

## **4b. WATER QUALITY IMPACT (ARTIFICIAL ISLAND NEAR SKC)**

### **4b.1 Introduction**

- 4b.1.1.1 This section describes the requirements for the monitoring and audit of water quality impact from the Project.
- 4b.1.1.2 The water quality assessment undertaken in the EIA Study has identified that suspended solids would be the most critical water quality parameter during the construction stage. Marine water quality monitoring for suspended solids / turbidity and dissolved oxygen is therefore recommended to be carried out at the nearby water sensitive receivers (WSRs). The monitoring should include baseline and impact monitoring. The impact monitoring should be carried out during the proposed reclamation, breakwater construction and installation of submarine cables. Monitoring programme to be implemented for protection of the coral communities are provided in Section 6b.
- 4b.1.1.3 Regular site inspections were recommended to be undertaken to inspect the construction activities and works areas and also the status on the implementation of the recommended mitigation measures. Discharges of drainage water from the construction works areas would be required to comply with the terms and conditions of a discharge licence, issued by EPD, under the Water Pollution Control Ordinance (WPCO). It may be a stipulation of the WPCO licence to require the Contractor to monitor the quality / quantity of the discharge to show compliance with the conditions of the licence. Such monitoring would not form part of the EM&A programme.
- 4b.1.1.4 As measure to control the dispersion of filling material from the reclamation area, a silt curtain system would be applied at the marine access opening during the reclamation work. A pilot test should be carried out at the early stage of reclamation to verify the silt-removal efficiency of the silt curtain at marine access opening.
- 4b.1.1.5 During the operation phase of the Project, all generated wastewater will be discharged into an on-site wastewater treatment plant. The treated effluent from the wastewater treatment plant will be reused for washdown and landscape irrigation in the IWMF site. A 'net zero discharge' scheme will be adopted during the operation of the IWMF. Saline water would be discharged from the proposed desalination plant. Monitoring of the change in salinity would be required during the commissioning period of the IWMF.

### **4b.2 Water Quality Parameters**

- 4b.2.1.1 Dissolved oxygen (DO), turbidity and suspended solids (SS) levels shall be monitored at designated marine water quality monitoring stations before, during and after the marine construction works while monitoring of salinity at the designated marine water quality monitoring stations would be required during the commissioning of the brine water discharge. The levels of DO, pH, temperature, turbidity and salinity should be measured *in situ* whereas SS should be determined by laboratory.

### **4b.3 Monitoring Locations**

- 4b.3.1.1 The proposed water quality monitoring stations for construction phase impact assessment are shown in **Table 4b.1** and **Figure 4b.1**. The monitoring stations proposed in this section are indicative only and may be subjected to further review before commencement of the water quality monitoring works. The status and locations of water sensitive receivers and the marine activities may change after issuing this Manual. If such case exists, the ET Leader shall propose updated monitoring locations and seek approval from the IEC and EPD.

4b.3.1.2 Marine water quality monitoring stations have been proposed at different water quality sensitive receivers to monitor the water quality impact due to the proposed marine works under this Project. Monitoring stations B1 to B4 would be located at 4 beaches respectively at the southern shore of Lantau Island. Monitoring station H1 is located at the horseshoe crab habitat at northern SKC, while CR1 and CR2 are located at the coral communities at southwestern shore of SKC. Monitoring station F1 is located at the Cheung Sha Wan Fish Culture Zone while monitoring station M1 is located at Tung Wan at Cheung Chau. Water quality monitoring at the northern landing site, midway and southern landing site of the proposed submarine cable is proposed at monitoring stations S1, S2 and S3 for monitoring the SS impact due to the laying of submarine cable. Control stations C1 and C2 have been proposed at far field location for comparison.

**Table 4b.1 Proposed Marine Water Quality Stations for Baseline and Impact Monitoring during Construction Phase**

Station	Description	Easting	Northing
B1	Beach - Cheung Sha Lower	813342	810316
B2	Beach - Pui O	815340	811025
B3	Beach - Yi Long Wan	817210	808395
B4	Beach - Tai Long Wan	817784	808682
H1	Horseshoe Crab - Shek Kwu Chau	816477	806953
C1	Control Station	810850	806288
C2	Control Station	819421	808053
F1	Cheung Sha Wan Fish Culture Zone	818631	810966
S1	Submarine Cable Landing Site	814245	810335
S2	Submarine Cable	815076	807747
S3	Submarine Cable Landing Site	816420	805621
CR1	Coral	817144	805597
CR2	Coral	816512	805882
M1	Tung Wan	821572	807799

4b.3.1.3 The proposed water quality monitoring stations for operational phase impact assessment are shown in **Section 4b.3.1.4** and **Figure 4b.2**. The monitoring stations proposed in this section are indicative only and may be subjected to further review before commencement of the water quality monitoring works. The locations of brine water outfall may change after issuing this Manual. If such case exists, the ET Leader shall propose updated monitoring locations and seek approval from the IEC and EPD.

