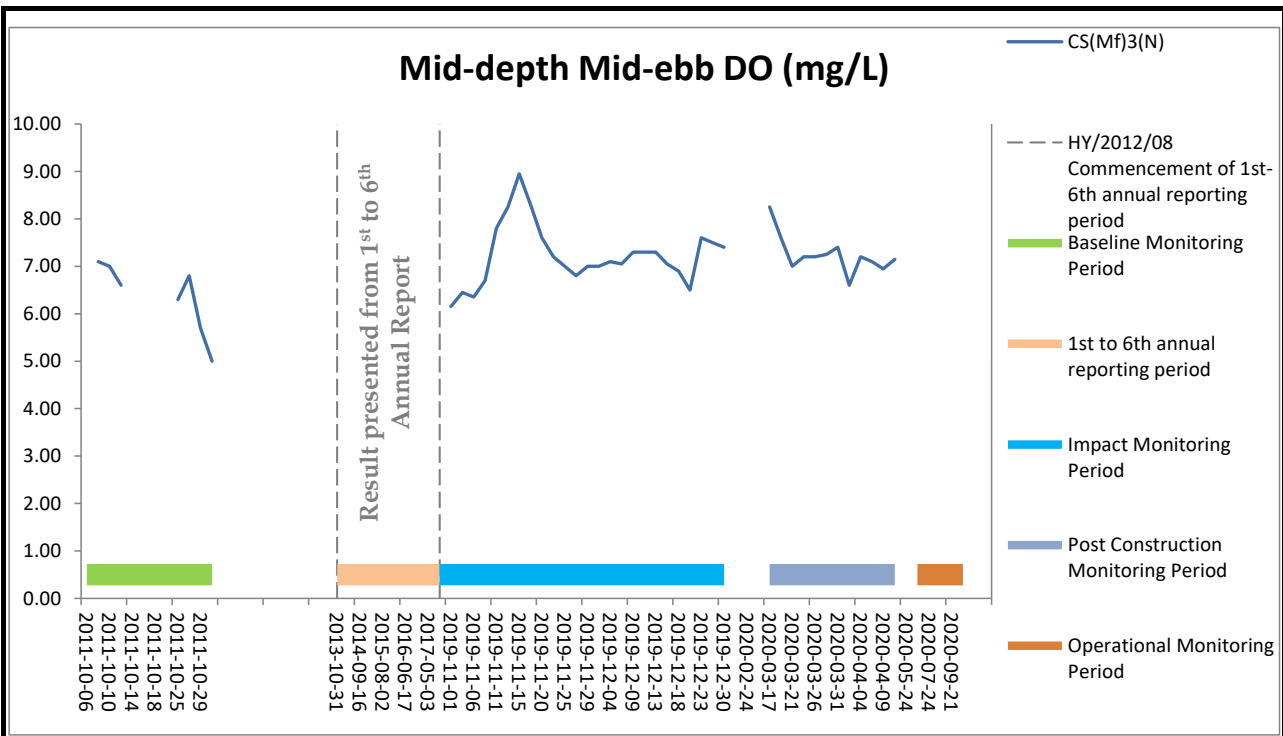




*No data for Stations SR8, SR9, SR7, IS8(N), SR4(N2), SR3(N), SR4a and IS(Mf)9 during mid-ebb tide due to shallow water depth (< 6m).

Figure E30 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in mid-depth waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS17. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B

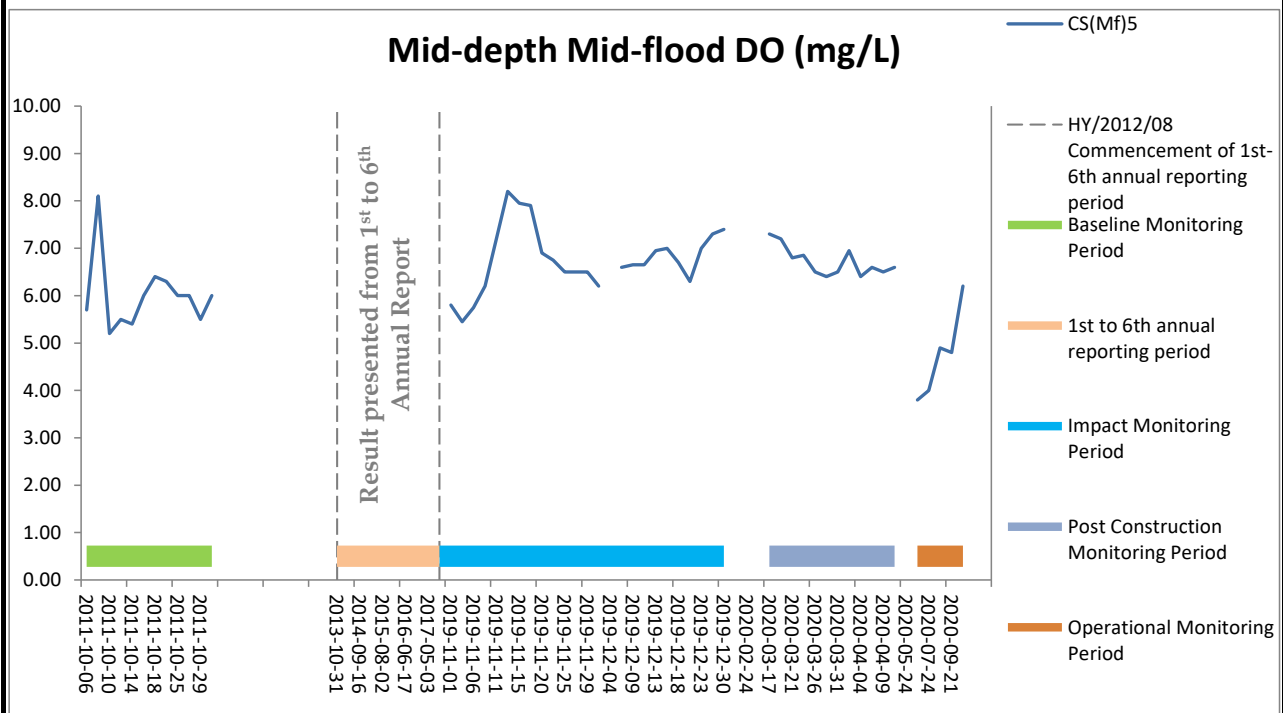
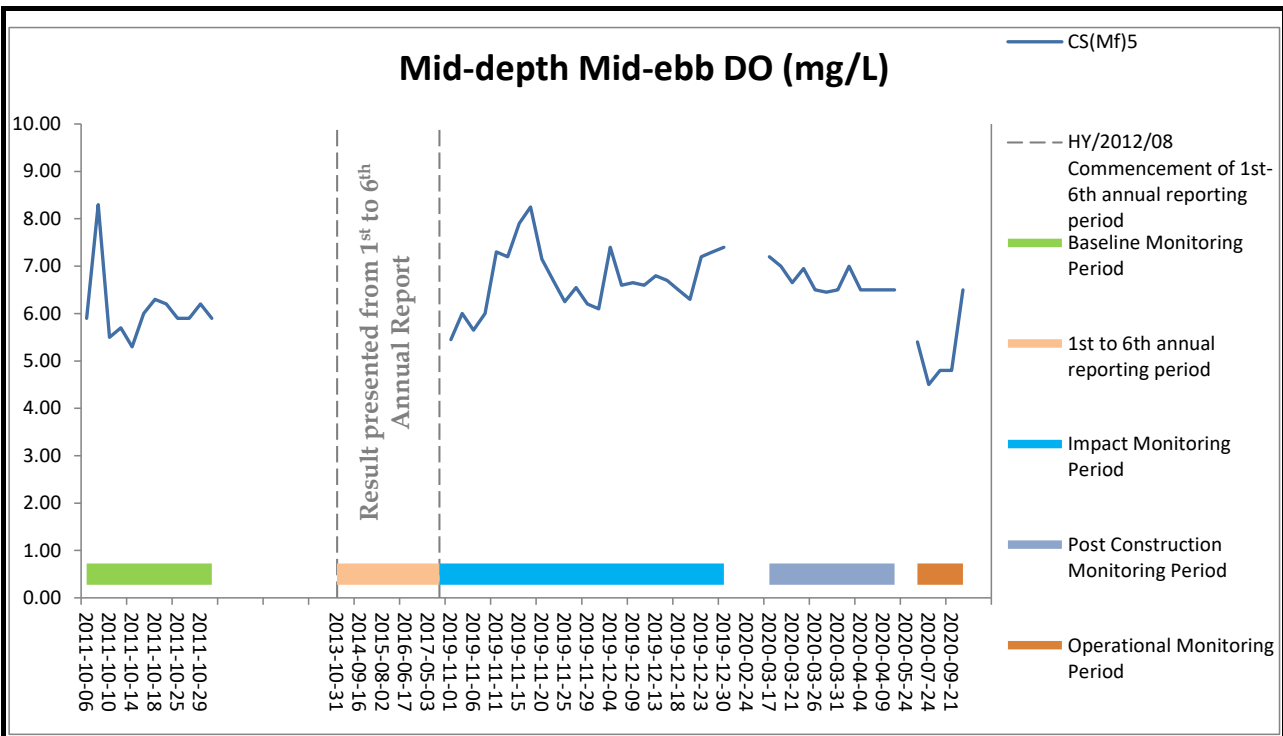




*No data for Stations SR8, SR9, SR7, IS8(N), SR4(N2), SR3(N), SR4a and IS(Mf)9 during mid-ebb tide due to shallow water depth (< 6m).

Figure E31 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in mid-depth waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at CS(Mf)3(N). Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B

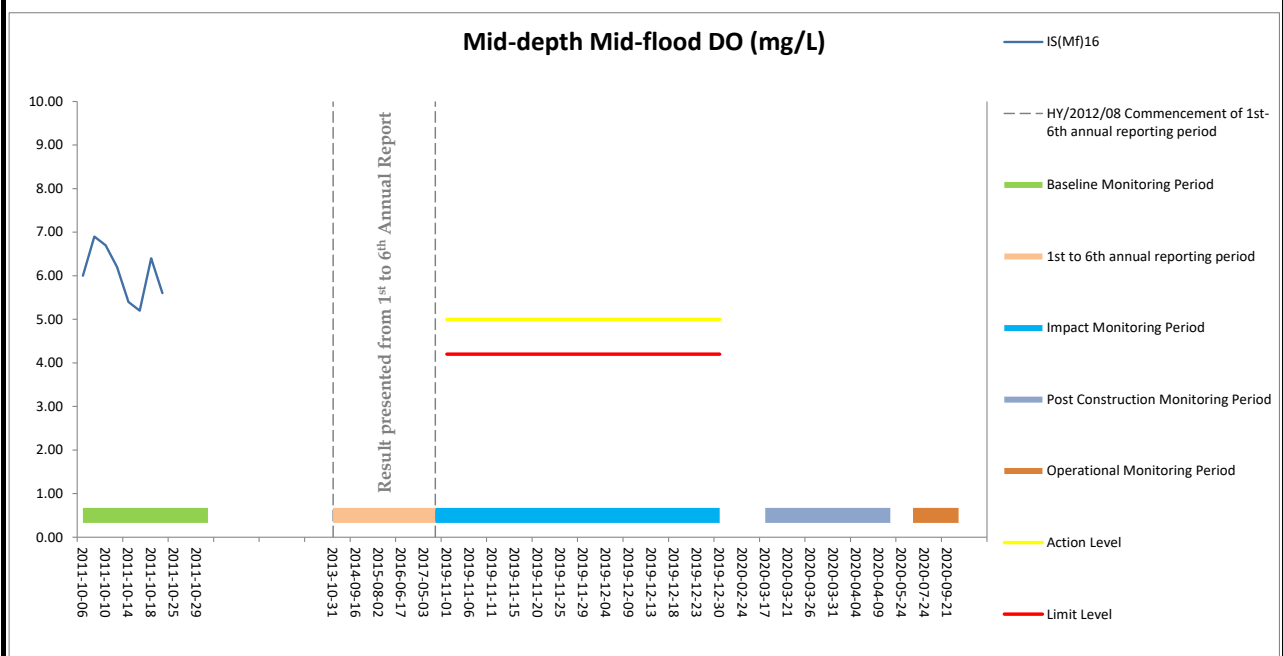
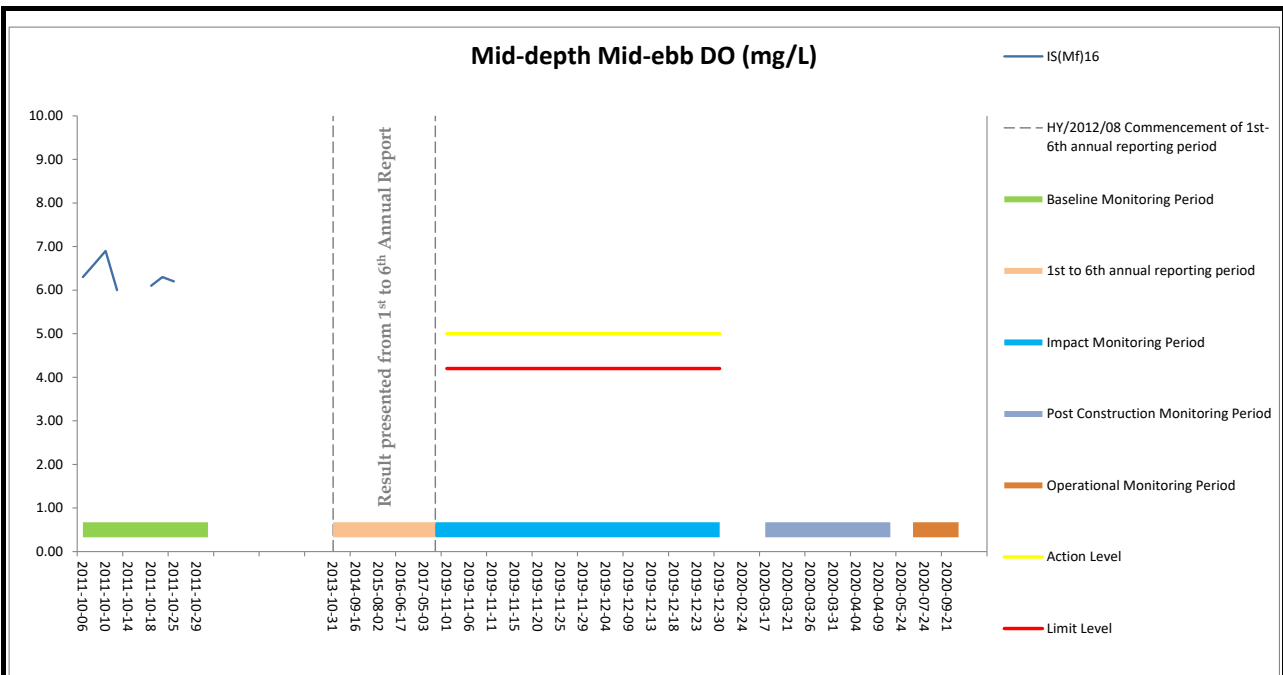




*No data for Stations SR8, SR9, SR7, IS8(N), SR4(N2), SR3(N), SR4a and IS(Mf)9 during mid-ebb tide due to shallow water depth (< 6m).

Figure E32 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in mid-depth waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at CS(Mf)5. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B

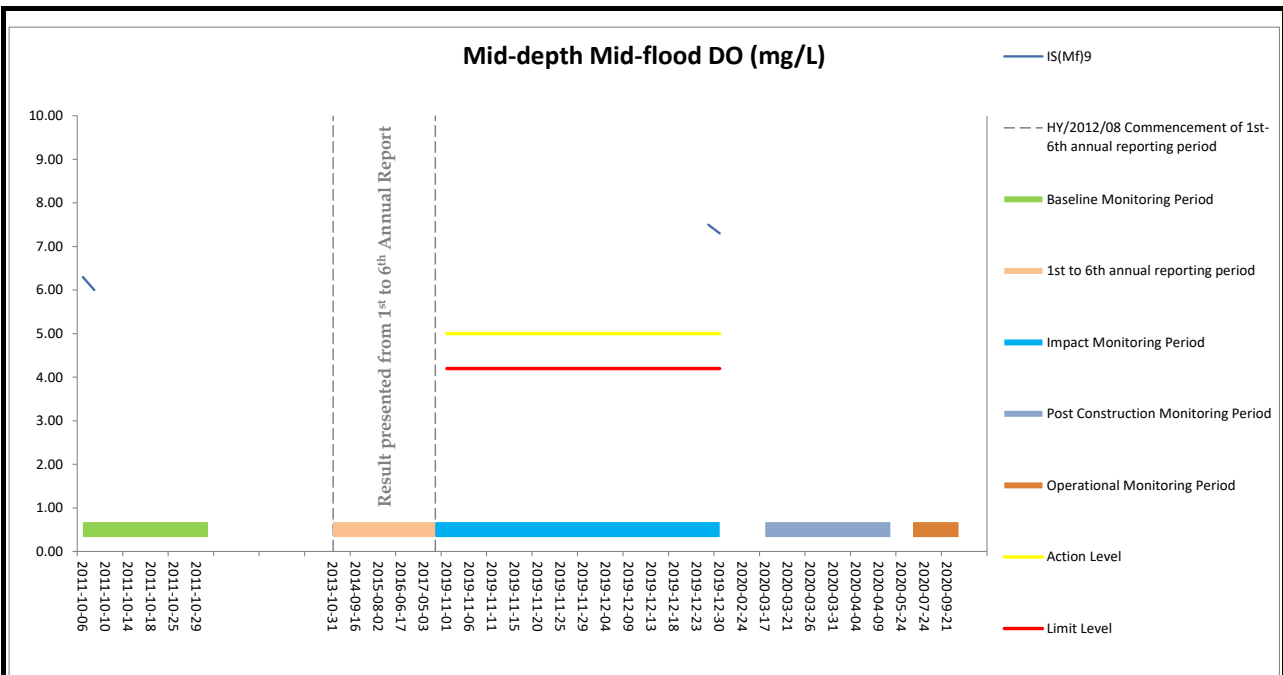




*No data for Stations SR8, SR9, SR7, IS8(N), SR4(N2), SR3(N), SR4a and IS(Mf)9 during mid-ebb tide due to shallow water depth (< 6m).

Figure E33 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in mid-depth waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS(Mf)16. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B

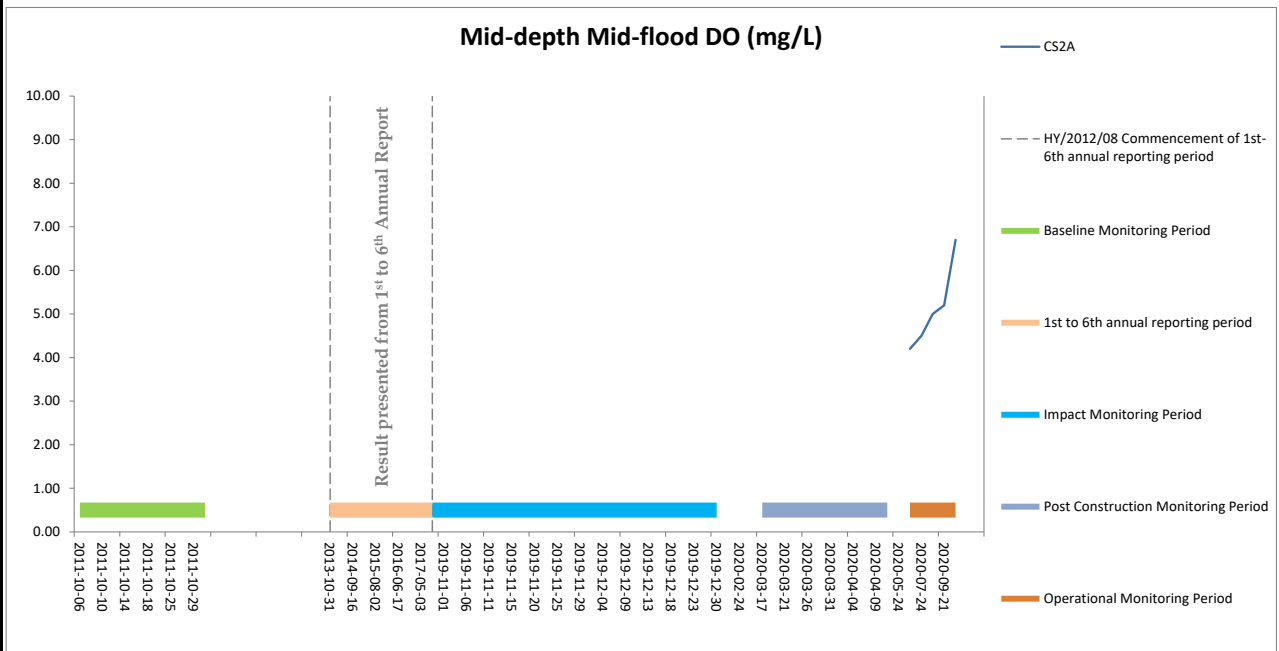
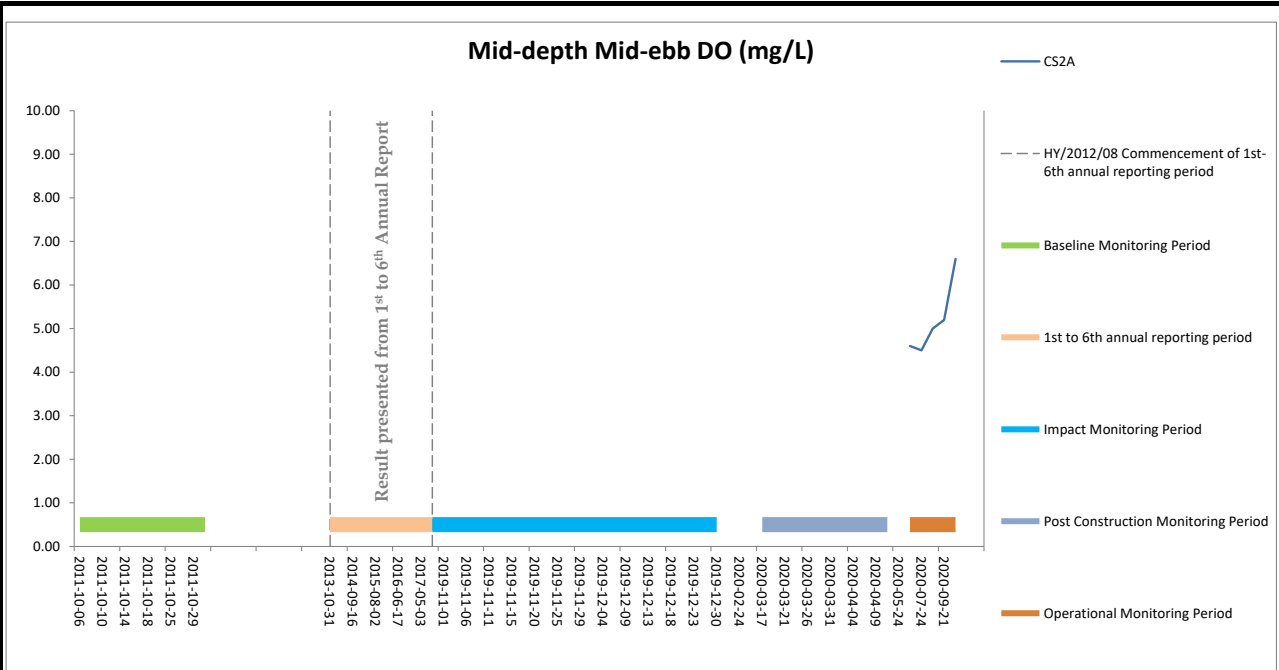




*No data for Stations SR8, SR9, SR7, IS8(N), SR4(N2), SR3(N), SR4a and IS(Mf)9 during mid-ebb tide due to shallow water depth (< 6m).

Figure E34 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in mid-depth waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS(Mf)9. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B





*No data for Stations SR8, SR9, SR7, IS8(N), SR4(N2), SR3(N), SR4a and IS(Mf)9 during mid-ebb tide due to shallow water depth (< 6m).

Figure E35 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in mid-depth waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at CS2(A). Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



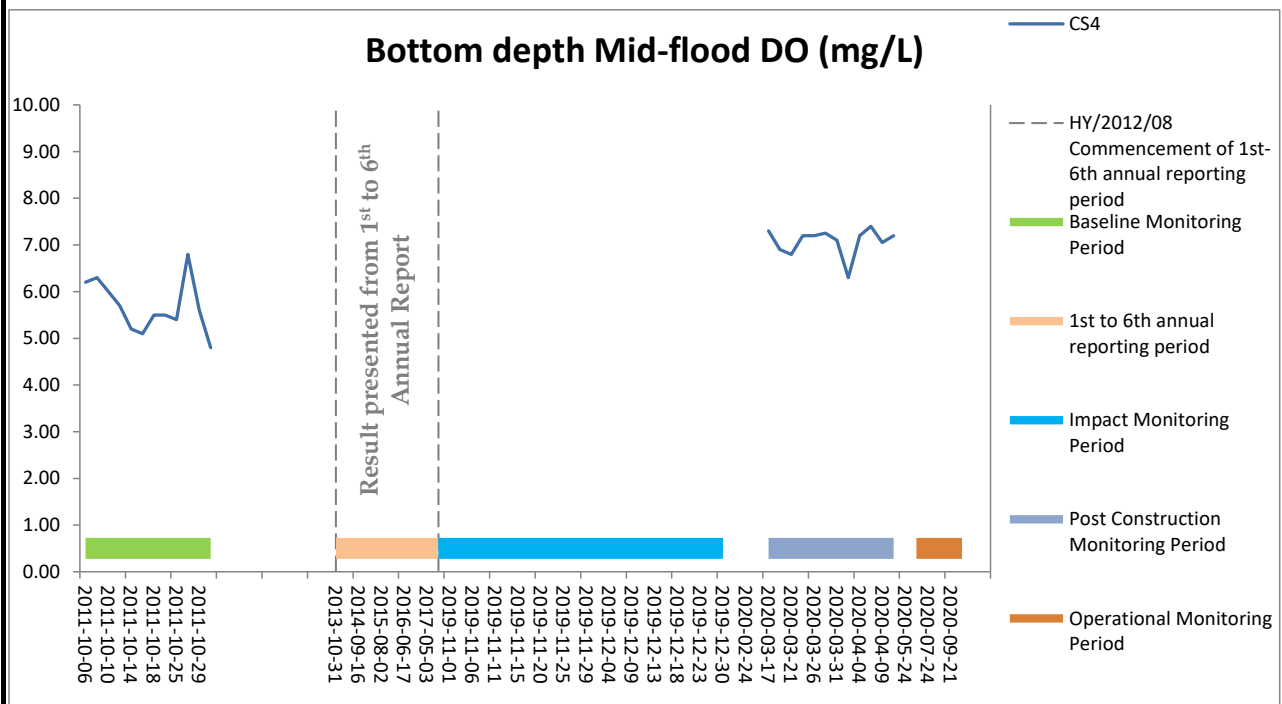
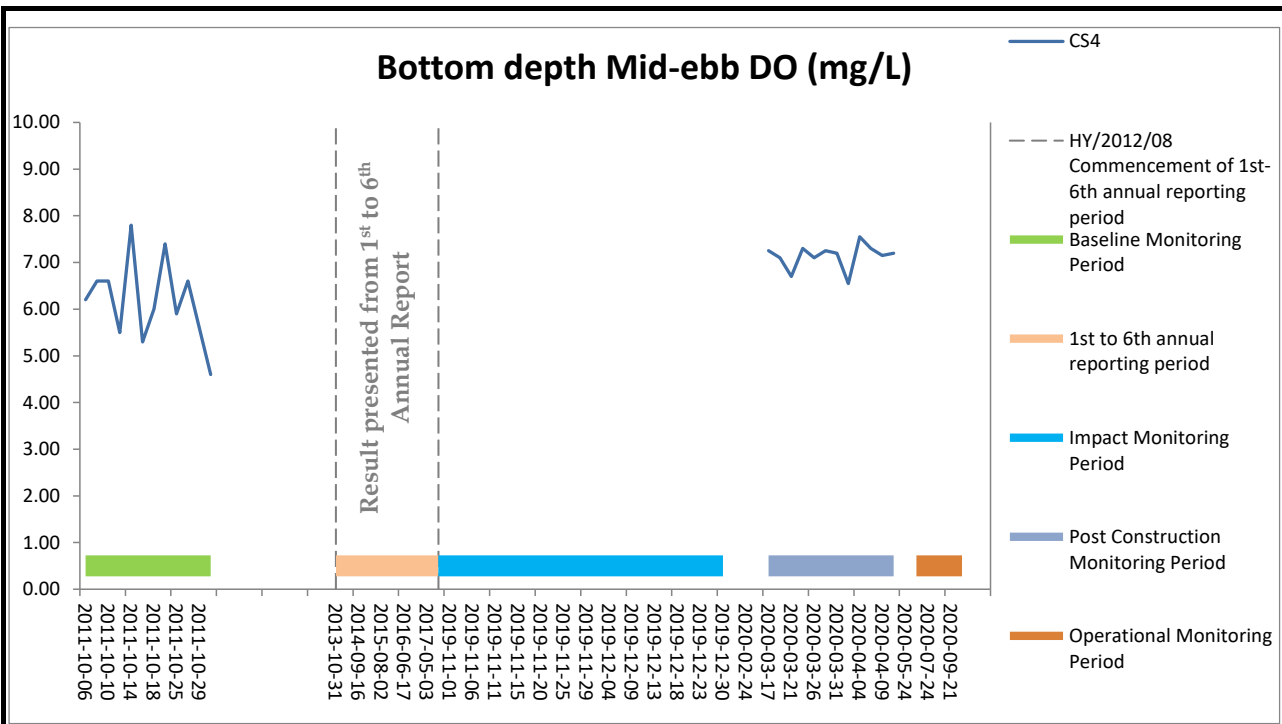


Figure E36 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in bottom waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at CS4. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

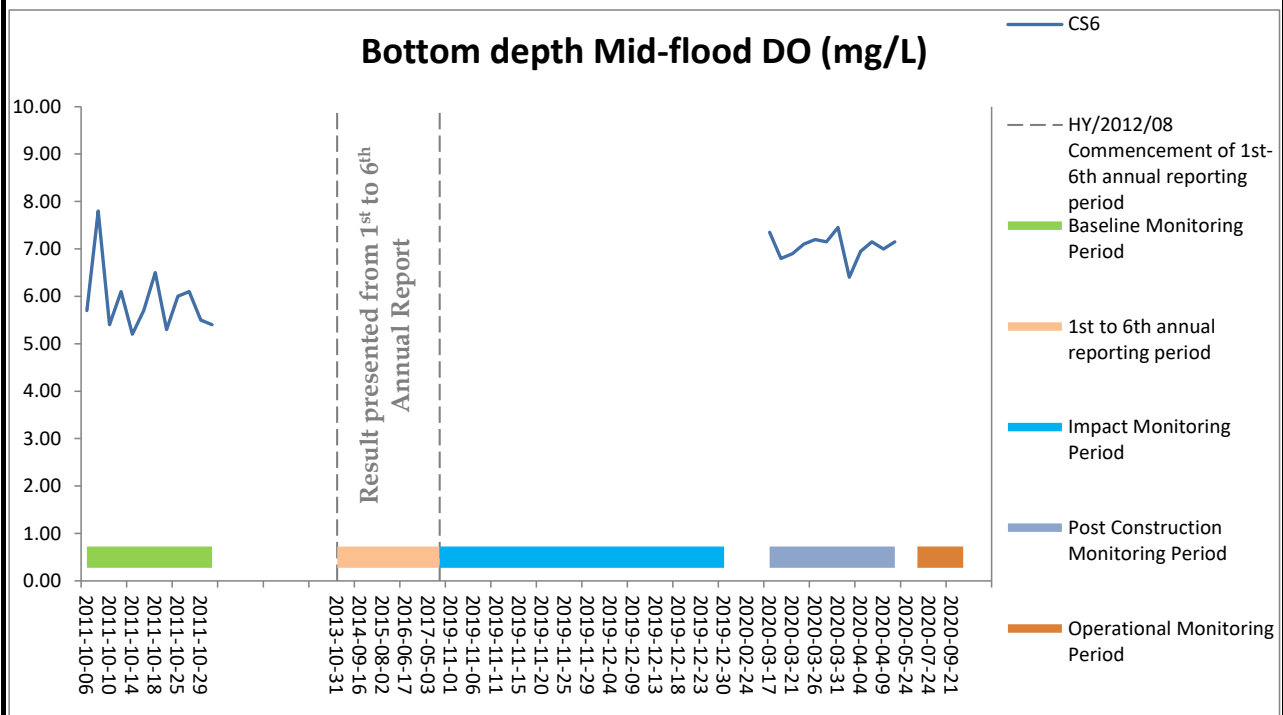
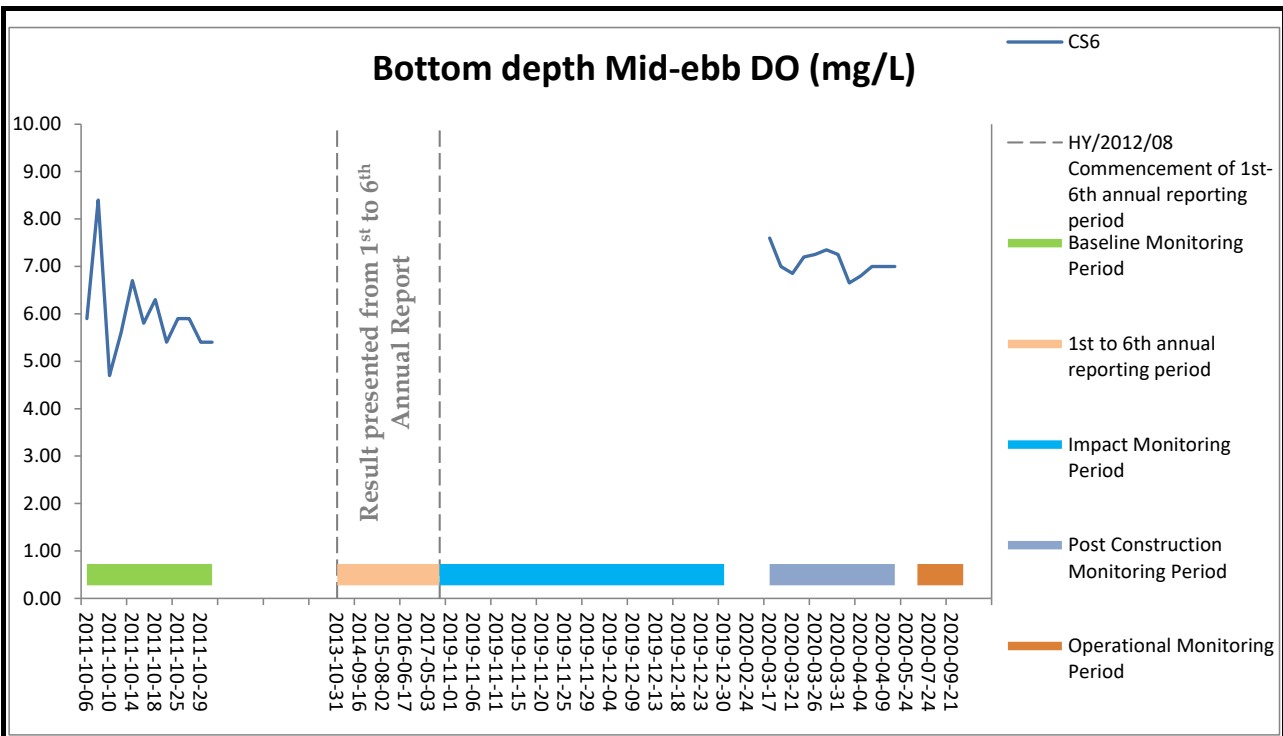


Figure E37 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in bottom waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at CS6. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

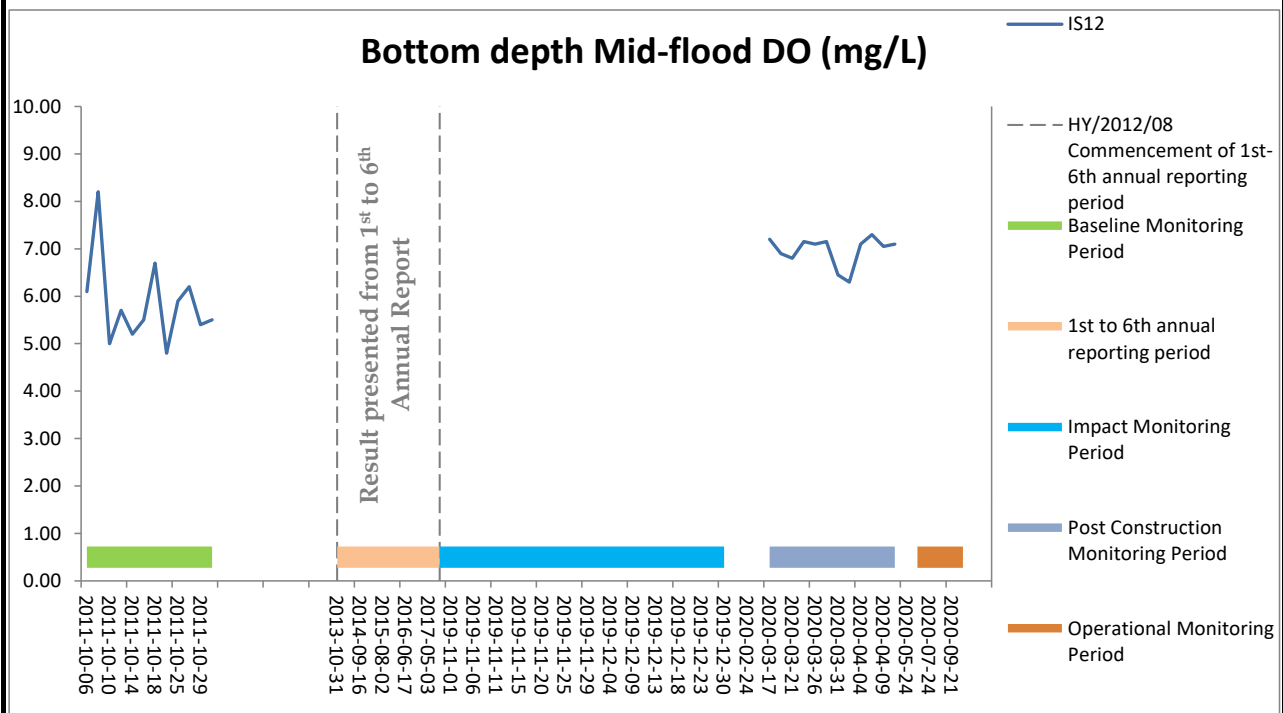
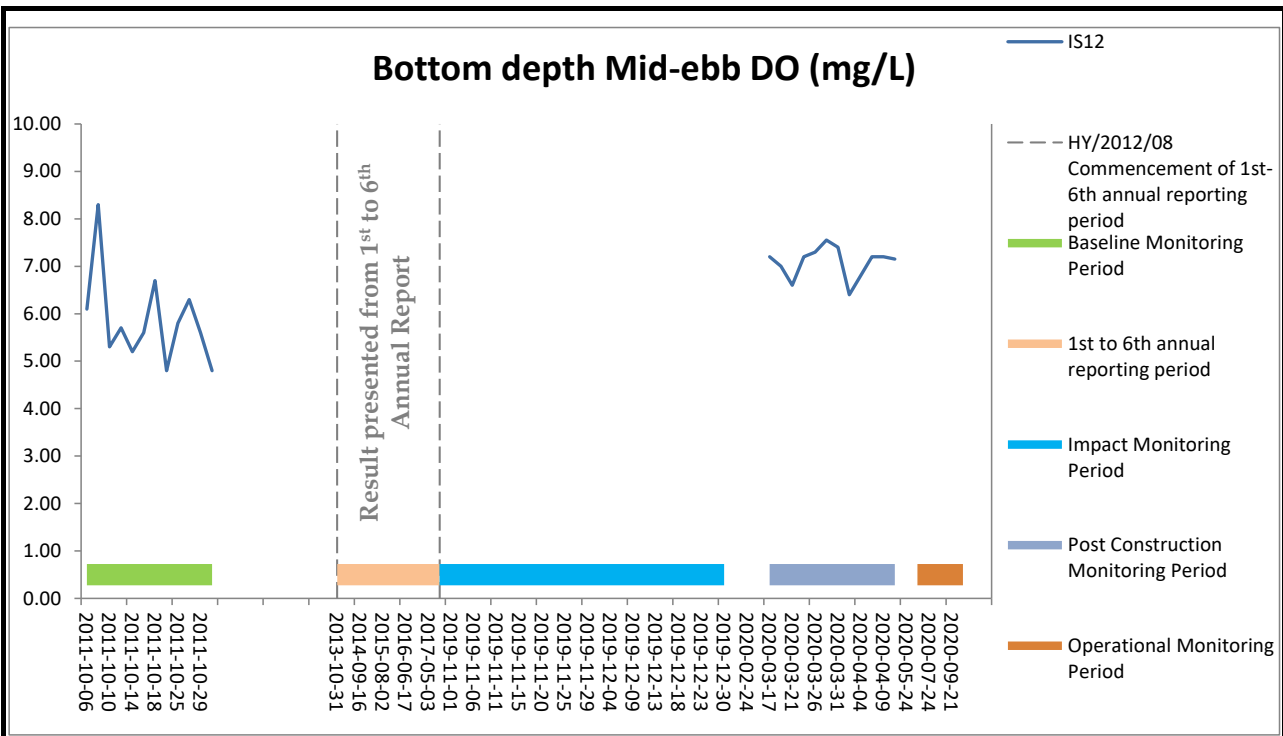


Figure E38 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in bottom waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS12. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

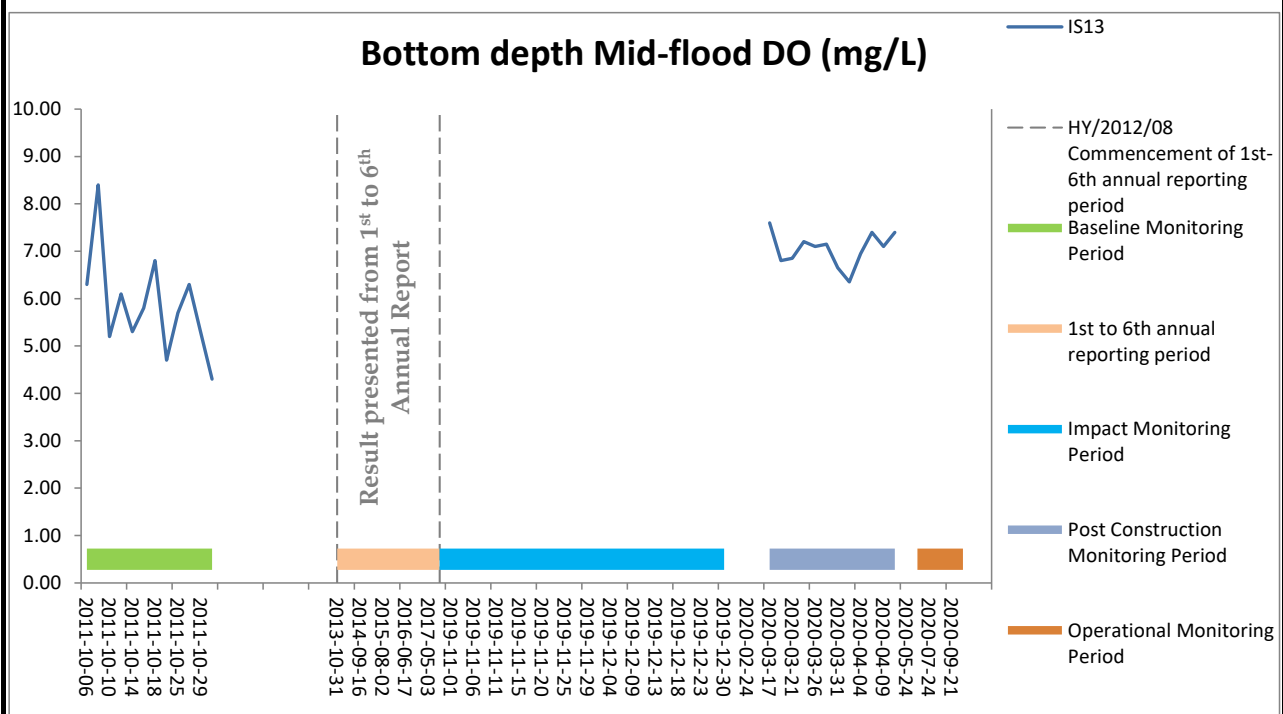
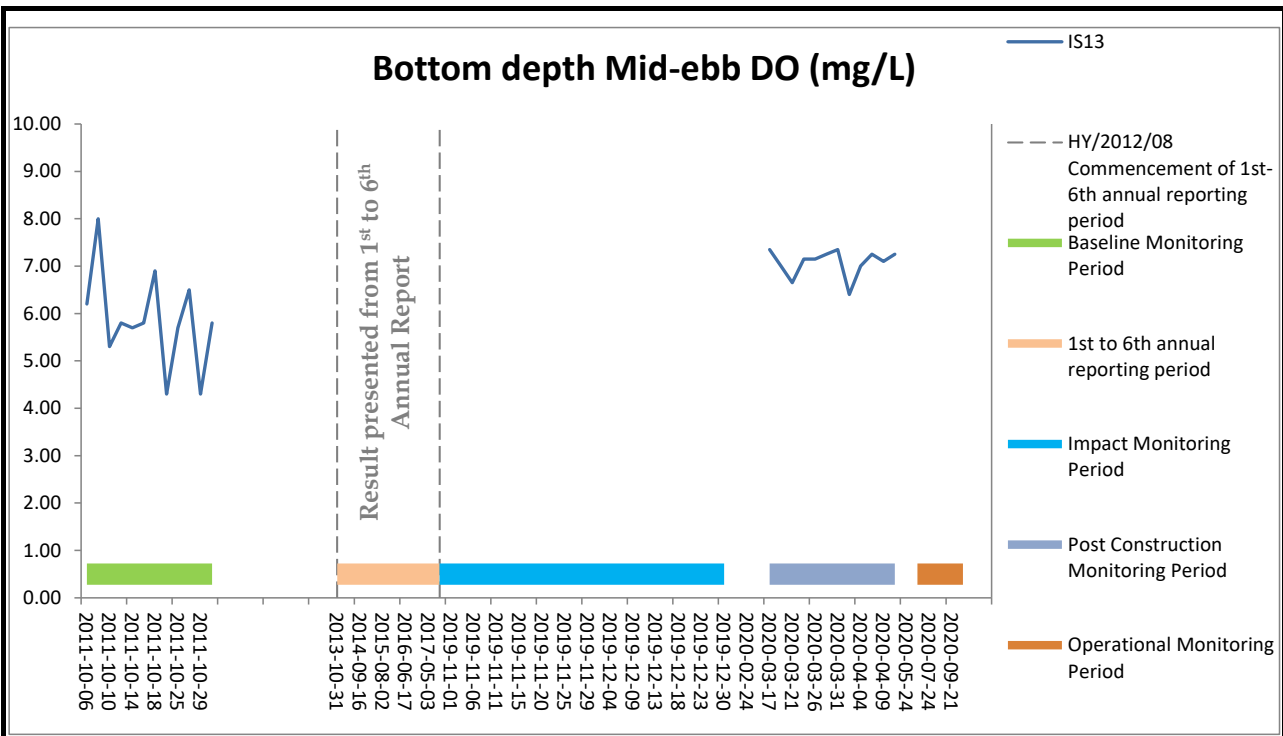


Figure E39 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in bottom waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS13. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

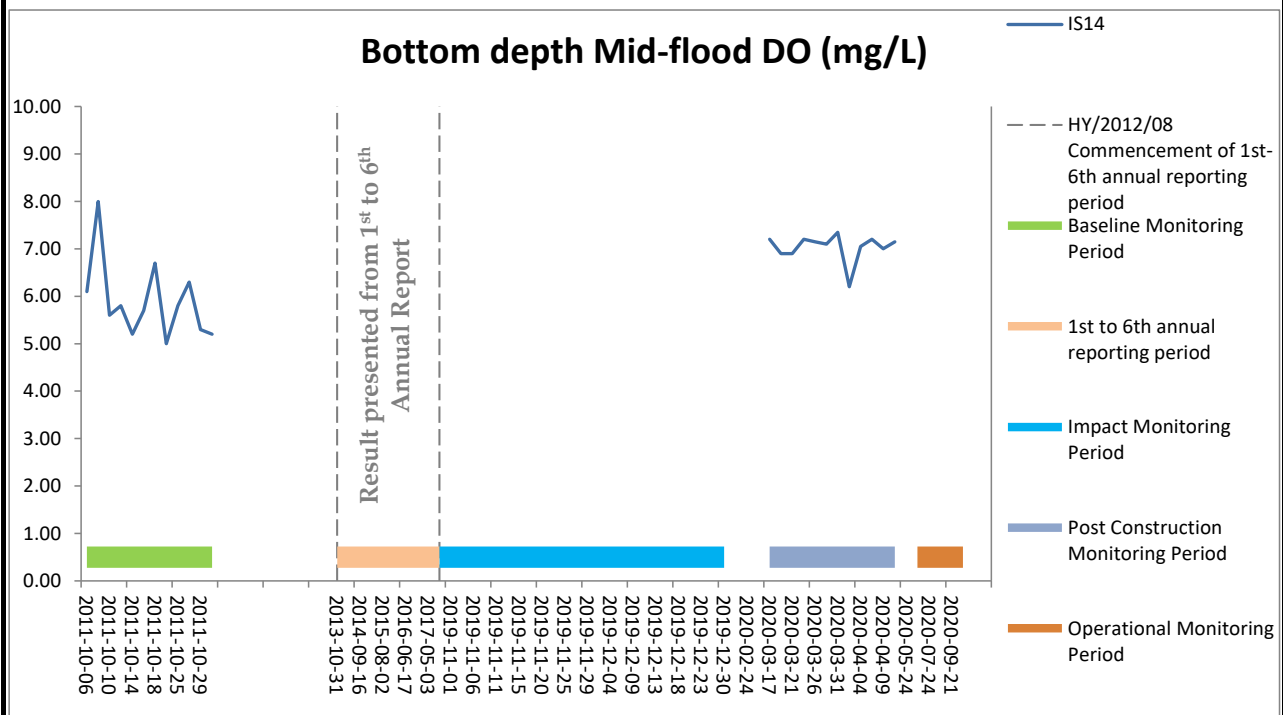
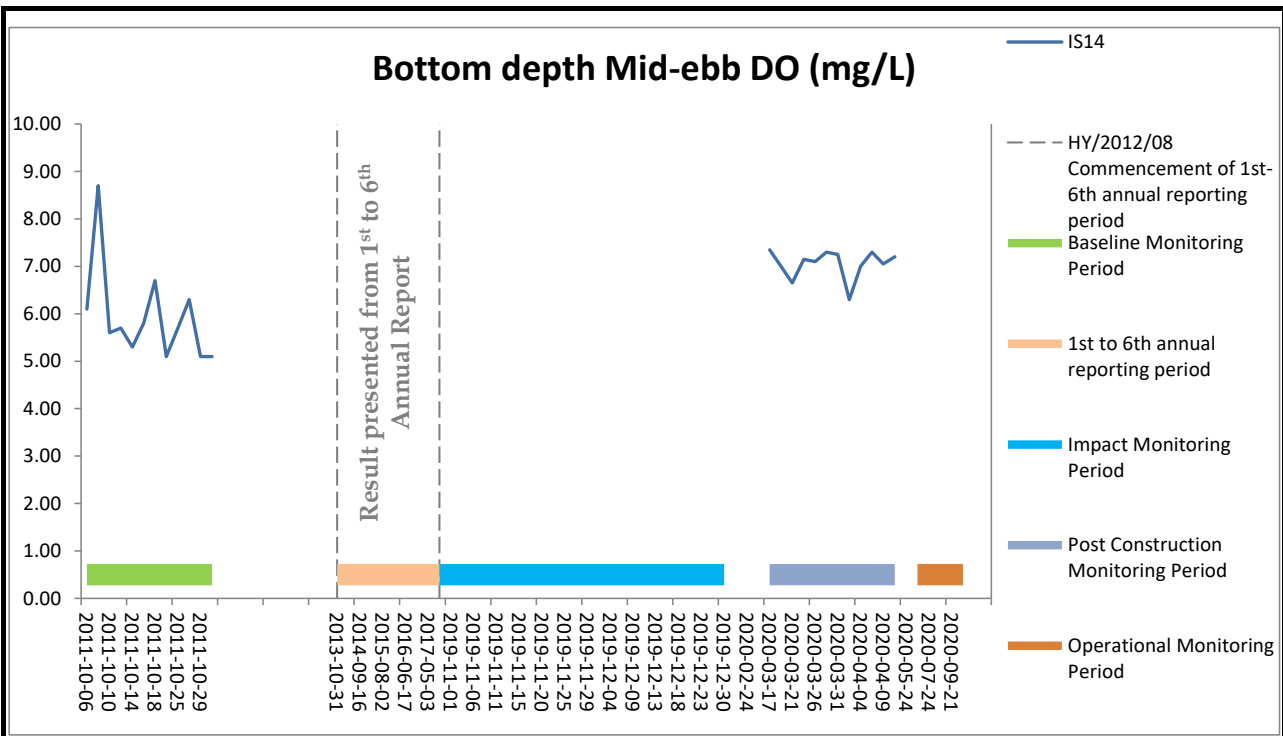


