IMPACT MONITORING REPORT

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

Seventh Weekly Impact Monitoring Report - 7th January to 13th January 2008

18th January 2008

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CLP Power

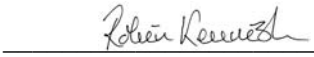
Proposed 132kV Submarine Cable Route for Airport "A" to Castle Peak Power Station Cable Circuit: *Seventh Weekly Impact Monitoring Report – 7th January 2008 – 13th January 2008*

January 2008

Reference 0072833

For and on behalf of
ERM-Hong Kong, Limited

Approved by: Dr Robin Kennish

Signed: 

Position: Director

Date: 18 January 2008

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LIST OF ANNEXES

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 7th weekly Environmental Monitoring and Audit (EM&A) report presenting the EM&A works carried out during the period from 7 January to 13 January 2008 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, dredging operations were undertaken during the reporting period. These works were carried out from 12 January to 13 January 2008. For the remainder of the reporting period (ie from 7 January to 10 January 2008), no marine works were conducted.

Water Quality

Three monitoring events were scheduled between 7 January and 13 January 2007. All monitoring events at all designated monitoring stations were performed on schedule, ie on 9 January, 11 January and 13 January 2007.

All measured dissolved oxygen levels complied with the Action and Limit (AL) Levels, while Turbidity and Suspended Solids (SS) levels were all below AL Levels during the reporting week.

Environmental Non-conformance

No exceedance of Action and Limit Levels was 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 14 January to 20 January 2008), dredging operations will be carried out from 14 January to 15 January. There will be no marine works (ie dredging operations) for the remainder of the following week.

1 INTRODUCTION

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 7th weekly EM&A report, which summarises the impact monitoring results and audit findings for the EM&A programme during the reporting period from 7 January to 13 January 2008.

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 PROJECT INFORMATION

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 Hong Kong International Airport. The alignment of the cable is illustrated in *Figure 2.1*.

2.3 MARINE CONSTRUCTION WORKS UNDERTAKEN DURING REPORTING WEEK

During the reporting week, at the Tuen Mun landing site, dredging operations were undertaken during the reporting period. These works were carried out from 12 January to 13 January 2008. For the remainder of the reporting period (ie from 7 January to 10 January 2008), no marine works were conducted.

The works programme of the period between 7 January and 13 January 2008 is presented in *Annex A*.

2.4 PROJECT ORGANISATION

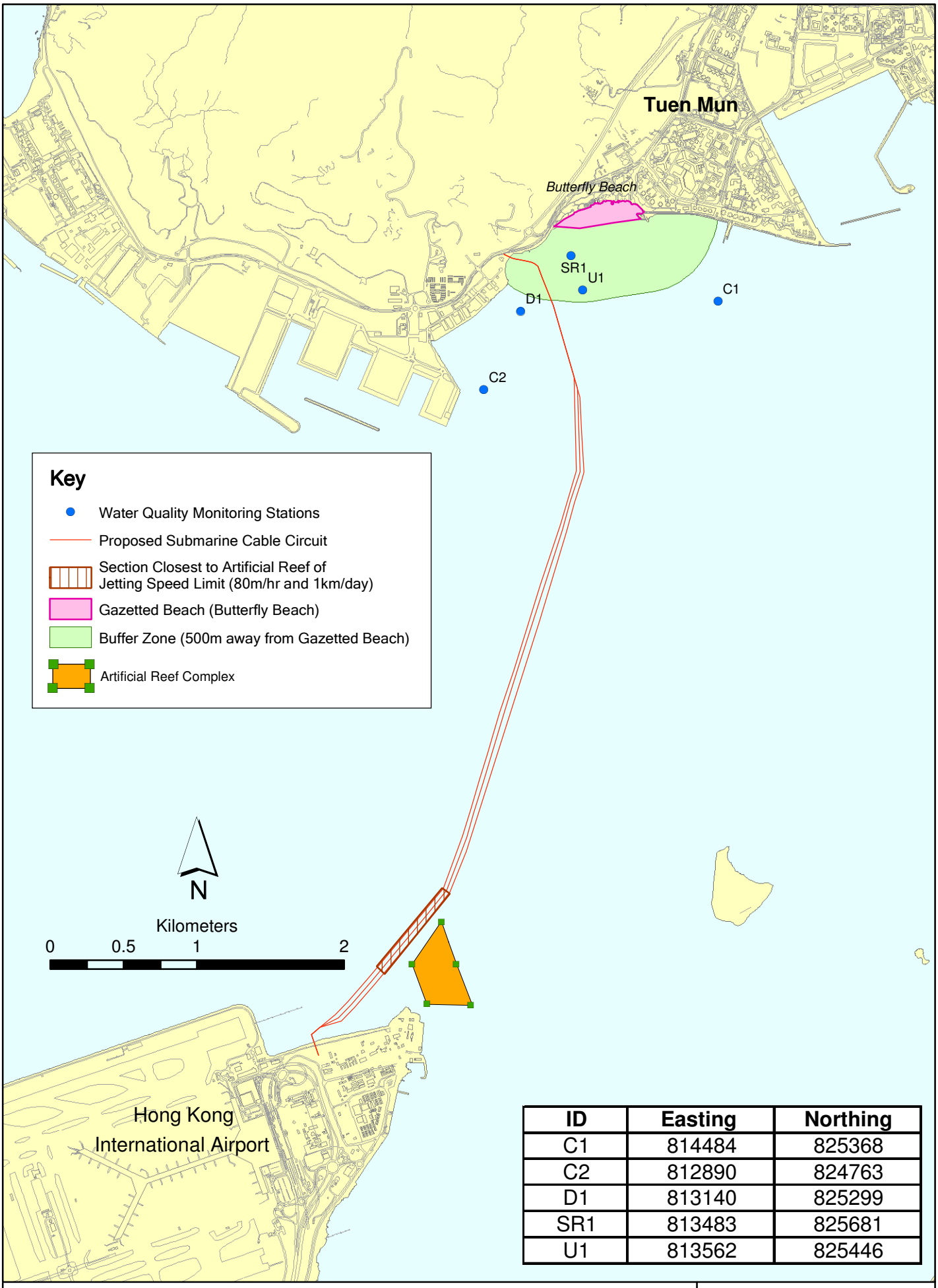
The Project Organisation chart and contact details are shown in *Annex B*.

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
Baseline Environmental Monitoring Report (Part B)	-	Throughout the construction period for Airport Section	approved by EPD on 16 January 2008



ID	Easting	Northing
C1	814484	825368
C2	812890	824763
D1	813140	825299
SR1	813483	825681
U1	813562	825446

FIGURE 2.1

Location of Water Quality Monitoring around Tuen Mun Landing Site

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Date: 26/11/2007

Environmental Resources Management

ERM

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 [1]. 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

3.2 MONITORING PARAMETERS AND FREQUENCY

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

3.2.1 Monitoring Parameters

Parameters measured *in situ* were:

- dissolved oxygen (DO) (% saturation and mg L^{-1});
- temperature (°C);

[1] The monitoring at the Airport has been postponed until the silt curtains have been installed for the artificial reef near the Airport.

- 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 7 January and 13 January 2008, 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.

Protocols

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

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

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 (for 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	**Step 1** - repeat sampling event; **Step 2 –** identify source(s) of impact and confirm whether exceedance was due to the construction works; **Step 3 –** inform EPD and LCSD and confirm notification of the non-compliance in writing; **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). **Step 5** - repeat measurements after implementation of mitigation for confirmation of compliance. **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.
Limit Level Exceedance	Undertake **Steps 1-5** immediately, if further non compliance continues at the Limit Level, suspend cable laying operations until an effective solution is identified.

4 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 m^3 day^{-1} for working 10 hours per day, i.e., 150 m^3 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 m^3 day^{-1} and 1,600 m^3 day^{-1} for working 16 hours per day, i.e., 41 m^3 hr^{-1} and 100 m^3 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

In additional 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 MONITORING RESULTS

5.1 IMPACT MONITORING RESULTS

The monitoring data and graphical presentations of the results are included in *Annex E*. These are summarised below.

Three monitoring events were scheduled between 7 January and 13 January 2008. All monitoring at all designated monitoring stations were performed on schedule, ie on 9 January, 11 January and 13 January 2008.

No major activities influencing the water quality were identified between 7 January and 13 January 2008.

All measured dissolved oxygen levels compiled with the Action and Limit (AL) Levels, while Turbidity and Suspended Solids (SS) levels were all below AL Levels during the reporting week (*Annex E*).

6 ENVIRONMENTAL NON-CONFORMANCES

6.1 SUMMARY OF ENVIRONMENTAL EXCEEDANCE

No exceedance of the Action and Limit Levels was recorded during the reporting 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 14 January to 21 January 2008), dredging operations will be carried out from 14 January to 15 January. There will be no marine works (ie dredging operations) for the remainder of the following week. It may be noted that all marine works at Tuen Mun landing site are expected to be completed on 17 January 2008. 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 in January 2008 is presented in *Annex C*. The environmental monitoring will be conducted at the same monitoring locations as those for this reporting week.

Dredging operation has been carried out at Tuen Mun land site during the reporting week, the monitoring data collected are therefore compared with the impact assessment predictions in the Project Profile. *Table 8.1* shows the predicted maximum suspended solids (SS) elevations that would occur at different distances away from dredging works at the shore ends after taking into account the deployment of silt curtains.