4b.3.1.4 Marine water quality monitoring stations have been proposed near the saline water outfall to monitor the water quality impact due to the proposed saline water discharge. Monitoring stations Z1 to Z3 would be located near the eastern, southern and western edge of the zone of initial mixing based on the results of modelling work conducted under this EIA. Control stations C3 and C4 have been proposed at far field location for comparison.

**Table 4b.2 Proposed Marine Water Quality Stations for Baseline and Impact Monitoring during Operational Phase**

Station	Description	Easting	Northing
Z1	Near the Edge of ZID (east of the brine water outfall)	816883	805424
Z2	Near the Edge of ZID (south of the brine water outfall)	816772	805317
Z3	Near the Edge of ZID (west of the brine water outfall)	816685	805429
C3	Control Station	817065	805416
C4	Control Station	816484	805416

4b.3.1.5 Sampling for baseline and impact monitoring shall be taken at three water depths, namely, 1m below water surface, mid-depth and 1m above seabed, except at where the water depth is less than 6m, in which case the mid-depth station may be omitted. Shall the water depth be less than 3m, only the mid-depth station will be monitored.

#### **4b.4 Baseline Monitoring**

##### **4b.4.1 Construction Phase**

4b.4.1.1 Baseline conditions for marine water quality should be established and agreed with EPD prior to the commencement of marine works. The purpose of the baseline monitoring is to establish ambient conditions prior to the commencement of the marine works and to demonstrate the suitability of the proposed monitoring stations.

4b.4.1.2 The baseline conditions should be established by measuring suspended solids (SS), salinity, turbidity and dissolved oxygen (DO) levels at the selected monitoring stations as shown in **Table 4b.1**. The baseline monitoring schedule should be submitted to EPD at least 4 weeks before commencement of monitoring for agreement. EPD should also be notified immediately for any changes in schedule.

4b.4.1.3 The measurements should be taken at all designated monitoring stations, 3 days per week, at mid-flood and mid-ebb tides, for at least 4 weeks prior to the commencement of marine works. There should not be any marine construction activities in the vicinity of the stations during the baseline monitoring. The interval between 2 sets of monitoring should not be less than 36 hours. Duplicate *in-situ* measurements and water sampling should be carried out in each sampling event.

4b.4.1.4 The baseline monitoring report should be submitted to EPD at least 4 weeks before the commencement of the marine works for agreement. The baseline monitoring report should be certified by the IEC before submission to EPD.

##### **4b.4.2 Operational Phase**

4b.4.2.1 Baseline conditions for marine water quality should be established and agreed with EPD prior to the commission of the brine water discharge. The purpose of the baseline monitoring is to establish ambient conditions prior to the commission of the brine water discharge.

4b.4.2.2 The baseline conditions should be established by measuring salinity at the selected monitoring stations as shown in **4b.3.1.4**. The baseline monitoring schedule should be

submitted to EPD at least 4 weeks before commencement of monitoring for agreement. EPD should also be notified immediately for any changes in schedule.

- 4b.4.2.3 The measurements should be taken at all designated monitoring stations, 3 days per week, at mid-flood and mid-ebb tides, for at least 4 weeks prior to the commission of the brine water discharge. There should not be any marine construction activities in the vicinity of the stations during the baseline monitoring. The interval between 2 sets of monitoring should not be less than 36 hours. Duplicate *in-situ* measurements should be carried out in each sampling event.
- 4b.4.2.4 The baseline monitoring report should be submitted to EPD at least 4 weeks before the commission of the brine water discharge for agreement. The baseline monitoring report should be certified by the IEC before submission to EPD.