Figure E40 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in bottom waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS14. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

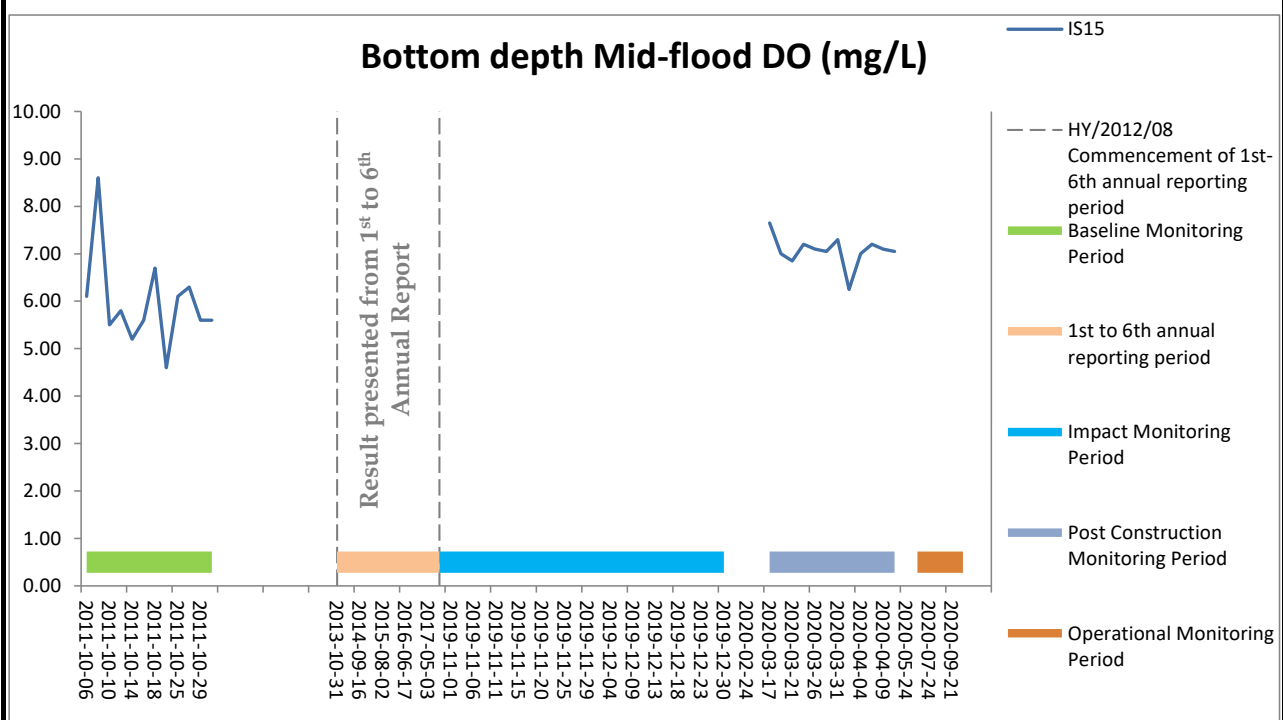
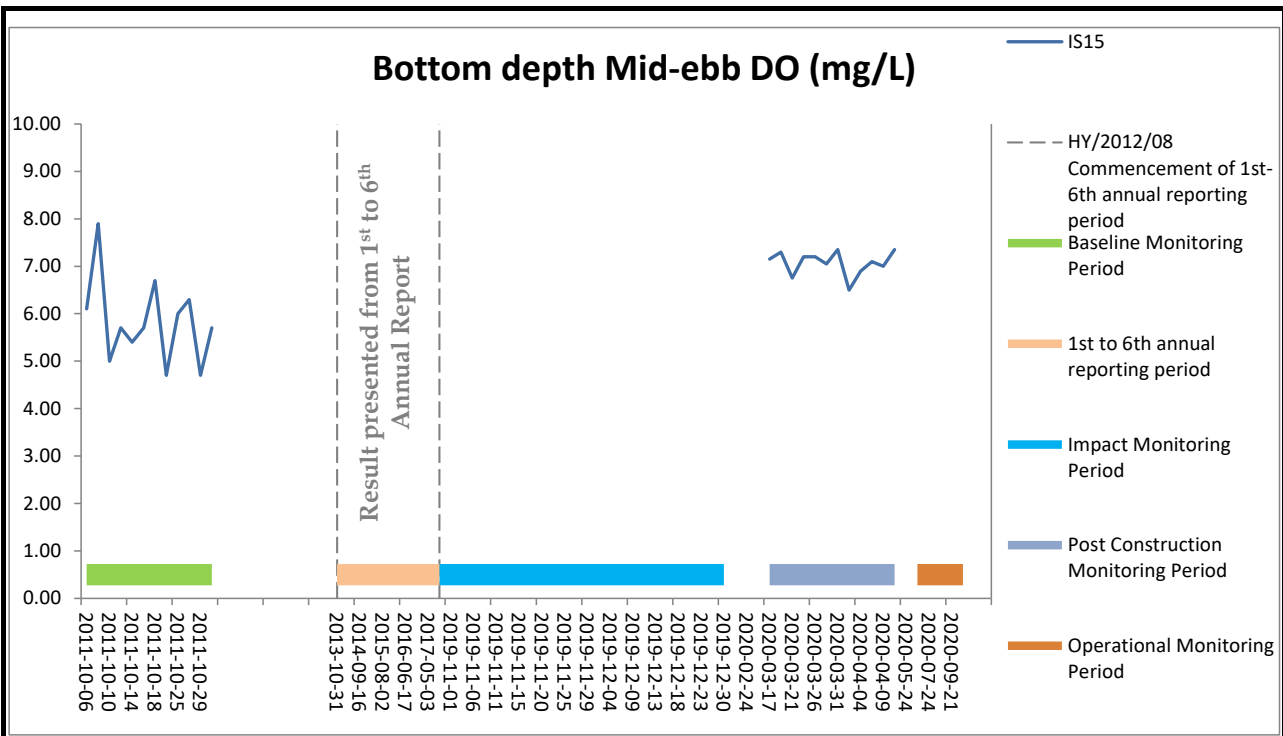


Figure E41 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in bottom waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS15. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

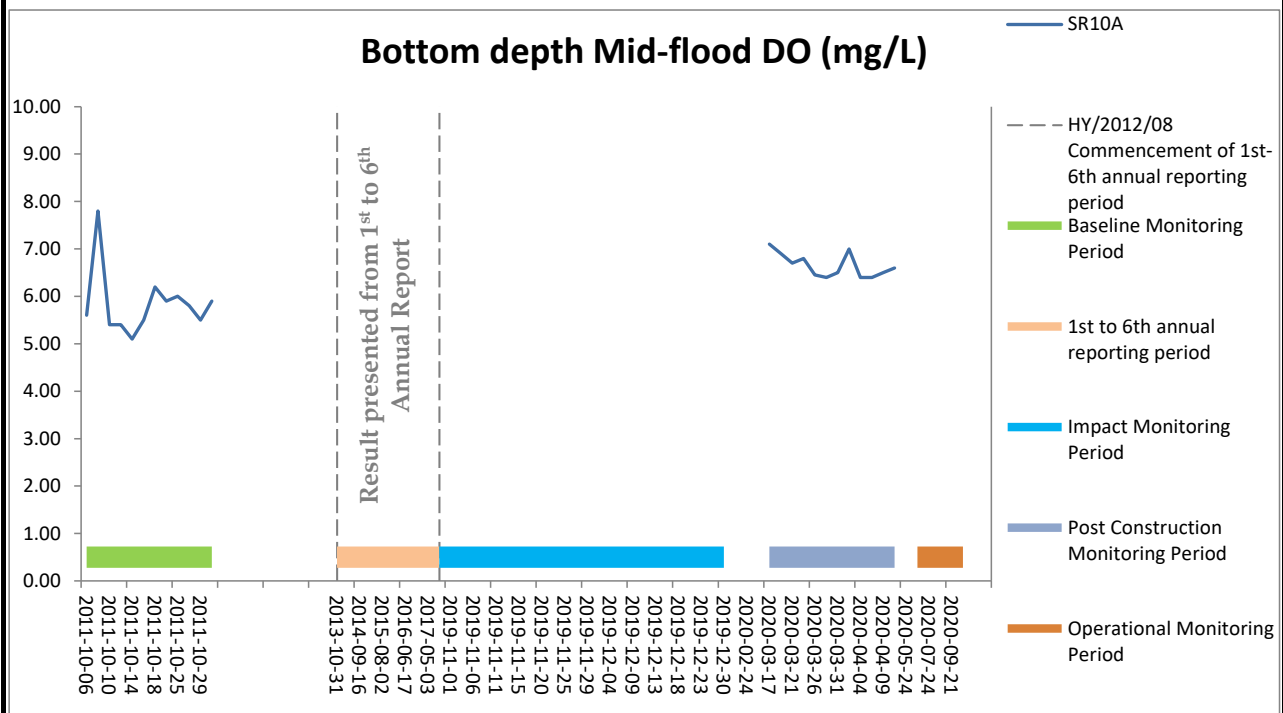
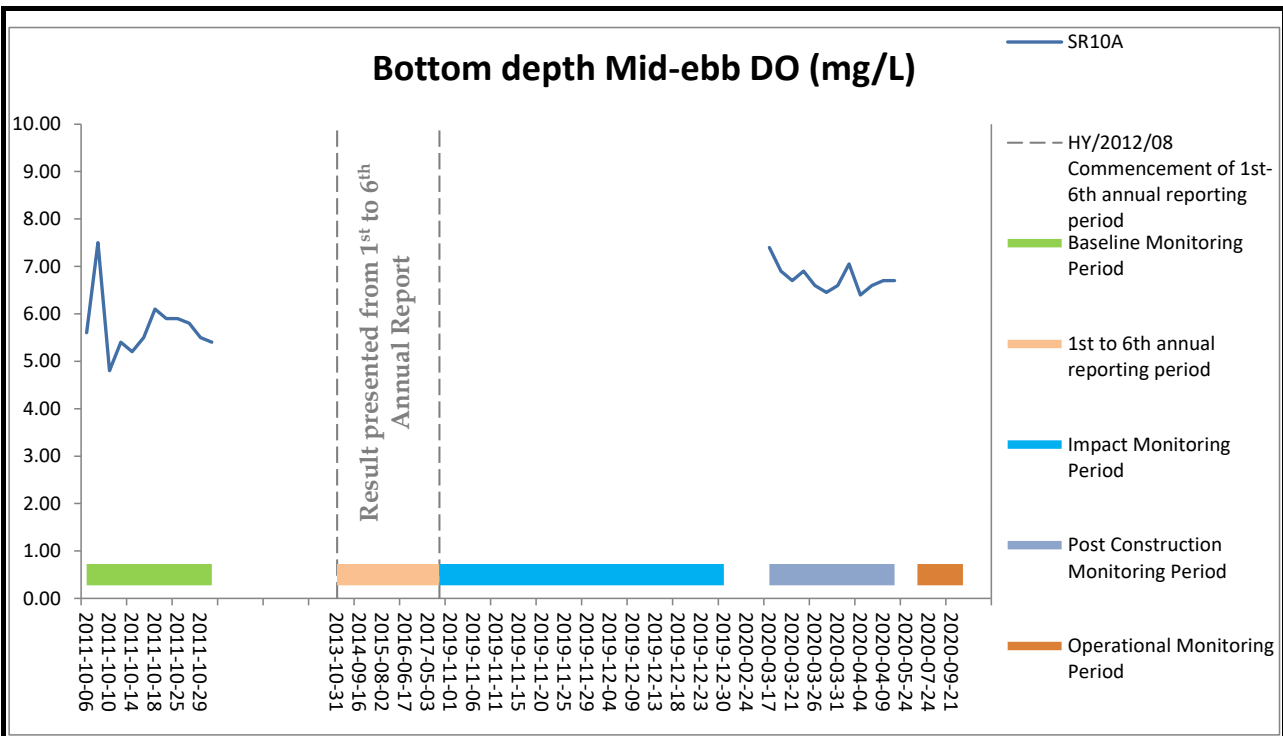


Figure E42 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in bottom waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at SR10A. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



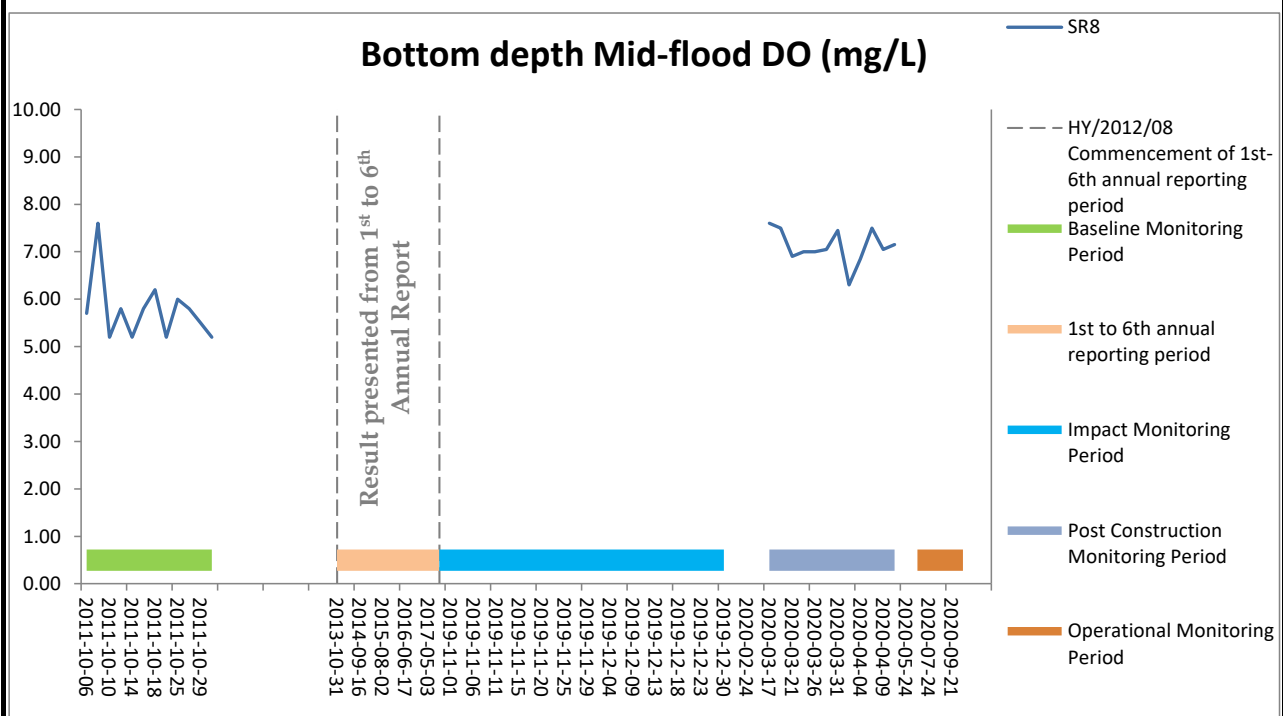
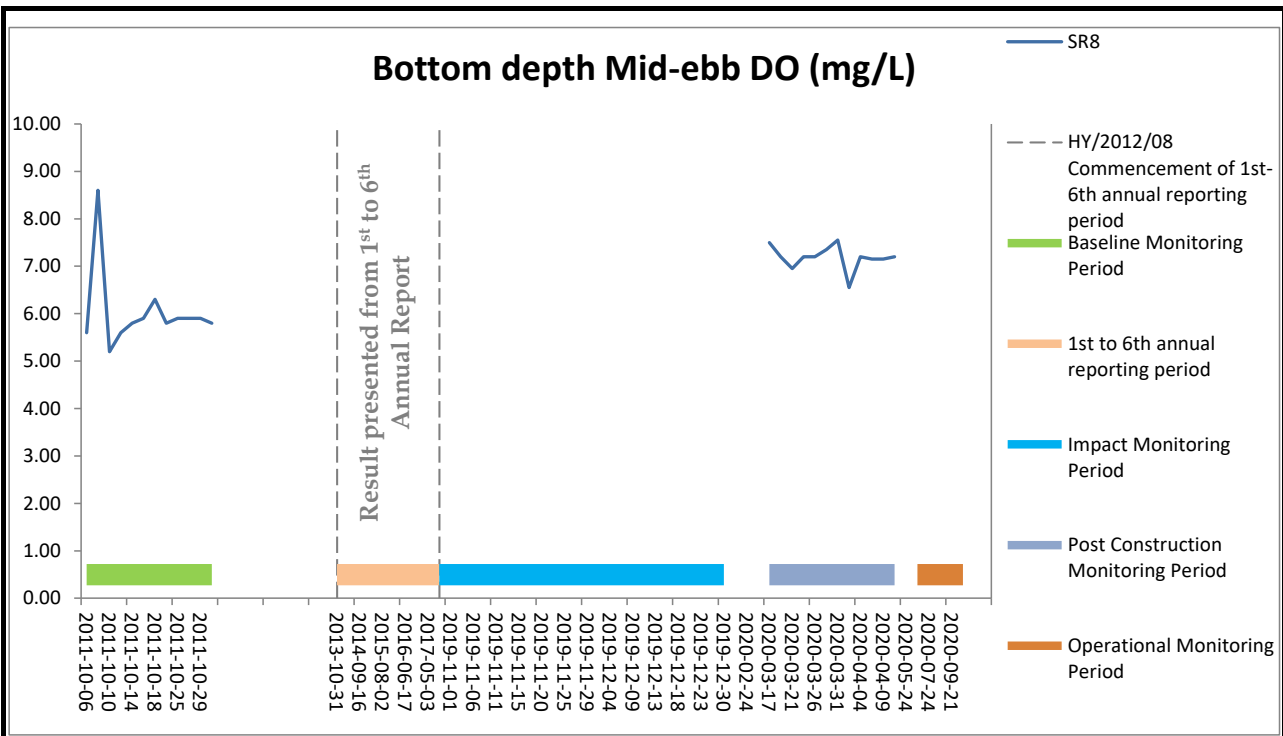


Figure E43 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in bottom waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at SR8. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



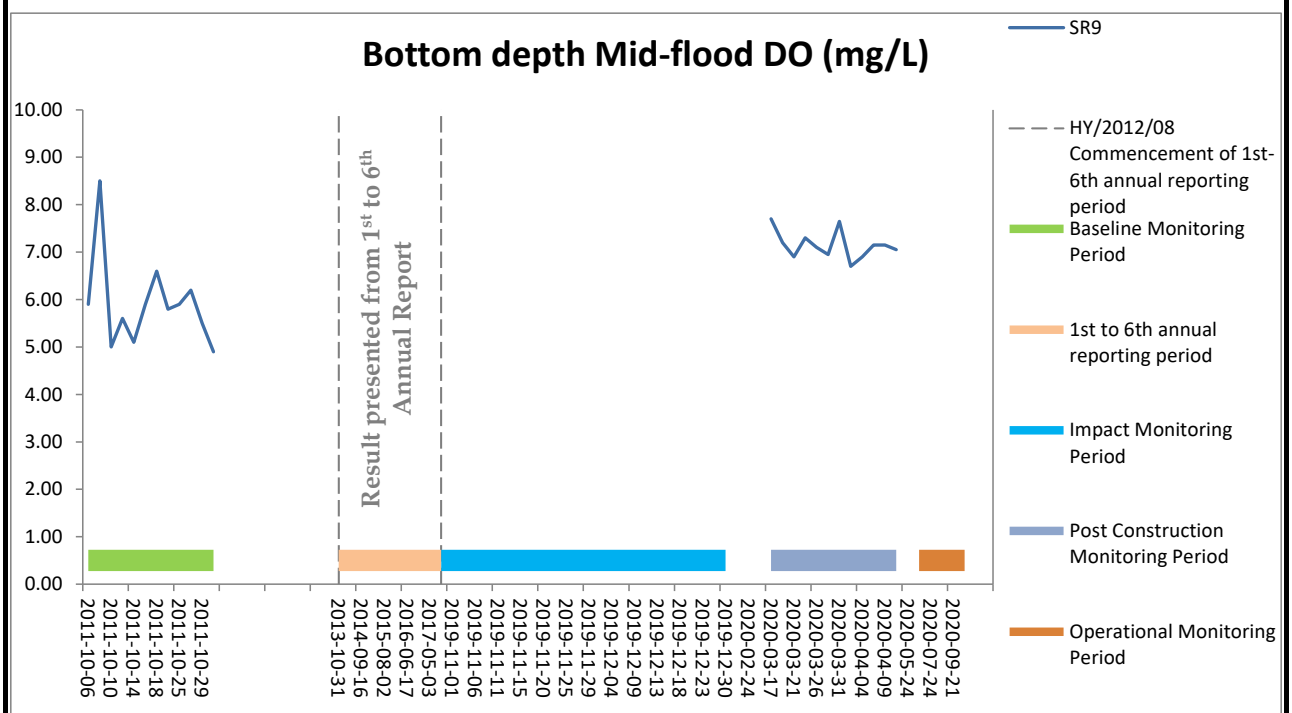
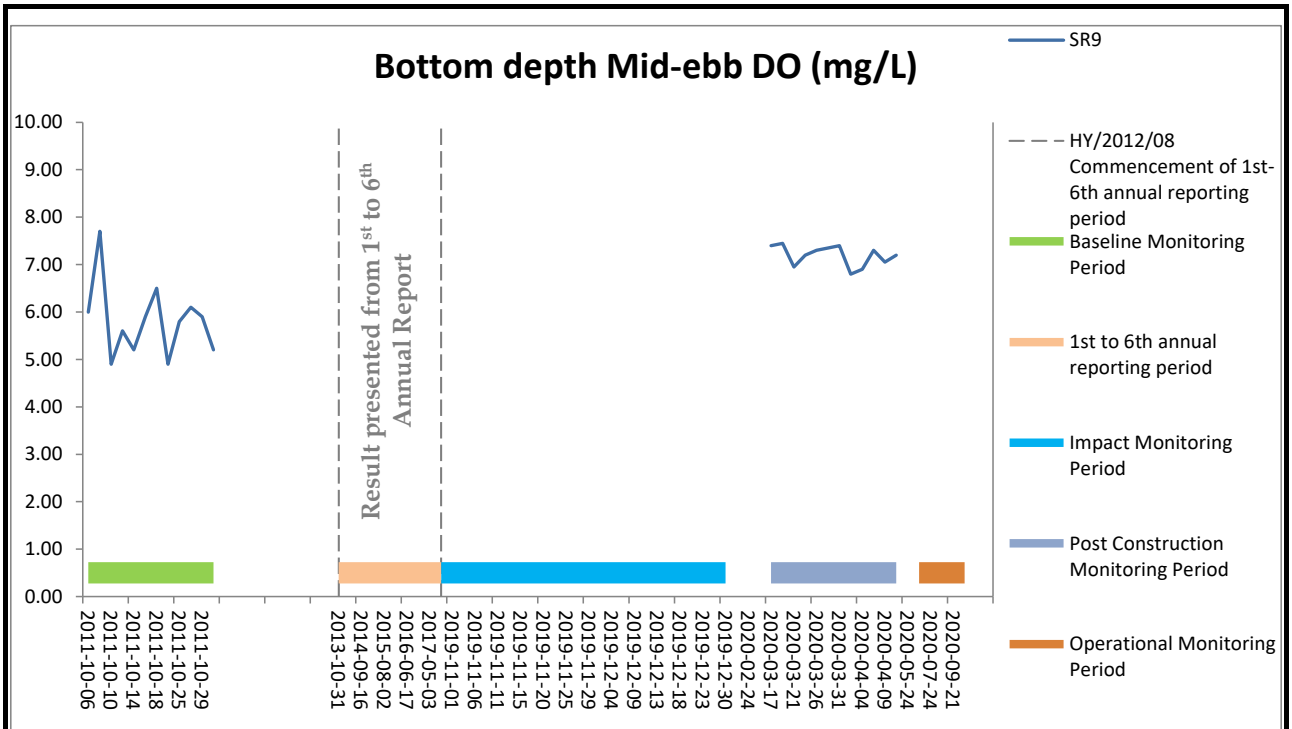


Figure E44 Baseline, Impact, Post-construction & Operational Monitoring - Mean Level of Dissolved Oxygen (mg/L) in bottom waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at SR9. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

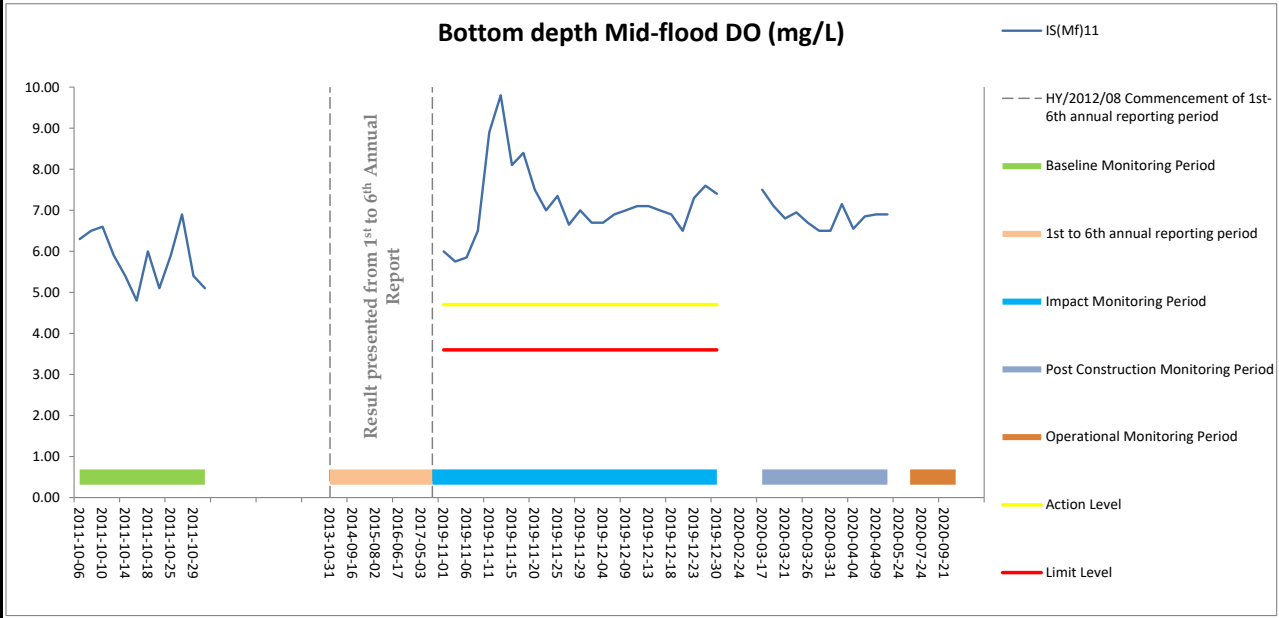
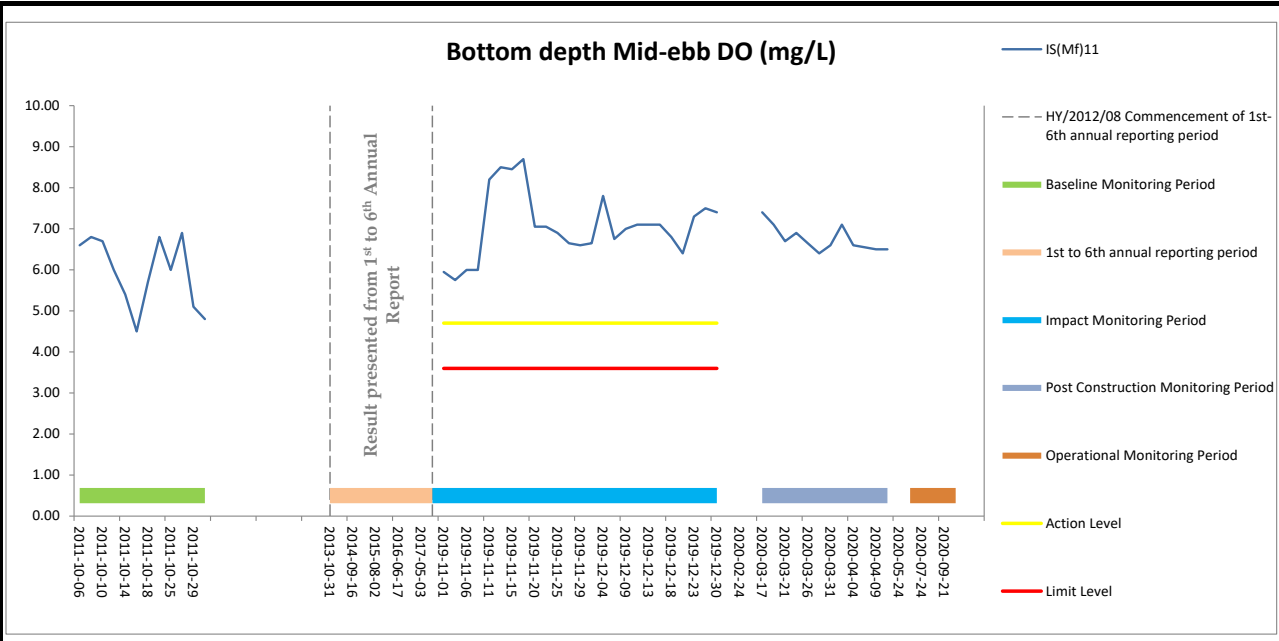


Figure E45 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in bottom waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS(Mf)11. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

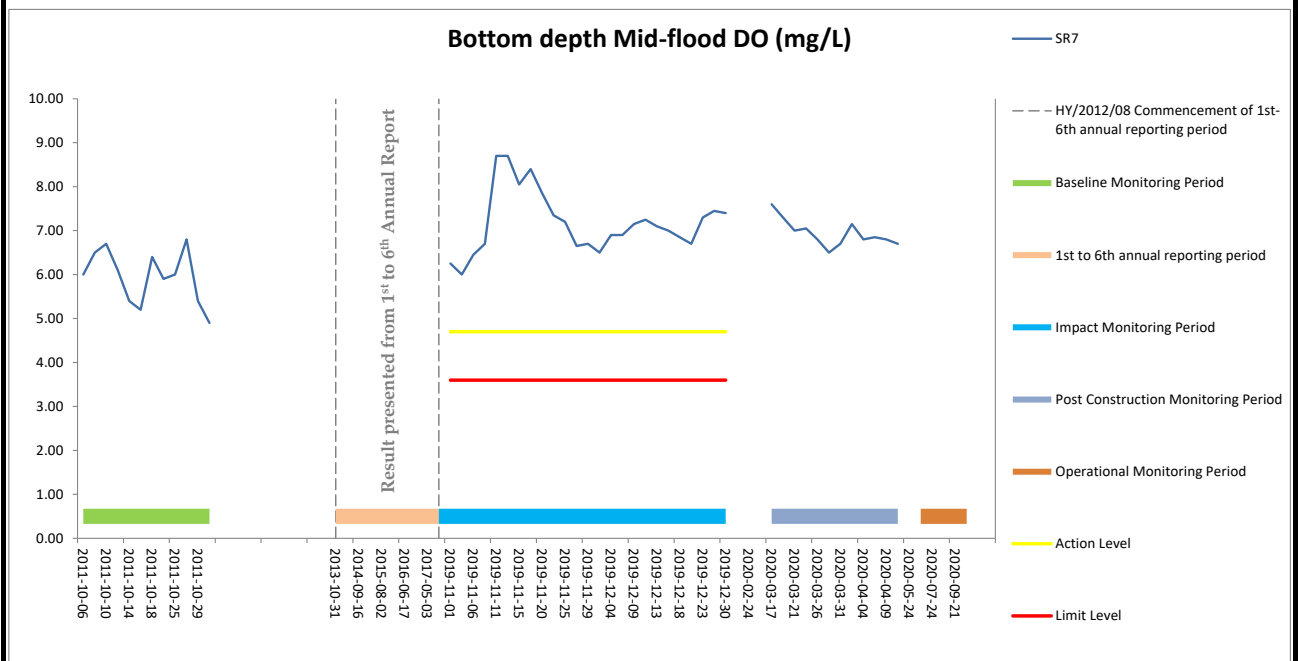
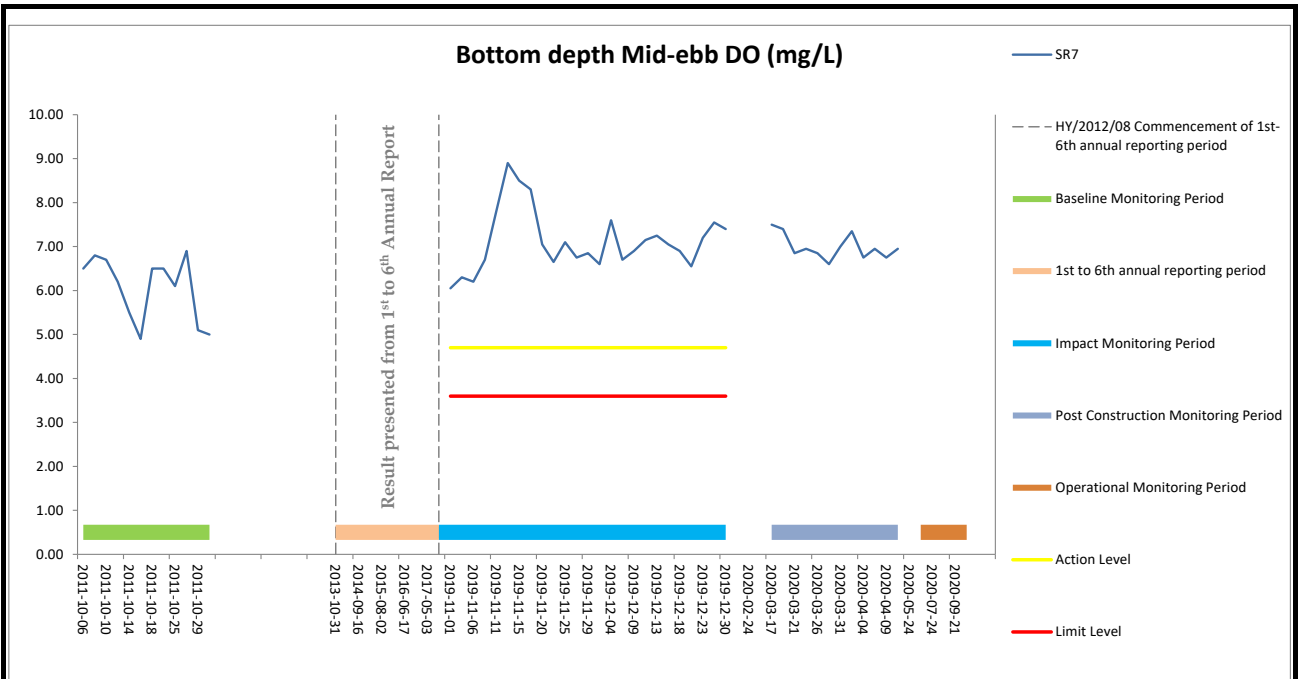


Figure E46 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in bottom waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at SR7. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



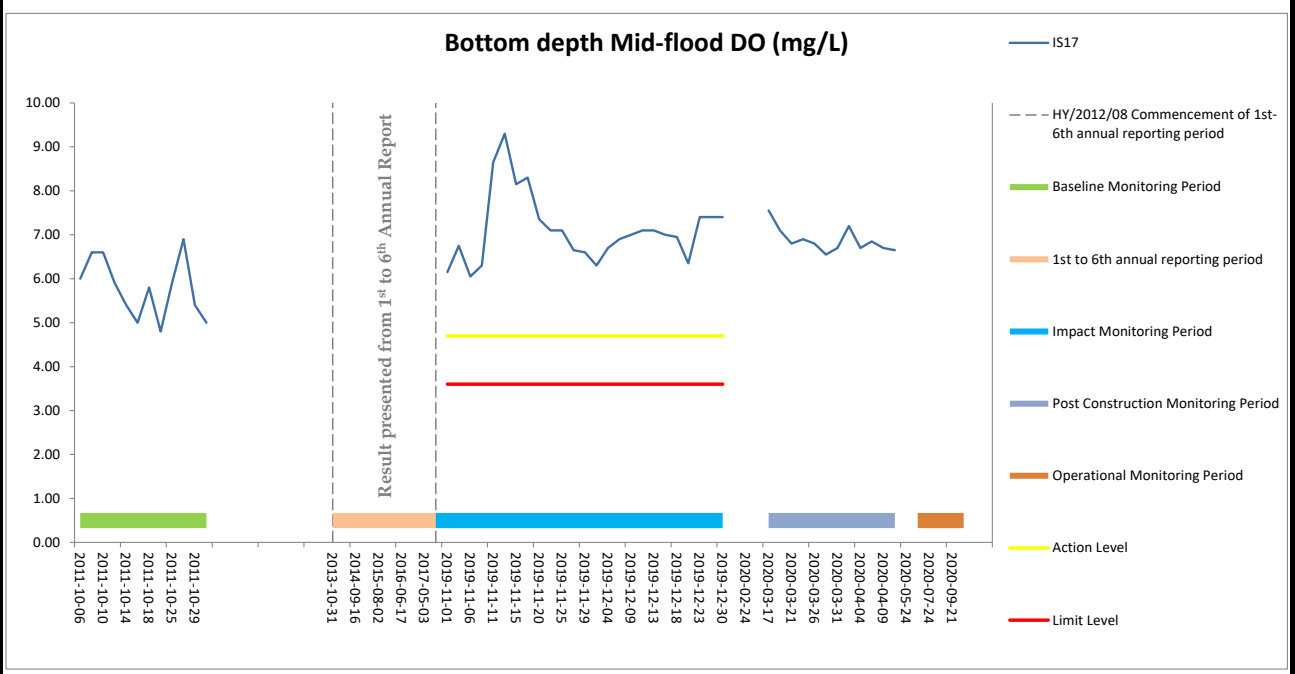
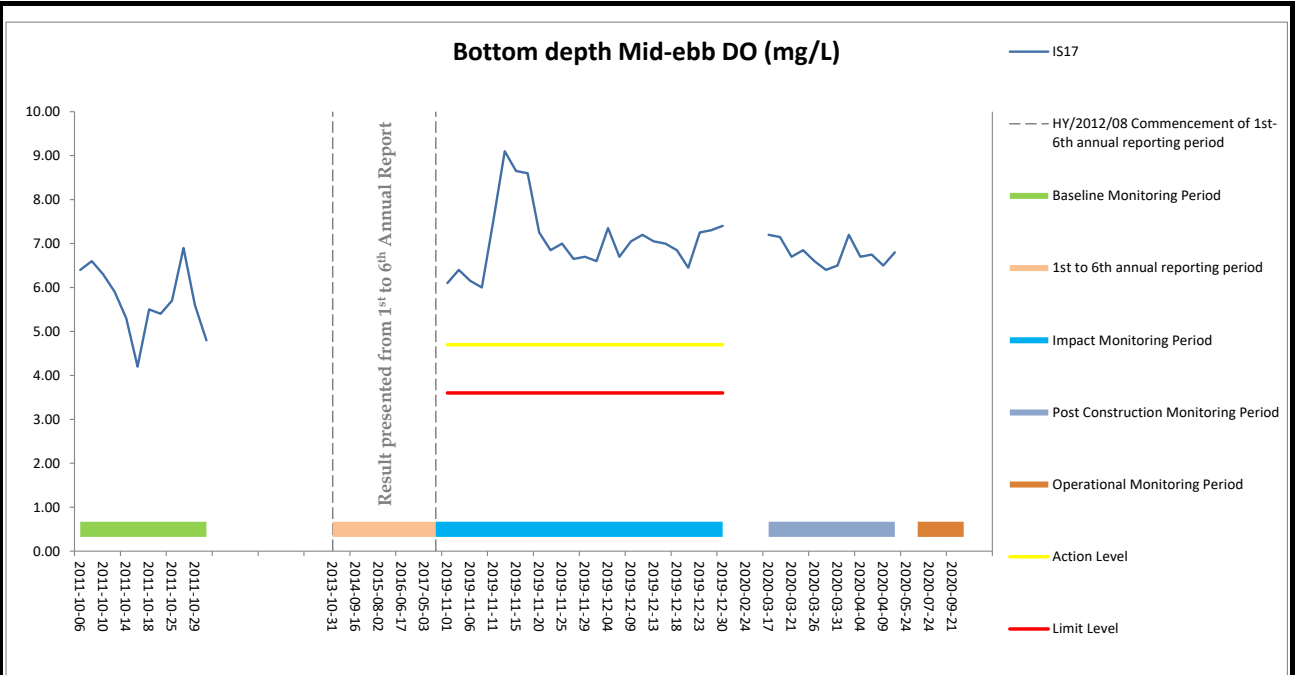


Figure E47 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in bottom waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS17. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

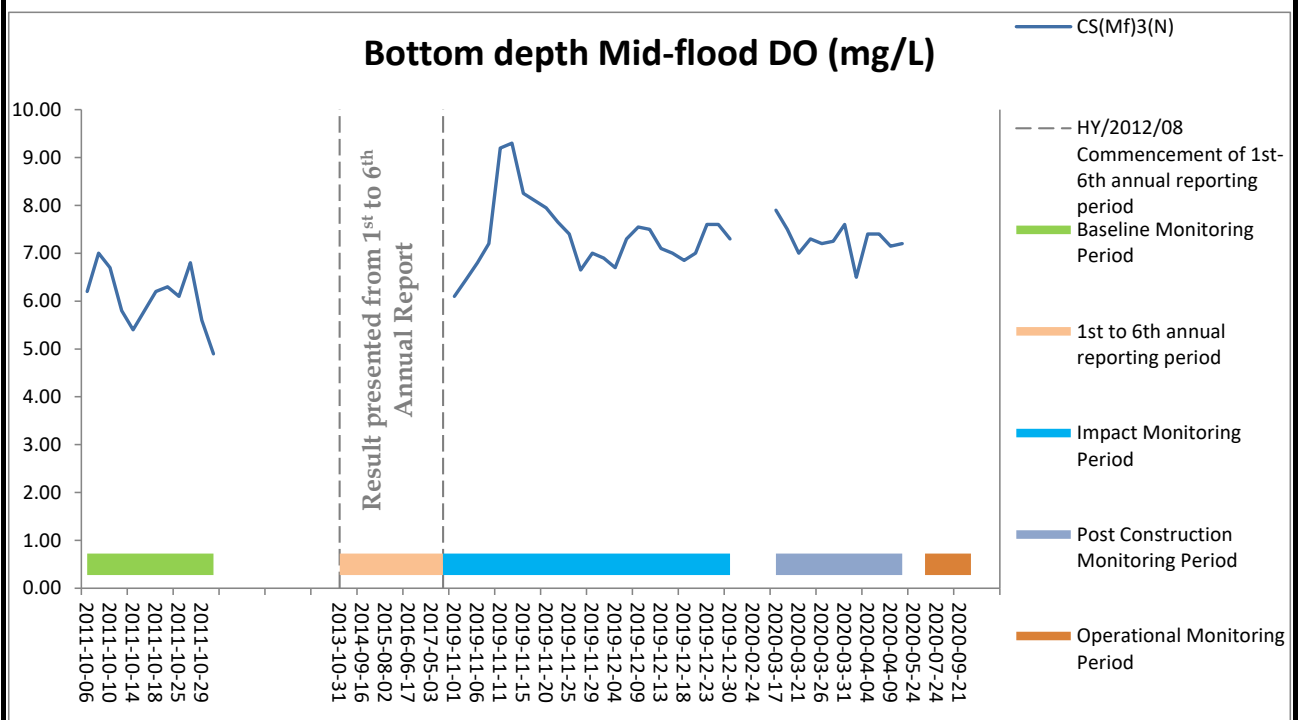
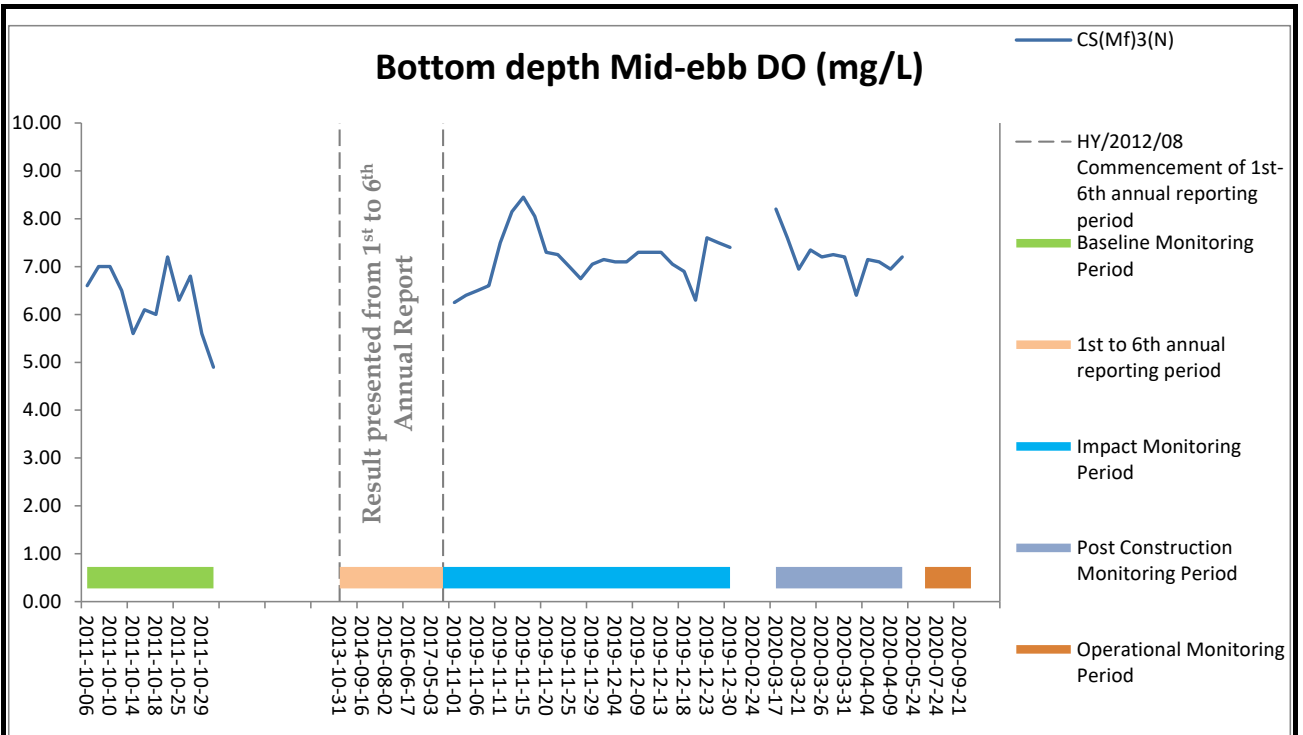


Figure E48 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in bottom waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS(Mf)3(N). Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



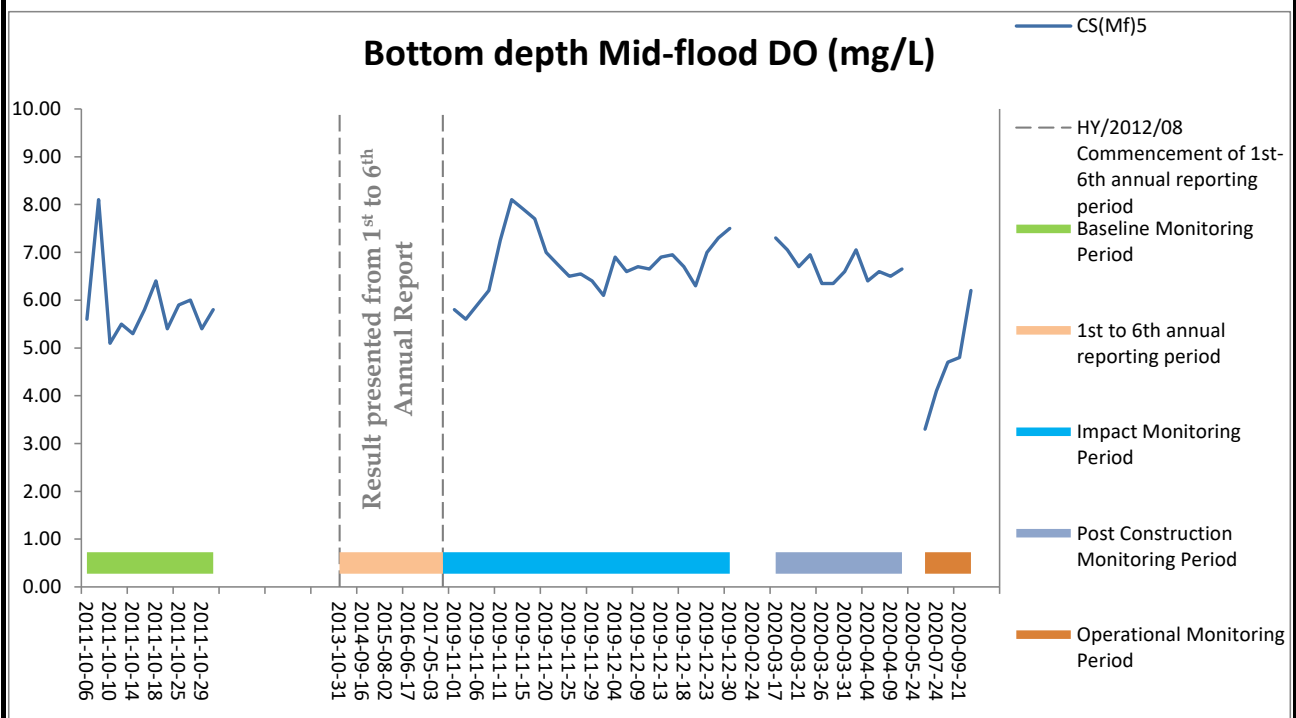
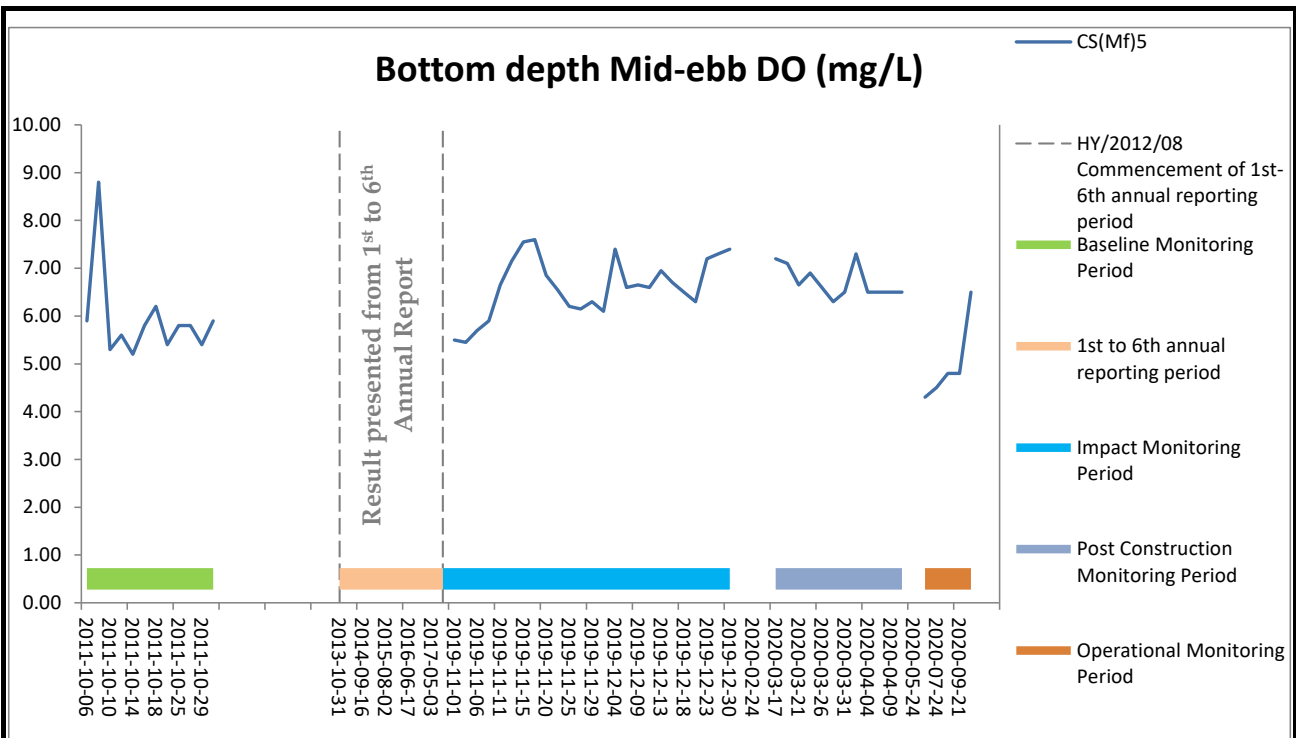