Table 8.1 ***Predicted Elevations of Suspended Solids Concentration due to Dredging at Shore Ends following the Deployment of Silt Curtains***

Distance from Source (m)	Tuen Mun (Grab Dredging)
	Concentration (mg L^{-1})
10	200
100	20
200	10
500	4
1000	2
2000	1
3000	1

Table 8.2 shows the SS levels that were recorded at monitoring stations on 13 January 2008 together with a calculation of elevations by taking control station data as ambient concentrations. The comparison is not applicable for monitoring results for 9 January and 11 January 2008 since there were no marine works conducted on that day. During the reporting week, impact station SR1 was located at approximately 400 m whereas D1 and U1 were located approximately 250 m away from the dredger. Measured elevations of SS at the monitoring stations did not exceed 1.17 mg L^{-1} (*Table 8.2*), which was in line with previous predictions (*Table 8.1*).

Table 8.2 ***Depth-averaged Suspended Sediment (SS) Elevations (mg L^{-1}) due to Dredging at Impact Station during the Reporting Week***

Date of Monitoring	Tidal State	Station	Distance from Grab Dredger (m)	SS Level (mg L^{-1})	Ambient SS Level (mg L^{-1}) (1)	Measured SS Elevation (mg L^{-1})	Predicted SS Elevation (mg L^{-1}) (2)
13/01/2008	Mid-Ebb	SR1	~400	8.20	C2 – 20.00	-11.83	4
13/01/2008	Mid-Ebb	D1	~250	5.50	C2 – 20.00	-14.50	9
13/01/2008	Mid-Ebb	U1	~250	7.33	C2 – 20.00	-12.67	9
13/01/2008	Mid-Flood	SR1	~400	8.33	C1 – 8.33	0.00	4
13/01/2008	Mid-Flood	D1	~250	9.50	C1 – 8.33	1.17	9
13/01/2008	Mid-Flood	U1	~250	7.33	C1 – 8.33	-1.00	9

Notes:

(1) Negative means SS levels at impact stations were lower than the ambient stations. This may be due to the natural fluctuation at the ambient.

(2) The predicted values represent the maximum SS elevations.

9 CONCLUSIONS

This Weekly Impact Monitoring Report presents the EM&A work undertaken during the period from 7 January to 13 January 2008 in accordance with the EM&A Manual and the requirements under *EP-267/2007*.

No exceedance of Action and Limit Levels was 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.

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 7 January and 27 January 2008

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

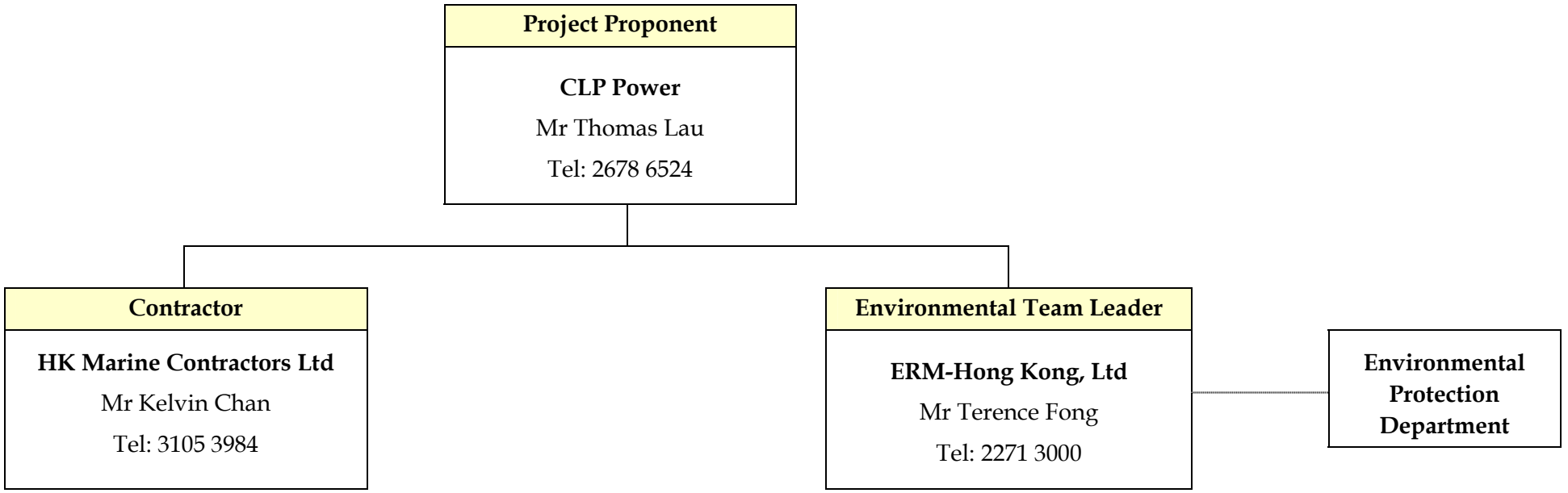
		Workdone for Last Week							Plan for This Week							Anticipate Plan for Next Week						
	Item Date	7/1	8/1	9/1	10/1	11/1	12/1	13/1	14/1	15/1	16/1	17/1	18/1	19/1	20/1	21/1	22/1	23/1	24/1	25/1	26/1	27/1
1	Mobilization of Plants																					
2	Utilities Detection																					
3	Mobilization 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)																					
7	Dredging (Tuen Mun)																					
8	Mobilization of Marine Plant																					
8	Dredging (Airport)																					

Prepared by: Hong Kong Marine Contractors Ltd.
Ref. No. MCERM-132AIRPORTTM-00101-08
Date: 17/01/2008

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 at Tuen Mun landing site - January 2008

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

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		01-Jan	02-Jan	03-Jan	04-Jan	05-Jan
06-Jan	07-Jan	08-Jan	09-Jan	10-Jan	11-Jan	12-Jan
			Mid-Ebb 13:43 Mid-Flood 18:41 *Impact Monitoring (Tuen Mun)*		Mid-Flood 09:44 Mid-Ebb 14:59 *Impact Monitoring (Tuen Mun)*	
13-Jan	14-Jan	15-Jan	16-Jan	17-Jan	18-Jan	19-Jan
Mid-Ebb 10:43 Mid-Flood 16:21 *Impact Monitoring (Tuen Mun)*		Mid-Flood 11:49 Mid-Ebb 18:13 *Impact Monitoring (Tuen Mun)*		Mid-Flood 13:06 Mid-Ebb 20:38 *Impact Monitoring (Tuen Mun)*		Mid-Flood 14:43 Mid-Ebb 22:48 *Impact Monitoring (Tuen Mun)*
20-Jan	21-Jan	22-Jan	23-Jan	24-Jan	25-Jan	26-Jan
27-Jan	28-Jan	29-Jan	30-Jan	31-Jan		

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	: HK0800480		
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	: 10 Jan 2008		
Order number	: ----			Date of issue	: 14 Jan 2008		
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 HK0800480 supersedes any previous reports with this reference. The completion date of analysis is 14 Jan 2008. 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 HK0800480 : **Sample(s) were received in a chilled condition.**
Water sample(s) analysed and reported on an as received basis.

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.

Signatory	*Position*	*Authorised results for:-*
Fung Lim Chee, Richard	**General Manager**	**Inorganics**

Quality Control - Laboratory Duplicate (DUP) Results

Matrix Type: WATER

Laboratory Sample ID	Client Sample ID	Method: Analysis Description	CAS number	Duplicate (DUP) Results				
				LOR	Units	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 570173)								
HK0800480-001	2008/01/09/12:22/C1/B/E/	EA025: Suspended Solids (SS)	----	1	mg/L	6	5	0.0
	REPL. 1							
HK0800480-011	2008/01/09/12:35/SR1/M/E/	EA025: Suspended Solids (SS)	----	1	mg/L	3	3	0.0
	REPL. 2							
EA/ED: Physical and Aggregate Properties (QC Lot: 570175)								
HK0800480-021	2008/01/09/12:49/D1/T/E/	EA025: Suspended Solids (SS)	----	1	mg/L	3	3	0.0
	REPL. 1							
HK0800480-031	2008/01/09/17:18/C1/B/F/	EA025: Suspended Solids (SS)	----	1	mg/L	4	4	0.0
	REPL. 1							
EA/ED: Physical and Aggregate Properties (QC Lot: 570176)								
HK0800480-041	2008/01/09/17:29/SR1/M/F/	EA025: Suspended Solids (SS)	----	1	mg/L	3	3	0.0
	REPL. 2							
HK0800480-051	2008/01/09/18:03/D1/T/F/	EA025: Suspended Solids (SS)	----	1	mg/L	5	5	0.0
	REPL. 1							

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

Matrix Type: WATER

Method: Analysis Description	CAS number	Method Blank (MB) Results			Single Control Spike (SCS) and Duplicate Control Spike (DCS) Results						
					Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
		LOR	Units	Result	Concentration	SCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QCLot: 570173)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	95.0	----	85	115	----	----
EA/ED: Physical and Aggregate Properties (QCLot: 570175)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	98.5	----	85	115	----	----
EA/ED: Physical and Aggregate Properties (QCLot: 570176)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	94.0	----	85	115	----	----

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	: HK0800611		
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	: 11 Jan 2008		
Order number	: ----			Date of issue	: 15 Jan 2008		
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 HK0800611 supersedes any previous reports with this reference. The completion date of analysis is 14 Jan 2008. 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 HK0800611 : **Sample(s) were received in a chilled condition.**
Water sample(s) analysed and reported on an as received basis.

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.