## **4b.5 Impact Monitoring**

### **4b.5.1 Construction Phase**

- 4b.5.1.1 During the period of marine construction, monitoring should be undertaken three days per week, at mid-flood and mid-ebb tides, with sampling / measurement at the designated monitoring stations as shown in **Table 4b.3**. Upon completion of the marine works, the monitoring exercise at the designated monitoring locations should be continued for four weeks in the same manner as the impact monitoring.
- 4b.5.1.2 The interval between two sets of monitoring should not be less than 36 hours except where there are exceedances of Action and/or Limit Levels, in which case the monitoring frequency will be increased. **Table 4b.3** shows the proposed monitoring frequency and water quality parameters. Duplicate *in-situ* measurements and water sampling should be carried out in each sampling event. The monitoring probes should be retrieved out of water after the first measurement and then redeployed for the second measurement. Where the difference in value between the first and second readings of DO or turbidity is more than 25% of the value of the first reading, the reading should be discarded and further readings should be taken.
- 4b.5.1.3 The proposed water quality monitoring schedule should be submitted to EPD at least 1 week before the first day of the monitoring month. EPD should also be notified immediately for any changes in schedule. If the monitoring data collected at the designated stations indicate that the Action or Limit Levels as shown in **Table 4b.6** are exceeded, appropriate actions should be taken in accordance with the Event and Action Plan in **Table 4b.7**.

**Table 4b.3 Proposed Marine Water Quality Monitoring Frequency and Parameters for Construction Phase Impact Monitoring**

Activities	Monitoring Frequency	Key Parameters <sup>Note 1</sup>	Monitoring Stations
During the 4-week baseline monitoring period	Three days per week, at mid-flood and mid-ebb tides	Suspended Solids (SS), Turbidity and Dissolved Oxygen (DO)	B1, B2, B3, B4, H1, C1, C2, F1, S1, S2, S3, CR1, CR2, M1
During marine works for proposed reclamation / breakwater construction	Three days per week, at mid-flood and mid-ebb tides	Suspended Solids (SS), Turbidity and Dissolved Oxygen (DO)	B1, B2, B3, B4, H1, C1, C2, F1, CR1, CR2, M1
During marine works for installation of submarine cables	Three days per week, at mid-flood and mid-ebb tides	Suspended Solids (SS), Turbidity and Dissolved Oxygen (DO)	B1, B2, B3, B4, H1, C1, C2, F1, S1, S2, S3, CR1, CR2, M1
During a 4-week period after completion of marine works	Three days per week, at mid-flood and mid-ebb tides	Suspended Solids (SS), Turbidity and Dissolved Oxygen (DO)	B1, B2, B3, B4, H1, C1, C2, F1, S1, S2, S3, CR1, CR2, M1

Notes: 1. DO and turbidity should be measured *in situ* whereas SS should be determined by laboratory analysis.

#### **4b.5.2 Operational Phase**

4b.5.2.1 When the discharge of brine water from the desalination plant start, monitoring should be undertaken three days per week, at mid-flood and mid-ebb tides, with measurement at the designated monitoring stations as shown in **4b.3.1.4**. The monitoring exercise at the designated monitoring locations should be continued for at least four weeks.

4b.5.2.2 The interval between two sets of monitoring should not be less than 36 hours except where there are exceedances of Action and/or Limit Levels, in which case the monitoring frequency will be increased. **Table 4b.4** shows the proposed monitoring frequency and water quality parameters. Duplicate *in-situ* measurements should be carried out in each sampling event. The monitoring probes should be retrieved out of water after the first measurement and then redeployed for the second measurement. Where the difference in value between the first and second readings of salinity is more than 25% of the value of the first reading, the reading should be discarded and further readings should be taken.

**Table 4b.4 Proposed Marine Water Quality Monitoring Frequency and Parameters for Operational Phase Impact Monitoring**

Activities	Monitoring Frequency <sup>Note 1</sup>	Key Parameters <sup>Note 2</sup>	Monitoring Stations
During the 4-week baseline monitoring period	Three days per week, at mid-flood and mid-ebb tides	Salinity	Z1, Z2, Z3, C3, C4
During the first 4 weeks of the commission of brine water discharge	Three days per week, at mid-flood and mid-ebb tides	Salinity	Z1, Z2, Z3, C3, C4

Notes: 1. Salinity should be measured *in situ*.

4b.5.2.3 The proposed water quality monitoring schedule should be submitted to EPD at least 1 week before the first day of monitoring. EPD should also be notified immediately for any changes in schedule. If the monitoring data collected at the designated stations indicate that the Action or Limit Levels as shown in **Table 4b.6** are exceeded, appropriate actions should be taken in accordance with the Event and Action Plan in **Table 4b.7**.