Figure E49 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in bottom waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at CS(Mf)5. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

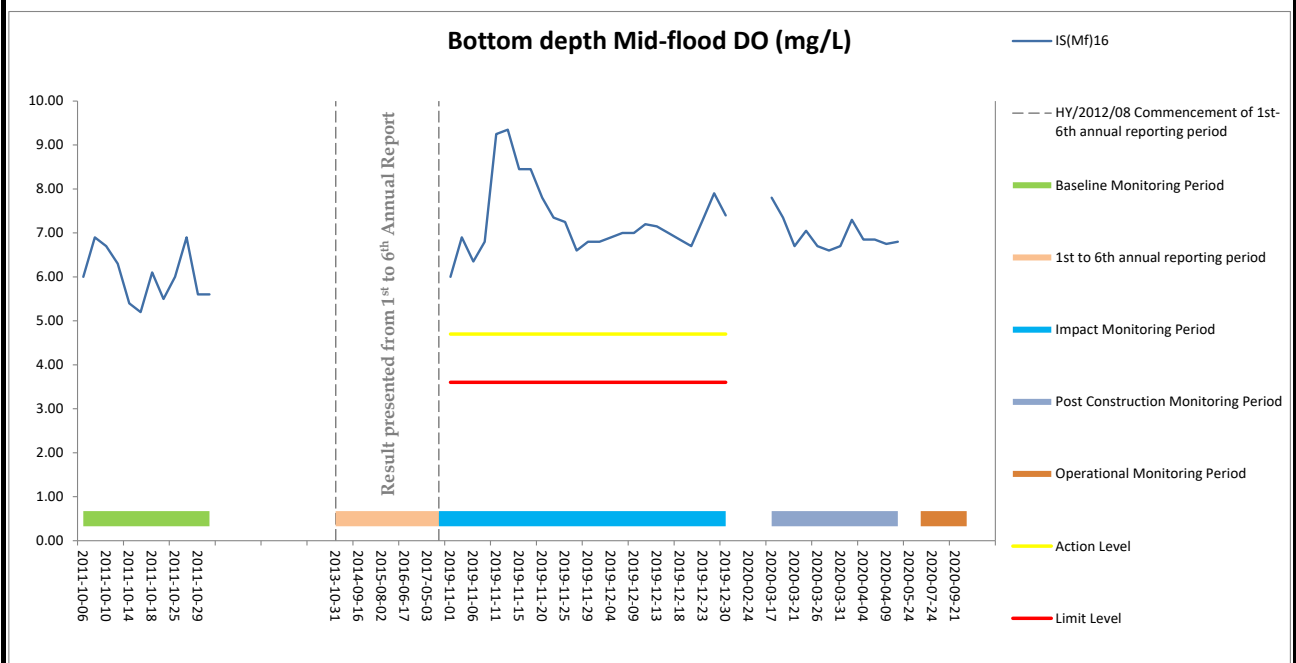
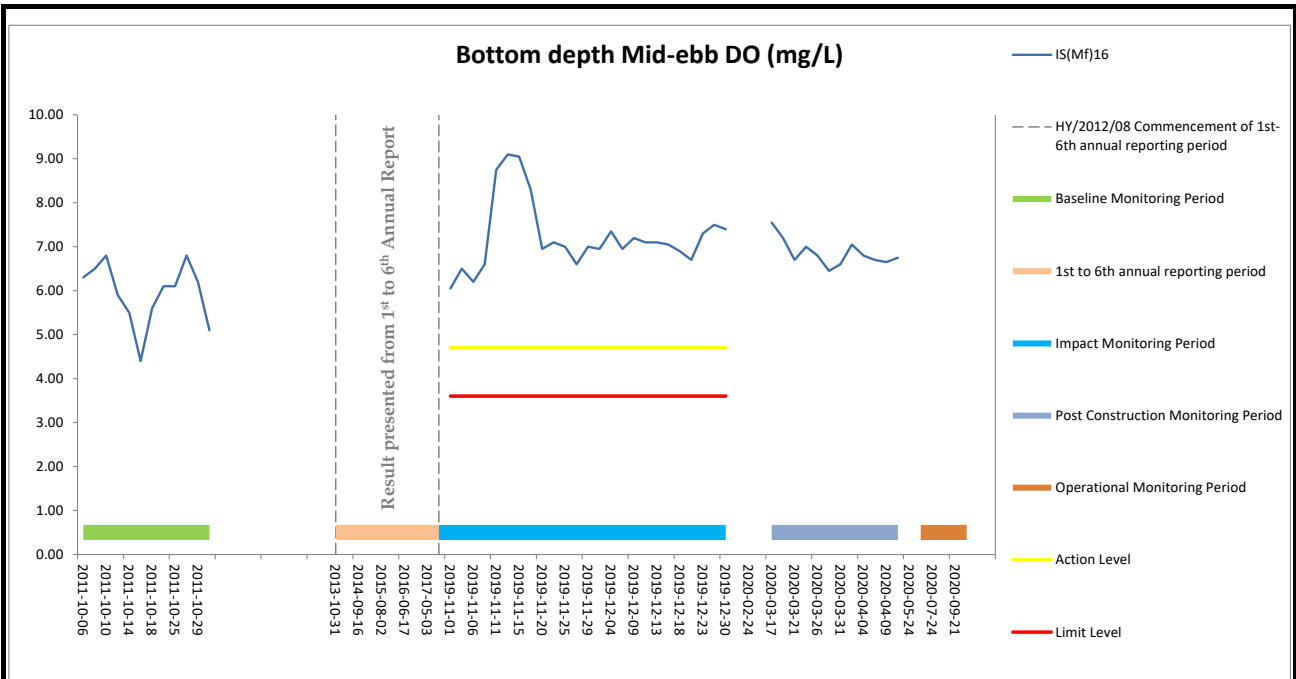


Figure E50 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in bottom waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS(Mf)16. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



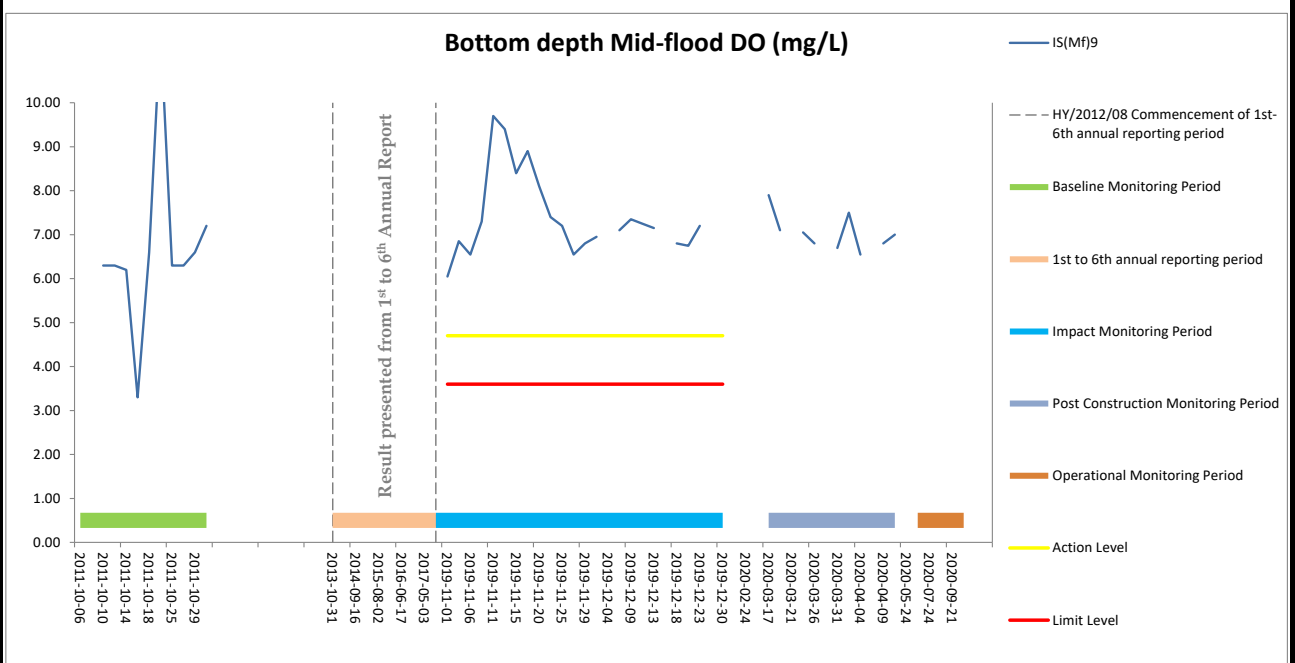
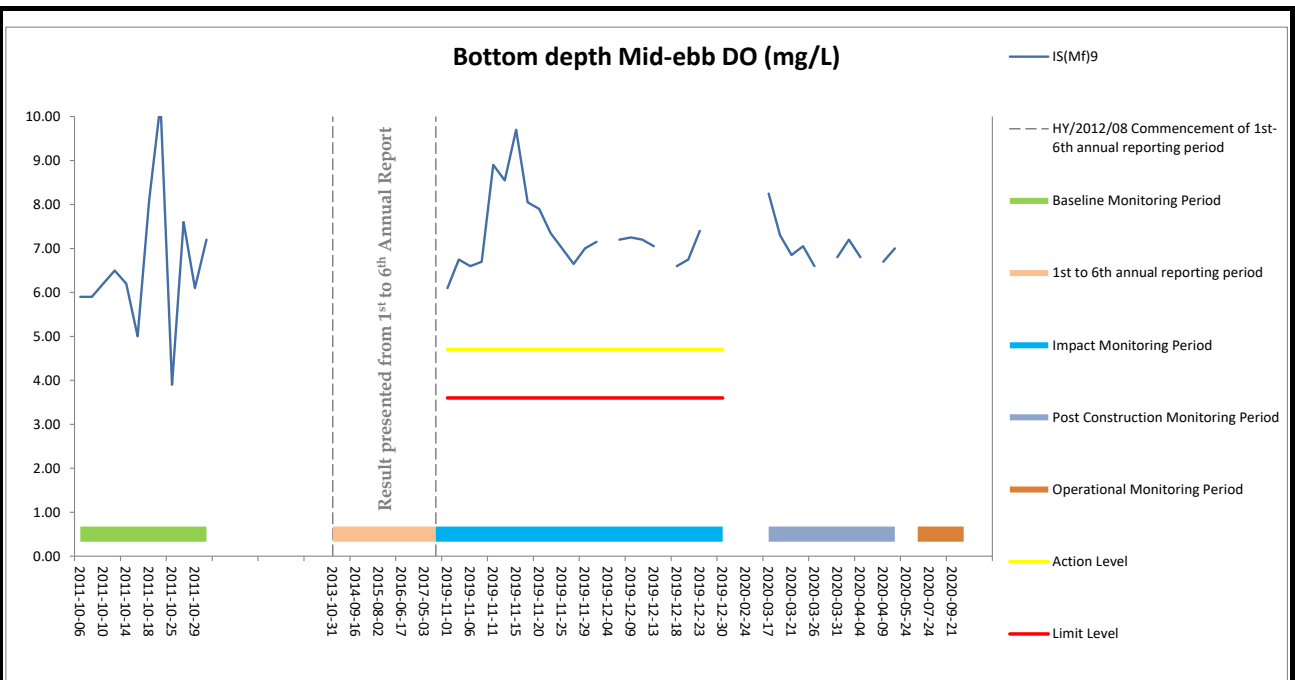


Figure E51 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in bottom waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS(Mf)9. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



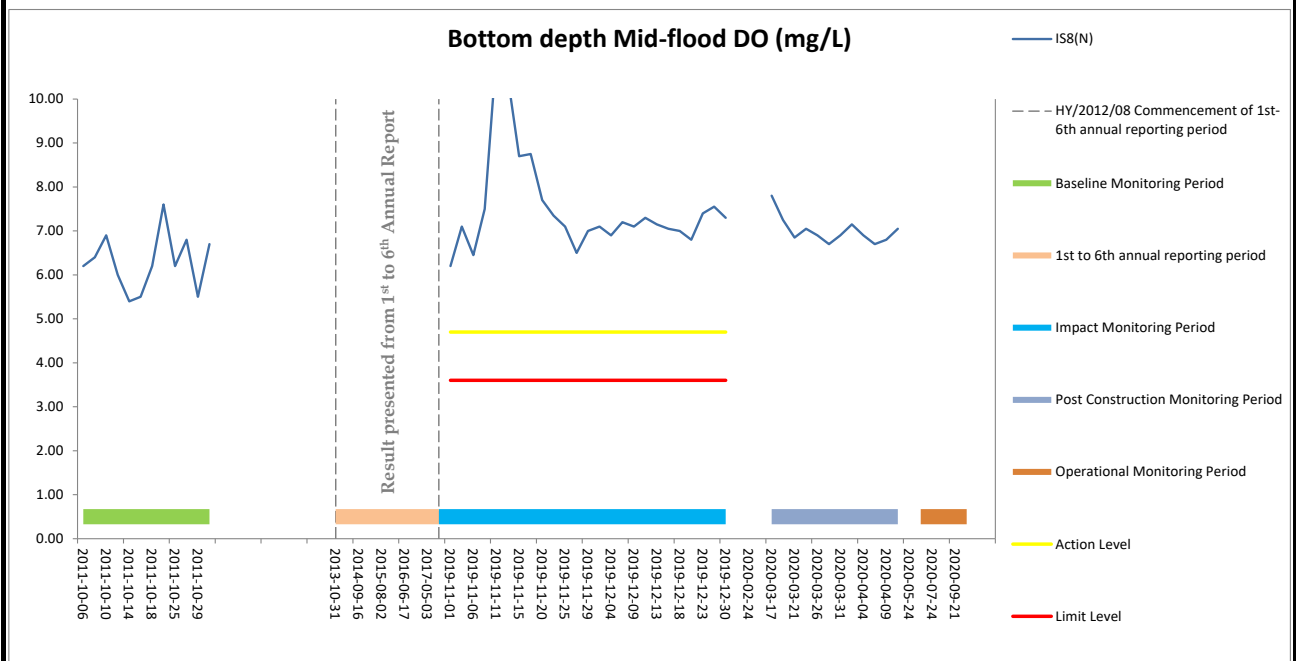
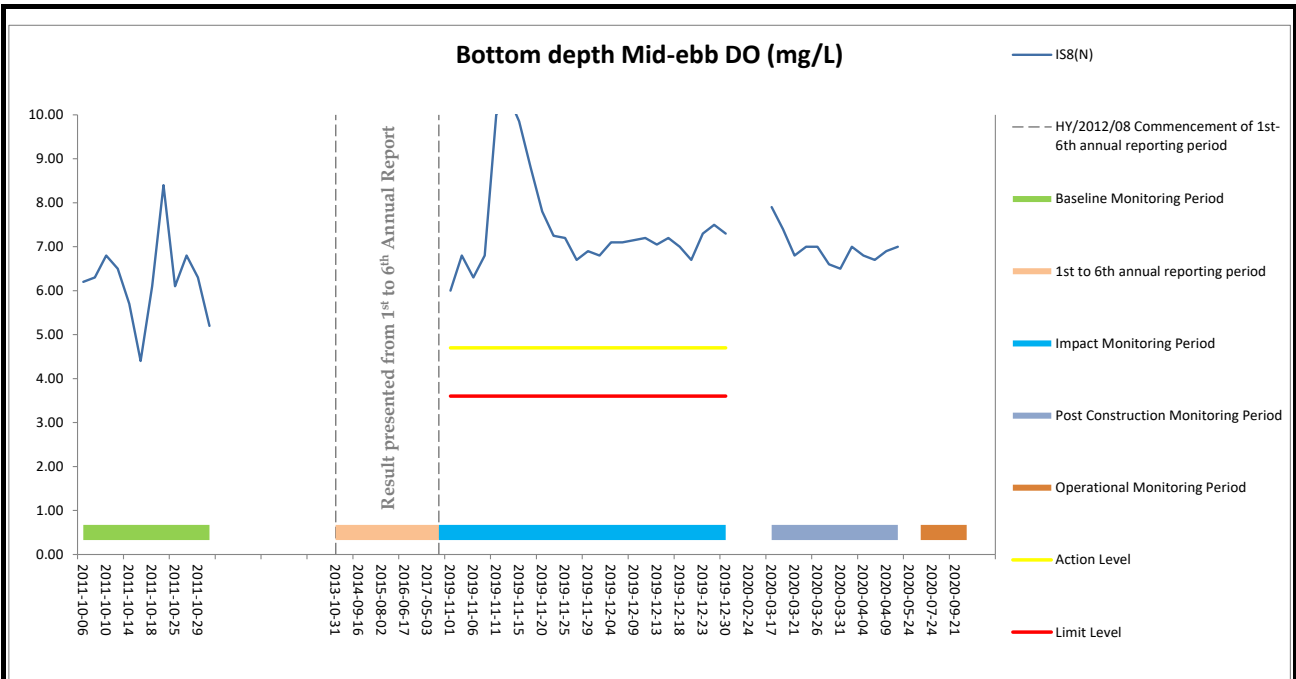


Figure E52 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in bottom waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS8(N). Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



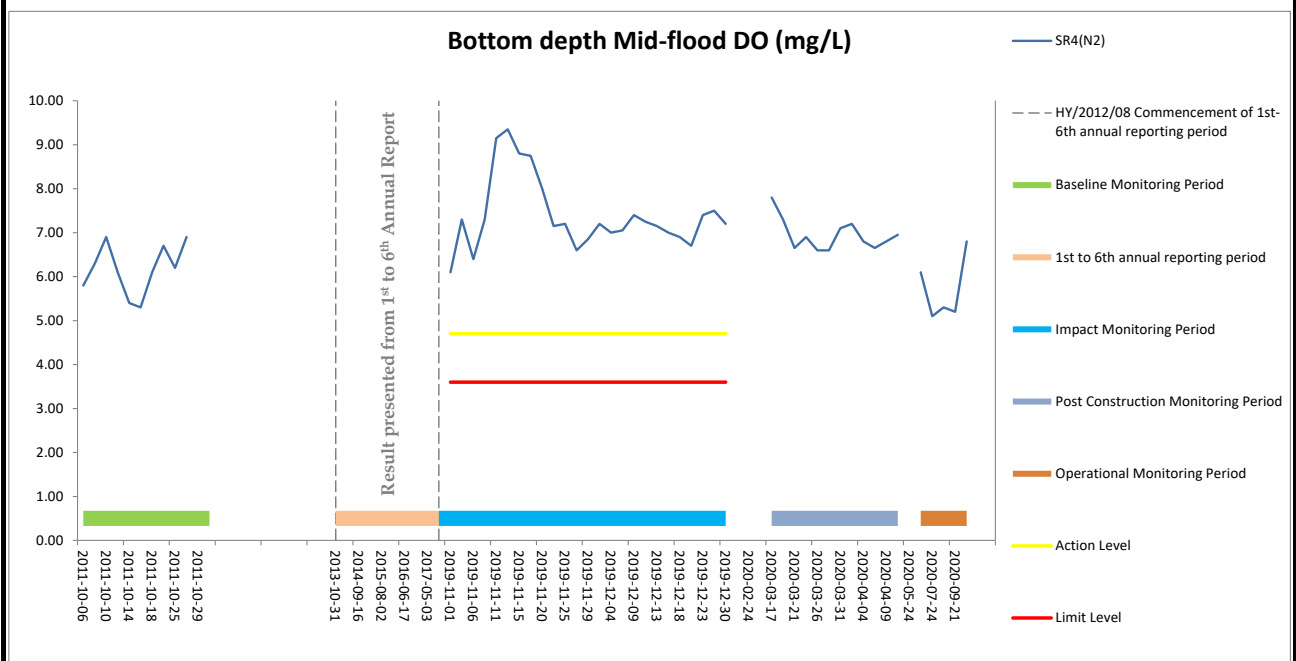
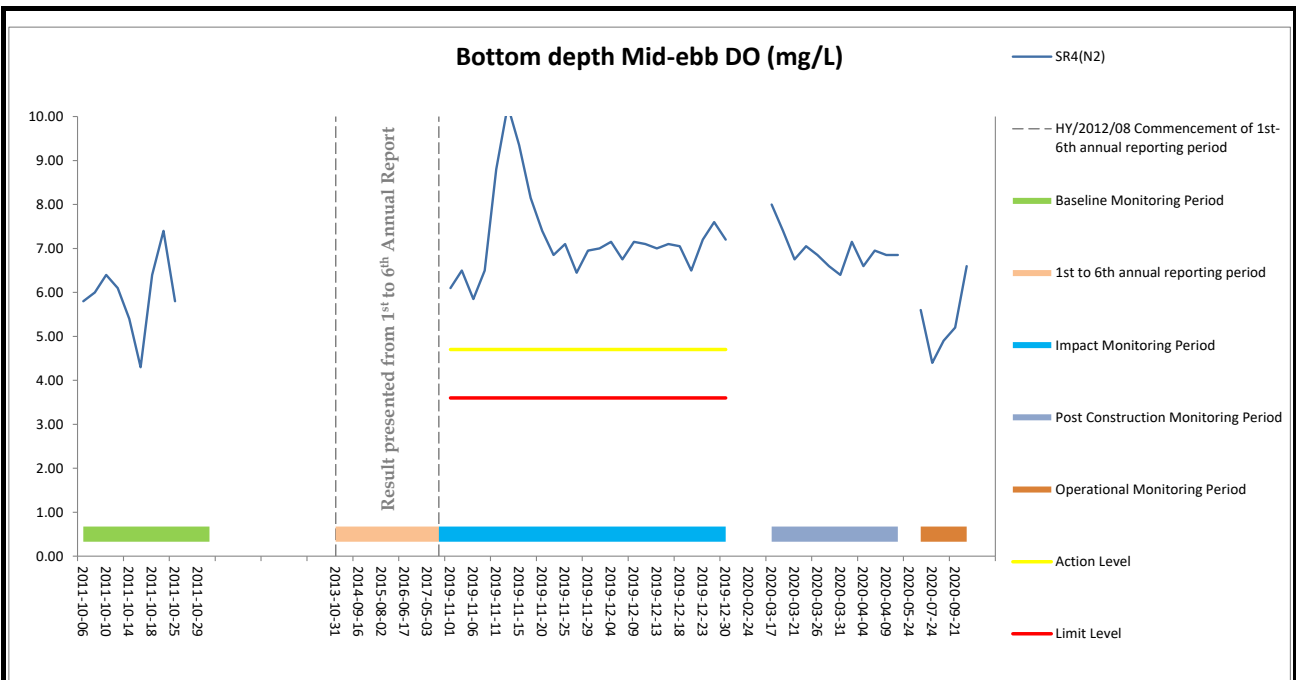


Figure E53 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in bottom waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at SR4(N2). Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



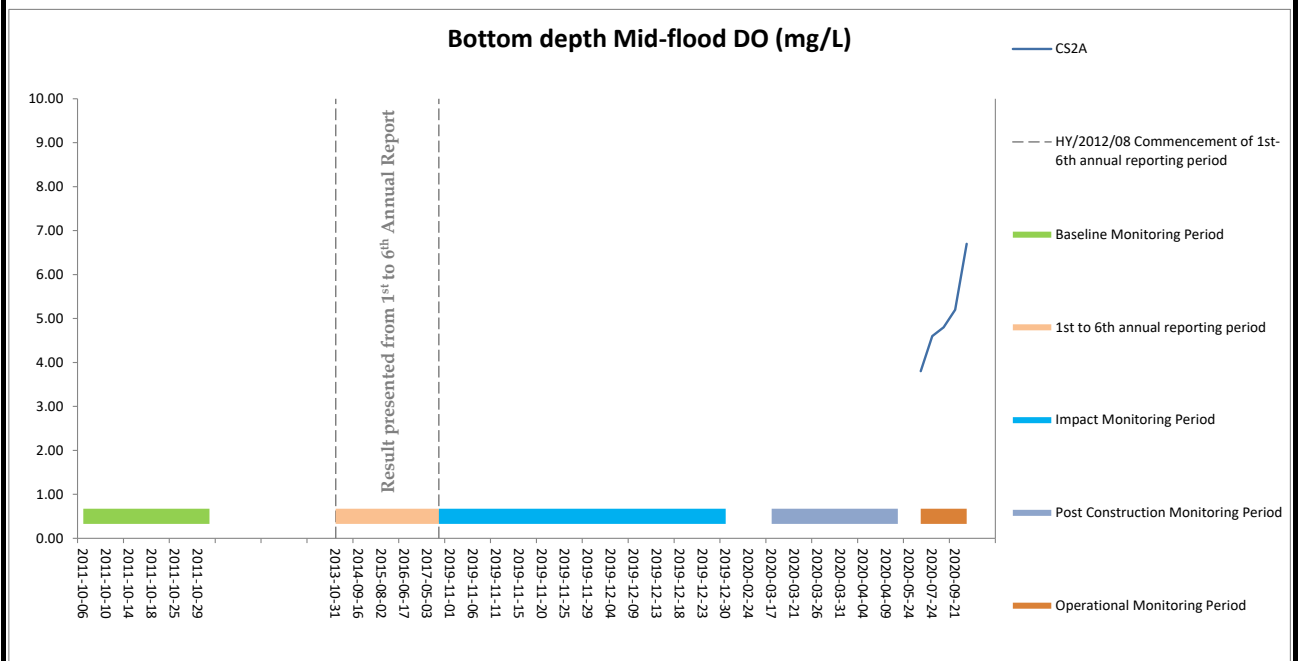
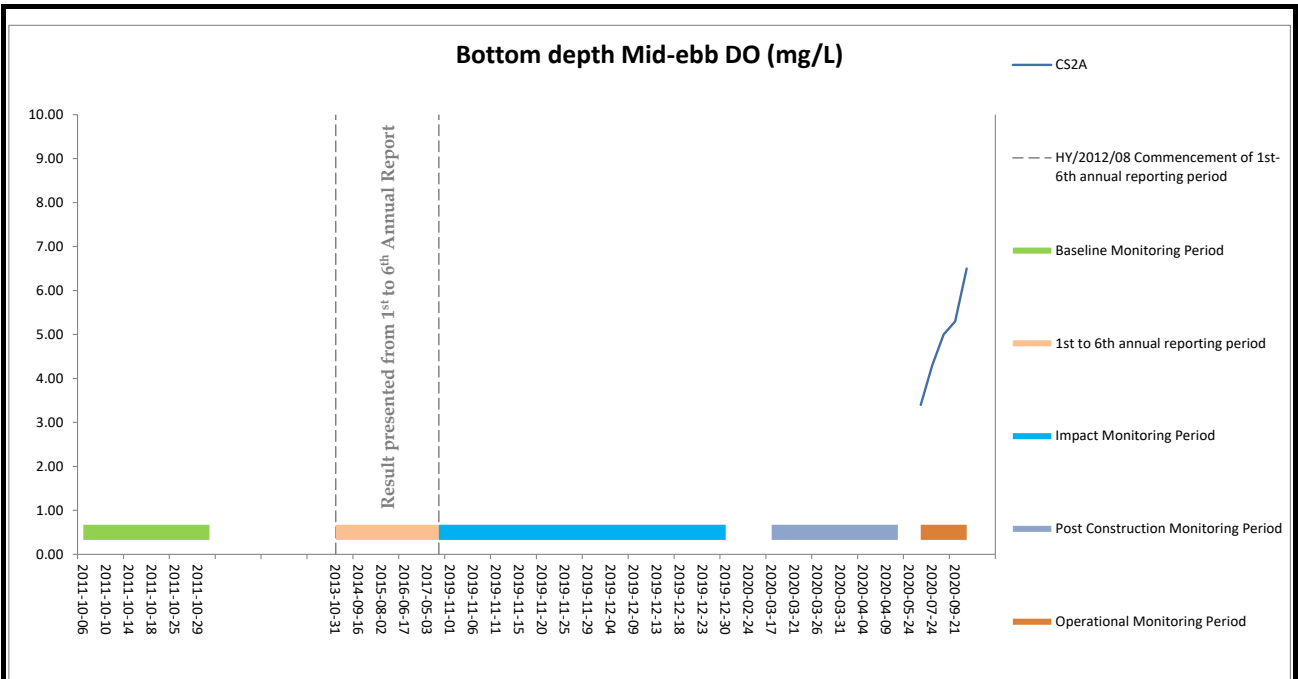


Figure E54 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in bottom waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at CS2A. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



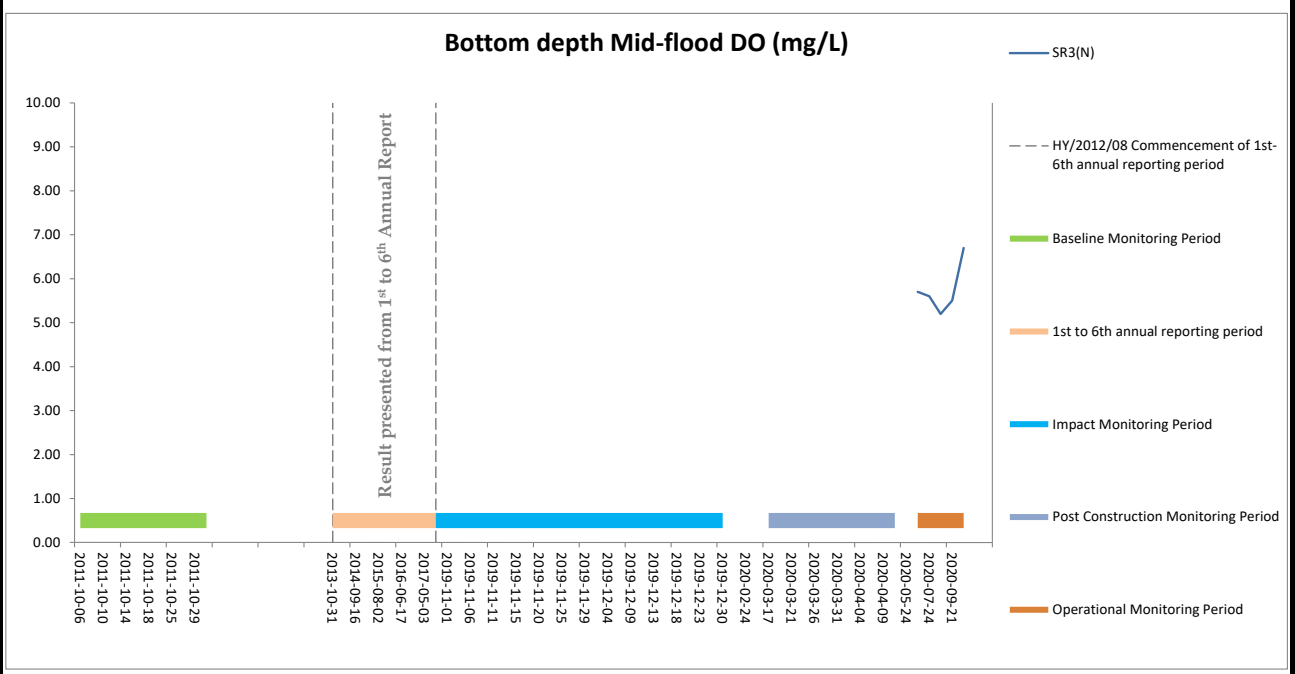
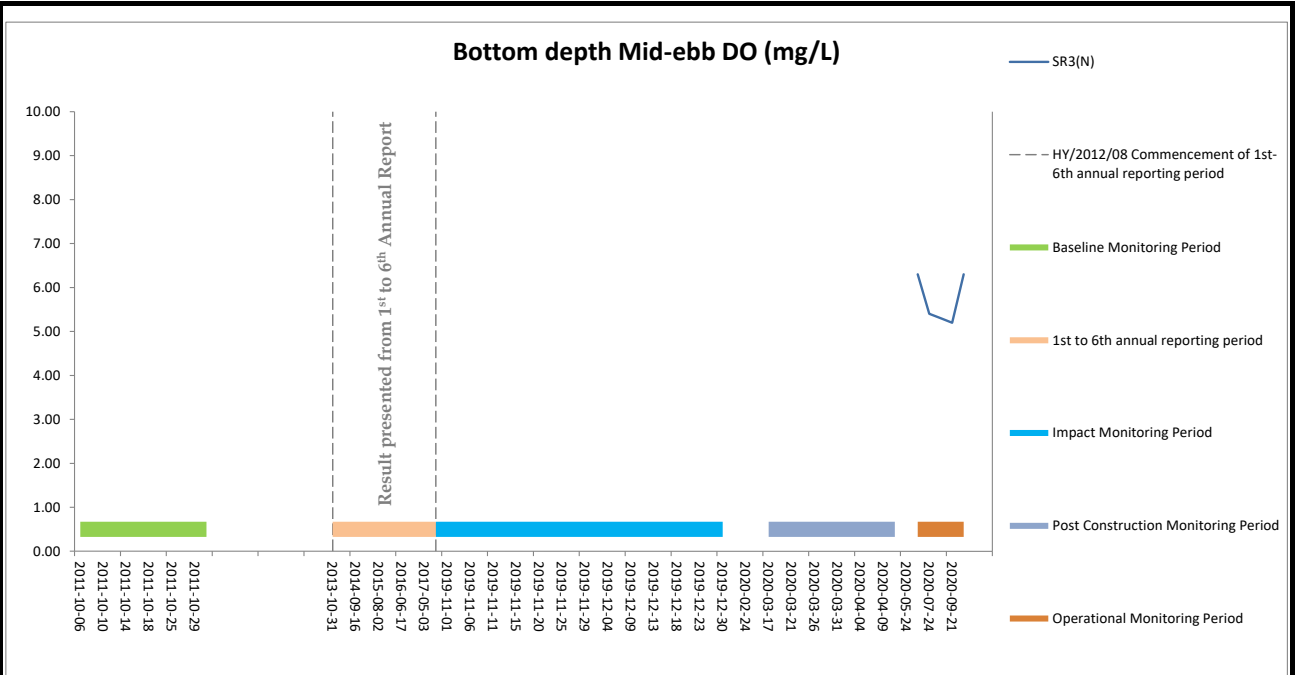


Figure E55 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in bottom waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at SR3(N). Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

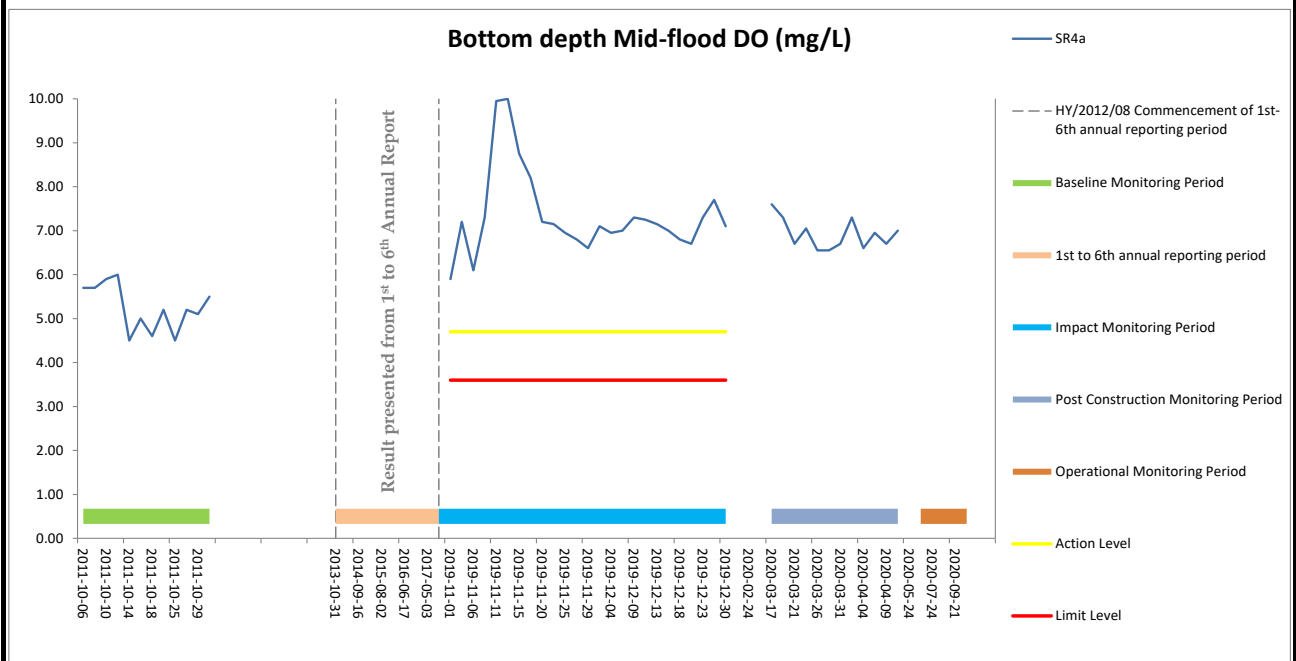
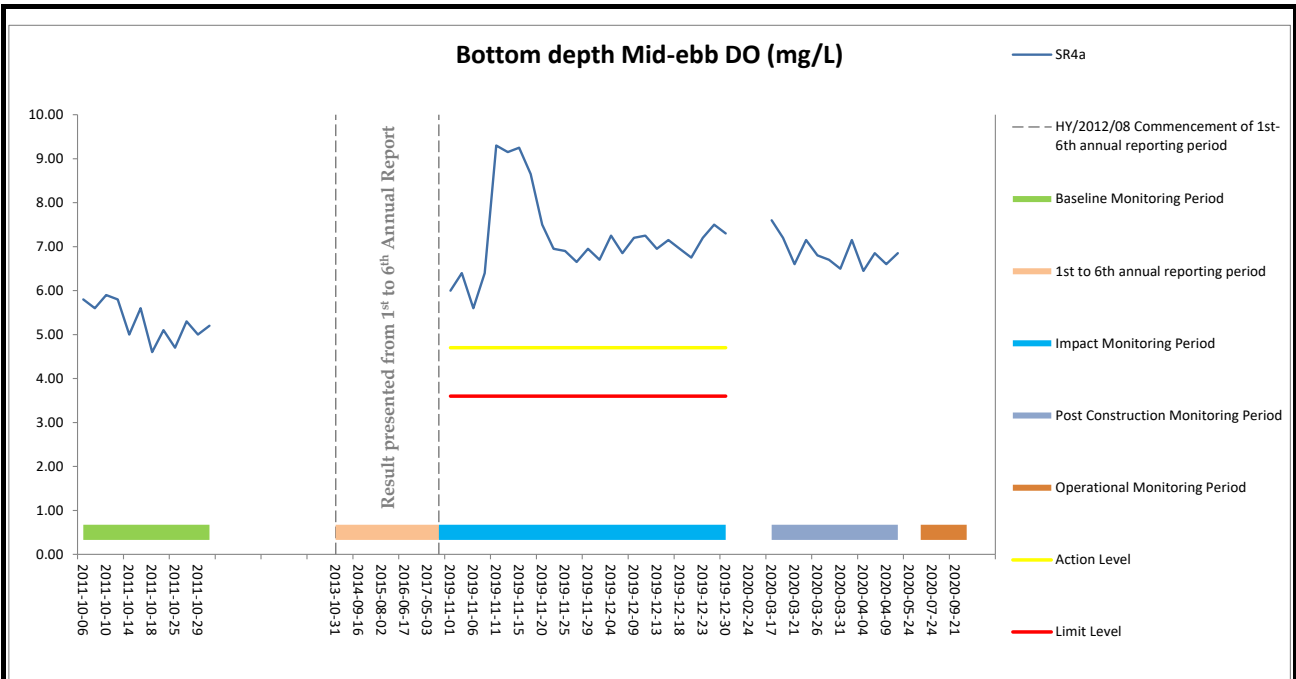


Figure E56 Baseline, Impact, Post-construction & Operational Monitoring – Mean Level of Dissolved Oxygen (mg/L) in bottom waters between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at SR4a. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



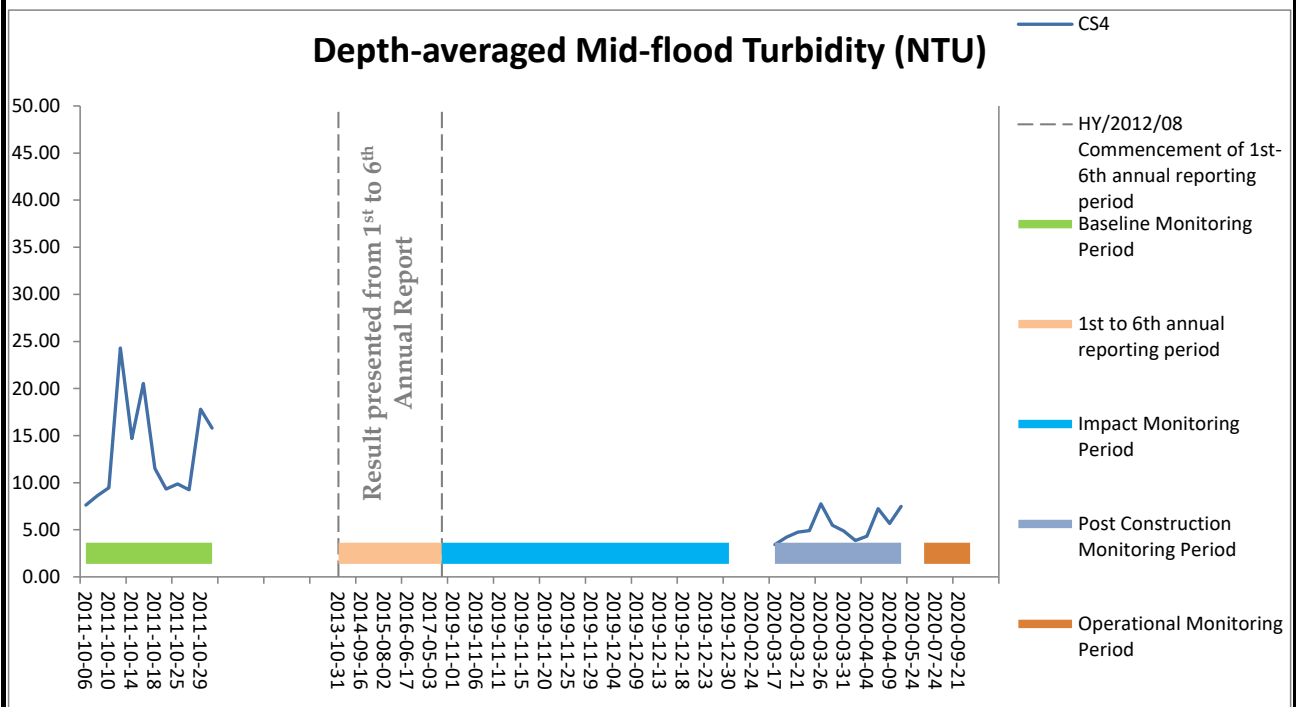
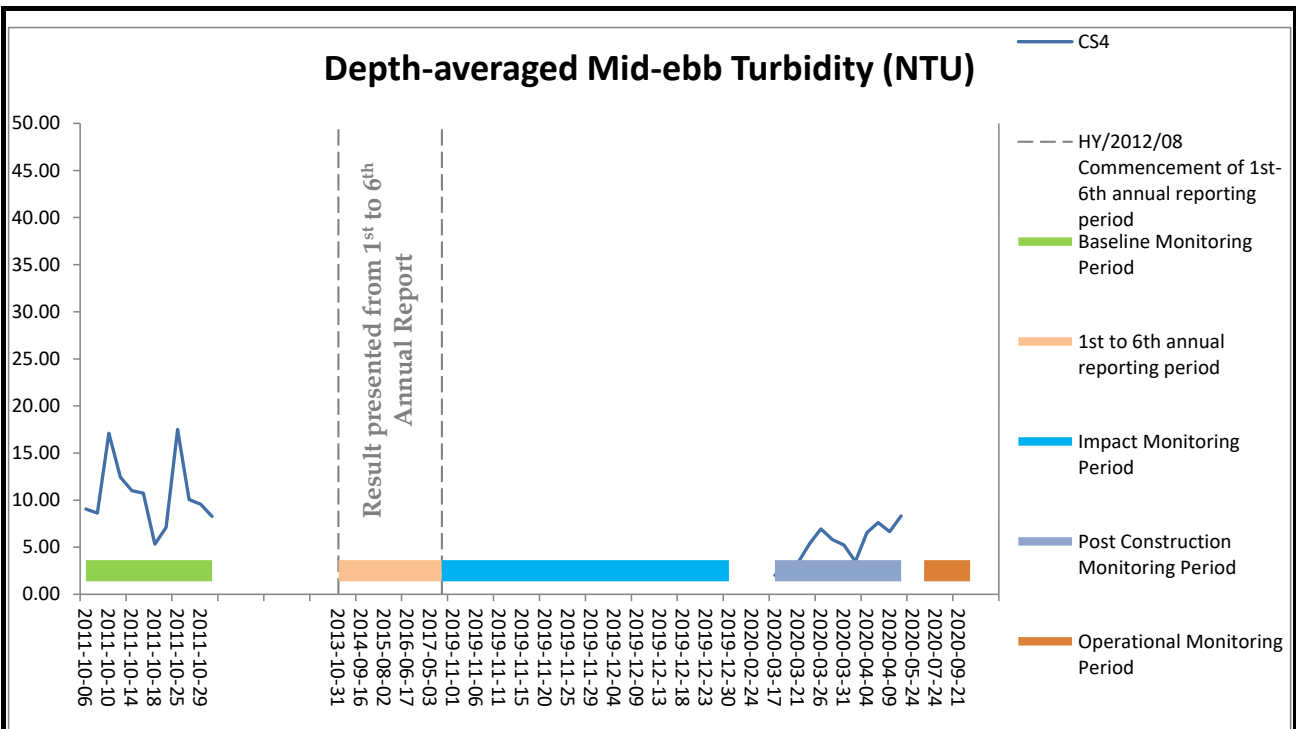


Figure E57 Baseline, Impact, Post-construction & Operational Monitoring - Mean Depth-averaged Level of Turbidity (NTU) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at CS4. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

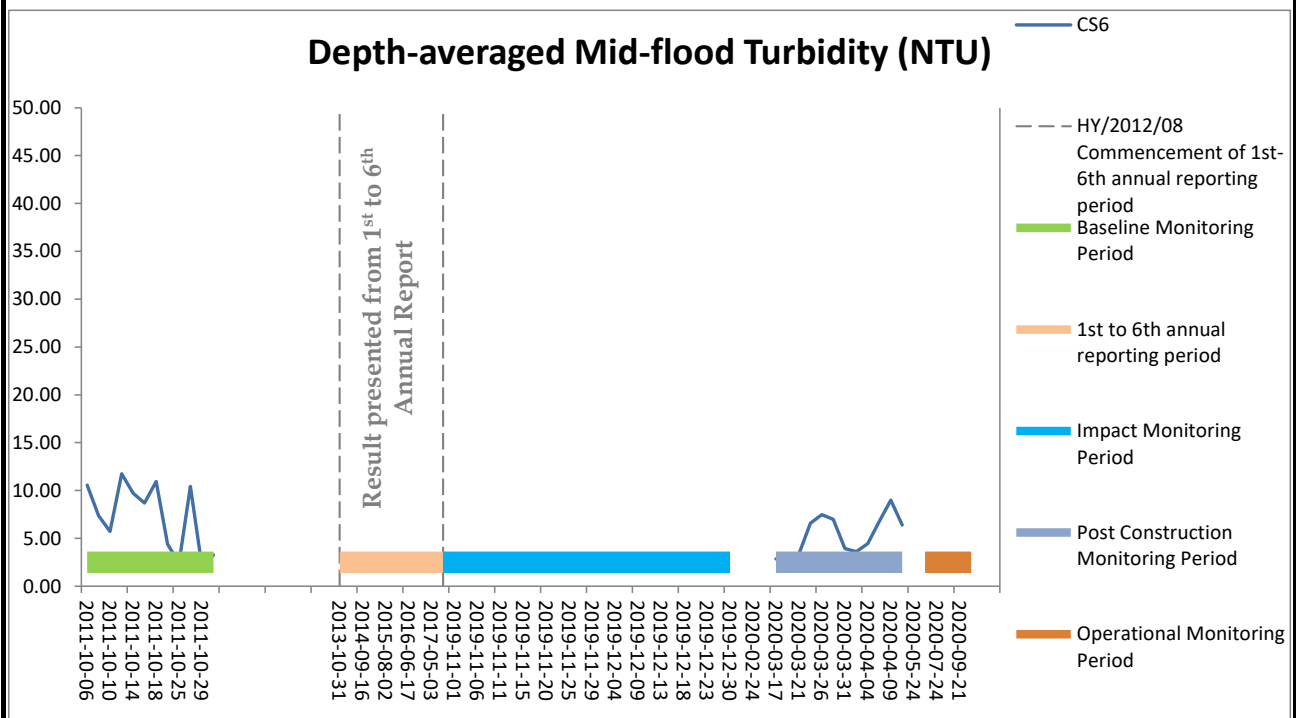
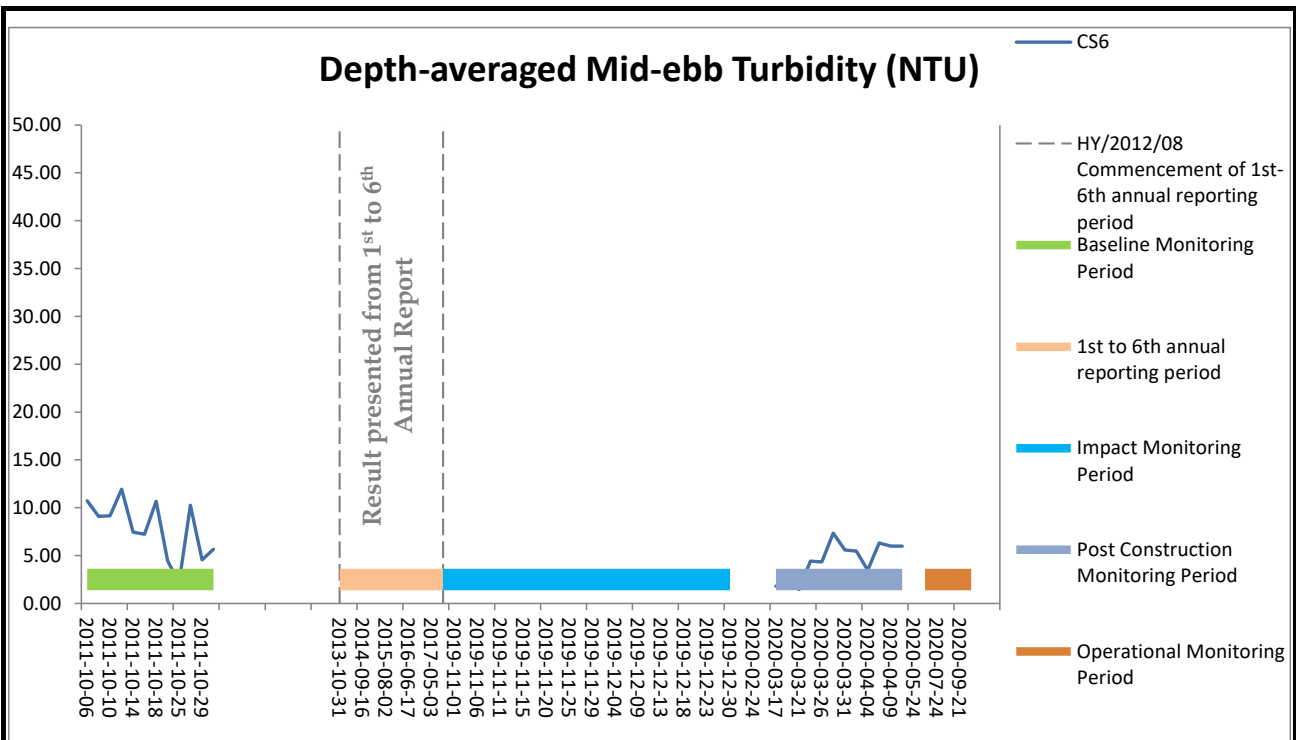


