



Proposed 132kV Submarine Cable
Route for Airport "A" to Castle Peak
Power Station Cable Circuit

*Third Weekly Impact Monitoring Report -
26th November to 2nd December 2007*

7th December 2007

Environmental Resources Management

21/F Lincoln House
Taikoo Place 979 King's Road
Island East Hong Kong
Telephone 2271 3000
Facsimile 2723 5660

www.erm.com

CLP Power


Proposed 132kV Submarine Cable
Route for Airport "A" to Castle
Peak Power Station Cable Circuit:
*Third Weekly Impact Monitoring
Report – 26th November – 2nd December
2007*

December 2007

Reference 0072833

For and on behalf of
ERM-Hong Kong, Limited

Approved by: Dr Robin Kennish

Signed: 

Position: Director

Date: 7 December 2007

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EXECUTIVE SUMMARY

The construction works for the Proposed 132kV Submarine Cable Route for Airport "A" to Castle Peak Power Station Cable Circuit (Application No. DIR-143/2006) commenced on 10 November 2007. This is the 3rd weekly Environmental Monitoring and Audit (EM&A) report presenting the EM&A works carried out during the period from 26 November to 2 December 2007 in accordance with the EM&A Manual.

Summary of Construction Works undertaken during the Reporting Period

During the reporting week, at the Tuen Mun landing site, rock breaking operations were undertaken by both backhoe machine on land and marine rock breaker on board of the work barge. It should be noted that there were occasions when rock breaking operation was not undertaken. No marine works involving dredging and jetting operations were conducted during the reporting period.

Water Quality

Three monitoring events were scheduled between 26 November and 2 December 2007. All monitoring events at all designated monitoring stations were performed on schedule, ie on 26 November, 28 November and 30 November 2007.

All measured dissolved oxygen levels did not fall below the Action and Limit (AL) Levels. SS levels at all monitoring events, were below AL Levels during the reporting week, with the exception of mid-flood monitoring on 28 November 2007. Turbidity levels of mid-ebb monitoring at Impact Stations on 26 November, and of mid-ebb and mid-flood monitoring on 28 November were above AL levels. Turbidity levels of Impact Stations on 30 November were below AL levels.

The exceedances of AL Levels of depth-averaged Turbidity (NTU) and Suspended Solids (mg/L) recorded on 26 November and 28 November 2007 were considered unrelated to the Project and may be due to the natural fluctuation.

Environmental Non-conformance

Three exceedances of the Action Level and five exceedances of the Limit Level of depth-averaged Turbidity were recorded during the reporting week. Two exceedances of Limit Level of depth-averaged SS were recorded during the reporting week.

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

No complaint and summons/prosecution was received during the reporting week.

Future Key Issues

During the following week (ie 3 December to 10 December 2007), the Project works will mainly involve rock breaking at the inshore area.

ERM-Hong Kong, Limited (ERM) was appointed by CLP Power (CLP) as the Environmental Team (ET) to implement the Environmental Monitoring and Audit (EM&A) programme for the Proposed 132kV Submarine Cable Route for Airport "A" to Castle Peak Power Station Cable Circuit (thereinafter called the Project).

1.1 PURPOSE OF THE REPORT

This is the 3rd weekly EM&A report which summarises the impact monitoring results and audit findings for the EM&A programme during the reporting period from 26 November to 2 December 2007.

1.2 STRUCTURE OF THE REPORT

The structure of the report is as follows:

Section 1 : Introduction

Details the background, purpose and structure of the report.

Section 2 : Project Information

Summarises background and scope of the project, site description, project organisation and contact details, construction programme, the construction works undertaken and the status of Environmental Permits/Licenses during the reporting period.

Section 3 : Environmental Monitoring Requirement

Summarises the monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring locations, Action and Limit Levels, Event / Action Plans, environmental mitigation measures as recommended in the EIA report and relevant environmental requirements.

Section 4 : Implementation Status on Environmental Mitigation Measures

Summarises the implementation of environmental protection measures during the reporting period.

Section 5 : Monitoring Results

Summarises the monitoring results obtained in the reporting period.

Section 6 : Environmental Non-conformance

Summarises any monitoring exceedance, environmental complaints and environmental summons within the reporting period.

*Section 7 : **Future Key Issues***

Summarises the monitoring schedule for the next week.

*Section 8 : **Review of EM&A Data and Impact Assessment Predictions***

Compares and contrasts the EM&A data in the reporting period with the impact assessment predictions and annotates with explanations of discrepancies.

*Section 9 : **Conclusions***

Presents the key findings of the impact monitoring results.

2.1 BACKGROUND

CLP will install a 132 kV submarine cable circuit to connect Castle Peak Power Station and Hong Kong International Airport in order to meet the electricity load growth at the Airport.

The proposed cable route will start from Tuen Mun and extend southward crossing the Urmston Road to the Airport. The cable landing sites will be located to the west of Butterfly Beach, Tuen Mun and at the northern part of the platform of the Airport (see *Figure 2.1*).

In September 2006, a Project Profile (PP) for the proposed 132kV Cable Route for Airport “A” to Castle Peak CCTS (thereinafter called the ‘Project’) was prepared and submitted to the Environmental Protection Department (EPD) under the *Environmental Impact Assessment Ordinance (EIAO)* for application for Permission to apply directly for Environmental Permit (EP) (Application No. DIR-143/2006).

An Environmental Permit (EP-267/2007) for the works was granted on 29 March 2007. Under the requirements of *Condition 2.12* of the EP, an EM&A programme as set out in the *Environmental Monitoring and Audit Manual (EM&A Manual)* is required to be implemented. In accordance with the *EM&A Manual*, impact monitoring of water quality is required for the Project.

Baseline Monitoring was conducted between 18 October and 28 October 2007. Through communications with EPD, a silt curtain at the water intake of the Airport should already be in place during the baseline monitoring. EPD hence advised the baseline monitoring (thereinafter called *Baseline Environmental Monitoring Part B*) for the Airport East section of works should be postponed until a silt curtain is ready. Accordingly, the baseline monitoring programme was undertaken for the Tuen Mun part only and is thereinafter called *Baseline Environmental Monitoring Part A*. Similarly, the Impact Monitoring was carried out for the Tuen Mun part only. This report, therefore, only presents results of the data from monitoring stations around the Tuen Mun landing site (*Figure 2.1*). Results of the impact monitoring data will therefore be compared against the results of the *Baseline Environmental Monitoring Part A*.

2.2 SITE DESCRIPTION

The proposed 132kV cable is located in-between Tuen Mun and the Airport and the alignment is illustrated in *Figure 2.1*.

2.3 *MARINE CONSTRUCTION WORKS UNDERTAKEN DURING REPORTING WEEK*

During the reporting week, rock breaking operations were undertaken by both backhoe machine on land and marine rock breaker on board of the work barge at inshore area of Tuen Mun landing. It should be noted that there were occasions when rock breaking operation was not undertaken. No marine works involving dredging and jetting operations were conducted during the reporting period.

The works programme of the period between 26 November and 16 December 2007 is presented in *Annex A*.

2.4 *PROJECT ORGANISATION*

The Project Organisation chart and contact details are shown in *Annex B*.

2.5 *STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS*

A summary of the relevant permits, licences, notifications and/or reports on environmental protection for this Project is presented in *Table 2.1*.

Table 2.1 *Summary of Environmental Licensing, Notification, Permit and Reporting Status*

| Permit / Licence / Notification / Report | Reference | Validity Period | Remarks |
|---|-------------|---|------------------------------------|
| EM&A Manual | - | Throughout the construction period | submitted on 25 January 2007 |
| Environmental Permit | EP-267/2007 | Throughout the construction period | granted on 29 March 2007 |
| Baseline Environmental Monitoring Report (Part A) | - | Throughout the construction period for Tuen Mun Section | approved by EPD on 8 November 2007 |

3.1 MONITORING LOCATIONS

In accordance with the *EM&A Manual*, prior to the installation of the cable, water quality sampling was undertaken at stations situated around the cable laying works area at Tuen Mun. The locations of the sampling stations are shown in *Figure 2.1*.

- C1 and C2 are Control Stations located over 1 km away from the Tuen Mun landing point and hence are not expected to be influenced by the construction works due to their remoteness;
- U1 and D1 are Gradient Stations situated approximately 300 m either side of the cable alignment for monitoring the effect of dredging at the Tuen Mun landing point and for identifying the source of impact; and,
- SR1 is a Sensitive Receiver used to monitor the effect of the construction works on Butterfly Beach.

The co-ordinates of these monitoring stations are listed in *Table 3.1*.

Table 3.1 *Co-ordinates of Water Quality Monitoring Stations (HK Grid)*

| Station | Nature | Description | Easting | Northing |
|---------|-----------------|-------------------------------------|-----------|-----------|
| C1 | Control Station | >1 km away from the cable alignment | 814483.53 | 825367.63 |
| C2 | Control Station | >1 km away from the cable alignment | 812890.08 | 824763.40 |
| U1 | Impact Station | 300 m away from the cable alignment | 813561.87 | 825446.07 |
| D1 | Impact Station | 300 m away from the cable alignment | 813140.26 | 825298.99 |
| SR1 | Impact Station | Butterfly Beach | 813483.43 | 825681.39 |

It is noted that water quality monitoring was undertaken at Tuen Mun only, consisting of stations C1, C2, U1, D1 and SR1. The monitoring at the Airport has been postponed until the silt curtains have been installed for the artificial reef near the Airport.

3.2 MONITORING PARAMETERS AND FREQUENCY

The impact water quality monitoring was conducted in accordance with the requirements stated in *EM&A Manual*, which is presented below.

3.2.1 Monitoring Parameters

Parameters measured *in situ* were:

- dissolved oxygen (DO) (% saturation and mg L⁻¹);

- temperature (°C);
- turbidity (NTU); and
- salinity (‰).

The only parameter measured in the laboratory was:

- suspended solids (SS) (mgL⁻¹).

In addition to the water quality parameters, other relevant data were measured and recorded in field logs, including the location of the sampling stations, water depth, time, weather conditions, sea conditions, tidal state, special phenomena and work activities undertaken around the monitoring and works area that may influence the monitoring results.

3.2.2 *Monitoring Frequency*

Impact water quality monitoring was carried out three times a week. The interval between two sets of monitoring was not less than 36 hours. The monitoring was undertaken at five locations (three impact monitoring stations D1, U1 and SR1, and two control monitoring stations C1 and C2), as shown on *Figure 2.1*. Samples were taken during mid-flood and mid-ebb tidal state on each sampling occasion.

3.3 *MONITORING EQUIPMENT AND METHODOLOGY*

3.3.1 *Monitoring Equipment*

Dissolved Oxygen, Temperature, Salinity, Turbidity Measuring Equipment

The instrument was a portable, weatherproof multi-parameter measuring instrument (YSI 6820) complete with cables, multi-probe sensor, comprehensive operation manuals, and was operable from a DC power source. It was capable of measuring:

- dissolved oxygen levels in the range of 0 – 50 mg L⁻¹; and 0-500% saturation;
- temperature of -5 to 50 °C;
- turbidity levels between 0-1000 NTU (response of the sensor was checked with certified standard turbidity solutions before the start of measurement); and,
- salinity in the range of 0-40 ppt (checked with 30 ppt Salinity solutions before the start of the measurement).

Water Depth Gauge

The water depth gauge affixed to the bottom of the water quality monitoring vessel was used.

Current Velocity and Direction

Current velocity and direction was estimated by conducting float tracking.

Positioning Device

A Global Positioning System (GPS) was used (C-Navigator World DGPS, GPS 72A) during monitoring to ensure the accurate recording of the position of the monitoring vessel before taking measurements. The use of DGPS was used for positioning device, which was well calibrated at appropriate checkpoint.

Water Sampling Equipment

Water samples for suspended solids measurement were collected by the use of a multi-bottle water sampling system (General Oceanics Inc., Rosette Sampler ROS02), consisting of PVC bottles of more than two litres, which could be effectively sealed with cups at both ends. The water sampler had a positive latching system to keep it open and prevent premature closure until released by a messenger when the sampler was at the selected water depth.

3.3.2

Monitoring Methodology

Timing & Frequency

The water quality sampling was undertaken within a 3 hour window of 1.5 hours before and 1.5 hours after mid-flood and mid-ebb tides. Tidal range for flood and ebb tides was not less than 0.5m for capturing representative tides.

Reference was made to the predicted tides at Lok On Pai, which is the tidal station nearest to the Project site, published on the website of Hong Kong Observatory⁽¹⁾. Based on the predicted water levels at Lok On Pai, the impact water quality monitoring was conducted between 26 November and 2 December, following the schedule presented in *Annex C*.

Duplicate samples were collected from each of the monitoring events for *in situ* measurements and laboratory analysis.

Depths

Each station was sampled and measurements were taken at three depths, 1 m below the sea surface, mid depth and 1m above the sea bed. For stations that were less than 3 m in depth, only the mid depth sample was taken.

⁽¹⁾ Hong Kong Observatory (2007) <http://www.hko.gov.hk/tide/eLOPtide.htm> [Accessed on 13 October 2007]

The multi-parameter measuring instrument (YSI 6820) was checked and calibrated by an HOKLAS accredited laboratory before use. Onsite calibration was also carried out to check the responses of sensors and electrodes using certified standard solutions before each use. Sufficient stocks of spare parts were maintained for replacements when necessary, and backup monitoring equipment was made available.

Water samples for SS measurements were collected in high density polythene bottles, packed in ice (cooled to 4° C without being frozen), and delivered to an HOKLAS accredited laboratory as soon as possible after collection.

Laboratory Analysis

All laboratory work was carried out by an HOKLAS accredited laboratory. Water samples of about 1,000 mL were collected at the monitoring and control stations for carrying out the laboratory determinations. The determination work started within the next working day after collection of the water samples. The analyses followed the standard methods as described in *APHA Standard Methods for the Examination of Water and Wastewater*, 19th Edition, unless otherwise specified (APHA 2540D for SS).

The QA/QC details were in accordance with requirements of HOKLAS or another internationally accredited scheme (details refer to *Annex D*).

3.3.3 Action and Limit Levels

The Action and Limit levels, which were established based on the results of *Baseline Environmental Monitoring Part A*, are presented in *Table 3.2*.

Table 3.2 Action and Limit Levels for Water Quality

| Parameter | Unit | Tide | Depth | Action Level | Limit Level |
|-----------------------|--------------------|-----------|--------------------|--------------|-------------|
| Suspended Solids (SS) | mg L ⁻¹ | Mid-Ebb | Depth-averaged | 12.8 | 13.3 |
| | | Mid-Flood | Depth-averaged | 23.6 | 28.3 |
| Dissolved Oxygen (DO) | mg L ⁻¹ | Mid-Ebb | Surface and Middle | 5.2 | 4.0 |
| | | | Bottom | 5.3 | 2.0 |
| | | Mid-Flood | Surface and Middle | 5.5 | 4.0 |
| | | | Bottom | 5.5 | 2.0 |
| Turbidity | NTU | Mid-Ebb | Depth-averaged | 7.0 | 8.3 |
| | | Mid-Flood | Depth-averaged | 14.8 | 18.9 |

3.3.4 Event and Action Plan

The Event and Action Plan for water quality monitoring which was stipulated in the *EM&A Manual* is presented in *Table 3.3*.

Table 3.3 *Event and Action Plan for Water Quality*

| Event | Action |
|----------------------------|--|
| Action Level Exceedance | <p>Step 1 - repeat sampling event;</p> <p>Step 2 - identify source(s) of impact and confirm whether exceedance was due to the construction works;</p> <p>Step 3 - inform EPD and LCSD and confirm notification of the non-compliance in writing;</p> <p>Step 4 - discuss with cable installation contractor the most appropriate method of reducing suspended solids during cable installation (e.g. reduce cable laying speed/ volume of water used during installation, increase effectiveness of silt curtain).</p> <p>Step 5 - repeat measurements after implementation of mitigation for confirmation of compliance.</p> <p>Step 6 - if non compliance continues - increase measures in Step 3 and repeat measurements in Step 3. If non compliance occurs a third time, suspend cable laying operations.</p> |
| Limit Level Exceedance | <p>Undertake Steps 1-5 immediately, if further non compliance continues at the Limit Level, suspend cable laying operations until an effective solution is identified.</p> |

IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES

4.1 RECOMMENDED MITIGATION MEASURES

Mitigation measures for water quality control have been recommended in the Project Profile and the Environmental Permit. The Contractor is responsible for the design and implementation of the following measures.

During cable laying the following will be undertaken:

- Although the sediment loss during both grab dredging and suction dredging is expected to be quite small, the Contractor will be employing a silt curtain around the dredgers to reduce the dispersion of sediments from the landing points.
- Closed grab dredgers will be used to avoid dispersion of suspended solids into the sea.
- The maximum dredging rate at Tuen Mun shore approach will be limited to 1,500 m³ day⁻¹ for working 10 hours per day, i.e., 150 m³ hr⁻¹.
- The maximum dredging rates of grab dredgers and suction method, whichever to be deployed by the contractor, at the Airport shore approach will be limited to 650 m³ day⁻¹ and 1,600 m³ day⁻¹ for working 16 hours per day, i.e., 41 m³ hr⁻¹ and 100 m³ hr⁻¹.
- All barges used for the transport of dredged materials will be fitted with tight bottom seals in order to prevent leakage of material during loading and transport.
- All barges will be filled to a level, to ensure that material does not spill over during loading and transport to the disposal site and that adequate freeboard is maintained to ensure that the decks are not washed by wave action.
- The forward speed of the jetting machine will be limited to a maximum of 80 m hr⁻¹ and 24 hours operation.

4.2 IMPLEMENTATION STATUS OF MITIGATION MEASURES

Since no marine works (ie dredging and jetting operations) were carried out during this reporting week, the mitigation measures as stipulated in the Project Profile and the EP were not required.

In addition to the regulatory requirements as mentioned in *Section 4.1* above, the Contractor has implemented a precautionary measure for the works

undertaken at the inshore area. As a precautionary measure, a silt curtain has been installed around the excavator that operates at low tide each day.

5.1 IMPACT MONITORING RESULTS

The monitoring data and graphical presentations are included in *Annex E* and summarised below.

Three monitoring events were scheduled between 26 November and 22 December 2007. All monitoring at all designated monitoring stations were performed on schedule, ie on 26 November, 28 November and 30 November 2007. The monitoring results are presented in *Annexes E1* to *E6*.

No major activities influencing the water quality were identified on 26 November and 30 November 2007. Trawling activity was however observed at Butterfly Beach on 28 November, which may have affected the water quality around the area.

All measured dissolved oxygen levels did not fall below the Action and Limit (AL) Levels. SS levels at all monitoring events, with exception of mid-flood monitoring on 28 November 2007, were below AL Levels during the reporting week. Turbidity levels of mid-ebb monitoring at Impact Stations on 26 November, and of mid-ebb and mid-flood monitoring on 28 November were above AL levels. Turbidity levels of Impact Stations on 30 November were below AL levels (*Tables 5.1 & 5.2*, and *Annex E*).