Signatory	*Position*	*Authorised results for:-*
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: 570835)								
HK0800611-001	2008/01/11/14:17/C1/B/E/	EA025: Suspended Solids (SS)	----	1	mg/L	6	6	0.0
	REPL.1							
HK0800611-011	2008/01/11/14:30/SR1/M/E/	EA025: Suspended Solids (SS)	----	1	mg/L	6	5	0.0
	REPL.2							
EA/ED: Physical and Aggregate Properties (QC Lot: 570836)								
HK0800611-021	2008/01/11/14:57/D1/T/E/	EA025: Suspended Solids (SS)	----	1	mg/L	8	7	0.0
	REPL.1							
HK0800611-031	2008/01/11/10:50/C1/B/F/	EA025: Suspended Solids (SS)	----	1	mg/L	9	10	15.1
	REPL.1							
EA/ED: Physical and Aggregate Properties (QC Lot: 570837)								
HK0800611-041	2008/01/11/09:38/SR1/M/F/	EA025: Suspended Solids (SS)	----	1	mg/L	8	10	16.8
	REPL.2							
HK0800611-051	2008/01/11/10:01/D1/T/F/	EA025: Suspended Solids (SS)	----	1	mg/L	6	7	17.1
	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*	*Value*	*Control Limit*
EA/ED: Physical and Aggregate Properties (QCLot: 570835)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	97.5	----	85	115	----	----
EA/ED: Physical and Aggregate Properties (QCLot: 570836)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	100	----	85	115	----	----
EA/ED: Physical and Aggregate Properties (QCLot: 570837)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	104	----	85	115	----	----

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	: HK0800706		
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	: 14 Jan 2008		
Order number	: ----			Date of issue	: 16 Jan 2008		
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 HK0800706 supersedes any previous reports with this reference. The completion date of analysis is 14 Jan 2008. 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 HK0800706 : **Sample(s) were received in a chilled condition.**
Water sample(s) analysed and reported on an as received basis.

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.

Signatory	*Position*	*Authorised results for:-*
Fung Lim Chee, Richard	**General Manager**	**Inorganics**

Quality Control - Laboratory Duplicate (DUP) Results

Matrix Type: WATER

Laboratory Sample ID	Client Sample ID	Method: Analysis Description	CAS number	Duplicate (DUP) Results				
				LOR	Units	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 571961)								
HK0800706-001	2008/01/13/0923/C1/B/E/	EA025: Suspended Solids (SS)	----	1	mg/L	10	10	0.0
	REPL.1							
HK0800706-011	2008/01/13/0937/SR1/M/E/	EA025: Suspended Solids (SS)	----	1	mg/L	9	8	0.0
	REPL.2							
EA/ED: Physical and Aggregate Properties (QC Lot: 571962)								
HK0800706-021	2008/01/13/1003/D1/T/E/	EA025: Suspended Solids (SS)	----	1	mg/L	7	9	17.7
	REPL.1							
HK0800706-032	2008/01/13/1514/C1/M/F/	EA025: Suspended Solids (SS)	----	1	mg/L	7	6	0.0
	REPL.1							
EA/ED: Physical and Aggregate Properties (QC Lot: 571963)								
HK0800706-041	2008/01/13/1525/SR1/M/F/	EA025: Suspended Solids (SS)	----	1	mg/L	7	6	20.8
	REPL.2							
HK0800706-051	2008/01/13/1541/D1/T/F/	EA025: Suspended Solids (SS)	----	1	mg/L	6	8	37.8
	REPL.1							

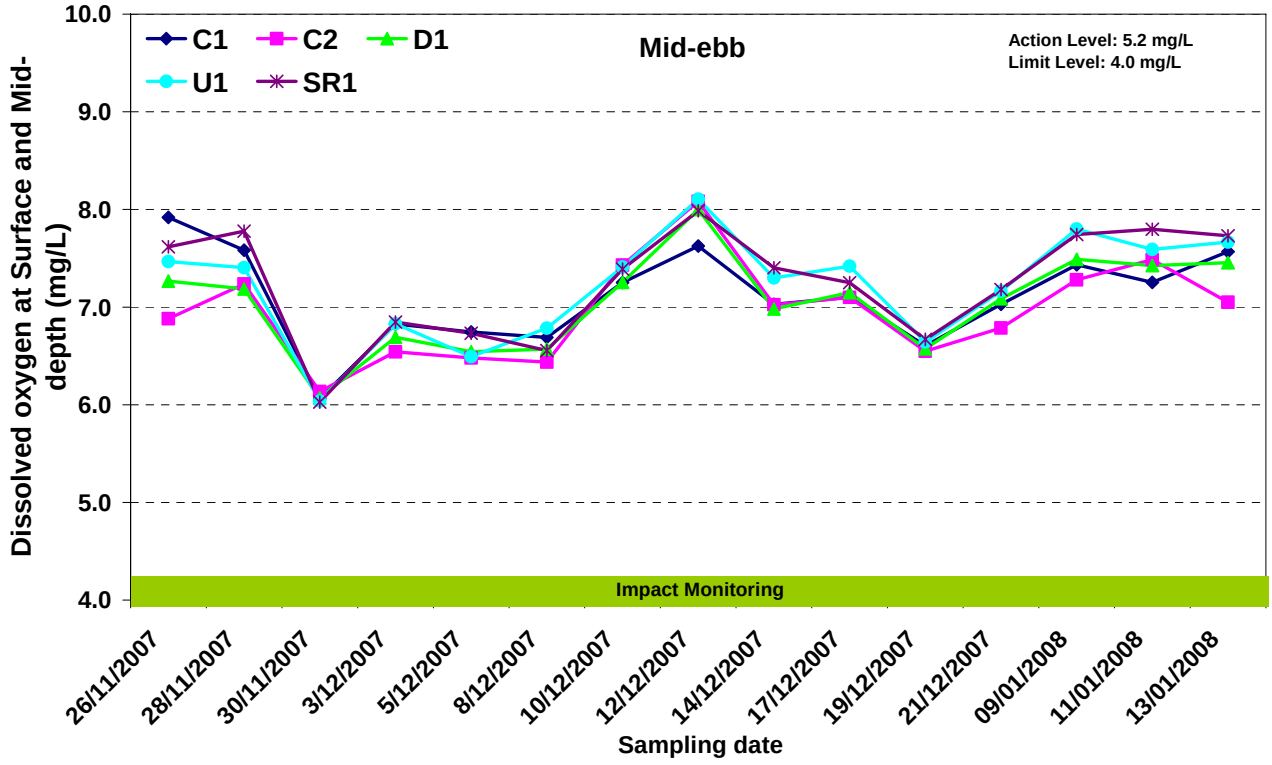
Quality Control - Method Blank (MB), Single Control Spike (SCS) and Duplicate Control Spike (DCS) Results

Matrix Type: WATER

Method: Analysis Description	CAS number	Method Blank (MB) Results			Single Control Spike (SCS) and Duplicate Control Spike (DCS) Results						
					Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
		LOR	Units	Result	Concentration	SCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QCLot: 571961)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	98.0	----	85	115	----	----
EA/ED: Physical and Aggregate Properties (QCLot: 571962)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	105	----	85	115	----	----
EA/ED: Physical and Aggregate Properties (QCLot: 571963)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	99.5	----	85	115	----	----