Figure E58 Baseline, Impact, Post-construction & Operational Monitoring - Mean Depth-averaged Level of Turbidity (NTU) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at CS6. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

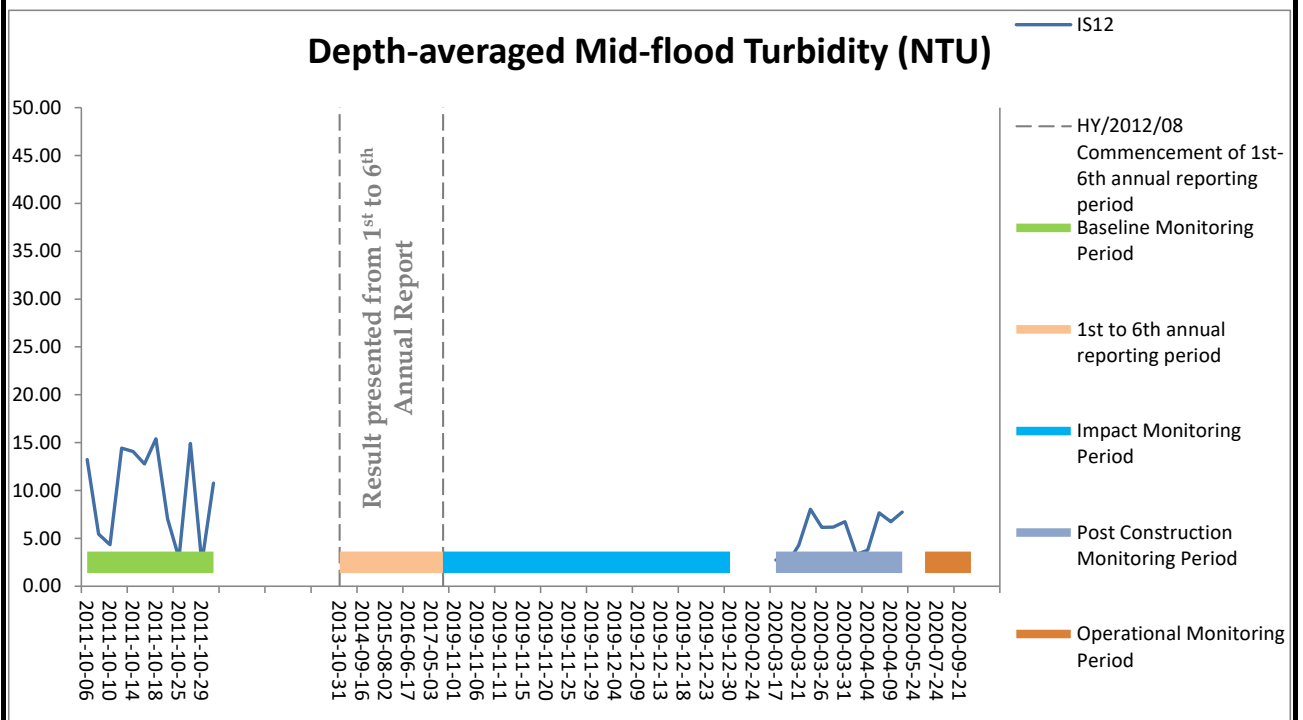
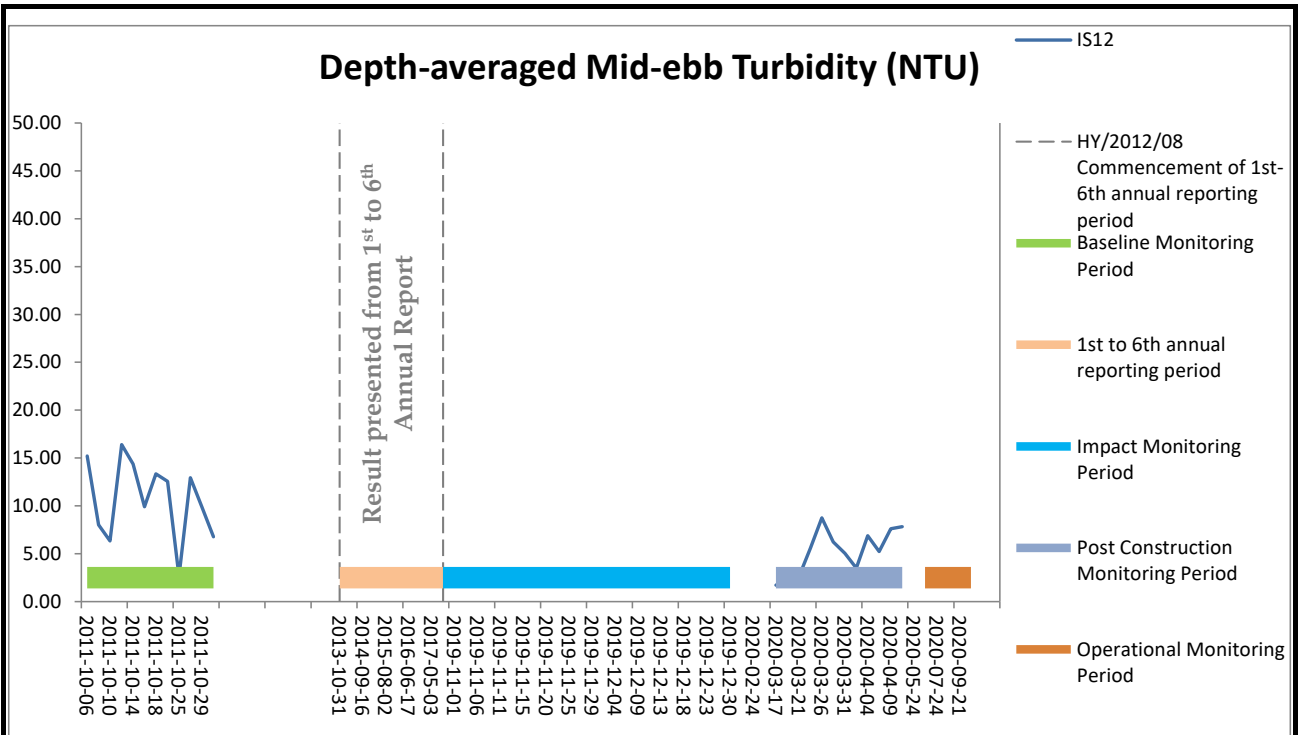


Figure E59 Baseline, Impact, Post-construction & Operational Monitoring - Mean Depth-averaged Level of Turbidity (NTU) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS12. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

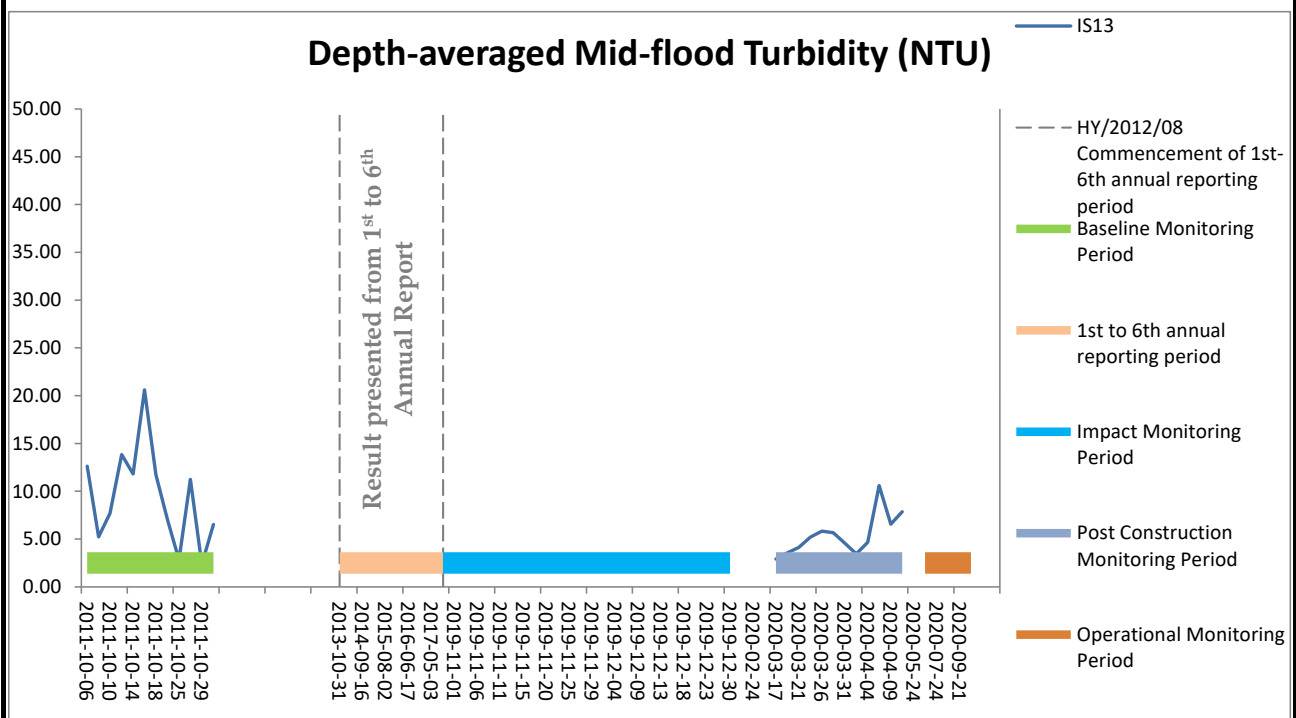
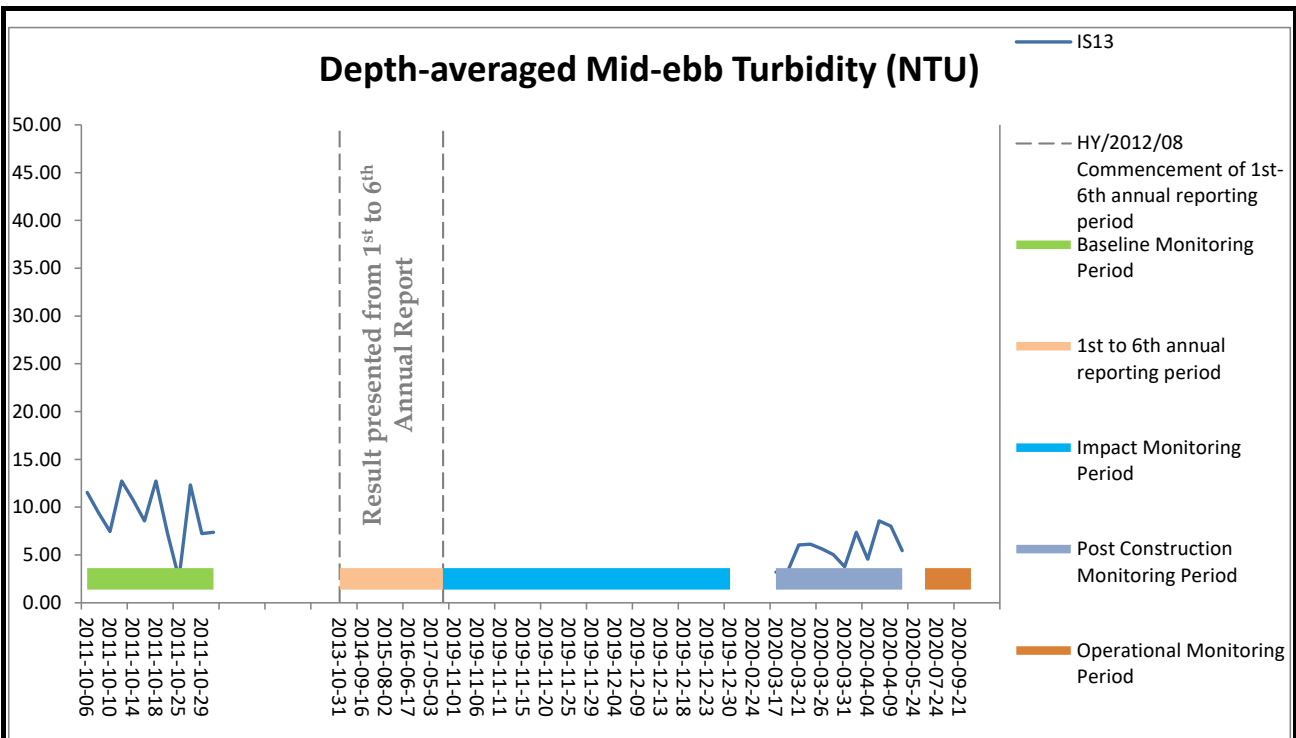


Figure E60 Baseline, Impact, Post-construction & Operational Monitoring - Mean Depth-averaged Level of Turbidity (NTU) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at CS4. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

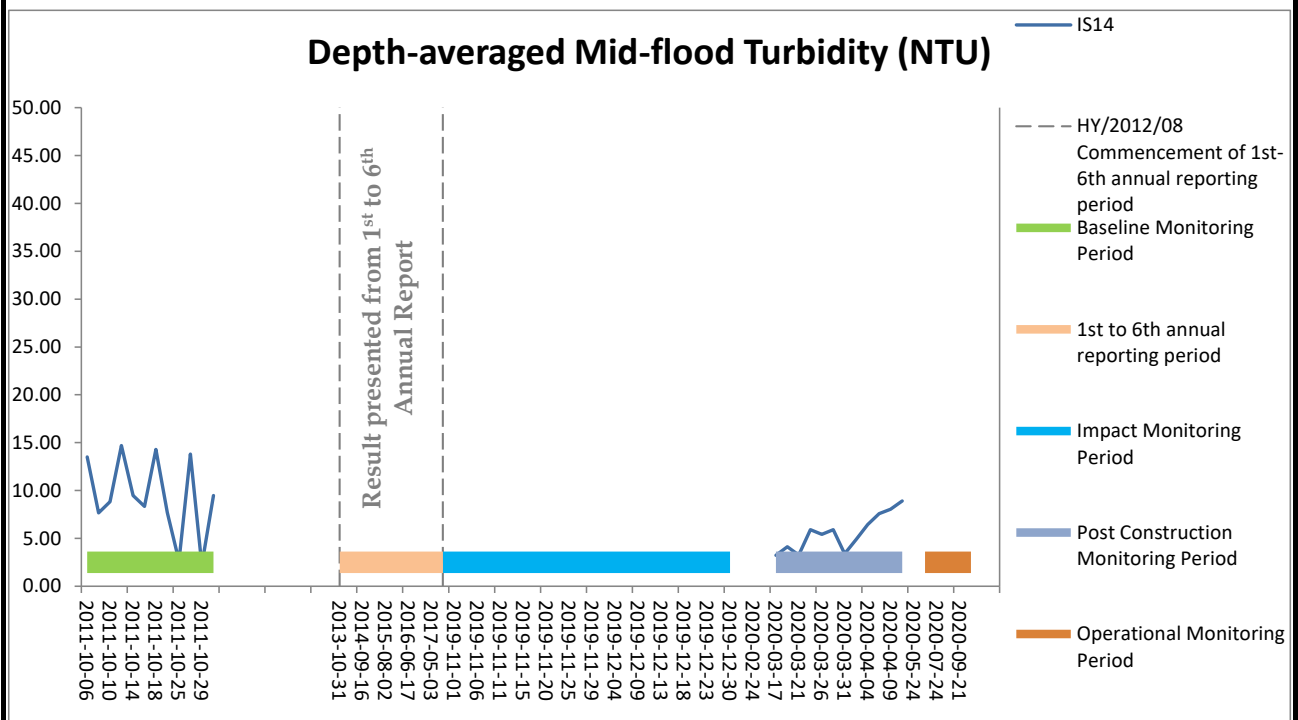
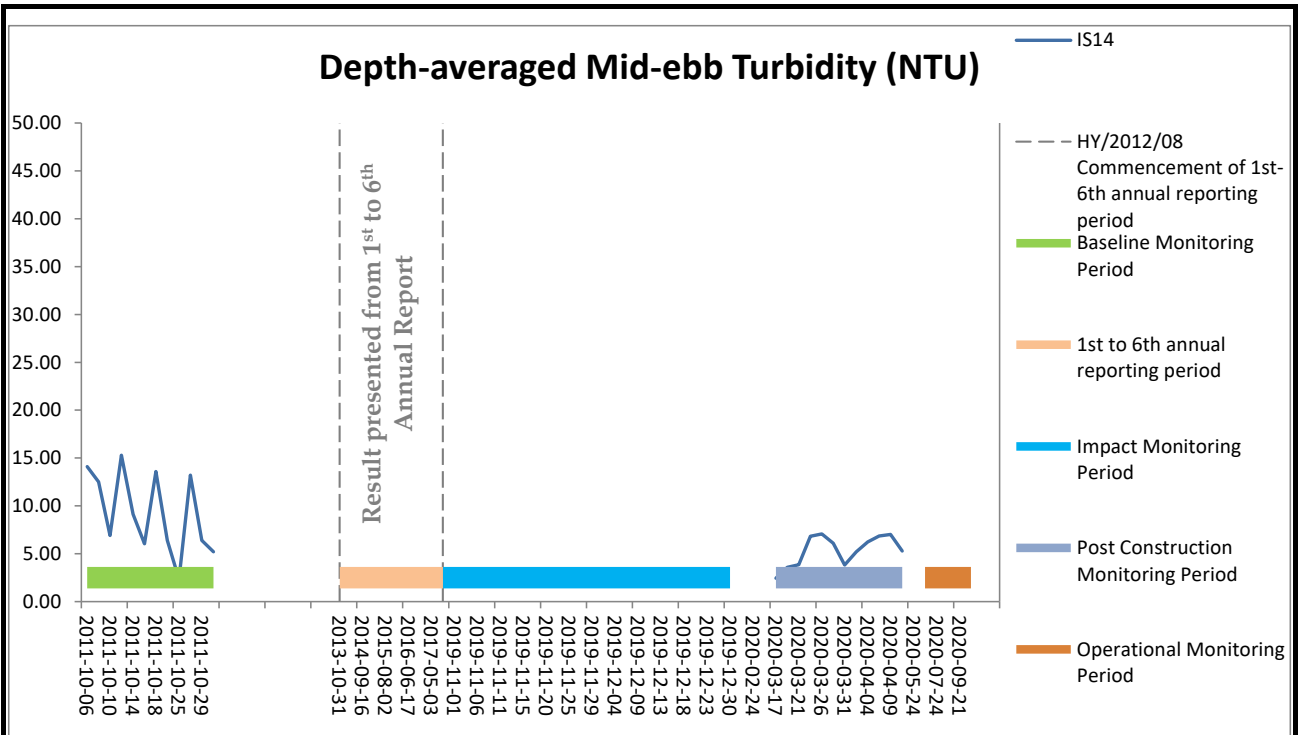


Figure E61 Baseline, Impact, Post-construction & Operational Monitoring - Mean Depth-averaged Level of Turbidity (NTU) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS14. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



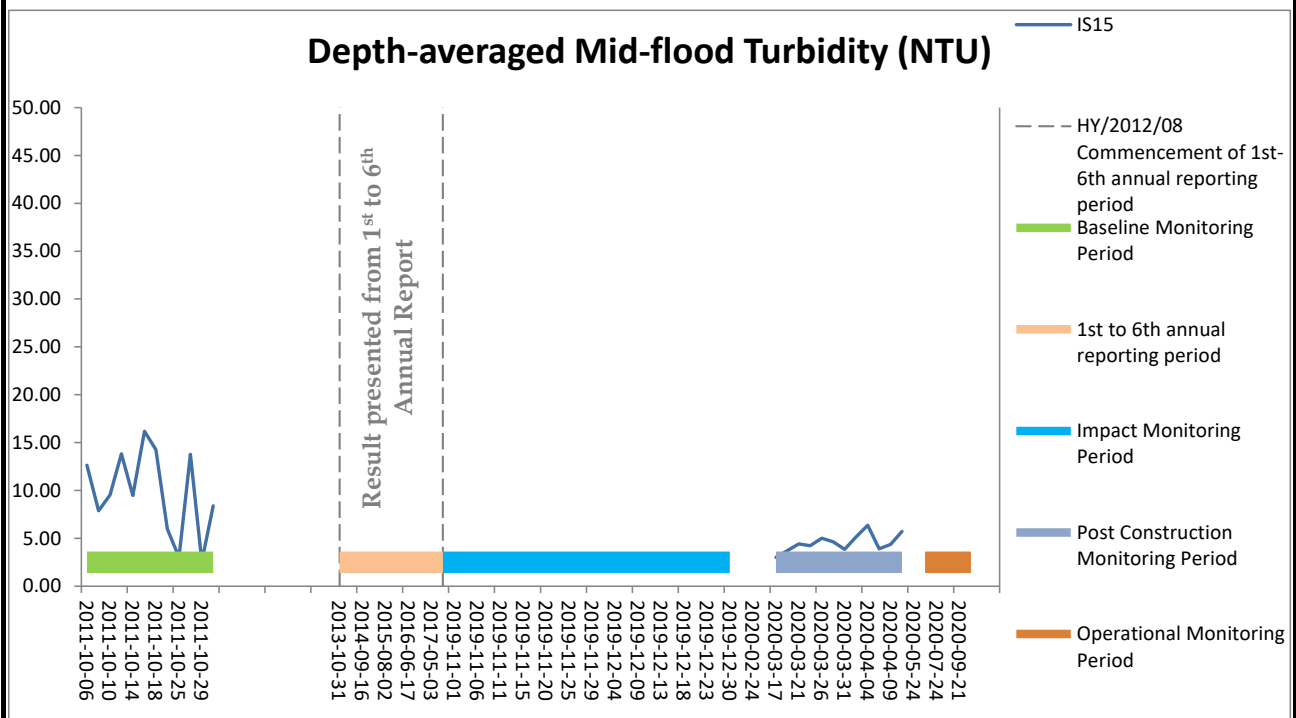
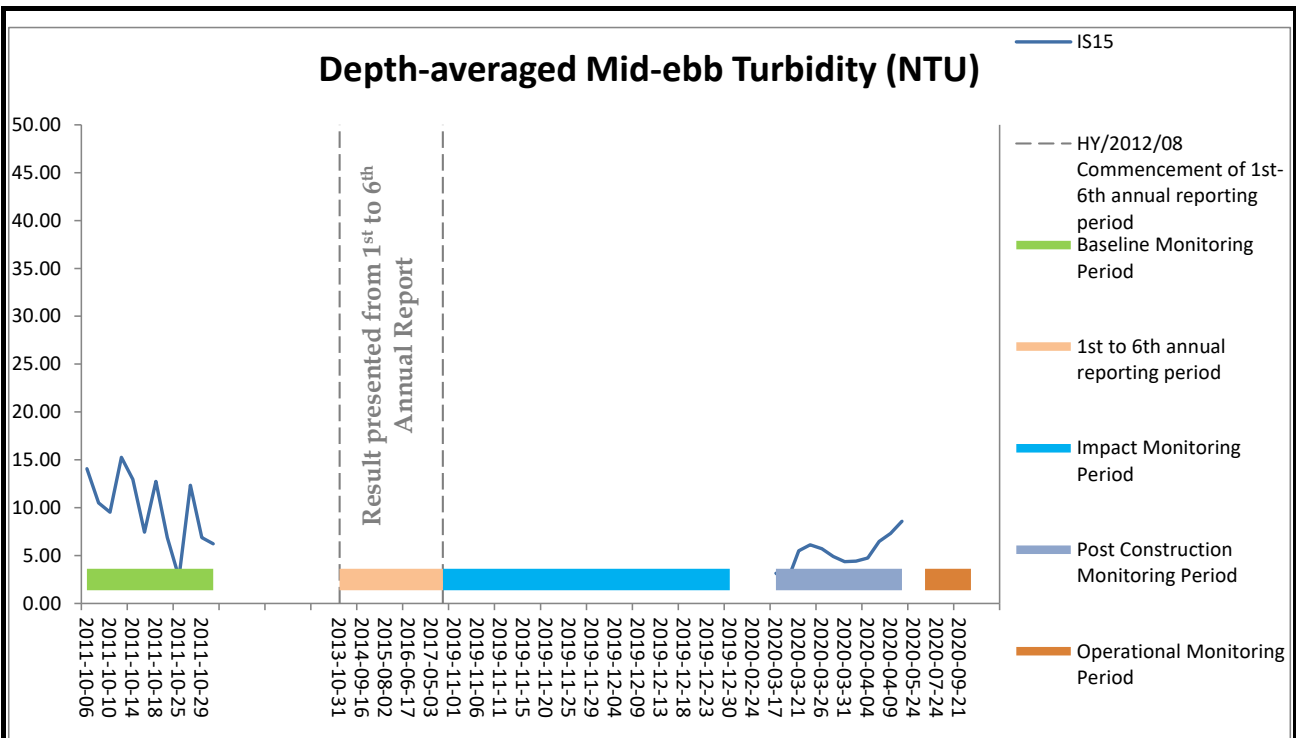


Figure E62 Baseline, Impact, Post-construction & Operational Monitoring - Mean Depth-averaged Level of Turbidity (NTU) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS15. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

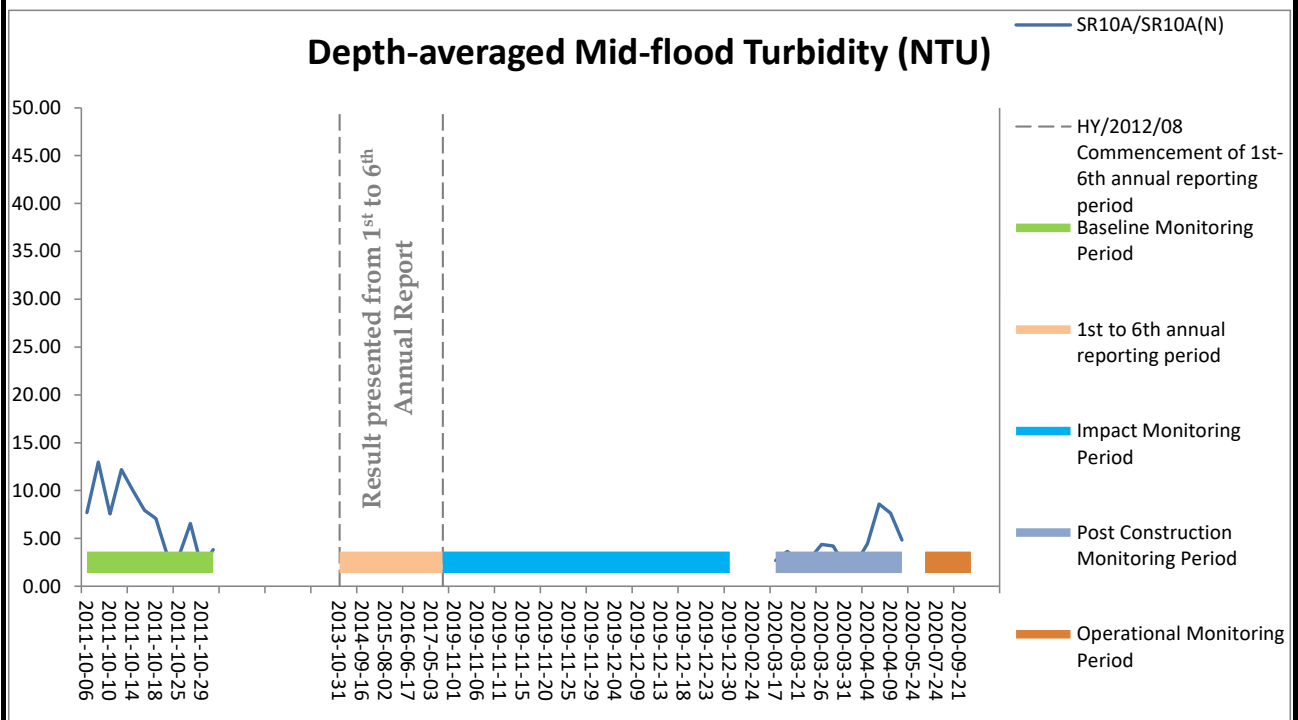
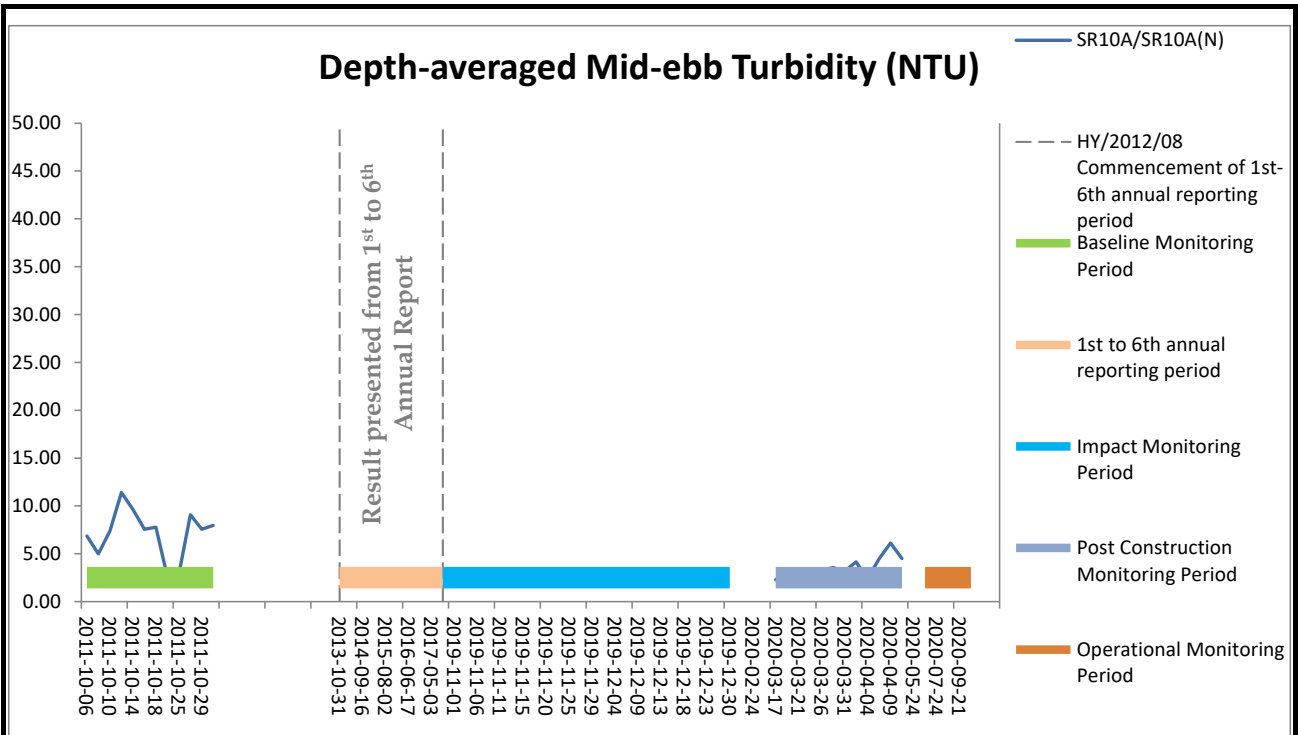


Figure E63 Baseline, Impact, Post-construction & Operational Monitoring - Mean Depth-averaged Level of Turbidity (NTU) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at SR10A/SR10A(N). Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

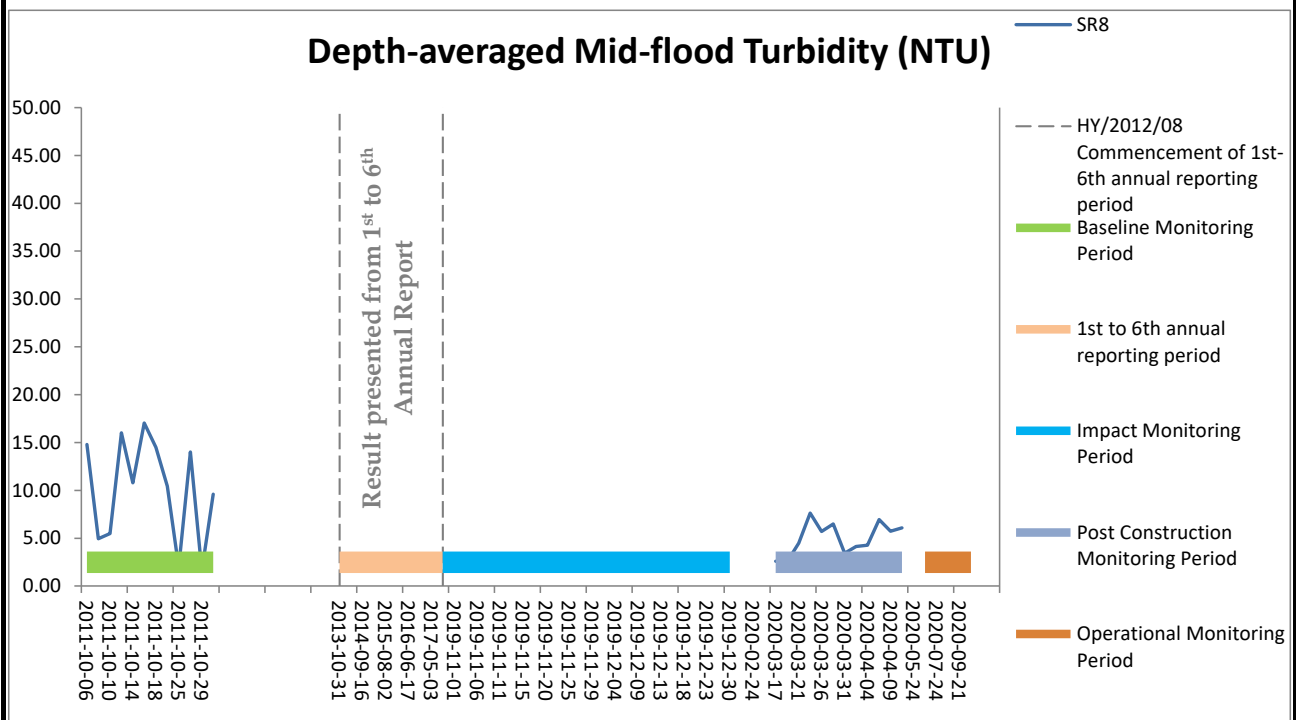
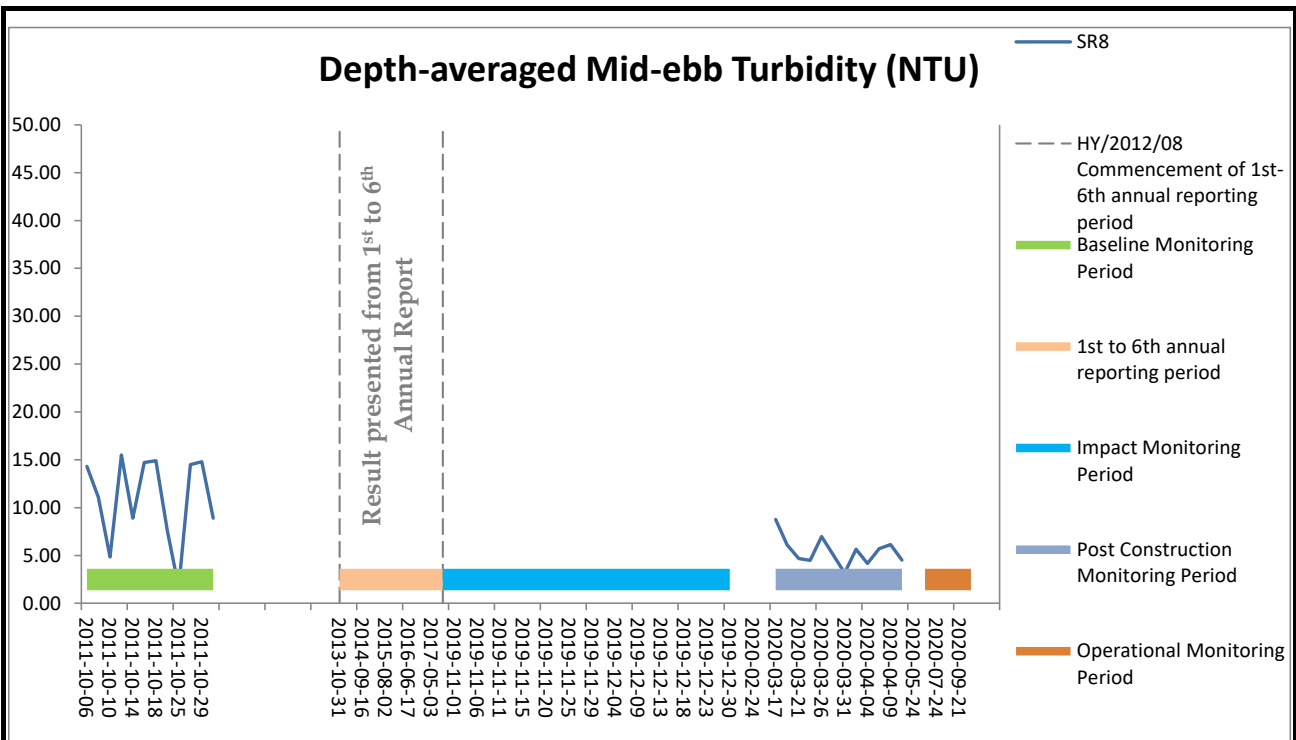


Figure E64 Baseline, Impact, Post-construction & Operational Monitoring - Mean Depth-averaged Level of Turbidity (NTU) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at SR8. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

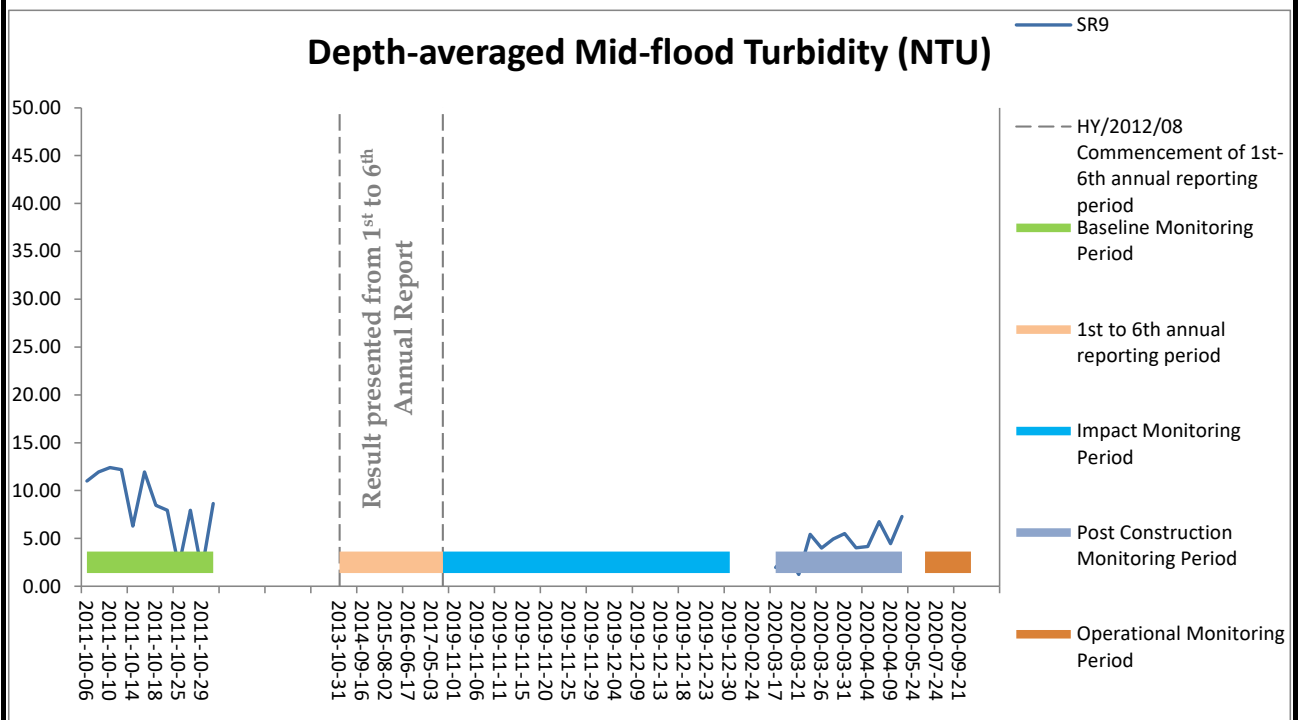
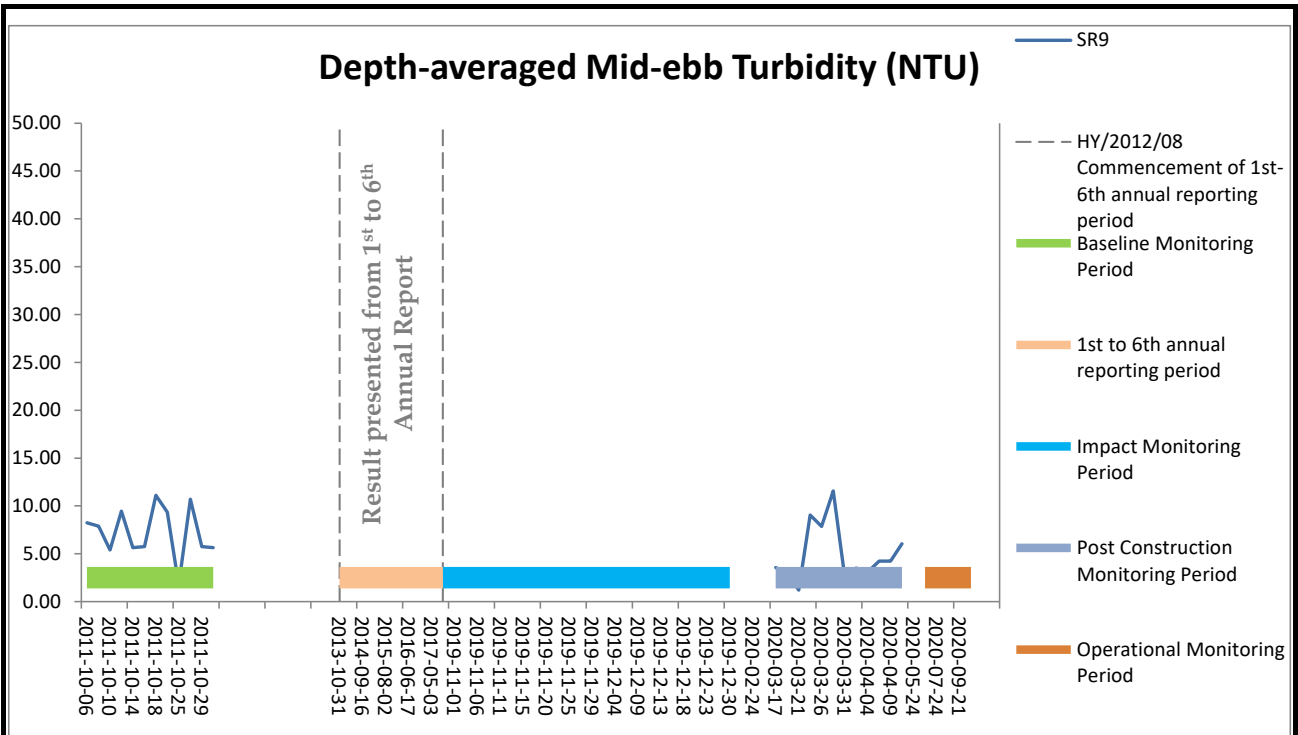


Figure E65 Baseline, Impact, Post-construction & Operational Monitoring - Mean Depth-averaged Level of Turbidity (NTU) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at SR9. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



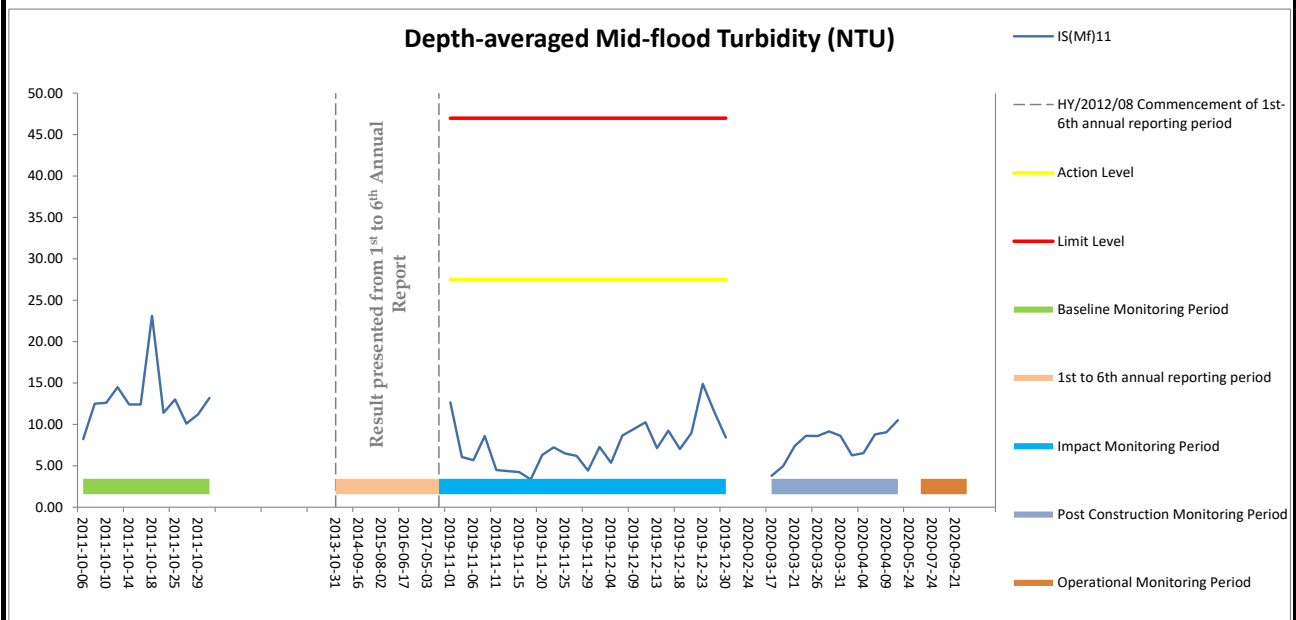
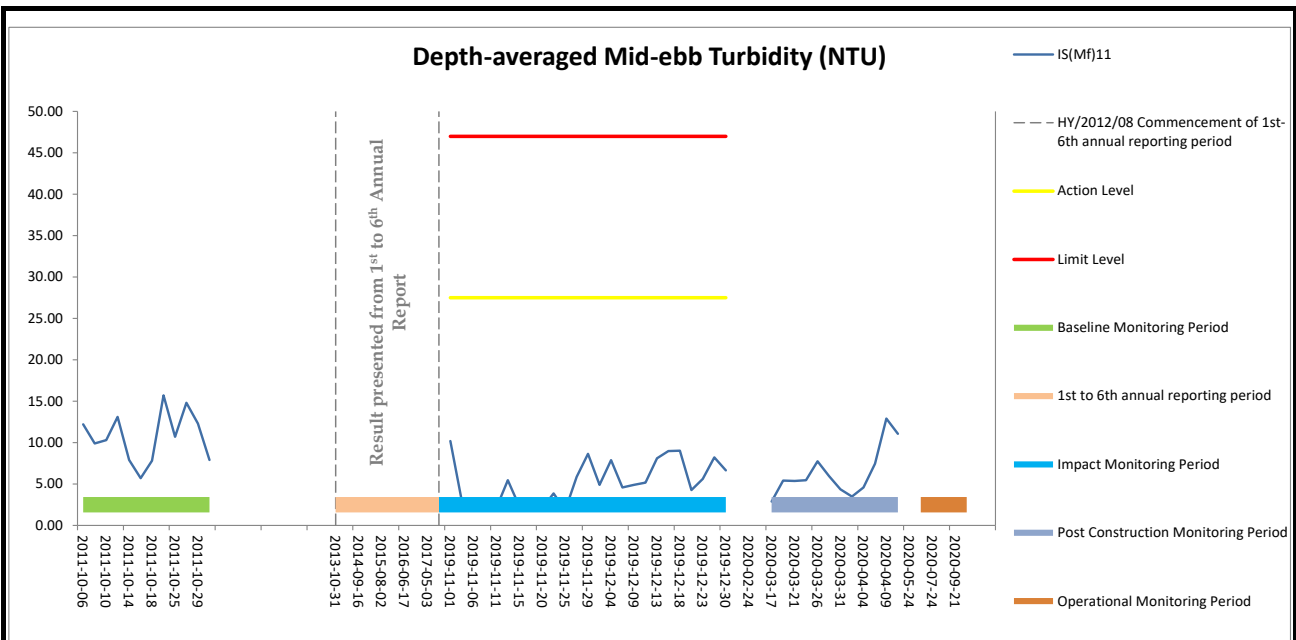


Figure E66 Baseline, Impact, Post-construction & Operational Monitoring – Mean Depth-averaged Level of Turbidity (NTU) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS(Mf)11. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