#### **4b.6 Efficiency of Silt Curtain at Marine Access Opening**

4b.6.1.1 The ET shall be responsible for conducting tests to confirm that the silt curtain systems to be adopted at marine access opening for reclamation filling work would achieve the silt removal efficiency stated in the EIA Report.

4b.6.1.2 A method statement shall be submitted by the ET Leader to seek approval from the IEC and EPD.

4b.6.1.3 During the initial period of filling works for reclamation at the SKC site, the silt-removal efficiency of the silt-curtains shall be verified by examining the results of water quality monitoring points. The water quality monitoring points to be selected for the pilot test shall be those close to the marine access opening for the reclamation filling works. The details for the pilot study shall be agreed by EPD.

4b.6.1.4 Pilot tests should be carried out during the early stage of reclamation to confirm whether the silt removal efficiency of the silt curtain systems at marine access opening can achieve at least 80% silt removal efficiency for reclamation filling. The pilot test shall include basic measurements such as turbidity and suspended solids as well as current speed and direction.

4b.6.1.5 Regardless of the measured efficiency of the silt curtain system, the event and action plan shall only be based on the monitoring results at the designed monitoring stations.

#### **4b.7 Site Audits**

4b.7.1.1 Implementation of regular site audits is to ensure that the recommended mitigation measures are to be properly undertaken during proposed construction works. It can also provide an effective control of any malpractices and therefore achieve continual improvement of environmental performance on site.

4b.7.1.2 Site audits shall be carried out by the ET and shall be based on the mitigation measures for water pollution control recommended in the implementation schedule as presented in **Appendix 12.1**. In the event that the recommended mitigation measures are not fully or properly implemented, deficiency shall be recorded and reported to the site management. Suitable actions are to be carried out to:

- investigate the problems and the causes;
- issue action notes to the Contractor who is responsible for the works;
- implement remedial and corrective actions immediately;
- re-inspect the site conditions upon completion of the remedial and corrective actions;  
and
- record the event and discuss with the Contractor for preventive actions.

4b.7.1.3 Daily site audit including full-time on-site monitoring by the ET is recommended during the dredging for anti-scouring protection layer for checking the compliance with the permitted no. of grab to be performed per hour by the dredging contractor as specified in the water quality assessment in the EIA.

#### **4b.8 Field Log**

4b.8.1.1 Other relevant data should also be recorded, including monitoring location / position, time, water depth, sampling depth, pH, salinity, DO saturation, water temperature, tidal stages, weather conditions and any special phenomena or work underway nearby.

4b.8.1.2 A sample data record sheet is shown in **Appendix 4b.1** for reference.

#### **4b.9 Monitoring Equipments**

##### ***4b.9.1 Dissolved Oxygen and Temperature Measuring Equipment***

4b.9.1.1 The instrument should be a portable and weatherproof DO measuring instrument complete with cable and sensor, and use a DC power source. The equipment should be capable of measuring:

- a DO level in the range of 0 - 20 mg/L and 0 - 200% saturation; and
- a temperature of 0 - 45 degree Celsius.

##### ***4b.9.2 Turbidity Measurement Instrument***

4b.9.2.1 The instrument should be a portable and weatherproof turbidity-measuring instrument using a DC power source. It should have a photoelectric sensor capable of measuring turbidity between 0 - 1000 NTU (for example, Hach model 2100P or an approved similar instrument).

##### ***4b.9.3 pH Measurement Instrument***

4b.9.3.1 The instrument should consist of a potentiometer, a glass electrode, a reference electrode and a temperature-compensating device. It should be readable to 0.1pH in a range of 0 to 14. Standard buffer solutions of at least pH 7 and pH 10 should be used for calibration of the instrument before and after use.

##### ***4b.9.4 Sampler***

4b.9.4.1 A water sampler is required. It should comprise a transparent PVC cylinder, with a capacity of not less than 2 litres, which can be effectively sealed with latex cups at both ends. The sampler should have a positive latching system to keep it open and prevent premature closure until released by a messenger when the sampler is at the selected water depth (for example, Kahlsico Water Sampler or an approved similar instrument).

#### **4b.9.5 Water Depth Detector**

4b.9.5.1 A portable, battery-operated echo sounder should be used for the determination of water depth at each designated monitoring station. This unit can either be hand held or affixed to the bottom of the work boat, if the same vessel is to be used throughout the monitoring programme.

#### **4b.9.6 Salinity**

4b.9.6.1 A portable salinometer capable of measuring salinity in the range of 0 - 40 parts per thousand (ppt) shall be provided for measuring salinity of the water at each monitoring location.