Annex E

Impact Water Quality Monitoring Results



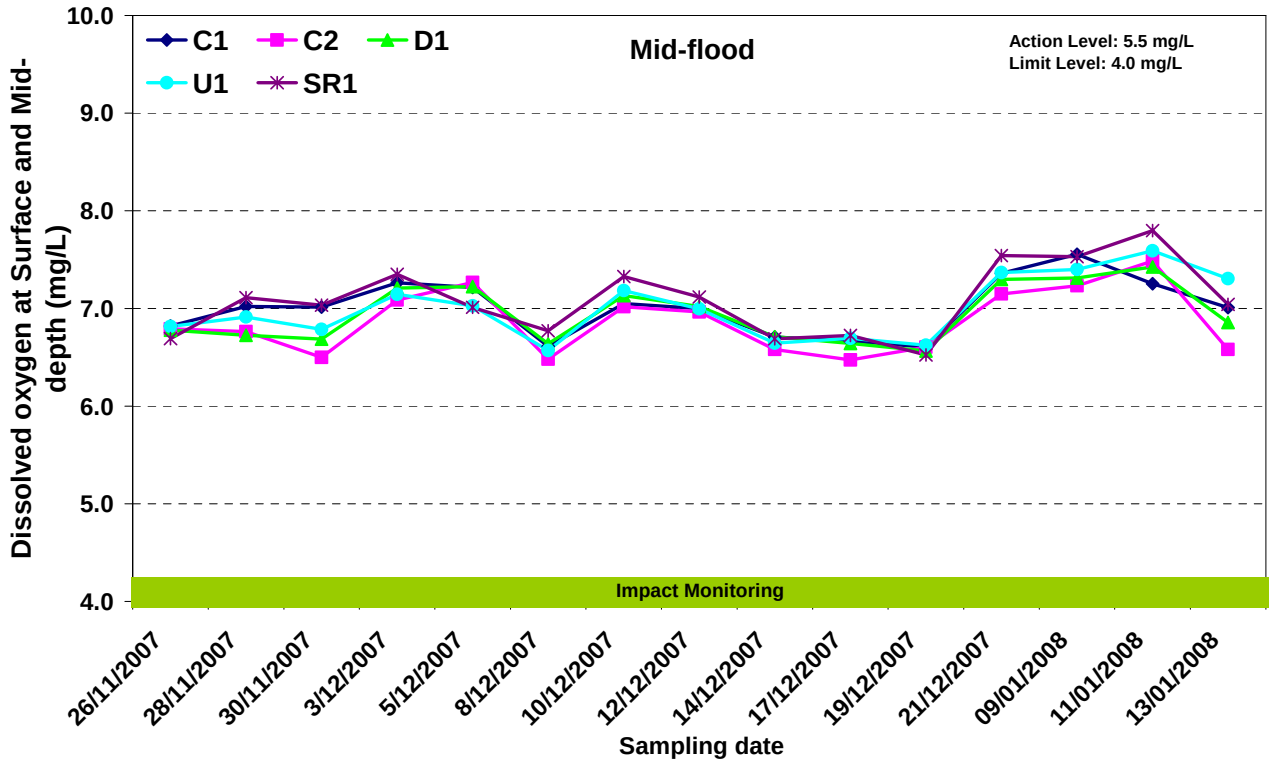
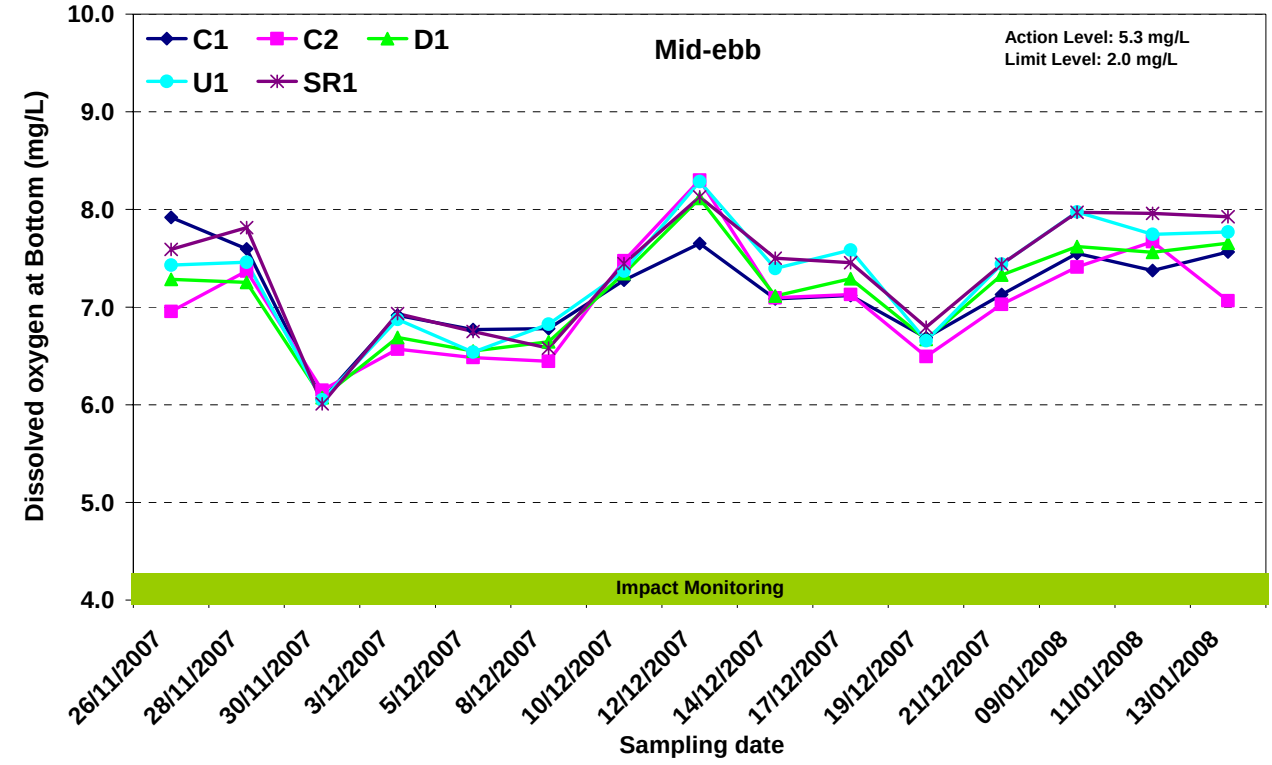


Figure E1 Dissolved oxygen concentration (mean of surface and mid-depth) (mg/L) of water samples from the five sampling locations at mid-ebb and mid-flood between 7 January and 13 January 2008, and previous monitoring period between 26 November 2007 and 23 December 2007



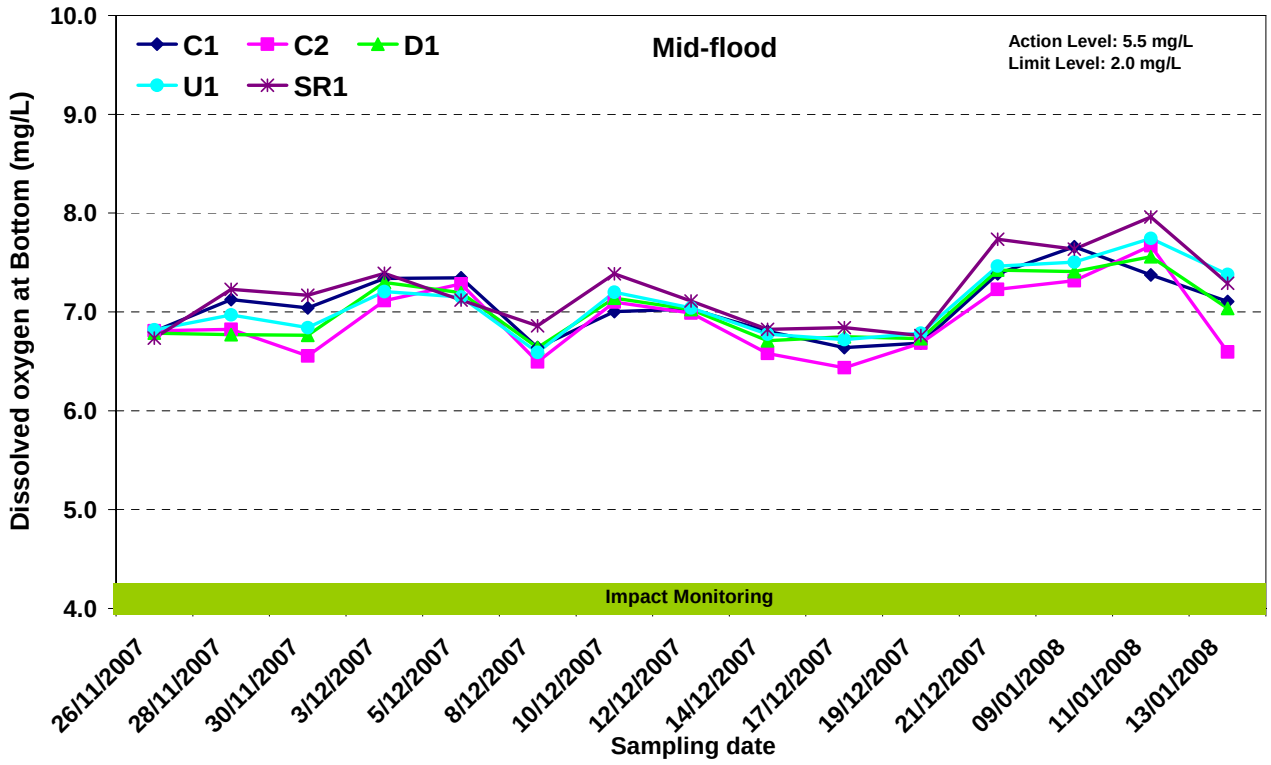
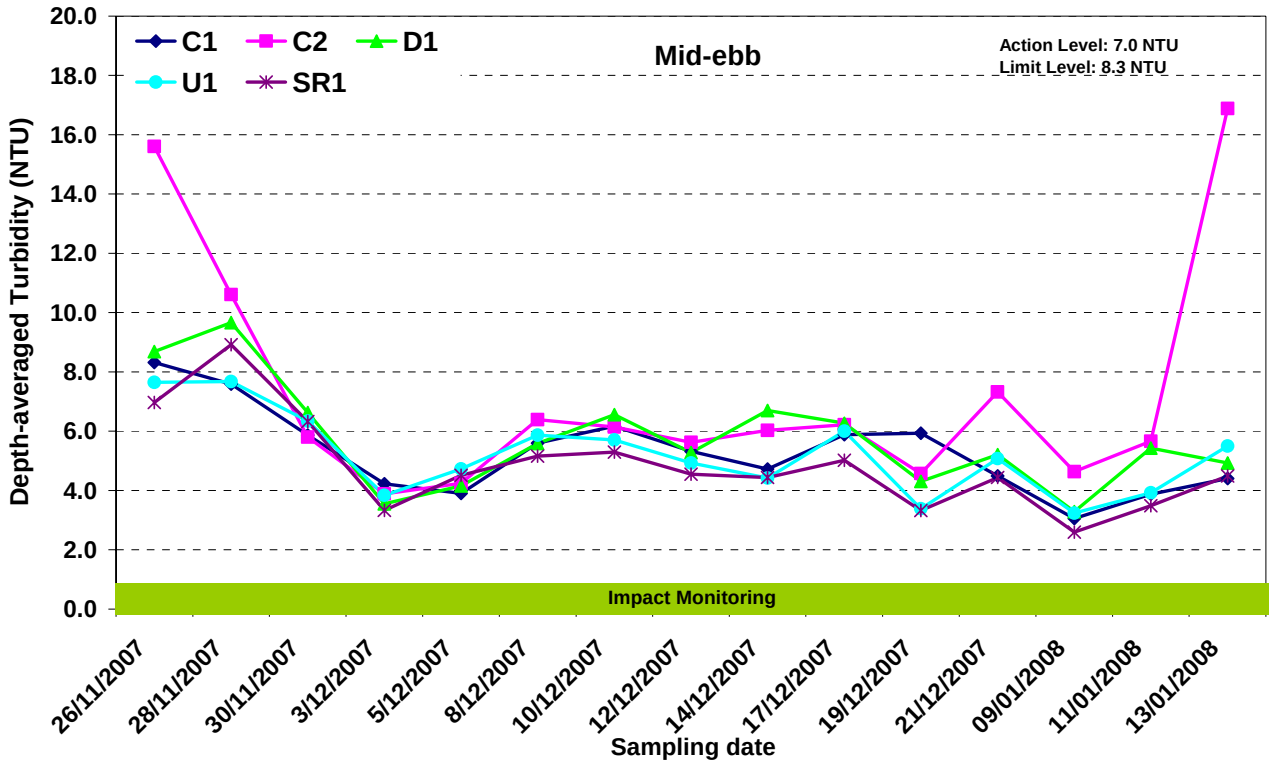