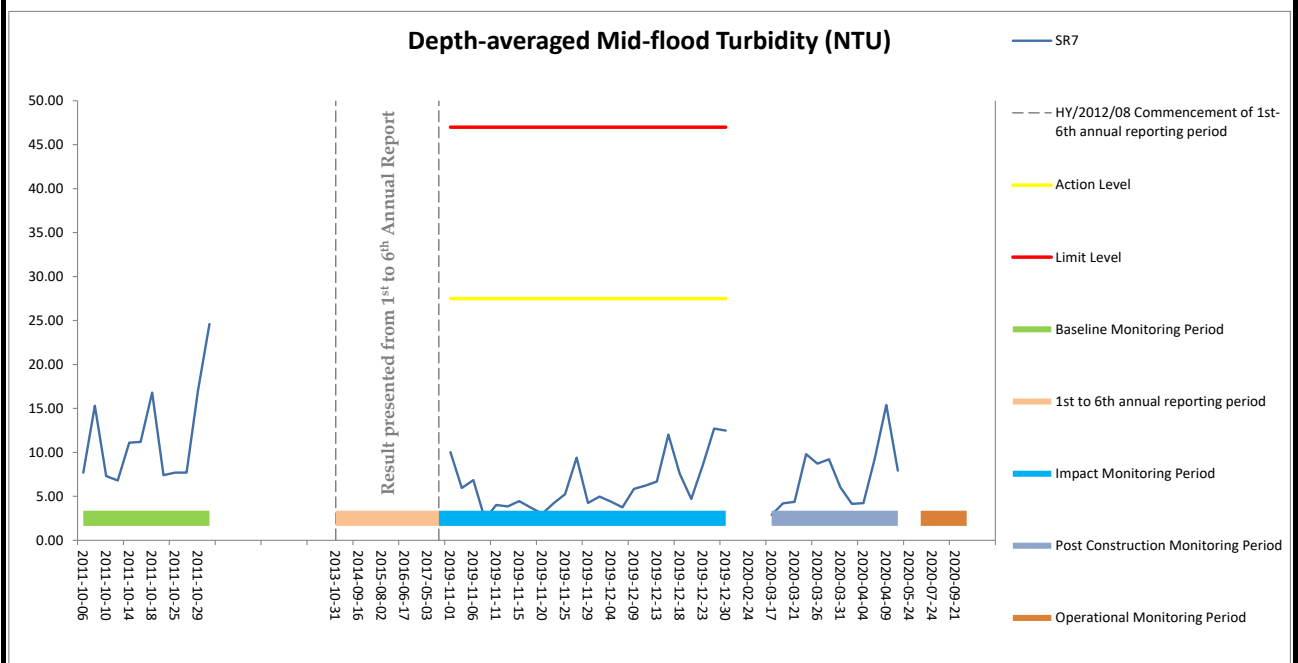
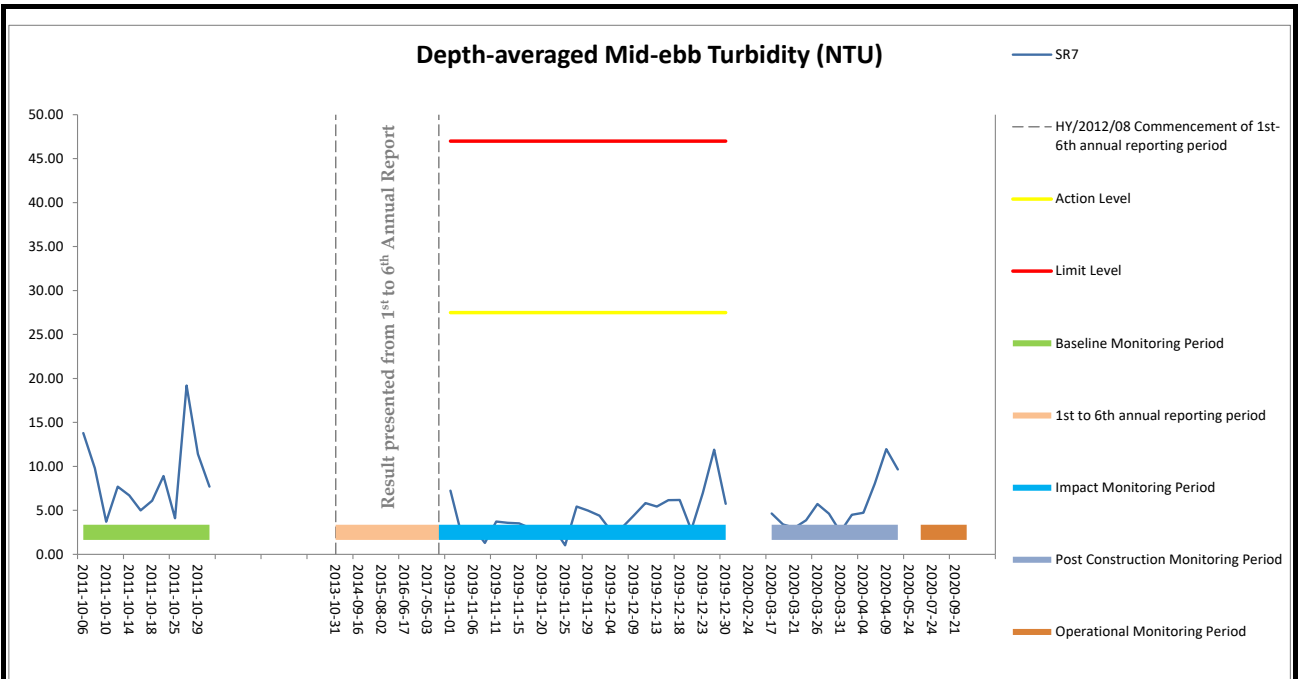


Figure E67 Baseline, Impact, Post-construction & Operational Monitoring – Mean Depth-averaged Level of Turbidity (NTU) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at SR7. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



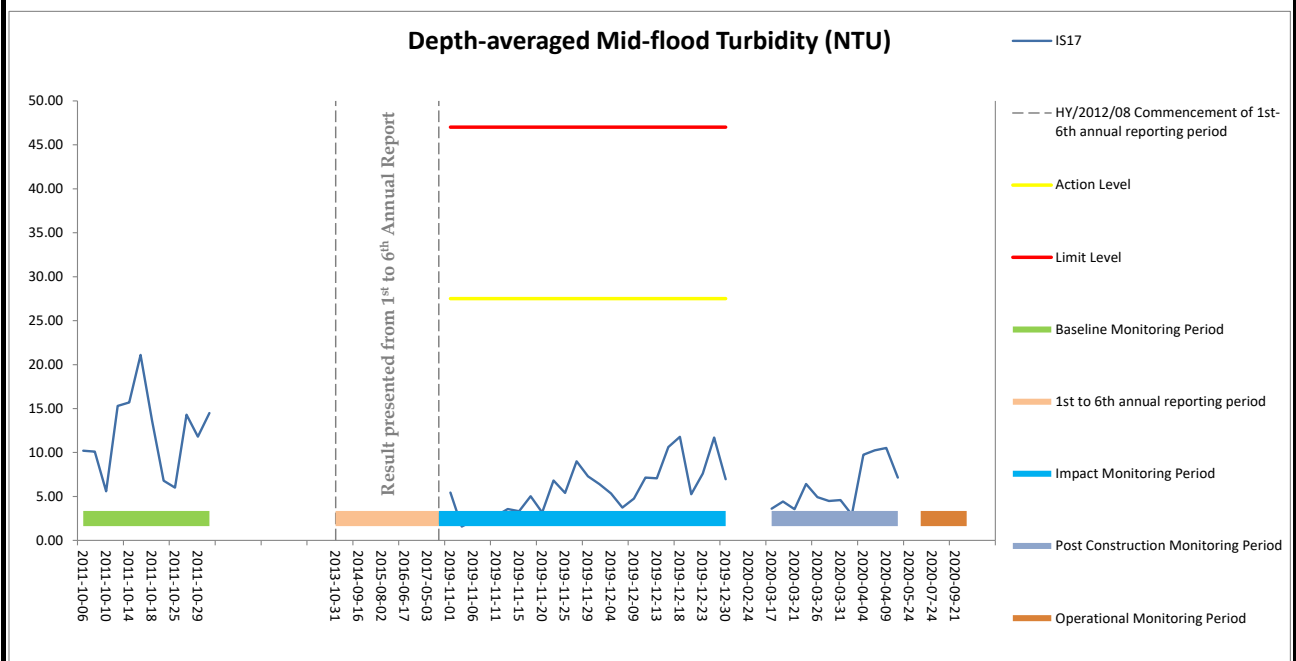
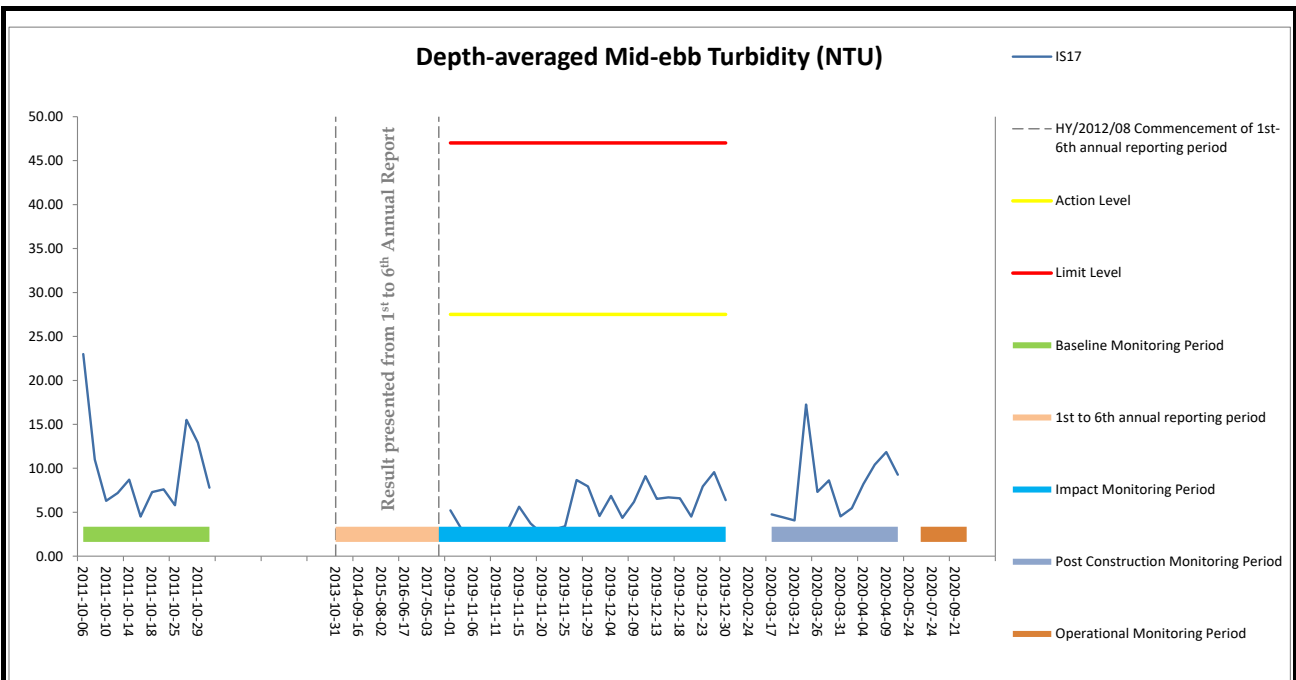


Figure E68 Baseline, Impact, Post-construction & Operational Monitoring – Mean Depth-averaged Level of Turbidity (NTU) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS17. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



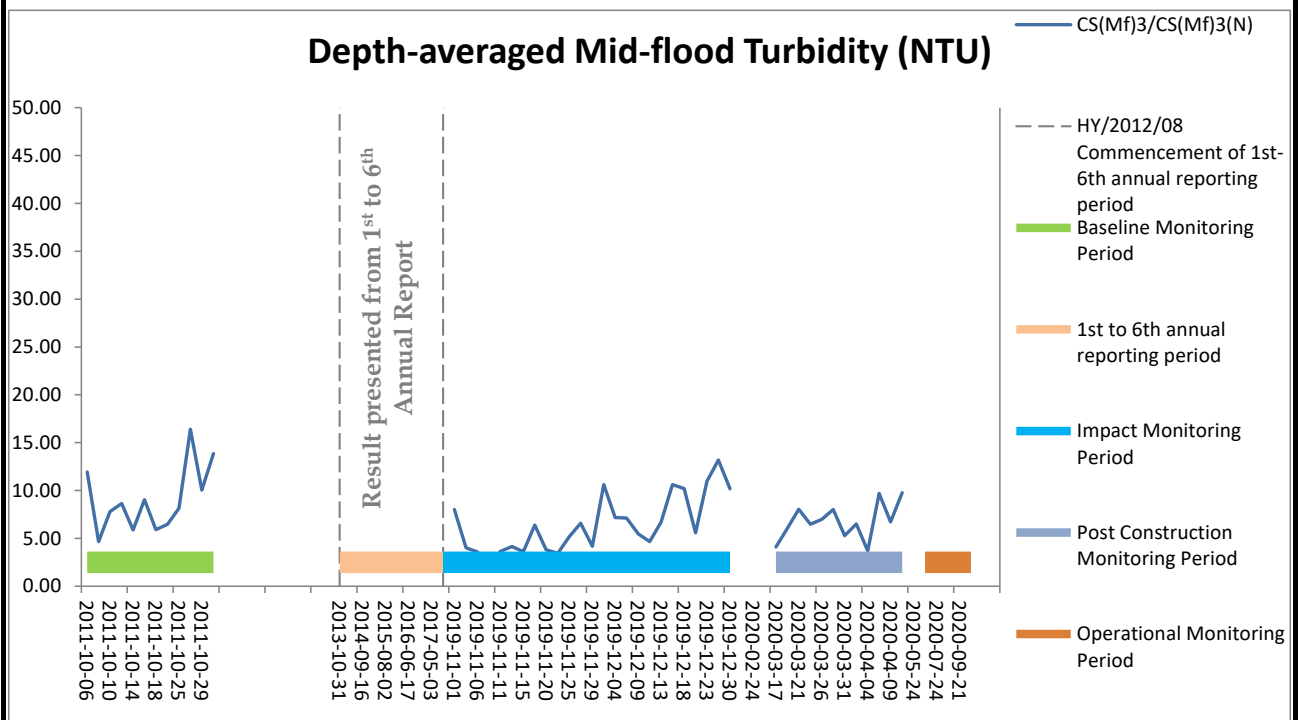
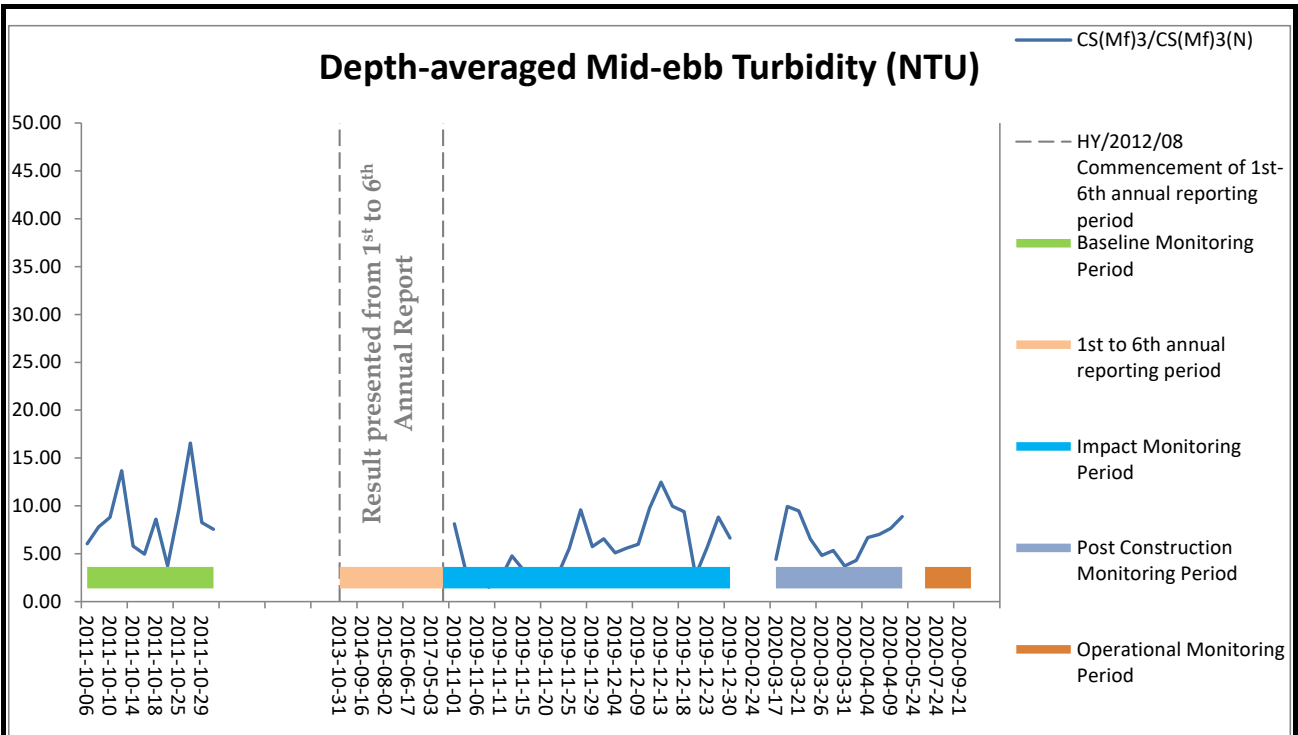


Figure E69 Baseline, Impact, Post-construction & Operational Monitoring - Mean Depth-averaged Level of Turbidity (NTU) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at CS(Mf)3/CS(Mf)3(N). Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

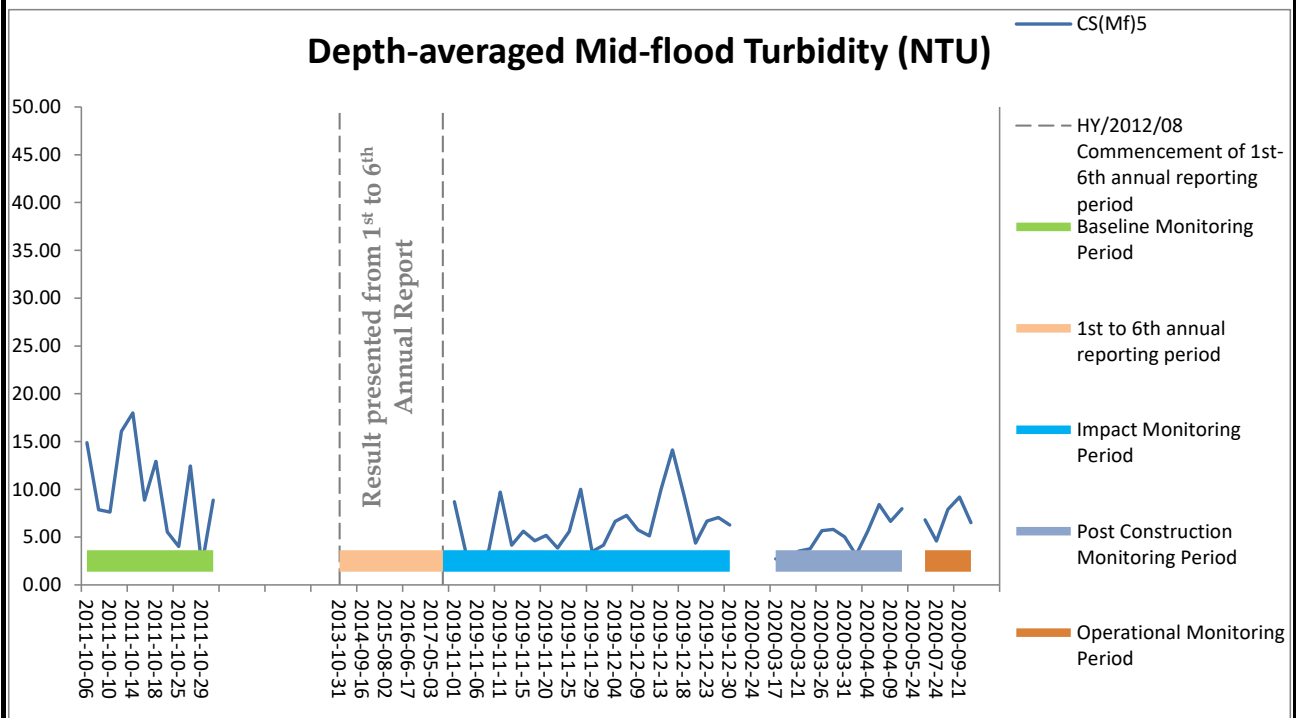
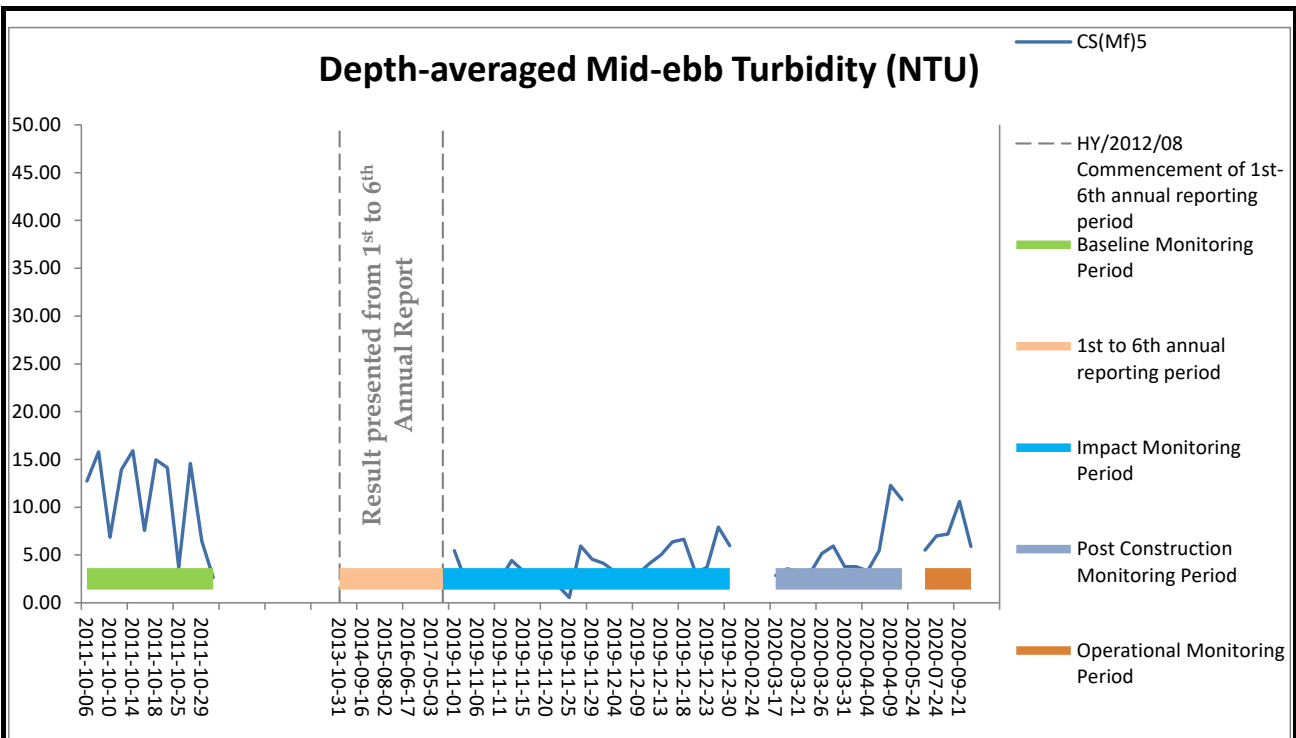


Figure E70 Baseline, Impact, Post-construction & Operational Monitoring - Mean Depth-averaged Level of Turbidity (NTU) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at CS(Mf)5. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

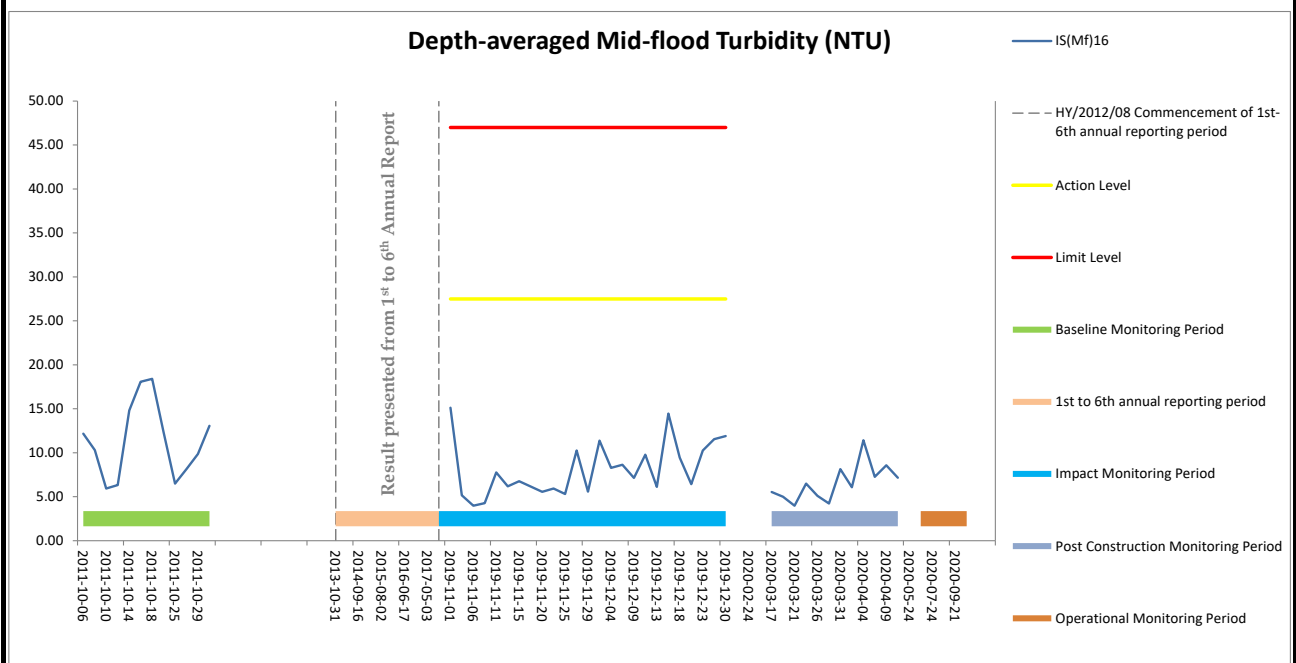
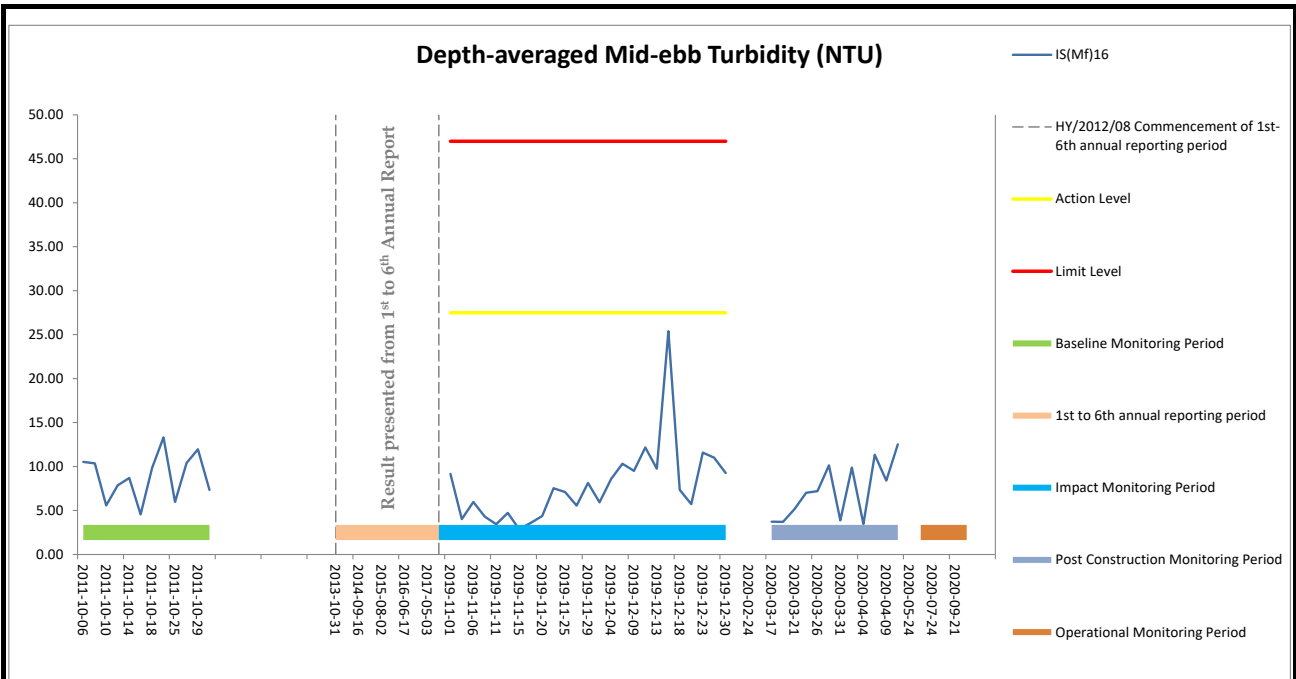


Figure E71 Baseline, Impact, Post-construction & Operational Monitoring - Mean Depth-averaged Level of Turbidity (NTU) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS(Mf)16. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



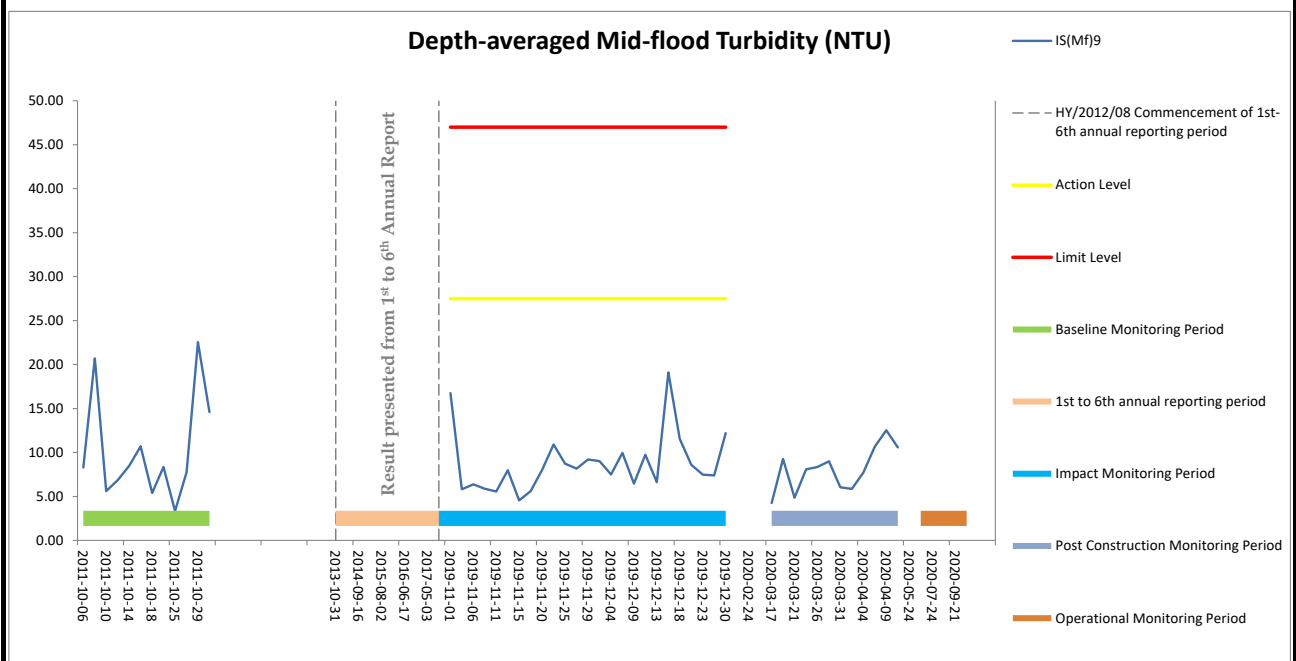
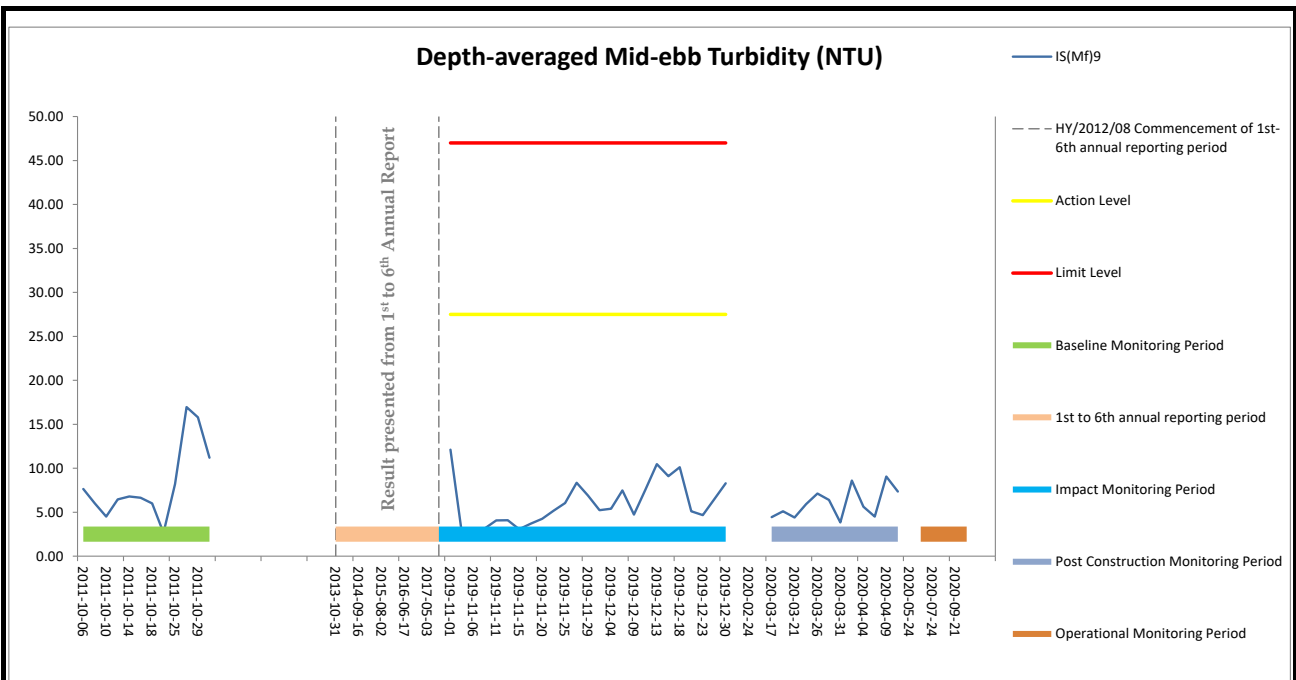


Figure E72 Baseline, Impact, Post-construction & Operational Monitoring - Mean Depth-averaged Level of Turbidity (NTU) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS(Mf)9. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



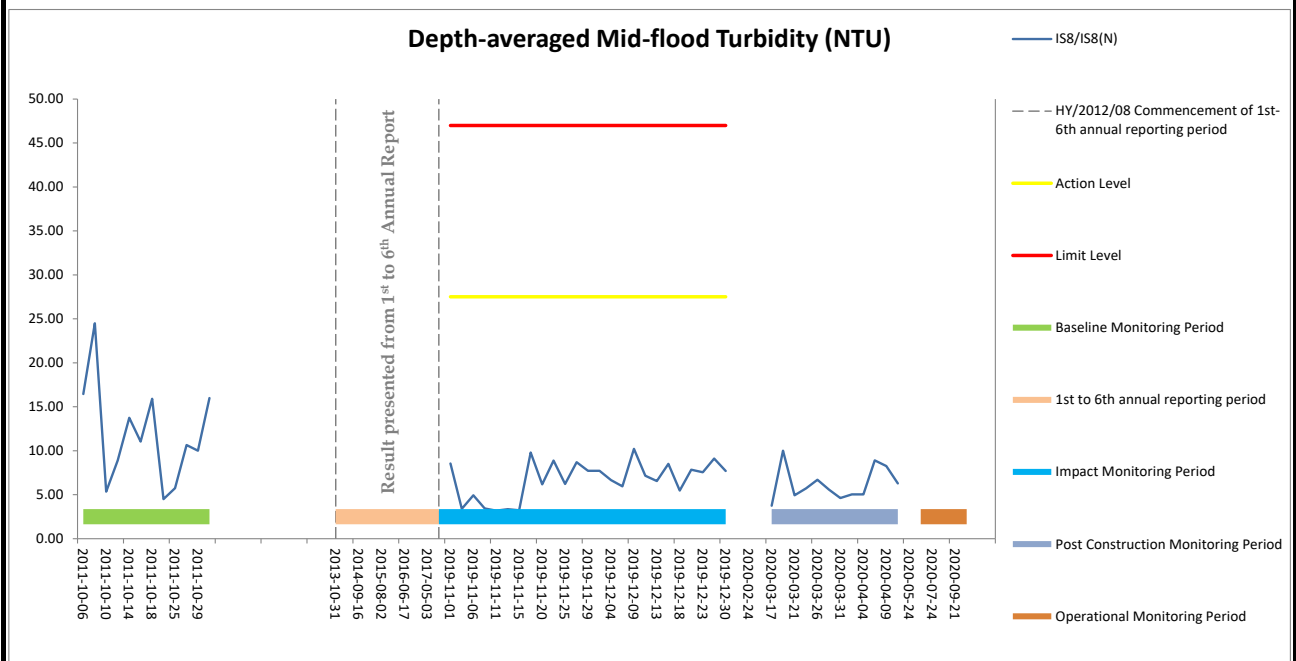
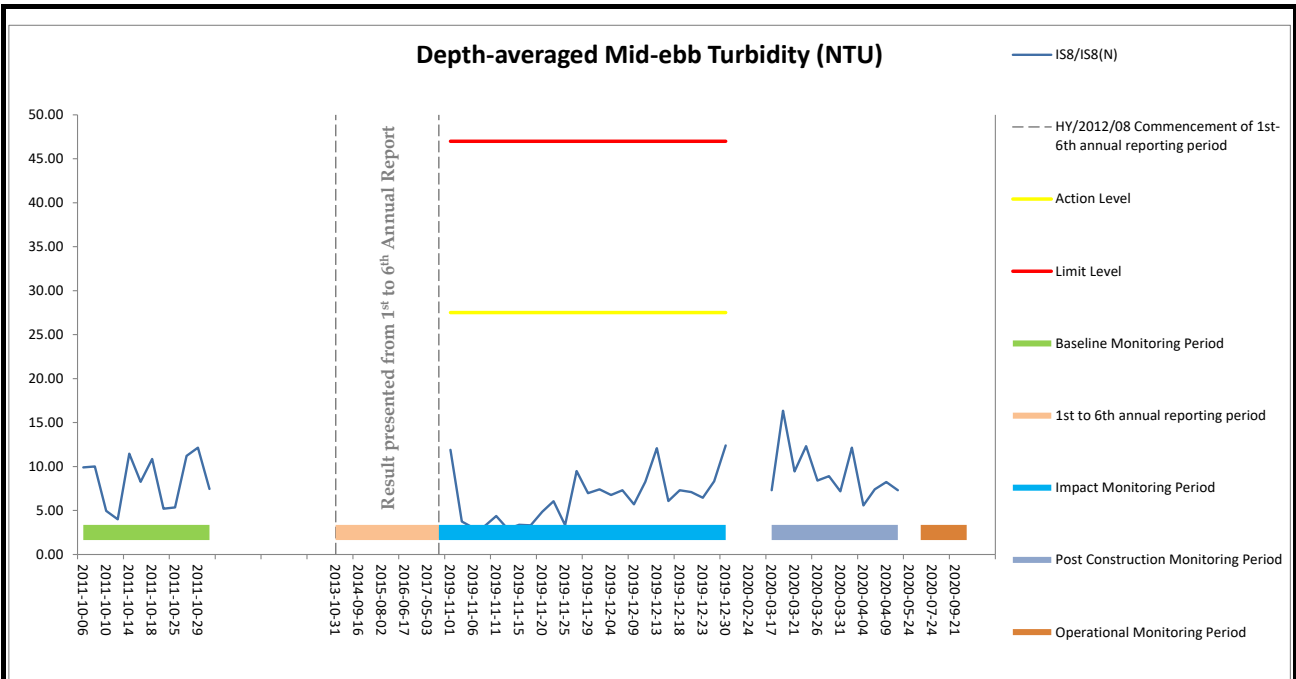


Figure E73 Baseline, Impact, Post-construction & Operational Monitoring - Mean Depth-averaged Level of Turbidity (NTU) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS8/IS8(N). Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



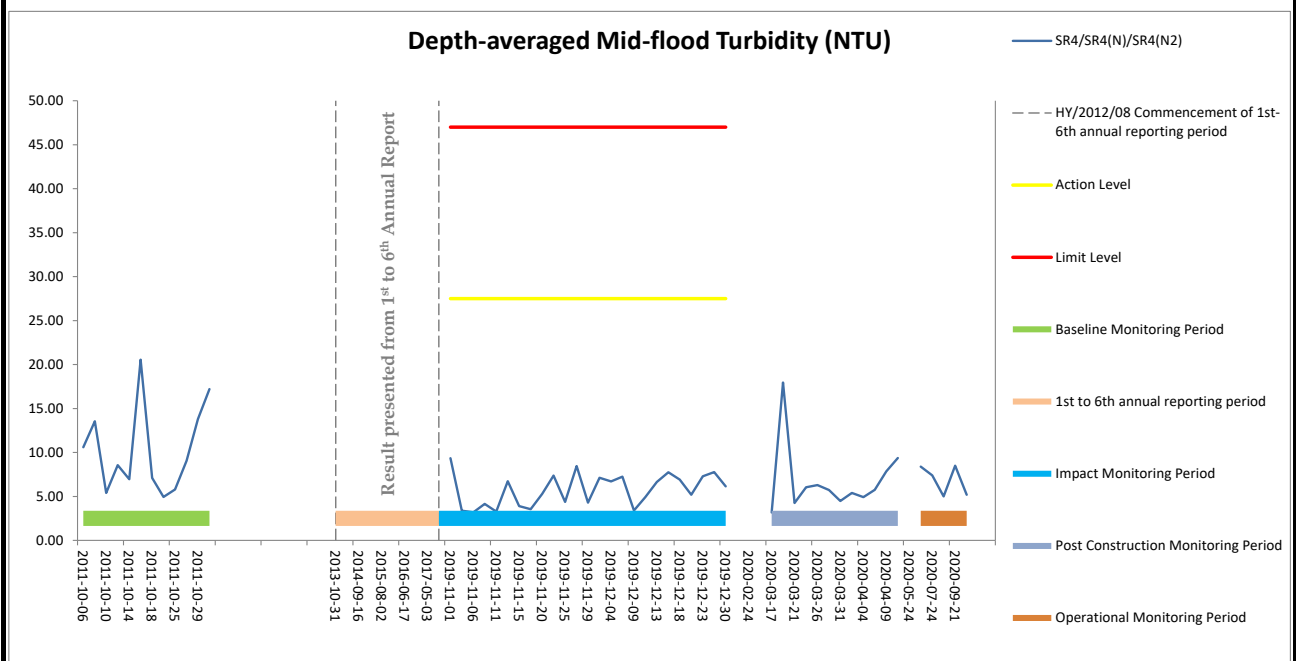
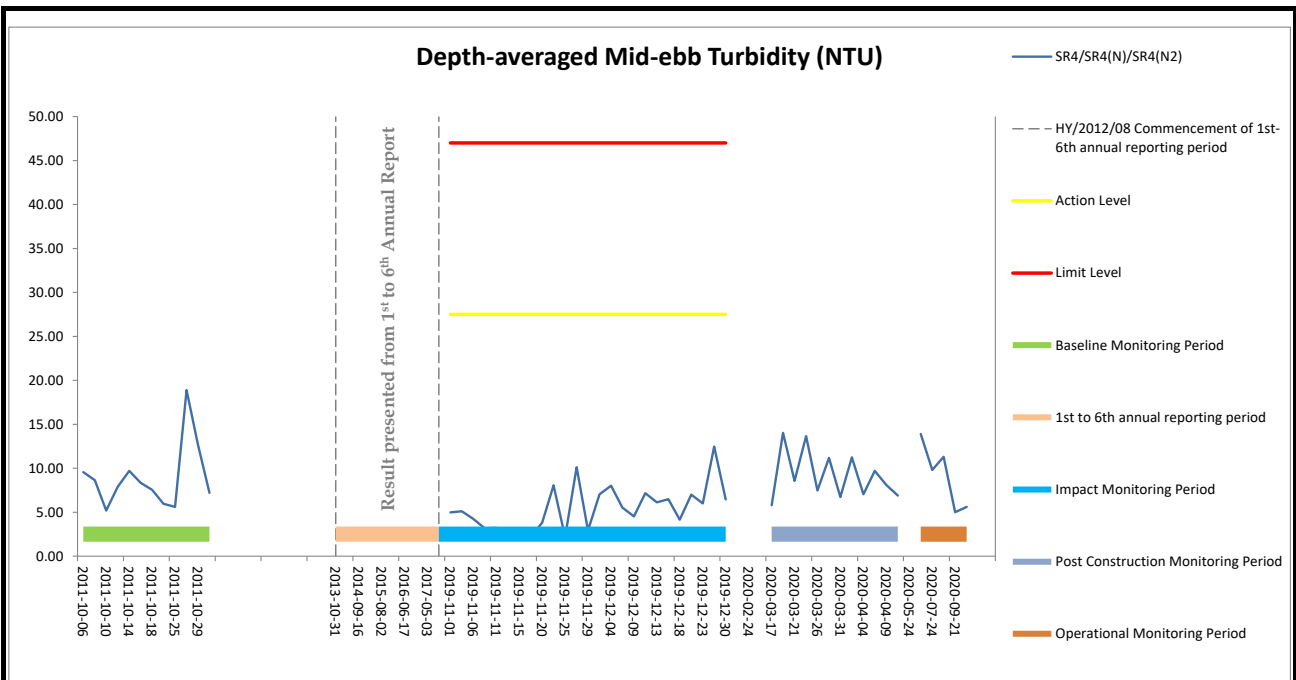


Figure E74 Baseline, Impact, Post-construction & Operational Monitoring – Mean Depth-averaged Level of Turbidity (NTU) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at SR4/SR4(N)/SR4(N2). Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

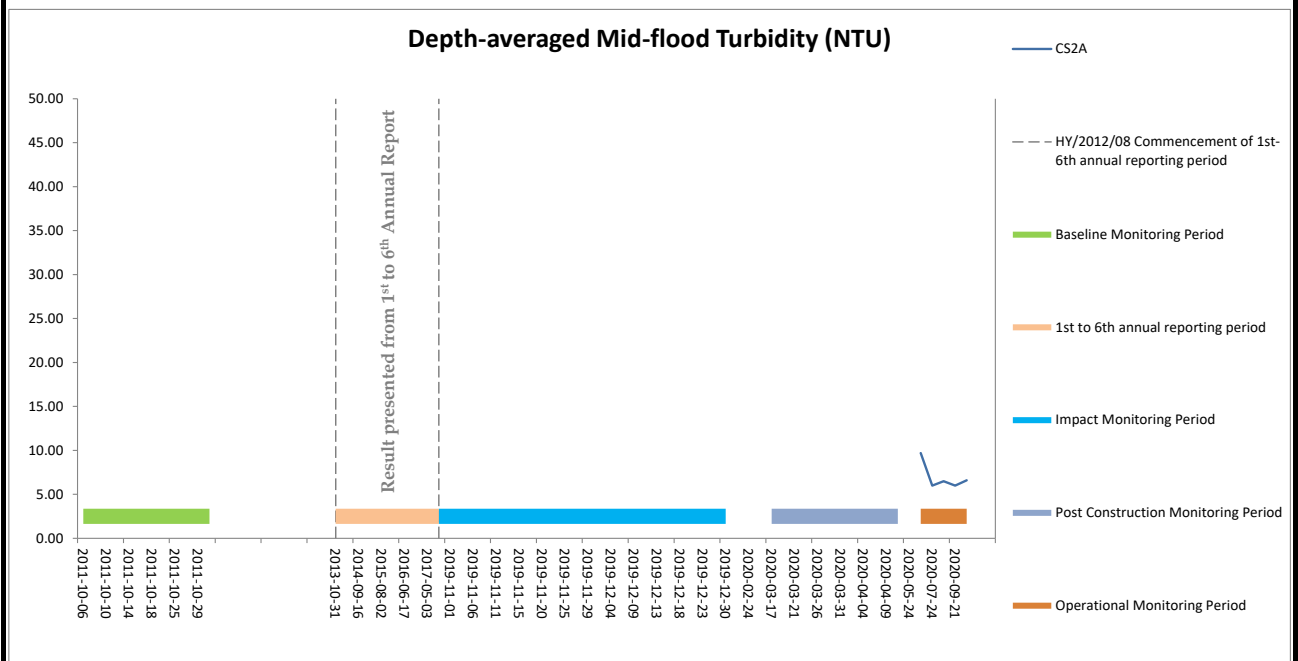
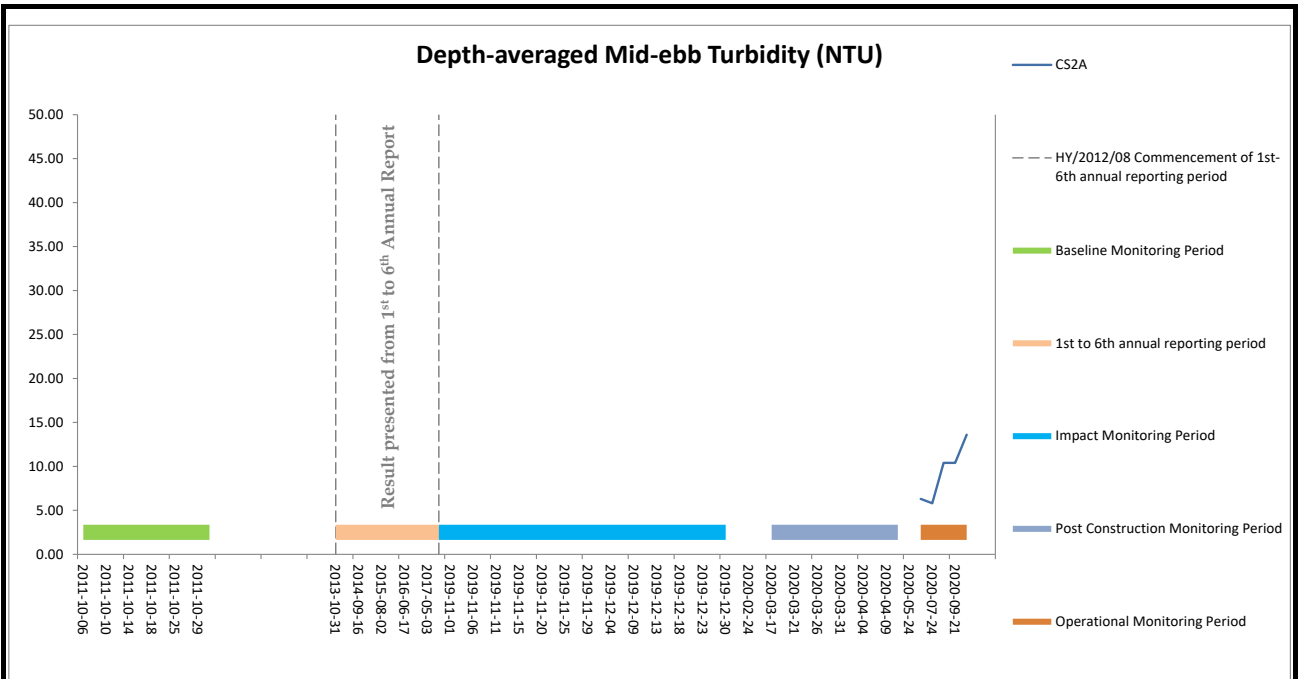