Table 5.1 *Action and Limit Levels for Water Quality and Status of Impacts Stations D1, U1 and SR1 on the Levels during Mid-ebb Tide*

| Sampling Date/ Parameter | Action Level | Limit Level | Station D1 | | Station U1 | | Station SR1 | |
|---|-----------------|----------------|---|--|---|--|---|--|
| | | | Exceed ance of Action Level ¹ | Exceed ance of Limit Level ¹ | Exceed ance of Action Level ¹ | Exceed ance of Limit Level ¹ | Exceed ance of Action Level ¹ | Exceed ance of Limit Level ¹ |
| 26/11/2007 | | | | | | | | |
| DO (mg/L) (Bottom) | 5.3 | 2.0 | N | N | N | N | N | N |
| DO (mg/L) (Depth- averaged) | 5.2 | 4.0 | N | N | N | N | N | N |
| Turbidity (NTU) (Depth- averaged) | 7.0 | 8.3 | Y | Y | Y | N | N | N |
| SS (mg/L) (Depth- averaged) | 12.8 | 13.3 | N | N | N | N | N | N |
| 28/11/2007 | | | | | | | | |
| DO (mg/L) (Bottom) | 5.3 | 2.0 | N | N | N | N | N | N |

| Sampling Date/ Parameter | Action Level | Limit Level | Station D1 | | Station U1 | | Station SR1 | |
|--|-----------------|----------------|---|--|---|--|---|--|
| | | | Exceed ance of Action Level ¹ | Exceed ance of Limit Level ¹ | Exceed ance of Action Level ¹ | Exceed ance of Limit Level ¹ | Exceed ance of Action Level ¹ | Exceed ance of Limit Level ¹ |
| DO (mg/L) (Depth- averaged) | 5.2 | 4.0 | N | N | N | N | N | N |
| Turbidity (NTU) (Depth- averaged) | 7.0 | 8.3 | Y | Y | Y | N | Y | Y |
| SS (mg/L) (Depth- averaged) | 12.8 | 13.3 | N | N | N | N | N | N |
| 30/11/2007 | | | | | | | | |
| DO (mg/L) (Bottom) | 5.3 | 2.0 | N | N | N | N | N | N |
| DO (mg/L) (Depth- averaged) | 5.2 | 4.0 | N | N | N | N | N | N |
| Turbidity (NTU) (Depth- averaged) | 7.0 | 8.3 | N | N | N | N | N | N |
| SS (mg/L) (Depth- averaged) | 12.8 | 13.3 | N | N | N | N | N | N |
| Notes: | | | | | | | | |
| 1. "Y" denotes exceedance of Action/Limit Level and "N" denotes no exceedances of Action/Limit Level | | | | | | | | |

Table 5.2 *Action and Limit Levels for Water Quality and Status of Impacts Stations D1, U1 and SR1 on the Levels during Mid-flood Tide*

| Sampling Date/ Parameter | Action Level | Limit Level | Station D1 | | Station U1 | | Station SR1 | |
|---|-----------------|----------------|---|--|---|--|---|--|
| | | | Exceed ance of Action Level ¹ | Exceed ance of Limit Level ¹ | Exceed ance of Action Level ¹ | Exceed ance of Limit Level ¹ | Exceed ance of Action Level ¹ | Exceed ance of Limit Level ¹ |
| | | | | | | | | |
| 26/11/2007 | | | | | | | | |
| DO (mg/L) (Bottom) | 5.5 | 2.0 | N | N | N | N | N | N |
| DO (mg/L) (Depth- averaged) | 5.5 | 4.0 | N | N | N | N | N | N |
| Turbidity (NTU) (Depth- averaged) | 14.8 | 18.9 | N | N | N | N | N | N |
| SS (mg/L) (Depth- averaged) | 23.6 | 28.3 | N | N | N | N | N | N |
| 28/11/2007 | | | | | | | | |
| DO (mg/L) (Bottom) | 5.5 | 2.0 | N | N | N | N | N | N |

| Sampling Date/ Parameter | Action Level | Limit Level | Station D1 | | Station U1 | | Station SR1 | |
|--|-----------------|----------------|---|--|---|--|---|--|
| | | | Exceed ance of Action Level ¹ | Exceed ance of Limit Level ¹ | Exceed ance of Action Level ¹ | Exceed ance of Limit Level ¹ | Exceed ance of Action Level ¹ | Exceed ance of Limit Level ¹ |
| DO (mg/L) (Depth- averaged) | 5.5 | 4.0 | N | N | N | N | N | N |
| Turbidity (NTU) (Depth- averaged) | 14.8 | 18.9 | Y | Y | Y | N | Y | Y |
| SS (mg/L) (Depth- averaged) | 23.6 | 28.3 | Y | Y | N | N | Y | Y |
| 30/11/2007 | | | | | | | | |
| DO (mg/L) (Bottom) | 5.5 | 2.0 | N | N | N | N | N | N |
| DO (mg/L) (Depth- averaged) | 5.5 | 4.0 | N | N | N | N | N | N |
| Turbidity (NTU) (Depth- averaged) | 14.8 | 18.9 | N | N | N | N | N | N |
| SS (mg/L) (Depth- averaged) | 23.6 | 28.3 | N | N | N | N | N | N |
| Notes: 1. "Y" denotes exceedance of Action/Limit Level and "N" denotes no exceedances of Action/Limit Levels | | | | | | | | |

6.1 SUMMARY OF ENVIRONMENTAL EXCEEDANCE

The exceedances occurred on the individual days are discussed. The implications of the exceedances are also discussed by reviewing the temporal and spatial trend of the concerned monitoring parameters, ie turbidity and SS.

Exceedances on 26 November 2007

Depth-averaged Turbidity (mg/L) exceeded Action Level at Station D1 and Limit Level at Station U1 during the mid-ebb tidal condition (*Figure 6.1, Table 6.1*).

Table 6.1 *Exceedance of Action Level of Depth-averaged Turbidity (NTU)*

| | | |
|------------------------------|---|---|
| Exceedance Log No. | 0072833_26 Nov 07_Turb_Stations D1 0072833_26 Nov 07_Turb_Stations U1 [Total No. of Exceedances: 2] | |
| Sampling date | 26 November 2007 | |
| Monitoring station | D1 and U1 | |
| Action Levels (NTU) | Mid-ebb | 7.00 |
| | Mid-flood | 14.80 |
| Limit Levels (NTU) | Mid-ebb | 8.30 |
| | Mid-flood | 18.90 |
| Measured Levels (NTU) | Mid-ebb | Station D1 – 8.69 (exceed Limit Level) |
| | | Station U1 – 7.64 (exceed Action Level) |
| | Mid-flood | Station D1 – 8.67 |
| | | Station U1 – 6.87 |

The exceedances were unlikely to be caused by the Project and were considered to be an isolated case due to the following reasons:

- Turbidity of the Upstream Control Station C2 was 15.6 NTU, which was much higher than those of Downstream Stations D1 & U1 and also exceeded Limit Level.
- Turbidity of the downstream Stations C1 and U1 were lower than those of the Upstream Stations D1 and C2. Since this monitoring event was carried out during the mid-ebb tidal condition (flow direction = 99 degree), the exceedance was unlikely to be caused by the Project.
- There was no exceedance of SS levels of the Impact Stations.

Exceedances on 28 November 2007

Depth-averaged Turbidity (mg/L) exceeded Limit Level at Station D1, Action Level at Station U1 and Limit Level at Station SR1 during both mid-ebb and mid-flood tidal conditions (*Figure 6.2 & Table 6.2*).

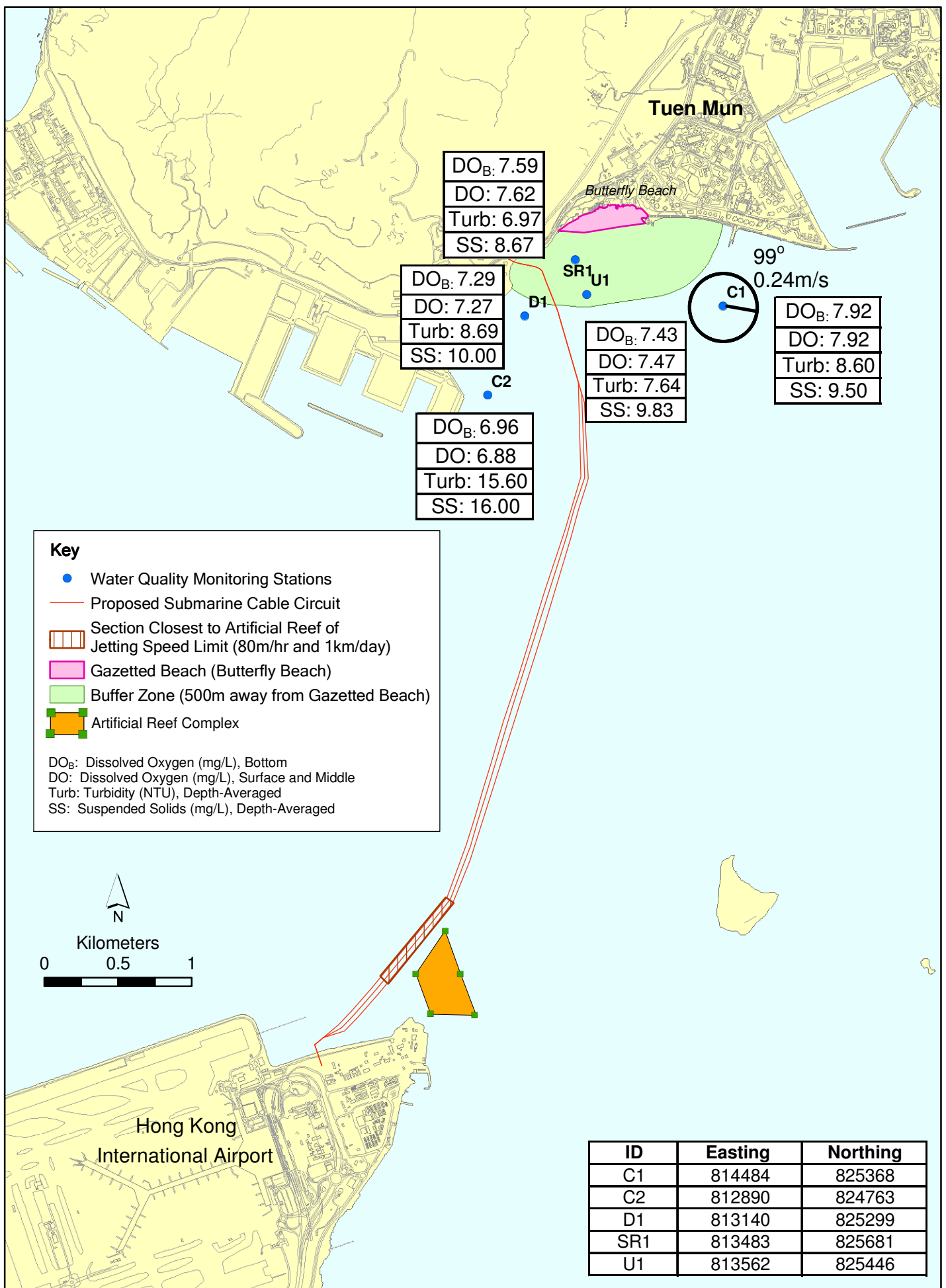


Figure 6.1

Mid Ebb Water Quality Monitoring
(26 Nov 2007)

File: 0072833_Midd_ebb.mxd
Date: 28/11/2007

Environmental
Resources
Management



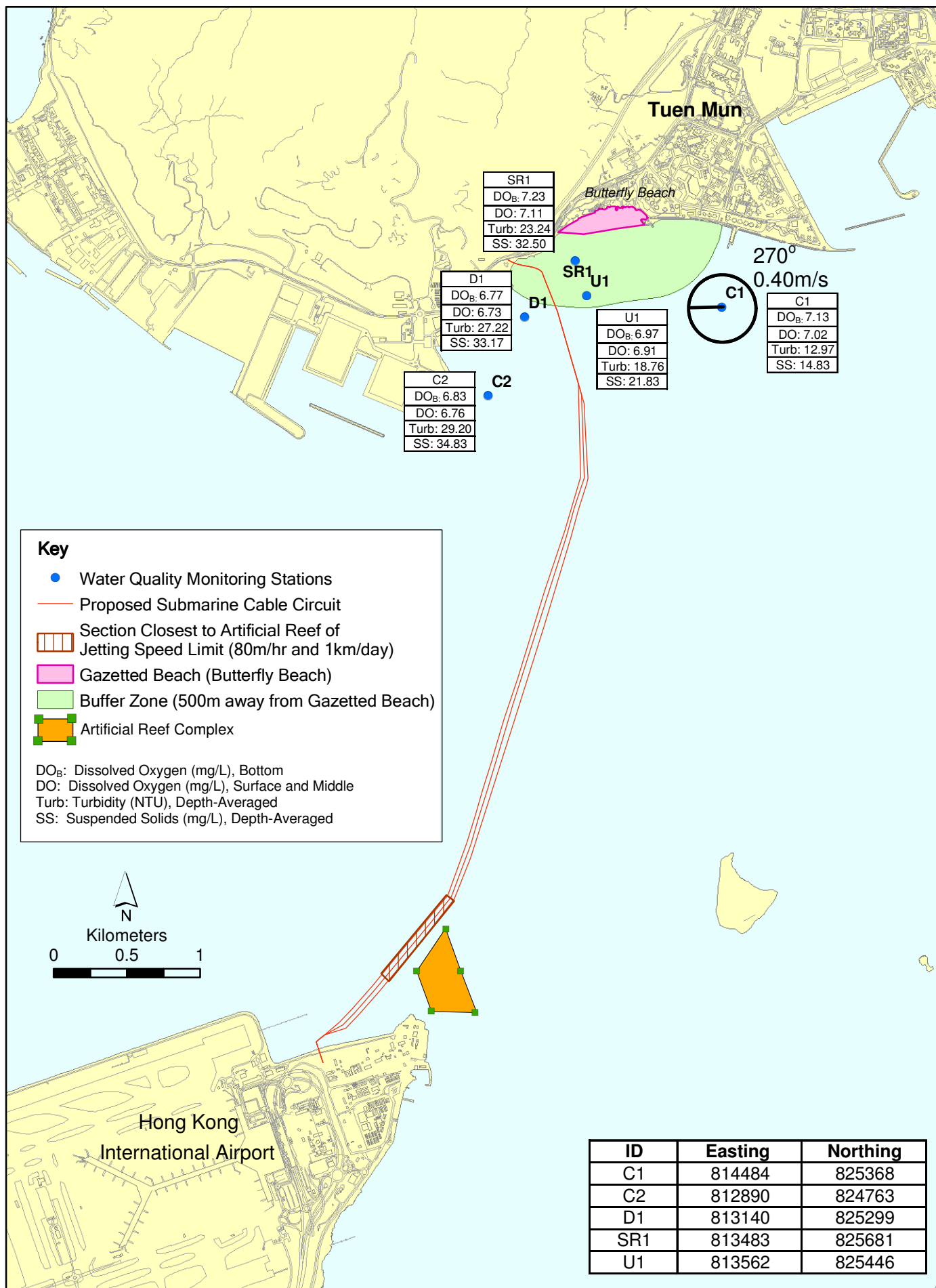


Figure 6.2

Mid Flood Water Quality Monitoring
(28 Nov 2007)

Environmental
Resources
Management



Table 6.2 *Exceedance of Action Level of Depth-averaged Turbidity (NTU)*

| | | |
|------------------------------|---|--|
| Exceedance Log No. | 0072833_28 Nov 07_Turb_F_Station D1 0072833_28 Nov 07_Turb_F_Station U1 0072833_28 Nov 07_Turb_F_Stations SR1 0072833_28 Nov 07_Turb_E_Station D1 0072833_28 Nov 07_Turb_E_Station U1 0072833_28 Nov 07_Turb_E_Stations SR1 [Total No. of Exceedances: 6] | |
| Sampling date | 28 November 2007 | |
| Monitoring station | D1, U1 and SR1 | |
| Action Levels (NTU) | Mid-ebb | 7.00 |
| | Mid-flood | 14.80 |
| Limit Levels (NTU) | Mid-ebb | 8.30 |
| | Mid-flood | 18.90 |
| Measured Levels (NTU) | Mid-ebb | Station D1 – 27.22 NTU (exceed Limit Level) |
| | | Station U1 – 18.76 NTU (exceed Action Level) |
| | | Station SR1 – 23.24 NTU (exceed Limit Level) |
| | Mid-flood | Station D1 – 9.66 NTU (exceed Limit Level) |
| | | Station U1 – 7.68 NTU (exceed Action Level) |
| | | Station SR1 – 8.92 NTU (exceed Limit Level) |

The exceedances were unlikely to be caused by the Project and were considered to be an isolated case due to the following reasons:

During mid-flood,

- The Contractor confirmed that there were no works carried out for the Project during mid-flood tidal condition.
- Turbidity levels recorded at upstream Stations U1 and SR1 were lower than but of similar magnitude to that recorded at downstream Stations D1.
- Downstream Station D1, which is located closer to the construction site, recorded lower turbidity level than that recorded at another Station C2, which is further away from the construction site.
- Trawling was observed in operation across the monitoring area. This may have affected the water quality in its vicinity and hence the monitoring results.

During mid-ebb,

- The turbidity levels of all Impact and Control Stations exceeded the Action Level. This indicates that the region was likely to be influenced by other activities at the farther upstream of the Project site.
- Turbidity level of the upstream Control Station C2 was 10.61 NTU, which was higher than another upstream Station D1 (closer to the Project site than C2).

- Turbidity levels recorded at both Upstream Stations were higher than those of Downstream Stations U1 and SR1. This again indicates that the water at the upstream area may be influenced by natural fluctuation.

Depth-averaged SS (mg/L) exceeded Limit Level at Stations D1 and SR1 during mid-flood tidal conditions (Figure 6.2 & Table 6.3).

Table 6.3 *Exceedance of Action Level of Depth-averaged Suspended Solids (SS, mg/L)*

| | | |
|-------------------------------|--|---|
| Exceedance Log No. | 0072833_28 Nov 07_SS_F_Station D1 0072833_28 Nov 07_SS_F_Station SR1 [Total No. of Exceedances: 2] | |
| Sampling date | 28 November 2007 | |
| Monitoring station | D1 and SR1 | |
| Action Levels (mg/L) | Mid-ebb | 12.8 |
| | Mid-flood | 23.6 |
| Limit Levels (mg/L) | Mid-ebb | 13.3 |
| | Mid-flood | 28.3 |
| Measured Levels (mg/L) | Mid-ebb | Station D1 – 9.83 Station SR1 – 10.00 |
| | Mid-flood | Station D1 – 33.17 (exceed Limit Level) Station SR1 – 32.50 (exceed Limit Level) |

The exceedances were unlikely to be caused by the Project and were considered to be an isolated case due to the following reasons:

- The Contractor confirmed that there was no work carried out during the mid-flood tidal condition.
- Upstream Station SR1 recorded SS levels in similar magnitude of those recorded at downstream Stations D1 and C2.
- Downstream Station D1, which is located closer to the construction site, recorded lower SS level than that recorded at another Station C2, which is further away from the construction site.
- Trawling operation across the monitoring area was observed by the ET. This may have affected the water quality in its vicinity and hence affected the monitoring results.
- Following the flood tide measurements, monitoring during the ebb tide was carried out and the monitoring results showed no SS exceedances.