#### **4b.9.7 Sample Containers and Storage**

4b.9.7.1 Water samples for SS and three heavy metals measurements should be stored in high density polythene bottles with no preservative added, packed in ice (cooled to 4°C without being frozen) and delivered to the laboratory and analysed as soon as possible after collection. Sufficient volume of samples should be collected to achieve the detection limit stated in **Section 4b.9**.

#### **4b.9.8 Monitoring Position Equipment**

4b.9.8.1 A hand-held or boat-fixed type digital Differential Global Positioning System (DGPS) with way point bearing indication and Radio Technical Commission for maritime (RTCM) Type 16 error message 'screen pop-up' facilities (for real-time auto-display of error messages and DGPS corrections from the Hong Kong Hydrographic Office), or other equipment instruments of similar accuracy, should be provided and used to ensure that the water sampling locations are correct during the water quality monitoring work.

#### **4b.9.9 Calibration of In-Situ Instruments**

4b.9.9.1 The DO meter and turbidimeter should be checked and calibrated before use. DO meter and turbidimeter should be certified by a laboratory accredited under HOKLAS or any other international accreditation scheme, and subsequently re-calibrated at three monthly intervals throughout all stages of the water quality monitoring. Responses of sensors and electrodes should be checked with certified standard solutions before each use. Wet bulb calibration for a DO meter should be carried out before measurement at each monitoring location.

4b.9.9.2 Sufficient stocks of spare parts should be maintained for replacements when necessary. Backup monitoring equipment should also be made available so that monitoring can proceed uninterrupted even when some equipment is under maintenance, calibration, etc.

#### **4b.10 Laboratory Measurement / Analysis**

4b.10.1.1 Analysis of suspended solids (SS) should be carried out in a HOKLAS or other international accredited laboratory. Sufficient water samples should be collected at the monitoring stations for carrying out the laboratory determinations. The determination work should start within 24 hours after collection of the water samples. The analyses should follow the American Public Health Association (APHA) Standard Methods for the Examination of Water and Wastewater or an equivalent method subject to the approval of EPD. The suggested testing method and lowest detection limit are provided in **Table 4b.5**.



**Table 4b.5 Analytical Methods to be Applied to Marine Water Quality Samples**

Determinant	Standard Method	Detection Limit
Suspended Solids (mg/L)	APHA 2540D*	1 mg/L

\* APHA American Public Health Association Standard Methods for the Examination of Water and Wastewater

- 4b.10.1.2 The testing of SS should be HOKLAS accredited (or if not, approved by EPD) and comprehensive quality assurance and control procedures in place in order to ensure quality and consistency in results.
- 4b.10.1.3 Detailed testing methods, pre-treatment procedures, instruments use, Quality Assurance / Quality Control (QA/QC) details (such as blank, number of duplicate samples per batch, etc.), detection limit and accuracy shall be submitted to EPD for approval prior to the commencement of monitoring programme. EPD may also request the laboratory to carry out analysis of known standards provided by EPD for quality assurance. The QA/QC shall be in accordance with the requirements of HOKLAS or international accredited scheme. The QA/QC results shall be reported. The testing methods and related proposal should be checked and certified by IEC before submission to EPD for approval.
- 4b.10.1.4 Additional duplicate samples may be required by EPD for inter laboratory calibration. Remaining samples after analysis should be kept by the laboratory for 3 months in case repeat analysis is required. If in-house or non-standard methods are proposed, details of the method verification may also be required by EPD. In any circumstance, the sample testing should have comprehensive quality assurance and quality control programmes. The laboratory should prepare to demonstrate the programmes to EPD or EPD's representatives when requested.

#### 4b.11 Event and Action Plan

- 4b.11.1.1 The water quality assessment criteria, namely Action and Limit levels are shown in **Table 4b.6**. If the monitoring results of the water quality parameters at any designated monitoring stations indicate that the water quality assessment criteria are exceeded during the construction phase, the actions in accordance with the Event and Action Plan in **Table 4b.7** should be carried out.
- 4b.11.1.2 The ET Leader should assess the potential impacts on the water sensitive receivers based on the monitoring data. The performance of the environmental management system (i.e. of the overall EM&A programme) should be reviewed by the ET Leader on a quarterly basis. The findings of this review should be included in the quarterly EM&A summary reports, together with any recommendations to improve the performance of the EM&A programme.
- 4b.11.1.3 The ET Leader should keep track on the elevation in salinity at the monitoring stations during the commission stage of the desalination plant to ensure the saline water discharge would not result in adverse water quality impact at the nearby water sensitive receivers.