Figure E75 Baseline, Impact, Post-construction & Operational Monitoring - Mean Depth-averaged Level of Turbidity (NTU) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at CS2A. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



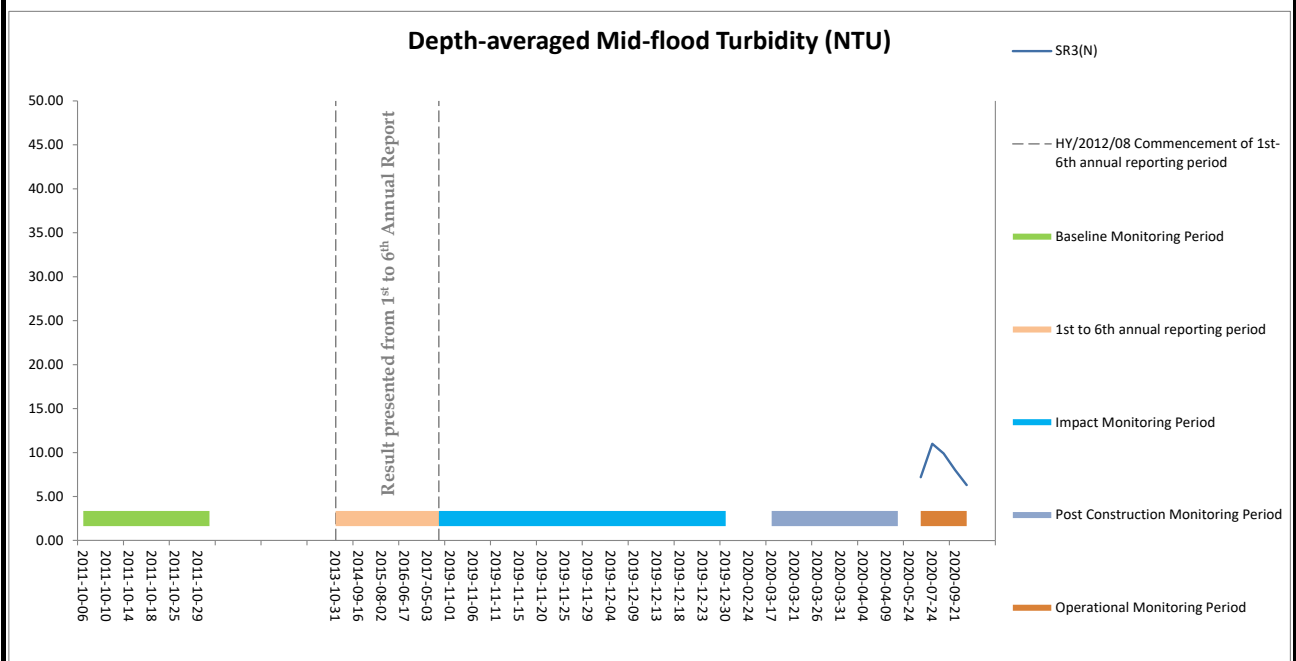
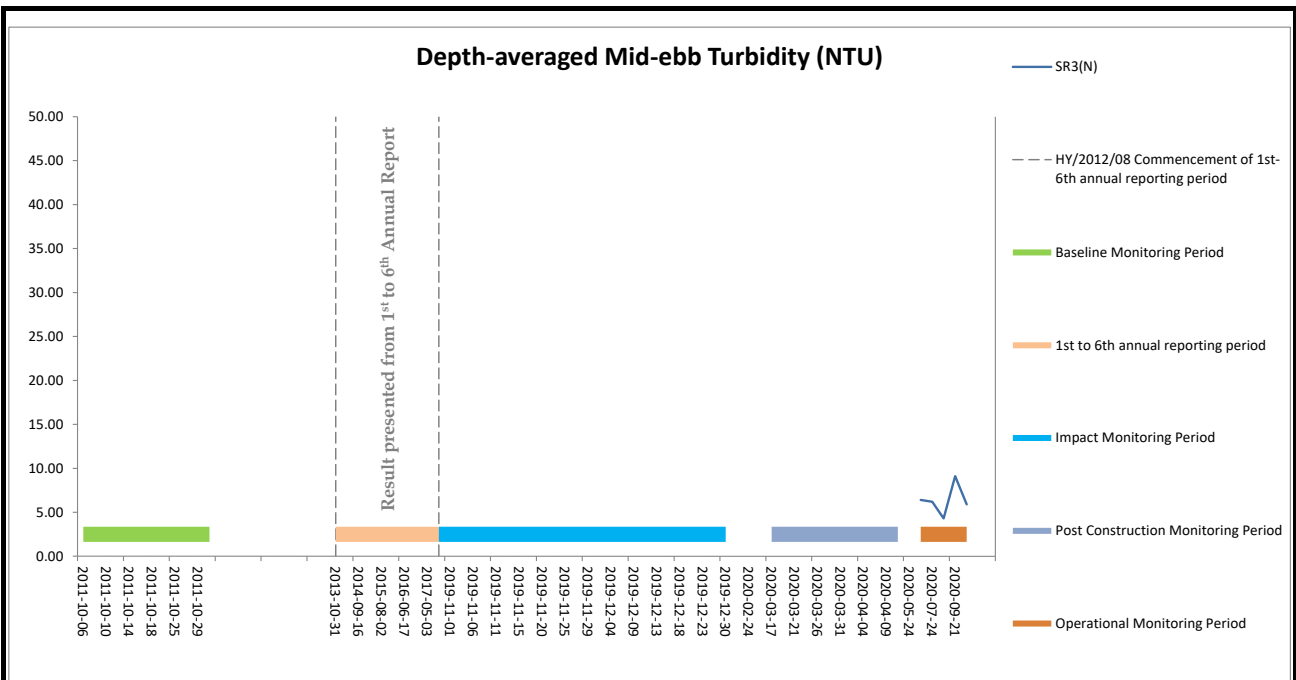


Figure E76 Baseline, Impact, Post-construction & Operational Monitoring - Mean Depth-averaged Level of Turbidity (NTU) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at SR3(N). Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

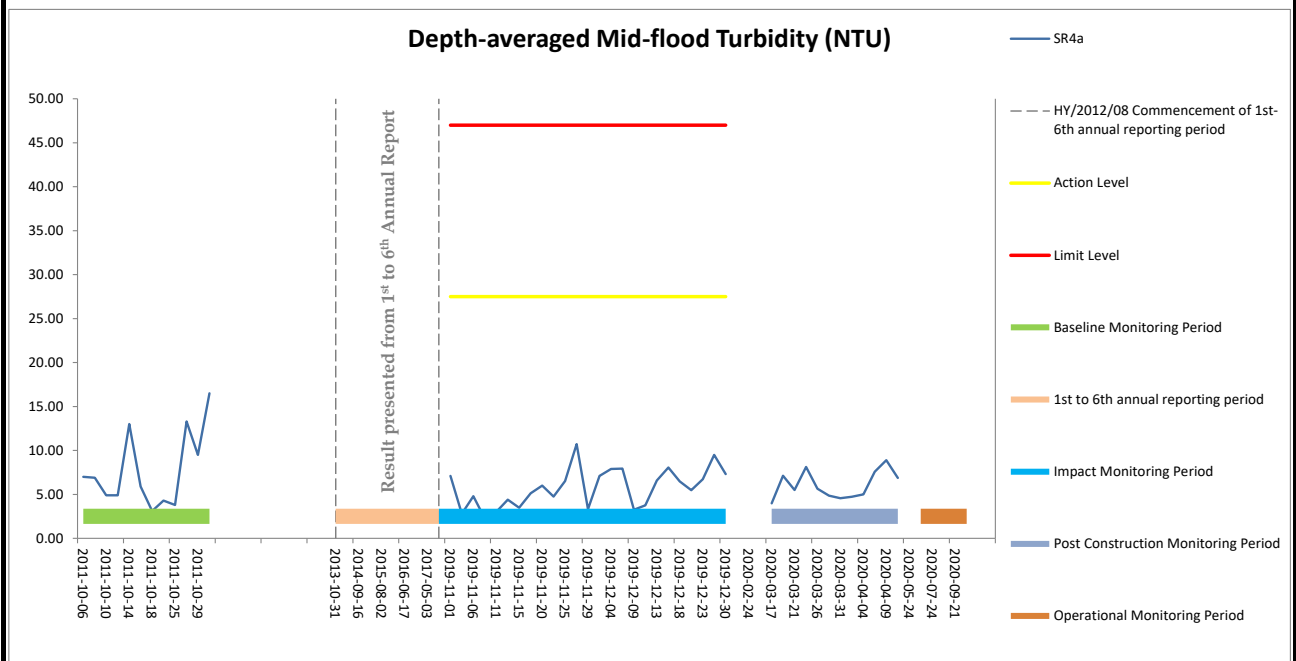
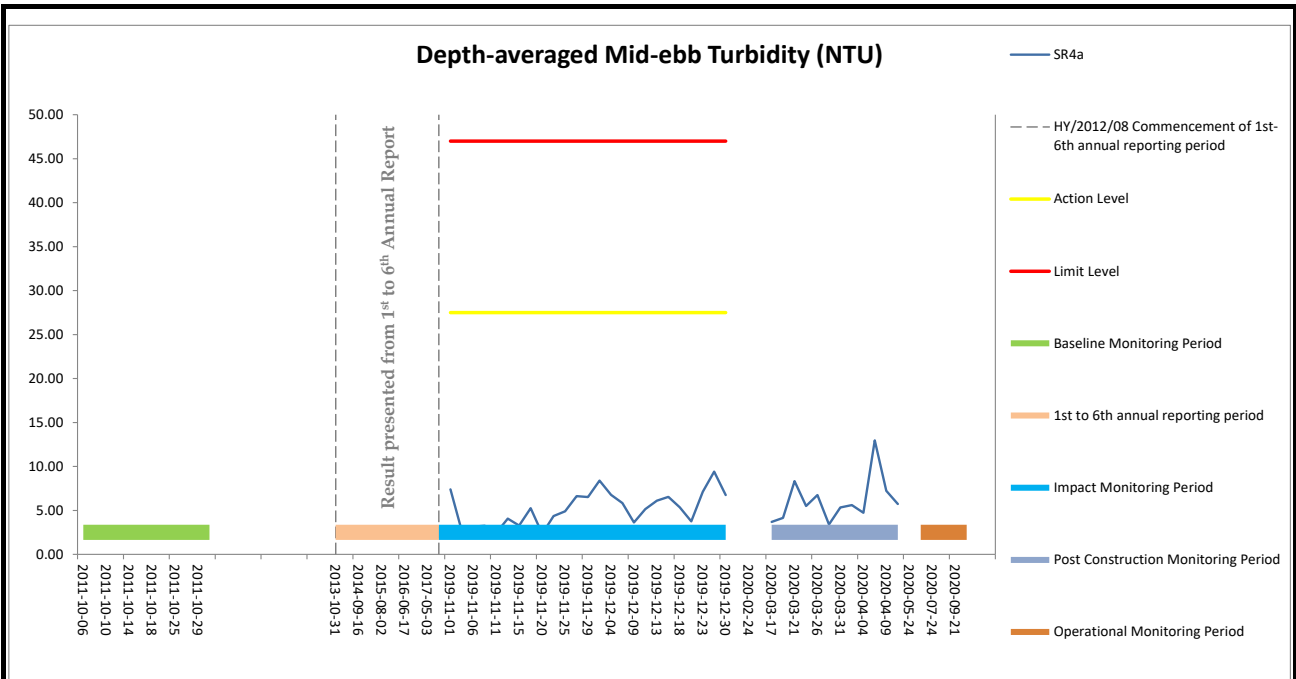


Figure E77 Baseline, Impact, Post-construction & Operational Monitoring - Mean Depth-averaged Level of Turbidity (NTU) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at SR4a. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



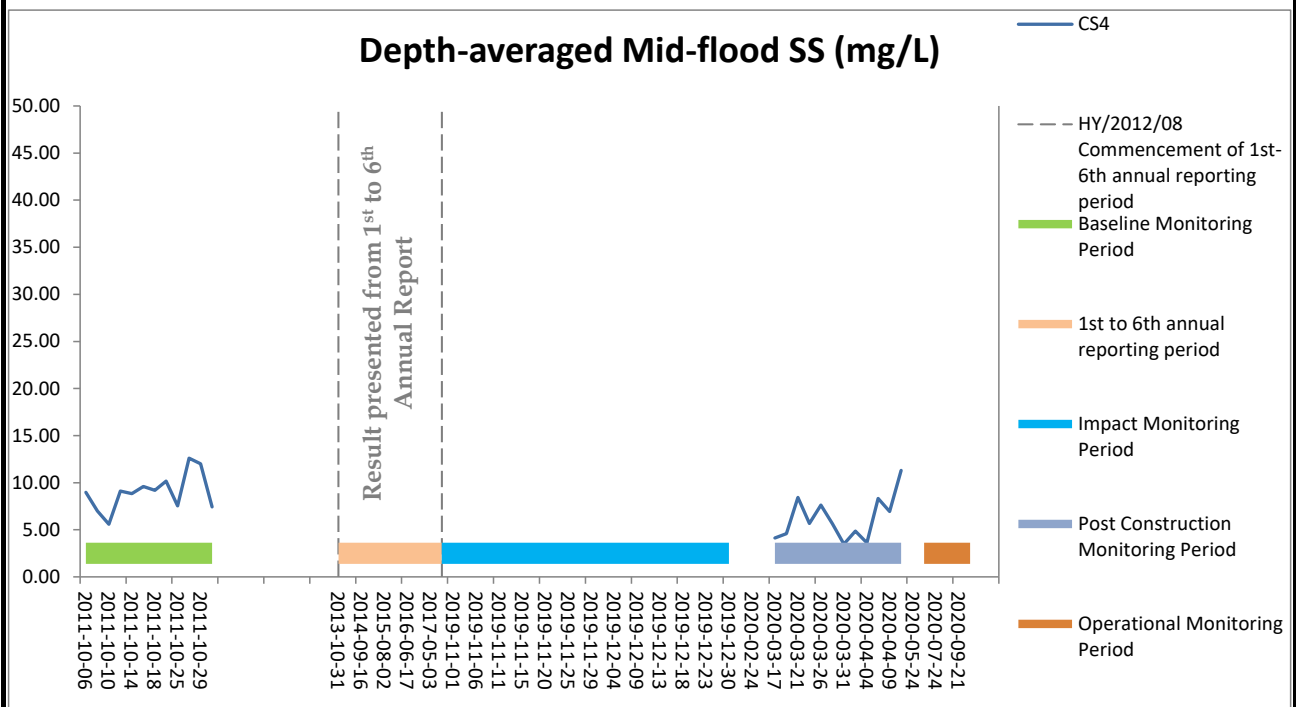
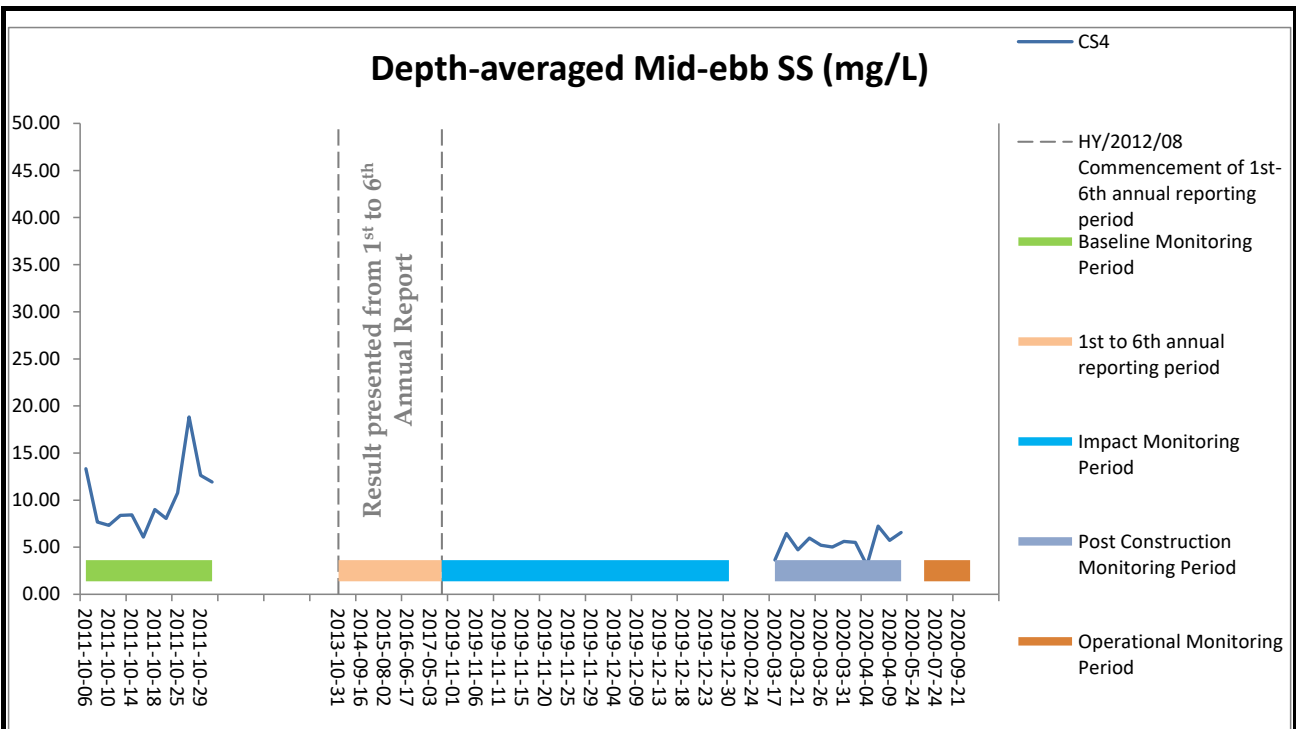


Figure E78 Baseline, Impact, Post-construction & Operational Monitoring – Mean Depth-averaged Level of Suspended Solids (mg/L) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at CS4. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

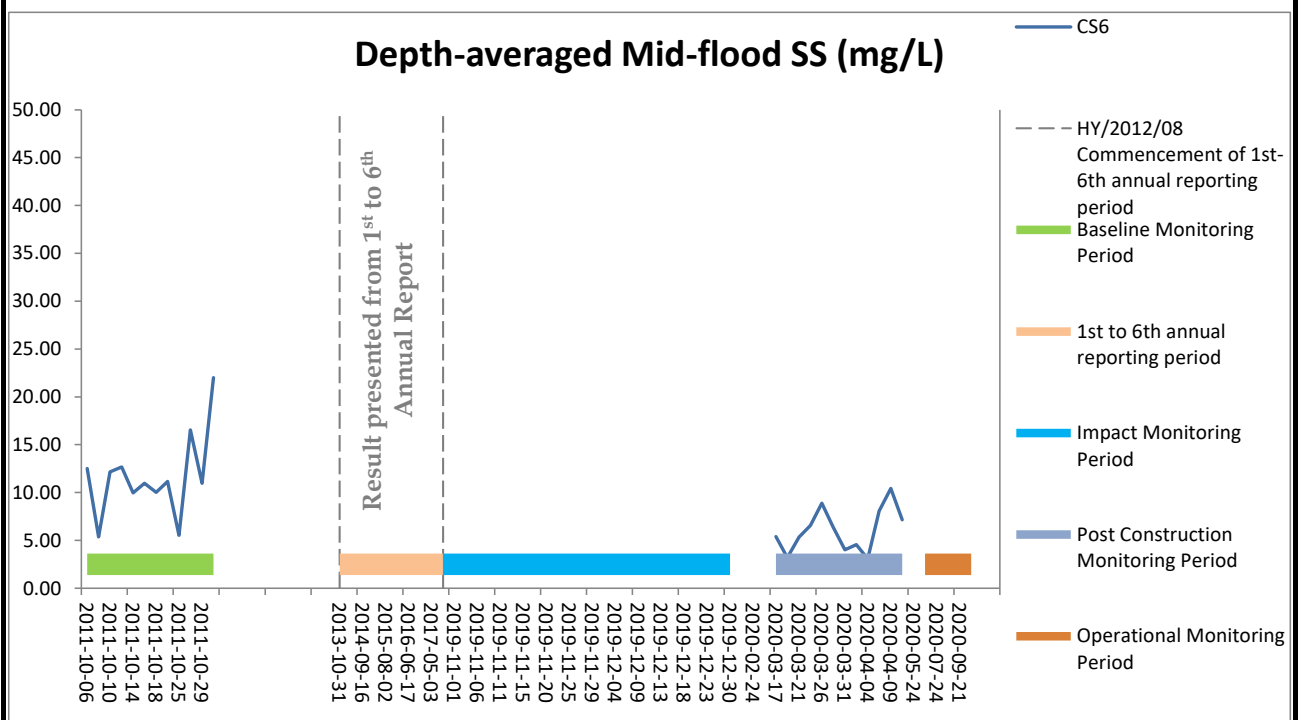
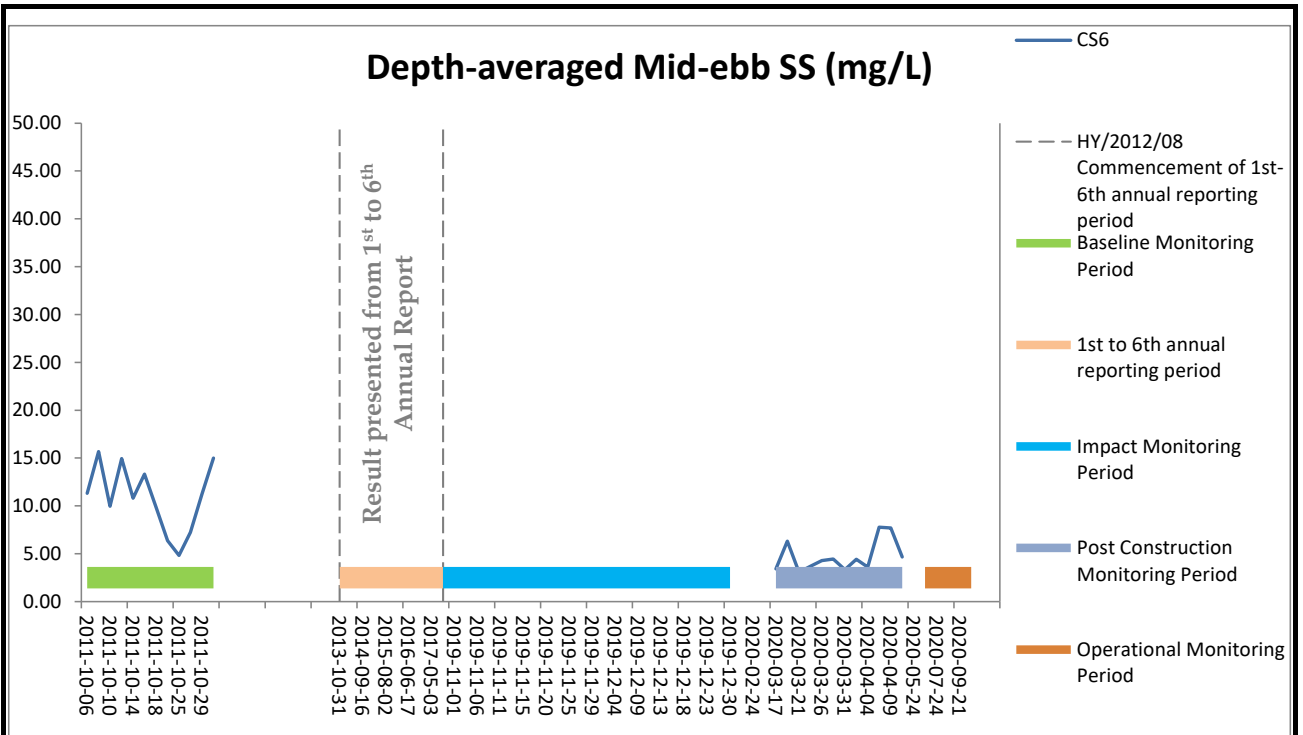


Figure E79 Baseline, Impact, Post-construction & Operational Monitoring – Mean Depth-averaged Level of Suspended Solids (mg/L) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at CS6. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



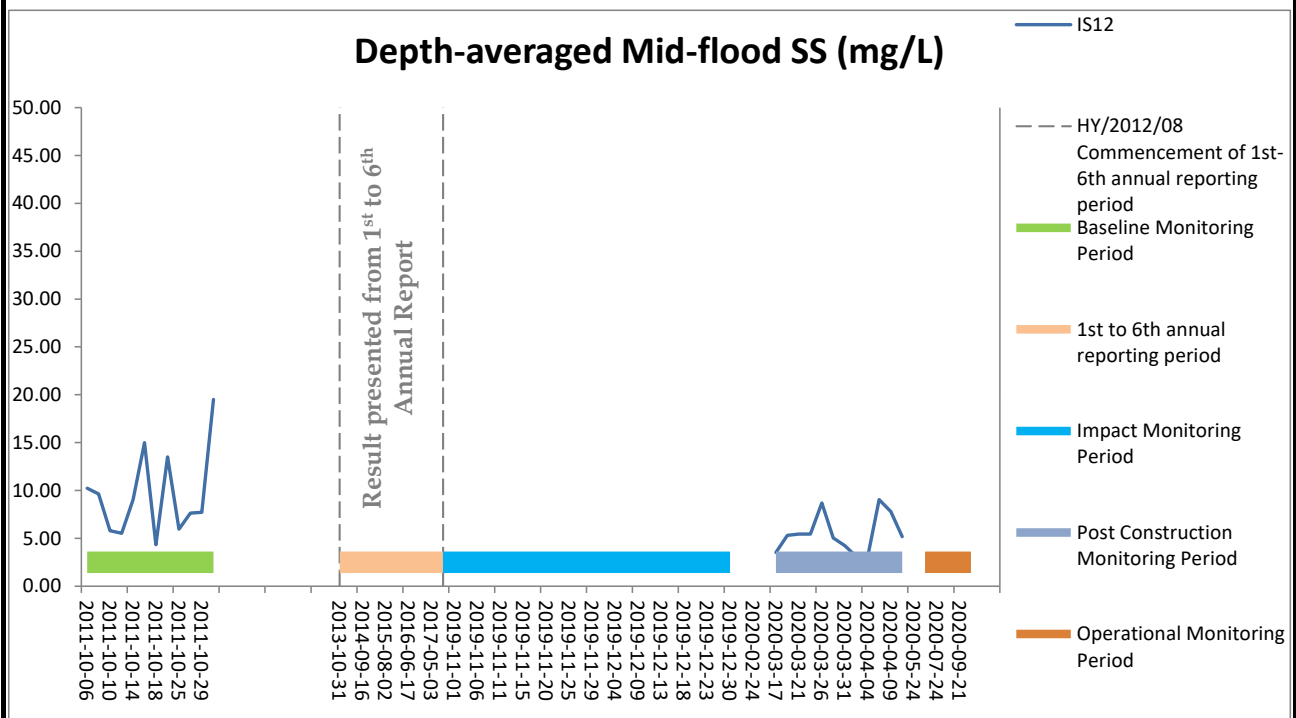
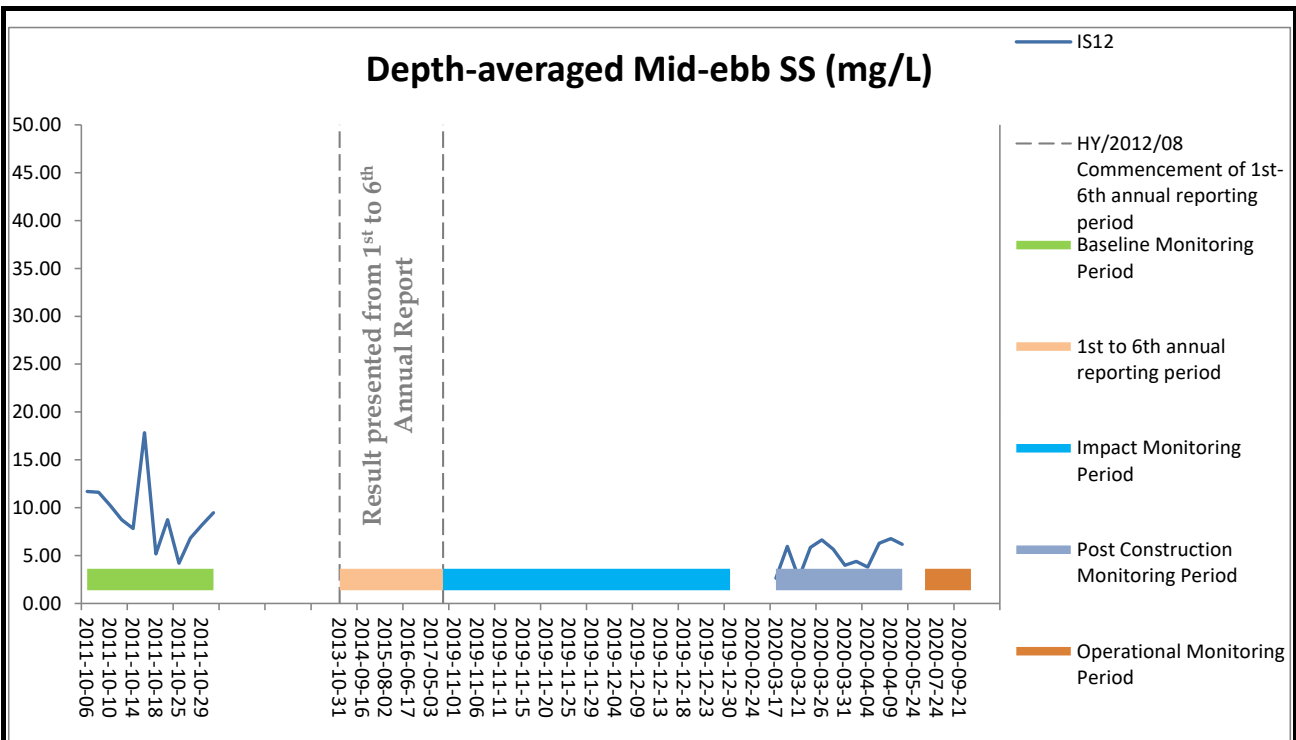


Figure E80 Baseline, Impact, Post-construction & Operational Monitoring – Mean Depth-averaged Level of Suspended Solids (mg/L) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS12. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

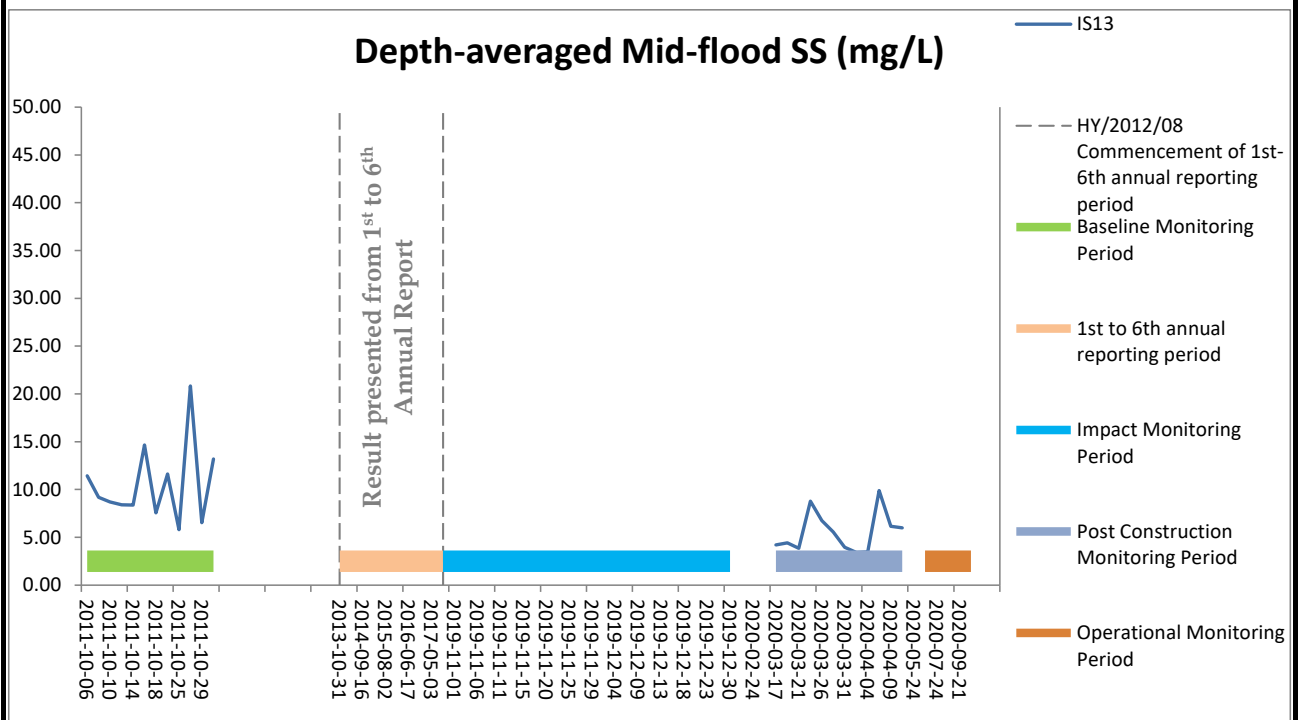
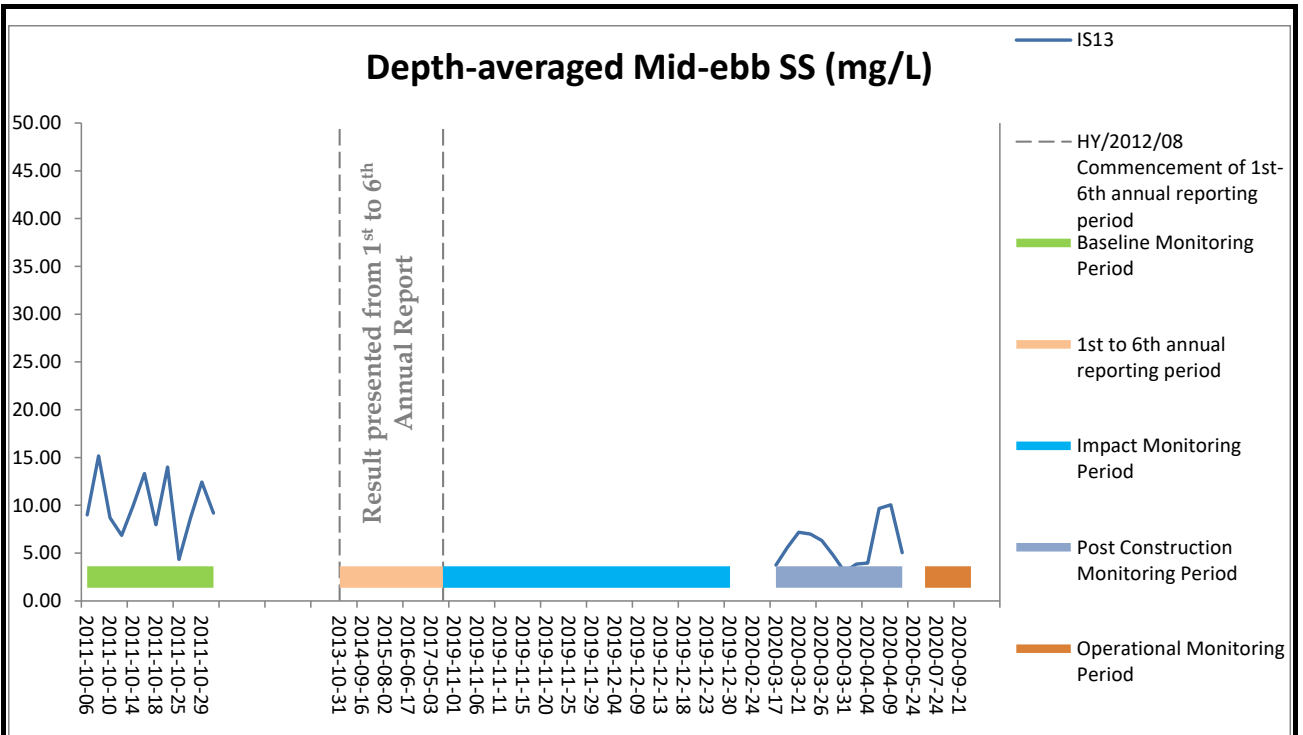


Figure E81 Baseline, Impact, Post-construction & Operational Monitoring – Mean Depth-averaged Level of Suspended Solids (mg/L) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS13. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

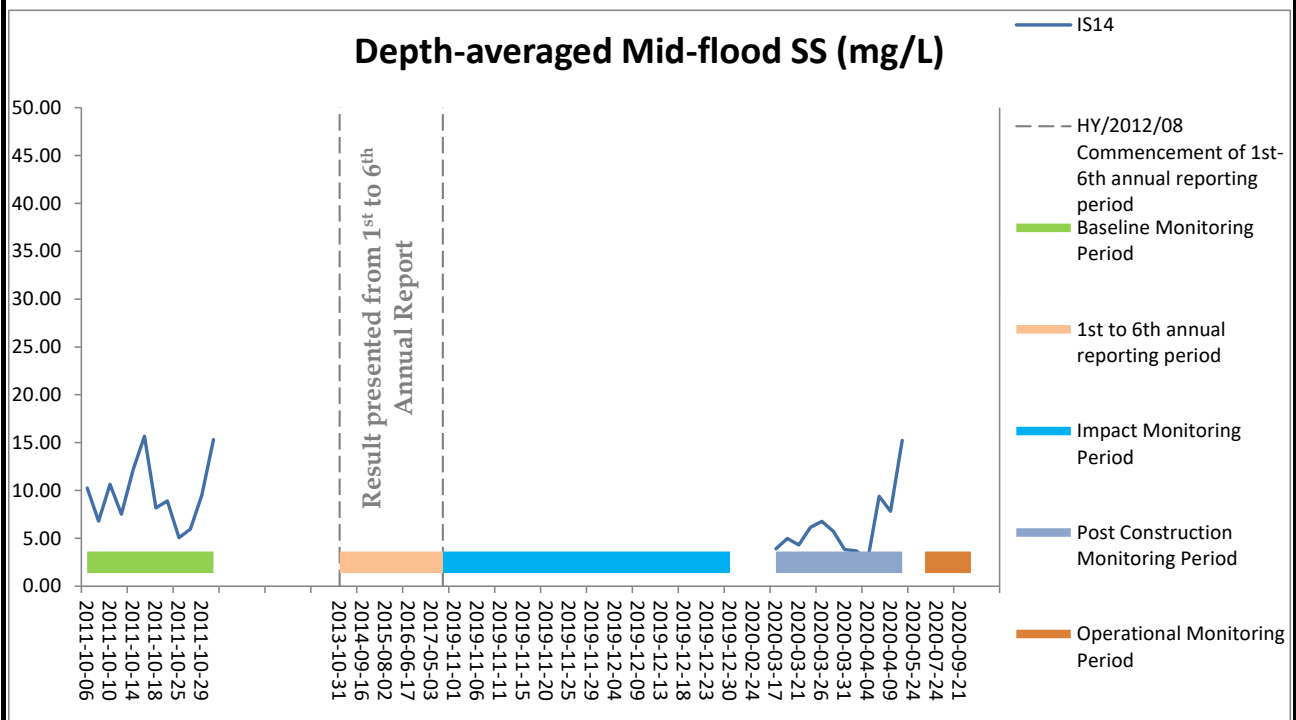
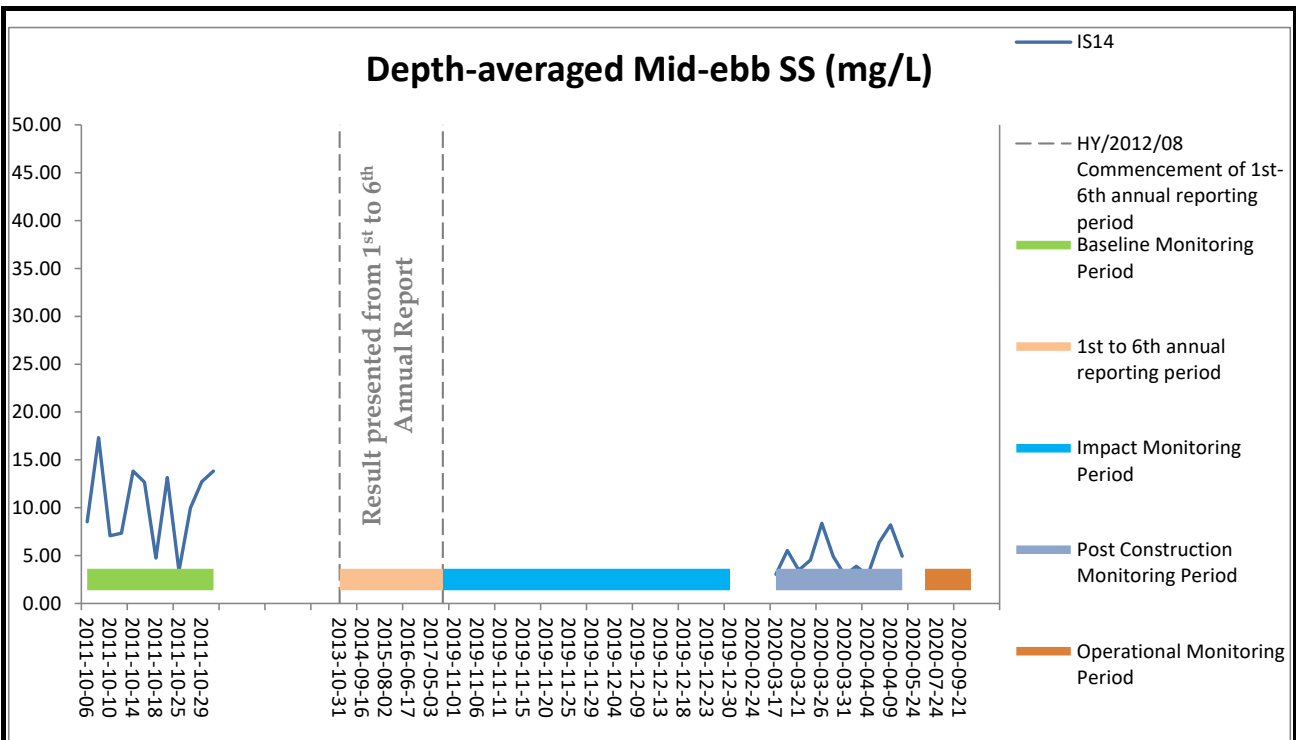


Figure E82 Baseline, Impact, Post-construction & Operational Monitoring – Mean Depth-averaged Level of Suspended Solids (mg/L) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS14. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

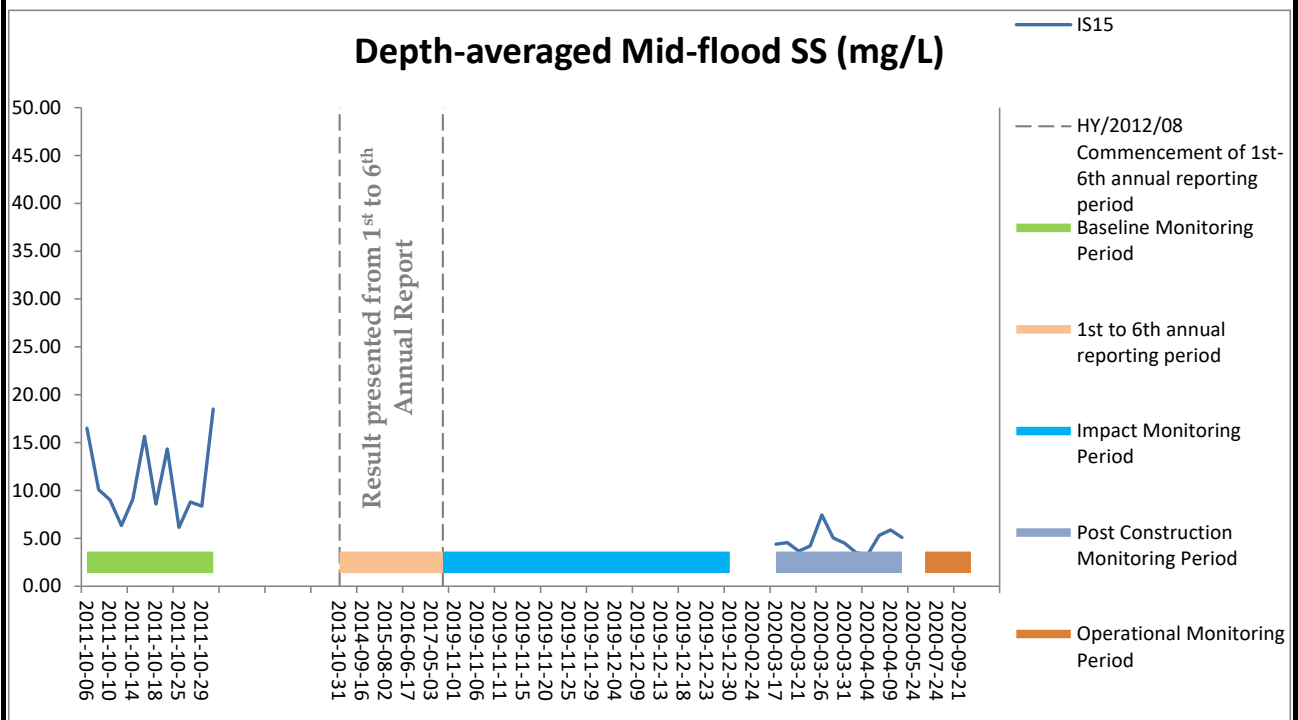
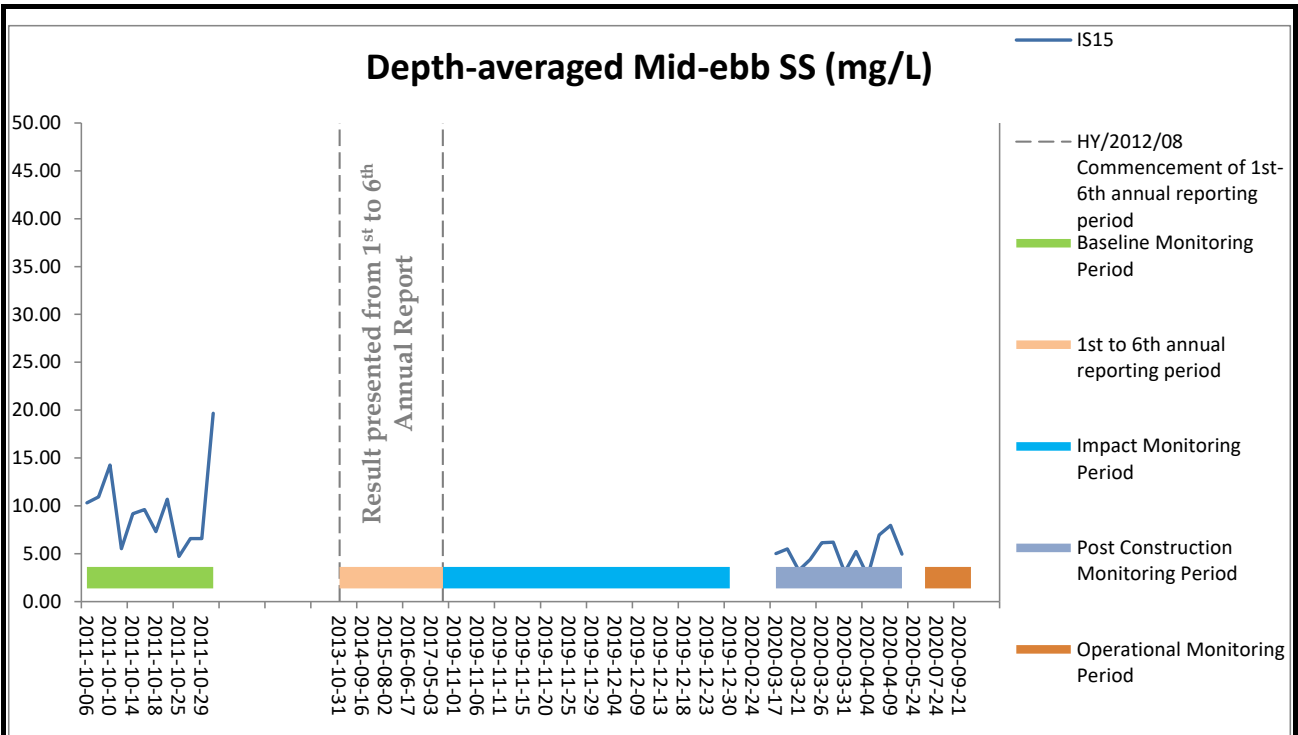


Figure E83 Baseline, Impact, Post-construction & Operational Monitoring – Mean Depth-averaged Level of Suspended Solids (mg/L) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS15. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