Figure E2 Dissolved oxygen concentration (bottom) (mg/L) of water samples from the five sampling locations at mid-ebb and mid-flood between 7 January and 13 January 2008, and previous monitoring period between 26 November 2007 and 23 December 2007



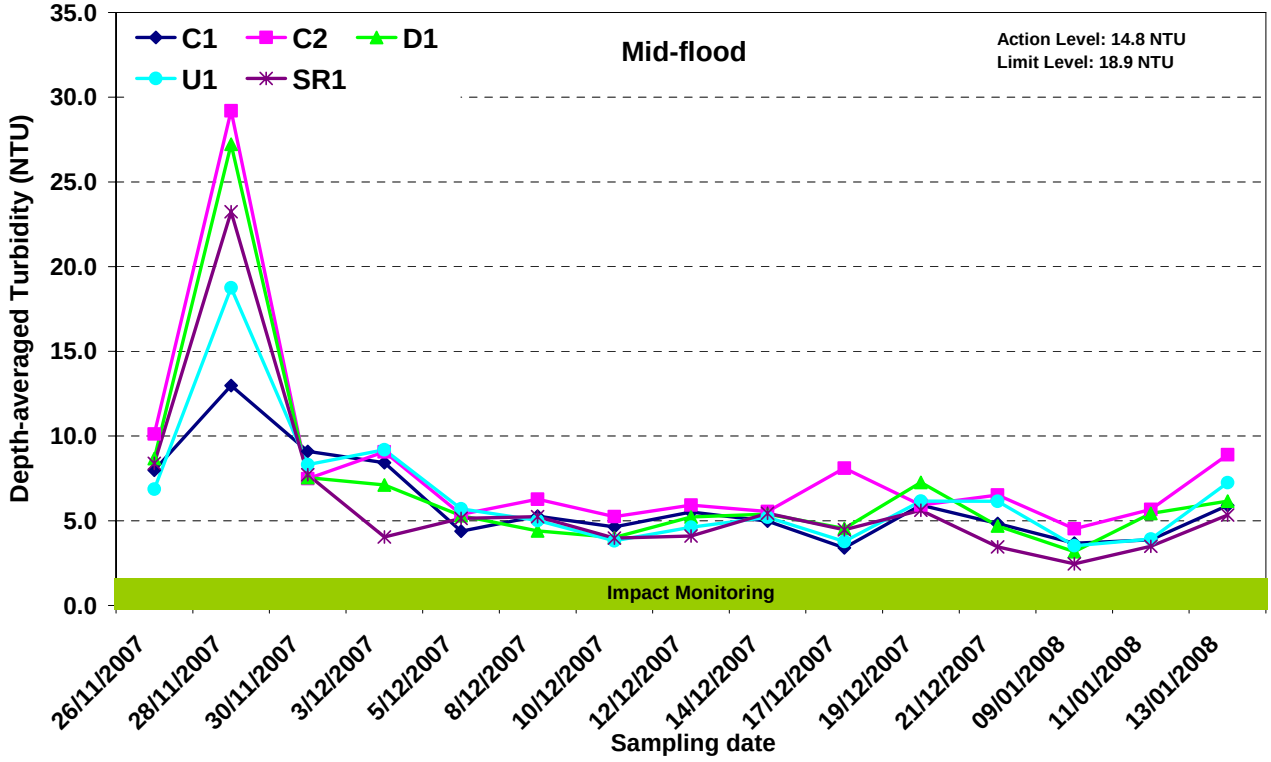
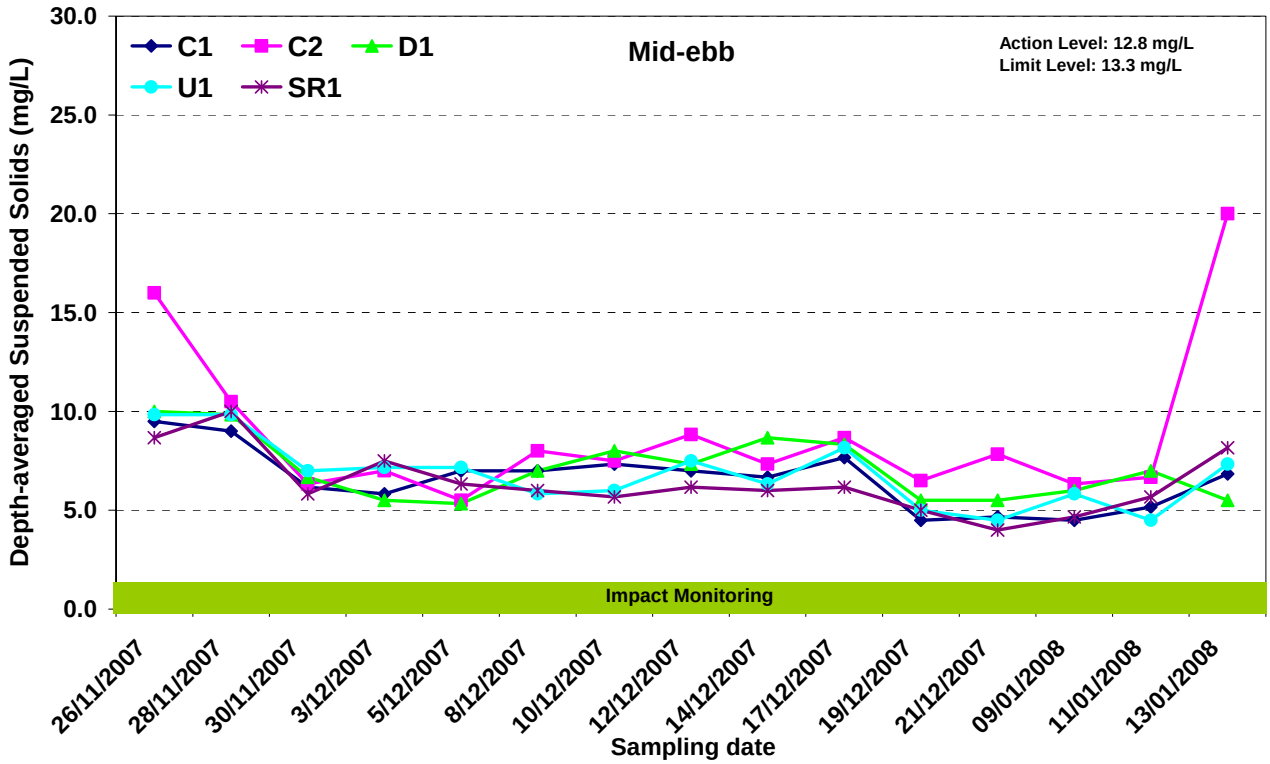


Figure E3 Depth-averaged turbidity (NTU) of water samples from the five sampling locations at mid-ebb and mid-flood between 7 January and 13 January 2008, and previous monitoring period between 26 November 2007 and 23 December 2007



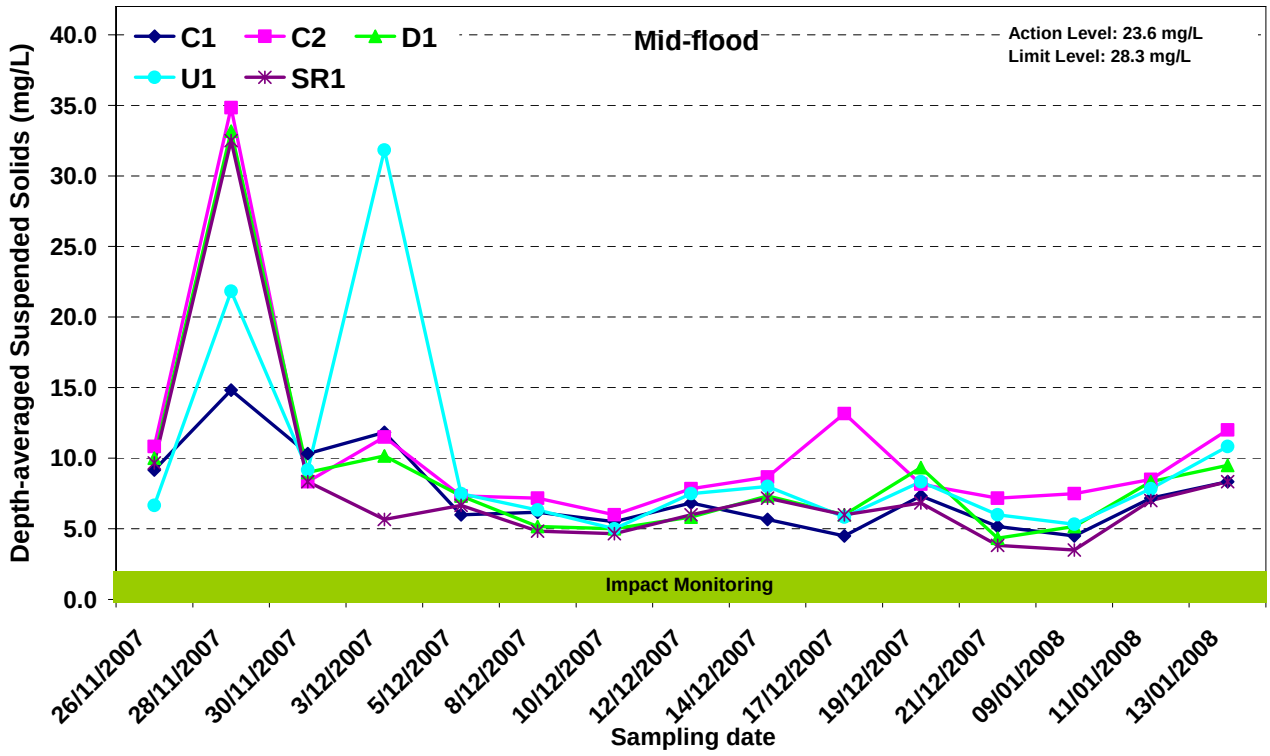


Figure E4 Depth-averaged suspended solids concentration (mg/L) of water samples from the five sampling locations at mid-ebb and mid-flood between 7 January and 13 January 2008, and previous monitoring period between 26 November 2007 and 23 December 2007