**Table 4b.6 Action and Limit Levels for Marine Water Quality**

Parameters	Action	Limit
<b>Construction Phase Impact Monitoring</b>		
DO in mg/L	≤ 5 %-ile of baseline data	≤ 4 mg/L
SS in mg/L	≥ 95 %-ile of baseline data or 120% of control station's SS at the same tide of the same day of measurement	≥ 99 %-ile of baseline or 130% of control station's SS at the same tide of the same day of measurement

Parameters	Action	Limit
Turbidity in NTU	≥ 95 %-ile of baseline data or 120% of control station's turbidity at the same tide of the same day of measurement	≥ 99 %-ile of baseline or 130% of control station's turbidity at the same tide of the same day of measurement
<b>Operational Phase Impact Monitoring</b>		
Salinity in ppm	≥ 95 %-ile of baseline data or 105% of control station's salinity at the same tide of the same day of measurement	≥ 99 %-ile of baseline data or 109% of control station's salinity at the same tide of the same day of measurement

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For SS, turbidity and salinity, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

- 4b.11.1.4 If monitoring results indicate that the construction works have caused an adverse impact on water quality at the water sensitive receivers, an additional mitigation measures should be recommended to rectify the non-compliance or the construction programme / design should be carefully reviewed.
- 4b.11.1.5 If monitoring results indicate that the concentrated saline discharge during the operation phase has caused a significant elevation in salinity beyond the edge of zone of initial mixing, actions should be taken as stated in **Table 4b.8**.
- 4b.11.1.6 Where necessary, EPD routine marine water quality monitoring data at the relevant station(s), dry and wet seasons inclusive, could also be referenced to establish the baseline water quality.

## 4b.12 Mitigation Measures

- 4b.12.1.1 Mitigation measures for water quality control have been recommended in the EIA Report. The Contractor should be responsible for the design and implementation of these measures.
- 4b.12.1.2 Recommended mitigation measures to minimize the adverse impacts on water quality are listed in the implementation schedule given in **Appendix 12.1**.

**Table 4b.7 Event and Action Plan for Construction Phase Marine Water Quality**

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action level being exceeded by one sampling day	<p>Repeat in-situ measurement to confirm findings;                      Identify source(s) of impact; Inform IEC and Contractor;                      Check monitoring data, all plant, equipment and Contractor's working methods;                      Discuss mitigation measures with IEC) and Contractor;                      (The above actions should be taken within 1 working day after the exceedance is identified)                      Repeat measurement on next day of exceedance.</p>	<p>Discuss with ET and Contractor on the mitigation measures;                      Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly;                      Assess the effectiveness of the implemented mitigation measures.                      (The above actions should be taken within 1 working day after the exceedance is identified)</p>	<p>Discuss with IEC on the proposed mitigation measures;                      Make agreement on the mitigation measures to be implemented.                      (The above actions should be taken within 1 working day after the exceedance is identified)</p>	<p>Inform the ER and confirm notification of the non-compliance in writing;                      Rectify unacceptable practice;                      Check all plant and equipment;                      Consider changes of working methods;                      Discuss with ET and IEC and propose mitigation measures to IEC and ER;                      Implement the agreed mitigation measures.                      (The above actions should be taken within 1 working day after the exceedance is identified)</p>
Action level being exceeded by more than one consecutive sampling days	<p>Identify source(s) of impact;                      Inform IEC and Contractor;                      Check monitoring data, all plant, equipment and Contractor's working methods;                      Discuss mitigation measures with IEC and Contractor;                      Ensure mitigation measures are implemented;                      Prepare to increase the monitoring frequency to daily;                      (The above actions should be taken within 1 working day after the exceedance is identified)                      Repeat measurement on next working day of exceedance.</p>	<p>Discuss with ET and Contractor on the mitigation measures;                      Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly;                      Assess the effectiveness of the implemented mitigation measures.                      (The above actions should be taken within 1 working day after the exceedance is identified)</p>	<p>Discuss with IEC on the proposed mitigation measures;                      Make agreement on the mitigation measures to be implemented;                      Assess the effectiveness of the implemented mitigation measures.                      (The above actions should be taken within 1 working day after the exceedance is identified)</p>	<p>Inform the ER and confirm notification of the non-compliance in writing;                      Rectify unacceptable practice;                      Check all plant and equipment;                      Consider changes of working methods;                      Discuss with ET and IEC and propose mitigation measures to IEC and ER within 3 working days;                      Implement the agreed mitigation measures.                      (The above actions should be taken within 1 working day after the exceedance is identified)</p>