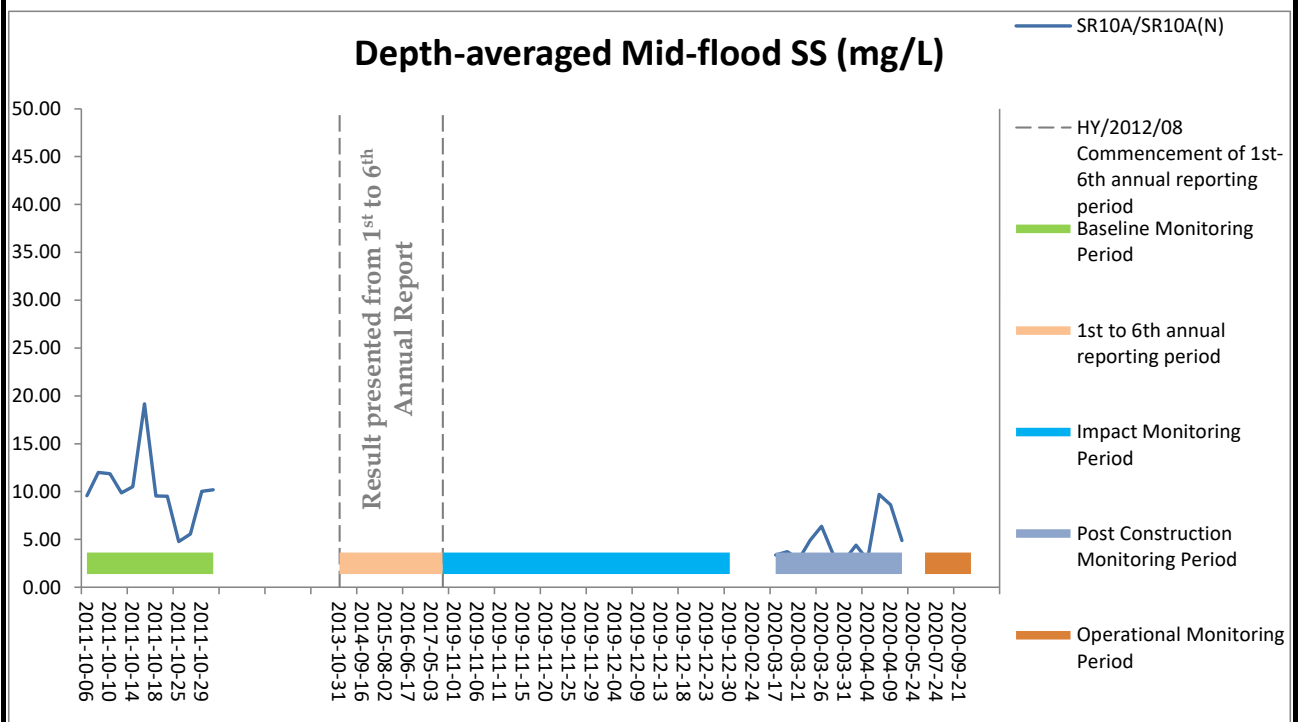
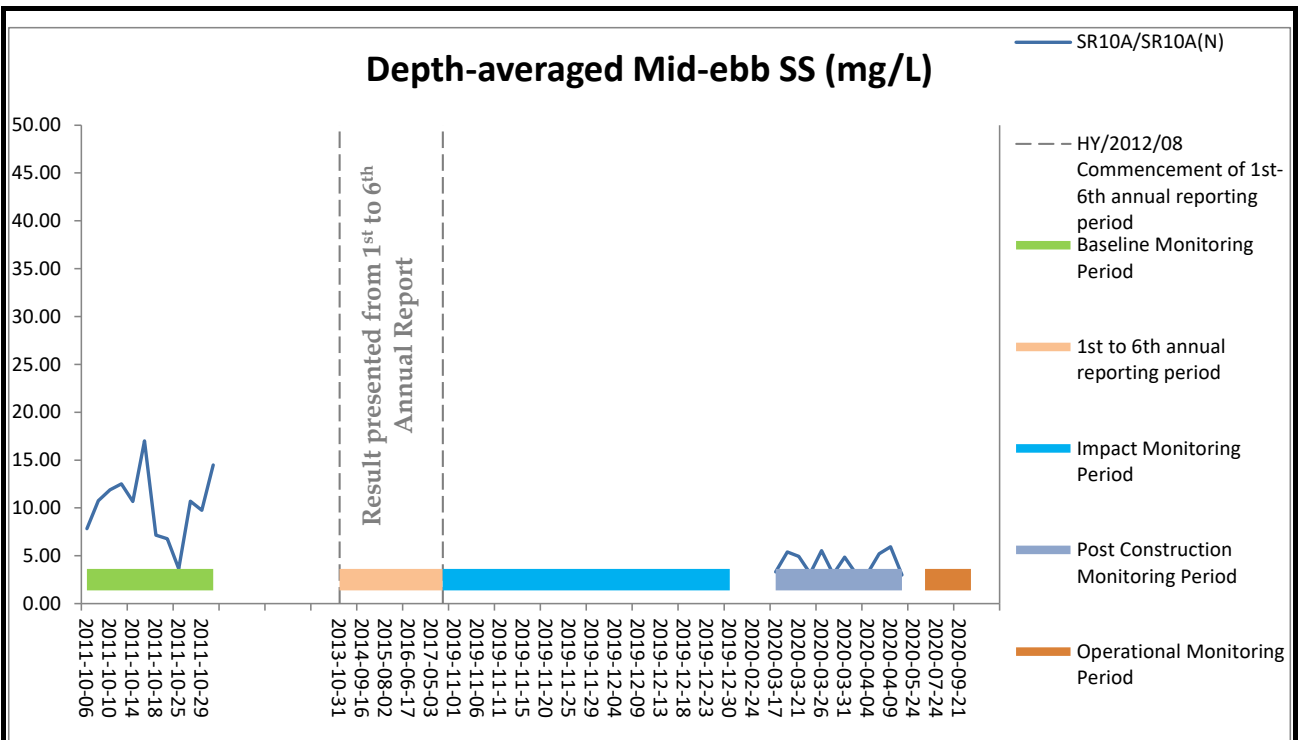


Figure E84 Baseline, Impact, Post-construction & Operational Monitoring – Mean Depth-averaged Level of Suspended Solids (mg/L) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at SR10A/SR10A(N). Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

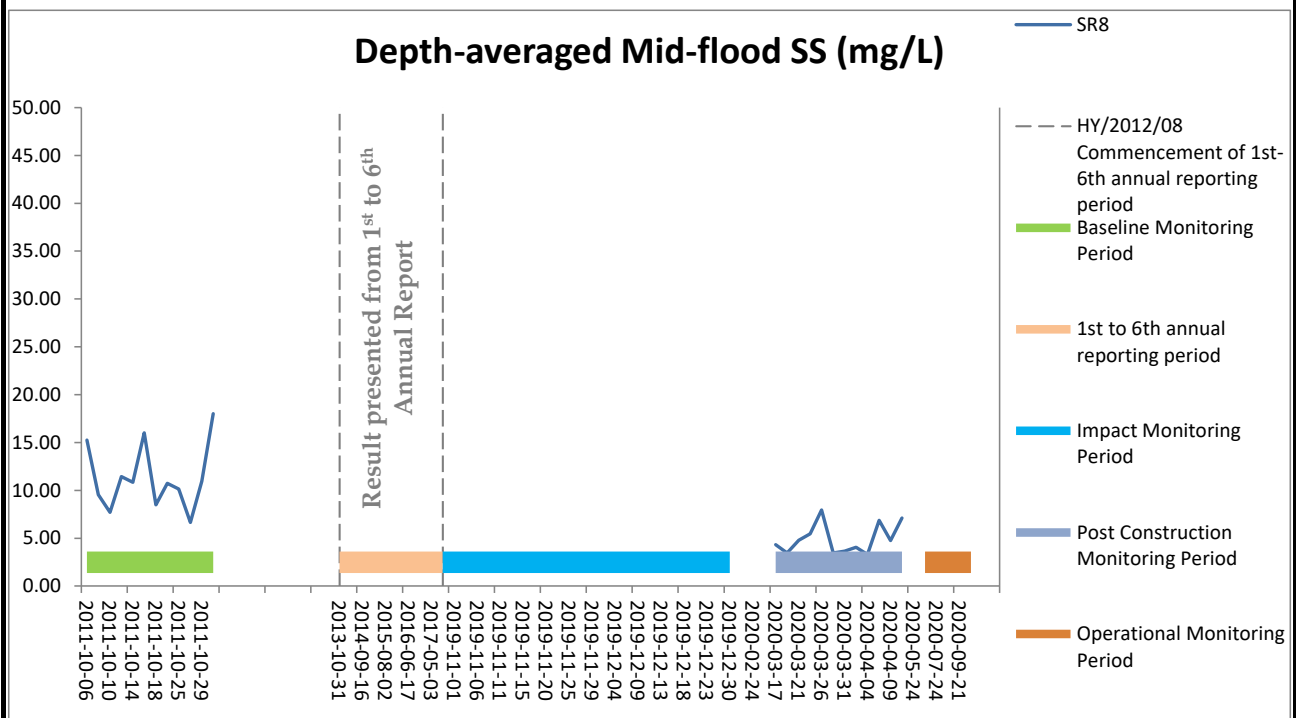
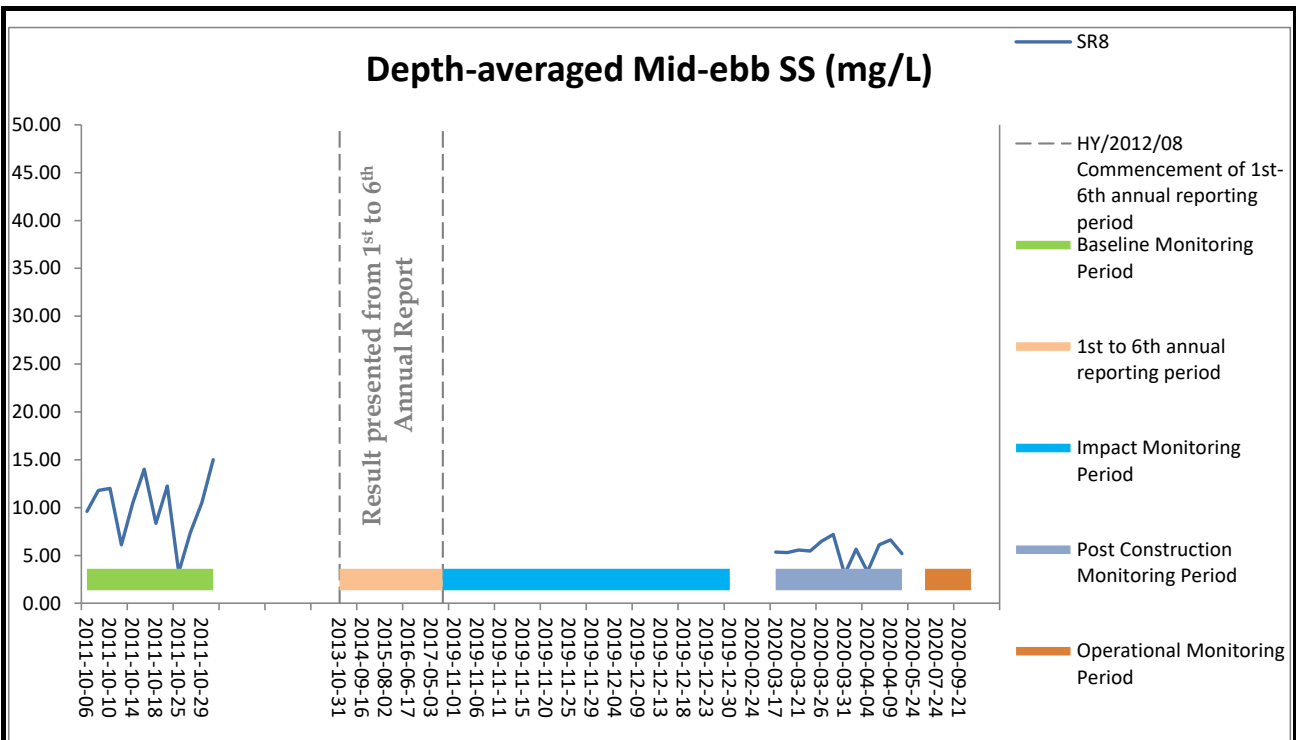


Figure E85 Baseline, Impact, Post-construction & Operational Monitoring – Mean Depth-averaged Level of Suspended Solids (mg/L) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at SR8. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

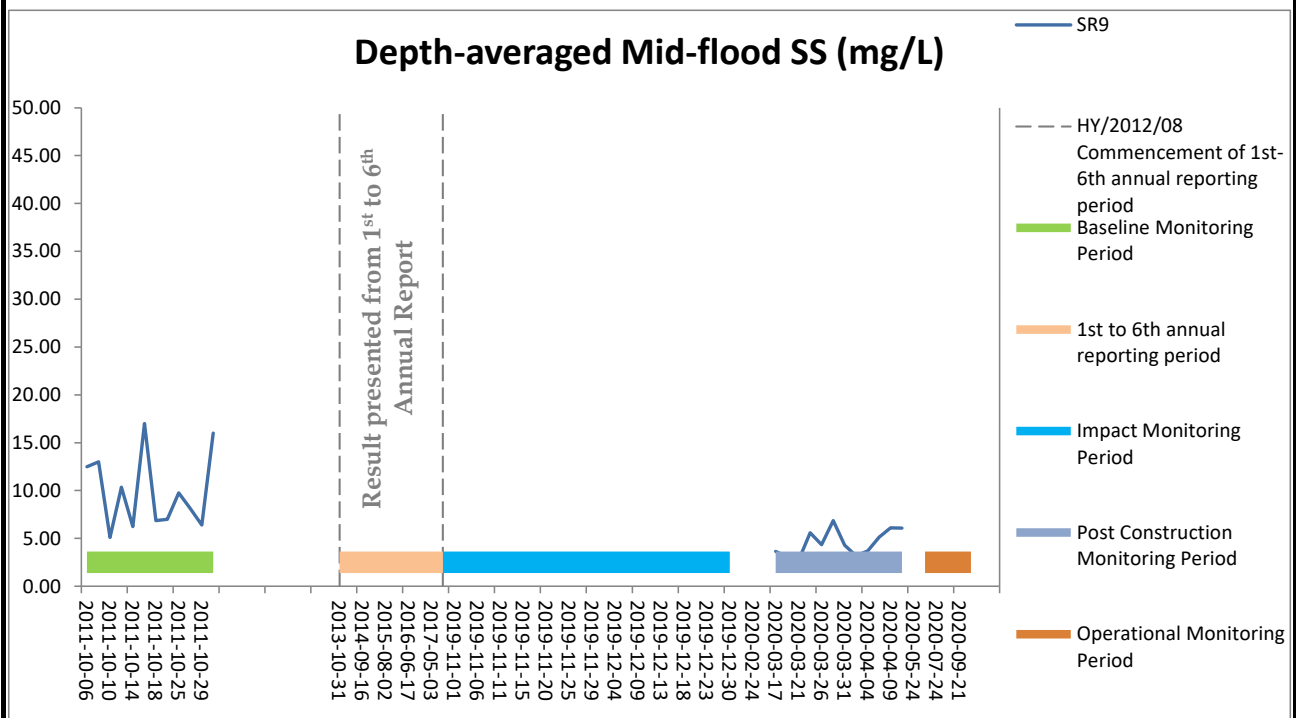
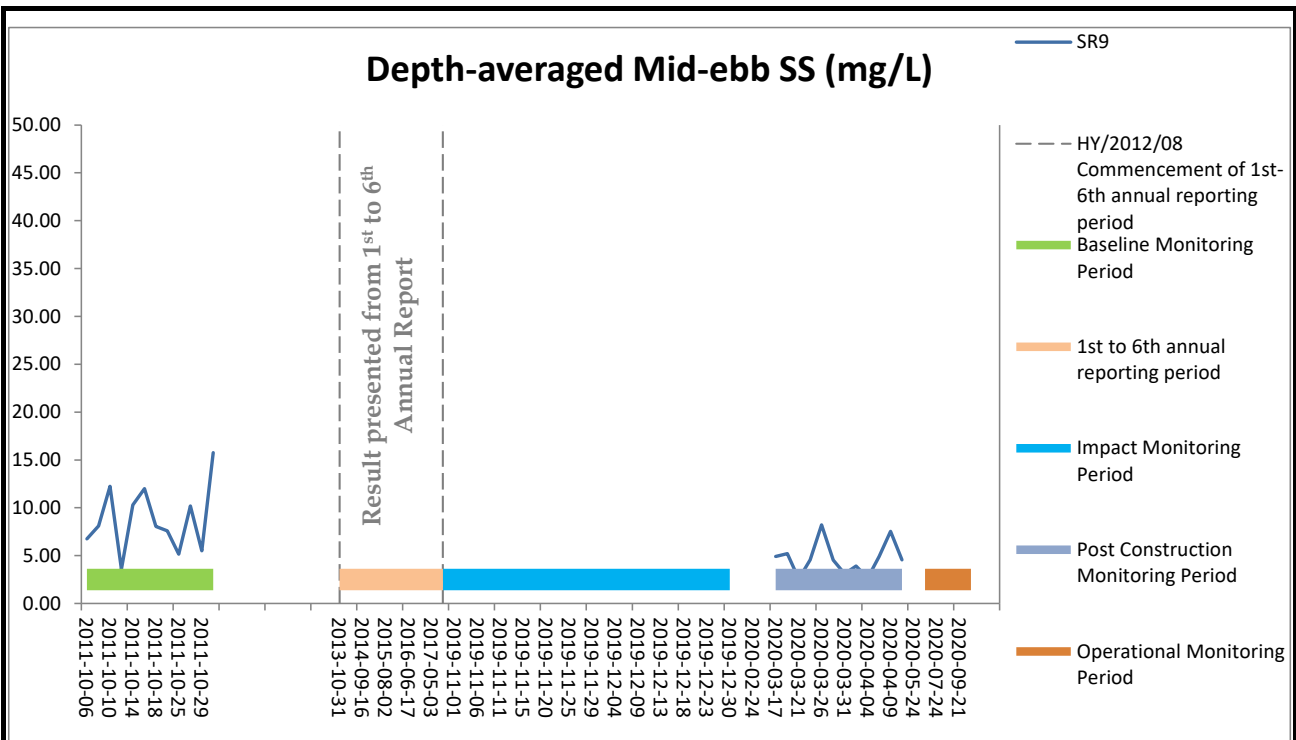


Figure E86 Baseline, Impact, Post-construction & Operational Monitoring – Mean Depth-averaged Level of Suspended Solids (mg/L) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at SR9. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

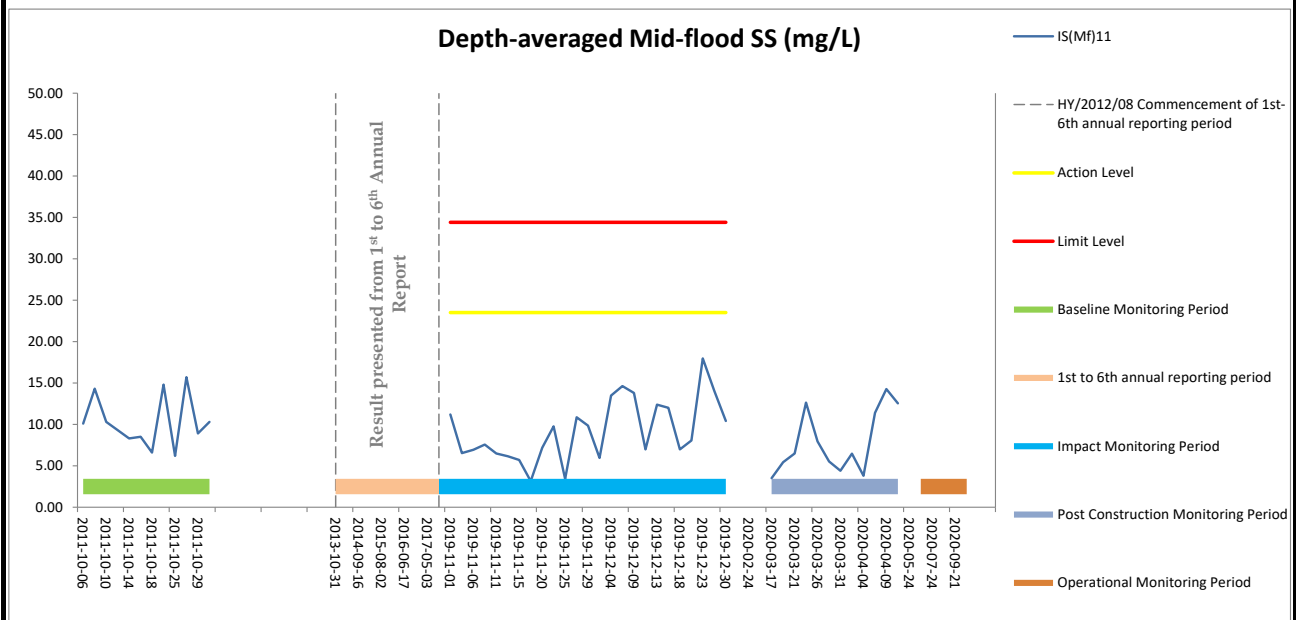
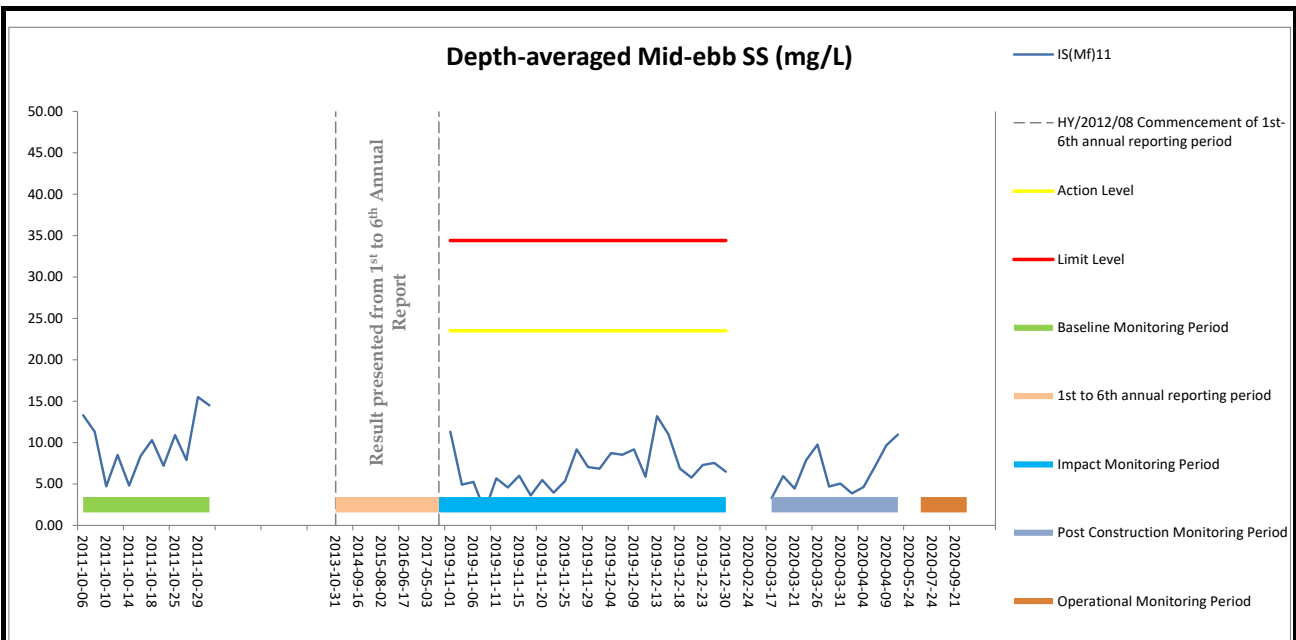


Figure E87 Baseline, Impact, Post-construction & Operational Monitoring – Mean Depth-averaged Level of Suspended Solids (mg/L) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS(Mf)11. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

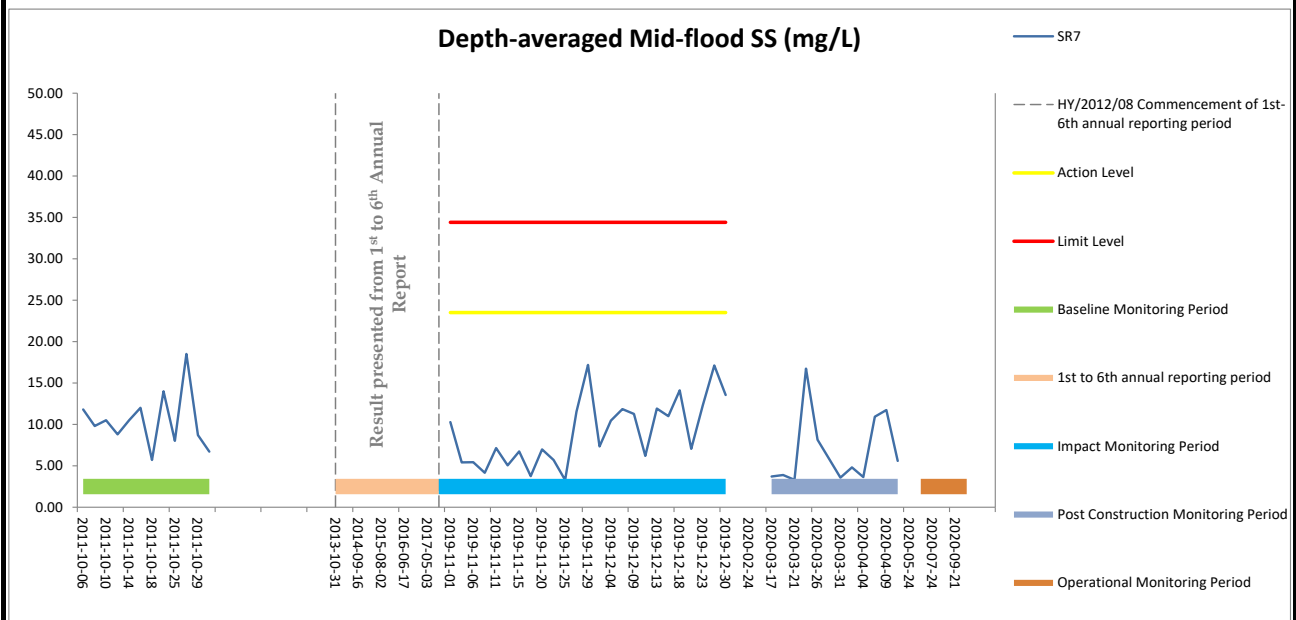
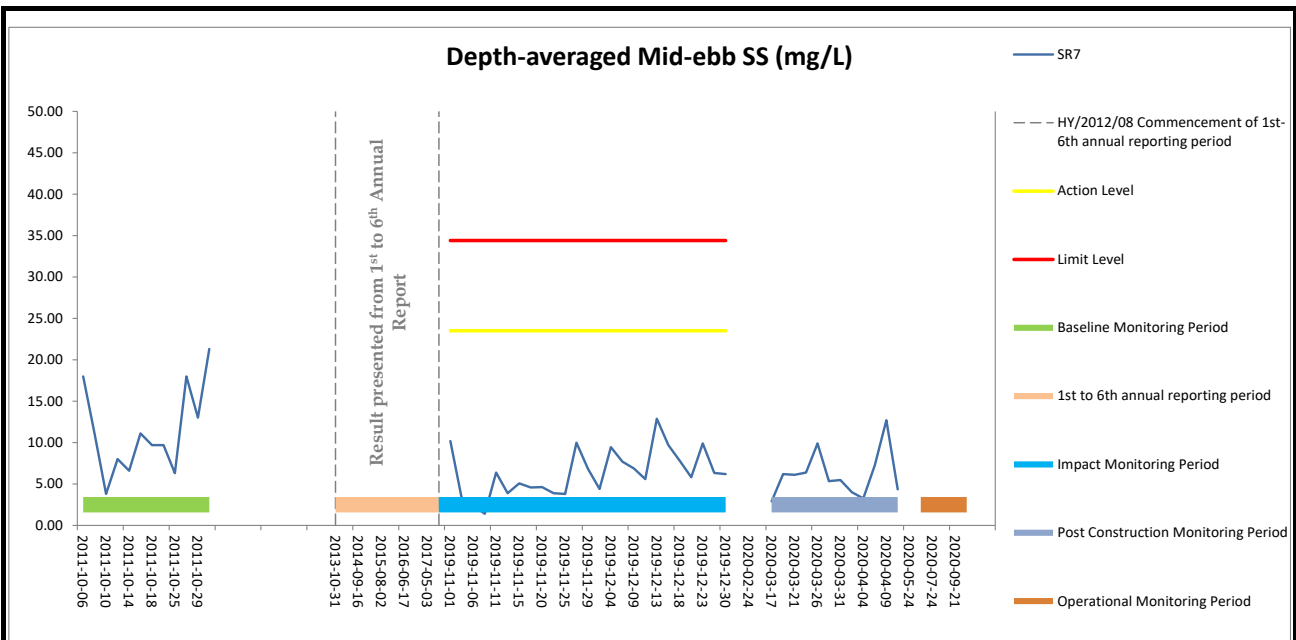


Figure E88 Baseline, Impact, Post-construction & Operational Monitoring – Mean Depth-averaged Level of Suspended Solids (mg/L) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at SR7. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

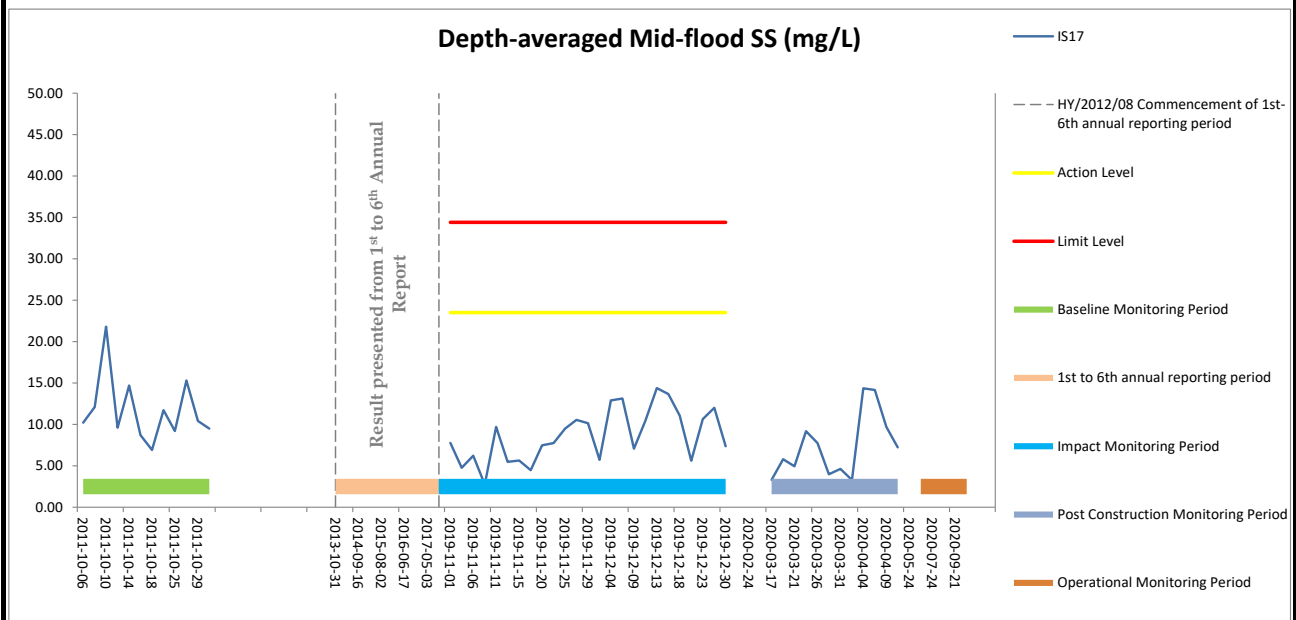
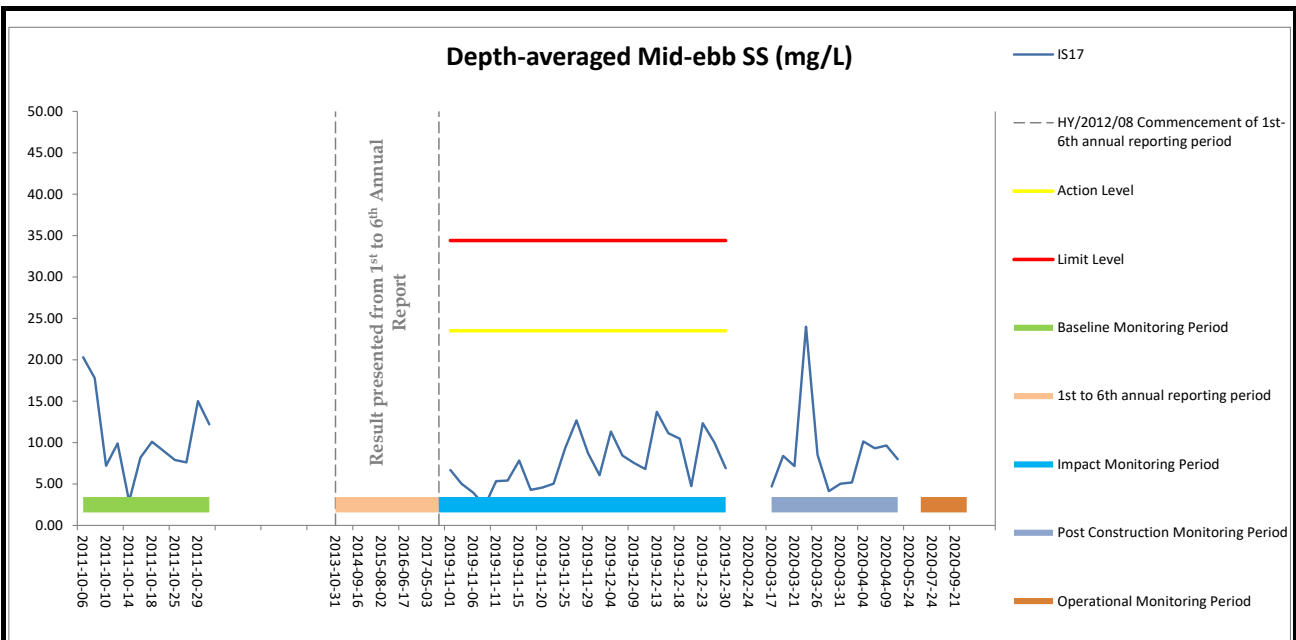


Figure E89 Baseline, Impact, Post-construction & Operational Monitoring – Mean Depth-averaged Level of Suspended Solids (mg/L) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS17. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

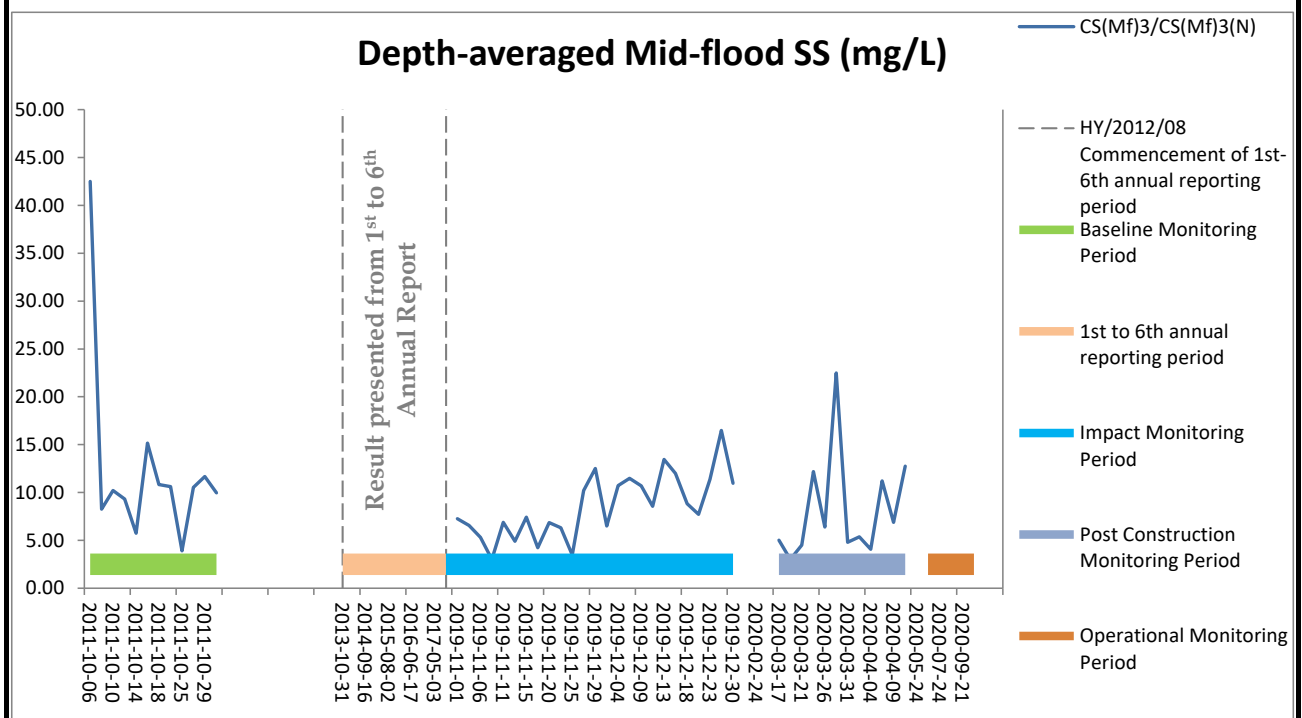
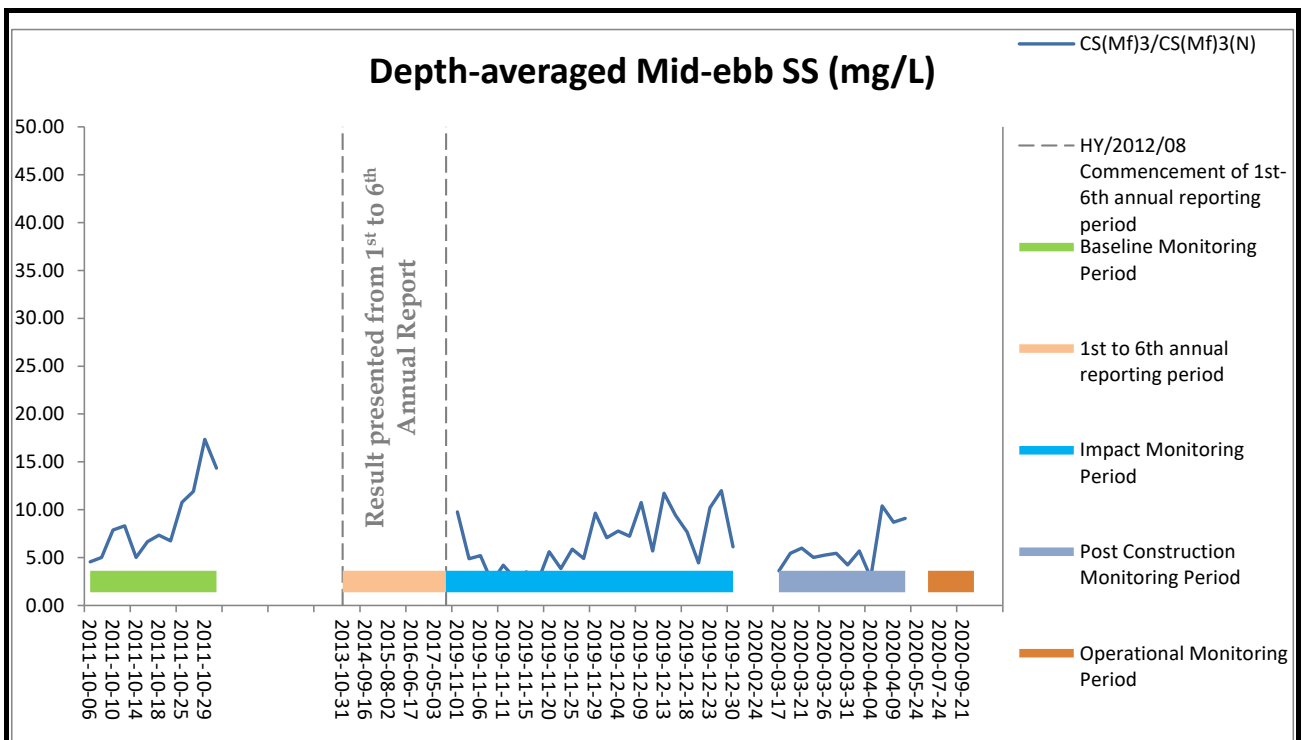


Figure E90 Baseline, Impact, Post-construction & Operational Monitoring – Mean Depth-averaged Level of Suspended Solids (mg/L) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at CS(Mf)3/CS(Mf)3(N). Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

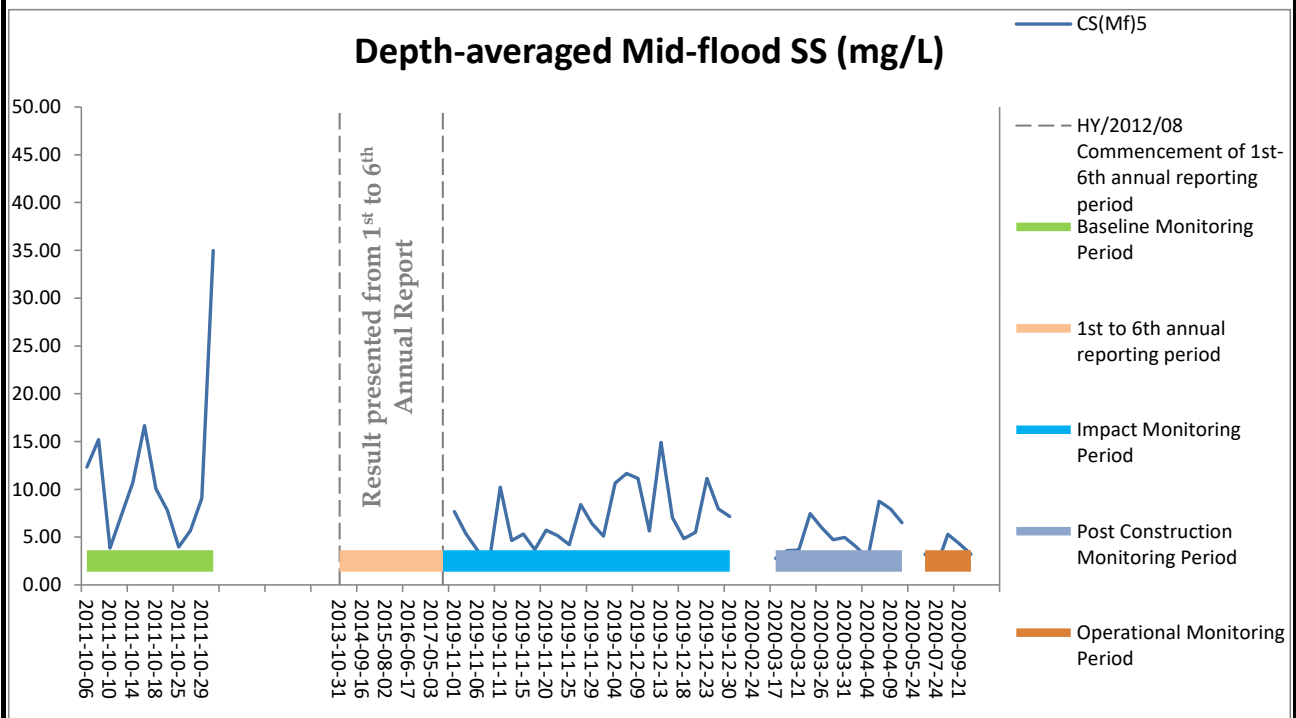
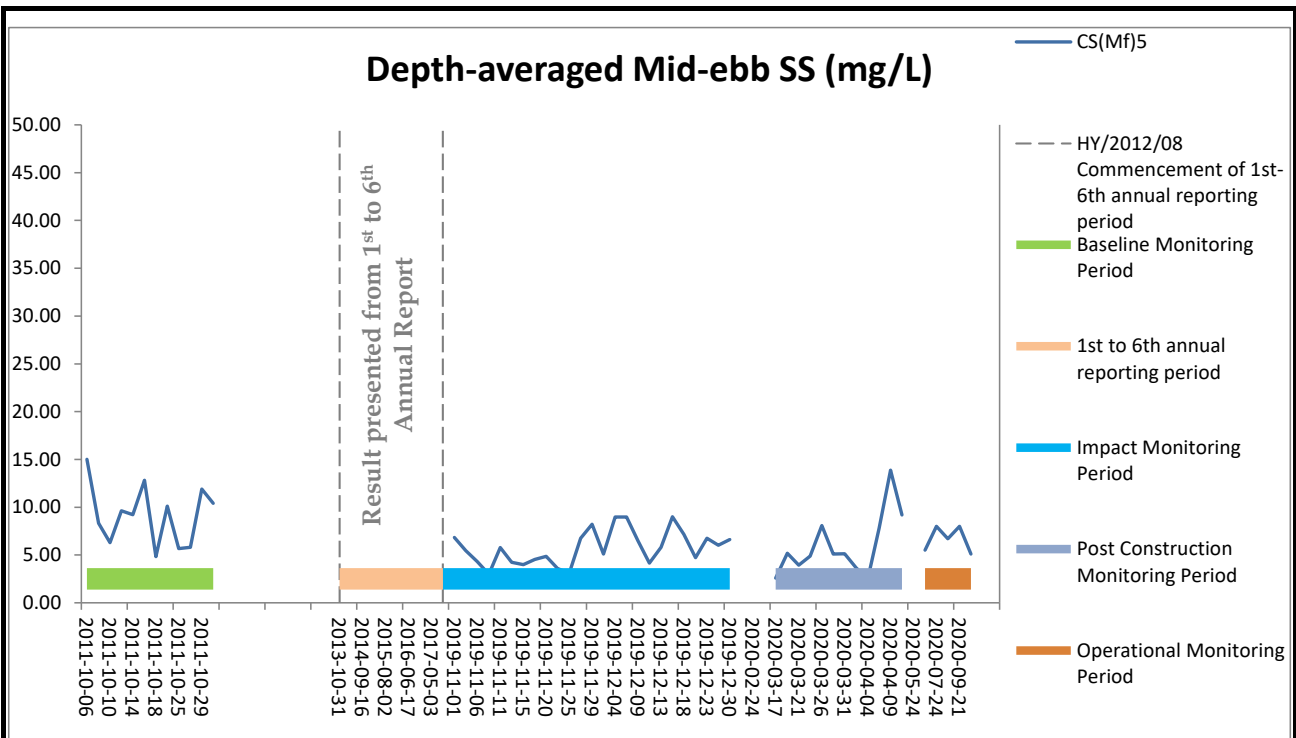


Figure E91 Baseline, Impact, Post-construction & Operational Monitoring – Mean Depth-averaged Level of Suspended Solids (mg/L) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at CS(Mf)5. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

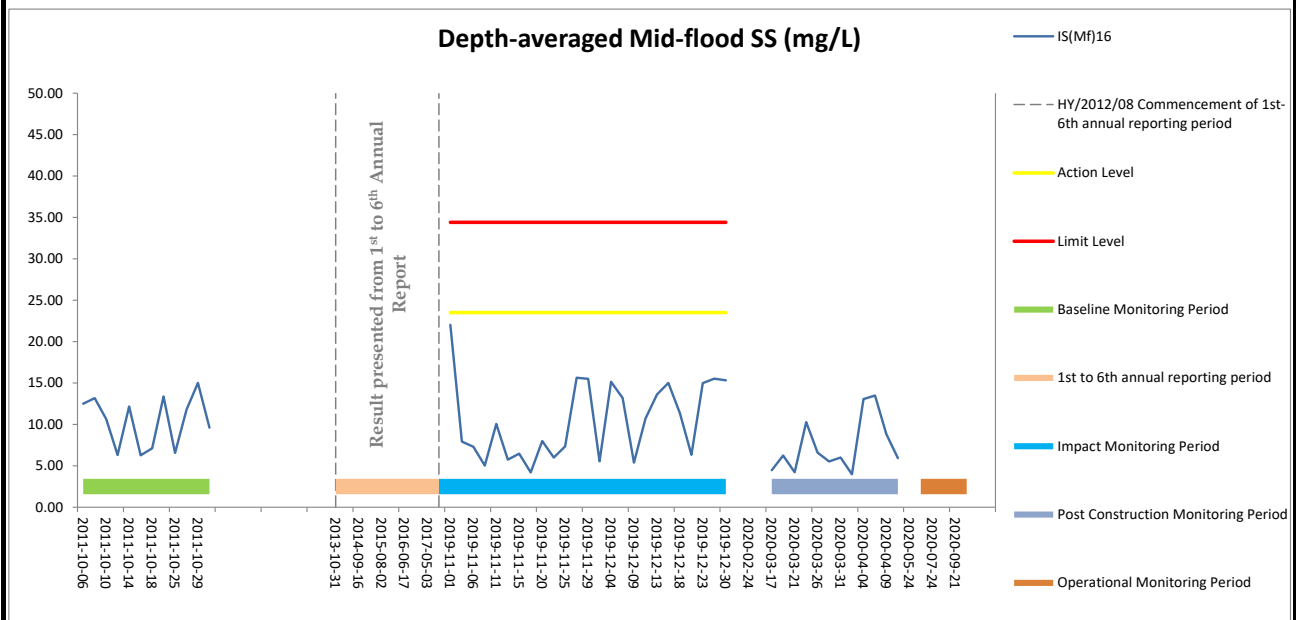
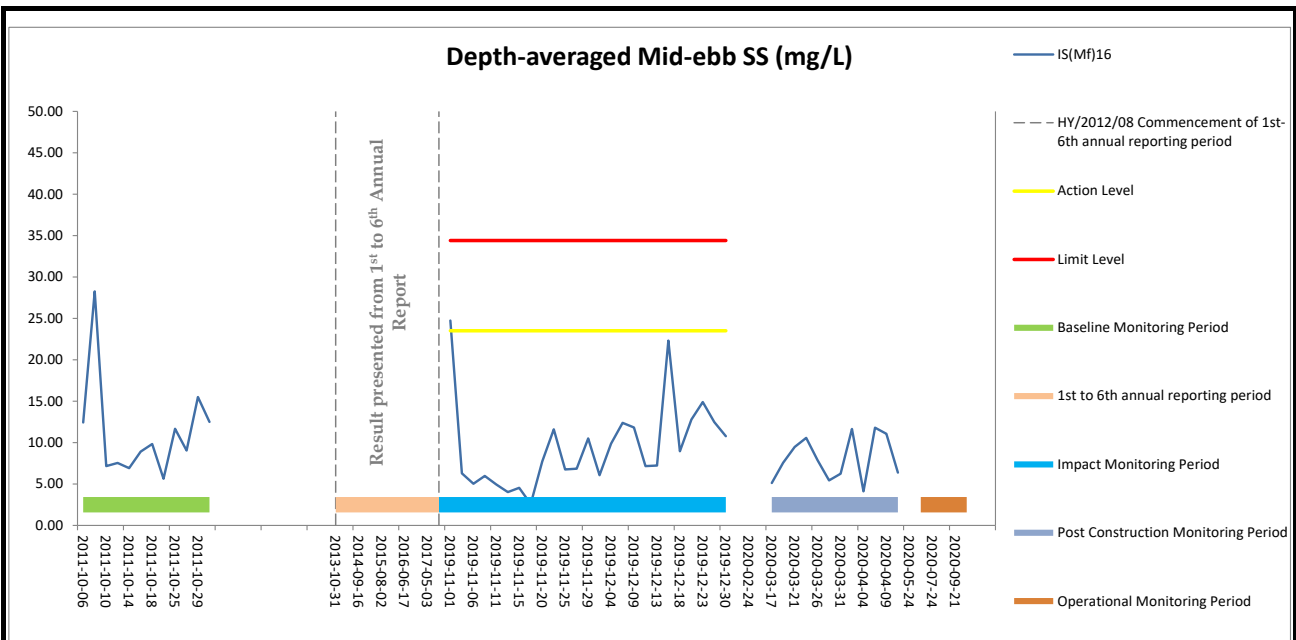


Figure E92 Baseline, Impact, Post-construction & Operational Monitoring – Mean Depth-averaged Level of Suspended Solids (mg/L) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS(Mf)16. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