Despite the above-mentioned reasons, the Contractor has confirmed that the silt curtain has been checked regularly during the reporting week and is in good condition. These exceedances were therefore unlikely to be caused by the Project and were considered to be an isolated case due to natural fluctuation.

The exceedance incidents were notified to EPD and LCSD.

Trends of Concerned Parameters

Following the investigation of NOEs during each monitoring event, it is observed that exceedances of two parameters, ie turbidity and suspended solids were recorded in the monitoring period. The monitoring results for the whole monitoring period including the baseline monitoring are illustrated in *Figures E1 to E4 in Annex E*.

Ebb Tide

At the ebb tide, turbidity levels at the stations, with the exception of upstream control station C2 recorded during the impact monitoring (12– 30 November 2007) are generally comparable with those recorded during the baseline monitoring (18– 28 October 2007). An increasing trend in turbidity levels at control station C2 is observed in the period of 17 November to 26 November 2007 touching the maximum of 15.6 NTU on 26 November 2007. Since control station C2 is located over 1 km upstream of the Project site, it is unlikely to be influenced by the site activities. Water in the upstream area may hence be potentially influenced by other factors such as natural fluctuation and/or vessel movement. In this connection, the relatively small increasing trend in turbidity level at other stations also indicates that other factors affecting the water quality in the vicinity of the Project site may exist. Similarly, an increasing trend of suspended solids is also observed for the period of 17 November to 26 November 2007 whilst the upstream station C2 also recorded the highest SS concentrations among the monitoring stations. This again indicates that some other factors rather than the Project works may affect the water quality in the upstream area.

Flood Tide

At the flood tide, turbidity and SS levels at the stations over the impact monitoring (12 – 30 November 2007) were comparable with those measured during the baseline monitoring (18 – 28 October 2007), with the exception of 28 November 2007. The peak levels on 28 November occurred at all stations, including the upstream stations, C1, U1 and SR1 and the levels on 30 November 2007 returned to the similar magnitude as recorded on the other days. This indicates that the peaks on 28 November were isolated and this may be due to the influence of the surrounding activities.

It is also worth to note that the construction works were not carried out continuously over the weeks during the impact monitoring period. On some occasions, there were no marine works undertaken on site during the monitoring period (see the discussion on each individual NOE and the work programme as shown in *Annex A*).

To conclude, the Project was unlikely to have given rise to the increasing trend as well as the NOEs recorded during the impact monitoring period.

6.2 *SUMMARY OF ENVIRONMENTAL NON-COMPLIANCE*

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

6.3 *SUMMARY OF ENVIRONMENTAL COMPLAINT*

No complaint was received during the reporting period.

6.4 *SUMMARY OF ENVIRONMENTAL SUMMONS AND PROSECUTION*

No summons or prosecution on environmental matters was received during the reporting period.

7 FUTURE KEY ISSUES

7.1 KEY ISSUES FOR THE COMING MONTH

During the following week (ie 3 December to 10 December 2007), the project works will mainly involve rock breaking at the inshore area. The expected construction programme is enclosed in *Annex A*.

7.2 MONITORING SCHEDULE FOR THE COMING MONTHS

The tentative schedule of impact water quality monitoring for November and December is presented in *Annex C*. The environmental monitoring will be conducted at the same monitoring locations as those for this reporting week.

Since there were no marine works (ie dredging and jetting operations) at the Project site during the reporting week, it was not necessary to compare the monitoring data with the impact assessment predictions in the Project Profile.

This Weekly Impact Monitoring Report presents the EM&A work undertaken during the period from 26 November to 2 December 2007 in accordance with the EM&A Manual and the requirements under *EP-267/2007*.

Although exceedances of the Action and Limit Levels of Turbidity and SS were found on 26 November and 28 November 2007, these were unlikely to be caused by the Project and may be due to natural fluctuation.

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

No complaint and summons/prosecution was received during the reporting week.

The ET will keep track of the EM&A programme to ensure compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

Annex A

Works Programme of the
Period between 26
November and 16 December
2007

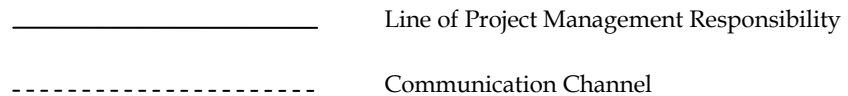
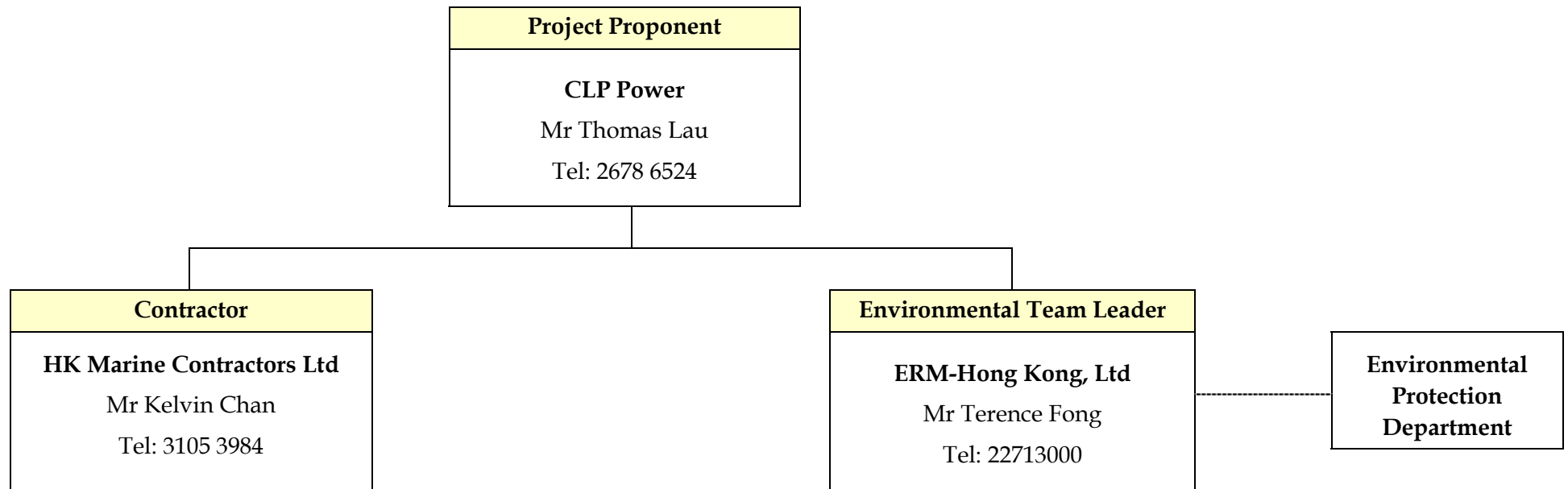
Marine Work of 132kV Submarine Cable Installation between Airport to Tuen Mun

| | Item Date | Workdone for Last Week | | | | | | | Plan for This Week | | | | | | | Anticipate Plan for Next Week | | | | | | |
|---|--------------------------------|------------------------|-------|-------|-------|-------|------|------|--------------------|------|------|------|------|------|------|-------------------------------|-------|-------|-------|-------|-------|-------|
| | | 26/11 | 27/11 | 28/11 | 29/11 | 30/11 | 1/12 | 2/12 | 3/12 | 4/12 | 5/12 | 6/12 | 7/12 | 8/12 | 9/12 | 10/12 | 11/12 | 12/12 | 13/12 | 14/12 | 15/12 | 16/12 |
| 1 | Mobilization of Plants | | | | | | | | | | | | | | | | | | | | | |
| 2 | Utilities Detection | | | | | | | | | | | | | | | | | | | | | |
| 3 | Mobilization of Marine Plant | | | | | | | | | | | | | | | | | | | | | |
| 4 | Site Setting Out | | | | | | | | | | | | | | | | | | | | | |
| 5 | Site Clearance | | | | | | | | | | | | | | | | | | | | | |
| 6 | Installation of Silt Curtain | | | | | | | | | | | | | | | | | | | | | |
| 5 | Rock Breaking (Land Portion) | | | | | | | | | | | | | | | | | | | | | |
| 6 | Rock Breaking (Marine Portion) | | | | | | | | | | | | | | | | | | | | | |

Annex B

Project Organisation Chart (with Contact Details)

ANNEX B - PROJECT ORGANIZATION (WITH CONTACT DETAILS)



Annex C

Tentative Monitoring Schedule

**Proposed 132kV Submarine Cable Route for Airport “A” to Castle Peak Power Station Cable Circuit
Tentative Water Quality Monitoring Schedule around Tuen Mun landing site - November 2007**

Reference Tidal Station: Lok On Pai (source: HK Observatory Department)

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|--------|--|---------|--|--|--|--|
| | | | | 01-Nov | 02-Nov | 03-Nov |
| | | | | | | |
| 04-Nov | 05-Nov | 06-Nov | 07-Nov | 08-Nov | 09-Nov | 10-Nov |
| | | | | | | |
| 11-Nov | 12-Nov | 13-Nov | 14-Nov | 15-Nov | 16-Nov | 17-Nov |
| | Mid-Ebb 14:11 Mid-Flood 19:13 <i>Impact Monitoring</i> | | | Mid-Ebb 03:36 Mid-Flood 11:27 <i>Impact Monitoring</i> | | Mid-Ebb 05:12 Mid-Flood 17:42 <i>Impact Monitoring</i> |
| 18-Nov | 19-Nov | 20-Nov | 21-Nov | 22-Nov | 23-Nov | 24-Nov |
| | Mid-Ebb 07:22 Mid-Flood 15:14 <i>Impact Monitoring</i> | | Mid-Ebb 09:41 Mid-Flood 16:10 <i>Impact Monitoring</i> | | Mid-Ebb 11:30 Mid-Flood 17:13 <i>Impact Monitoring</i> | |
| 25-Nov | 26-Nov | 27-Nov | 28-Nov | 29-Nov | 30-Nov | |
| | Mid-Ebb 14:00 Mid-Flood 19:02 <i>Impact Monitoring</i> | | Mid-Ebb 10:40 Mid-Flood 15:31 <i>Impact Monitoring</i> | | Mid-Ebb 04:45 Mid-Flood 17:11 <i>Impact Monitoring</i> | |

The schedule is subject to agreement from the EPD on the monitoring times. The schedule will be revised after reviewing the progress of the construction works or due to adverse (safety, weather etc) conditions.

**Proposed 132kV Submarine Cable Route for Airport “A” to Castle Peak Power Station Cable Circuit
Tentative Water Quality Monitoring Schedule around Tuen Mun landing site - December 2007**

Reference Tidal Station: Lok On Pai (source: HK Observatory Department)

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|--------|--|---------|--|----------|--|--|
| | | | | | | 01-Dec |
| | | | | | | |
| 02-Dec | 03-Dec | 04-Dec | 05-Dec | 06-Dec | 07-Dec | 08-Dec |
| | Mid-Ebb 07:52 Mid-Flood 15:02 <i>Impact Monitoring</i> | | Mid-Ebb 09:59 Mid-Flood 15:58 <i>Impact Monitoring</i> | | | Mid-Ebb 12:11 Mid-Flood 17:12 <i>Impact Monitoring</i> |
| 09-Dec | 10-Dec | 11-Dec | 12-Dec | 13-Dec | 14-Dec | 15-Dec |
| | Mid-Ebb 13:19 Mid-Flood 18:12 <i>Impact Monitoring</i> | | Mid-Ebb 14:27 Mid-Flood 19:16 <i>Impact Monitoring</i> | | Mid-Ebb 15:51 Mid-Flood 20:37 <i>Impact Monitoring</i> | |
| 16-Dec | 17-Dec | 18-Dec | 19-Dec | 20-Dec | 21-Dec | 22-Dec |
| | Mid-Flood 13:12 Mid-Ebb 19:12 <i>Impact Monitoring</i> | | Mid-Ebb 07:47 Mid-Flood 14:29 <i>Impact Monitoring</i> | | Mid-Ebb 10:11 Mid-Flood 15:47 <i>Impact Monitoring</i> | |
| 23-Dec | 24-Dec | 25-Dec | 26-Dec | 27-Dec | 28-Dec | 29-Dec |
| | Mid-Ebb 13:03 Mid-Flood 18:01 <i>Impact Monitoring</i> | | Mid-Ebb 14:34 Mid-Flood 19:36 <i>Impact Monitoring</i> | | Mid-Ebb 16:04 Mid-Flood 21:08 <i>Impact Monitoring</i> | |
| 30-Dec | 31-Dec | | | | | |
| | Mid-Ebb 05:29 Mid-Flood 12:51 <i>Impact Monitoring</i> | | | | | |

The schedule is subject to agreement from the EPD on the monitoring times. The schedule will be revised after reviewing the progress of the construction works or due to adverse (safety, weather etc) conditions.

Annex D

QA/QC Results of
Laboratory Testing for
Suspended Solids



CERTIFICATE OF ANALYSIS

| | | | | | |
|--------------|---|--------------|---|----------------|-----------------|
| Client | : ERM HONG KONG | Laboratory | : ALS Technichem (HK) Pty Ltd | Page | : 1 of 6 |
| Contact | : MS KAREN LUI | Contact | : Alice Wong | Work Order | : HK0717169 |
| Address | : 21/F, LINCOLN HOUSE, 979 KING'S ROAD, TAIKOO PLACE, ISLAND EAST, HONG KONG | Address | : 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong | | |
| E-mail | : Karen.Lui@erm.com | E-mail | : Alice.Wong@alsenviro.com | | |
| Telephone | : 2271 3000 | Telephone | : +852 2610 1044 | | |
| Facsimile | : 2723 5660 | Facsimile | : +852 2610 2021 | | |
| Project | : EM&A FOR THE PROPOSED 132kV SUBMARINE CABLE ROUTE FOR AIRPORT "A" TO CASTLE PEAK CCTS | Quote number | : ---- | Date received | : 27 Nov 2007 |
| Order number | : ---- | | | Date of issue | : 28 Nov 2007 |
| C-O-C number | : ---- | | | No. of samples | - Received : 60 |
| Site | : ---- | | | | - Analysed : 60 |

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK0717169 supersedes any previous reports with this reference. The completion date of analysis is 28 Nov 2007. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific comments for Work Order HK0717169 : **Sample(s) were received in a chilled condition.**
Water sample(s) analysed and reported on an as received basis.

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| <i>Signatory</i> | <i>Position</i> | <i>Authorised results for:-</i> |
| Fung Lim Chee, Richard | General Manager | Inorganics |



Quality Control - Laboratory Duplicate (DUP) Results

| Matrix Type: WATER | | | | Duplicate (DUP) Results | | | | |
|--|---------------------------|------------------------------|------------|-------------------------|-------|-----------------|------------------|---------|
| Laboratory Sample ID | Client Sample ID | Method: Analysis Description | CAS number | LOR | Units | Original Result | Duplicate Result | RPD (%) |
| EA/ED: Physical and Aggregate Properties (QC Lot: 543884) | | | | | | | | |
| HK0717169-001 | 2007/11/26/13:06/C1/B/E/ | EA025: Suspended Solids (SS) | ---- | 1 | mg/L | 12 | 13 | 8.4 |
| | REPL. 1 | | | | | | | |
| HK0717169-011 | 2007/11/26/13:19/SR1/M/E/ | EA025: Suspended Solids (SS) | ---- | 1 | mg/L | 9 | 8 | 16.8 |
| | REPL. 2 | | | | | | | |
| EA/ED: Physical and Aggregate Properties (QC Lot: 543886) | | | | | | | | |
| HK0717169-021 | 2007/11/26/13:34/D1/T/E/ | EA025: Suspended Solids (SS) | ---- | 1 | mg/L | 9 | 8 | 0.0 |
| | REPL. 1 | | | | | | | |
| HK0717169-031 | 2007/11/26/17:49/C1/B/F/ | EA025: Suspended Solids (SS) | ---- | 1 | mg/L | 10 | 11 | 10.6 |
| | REPL. 1 | | | | | | | |
| EA/ED: Physical and Aggregate Properties (QC Lot: 543887) | | | | | | | | |
| HK0717169-041 | 2007/11/26/18:07/SR1/M/F/ | EA025: Suspended Solids (SS) | ---- | 1 | mg/L | 9 | 10 | 11.6 |
| | REPL. 2 | | | | | | | |
| HK0717169-051 | 2007/11/26/18:24/D1/T/F/ | EA025: Suspended Solids (SS) | ---- | 1 | mg/L | 8 | 8 | 0.0 |
| | REPL. 1 | | | | | | | |

Quality Control - Method Blank (MB), Single Control Spike (SCS) and Duplicate Control Spike (DCS) Results

| Matrix Type: WATER | | Method Blank (MB) Results | | | Single Control Spike (SCS) and Duplicate Control Spike (DCS) Results | | | | | | | |
|--|--|------------------------------|------------|------|--|--------------------|--------|---------------------|-----|----------|------|-------|
| | | | | | Spike Concentration | Spike Recovery (%) | | Recovery Limits (%) | | RPDs (%) | | |
| | | Method: Analysis Description | CAS number | LOR | | Units | Result | SCS | DCS | Low | High | Value |
| EA/ED: Physical and Aggregate Properties (QCLot: 543884) | | | | | | | | | | | | |
| EA025: Suspended Solids (SS) | | ---- | 2 | mg/L | <2 | 20 mg/L | 97.5 | ---- | 85 | 115 | ---- | ---- |
| EA/ED: Physical and Aggregate Properties (QCLot: 543886) | | | | | | | | | | | | |
| EA025: Suspended Solids (SS) | | ---- | 2 | mg/L | <2 | 20 mg/L | 99.5 | ---- | 85 | 115 | ---- | ---- |
| EA/ED: Physical and Aggregate Properties (QCLot: 543887) | | | | | | | | | | | | |
| EA025: Suspended Solids (SS) | | ---- | 2 | mg/L | <2 | 20 mg/L | 95.0 | ---- | 85 | 115 | ---- | ---- |



CERTIFICATE OF ANALYSIS

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| Client | : ERM HONG KONG | Laboratory | : ALS Technichem (HK) Pty Ltd | Page | : 1 of 6 |
| Contact | : MS KAREN LUI | Contact | : Alice Wong | Work Order | : HK0717301 |
| Address | : 21/F, LINCOLN HOUSE, 979 KING'S ROAD, TAIKOO PLACE, ISLAND EAST, HONG KONG | Address | : 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong | | |
| E-mail | : Karen.Lui@erm.com | E-mail | : Alice.Wong@alsenviro.com | | |
| Telephone | : 2271 3000 | Telephone | : +852 2610 1044 | | |
| Facsimile | : 2723 5660 | Facsimile | : +852 2610 2021 | | |
| Project | : EM&A FOR THE PROPOSED 132kV SUBMARINE CABLE ROUTE FOR AIRPORT "A" TO CASTLE PEAK CCTS | Quote number | : ---- | Date received | : 29 Nov 2007 |
| Order number | : ---- | | | Date of issue | : 30 Nov 2007 |
| C-O-C number | : ---- | | | No. of samples | - Received : 60 |
| Site | : ---- | | | | - Analysed : 60 |

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK0717301 supersedes any previous reports with this reference. The completion date of analysis is 30 Nov 2007. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific comments for Work Order HK0717301 : **Sample(s) were received in a chilled condition.**
Water sample(s) analysed and reported on an as received basis.