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Limit level being exceeded by one sampling day	<p>Inform the ER and confirm notification of the non-compliance in writing;</p> <p>Rectify unacceptable practice;</p> <p>Check all plant and equipment;</p> <p>Consider changes of working methods;</p> <p>Discuss with ET and IEC and propose mitigation measures to IEC and ER within 3 working days;</p> <p>Implement the agreed mitigation measures.</p> <p>(The above actions should be taken within 1 working day after the exceedance is identified)</p>	<p>Discuss with ET and Contractor on the mitigation measures;</p> <p>Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly;</p> <p>Assess the effectiveness of the implemented mitigation measures.</p> <p>(The above actions should be taken within 1 working day after the exceedance is identified)</p>	<p>Discuss with IEC, ET and Contractor on the proposed mitigation measures;</p> <p>Request Contractor to critically review the working methods;</p> <p>Make agreement on the mitigation measures to be implemented;</p> <p>Assess the effectiveness of the implemented mitigation measures.</p> <p>(The above actions should be taken within 1 working day after the exceedance is identified)</p>	<p>Inform the ER and confirm notification of the non-compliance in writing;</p> <p>Rectify unacceptable practice;</p> <p>Check all plant and equipment;</p> <p>Consider changes of working methods;</p> <p>Discuss with ET , IEC and ER and propose mitigation measures to IEC and ER within 3 working days;</p> <p>Implement the agreed mitigation measures.</p> <p>(The above actions should be taken within 1 working day after the exceedance is identified)</p>
Limit level being exceeded by more than one consecutive sampling days	<p>Identify source(s) of impact;</p> <p>Inform IEC, contractor and EPD;</p> <p>Check monitoring data, all plant, equipment and Contractor's working methods;</p> <p>Discuss mitigation measures with IEC, ER and Contractor;</p> <p>Ensure mitigation measures are implemented;</p> <p>Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days.</p> <p>(The above actions should be taken within 1 working day after the exceedance is identified)</p>	<p>Discuss with ET and Contractor on the mitigation measures;</p> <p>Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly;</p> <p>Assess the effectiveness of the implemented mitigation measures.</p> <p>(The above actions should be taken within 1 working day after the exceedance is identified)</p>	<p>Discuss with IEC, ET and Contractor on the proposed mitigation measures;</p> <p>Request Contractor to critically review the working methods;</p> <p>Make agreement on the mitigation measures to be implemented;</p> <p>Assess the effectiveness of the implemented mitigation measures;</p> <p>Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the marine work until no exceedance of Limit level.</p> <p>(The above actions should be taken within 1 working day after the exceedance is identified)</p>	<p>Inform the ER and confirm notification of the non-compliance in writing;</p> <p>Rectify unacceptable practice;</p> <p>Check all plant and equipment;</p> <p>Consider changes of working methods;</p> <p>Discuss with ET , IEC and ER and propose mitigation measures to IEC and ER within 3 working days;</p> <p>Implement the agreed mitigation measures;</p> <p>As directed by the ER, to slow down or to stop all or part of the marine work or construction activities.</p> <p>(The above actions should be taken within 1 working day after the exceedance is identified)</p>