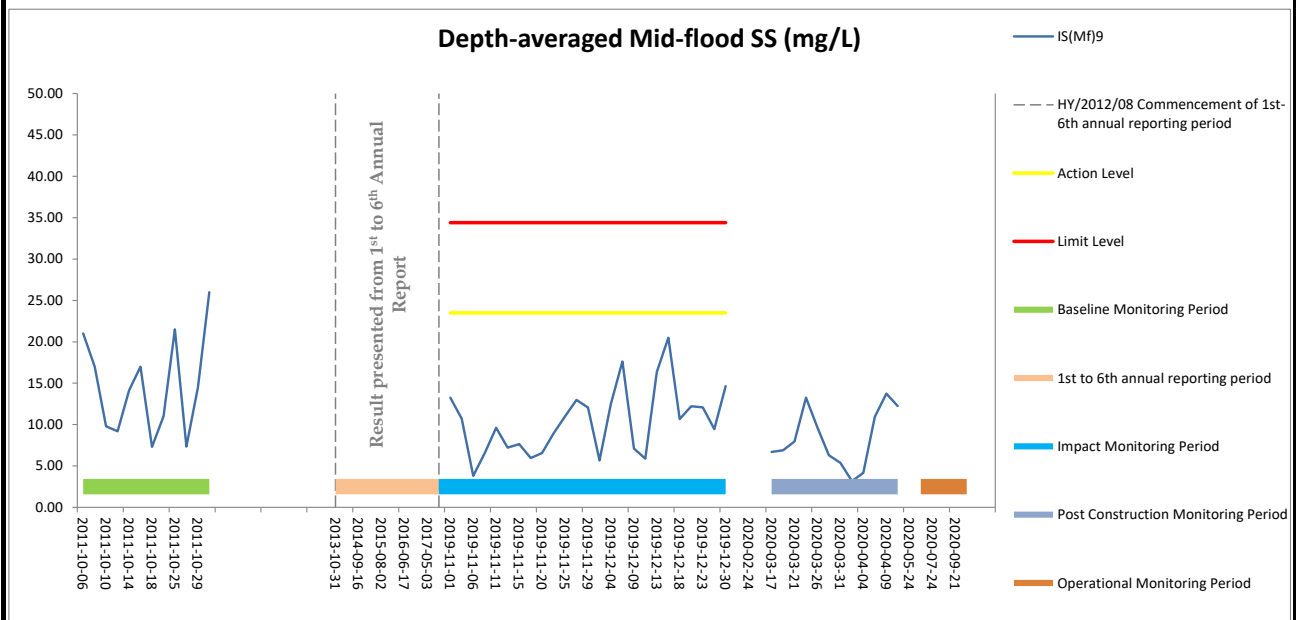
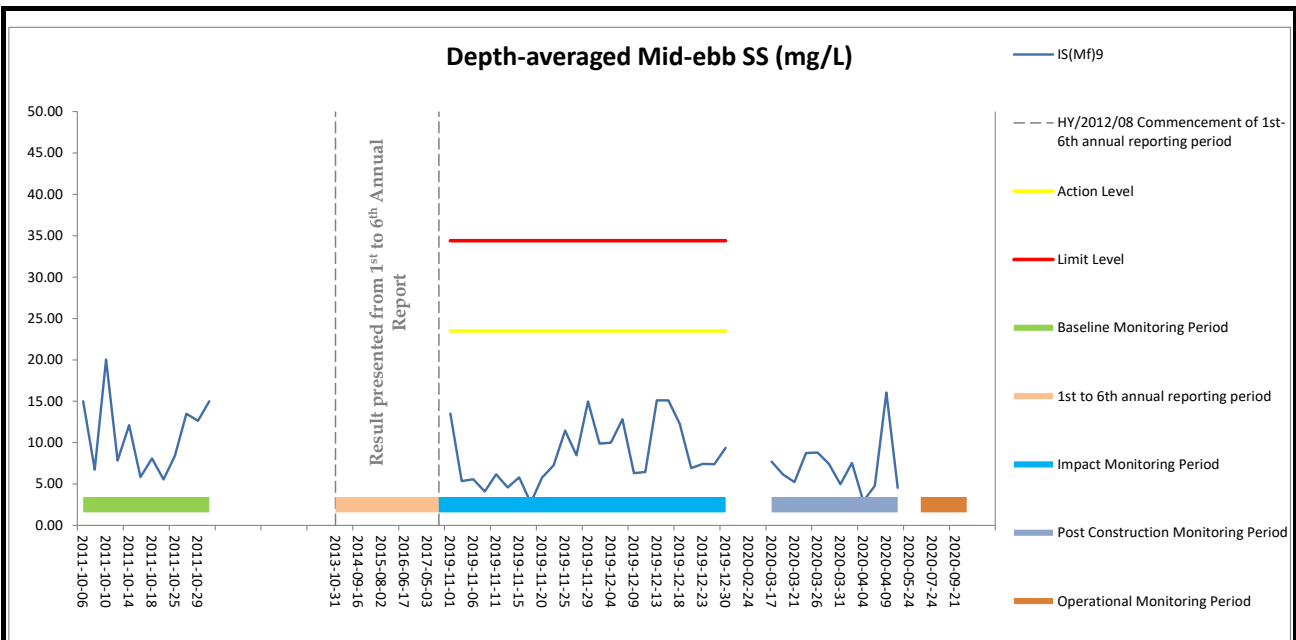


Figure E93 Baseline, Impact, Post-construction & Operational Monitoring – Mean Depth-averaged Level of Suspended Solids (mg/L) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS(Mf)9. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

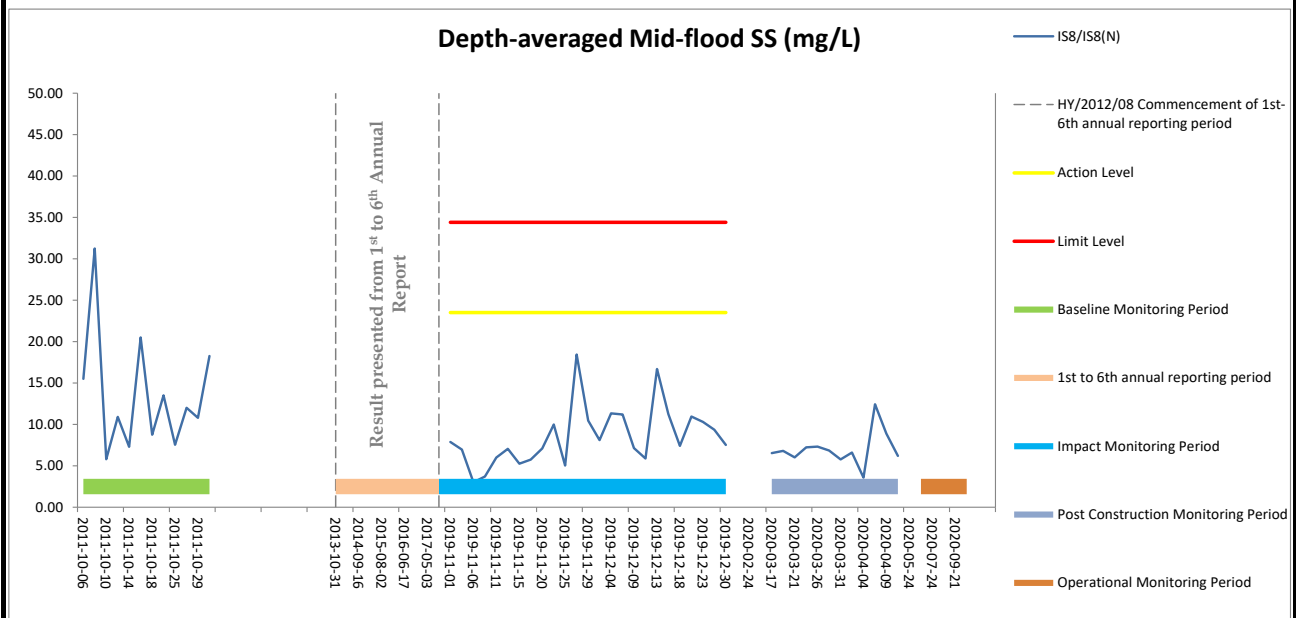
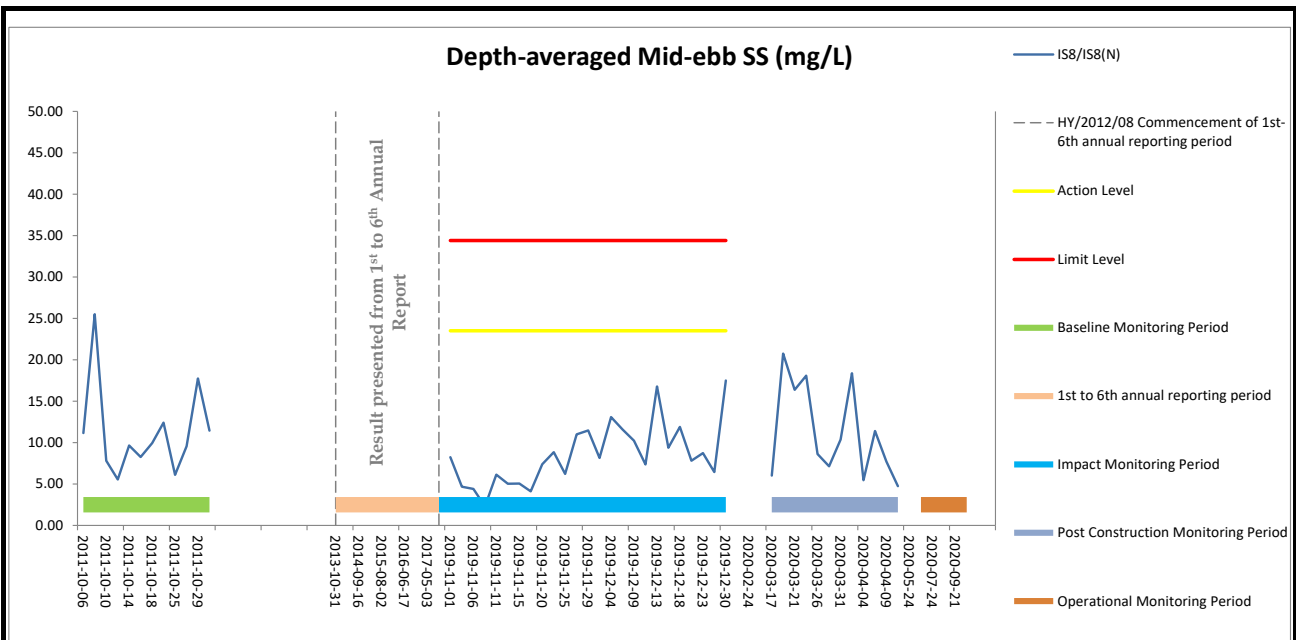


Figure E94 Baseline, Impact, Post-construction & Operational Monitoring – Mean Depth-averaged Level of Suspended Solids (mg/L) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at IS8/IS8(N). Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

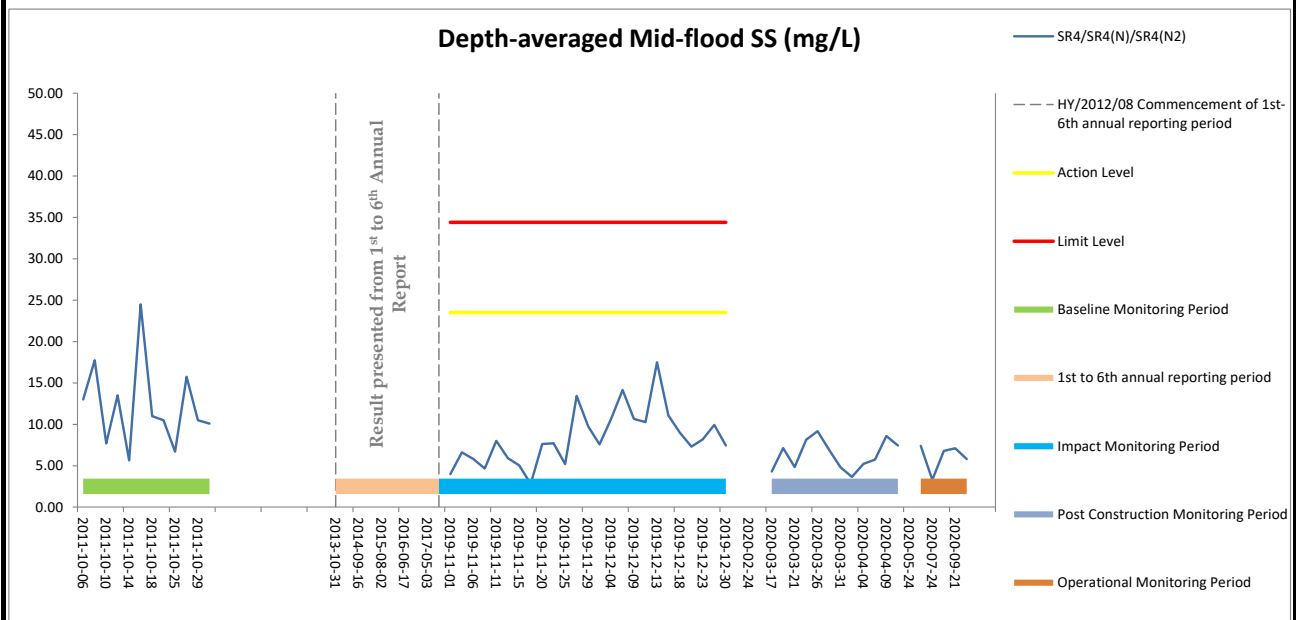
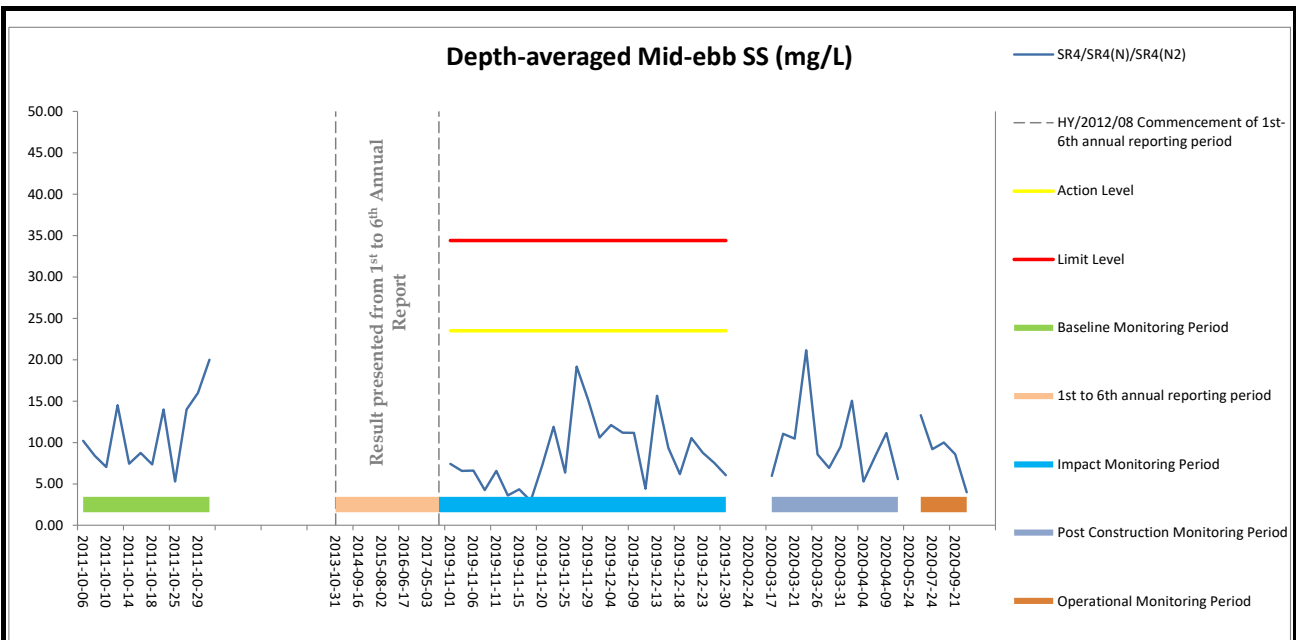


Figure E95 Baseline, Impact, Post-construction & Operational Monitoring – Mean Depth-averaged Level of Suspended Solids (mg/L) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at SR4/SR4(N)/SR4(N2). Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

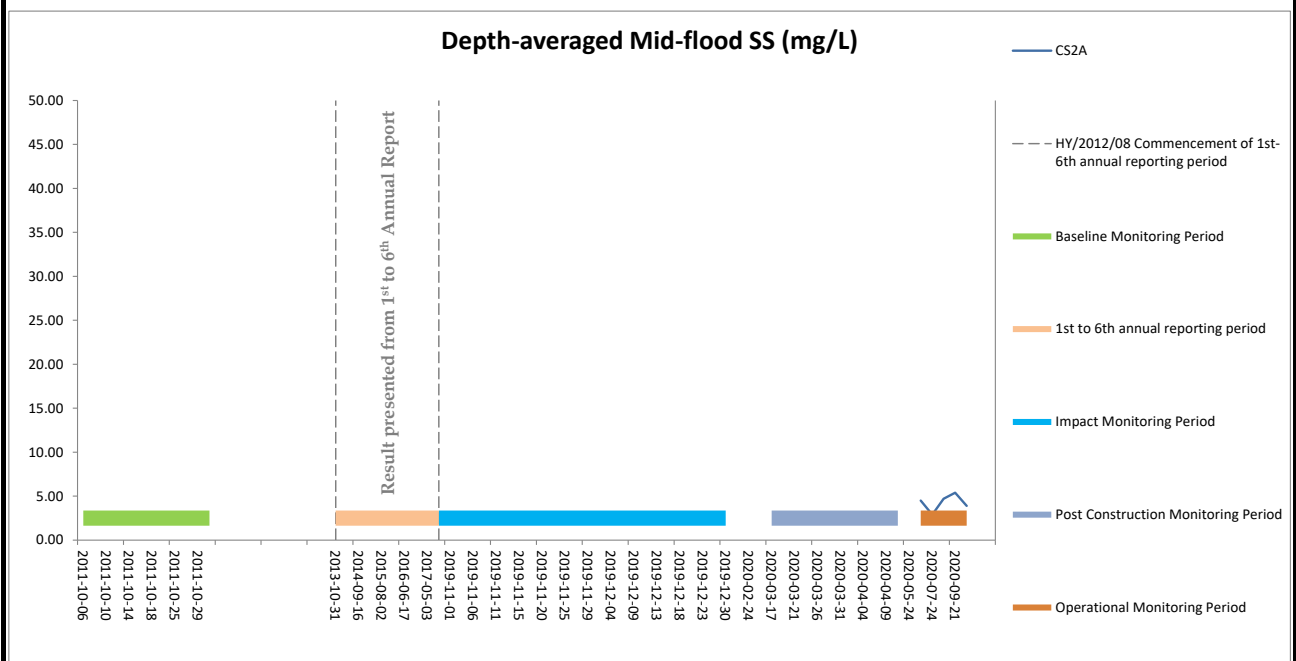
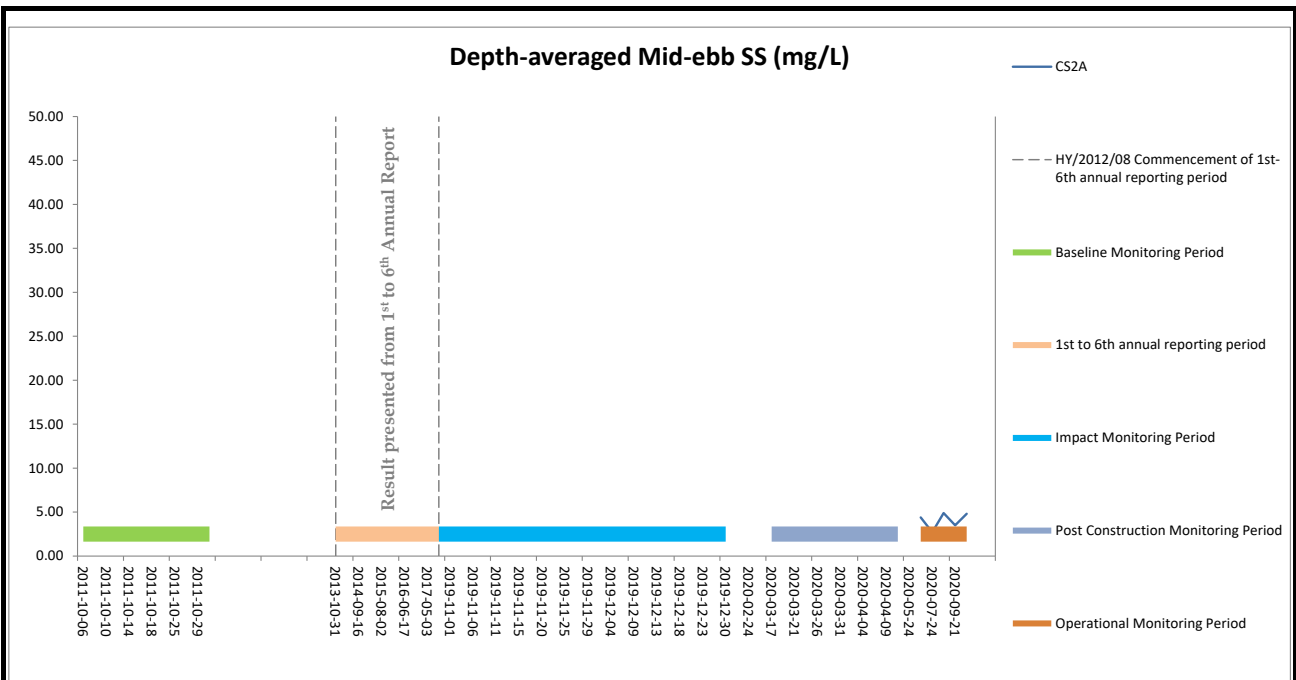


Figure E96 Baseline, Impact, Post-construction & Operational Monitoring – Mean Depth-averaged Level of Suspended Solids (mg/L) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at CS2A. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

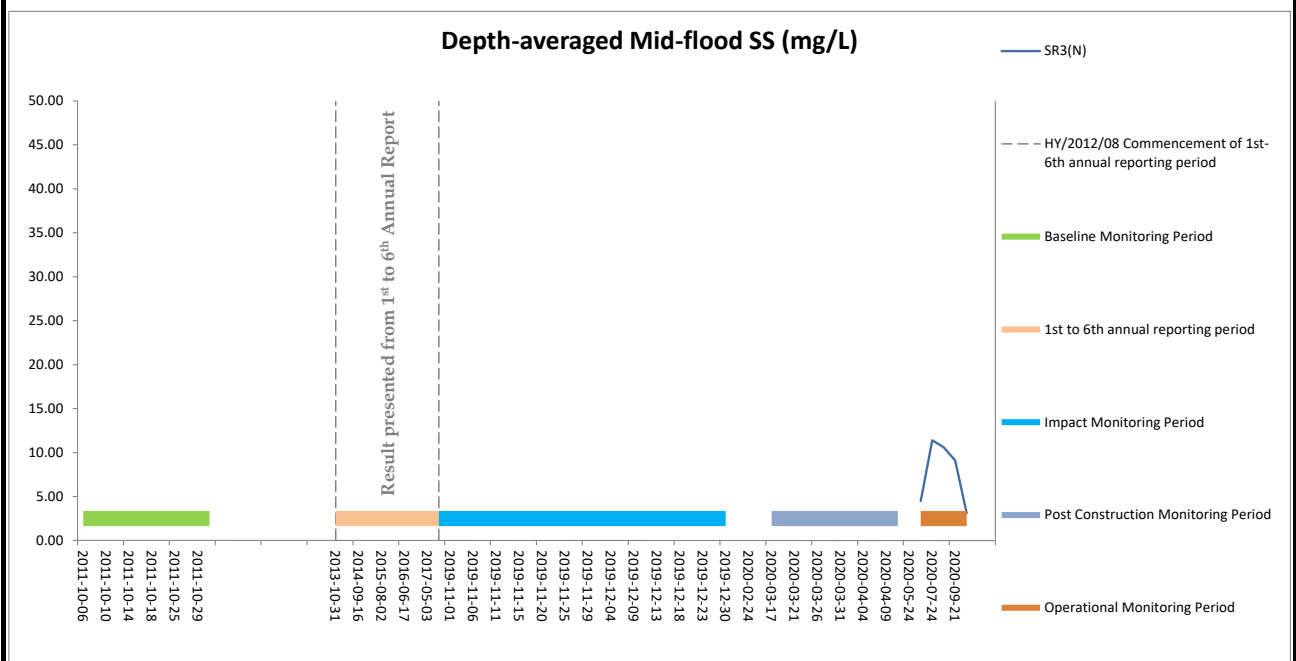
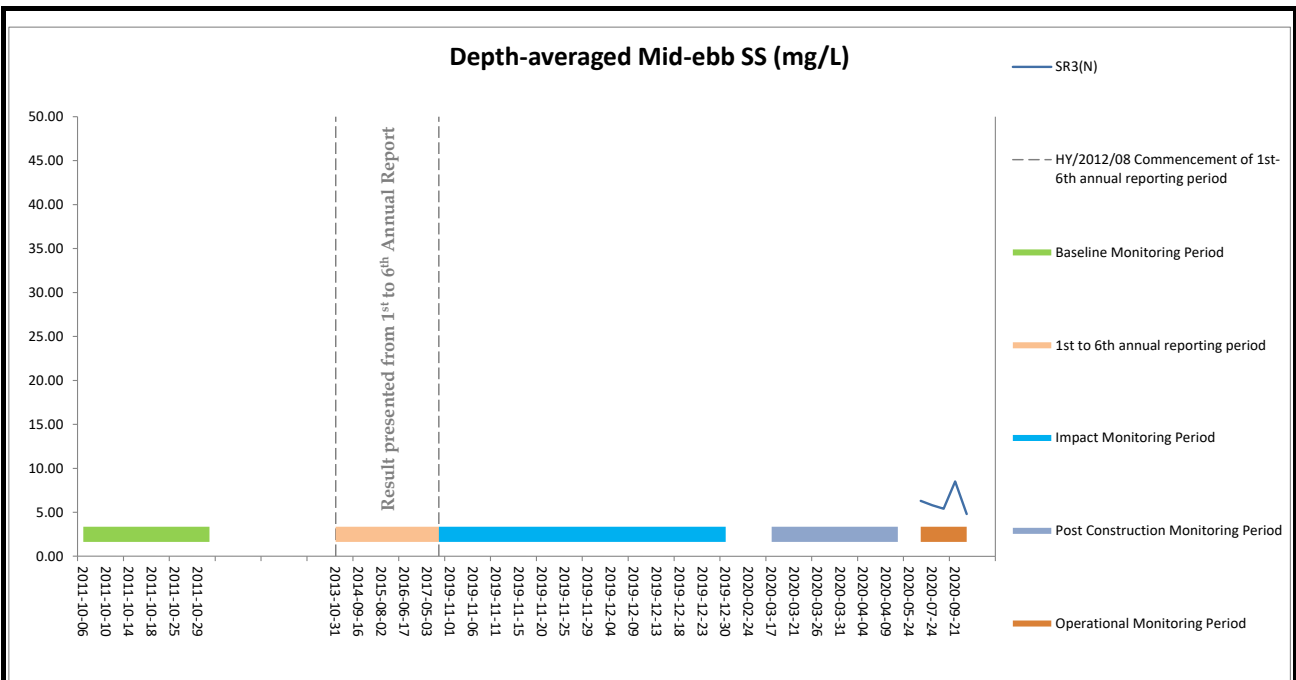


Figure E97 Baseline, Impact, Post-construction & Operational Monitoring – Mean Depth-averaged Level of Suspended Solids (mg/L) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at SR3(N). Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



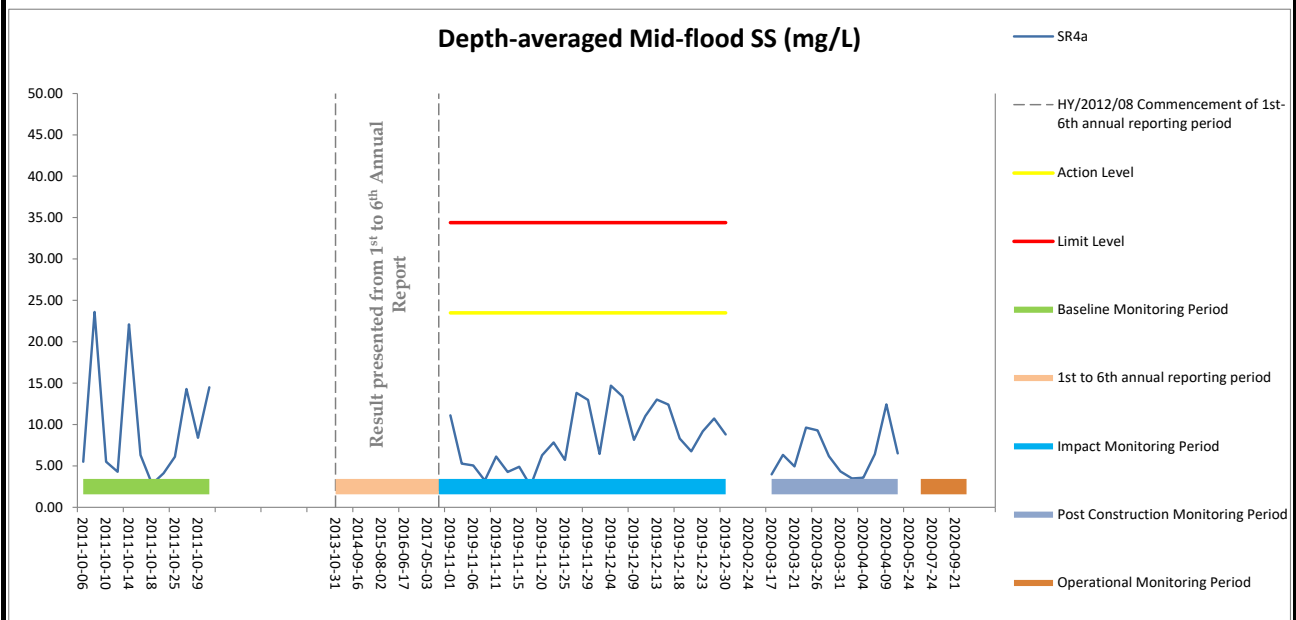
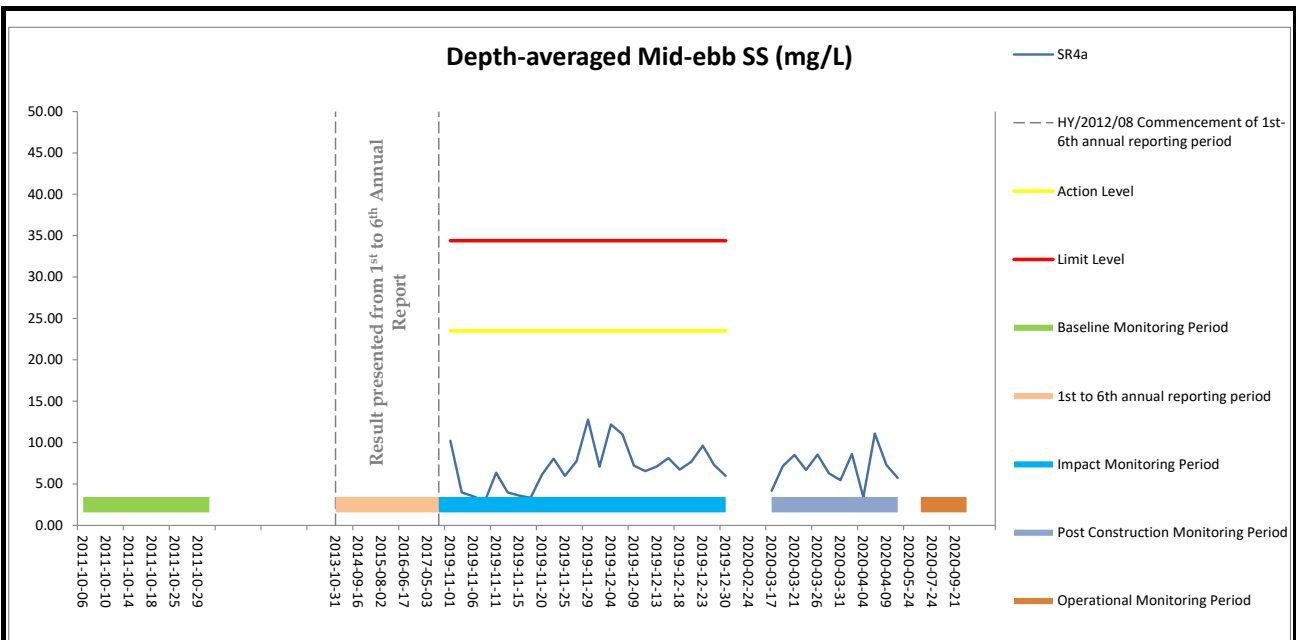


Figure E98 Baseline, Impact, Post-construction & Operational Monitoring – Mean Depth-averaged Level of Suspended Solids (mg/L) between Baseline, Impact, Post-construction & Operational Monitoring (1/11/2019 to 31/10/2020) at SR4a. Weather condition within the reporting period varied between sunny to rainy. The overall monitoring results were not affected by weather conditions. Major marine construction activities included: Seawall Modification Works at Portion S-B



Ref: 0212330_Impact-WQM_7th annual.xlsx

Appendix F

Event and Action Plan

Event and Action Plan for Impact Air Monitoring

| | Action | | | |
|--------------------------------|--|--|---|---|
| | ET (a) | IEC (a) | SOR (a) | Contractor(s) |
| Action Level Exceedance | | | | |
| | <ol style="list-style-type: none"> 1. Identify the source. 2. Repeat measurement to confirm finding. If two consecutive measurements exceed Action Level, the exceedance is then confirmed. 3. Inform the IEC and the SOR. 4. Investigate the cause of exceedance and check Contractor's working procedures to determine possible mitigation to be implemented. 5. If the exceedance is confirmed to be Project related after investigation, increase monitoring frequency to daily. 6. Discuss with the IEC and the Contractor on remedial actions required. 7. If exceedance continues, arrange meeting with the IEC and the SOR. 8. If exceedance stops, cease additional monitoring. | <ol style="list-style-type: none"> 1. Check monitoring data submitted by the ET. 2. Check the Contractor's working method. 3. If the exceedance is confirmed to be Project related after investigation, discuss with the ET and the Contractor on possible remedial measures. 4. Advise the SOR on the effectiveness of the proposed remedial measures. 5. Supervise implementation of remedial measures. | <ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing. 2. Notify the Contractor. 3. Ensure remedial measures properly implemented. | <ol style="list-style-type: none"> 1. Rectify any unacceptable practice 2. Amend working methods if appropriate 3. If the exceedance is confirmed to be Project related, submit proposals for remedial actions to IEC within 3 working days of notification 4. Implement the agreed proposals 5. Amend proposal if appropriate |

| | Action | | | |
|-------------------------------|--|--|--|---|
| | ET (a) | IEC (a) | SOR (a) | Contractor(s) |
| Limit Level Exceedance | | | | |
| | <ol style="list-style-type: none"> 1. Identify the source. 2. Repeat measurement to confirm finding. If two consecutive measurements exceed Limit Level, the exceedance is then confirmed. 3. Inform the IEC, the SOR, the DEP and the Contractor. 4. Investigate the cause of exceedance and check Contractor’s working procedures to determine possible mitigation to be implemented. 5. If the exceedance is confirmed to be Project related after investigation, increase monitoring frequency to daily. 6. Carry out analysis of the Contractor’s working procedures to determine possible mitigation to be implemented. 7. Arrange meeting with the IEC and the SOR to discuss the remedial actions to be taken. 8. Assess effectiveness of the Contractor’s remedial actions and keep the IEC, the DEP and the SOR informed of the results. 9. If exceedance stops, cease additional monitoring. | <ol style="list-style-type: none"> 1. Check monitoring data submitted by the ET. 2. Check Contractor’s working method. 3. If the exceedance is confirmed to be Project related after investigation, discuss with the ET and the Contractor on possible remedial measures. 4. Advise the SOR on the effectiveness of the proposed remedial measures. 5. Supervise implementation of remedial measures. | <ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing. 2. Notify the Contractor. 3. If the exceedance is confirmed to be Project related after investigation, in consultation with the IEC, agree with the Contractor on the remedial measures to be implemented. 4. Ensure remedial measures are properly implemented. 5. If exceedance continues, consider what activity of the work is responsible and instruct the Contractor to stop that activity of work until the exceedance is abated. | <ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance. 2. If the exceedance is confirmed to be Project related after investigation, submit proposals for remedial actions to IEC within 3 working days of notification. 3. Implement the agreed proposals. 4. Amend proposal if appropriate. 5. Stop the relevant activity of works as determined by the SOR until the exceedance is abated. |

Note: (a) ET – Environmental Team; IEC – Independent Environmental Checker; SOR – Supervising Officer’s Representative

Event & Action Plan for Impact Water Quality Monitoring

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

| Event | ET Leader | IEC | SOR | Contractor |
|---|---|--|---|--|
| | <ol style="list-style-type: none"> 2. Identify source(s) of impact; 3. Inform IEC, Contractor, SOR and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, SOR and Contractor; | <ol style="list-style-type: none"> Contractor's working method; 2. Discuss with ET and Contractor on possible remedial actions; 3. Review the proposed mitigation measures submitted by Contractor and advise the SOR accordingly. | <ol style="list-style-type: none"> writing; 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 3. Request Contractor to review the working methods. | <ol style="list-style-type: none"> non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment and consider changes of working methods; 4. Submit proposal of mitigation measures to SOR within 3 working days of notification and discuss with ET, IEC and SOR. |
| Limit level being exceeded by two or more consecutive sampling days | <ol style="list-style-type: none"> 1. Repeat measurement on next day of exceedance to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, contractor, SOR and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, SOR and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days; | <ol style="list-style-type: none"> 1. Check monitoring data submitted by ET and Contractor's working method; 2. Discuss with ET and Contractor on possible remedial actions; 3. Review the Contractor's mitigation measures whenever necessary to assure their effectiveness and advise the SOR accordingly; 4. Supervise the implementation of mitigation measures. | <ol style="list-style-type: none"> 1. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Ensure mitigation measures are properly implemented; 5. 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. | <ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposal of mitigation measures to SOR within 3 working days of notification and discuss with ET, IEC and SOR; 3. Implement the agreed mitigation measures; 4. Resubmit proposals of mitigation measures if problem still not under control; 5. As directed by the Supervising Officer, to slow down or to stop all or part of the construction activities until no exceedance of Limit level. |

Note: ET – Environmental Team, IEC – Independent Environmental Checker, SOR – Supervising Officer's Representative

Event / Action Plan for Impact Dolphin Monitoring

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

| EVENT | ACTION | | | |
|-------|--|--|---|--|
| | ET | IEC | SOR | Contractor |
| | <ol style="list-style-type: none"> 3. Identify source(s) of impact; 4. Inform the IEC, SOR and Contractor of findings; 5. Check monitoring data; 6. Repeat review to ensure all the dolphin protective measures are fully and properly implemented and advise on additional measures if necessary. 7. If ET proves that the source of impact is caused by any of the construction activity by the works contract, ET to arrange a meeting to discuss with IEC, 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. | <p>Contractor the necessity of additional dolphin monitoring and any other potential mitigation measures.</p> <ol style="list-style-type: none"> 4. Review proposals for additional monitoring and any other mitigation measures submitted by ET and Contractor and advise SOR of the results and findings accordingly. 5. Supervise / Audit the implementation of additional monitoring and/or any other mitigation measures and advise SOR the results and findings accordingly. | <p>proposals for additional dolphin monitoring and/or any other mitigation measures submitted by ET and Contractor and verified by IEC, SOR to signify the agreement in writing on such proposals and any other mitigation measures.</p> <ol style="list-style-type: none"> 3. Supervise the implementation of additional monitoring and/or any other mitigation measures. | <p>potential mitigation measures.</p> <ol style="list-style-type: none"> 3. Jointly submit with ET to IEC a proposal of additional dolphin monitoring and/or any other mitigation measures when necessary. 4. Implement the agreed additional dolphin monitoring and/or any other mitigation measures. |

Note: ET – Environmental Team, IEC – Independent Environmental Checker, SOR – Supervising Officer’s Representative

Appendix G

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

Table G1 *Cumulative Statistics on Exceedances*

| Monitoring Parameters | Action/Limit Level | Total No. recorded in this reporting year (Nov 2019 to Oct 2020) | Total No. recorded since Contract commencement |
|--|---------------------------|---|---|
| 1-Hr TSP | Action | 20 | 116 |
| | Limit | 6 | 14 |
| 24-Hr TSP | Action | 0 | 10 |
| | Limit | 0 | 4 |
| Water Quality | Action | 0 | 167 |
| | Limit | 0 | 19 |
| Impact Dolphin Monitoring | Action | 0 | 11 |
| | Limit | 3 | 19 |
| Post Construction (Operational) Dolphin Monitoring | Action | 0 | 0 |
| | Limit | 1 | 1 |

Table G2 *Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions*

| Reporting Period | Cumulative Statistics | | |
|--|------------------------------|---------------------------------|--------------------------------|
| | Complaints | Notifications of Summons | Successful Prosecutions |
| This Reporting Period (Nov 2019 to Oct 2020) | 0 | 0 | 0 |
| Total No. received since Contract commencement | 17 | 1 | 0 |

Appendix H

Waste Flow Table

Monthly Summary Waste Flow Table

Name of Department: HyD

Contract No. / Works Order No.: HY/2012/08

Monthly Summary Waste Flow Table for December 2019 [to be submitted not later than the 15th day of each month following reporting month] (All quantities shall be rounded off to 3 decimal places.)

| Month | Monthly Break-down of <u>Inert</u> Construction & Demolition Materials (i.e. Public Fill Materials) | | | | |
|--------------------------|---|--|-------------------------------|---------------------------------|-----------------------------------|
| | (a)=(b)+(c)+(d)+(e) Total Quantity Generated | (b) Hard Rock and Large Broken Concrete | (c) Reused in the Contract | (d) Reused in other Projects | (e) Disposed of as Public Fill |
| | (in '000 ton) | (in '000 ton) | (in '000 ton) | (in '000 ton) | (in '000 ton) |
| Sub-total | 2224.407 | 0.000 | 76.754 | 585.369 | 1562.284 |
| Jan-2019 | 299.831 | 0.000 | 53.419 | 215.427 | 30.985 |
| Feb-2019 | 133.335 | 0.000 | 46.021 | 67.707 | 19.607 |
| Mar-2019 | 120.224 | 0.000 | 50.455 | 20.964 | 48.805 |
| Apr-2019 | 130.329 | 0.000 | 58.956 | 0.000 | 71.373 |
| May-2019 | 67.355 | 0.000 | 51.297 | 0.000 | 16.058 |
| Jun-2019 | 4.134 | 0.000 | 0.000 | 0.000 | 4.134 |
| Half Year Sub-total | 755.208 | 0.000 | 260.148 | 304.098 | 190.962 |
| Jul-2019 | 3.821 | 0.000 | 0.000 | 0.000 | 3.821 |
| Aug-2019 | 2.388 | 0.000 | 0.000 | 0.000 | 2.388 |
| Sep-2019 | 4.191 | 0.000 | 0.000 | 0.000 | 4.191 |
| Oct-2019 | 8.366 | 0.000 | 0.000 | 0.000 | 8.366 |
| Nov-2019 | 6.215 | 0.000 | 0.000 | 0.000 | 6.215 |
| Dec-2019 | 4.216 | 0.000 | 0.000 | 0.000 | 4.216 |
| Project Total Quantities | 3008.822 | 0.000 | 336.902 | 889.467 | 1782.443 |

| Month | Actual Quantities of <u>Non-inert</u> Construction Waste Generated Monthly | | | | | | | | |
|--------------------------|--|----------|----------------------------|----------|--------------------------|----------|----------------|----------|--|
| | Metals | | Paper/ cardboard packaging | | Plastics (see Note 3) | | Chemical Waste | | Others, e.g. General Refuse disposed at Landfill |
| | (in '000kg) | | (in '000kg) | | (in '000kg) | | (in '000kg) | | (in '000ton) |
| | generated | recycled | generated | recycled | generated | recycled | generated | Disposed | generated |
| Sub-total | 6763.82 | 6763.82 | 7.74 | 7.74 | 8.70 | 8.70 | 60.35 | 60.35 | 13.989 |
| Jan-2019 | 394.55 | 394.55 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.538 |
| Feb-2019 | 103.72 | 103.72 | 0.62 | 0.62 | 0.00 | 0.00 | 1.672 | 1.672 | 0.578 |
| Mar-2019 | 88.20 | 88.20 | 0.46 | 0.46 | 0.00 | 0.00 | 0.00 | 0.00 | 0.692 |
| Apr-2019 | 260.89 | 260.89 | 0.00 | 0.00 | 3.90 | 3.90 | 1.045 | 1.045 | 0.707 |
| May-2019 | 0.66 | 0.66 | 1.46 | 1.46 | 0.00 | 0.00 | 0.00 | 0.00 | 0.798 |
| Jun-2019 | 136.75 | 136.75 | 0.66 | 0.66 | 0.00 | 0.00 | 4.14 | 4.14 | 0.751 |
| Half Year Sub-total | 984.77 | 984.77 | 3.20 | 3.20 | 3.90 | 3.90 | 6.857 | 6.857 | 4.064 |
| Jul-2019 | 444.37 | 444.37 | 1.20 | 1.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.730 |
| Aug-2019 | 505.93 | 505.93 | 0.00 | 0.00 | 1.58 | 1.58 | 3.80 | 3.80 | 0.703 |
| Sep-2019 | 397.10 | 397.10 | 0.60 | 0.60 | 1.62 | 1.62 | 8.00 | 8.00 | 0.737 |
| Oct-2019 | 523.05 | 523.05 | 0.00 | 0.00 | 1.04 | 1.04 | 5.80 | 5.80 | 0.754 |
| Nov-2019 | 271.73 | 271.73 | 1.90 | 1.90 | 0.00 | 0.00 | 1.00 | 1.00 | 0.525 |
| Dec-2019 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.441 |
| Project Total Quantities | 9890.77 | 9890.77 | 14.64 | 14.64 | 16.84 | 16.84 | 85.807 | 85.807 | 21.943 |

| Forecast of Total Quantities of Construction and Demolition Materials to be Generated from the Contract* | | | | |
|--|-------------------------------------|------------------------|--------------------------|----------------------------|
| Total Quantity Generated | Hard Rock and Large Broken Concrete | Reused in the Contract | Reused in other Projects | Disposed of as Public Fill |
| (in '000 ton) | (in '000 ton) | (in '000 ton) | (in '000 ton) | (in '000 ton) |
| 3200.000 | 0.000 | 350.000 | 1000.000 | 2000.000 |

| Forecast of Total Quantities of Construction and Demolition Materials to be Generated from the Contract* | | | | |
|--|----------------------------|--------------------------|----------------|--|
| Metals | Paper/ cardboard packaging | Plastics (see Note 3) | Chemical Waste | General Refuse disposed of at Landfill |
| (in '000kg) | (in '000kg) | (in '000kg) | (in '000kg) | (in '000 ton) |
| 10500.00 | 20.00 | 20.00 | 100.00 | 30.000 |

- Notes:
- (1) The performance targets are given in the **ER Appendix 8J Clause 14** and the EM & A Manual(s).
 - (2) The waste flow table shall also include C&D materials to be imported for use at the Site.
 - (3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
 - (4) The Contractor shall also submit the latest forecast of the total amount of C&D materials expected to be generated from the Works, together with a breakdown of the nature where the amount of C&D materials expected to be generated from the Works is equal to or exceeding 50,000 m³. (**ER Part 8 Clause 8.8.5 (d) (ii)** refers).

Monthly Summary Waste Flow Table

Name of Department: HyD

Contract No. / Works Order No.: HY/2012/08

Monthly Summary Waste Flow Table for **October 2020** [to be submitted not later than the 15th day of each month following reporting month] (All quantities shall be rounded off to 3 decimal places.)

| Month | Monthly Break-down of <u>Inert</u> Construction & Demolition Materials (i.e. Public Fill Materials) | | | | |
|--------------------------|---|--|-------------------------------|---------------------------------|-----------------------------------|
| | (a)=(b)+(c)+(d)+(e) Total Quantity Generated | (b) Hard Rock and Large Broken Concrete | (c) Reused in the Contract | (d) Reused in other Projects | (e) Disposed of as Public Fill |
| | (in '000 ton) | (in '000 ton) | (in '000 ton) | (in '000 ton) | (in '000 ton) |
| Sub-total | 3008.812 | 0.000 | 336.902 | 889.467 | 1782.443 |
| Jan-2020 | 174.69 | 0.000 | 0.000 | 0.000 | 174.69 |
| Feb-2020 | 1.455 | 0.000 | 0.000 | 0.000 | 1.455 |
| Mar-2020 | 3.252 | 0.000 | 0.000 | 0.000 | 3.252 |
| Apr-2020 | 4.200 | 0.000 | 0.000 | 0.000 | 4.200 |
| May-2020 | 7.015 | 0.000 | 0.000 | 0.000 | 7.015 |
| Jun-2020 | 2.670 | 0.000 | 0.000 | 0.000 | 2.693 |
| Half Year Sub-total | 193.282 | 0.000 | 0.000 | 0.000 | 193.305 |
| Jul-2020 | 1.440 | 0.000 | 0.000 | 0.000 | 1.440 |
| Aug-2020 | 1.159 | 0.000 | 0.000 | 0.000 | 1.159 |
| Sep-2020 | 0.074 | 0.000 | 0.000 | 0.000 | 0.074 |
| Oct-2020 | 0.253 | 0.000 | 0.000 | 0.000 | 0.253 |
| Nov-2020 | | | | | |
| Dec-2020 | | | | | |
| Project Total Quantities | 3205.020 | 0.000 | 336.902 | 889.467 | 1978.674 |

| Month | Actual Quantities of <u>Non-inert</u> Construction Waste Generated Monthly | | | | | | | | |
|--------------------------|--|----------|----------------------------|----------|--------------------------|----------|----------------|----------|--|
| | Metals | | Paper/ cardboard packaging | | Plastics (see Note 3) | | Chemical Waste | | Others, e.g. General Refuse disposed at Landfill |
| | (in '000kg) | | (in '000kg) | | (in '000kg) | | (in '000kg) | | (in '000ton) |
| | generated | recycled | generated | recycled | generated | recycled | generated | Disposed | generated |
| Sub-total | 9890.77 | 9890.77 | 14.64 | 14.64 | 16.84 | 16.84 | 85.807 | 85.807 | 21.943 |
| Jan-2020 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.54 |
| Feb-2020 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.349 |
| Mar-2020 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.226 |
| Apr-2020 | 22.14 | 22.14 | 1.30 | 1.30 | 0.00 | 0.00 | 6.40 | 6.40 | 0.521 |
| May-2020 | 6.2 | 6.2 | 0.54 | 0.54 | 0.00 | 0.00 | 0.60 | 0.60 | 0.536 |
| Jun-2020 | 0.00 | 0.00 | 0.74 | 0.74 | 0.00 | 0.00 | 1.00 | 1.00 | 0.303 |
| Half Year Sub-total | 28.34 | 28.34 | 2.58 | 2.58 | 0.00 | 0.00 | 8.00 | 8.00 | 5.475 |
| Jul-2020 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.140 |
| Aug-2020 | 0.00 | 0.00 | 1.06 | 1.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.110 |
| Sep-2020 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.100 |
| Oct-2020 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.145 |
| Nov-2020 | | | | | | | | | |
| Dec-2020 | | | | | | | | | |
| Project Total Quantities | 9919.11 | 9919.11 | 18.28 | 18.28 | 16.84 | 16.84 | 93.807 | 93.807 | 27.913 |

| Forecast of Total Quantities of Construction and Demolition Materials to be Generated from the Contract* | | | | |
|--|-------------------------------------|------------------------|--------------------------|----------------------------|
| Total Quantity Generated | Hard Rock and Large Broken Concrete | Reused in the Contract | Reused in other Projects | Disposed of as Public Fill |
| (in '000 ton) | (in '000 ton) | (in '000 ton) | (in '000 ton) | (in '000 ton) |
| 3200.000 | 0.000 | 350.000 | 1000.000 | 2000.000 |

| Forecast of Total Quantities of Construction and Demolition Materials to be Generated from the Contract* | | | | |
|--|----------------------------|--------------------------|----------------|--|
| Metals | Paper/ cardboard packaging | Plastics (see Note 3) | Chemical Waste | General Refuse disposed of at Landfill |
| (in '000kg) | (in '000kg) | (in '000kg) | (in '000kg) | (in '000 ton) |
| 10000.00 | 20.00 | 18.00 | 120.00 | 30.000 |

- Notes:
- (1) The performance targets are given in the **ER Appendix 8J Clause 14** and the EM & A Manual(s).
 - (2) The waste flow table shall also include C&D materials to be imported for use at the Site.
 - (3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
 - (4) The Contractor shall also submit the latest forecast of the total amount of C&D materials expected to be generated from the Works, together with a breakdown of the nature where the amount of C&D materials expected to be generated from the Works is equal to or exceeding 50,000 m³. (**ER Part 8 Clause 8.8.5 (d) (ii)** refers).