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| <i>Signatory</i> | <i>Position</i> | <i>Authorised results for:-</i> |
| Fung Lim Chee, Richard | General Manager | Inorganics |



Quality Control - Laboratory Duplicate (DUP) Results

| Matrix Type: WATER | | | | Duplicate (DUP) Results | | | | |
|--|---------------------------|------------------------------|------------|-------------------------|-------|-----------------|------------------|---------|
| Laboratory Sample ID | Client Sample ID | Method: Analysis Description | CAS number | LOR | Units | Original Result | Duplicate Result | RPD (%) |
| EA/ED: Physical and Aggregate Properties (QC Lot: 546106) | | | | | | | | |
| HK0717301-002 | 2007/11/28/09:48/C1/M/E/ | EA025: Suspended Solids (SS) | ---- | 1 | mg/L | 14 | 13 | 10.8 |
| | REPL. 1 | | | | | | | |
| HK0717301-011 | 2007/11/28/10:13/SR1/M/E/ | EA025: Suspended Solids (SS) | ---- | 1 | mg/L | 30 | 30 | 0.0 |
| | REPL. 2 | | | | | | | |
| EA/ED: Physical and Aggregate Properties (QC Lot: 546107) | | | | | | | | |
| HK0717301-021 | 2007/11/28/10:35/D1/T/E/ | EA025: Suspended Solids (SS) | ---- | 1 | mg/L | 30 | 35 | 15.0 |
| | REPL. 1 | | | | | | | |
| HK0717301-031 | 2007/11/28/14:20/C1/B/F/ | EA025: Suspended Solids (SS) | ---- | 1 | mg/L | 9 | 10 | 0.0 |
| | REPL. 1 | | | | | | | |
| EA/ED: Physical and Aggregate Properties (QC Lot: 546108) | | | | | | | | |
| HK0717301-041 | 2007/11/28/14:34/SR1/M/F/ | EA025: Suspended Solids (SS) | ---- | 1 | mg/L | 10 | 11 | 14.8 |
| | REPL. 2 | | | | | | | |
| HK0717301-051 | 2007/11/28/14:50/D1/T/F/ | EA025: Suspended Solids (SS) | ---- | 1 | mg/L | 9 | 10 | 15.6 |
| | REPL. 1 | | | | | | | |

Quality Control - Method Blank (MB), Single Control Spike (SCS) and Duplicate Control Spike (DCS) Results

| Matrix Type: WATER | | Method Blank (MB) Results | | | Single Control Spike (SCS) and Duplicate Control Spike (DCS) Results | | | | | | | |
|--|--|------------------------------|------------|------|--|--------------------|--------|---------------------|-----|----------|------|-------|
| | | | | | Spike Concentration | Spike Recovery (%) | | Recovery Limits (%) | | RPDs (%) | | |
| | | Method: Analysis Description | CAS number | LOR | | Units | Result | SCS | DCS | Low | High | Value |
| EA/ED: Physical and Aggregate Properties (QCLot: 546106) | | | | | | | | | | | | |
| EA025: Suspended Solids (SS) | | ---- | 2 | mg/L | <2 | 20 mg/L | 105 | ---- | 85 | 115 | ---- | ---- |
| EA/ED: Physical and Aggregate Properties (QCLot: 546107) | | | | | | | | | | | | |
| EA025: Suspended Solids (SS) | | ---- | 2 | mg/L | <2 | 20 mg/L | 93.0 | ---- | 85 | 115 | ---- | ---- |
| EA/ED: Physical and Aggregate Properties (QCLot: 546108) | | | | | | | | | | | | |
| EA025: Suspended Solids (SS) | | ---- | 2 | mg/L | <2 | 20 mg/L | 97.5 | ---- | 85 | 115 | ---- | ---- |



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| Client | : ERM HONG KONG | Laboratory | : ALS Technichem (HK) Pty Ltd | Page | : 1 of 6 |
| Contact | : MS KAREN LUI | Contact | : Alice Wong | Work Order | : HK0717413 |
| Address | : 21/F, LINCOLN HOUSE, 979 KING'S ROAD, TAIKOO PLACE, ISLAND EAST, HONG KONG | Address | : 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong | | |
| E-mail | : Karen.Lui@erm.com | E-mail | : Alice.Wong@alsenviro.com | | |
| Telephone | : 2271 3000 | Telephone | : +852 2610 1044 | | |
| Facsimile | : 2723 5660 | Facsimile | : +852 2610 2021 | | |
| Project | : EM&A FOR THE PROPOSED 132kV SUBMARINE CABLE ROUTE FOR AIRPORT "A" TO CASTLE PEAK CCTS | Quote number | : --- | Date received | : 1 Dec 2007 |
| Order number | : --- | | | Date of issue | : 4 Dec 2007 |
| C-O-C number | : --- | | | No. of samples | - Received : 60 |
| Site | : --- | | | | - Analysed : 60 |

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK0717413 supersedes any previous reports with this reference. The completion date of analysis is 4 Dec 2007. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific comments for Work Order HK0717413 : **Sample(s) were received in a chilled condition.**
Water sample(s) analysed and reported on an as received basis.

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This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in the 'Electronic Transactions Ordinance' of Hong Kong. Chapter 553. Section 6.

| | | |
|------------------------|-----------------|---------------------------------|
| <i>Signatory</i> | <i>Position</i> | <i>Authorised results for:-</i> |
| Fung Lim Chee, Richard | General Manager | Inorganics |



Quality Control - Laboratory Duplicate (DUP) Results

| Matrix Type: WATER | | | | Duplicate (DUP) Results | | | | |
|--|---------------------------|------------------------------|------------|-------------------------|-------|-----------------|------------------|---------|
| Laboratory Sample ID | Client Sample ID | Method: Analysis Description | CAS number | LOR | Units | Original Result | Duplicate Result | RPD (%) |
| EA/ED: Physical and Aggregate Properties (QC Lot: 548001) | | | | | | | | |
| HK0717413-001 | 2007/11/30/03:52/C1/B/E/ | EA025: Suspended Solids (SS) | ---- | 1 | mg/L | 7 | 6 | 0.0 |
| | REPL. 1 | | | | | | | |
| HK0717413-012 | 2007/11/30/04:08/SR1/T/E/ | EA025: Suspended Solids (SS) | ---- | 1 | mg/L | 6 | 7 | 19.1 |
| | REPL. 2 | | | | | | | |
| EA/ED: Physical and Aggregate Properties (QC Lot: 548002) | | | | | | | | |
| HK0717413-021 | 2007/11/30/04:24/D1/T/E/ | EA025: Suspended Solids (SS) | ---- | 1 | mg/L | 6 | 7 | 0.0 |
| | REPL. 1 | | | | | | | |
| HK0717413-031 | 2007/11/30/16:09/C1/B/F/ | EA025: Suspended Solids (SS) | ---- | 1 | mg/L | 10 | 11 | 0.0 |
| | REPL. 1 | | | | | | | |
| EA/ED: Physical and Aggregate Properties (QC Lot: 548003) | | | | | | | | |
| HK0717413-041 | 2007/11/30/16:23/SR1/M/F/ | EA025: Suspended Solids (SS) | ---- | 1 | mg/L | 8 | 9 | 0.0 |
| | REPL. 2 | | | | | | | |
| HK0717413-051 | 2007/11/30/04:40/D1/T/F/ | EA025: Suspended Solids (SS) | ---- | 1 | mg/L | 10 | 9 | 17.0 |
| | REPL. 1 | | | | | | | |

Quality Control - Method Blank (MB), Single Control Spike (SCS) and Duplicate Control Spike (DCS) Results

| Matrix Type: WATER | | Method Blank (MB) Results | | | Single Control Spike (SCS) and Duplicate Control Spike (DCS) Results | | | | | | | |
|--|--|------------------------------|------------|------|--|--------------------|--------|---------------------|-----|----------|------|------|
| | | | | | Spike | Spike Recovery (%) | | Recovery Limits (%) | | RPDs (%) | | |
| | | Method: Analysis Description | CAS number | LOR | | Units | Result | Concentration | SCS | DCS | Low | High |
| EA/ED: Physical and Aggregate Properties (QCLot: 548001) | | | | | | | | | | | | |
| EA025: Suspended Solids (SS) | | ---- | 2 | mg/L | <2 | 20 mg/L | 98.5 | ---- | 85 | 115 | ---- | ---- |
| EA/ED: Physical and Aggregate Properties (QCLot: 548002) | | | | | | | | | | | | |
| EA025: Suspended Solids (SS) | | ---- | 2 | mg/L | <2 | 20 mg/L | 100 | ---- | 85 | 115 | ---- | ---- |
| EA/ED: Physical and Aggregate Properties (QCLot: 548003) | | | | | | | | | | | | |
| EA025: Suspended Solids (SS) | | ---- | 2 | mg/L | <2 | 20 mg/L | 94.5 | ---- | 85 | 115 | ---- | ---- |

Annex E

Impact Water Quality Monitoring Results

Annex E4 - Water Quality Results, Action and Limit Levels at mid-ebb tide for 28 November 2007

| Date | 11/28/2007 | | | | | | | | |
|--------------------------|---------------|---------|---------|---------|---------|---------|----------------|--------|--|
| Station | C1 | | | | | | | | |
| Time (hh:mm) | 14:20 - 14:23 | | | | | | | | |
| Ambient Temperature (°C) | 20 | | | | | | | | |
| Weather | Sunny | | | | | | | | |
| Water Depth (m) | 9.00 | | | | | | | | |
| Monitoring Depth (m) | 1.10 | | 4.20 | | 7.10 | | | | |
| Tide | Mid-Ebb | | | | | | | | |
| Trial | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Depth-averaged | Bottom | |
| Water Temperature (°C) | 21.6 | 21.6 | 21.6 | 21.6 | 21.6 | 21.6 | 21.60 | - | |
| Salinity (ppt) | 32.4 | 32.4 | 32.4 | 32.4 | 32.4 | 32.5 | 32.44 | - | |
| pH | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.98 | | |
| D.O. Saturation (%) | 104.3 | 103.6 | 104.2 | 103.7 | 104.5 | 103.7 | 103.99 | - | |
| D.O. (mg/L) | 7.61 | 7.56 | 7.60 | 7.56 | 7.62 | 7.57 | 7.59 | 7.60 | |
| Turbidity (NTU) | 6.78 | 7.08 | 7.29 | 7.19 | 8.20 | 9.01 | 7.59 | - | |
| SS (mg/L) | 10.0 | 8.0 | 7.0 | 10.0 | 9.0 | 10.0 | 9.00 | - | |
| Remarks | - | | | | | | | | |

| Date | 11/28/2007 | | | | | | | | |
|--------------------------|---------------|---------|---------|---------|---------|---------|----------------|--------|--|
| Station | C2 | | | | | | | | |
| Time (hh:mm) | 14:57 - 15:02 | | | | | | | | |
| Ambient Temperature (°C) | 20 | | | | | | | | |
| Weather | Sunny | | | | | | | | |
| Water Depth (m) | 14.20 | | | | | | | | |
| Monitoring Depth (m) | 1.00 | | 6.80 | | 13.20 | | | | |
| Tide | Mid-Ebb | | | | | | | | |
| Trial | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Depth-averaged | Bottom | |
| Water Temperature (°C) | 21.6 | 21.6 | 21.6 | 21.6 | 21.6 | 21.5 | 21.56 | - | |
| Salinity (ppt) | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.49 | - | |
| pH | 7.9 | 7.9 | 7.9 | 7.9 | 7.9 | 7.9 | 7.94 | | |
| D.O. Saturation (%) | 100.1 | 97.2 | 101.7 | 97.8 | 103.3 | 98.6 | 99.79 | - | |
| D.O. (mg/L) | 7.31 | 7.09 | 7.42 | 7.13 | 7.54 | 7.20 | 7.28 | 7.37 | |
| Turbidity (NTU) | 9.92 | 7.79 | 10.42 | 11.44 | 12.25 | 11.84 | 10.61 | - | |
| SS (mg/L) | 9.0 | 9.0 | 9.0 | 14.0 | 11.0 | 11.0 | 10.50 | - | |
| Remarks | - | | | | | | | | |

| Date | 11/28/2007 | | | | | | | | |
|--------------------------|---------------|---------|---------|---------|---------|---------|----------------|--------|--|
| Station | D1 | | | | | | | | |
| Time (hh:mm) | 14:49 - 14:52 | | | | | | | | |
| Ambient Temperature (°C) | 20 | | | | | | | | |
| Weather | Sunny | | | | | | | | |
| Water Depth (m) | 8.90 | | | | | | | | |
| Monitoring Depth (m) | 1.30 | | 4.60 | | 8.10 | | | | |
| Tide | Mid-Ebb | | | | | | | | |
| Trial | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Depth-averaged | Bottom | |
| Water Temperature (°C) | 21.6 | 21.6 | 21.6 | 21.5 | 21.5 | 21.5 | 21.55 | - | |
| Salinity (ppt) | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.50 | - | |
| pH | 8.0 | 8.0 | 8.0 | 7.9 | 7.9 | 7.9 | 7.95 | | |
| D.O. Saturation (%) | 99.6 | 97.3 | 99.8 | 97.3 | 100.9 | 97.7 | 98.78 | - | |
| D.O. (mg/L) | 7.26 | 7.10 | 7.28 | 7.10 | 7.37 | 7.14 | 7.21 | 7.26 | |
| Turbidity (NTU) | 7.79 | 10.42 | 8.40 | 12.35 | 8.80 | 10.22 | 9.66 | - | |
| SS (mg/L) | 9.0 | 8.0 | 9.0 | 12.0 | 10.0 | 11.0 | 9.83 | - | |
| Remarks | - | | | | | | | | |

Compliance with Action and Limit Level

| Parameter | Action Level | Limit Level | D1 | | U1 | | SR1 | |
|----------------------------|--------------|-------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|
| | | | Exceedance of Action Level | Exceedance of Limit Level | Exceedance of Action Level | Exceedance of Limit Level | Exceedance of Action Level | Exceedance of Limit Level |
| DO (Bottom) | 5.3 | 2.0 | N | N | N | N | N | N |
| DO (Depth-averaged) | 5.2 | 4.0 | N | N | N | N | N | N |
| Turbidity (Depth-averaged) | 7.0 | 8.3 | Y | Y | Y | N | Y | Y |
| SS (Depth-averaged) | 12.8 | 13.3 | N | N | N | N | N | N |

| Date | 11/28/2007 | | | | | | | | |
|--------------------------|---------------|---------|---------|---------|---------|---------|----------------|--------|--|
| Station | U1 | | | | | | | | |
| Time (hh:mm) | 14:40 - 14:44 | | | | | | | | |
| Ambient Temperature (°C) | 20 | | | | | | | | |
| Weather | Sunny | | | | | | | | |
| Water Depth (m) | 9.70 | | | | | | | | |
| Monitoring Depth (m) | 1.10 | | 4.80 | | 8.00 | | | | |
| Tide | Mid-Ebb | | | | | | | | |
| Trial | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Depth-averaged | Bottom | |
| Water Temperature (°C) | 21.6 | 21.6 | 21.6 | 21.6 | 21.5 | 21.5 | 21.56 | - | |
| Salinity (ppt) | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.48 | - | |
| pH | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.96 | | |
| D.O. Saturation (%) | 102.5 | 100.9 | 102.1 | 100.5 | 103.0 | 101.2 | 101.71 | - | |
| D.O. (mg/L) | 7.48 | 7.35 | 7.45 | 7.34 | 7.53 | 7.39 | 7.42 | 7.46 | |
| Turbidity (NTU) | 5.57 | 5.87 | 7.59 | 7.79 | 10.32 | 8.91 | 7.68 | - | |
| SS (mg/L) | 8.0 | 9.0 | 10.0 | 8.0 | 11.0 | 13.0 | 9.83 | - | |
| Remarks | - | | | | | | | | |

| Date | 11/28/2007 | | | | | | | | |
|--------------------------|---------------|---------|---------|---------|---------|---------|----------------|--------|--|
| Station | SR1 | | | | | | | | |
| Time (hh:mm) | 14:32 - 14:35 | | | | | | | | |
| Ambient Temperature (°C) | 20 | | | | | | | | |
| Weather | Sunny | | | | | | | | |
| Water Depth (m) | 5.90 | | | | | | | | |
| Monitoring Depth (m) | 1.20 | | 2.60 | | 4.10 | | | | |
| Tide | Mid-Ebb | | | | | | | | |
| Trial | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Depth-averaged | Bottom | |
| Water Temperature (°C) | 21.5 | 21.5 | 21.5 | 21.5 | 21.5 | 21.4 | 21.47 | - | |
| Salinity (ppt) | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.48 | - | |
| pH | 7.9 | 8.0 | 7.9 | 8.0 | 7.9 | 7.9 | 7.94 | | |
| D.O. Saturation (%) | 106.2 | 107.2 | 107.2 | 105.1 | 108.4 | 105.5 | 106.60 | - | |
| D.O. (mg/L) | 7.76 | 7.83 | 7.84 | 7.68 | 7.92 | 7.71 | 7.79 | 7.82 | |
| Turbidity (NTU) | 9.51 | 6.58 | 9.51 | 8.40 | 9.21 | 10.32 | 8.92 | - | |
| SS (mg/L) | 12.0 | 8.0 | 9.0 | 10.0 | 10.0 | 11.0 | 10.00 | - | |
| Remarks | - | | | | | | | | |

Flow Tracking Data

| Position | Easting | Northing | Depth | Time | Speed | Direction | Date |
|----------|-----------|-----------|-------|--------|--------|-----------|----------|
| C1 | 814488.53 | 825365.67 | 8.7 | 150958 | 0 | 0 | 20071128 |
| C1 | 814544.96 | 825366.41 | 1.7 | 151550 | 0.1603 | 89.2 | 20071128 |
| C1 | 814592.62 | 825367.09 | 1.7 | 152101 | 0.1533 | 89.2 | 20071128 |
| C1 | 814647.24 | 825368.6 | 1.7 | 152626 | 0.1681 | 88.4 | 20071128 |