Annex E1 - Water Quality Results, Action and Limit Levels at mid-ebb tide for 9 January 2008

Date	01/09/2008							
Station	C1							
Time (hh:mm)	12:22 - 12:25							
Ambient Temperature (°C)	24							
Weather	Sunny							
Water Depth (m)	8.30							
Monitoring Depth (m)	1.10		4.10		7.10			
Tide	Mid-Ebb							
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth-averaged*	*Bottom*
Water Temperature (°C)	18.9	19.1	19.0	18.8	18.8	18.8	18.89	-
Salinity (ppt)	30.6	30.5	30.5	30.6	30.8	30.8	30.62	-
pH	7.7	7.7	7.7	7.7	7.7	7.7	7.70	
D.O. Saturation (%)	95.9	96.1	96.4	95.6	98.6	96.2	96.46	-
D.O. (mg/L)	7.43	7.43	7.45	7.43	7.64	7.46	7.47	7.55
Turbidity (NTU)	2.80	2.40	3.00	3.30	3.40	3.30	3.05	-
SS (mg/L)	5.0	3.0	4.0	5.0	6.0	4.0	4.50	-
Remarks	-							

Date	01/09/2008							
Station	U1							
Time (hh:mm)	12:40 - 12:42							
Ambient Temperature (°C)	24							
Weather	Sunny							
Water Depth (m)	9.20							
Monitoring Depth (m)	1.00		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)	19.0	18.9	18.9	18.9	18.8	18.8	18.89	-
Salinity (ppt)	30.5	30.6	30.6	30.6	30.7	30.7	30.62	-
pH	7.8	7.8	7.8	7.8	7.8	7.8	7.81	
D.O. Saturation (%)	101.3	99.3	102.5	99.7	105.2	100.4	101.40	-
D.O. (mg/L)	7.83	7.69	7.95	7.73	8.16	7.79	7.86	7.98
Turbidity (NTU)	3.60	3.20	3.10	3.00	3.20	3.20	3.24	-
SS (mg/L)	5.0	6.0	9.0	4.0	4.0	7.0	5.83	-
Remarks	-							

Date	01/09/2008							
Station	C2							
Time (hh:mm)	12:55 - 12:59							
Ambient Temperature (°C)	24							
Weather	Sunny							
Water Depth (m)	13.40							
Monitoring Depth (m)	1.20		6.50		12.10			
Tide	Mid-Ebb							
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth-averaged*	*Bottom*
Water Temperature (°C)	18.9	18.9	18.8	18.8	18.9	18.9	18.86	-
Salinity (ppt)	30.7	30.7	30.7	30.7	30.9	30.9	30.75	-
pH	7.8	7.8	7.8	7.8	7.8	7.8	7.82	
D.O. Saturation (%)	94.6	92.8	95.3	93.3	97.7	93.8	94.57	-
D.O. (mg/L)	7.33	7.18	7.38	7.23	7.56	7.26	7.32	7.41
Turbidity (NTU)	4.50	5.40	4.70	4.10	4.10	4.90	4.64	-
SS (mg/L)	5.0	8.0	7.0	6.0	5.0	7.0	6.33	-
Remarks	-							

Date	01/09/2008							
Station	SR1							
Time (hh:mm)	12:31 - 12:35							
Ambient Temperature (°C)	24							
Weather	Sunny							
Water Depth (m)	5.20							
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)	19.3	19.3	19.0	19.0	19.0	19.0	19.09	-
Salinity (ppt)	30.5	30.5	30.5	30.5	30.6	30.6	30.52	-
pH	7.8	7.8	7.8	7.8	7.8	7.8	7.78	
D.O. Saturation (%)	101.1	98.8	102.3	99.3	104.9	101.0	101.24	-
D.O. (mg/L)	7.78	7.60	7.91	7.68	8.12	7.82	7.82	7.97
Turbidity (NTU)	2.30	2.40	2.30	2.50	2.40	3.60	2.60	-
SS (mg/L)	5.0	4.0	4.0	3.0	9.0	3.0	4.67	-
Remarks	-							

Date	01/09/2008							
Station	D1							
Time (hh:mm)	12:48 - 12:50							
Ambient Temperature (°C)	24							
Weather	Sunny							
Water Depth (m)	9.50							
Monitoring Depth (m)	1.10		4.80		8.20			
Tide	Mid-Ebb							
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth-averaged*	*Bottom*
Water Temperature (°C)	19.2	19.1	19.0	19.0	18.9	18.9	19.03	-
Salinity (ppt)	30.6	30.6	30.6	30.6	30.8	30.7	30.66	-
pH	7.8	7.8	7.8	7.8	7.8	7.8	7.81	
D.O. Saturation (%)	97.4	96.1	98.1	96.5	99.9	97.1	97.51	-
D.O. (mg/L)	7.50	7.42	7.58	7.46	7.73	7.51	7.53	7.62
Turbidity (NTU)	2.30	2.80	3.40	3.10	4.80	3.20	3.28	-
SS (mg/L)	3.0	6.0	7.0	5.0	7.0	8.0	6.00	-
Remarks	-							

Flow Tracking Data

Position	Easting	Northing	Depth	Time	Speed	Direction	Date
C1	814481.99	825364.98	8.3	130707	0	0	20080109
C1	814522.89	825379.38	-99	131228	0.1351	70.6	20080109
C1	814562.14	825371.41	8.4	131810	0.1171	101.5	20080109
C1	814590.2	825386.33	8.5	132300	0.1096	62	20080109

	Impact Station			Control Station	
Depth-averaged SS levels (mg/L)	SR1	D1	U1	C1	C2
Mid-ebb	4.7	6.00	5.83	4.50	6.33
Mid-flood	3.50	5.17	5.33	4.50	7.50
Mid-ebb elevations (w.r.t. C2)	-1.67	-0.33	-0.50		
Mid-ebb elevations (w.r.t. C1)	-1.00	0.67	0.83		

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

Annex E2 - Water Quality Results, Action and Limit Levels at mid-flood tide for 9 January 2008

Date	01/09/2008							
Station	C1							
Time (hh:mm)	17:18 - 17:20							
Ambient Temperature (°C)	21							
Weather	Sunny							
Water Depth (m)	8.40							
Monitoring Depth (m)	1.10		4.30		7.10			
Tide	Mid-Flood							
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth-averaged*	*Bottom*
Water Temperature (°C)	19.0	19.0	18.9	18.9	18.9	18.9	18.92	-
Salinity (ppt)	30.4	30.4	30.5	30.6	30.6	30.6	30.51	-
pH	7.7	7.7	7.7	7.7	7.6	7.7	7.67	
D.O. Saturation (%)	97.9	97.0	98.1	96.8	100.2	97.4	97.92	-
D.O. (mg/L)	7.59	7.52	7.61	7.50	7.77	7.55	7.59	7.66
Turbidity (NTU)	2.80	3.00	3.60	3.90	4.00	4.60	3.67	-
SS (mg/L)	7.0	3.0	3.0	5.0	4.0	5.0	4.50	-
Remarks	-							

Date	01/09/2008							
Station	U1							
Time (hh:mm)	17:38 - 17:43							
Ambient Temperature (°C)	21							
Weather	Sunny							
Water Depth (m)	9.30							
Monitoring Depth (m)	1.00		4.70		8.10			
Tide	Mid-Flood							
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth-averaged*	*Bottom*
Water Temperature (°C)	18.9	18.9	18.9	18.9	18.9	18.9	18.90	-
Salinity (ppt)	30.6	30.6	30.6	30.6	30.7	30.7	30.63	-
pH	7.8	7.8	7.8	7.8	7.8	7.8	7.77	
D.O. Saturation (%)	95.5	95.3	95.7	95.7	96.5	97.4	95.99	-
D.O. (mg/L)	7.40	7.38	7.41	7.41	7.47	7.54	7.44	7.51
Turbidity (NTU)	3.00	3.10	3.50	3.30	4.10	4.00	3.52	-
SS (mg/L)	6.0	3.0	4.0	6.0	7.0	6.0	5.33	-
Remarks	-							