**Table 4b.8 Event and Action Plan for Operational Phase Marine Water Quality**

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action level being exceeded by one sampling day	<p>Repeat in-situ measurement to confirm findings;                      Check the salinity of the effluent from the desalination plant;                      Inform IEC and Contractor;                      Check monitoring data, all plant and equipment;                      Discuss mitigation measures with IEC) and Contractor;                      (The above actions should be taken within 1 working day after the exceedance is identified)                      Repeat measurement on next day of exceedance.</p>	<p>Discuss with ET and Contractor on the mitigation measures;                      Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly;                      Assess the effectiveness of the implemented mitigation measures.                      (The above actions should be taken within 1 working day after the exceedance is identified)</p>	<p>Discuss with IEC on the proposed mitigation measures;                      Make agreement on the mitigation measures to be implemented.                      (The above actions should be taken within 1 working day after the exceedance is identified)</p>	<p>Inform the ER and confirm notification of the non-compliance in writing;                      Rectify unacceptable practice;                      Check all plant and equipment;                      Discuss with ET and IEC and propose mitigation measures to IEC and ER;                      Implement the agreed mitigation measures.                      (The above actions should be taken within 1 working day after the exceedance is identified)</p>
Action level being exceeded by more than one consecutive sampling days	<p>Identify source(s) of impact;                      Check the salinity of the effluent from the desalination plant;                      Inform IEC and Contractor;                      Check monitoring data, all plant and equipment;                      Discuss mitigation measures with IEC and Contractor;                      Ensure mitigation measures are implemented;                      Prepare to increase the monitoring frequency to daily;                      (The above actions should be taken within 1 working day after the exceedance is identified)                      Repeat measurement on next working day of exceedance.</p>	<p>Discuss with ET and Contractor on the mitigation measures;                      Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly;                      Assess the effectiveness of the implemented mitigation measures.                      (The above actions should be taken within 1 working day after the exceedance is identified)</p>	<p>Discuss with IEC on the proposed mitigation measures;                      Make agreement on the mitigation measures to be implemented;                      Assess the effectiveness of the implemented mitigation measures.                      (The above actions should be taken within 1 working day after the exceedance is identified)</p>	<p>Inform the ER and confirm notification of the non-compliance in writing;                      Rectify unacceptable practice;                      Check all plant and equipment;                      Discuss with ET and IEC and propose mitigation measures to IEC and ER within 3 working days;                      Implement the agreed mitigation measures.                      (The above actions should be taken within 1 working day after the exceedance is identified)</p>

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Limit level being exceeded by one sampling day	<p>Inform the ER and confirm notification of the non-compliance in writing;</p> <p>Check the salinity of the effluent from the desalination plant;</p> <p>Rectify unacceptable practice;</p> <p>Check all plant and equipment;</p> <p>Discuss with ET and IEC and propose mitigation measures to IEC and ER within 3 working days;</p> <p>Implement the agreed mitigation measures.</p> <p>(The above actions should be taken within 1 working day after the exceedance is identified)</p>	<p>Discuss with ET and Contractor on the mitigation measures;</p> <p>Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly;</p> <p>Assess the effectiveness of the implemented mitigation measures.</p> <p>(The above actions should be taken within 1 working day after the exceedance is identified)</p>	<p>Discuss with IEC, ET and Contractor on the proposed mitigation measures;</p> <p>Make agreement on the mitigation measures to be implemented;</p> <p>Assess the effectiveness of the implemented mitigation measures.</p> <p>(The above actions should be taken within 1 working day after the exceedance is identified)</p>	<p>Inform the ER and confirm notification of the non-compliance in writing;</p> <p>Rectify unacceptable practice;</p> <p>Check all plant and equipment;</p> <p>Discuss with ET , IEC and ER and propose mitigation measures to IEC and ER within 3 working days;</p> <p>Implement the agreed mitigation measures.</p> <p>(The above actions should be taken within 1 working day after the exceedance is identified)</p>
Limit level being exceeded by more than one consecutive sampling days	<p>Identify source(s) of impact;</p> <p>Inform IEC, contractor and EPD;</p> <p>Check the salinity of the effluent from the desalination plant;</p> <p>Check monitoring data, all plant and equipment;</p> <p>Discuss mitigation measures with IEC, ER and Contractor;</p> <p>Ensure mitigation measures are implemented;</p> <p>Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days.</p> <p>(The above actions should be taken within 1 working day after the exceedance is identified)</p>	<p>Discuss with ET and Contractor on the mitigation measures;</p> <p>Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly;</p> <p>Assess the effectiveness of the implemented mitigation measures.</p> <p>(The above actions should be taken within 1 working day after the exceedance is identified)</p>	<p>Discuss with IEC, ET and Contractor on the proposed mitigation measures;</p> <p>Make agreement on the mitigation measures to be implemented;</p> <p>Assess the effectiveness of the implemented mitigation measures;</p> <p>Consider, if necessary, other source of fresh water for normal operation of the facilities and instruct the contractor to tune down the production volume of the desalination plant until no exceedance of Limit level for two consecutive days.</p> <p>(The above actions should be taken within 1 working day after the exceedance is identified)</p>	<p>Inform the ER and confirm notification of the non-compliance in writing;</p> <p>Rectify unacceptable practice;</p> <p>Check all plant and equipment;</p> <p>Discuss with ET , IEC and ER and propose mitigation measures to IEC and ER within 3 working days;</p> <p>Implement the agreed mitigation measures;</p> <p>As directed by the ER, to tune down the production volume of the desalination plant.</p> <p>(The above actions should be taken within 1 working day after the exceedance is identified)</p>