Dissolved Oxygen (mg/L, Surface and Middle)

| | |
|-----|------|
| C1 | 7.58 |
| C2 | 7.24 |
| D1 | 7.19 |
| U1 | 7.41 |
| SR1 | 7.78 |

Annex E3 - Water Quality Results, Action and Limit Levels at mid-flood tide for 28 November 2007

| | | | | | | | | |
|--------------------------|---------------|---------|---------|---------|---------|---------|----------------|--------|
| Date | 11/28/2007 | | | | | | | |
| Station | C1 | | | | | | | |
| Time (hh:mm) | 09:47 - 09:53 | | | | | | | |
| Ambient Temperature (°C) | 20 | | | | | | | |
| Weather | Sunny | | | | | | | |
| Water Depth (m) | 8.20 | | | | | | | |
| Monitoring Depth (m) | 1.10 | | 4.20 | | 7.00 | | | |
| Tide | Mid-Flood | | | | | | | |
| Trial | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Depth-averaged | Bottom |
| Water Temperature (°C) | 21.4 | 21.5 | 21.4 | 21.5 | 21.3 | 21.4 | 21.41 | - |
| Salinity (ppt) | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.51 | - |
| pH | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.96 | - |
| D.O. Saturation (%) | 96.9 | 94.6 | 97.4 | 95.1 | 98.5 | 96.2 | 96.42 | - |
| D.O. (mg/L) | 7.09 | 6.91 | 7.13 | 6.95 | 7.21 | 7.04 | 7.06 | 7.13 |
| Turbidity (NTU) | 9.11 | 10.73 | 13.46 | 12.14 | 15.99 | 16.39 | 12.97 | - |
| SS (mg/L) | 11.0 | 12.0 | 14.0 | 12.0 | 19.0 | 21.0 | 14.83 | - |
| Remarks | - | | | | | | | |

| | | | | | | | | |
|--------------------------|---------------|---------|---------|---------|---------|---------|----------------|--------|
| Date | 11/28/2007 | | | | | | | |
| Station | C2 | | | | | | | |
| Time (hh:mm) | 10:43 - 10:47 | | | | | | | |
| Ambient Temperature (°C) | 20 | | | | | | | |
| Weather | Sunny | | | | | | | |
| Water Depth (m) | 14.00 | | | | | | | |
| Monitoring Depth (m) | 1.10 | | 6.50 | | 11.80 | | | |
| Tide | Mid-Flood | | | | | | | |
| Trial | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Depth-averaged | Bottom |
| Water Temperature (°C) | 21.1 | 21.1 | 21.1 | 21.1 | 21.1 | 21.1 | 21.08 | - |
| Salinity (ppt) | 32.4 | 32.4 | 32.4 | 32.4 | 32.4 | 32.4 | 32.38 | - |
| pH | 7.9 | 7.9 | 7.9 | 7.9 | 7.9 | 7.9 | 7.91 | - |
| D.O. Saturation (%) | 92.4 | 91.0 | 93.0 | 91.2 | 93.7 | 91.7 | 92.12 | - |
| D.O. (mg/L) | 6.80 | 6.70 | 6.84 | 6.71 | 6.90 | 6.75 | 6.78 | 6.83 |
| Turbidity (NTU) | 28.23 | 33.09 | 24.09 | 32.89 | 25.91 | 30.97 | 29.20 | - |
| SS (mg/L) | 33.0 | 39.0 | 28.0 | 41.0 | 30.0 | 38.0 | 34.83 | - |
| Remarks | - | | | | | | | |

| | | | | | | | | |
|--------------------------|---------------|---------|---------|---------|---------|---------|----------------|--------|
| Date | 11/28/2007 | | | | | | | |
| Station | D1 | | | | | | | |
| Time (hh:mm) | 10:33 - 10:36 | | | | | | | |
| Ambient Temperature (°C) | 20 | | | | | | | |
| Weather | Sunny | | | | | | | |
| Water Depth (m) | 9.20 | | | | | | | |
| Monitoring Depth (m) | 1.00 | | 4.50 | | 8.10 | | | |
| Tide | Mid-Flood | | | | | | | |
| Trial | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Depth-averaged | Bottom |
| Water Temperature (°C) | 21.1 | 21.1 | 21.1 | 21.1 | 21.1 | 21.1 | 21.12 | - |
| Salinity (ppt) | 32.4 | 32.3 | 32.3 | 32.3 | 32.4 | 32.3 | 32.34 | - |
| pH | 7.9 | 7.9 | 7.9 | 7.9 | 7.9 | 7.9 | 7.91 | - |
| D.O. Saturation (%) | 91.8 | 90.6 | 92.1 | 90.9 | 92.7 | 91.3 | 91.58 | - |
| D.O. (mg/L) | 6.76 | 6.67 | 6.79 | 6.69 | 6.82 | 6.72 | 6.74 | 6.77 |
| Turbidity (NTU) | 24.29 | 21.35 | 28.54 | 27.43 | 29.04 | 32.69 | 27.22 | - |
| SS (mg/L) | 30.0 | 27.0 | 31.0 | 36.0 | 34.0 | 41.0 | 33.17 | - |
| Remarks | | | | | | | - | |

Compliance with Action and Limit Level

| Parameter | Action Level | Limit Level | D1 | | U1 | | SR1 | |
|----------------------------|--------------|-------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|
| | | | Exceedance of Action Level | Exceedance of Limit Level | Exceedance of Action Level | Exceedance of Limit Level | Exceedance of Action Level | Exceedance of Limit Level |
| DO (Bottom) | 5.5 | 2.0 | N | N | N | N | N | N |
| DO (Surface and Middle) | 5.5 | 4.0 | N | N | N | N | N | N |
| Turbidity (Depth-averaged) | 14.8 | 18.9 | Y | Y | Y | N | Y | Y |
| SS (Depth-averaged) | 23.6 | 28.3 | Y | Y | N | N | Y | Y |

| | | | | | | | | | | |
|--------------------------|---------------|---------|---------|---------|---------|---------|-------|------|----------------|--------|
| Date | 11/28/2007 | | | | | | | | | |
| Station | U1 | | | | | | | | | |
| Time (hh:mm) | 10:24 - 10:27 | | | | | | | | | |
| Ambient Temperature (°C) | 20 | | | | | | | | | |
| Weather | Sunny | | | | | | | | | |
| Water Depth (m) | 8.80 | | | | | | | | | |
| Monitoring Depth (m) | 1.10 | | 4.00 | | 7.00 | | | | | |
| Tide | Mid-Flood | | | | | | | | | |
| Trial | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Trial 1 | Trial 2 | | | Depth-averaged | Bottom |
| Water Temperature (°C) | 21.0 | 21.0 | 21.2 | 21.1 | 21.1 | 21.0 | | | 21.06 | - |
| Salinity (ppt) | 32.3 | 32.3 | 32.4 | 32.4 | 32.4 | 32.4 | 32.38 | - | | |
| pH | 7.9 | 7.9 | 7.9 | 7.9 | 7.9 | 7.9 | 7.92 | - | | |
| D.O. Saturation (%) | 94.1 | 93.3 | 94.7 | 93.3 | 95.6 | 93.7 | 94.11 | - | | |
| D.O. (mg/L) | 6.94 | 6.88 | 6.96 | 6.87 | 7.04 | 6.90 | 6.93 | 6.97 | | |
| Turbidity (NTU) | 7.89 | 7.39 | 12.75 | 12.85 | 33.80 | 37.85 | 18.76 | - | | |
| SS (mg/L) | 10.0 | 11.0 | 14.0 | 9.0 | 44.0 | 43.0 | 21.83 | - | | |
| Remarks | - | | | | | | | | | |

| | | | | | | | | | |
|--------------------------|---------------|---------|---------|---------|---------|---------|-------|----------------|--------|
| Date | 11/28/2007 | | | | | | | | |
| Station | SR1 | | | | | | | | |
| Time (hh:mm) | 10:11 - 10:14 | | | | | | | | |
| Ambient Temperature (°C) | 20 | | | | | | | | |
| Weather | Sunny | | | | | | | | |
| Water Depth (m) | 5.00 | | | | | | | | |
| Monitoring Depth (m) | 1.30 | | 2.70 | | 4.00 | | | | |
| Tide | Mid-Flood | | | | | | | | |
| Trial | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Trial 1 | Trial 2 | | Depth-averaged | Bottom |
| Water Temperature (°C) | 21.3 | 21.4 | 21.3 | 21.4 | 21.4 | 21.3 | | 21.35 | - |
| Salinity (ppt) | 32.4 | 32.4 | 32.4 | 32.4 | 32.4 | 32.4 | 32.41 | - | |
| pH | 7.9 | 7.9 | 7.9 | 7.9 | 7.9 | 7.9 | 7.93 | - | |
| D.O. Saturation (%) | 97.9 | 95.4 | 98.7 | 96.3 | 100.3 | 97.1 | 97.57 | - | |
| D.O. (mg/L) | 7.18 | 6.98 | 7.23 | 7.05 | 7.35 | 7.11 | 7.15 | 7.23 | |
| Turbidity (NTU) | 16.19 | 21.86 | 17.81 | 25.10 | 37.34 | 21.15 | 23.24 | - | |
| SS (mg/L) | 19.0 | 26.0 | 69.0 | 30.0 | 26.0 | 25.0 | 32.50 | - | |
| Remarks | - | | | | | | | | |

Flow Tracking Data

| Position | Easting | Northing | Depth | Time | Speed | Direction | Date |
|----------|---------|----------|-------|--------|--------|-----------|----------|
| C1 | 814483 | 825373 | 8.4 | 105614 | 0 | 0 | 20071128 |
| C1 | 814311 | 825372 | 8.5 | 110251 | 0.435 | 269.6 | 20071128 |
| C1 | 814195 | 825373 | 8.7 | 110748 | 0.391 | 270.7 | 20071128 |
| C1 | 814063 | 825367 | 8.7 | 111328 | 0.3867 | 267.2 | 20071128 |

Dissolved Oxygen (mg/L, Surface and Middle)

| | |
|-----|------|
| C1 | 7.02 |
| C2 | 6.76 |
| D1 | 6.73 |
| U1 | 6.91 |
| SR1 | 7.11 |

Annex E2 - Water Quality Results, Action and Limit Levels at mid-flood tide for 26 November 2007

| | | | | | | | | | | |
|--------------------------|---------------|---------|---------|---------|---------|---------|-------|------|----------------|--------|
| Date | 11/26/2007 | | | | | | | | | |
| Station | C1 | | | | | | | | | |
| Time (hh:mm) | 17:49 - 17:57 | | | | | | | | | |
| Ambient Temperature (°C) | 20 | | | | | | | | | |
| Weather | Sunny | | | | | | | | | |
| Water Depth (m) | 8.80 | | | | | | | | | |
| Monitoring Depth (m) | 1.30 | | 4.10 | | 7.20 | | | | | |
| Tide | Mid-Flood | | | | | | | | | |
| Trial | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Trial 1 | Trial 2 | | | Depth-averaged | Bottom |
| Water Temperature (°C) | 22.3 | 22.3 | 22.3 | 22.3 | 22.3 | 22.3 | | | 22.30 | - |
| Salinity (ppt) | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.49 | - | | |
| pH | 8.0 | 8.0 | 8.0 | 8.0 | 7.9 | 8.0 | 7.96 | | | |
| D.O. Saturation (%) | 94.7 | 94.6 | 94.7 | 94.7 | 94.5 | 94.5 | 94.63 | - | | |
| D.O. (mg/L) | 6.82 | 6.82 | 6.82 | 6.82 | 6.81 | 6.80 | 6.82 | 6.81 | | |
| Turbidity (NTU) | 6.98 | 7.08 | 7.19 | 8.91 | 8.40 | 9.31 | 7.98 | - | | |
| SS (mg/L) | 8.0 | 7.0 | 9.0 | 11.0 | 10.0 | 10.0 | 9.17 | - | | |
| Remarks | | | | | | | | | | |

| | | | | | | | | | |
|--------------------------|---------------|---------|---------|---------|---------|---------|----------------|--------|--|
| Date | 11/26/2007 | | | | | | | | |
| Station | C2 | | | | | | | | |
| Time (hh:mm) | 18:32 - 18:39 | | | | | | | | |
| Ambient Temperature (°C) | 20 | | | | | | | | |
| Weather | Sunny | | | | | | | | |
| Water Depth (m) | 14.70 | | | | | | | | |
| Monitoring Depth (m) | 1.10 | | 7.10 | | 13.10 | | | | |
| Tide | Mid-Flood | | | | | | | | |
| Trial | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Depth-averaged | Bottom | |
| Water Temperature (°C) | 22.3 | 22.3 | 22.3 | 22.3 | 22.3 | 22.3 | 22.32 | - | |
| Salinity (ppt) | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.49 | - | |
| | 7.9 | 7.9 | 7.9 | 7.9 | 7.9 | 7.9 | 7.93 | | |
| D.O. Saturation (%) | 94.4 | 94.4 | 94.3 | 94.3 | 94.5 | 94.5 | 94.40 | - | |
| D.O. (mg/L) | 6.79 | 6.79 | 6.79 | 6.79 | 6.81 | 6.81 | 6.80 | 6.81 | |
| Turbidity (NTU) | 8.30 | 8.91 | 9.01 | 10.52 | 11.54 | 12.45 | 10.12 | - | |
| SS (mg/L) | 9.0 | 10.0 | 9.0 | 11.0 | 12.0 | 14.0 | 10.83 | - | |
| Remarks | | | | | | | | | |

| | | | | | | | | | | |
|--------------------------|---------------|---------|---------|---------|---------|---------|-------|------|----------------|--------|
| Date | 11/23/2007 | | | | | | | | | |
| Station | D1 | | | | | | | | | |
| Time (hh:mm) | 18:23 - 18:26 | | | | | | | | | |
| Ambient Temperature (°C) | 20 | | | | | | | | | |
| Weather | Sunny | | | | | | | | | |
| Water Depth (m) | 10.10 | | | | | | | | | |
| Monitoring Depth (m) | 1.00 | 5.10 | | 9.00 | | | | | | |
| Tide | Mid-Flood | | | | | | | | | |
| Trial | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Trial 1 | Trial 2 | | | Depth-averaged | Bottom |
| Water Temperature (°C) | 22.4 | 22.4 | 22.4 | 22.4 | 22.4 | 22.4 | | | 22.39 | - |
| Salinity (ppt) | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.52 | - | | |
| pH | 7.9 | 7.9 | 7.9 | 7.9 | 8.0 | 7.9 | 7.94 | - | | |
| D.O. Saturation (%) | 94.3 | 94.4 | 94.2 | 94.2 | 94.6 | 94.2 | 94.31 | - | | |
| D.O. (mg/L) | 6.78 | 6.79 | 6.77 | 6.77 | 6.80 | 6.77 | 6.78 | 6.79 | | |
| Turbidity (NTU) | 7.89 | 7.79 | 8.20 | 8.60 | 9.61 | 9.92 | 8.67 | - | | |
| SS (mg/L) | 8.0 | 9.0 | 9.0 | 11.0 | 12.0 | 11.0 | 10.00 | - | | |
| Remarks | - | | | | | | | | | |

Compliance with Action and Limit Level

| Parameter | Action Level | Limit Level | D1 | | U1 | | SR1 | |
|----------------------------|--------------|-------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|
| | | | Exceedance of Action Level | Exceedance of Limit Level | Exceedance of Action Level | Exceedance of Limit Level | Exceedance of Action Level | Exceedance of Limit Level |
| DO (Bottom) | 5.5 | 2.0 | N | N | N | N | N | N |
| DO (Depth-averaged) | 5.5 | 4.0 | N | N | N | N | N | N |
| Turbidity (Depth-averaged) | 14.8 | 18.9 | N | N | N | N | N | N |
| SS (Depth-averaged) | 23.6 | 28.3 | N | N | N | N | N | N |

| | | | | | | | | |
|--------------------------|---------------|---------|---------|---------|---------|---------|----------------|--------|
| Date | 11/26/2007 | | | | | | | |
| Station | U1 | | | | | | | |
| Time (hh:mm) | 18:12 - 18:17 | | | | | | | |
| Ambient Temperature (°C) | 20 | | | | | | | |
| Weather | Sunny | | | | | | | |
| Water Depth (m) | 9.70 | | | | | | | |
| Monitoring Depth (m) | 1.30 | | 4.60 | | 7.90 | | | |
| Tide | Mid-Flood | | | | | | | |
| Trial | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Depth-averaged | Bottom |
| Water Temperature (°C) | 22.3 | 22.3 | 22.3 | 22.3 | 22.4 | 22.3 | 22.33 | - |
| Salinity (ppt) | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.51 | - |
| pH | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.96 | |
| D.O. Saturation (%) | 94.6 | 94.8 | 94.6 | 94.8 | 94.6 | 94.9 | 94.72 | - |
| D.O. (mg/L) | 6.81 | 6.83 | 6.81 | 6.82 | 6.81 | 6.83 | 6.82 | 6.82 |
| Turbidity (NTU) | 6.07 | 6.68 | 6.48 | 6.78 | 7.59 | 7.59 | 6.87 | - |
| SS (mg/L) | 3.0 | 8.0 | 6.0 | 6.0 | 10.0 | 7.0 | 6.67 | - |
| Remarks | - | | | | | | | |

| | | | | | | | | |
|--------------------------|---------------|---------|---------|---------|---------|---------|----------------|--------|
| Date | 11/26/2007 | | | | | | | |
| Station | SR1 | | | | | | | |
| Time (hh:mm) | 18:04 - 18:08 | | | | | | | |
| Ambient Temperature (°C) | 20 | | | | | | | |
| Weather | Sunny | | | | | | | |
| Water Depth (m) | 5.80 | | | | | | | |
| Monitoring Depth (m) | 1.00 | | 2.90 | | 5.10 | | | |
| Tide | Mid-Flood | | | | | | | |
| Trial | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Depth-averaged | Bottom |
| Water Temperature (°C) | 22.4 | 22.4 | 22.4 | 22.4 | 22.4 | 22.4 | 22.39 | - |
| Salinity (ppt) | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.52 | - |
| pH | 7.9 | 8.0 | 7.9 | 8.0 | 7.9 | 8.0 | 7.94 | - |
| D.O. Saturation (%) | 93.1 | 93.3 | 92.8 | 93.2 | 94.3 | 93.1 | 93.28 | - |
| D.O. (mg/L) | 6.69 | 6.71 | 6.67 | 6.70 | 6.78 | 6.69 | 6.71 | 6.74 |
| Turbidity (NTU) | 8.10 | 7.19 | 9.51 | 7.79 | 9.11 | 8.60 | 8.38 | - |
| SS (mg/L) | 10.0 | 8.0 | 10.0 | 9.0 | 12.0 | 9.0 | 9.67 | - |
| Remarks | - | | | | | | | |