Date	01/09/2008							
Station	C2							
Time (hh:mm)	18:10 - 18:14							
Ambient Temperature (°C)	21							
Weather	Sunny							
Water Depth (m)	14.00							
Monitoring Depth (m)	1.30		6.90		13.20			
Tide	Mid-Flood							
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth-averaged*	*Bottom*
Water Temperature (°C)	18.9	18.9	18.9	18.9	18.8	18.8	18.86	-
Salinity (ppt)	30.6	30.7	30.7	30.7	30.7	30.7	30.66	-
	7.8	7.8	7.8	7.8	7.8	7.8	7.80	
D.O. Saturation (%)	93.5	93.9	93.2	92.8	95.4	93.1	93.68	-
D.O. (mg/L)	7.25	7.27	7.22	7.19	7.40	7.23	7.26	7.32
Turbidity (NTU)	4.00	3.70	4.10	4.60	5.30	5.30	4.52	-
SS (mg/L)	5.0	9.0	9.0	6.0	6.0	10.0	7.50	-
Remarks	-							

Date	01/09/2008							
Station	SR1							
Time (hh:mm)	17:27 - 17:30							
Ambient Temperature (°C)	21							
Weather	Sunny							
Water Depth (m)	5.40							
Monitoring Depth (m)	1.20		2.70		4.10			
Tide	Mid-Flood							
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth-averaged*	*Bottom*
Water Temperature (°C)	19.3	19.2	19.0	19.0	19.0	19.0	19.07	-
Salinity (ppt)	30.6	30.6	30.6	30.6	30.7	30.7	30.64	-
pH	7.8	7.8	7.8	7.8	7.8	7.7	7.75	
D.O. Saturation (%)	98.4	97.5	97.5	97.2	99.1	98.3	98.01	-
D.O. (mg/L)	7.56	7.51	7.54	7.51	7.67	7.60	7.57	7.64
Turbidity (NTU)	2.60	2.30	2.20	2.40	2.50	2.60	2.44	-
SS (mg/L)	5.0	2.0	3.0	3.0	4.0	4.0	3.50	-
Remarks	-							

Date	01/09/2008							
Station	D1							
Time (hh:mm)	18:02 - 18:05							
Ambient Temperature (°C)	21							
Weather	Sunny							
Water Depth (m)	9.40							
Monitoring Depth (m)	1.00		4.70		8.00			
Tide	Mid-Flood							
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth-averaged*	*Bottom*
Water Temperature (°C)	19.0	19.0	18.9	18.9	18.9	18.9	18.96	-
Salinity (ppt)	30.6	30.6	30.6	30.6	30.7	30.7	30.62	-
pH	7.8	7.8	7.8	7.8	7.8	7.8	7.80	
D.O. Saturation (%)	94.9	94.4	94.9	94.0	96.7	94.6	94.93	-
D.O. (mg/L)	7.33	7.29	7.35	7.28	7.49	7.33	7.35	7.41
Turbidity (NTU)	2.20	2.40	3.10	3.10	4.40	3.70	3.17	-
SS (mg/L)	5.0	5.0	4.0	4.0	7.0	6.0	5.17	-
Remarks	-							

Flow Tracking Data

Position	Easting	Northing	Depth	Time	Speed	Direction	Date
C1	814482.48	825365.99	-99	182335	0	0	20080109
C1	814382.73	825366.84	-99	182854	0.3127	270.5	20080109
C1	814263.25	825375.58	-99	183419	0.3686	274.2	20080109
C1	814163.69	825376.74	-99	183950	0.3008	270.7	20080109

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

Annex E3 - Water Quality Results, Action and Limit Levels at mid-ebb tide for 11 January 2008

Date	01/11/2008							
Station	C1							
Time (hh:mm)	14:17 - 14:20							
Ambient Temperature (°C)	23							
Weather	Sunny							
Water Depth (m)	8.70							
Monitoring Depth (m)	1.20		4.10		7.10			
Tide	Mid-Ebb							
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth-averaged*	*Bottom*
Water Temperature (°C)	19.6	19.6	19.3	19.5	19.3	19.3	19.43	-
Salinity (ppt)	30.3	30.3	30.3	30.3	30.4	30.4	30.32	-
pH	7.7	7.7	7.7	7.7	7.7	7.7	7.70	
D.O. Saturation (%)	94.9	94.5	94.6	94.2	97.0	94.6	94.96	-
D.O. (mg/L)	7.27	7.23	7.28	7.24	7.47	7.28	7.30	7.38
Turbidity (NTU)	3.60	3.60	3.80	3.60	4.70	3.80	3.87	-
SS (mg/L)	6.0	4.0	3.0	6.0	6.0	6.0	5.17	-
Remarks	-							

Date	01/11/2008							
Station	U1							
Time (hh:mm)	14:36 - 14:40							
Ambient Temperature (°C)	23							
Weather	Sunny							
Water Depth (m)	9.60							
Monitoring Depth (m)	0.90		4.40		8.40			
Tide	Mid-Ebb							
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth-averaged*	*Bottom*
Water Temperature (°C)	19.8	19.6	19.6	19.6	19.5	19.5	19.62	-
Salinity (ppt)	30.3	30.3	30.4	30.3	30.4	30.4	30.33	-
pH	7.8	7.8	7.8	7.8	7.8	7.8	7.81	
D.O. Saturation (%)	100.2	97.9	100.8	98.2	103.2	98.8	99.84	-
D.O. (mg/L)	7.64	7.49	7.72	7.51	7.91	7.58	7.64	7.75
Turbidity (NTU)	3.90	4.00	3.50	3.90	4.00	4.10	3.92	-
SS (mg/L)	3.0	5.0	5.0	4.0	4.0	6.0	4.50	-
Remarks	-							

Date	01/11/2008							
Station	C2							
Time (hh:mm)	15:07 - 15:13							
Ambient Temperature (°C)	23							
Weather	Sunny							
Water Depth (m)	14.00							
Monitoring Depth (m)	1.10		7.00		13.00			
Tide	Mid-Ebb							
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth-averaged*	*Bottom*
Water Temperature (°C)	19.8	19.5	19.3	19.4	19.4	19.4	19.45	-
Salinity (ppt)	30.3	30.3	30.3	30.3	30.4	30.4	30.31	-
pH	7.8	7.8	7.8	7.8	7.9	7.8	7.82	
D.O. Saturation (%)	99.4	95.1	99.8	95.7	102.3	97.3	98.26	-
D.O. (mg/L)	7.59	7.30	7.68	7.37	7.86	7.48	7.55	7.67
Turbidity (NTU)	6.10	4.70	4.60	5.80	6.20	6.40	5.66	-
SS (mg/L)	4.0	6.0	7.0	5.0	7.0	11.0	6.67	-
Remarks	-							

Date	01/11/2008							
Station	SR1							
Time (hh:mm)	14:27 - 14:30							
Ambient Temperature (°C)	23							
Weather	Sunny							
Water Depth (m)	5.50							
Monitoring Depth (m)	0.90		2.50		4.00			
Tide	Mid-Ebb							
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth-averaged*	*Bottom*
Water Temperature (°C)	19.7	19.8	19.8	19.8	19.7	19.6	19.74	-
Salinity (ppt)	30.3	30.3	30.3	30.3	30.3	30.4	30.32	-
pH	7.8	7.8	7.8	7.8	7.8	7.8	7.80	
D.O. Saturation (%)	102.8	100.7	103.4	101.7	105.5	102.7	102.79	-
D.O. (mg/L)	7.85	7.69	7.89	7.76	8.06	7.86	7.85	7.96
Turbidity (NTU)	3.30	3.40	3.30	3.40	3.70	3.70	3.49	-
SS (mg/L)	6.0	5.0	5.0	6.0	7.0	5.0	5.67	-
Remarks	-							

Date	01/11/2008							
Station	D1							
Time (hh:mm)	14:56 - 14:59							
Ambient Temperature (°C)	23							
Weather	Sunny							
Water Depth (m)	9.30							
Monitoring Depth (m)	1.00		4.50		8.30			
Tide	Mid-Ebb							
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth-averaged*	*Bottom*
Water Temperature (°C)	19.5	19.5	19.5	19.5	19.6	19.6	19.53	-
Salinity (ppt)	30.2	30.3	30.3	30.3	30.4	30.4	30.30	-
pH	7.8	7.8	7.8	7.8	7.8	7.8	7.83	
D.O. Saturation (%)	97.5	95.2	98.6	95.8	100.9	96.5	97.40	-
D.O. (mg/L)	7.48	7.31	7.56	7.35	7.73	7.39	7.47	7.56
Turbidity (NTU)	5.50	5.70	5.60	6.10	4.60	4.90	5.43	-
SS (mg/L)	8.0	7.0	8.0	7.0	6.0	6.0	7.00	-
Remarks	-							

Flow Tracking Data

Position	Easting	Northing	Depth	Time	Speed	Direction	Date
C1	814481.14	825367.85	-99	152659	0	0	20080111
C1	814555.92	825369.24	8.5	153137	0.269	88.9	20080111
C1	814632.82	825361.65	-99	153729	0.2195	95.6	20080111
C1	814708.23	825361.99	-99	154220	0.2591	89.7	20080111

	Impact Station			Control Station	
Depth-averaged SS levels (mg/L)	SR1	D1	U1	C1	C2
Mid-ebb	5.7	7.00	4.50	5.17	6.67
Mid-flood	7.00	8.33	7.83	7.17	8.50
Mid-ebb elevations (w.r.t. C2)	-1.00	0.33	-2.17		
Mid-ebb elevations (w.r.t. C1)	-0.17	1.17	0.67		

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

Annex E4 - Water Quality Results, Action and Limit Levels at mid-flood tide for 11 January 2008