Flow Tracking Data

| Position | Easting | Northing | Depth | Time | Speed | Direction | Date |
|----------|-----------|-----------|-------|--------|--------|-----------|----------|
| C1 | 814487.51 | 825372.4 | 10.2 | 184842 | 0 | 0 | 20071126 |
| C1 | 814347.68 | 825382.94 | -99 | 185325 | 0.4955 | 274.3 | 20071126 |
| C1 | 814205.68 | 825391.55 | -99 | 185849 | 0.4391 | 273.5 | 20071126 |
| C1 | 814063.55 | 825396.05 | -99 | 190414 | 0.4375 | 271.8 | 20071126 |
| Average | | | | | 0.46 | 273.20 | |

Dissolved Oxygen (mg/L, Surface and Middle)

| | |
|-----|------|
| C1 | 6.82 |
| C2 | 6.79 |
| D1 | 6.78 |
| U1 | 6.82 |
| SR1 | 6.69 |

Annex E1 - Water Quality Results, Action and Limit Levels at mid-ebb tide for 26 November 2007

| | | | | | | | | | | |
|--------------------------|---------------|---------|---------|---------|---------|---------|--------|------|----------------|--------|
| Date | 11/26/2007 | | | | | | | | | |
| Station | C1 | | | | | | | | | |
| Time (hh:mm) | 13:06 - 13:10 | | | | | | | | | |
| Ambient Temperature (°C) | 21 | | | | | | | | | |
| Weather | Sunny | | | | | | | | | |
| Water Depth (m) | 8.20 | | | | | | | | | |
| Monitoring Depth (m) | 1.10 | | 4.20 | | 7.10 | | | | | |
| Tide | Mid-Ebb | | | | | | | | | |
| Trial | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Trial 1 | Trial 2 | | | Depth-averaged | Bottom |
| Water Temperature (°C) | 22.4 | 22.5 | 22.3 | 22.3 | 22.2 | 22.4 | | | 22.33 | - |
| Salinity (ppt) | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.51 | - | | |
| pH | 7.9 | 7.9 | 7.9 | 7.9 | 7.9 | 7.9 | 7.92 | - | | |
| D.O. Saturation (%) | 110.6 | 110.6 | 109.3 | 110.0 | 109.8 | 110.1 | 110.04 | - | | |
| D.O. (mg/L) | 7.95 | 7.93 | 7.87 | 7.93 | 7.92 | 7.92 | 7.92 | 7.92 | | |
| Turbidity (NTU) | 7.19 | 5.87 | 9.21 | 8.10 | 10.93 | 8.60 | 8.32 | - | | |
| SS (mg/L) | 9.0 | 6.0 | 11.0 | 9.0 | 12.0 | 10.0 | 9.50 | - | | |
| Remarks | - | | | | | | | | | |

| | | | | | | | | | | |
|--------------------------|---------------|---------|---------|---------|---------|---------|-------|------|----------------|--------|
| Date | 11/26/2007 | | | | | | | | | |
| Station | C2 | | | | | | | | | |
| Time (hh:mm) | 13:44 - 13:49 | | | | | | | | | |
| Ambient Temperature (°C) | 21 | | | | | | | | | |
| Weather | Sunny | | | | | | | | | |
| Water Depth (m) | 14.30 | | | | | | | | | |
| Monitoring Depth (m) | 1.30 | | 7.10 | | 13.10 | | | | | |
| Tide | Mid-Ebb | | | | | | | | | |
| Trial | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Trial 1 | Trial 2 | | | Depth-averaged | Bottom |
| Water Temperature (°C) | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | | | 22.46 | - |
| Salinity (ppt) | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.54 | - | | |
| pH | 7.9 | 7.9 | 7.9 | 7.9 | 7.9 | 7.9 | 7.91 | - | | |
| D.O. Saturation (%) | 96.7 | 94.7 | 97.2 | 94.8 | 97.9 | 95.9 | 96.19 | - | | |
| D.O. (mg/L) | 6.94 | 6.80 | 6.98 | 6.80 | 7.03 | 6.88 | 6.91 | 6.96 | | |
| Turbidity (NTU) | 11.54 | 10.22 | 18.42 | 11.54 | 23.68 | 18.22 | 15.60 | - | | |
| SS (mg/L) | 13.0 | 15.0 | 20.0 | 14.0 | 13.0 | 21.0 | 16.00 | - | | |
| Remarks | - | | | | | | | | | |

| | | | | | | | | | | |
|--------------------------|---------------|---------|---------|---------|---------|---------|--------|------|----------------|--------|
| Date | 11/26/2007 | | | | | | | | | |
| Station | D1 | | | | | | | | | |
| Time (hh:mm) | 13:33 - 13:36 | | | | | | | | | |
| Ambient Temperature (°C) | 21 | | | | | | | | | |
| Weather | Sunny | | | | | | | | | |
| Water Depth (m) | 9.20 | | | | | | | | | |
| Monitoring Depth (m) | 1.10 | | 4.50 | | 8.10 | | | | | |
| Tide | Mid-Ebb | | | | | | | | | |
| Trial | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Trial 1 | Trial 2 | | | Depth-averaged | Bottom |
| Water Temperature (°C) | 22.5 | 22.5 | 22.5 | 22.5 | 22.4 | 22.4 | | | 22.46 | - |
| Salinity (ppt) | 32.5 | 32.5 | 32.6 | 32.6 | 32.6 | 32.6 | 32.55 | - | | |
| pH | 7.9 | 7.9 | 7.9 | 7.9 | 7.9 | 7.9 | 7.93 | - | | |
| D.O. Saturation (%) | 102.0 | 100.4 | 102.4 | 100.3 | 102.4 | 100.5 | 101.33 | - | | |
| D.O. (mg/L) | 7.32 | 7.20 | 7.35 | 7.20 | 7.35 | 7.22 | 7.27 | 7.29 | | |
| Turbidity (NTU) | 7.59 | 7.59 | 8.20 | 8.20 | 10.93 | 9.61 | 8.69 | - | | |
| SS (mg/L) | 9.0 | 9.0 | 10.0 | 9.0 | 12.0 | 11.0 | 10.00 | - | | |
| Remarks | - | | | | | | | | | |

| | | | | | | | | | | |
|--------------------------|---------------|---------|---------|---------|---------|---------|----------------|------|--|--------|
| Date | 11/26/2007 | | | | | | | | | |
| Station | U1 | | | | | | | | | |
| Time (hh:mm) | 13:24 - 13:28 | | | | | | | | | |
| Ambient Temperature (°C) | 21 | | | | | | | | | |
| Weather | Sunny | | | | | | | | | |
| Water Depth (m) | 9.30 | | | | | | | | | |
| Monitoring Depth (m) | 1.20 | | 4.70 | | 8.20 | | | | | |
| Tide | Mid-Ebb | | | | | | | | | |
| Trial | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Depth-averaged | | | Bottom |
| Water Temperature (°C) | 22.5 | 22.5 | 22.4 | 22.5 | 22.4 | 22.4 | 22.45 | | | - |
| Salinity (ppt) | 32.6 | 32.6 | 32.6 | 32.6 | 32.6 | 32.6 | 32.55 | - | | |
| pH | 7.9 | 7.9 | 7.9 | 7.9 | 7.9 | 7.9 | 7.93 | - | | |
| D.O. Saturation (%) | 105.2 | 104.7 | 103.3 | 103.0 | 103.9 | 102.8 | 103.82 | - | | |
| D.O. (mg/L) | 7.55 | 7.51 | 7.42 | 7.39 | 7.47 | 7.39 | 7.46 | 7.43 | | |
| Turbidity (NTU) | 6.38 | 6.38 | 7.59 | 7.29 | 10.02 | 8.20 | 7.64 | - | | |
| SS (mg/L) | 7.0 | 8.0 | 13.0 | 7.0 | 12.0 | 12.0 | 9.83 | - | | |
| Remarks | - | | | | | | | | | |

| | | | | | | | | | | |
|--------------------------|---------------|---------|---------|---------|---------|---------|----------------|------|--|--------|
| Date | 11/26/2007 | | | | | | | | | |
| Station | SR1 | | | | | | | | | |
| Time (hh:mm) | 13:17 - 13:20 | | | | | | | | | |
| Ambient Temperature (°C) | 21 | | | | | | | | | |
| Weather | Sunny | | | | | | | | | |
| Water Depth (m) | 5.70 | | | | | | | | | |
| Monitoring Depth (m) | 1.10 | | 2.70 | | 4.00 | | | | | |
| Tide | Mid-Ebb | | | | | | | | | |
| Trial | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Depth-averaged | | | Bottom |
| Water Temperature (°C) | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.50 | | | - |
| Salinity (ppt) | 32.6 | 32.6 | 32.6 | 32.6 | 32.6 | 32.6 | 32.57 | - | | |
| pH | 8.0 | 7.9 | 7.9 | 7.9 | 7.9 | 7.9 | 7.94 | - | | |
| D.O. Saturation (%) | 107.6 | 105.8 | 106.6 | 105.1 | 106.3 | 105.3 | 106.12 | - | | |
| D.O. (mg/L) | 7.71 | 7.58 | 7.65 | 7.53 | 7.63 | 7.55 | 7.61 | 7.59 | | |
| Turbidity (NTU) | 6.48 | 6.68 | 6.88 | 6.88 | 8.10 | 6.78 | 6.97 | - | | |
| SS (mg/L) | 9.0 | 9.0 | 7.0 | 9.0 | 9.0 | 9.0 | 8.67 | - | | |
| Remarks | - | | | | | | | | | |

Flow Tracking Data

| Position | Easting | Northing | Depth | Time | Speed | Direction | Date |
|----------|-----------|-----------|-------|--------|--------|-----------|----------|
| C1 | 814489.89 | 825366.43 | 8.8 | 135641 | 0 | 0 | 20071126 |
| C1 | 814542.09 | 825353.14 | 8.5 | 140137 | 0.182 | 104.3 | 20071126 |
| C1 | 814592.9 | 825353.43 | 8.7 | 140605 | 0.1896 | 89.7 | 20071126 |
| C1 | 814705.49 | 825330.02 | 8.6 | 141143 | 0.3402 | 101.7 | 20071126 |
| Average | | | | | 0.24 | 98.57 | |

Dissolved Oxygen (mg/L, Surface and Middle)

| | |
|-----|------|
| C1 | 7.92 |
| C2 | 6.88 |
| D1 | 7.27 |
| U1 | 7.47 |
| SR1 | 7.62 |

Compliance with Action and Limit Level

| Parameter | Action Level | Limit Level | D1 | | U1 | | SR1 | |
|----------------------------|--------------|-------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|
| | | | Exceedance of Action Level | Exceedance of Limit Level | Exceedance of Action Level | Exceedance of Limit Level | Exceedance of Action Level | Exceedance of Limit Level |
| DO (Bottom) | 5.3 | 2.0 | N | N | N | N | N | N |
| DO (Surface and Middle) | 5.2 | 4.0 | N | N | N | N | N | N |
| Turbidity (Depth-averaged) | 7.0 | 8.3 | Y | Y | Y | N | N | N |
| SS (Depth-averaged) | 12.8 | 13.3 | N | N | N | N | N | N |

Annex E6 - Water Quality Results, Action and Limit Levels at mid-flood tide for 30 November 2007

| | | | | | | | | | | |
|--------------------------|---------------|---------|---------|---------|---------|---------|-------|------|----------------|--------|
| Date | 11/30/2007 | | | | | | | | | |
| Station | C1 | | | | | | | | | |
| Time (hh:mm) | 16:09 - 16:12 | | | | | | | | | |
| Ambient Temperature (°C) | 18 | | | | | | | | | |
| Weather | Sunny | | | | | | | | | |
| Water Depth (m) | 9.10 | | | | | | | | | |
| Monitoring Depth (m) | 1.00 | | 4.00 | | 7.10 | | | | | |
| Tide | Mid-Flood | | | | | | | | | |
| Trial | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Trial 1 | Trial 2 | | | Depth-averaged | Bottom |
| Water Temperature (°C) | 20.8 | 20.8 | 20.8 | 20.8 | 20.8 | 20.8 | | | 20.81 | - |
| Salinity (ppt) | 32.3 | 32.3 | 32.3 | 32.3 | 32.3 | 32.3 | 32.30 | - | | |
| pH | 7.9 | 7.9 | 7.9 | 7.9 | 7.9 | 7.9 | 7.88 | - | | |
| D.O. Saturation (%) | 94.9 | 94.4 | 95.1 | 94.6 | 95.4 | 94.7 | 94.86 | - | | |
| D.O. (mg/L) | 7.03 | 6.99 | 7.04 | 7.00 | 7.07 | 7.01 | 7.02 | 7.04 | | |
| Turbidity (NTU) | 8.91 | 9.11 | 8.70 | 9.21 | 8.80 | 9.82 | 9.09 | - | | |
| SS (mg/L) | 11.0 | 10.0 | 10.0 | 11.0 | 10.0 | 10.0 | 10.33 | - | | |
| Remarks | - | | | | | | | | | |

| | | | | | | | | |
|--------------------------|---------------|---------|---------|---------|---------|---------|-------|------|
| Date | 11/30/2007 | | | | | | | |
| Station | C2 | | | | | | | |
| Time (hh:mm) | 16:49 - 16:53 | | | | | | | |
| Ambient Temperature (°C) | 18 | | | | | | | |
| Weather | Sunny | | | | | | | |
| Water Depth (m) | 14.50 | | | | | | | |
| Monitoring Depth (m) | 1.00 | | 7.00 | | 13.10 | | | |
| Tide | Mid-Flood | | | | | | | |
| Trial | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Trial 1 | Trial 2 | | |
| | | | | | | | | |
| Water Temperature (°C) | 20.7 | 20.7 | 20.8 | 20.7 | 20.7 | 20.8 | 20.74 | - |
| Salinity (ppt) | 32.3 | 32.3 | 32.3 | 32.3 | 32.3 | 32.3 | 32.31 | - |
| | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.96 | |
| D.O. Saturation (%) | 88.0 | 87.2 | 88.4 | 87.3 | 89.4 | 87.6 | 87.94 | - |
| D.O. (mg/L) | 6.52 | 6.46 | 6.55 | 6.47 | 6.62 | 6.49 | 6.52 | 6.56 |
| Turbidity (NTU) | 7.59 | 6.98 | 7.99 | 7.08 | 7.89 | 7.39 | 7.49 | - |
| SS (mg/L) | 7.0 | 10.0 | 10.0 | 7.0 | 8.0 | 8.0 | 8.33 | - |
| Remarks | | | | | | | - | |

| | | | | | | | | |
|--------------------------|---------------|---------|---------|---------|---------|---------|-------|------|
| Date | 11/30/2007 | | | | | | | |
| Station | D1 | | | | | | | |
| Time (hh:mm) | 16:39 - 16:42 | | | | | | | |
| Ambient Temperature (°C) | 18 | | | | | | | |
| Weather | Sunny | | | | | | | |
| Water Depth (m) | 9.40 | | | | | | | |
| Monitoring Depth (m) | 1.00 | | 5.00 | | 8.20 | | | |
| Tide | Mid-Flood | | | | | | | |
| Trial | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Trial 1 | Trial 2 | | |
| | | | | | | | | |
| Water Temperature (°C) | 20.8 | 20.8 | 20.8 | 20.8 | 20.8 | 20.8 | 20.81 | - |
| Salinity (ppt) | 32.3 | 32.3 | 32.3 | 32.3 | 32.3 | 32.3 | 32.31 | - |
| pH | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.96 | - |
| D.O. Saturation (%) | 91.1 | 89.5 | 91.1 | 89.5 | 92.6 | 90.2 | 90.65 | - |
| D.O. (mg/L) | 6.75 | 6.63 | 6.74 | 6.62 | 6.85 | 6.68 | 6.71 | 6.77 |
| Turbidity (NTU) | 7.49 | 7.19 | 7.49 | 7.59 | 7.89 | 7.59 | 7.54 | - |
| SS (mg/L) | 10.0 | 9.0 | 8.0 | 7.0 | 10.0 | 10.0 | 9.00 | - |
| Remarks | | | | | | | | |

Compliance with Action and Limit Level

| Parameter | Action Level | Limit Level | D1 | | U1 | | SR1 | |
|----------------------------|--------------|-------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|
| | | | Exceedance of Action Level | Exceedance of Limit Level | Exceedance of Action Level | Exceedance of Limit Level | Exceedance of Action Level | Exceedance of Limit Level |
| DO (Bottom) | 5.5 | 2.0 | N | N | N | N | N | N |
| DO (Depth-averaged) | 5.5 | 4.0 | N | N | N | N | N | N |
| Turbidity (Depth-averaged) | 14.8 | 18.9 | N | N | N | N | N | N |
| SS (Depth-averaged) | 23.6 | 28.3 | N | N | N | N | N | N |

| | | | | | | | | | | |
|--------------------------|---------------|---------|---------|---------|---------|---------|-------|------|----------------|--------|
| Date | 11/30/2007 | | | | | | | | | |
| Station | U1 | | | | | | | | | |
| Time (hh:mm) | 16:29 - 16:33 | | | | | | | | | |
| Ambient Temperature (°C) | 18 | | | | | | | | | |
| Weather | Sunny | | | | | | | | | |
| Water Depth (m) | 9.80 | | | | | | | | | |
| Monitoring Depth (m) | 1.00 | | 5.00 | | 7.90 | | | | | |
| Tide | Mid-Flood | | | | | | | | | |
| Trial | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Trial 1 | Trial 2 | | | Depth-averaged | Bottom |
| Water Temperature (°C) | 20.8 | 20.8 | 20.8 | 20.8 | 20.8 | 20.8 | | | 20.81 | - |
| Salinity (ppt) | 32.3 | 32.3 | 32.3 | 32.3 | 32.3 | 32.3 | 32.32 | - | | |
| pH | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.96 | - | | |
| D.O. Saturation (%) | 92.1 | 90.7 | 92.6 | 91.1 | 93.2 | 91.6 | 91.88 | - | | |
| D.O. (mg/L) | 6.82 | 6.72 | 6.86 | 6.75 | 6.90 | 6.78 | 6.81 | 6.84 | | |
| Turbidity (NTU) | 7.49 | 8.20 | 8.50 | 8.80 | 7.99 | 8.91 | 8.32 | - | | |
| SS (mg/L) | 10.0 | 8.0 | 7.0 | 11.0 | 11.0 | 8.0 | 9.17 | - | | |
| Remarks | - | | | | | | | | | |

| | | | | | | | | |
|--------------------------|---------------|---------|---------|---------|---------|---------|----------------|--------|
| Date | 11/30/2007 | | | | | | | |
| Station | SR1 | | | | | | | |
| Time (hh:mm) | 16:20 - 16:23 | | | | | | | |
| Ambient Temperature (°C) | 18 | | | | | | | |
| Weather | Sunny | | | | | | | |
| Water Depth (m) | 5.90 | | | | | | | |
| Monitoring Depth (m) | 1.10 | | 2.60 | | 4.00 | | | |
| Tide | Mid-Flood | | | | | | | |
| Trial | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Depth-averaged | Bottom |
| Water Temperature (°C) | 20.8 | 20.8 | 20.8 | 20.8 | 20.8 | 20.8 | 20.81 | - |
| Salinity (ppt) | 32.3 | 32.3 | 32.3 | 32.3 | 32.3 | 32.3 | 32.31 | - |
| pH | 8.0 | 8.0 | 8.0 | 8.0 | 7.9 | 8.0 | 7.95 | - |
| D.O. Saturation (%) | 95.3 | 94.5 | 95.4 | 94.6 | 98.8 | 94.8 | 95.59 | - |
| D.O. (mg/L) | 7.06 | 7.00 | 7.06 | 7.01 | 7.32 | 7.02 | 7.08 | 7.17 |
| Turbidity (NTU) | 7.79 | 7.59 | 7.59 | 7.69 | 7.79 | 7.89 | 7.72 | - |
| SS (mg/L) | 10.0 | 7.0 | 8.0 | 8.0 | 9.0 | 8.0 | 8.33 | - |
| Remarks | - | | | | | | | |

Flow Tracking Data

| Position | Easting | Northing | Depth | Time | Speed | Direction | Date |
|----------|----------|-----------|-------|--------|--------|-----------|----------|
| C1 | 814484.4 | 825368.74 | 11.4 | 170059 | 0 | 0 | 20071130 |
| C1 | 814513 | 825366.13 | 11.4 | 170629 | 0.087 | 95.2 | 20071130 |
| C1 | 814539.2 | 825378.52 | 11.4 | 171244 | 0.0775 | 64.8 | 20071130 |
| C1 | 814573.8 | 825377.06 | 11.4 | 171714 | 0.1282 | 92.4 | 20071130 |
| Average | | | | | 0.10 | 84.13 | |

Dissolved Oxygen (mg/L, Surface and Middle)

| | |
|-----|------|
| C1 | 7.02 |
| C2 | 6.50 |
| D1 | 6.69 |
| U1 | 6.79 |
| SR1 | 7.03 |

Annex E5 - Water Quality Results, Action and Limit Levels at mid-ebb tide for 30 November 2007

| | | | | | | | | | |
|--------------------------|---------------|---------|---------|---------|---------|---------|----------------|--------|--|
| Date | 11/30/2007 | | | | | | | | |
| Station | C1 | | | | | | | | |
| Time (hh:mm) | 03:52 - 03:56 | | | | | | | | |
| Ambient Temperature (°C) | 15 | | | | | | | | |
| Weather | Sunny | | | | | | | | |
| Water Depth (m) | 9.30 | | | | | | | | |
| Monitoring Depth (m) | 1.10 | | 4.90 | | | 8.20 | | | |
| Tide | Mid-Ebb | | | | | | | | |
| Trial | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Depth-averaged | Bottom | |
| Water Temperature (°C) | 20.8 | 20.8 | 20.8 | 20.8 | 20.8 | 20.8 | 20.79 | - | |
| Salinity (ppt) | 32.3 | 32.3 | 32.3 | 32.3 | 32.3 | 32.3 | 32.33 | - | |
| pH | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.97 | - | |
| D.O. Saturation (%) | 81.9 | 81.9 | 81.8 | 81.9 | 81.7 | 81.8 | 81.82 | - | |
| D.O. (mg/L) | 6.07 | 6.07 | 6.05 | 6.06 | 6.05 | 6.06 | 6.06 | 6.06 | |
| Turbidity (NTU) | 4.96 | 5.46 | 5.87 | 5.87 | 6.78 | 6.27 | 5.87 | - | |
| SS (mg/L) | 4.0 | 6.0 | 5.0 | 6.0 | 7.0 | 9.0 | 6.17 | - | |
| Remarks | - | | | | | | | | |

| | | | | | | | | | |
|--------------------------|---------------|---------|---------|---------|---------|---------|----------------|--------|--|
| Date | 11/30/2007 | | | | | | | | |
| Station | C2 | | | | | | | | |
| Time (hh:mm) | 04:32 - 04:37 | | | | | | | | |
| Ambient Temperature (°C) | 15 | | | | | | | | |
| Weather | Sunny | | | | | | | | |
| Water Depth (m) | 14.70 | | | | | | | | |
| Monitoring Depth (m) | 1.10 | | 7.00 | | | 13.10 | | | |
| Tide | Mid-Ebb | | | | | | | | |
| Trial | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Depth-averaged | Bottom | |
| Water Temperature (°C) | 20.8 | 20.8 | 20.8 | 20.8 | 20.8 | 20.8 | 20.78 | - | |
| Salinity (ppt) | 32.3 | 32.3 | 32.3 | 32.3 | 32.3 | 32.3 | 32.32 | - | |
| pH | 8.0 | 7.9 | 8.0 | 7.9 | 8.0 | 7.9 | 7.95 | - | |
| D.O. Saturation (%) | 82.9 | 83.1 | 82.7 | 82.8 | 83.3 | 82.7 | 82.91 | - | |
| D.O. (mg/L) | 6.14 | 6.16 | 6.12 | 6.13 | 6.17 | 6.13 | 6.14 | 6.15 | |
| Turbidity (NTU) | 5.97 | 5.26 | 5.77 | 5.67 | 6.27 | 5.87 | 5.80 | - | |
| SS (mg/L) | 6.0 | 6.0 | 5.0 | 8.0 | 7.0 | 6.0 | 6.33 | - | |
| Remarks | - | | | | | | | | |

| | | | | | | | | | |
|--------------------------|---------------|---------|---------|---------|---------|---------|----------------|--------|--|
| Date | 11/30/2007 | | | | | | | | |
| Station | D1 | | | | | | | | |
| Time (hh:mm) | 04:22 - 04:26 | | | | | | | | |
| Ambient Temperature (°C) | 15 | | | | | | | | |
| Weather | Sunny | | | | | | | | |
| Water Depth (m) | 9.40 | | | | | | | | |
| Monitoring Depth (m) | 1.10 | | 5.00 | | | 8.00 | | | |
| Tide | Mid-Ebb | | | | | | | | |
| Trial | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Depth-averaged | Bottom | |
| Water Temperature (°C) | 20.8 | 20.8 | 20.8 | 20.8 | 20.8 | 20.8 | 20.79 | - | |
| Salinity (ppt) | 32.3 | 32.3 | 32.3 | 32.3 | 32.3 | 32.3 | 32.33 | - | |
| pH | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.95 | - | |
| D.O. Saturation (%) | 81.9 | 82.3 | 81.6 | 82.1 | 82.2 | 82.0 | 82.00 | - | |
| D.O. (mg/L) | 6.06 | 6.10 | 6.04 | 6.08 | 6.08 | 6.07 | 6.07 | 6.08 | |
| Turbidity (NTU) | 6.58 | 6.17 | 6.78 | 6.27 | 7.29 | 6.68 | 6.63 | - | |
| SS (mg/L) | 6.0 | 6.0 | 6.0 | 8.0 | 8.0 | 6.0 | 6.67 | - | |
| Remarks | - | | | | | | | | |

| | | | | | | | | | |
|--------------------------|---------------|---------|---------|---------|---------|---------|----------------|--------|--|
| Date | 11/30/2007 | | | | | | | | |
| Station | U1 | | | | | | | | |
| Time (hh:mm) | 04:13 - 04:17 | | | | | | | | |
| Ambient Temperature (°C) | 15 | | | | | | | | |
| Weather | Sunny | | | | | | | | |
| Water Depth (m) | 9.90 | | | | | | | | |
| Monitoring Depth (m) | 1.10 | | 5.00 | | | 8.10 | | | |
| Tide | Mid-Ebb | | | | | | | | |
| Trial | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Depth-averaged | Bottom | |
| Water Temperature (°C) | 20.8 | 20.8 | 20.8 | 20.9 | 20.8 | 20.8 | 20.83 | - | |
| Salinity (ppt) | 32.3 | 32.3 | 32.3 | 32.3 | 32.3 | 32.3 | 32.32 | - | |
| pH | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.97 | - | |
| D.O. Saturation (%) | 81.6 | 81.8 | 81.4 | 81.7 | 82.0 | 81.5 | 81.65 | - | |
| D.O. (mg/L) | 6.04 | 6.05 | 6.02 | 6.04 | 6.07 | 6.03 | 6.04 | 6.05 | |
| Turbidity (NTU) | 6.07 | 6.38 | 6.88 | 6.07 | 6.58 | 6.07 | 6.34 | - | |
| SS (mg/L) | 7.0 | 7.0 | 6.0 | 8.0 | 8.0 | 6.0 | 7.00 | - | |
| Remarks | - | | | | | | | | |

| | | | | | | | | | |
|--------------------------|---------------|---------|---------|---------|---------|---------|----------------|--------|--|
| Date | 11/30/2007 | | | | | | | | |
| Station | SR1 | | | | | | | | |
| Time (hh:mm) | 04:04 - 04:08 | | | | | | | | |
| Ambient Temperature (°C) | 15 | | | | | | | | |
| Weather | Sunny | | | | | | | | |
| Water Depth (m) | 6.10 | | | | | | | | |
| Monitoring Depth (m) | 1.00 | | 2.50 | | | 4.10 | | | |
| Tide | Mid-Ebb | | | | | | | | |
| Trial | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Trial 1 | Trial 2 | Depth-averaged | Bottom | |
| Water Temperature (°C) | 20.7 | 20.7 | 20.7 | 20.8 | 20.8 | 20.7 | 20.74 | - | |
| Salinity (ppt) | 32.4 | 32.4 | 32.4 | 32.4 | 32.4 | 32.4 | 32.37 | - | |
| pH | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.97 | - | |
| D.O. Saturation (%) | 81.1 | 81.6 | 81.0 | 81.5 | 80.9 | 81.3 | 81.22 | - | |
| D.O. (mg/L) | 6.02 | 6.05 | 6.00 | 6.04 | 6.00 | 6.02 | 6.02 | 6.01 | |
| Turbidity (NTU) | 6.48 | 5.26 | 6.88 | 5.77 | 6.88 | 6.68 | 6.33 | - | |
| SS (mg/L) | 5.0 | 6.0 | 7.0 | 5.0 | 5.0 | 7.0 | 5.83 | - | |
| Remarks | - | | | | | | | | |

Flow Tracking Data

| Position | Easting | Northing | Depth | Time | Speed | Direction | Date |
|----------|-----------|-----------|-------|-------|--------|-----------|----------|
| C1 | 814490.02 | 825366.93 | 8.8 | 44525 | 0 | 0 | 20071130 |
| C1 | 814612.79 | 825391.93 | 9.1 | 45200 | 0.3172 | 78.5 | 20071130 |
| C1 | 814711.91 | 825399.87 | 9.1 | 45744 | 0.2891 | 85.4 | 20071130 |
| C1 | 814821.92 | 825395.85 | 9.2 | 50319 | 0.3286 | 92.1 | 20071130 |
| Average | | | | | 0.31 | 85.33 | |

Dissolved Oxygen (mg/L, Surface and Middle)

| | |
|-----|------|
| C1 | 6.06 |
| C2 | 6.14 |
| D1 | 6.07 |
| U1 | 6.04 |
| SR1 | 6.03 |

Compliance with Action and Limit Level

| Parameter | Action Level | Limit Level | D1 | | U1 | | SR1 | |
|----------------------------|--------------|-------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|
| | | | Exceedance of Action Level | Exceedance of Limit Level | Exceedance of Action Level | Exceedance of Limit Level | Exceedance of Action Level | Exceedance of Limit Level |
| DO (Bottom) | 5.3 | 2.0 | N | N | N | N | N | N |
| DO (Surface and Middle) | 5.2 | 4.0 | N | N | N | N | N | N |
| Turbidity (Depth-averaged) | 7.0 | 8.3 | N | N | N | N | N | N |
| SS (Depth-averaged) | 12.8 | 13.3 | N | N | N | N | N | N |

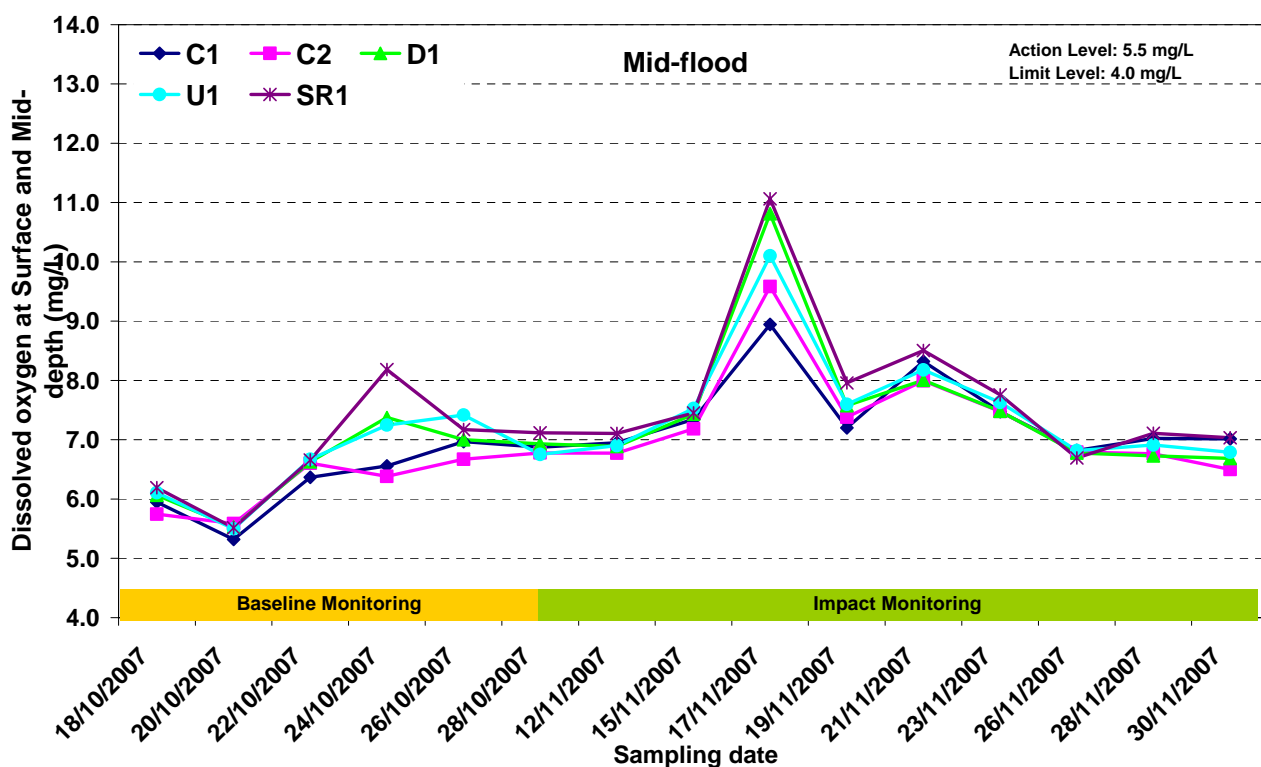
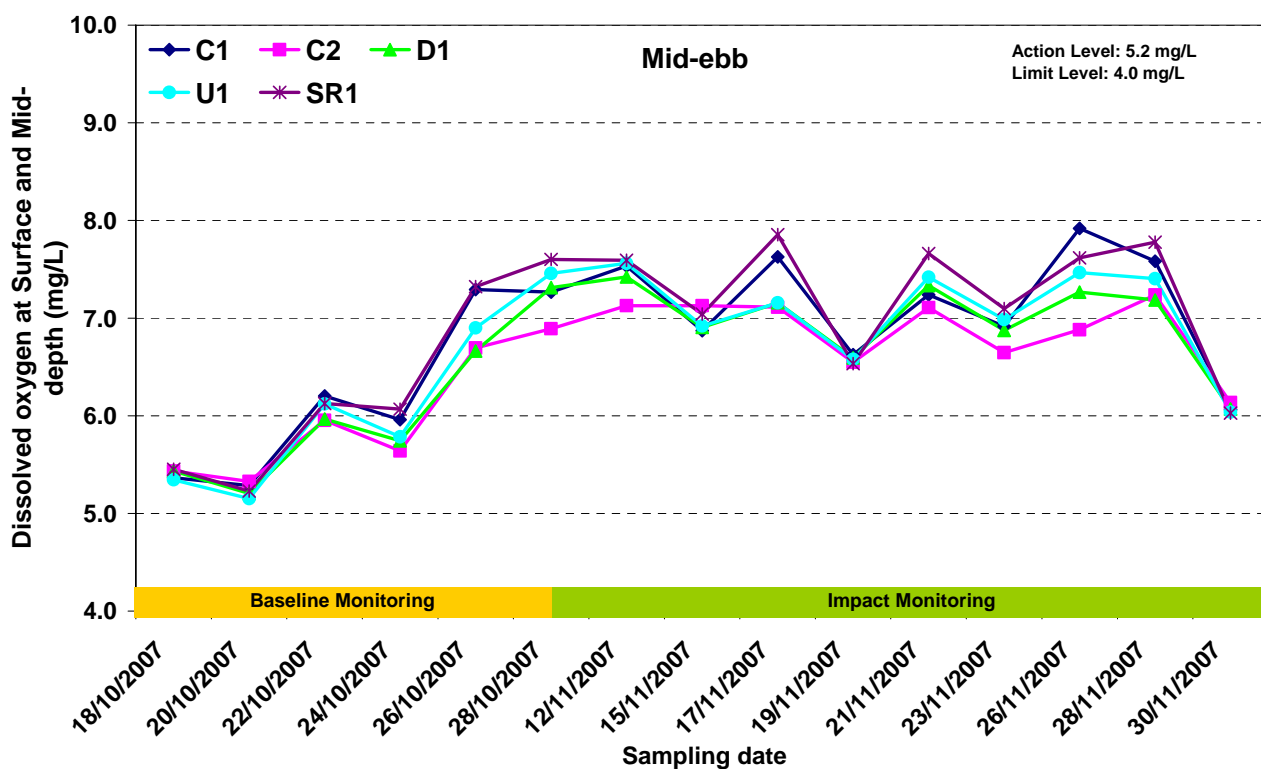


Figure E1 Dissolved oxygen concentration (mean of surface and mid-depth) (mg/L) of water samples from the five sampling locations at mid-ebb and mid-flood between 26 November and 2 December 2007, and previous monitoring period between 18 October and 25 November 2007



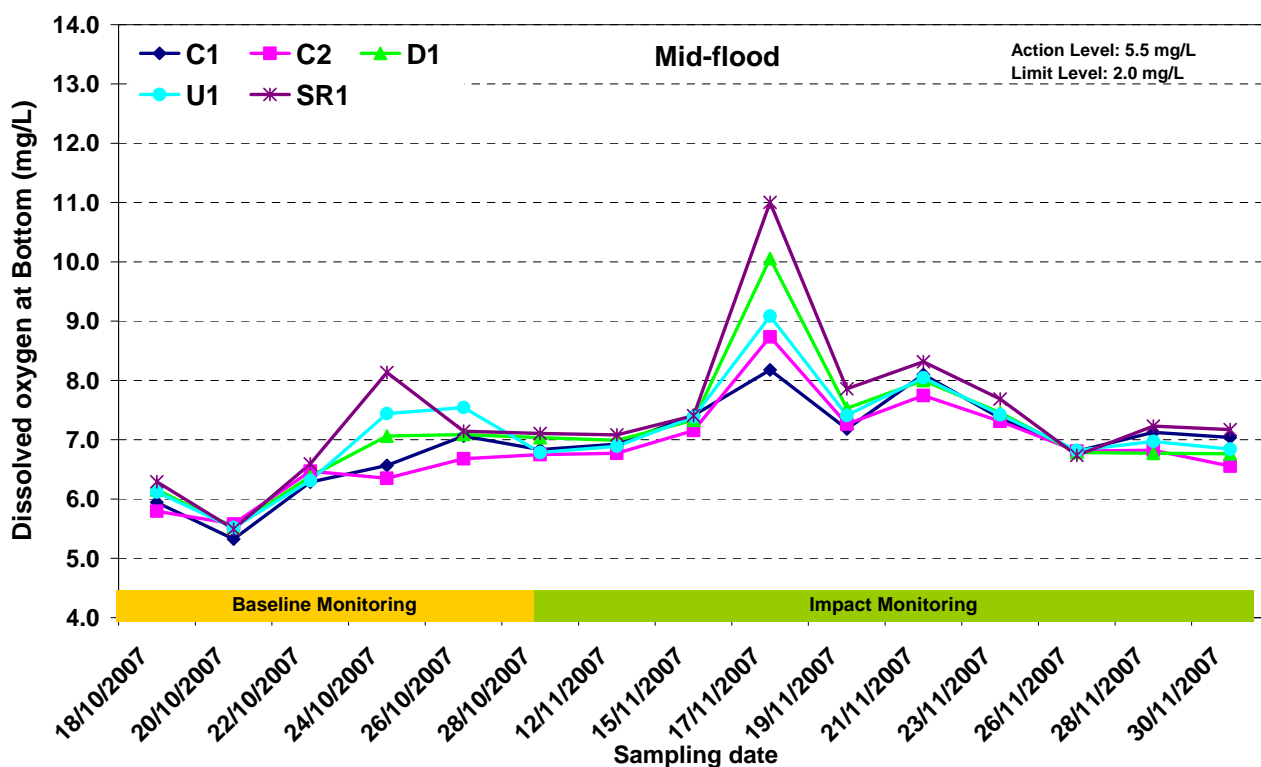
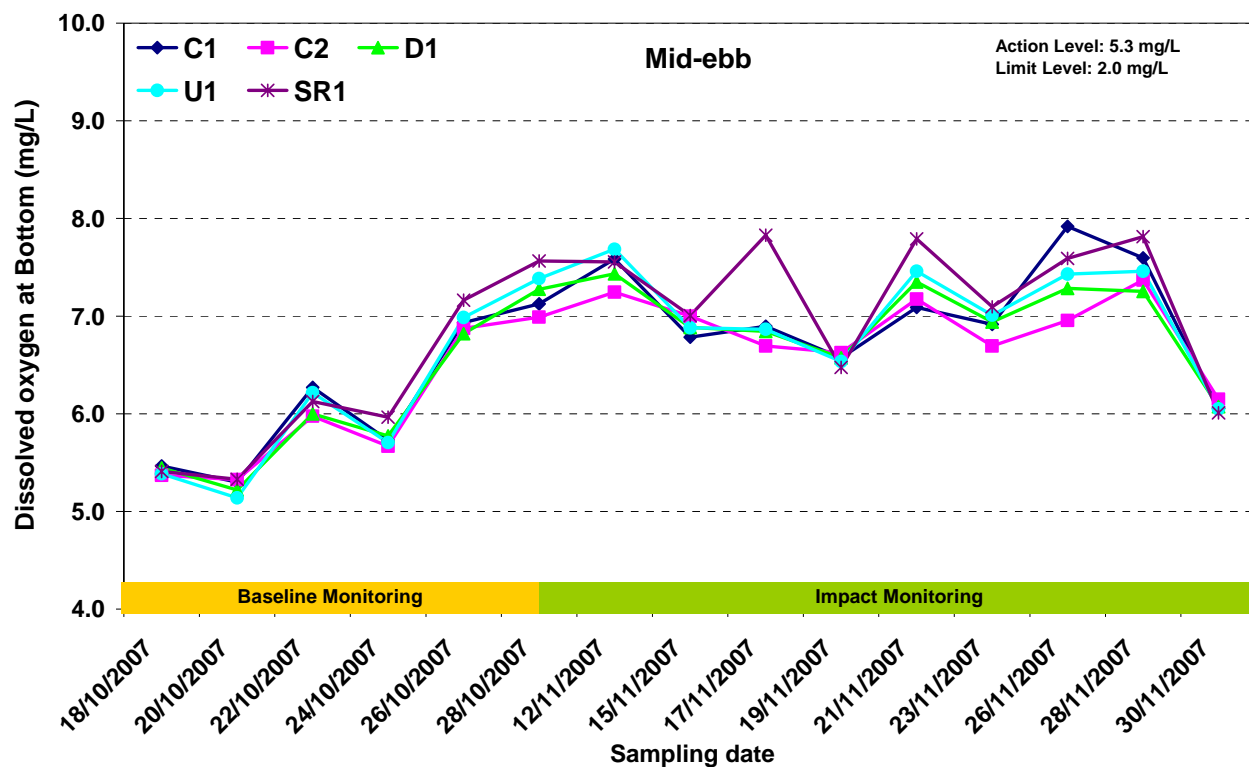


Figure E2 Dissolved oxygen concentration (bottom) (mg/L) of water samples from the five sampling locations at mid-ebb and mid-flood between 26 November and 2 December 2007, and previous monitoring period between 18 October and 25 November 2007

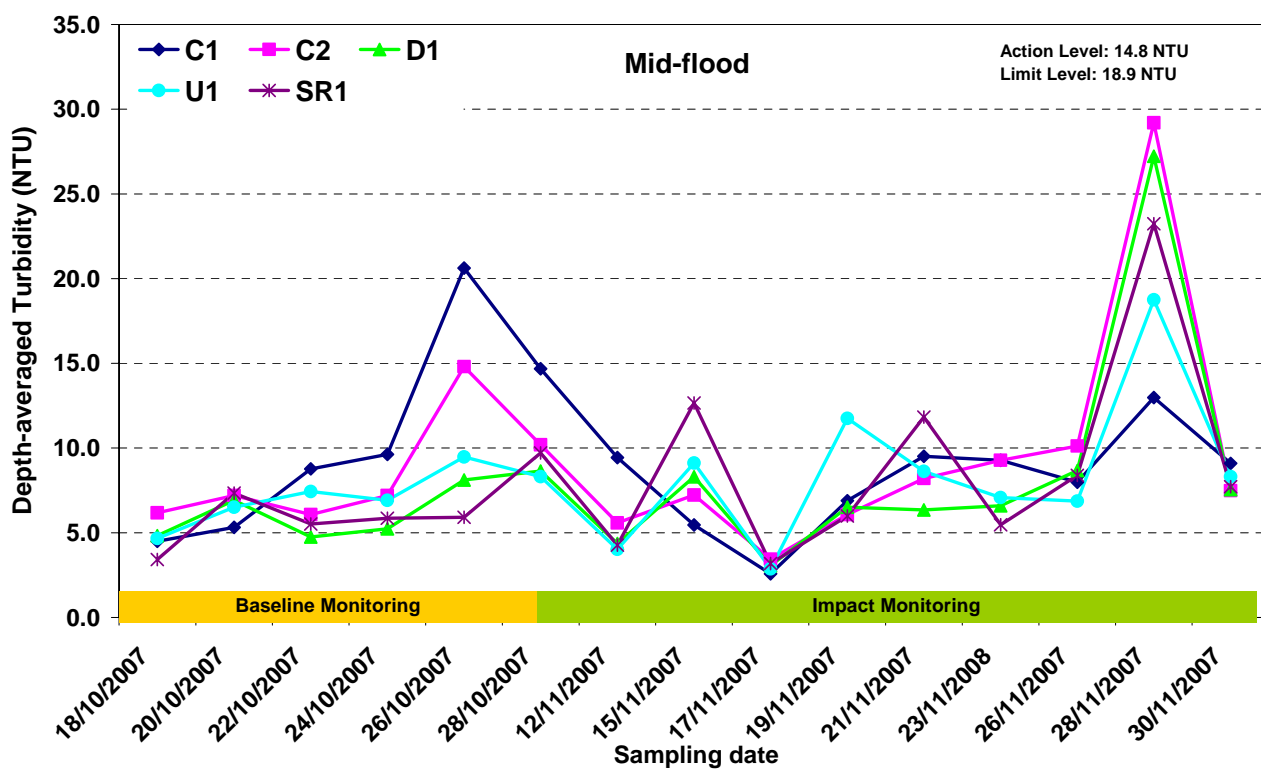
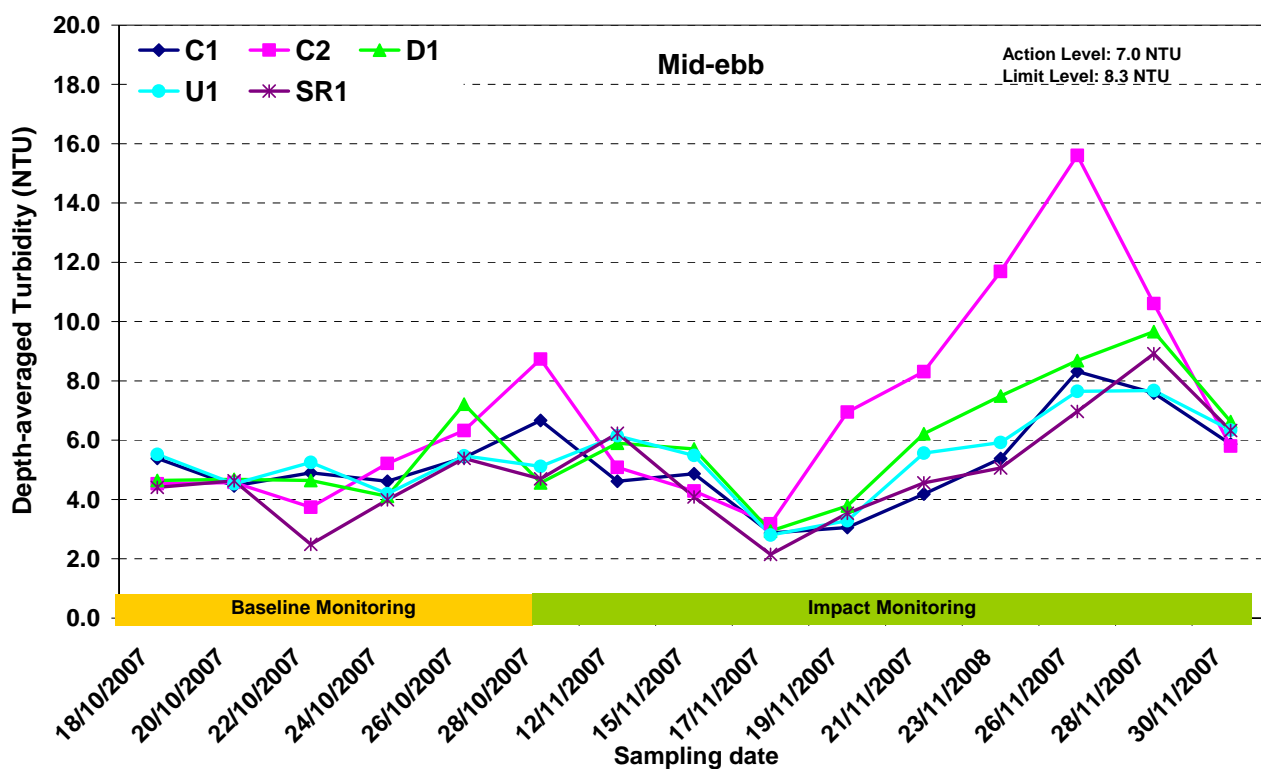


Figure E3 Depth-averaged turbidity (NTU) of water samples from the five sampling locations at mid-ebb and mid-flood between 26 November and 2 December 2007, and previous monitoring period between 18 October and 25 November 2007

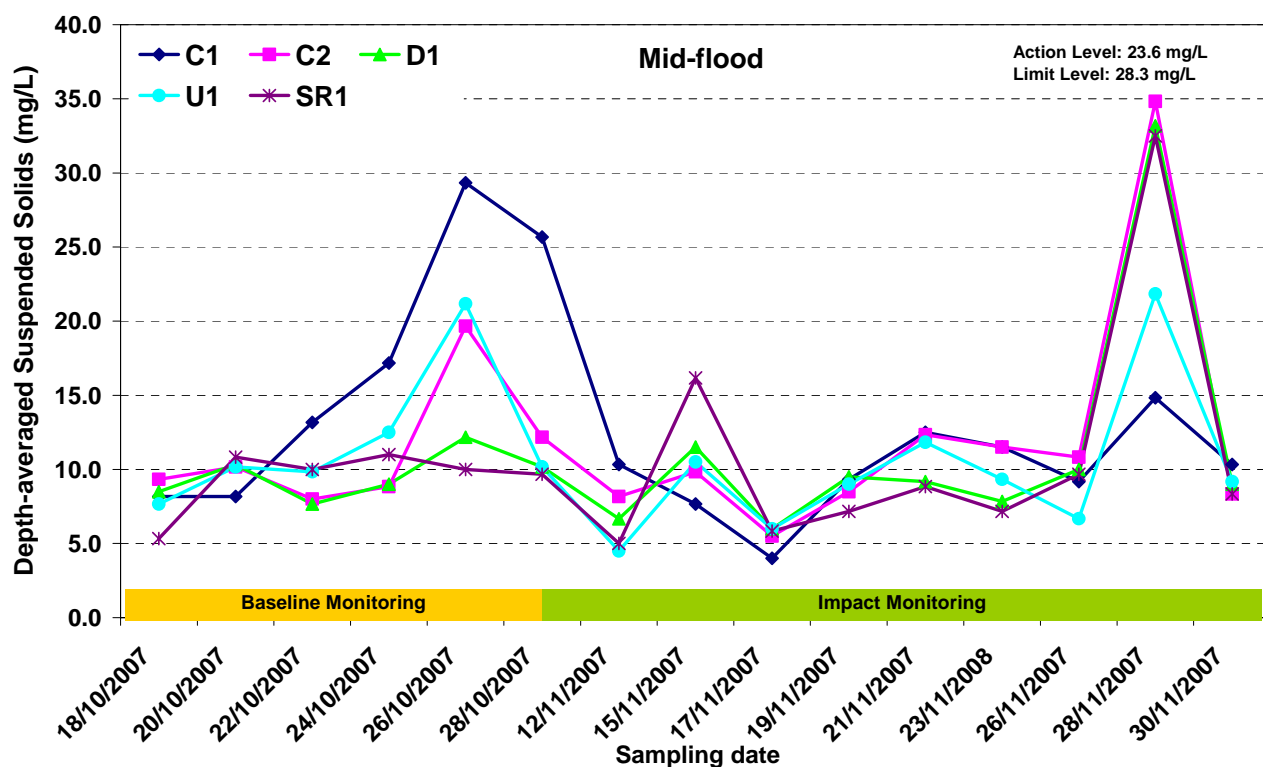
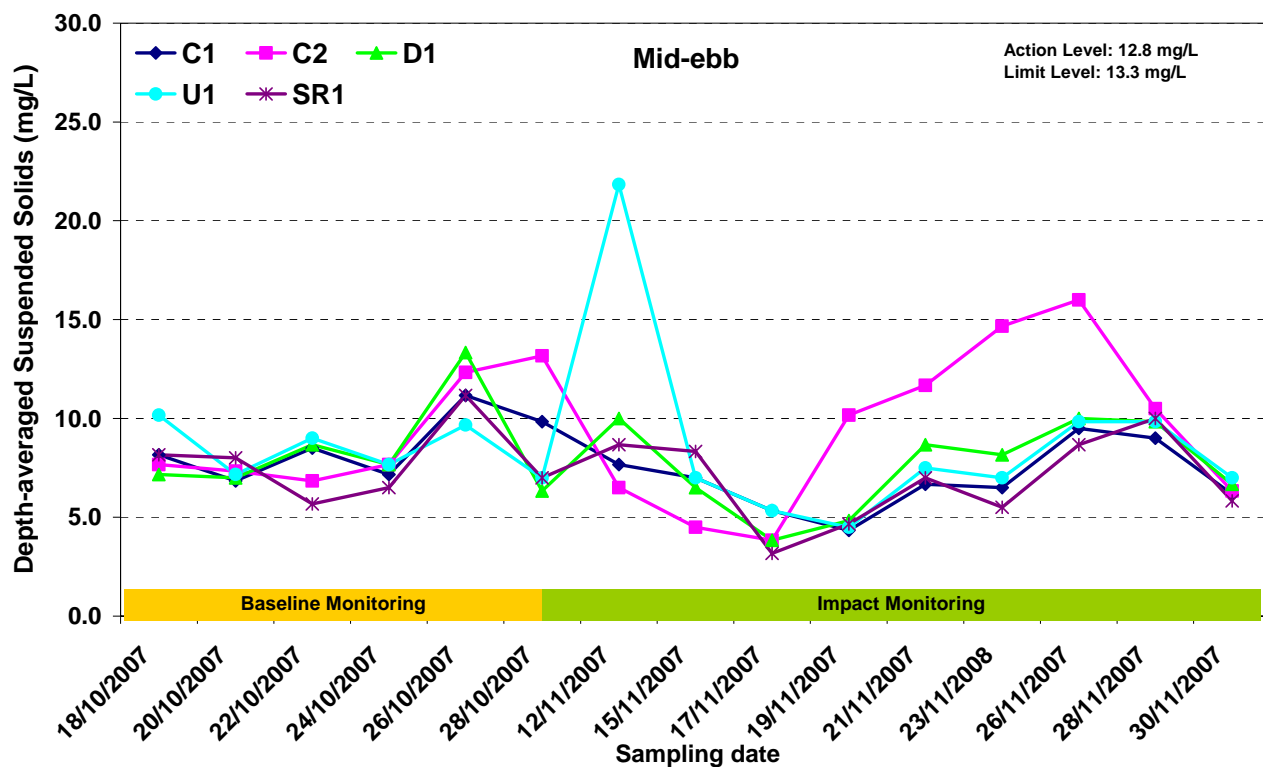


Figure E4 Depth-averaged suspended solids concentration (mg/L) of water samples from the five sampling locations at mid-ebb and mid-flood between 26 November and 2 December 2007, and previous monitoring period between 18 October and 25 November 2007