Date	01/11/2008							
Station	C1							
Time (hh:mm)	10:50 - 10:54							
Ambient Temperature (°C)	21							
Weather	Sunny							
Water Depth (m)	8.70							
Monitoring Depth (m)	1.20		4.10		7.10			
Tide	Mid-Flood							
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth-averaged*	*Bottom*
Water Temperature (°C)	19.6	19.6	19.3	19.5	19.3	19.3	19.43	-
Salinity (ppt)	30.3	30.3	30.3	30.3	30.4	30.4	30.32	-
pH	7.7	7.7	7.7	7.7	7.7	7.7	7.70	
D.O. Saturation (%)	94.9	94.5	94.6	94.2	97.0	94.6	94.96	-
D.O. (mg/L)	7.27	7.23	7.28	7.24	7.47	7.28	7.30	7.38
Turbidity (NTU)	3.60	3.60	3.80	3.60	4.70	3.80	3.87	-
SS (mg/L)	8.0	6.0	6.0	7.0	9.0	7.0	7.17	-
Remarks	-							

Date	01/11/2008							
Station	U1							
Time (hh:mm)	10:36 - 10:40							
Ambient Temperature (°C)	21							
Weather	Sunny							
Water Depth (m)	9.50							
Monitoring Depth (m)	0.90		4.40		8.40			
Tide	Mid-Flood							
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth-averaged*	*Bottom*
Water Temperature (°C)	19.8	19.6	19.6	19.6	19.5	19.5	19.62	-
Salinity (ppt)	30.3	30.3	30.4	30.3	30.4	30.4	30.33	-
pH	7.8	7.8	7.8	7.8	7.8	7.8	7.81	
D.O. Saturation (%)	100.2	97.9	100.8	98.2	103.2	98.8	99.84	-
D.O. (mg/L)	7.64	7.49	7.72	7.51	7.91	7.58	7.64	7.75
Turbidity (NTU)	3.90	4.00	3.50	3.90	4.00	4.10	3.92	-
SS (mg/L)	8.0	8.0	6.0	7.0	12.0	6.0	7.83	-
Remarks	-							

Date	01/11/2008							
Station	C2							
Time (hh:mm)	10:14 - 10:18							
Ambient Temperature (°C)	21							
Weather	Sunny							
Water Depth (m)	14.20							
Monitoring Depth (m)	1.10		7.00		13.00			
Tide	Mid-Flood							
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth-averaged*	*Bottom*
Water Temperature (°C)	19.8	19.5	19.3	19.4	19.4	19.4	19.45	-
Salinity (ppt)	30.3	30.3	30.3	30.3	30.4	30.4	30.31	-
	7.8	7.8	7.8	7.8	7.9	7.8	7.82	
D.O. Saturation (%)	99.4	95.1	99.8	95.7	102.3	97.3	98.26	-
D.O. (mg/L)	7.59	7.30	7.68	7.37	7.86	7.48	7.55	7.67
Turbidity (NTU)	6.10	4.70	4.60	5.80	6.20	6.40	5.66	-
SS (mg/L)	7.0	10.0	10.0	6.0	7.0	11.0	8.50	-
Remarks	-							

Date	01/11/2008							
Station	SR1							
Time (hh:mm)	09:34 - 09:38							
Ambient Temperature (°C)	21							
Weather	Sunny							
Water Depth (m)	5.40							
Monitoring Depth (m)	0.90		2.50		4.00			
Tide	Mid-Flood							
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth-averaged*	*Bottom*
Water Temperature (°C)	19.7	19.8	19.8	19.8	19.7	19.6	19.74	-
Salinity (ppt)	30.3	30.3	30.3	30.3	30.3	30.4	30.32	-
pH	7.8	7.8	7.8	7.8	7.8	7.8	7.80	
D.O. Saturation (%)	102.8	100.7	103.4	101.7	105.5	102.7	102.79	-
D.O. (mg/L)	7.85	7.69	7.89	7.76	8.06	7.86	7.85	7.96
Turbidity (NTU)	3.30	3.40	3.30	3.40	3.70	3.70	3.49	-
SS (mg/L)	8.0	8.0	5.0	8.0	5.0	8.0	7.00	-
Remarks	-							

Date	01/11/2008							
Station	D1							
Time (hh:mm)	10:00 - 10:05							
Ambient Temperature (°C)	21							
Weather	Sunny							
Water Depth (m)	9.60							
Monitoring Depth (m)	1.00		4.50		8.30			
Tide	Mid-Flood							
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth-averaged*	*Bottom*
Water Temperature (°C)	19.5	19.5	19.5	19.5	19.6	19.6	19.53	-
Salinity (ppt)	30.2	30.3	30.3	30.3	30.4	30.4	30.30	-
pH	7.8	7.8	7.8	7.8	7.8	7.8	7.83	
D.O. Saturation (%)	97.5	95.2	98.6	95.8	100.9	96.5	97.40	-
D.O. (mg/L)	7.48	7.31	7.56	7.35	7.73	7.39	7.47	7.56
Turbidity (NTU)	5.50	5.70	5.60	6.10	4.60	4.90	5.43	-
SS (mg/L)	6.0	7.0	10.0	6.0	12.0	9.0	8.33	-
Remarks	-							

Flow Tracking Data

Position	Easting	Northing	Depth	Time	Speed	Direction	Date
C1	814488.42	825370.64	8.7	105533	0	0	20080111
C1	814440.25	825372.64	8.4	105933	0.2009	272.4	20080111
C1	814336.97	825368.74	8.7	110605	0.2637	267.8	20080111
C1	814295.73	825403.27	8.7	111220	0.1434	309.9	20080111

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

Annex E5 - Water Quality Results, Action and Limit Levels at mid-ebb tide for 13 January 2008

Date	01/13/2008							
Station	C1							
Time (hh:mm)	15:13 - 15:17							
Ambient Temperature (°C)	20							
Weather	Sunny							
Water Depth (m)	8.80							
Monitoring Depth (m)	1.00		4.10		6.90			
Tide	Mid-Flood							
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth-averaged*	*Bottom*
Water Temperature (°C)	19.8	19.8	19.8	19.7	19.7	19.7	19.76	-
Salinity (ppt)	29.6	29.6	29.6	29.7	29.7	29.7	29.64	-
pH	7.6	7.6	7.6	7.6	7.6	7.6	7.61	
D.O. Saturation (%)	99.1	97.6	100.4	97.6	98.8	98.5	98.67	-
D.O. (mg/L)	7.59	7.49	7.70	7.49	7.58	7.55	7.57	7.57
Turbidity (NTU)	4.10	4.10	4.40	4.60	4.60	4.50	4.40	-
SS (mg/L)	8.0	6.0	7.0	8.0	5.0	7.0	6.83	-
Remarks	-							

Date	01/13/2008							
Station	U1							
Time (hh:mm)	15:31 - 15:34							
Ambient Temperature (°C)	20							
Weather	Sunny							
Water Depth (m)	9.70							
Monitoring Depth (m)	1.00		4.60		8.00			
Tide	Mid-Flood							
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth-averaged*	*Bottom*
Water Temperature (°C)	19.8	19.8	19.8	19.8	19.8	19.8	19.79	-
Salinity (ppt)	29.6	29.6	29.6	29.6	29.6	29.6	29.62	-
pH	7.7	7.7	7.7	7.7	7.7	7.7	7.72	
D.O. Saturation (%)	100.8	99.0	101.3	99.1	103.0	99.6	100.45	-
D.O. (mg/L)	7.72	7.58	7.76	7.60	7.90	7.64	7.70	7.77
Turbidity (NTU)	5.50	5.70	5.20	5.30	5.80	5.30	5.50	-
SS (mg/L)	7.0	10.0	7.0	7.0	6.0	7.0	7.33	-
Remarks	-							

Date	01/13/2008							
Station	C2							
Time (hh:mm)	15:56 - 16:00							
Ambient Temperature (°C)	20							
Weather	Sunny							
Water Depth (m)	14.60							
Monitoring Depth (m)	1.10		7.20		13.10			
Tide	Mid-Flood							
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth-averaged*	*Bottom*
Water Temperature (°C)	19.6	19.6	19.5	19.5	19.4	19.4	19.51	-
Salinity (ppt)	29.9	29.8	30.1	30.1	30.3	30.3	30.10	-
	7.8	7.8	7.8	7.8	7.8	7.8	7.78	
D.O. Saturation (%)	92.0	92.0	91.9	91.4	92.2	91.7	91.86	-
D.O. (mg/L)	7.06	7.06	7.06	7.02	7.08	7.05	7.06	7.07
Turbidity (NTU)	11.20	9.60	15.70	19.10	22.50	23.30	16.89	-
SS (mg/L)	15.0	13.0	16.0	21.0	20.0	35.0	20.00	-
Remarks	-							

Date	01/13/2008							
Station	SR1							
Time (hh:mm)	15:23 - 15:26							
Ambient Temperature (°C)	20							
Weather	Sunny							
Water Depth (m)	5.90							
Monitoring Depth (m)	1.00		2.60		3.90			
Tide	Mid-Flood							
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth-averaged*	*Bottom*
Water Temperature (°C)	19.8	19.8	19.8	19.8	19.8	19.8	19.81	-
Salinity (ppt)	29.6	29.6	29.6	29.6	29.6	29.6	29.62	-
pH	7.7	7.7	7.7	7.7	7.7	7.7	7.70	
D.O. Saturation (%)	101.3	99.9	102.2	100.3	106.0	100.9	101.76	-
D.O. (mg/L)	7.76	7.65	7.83	7.68	8.12	7.73	7.80	7.93
Turbidity (NTU)	4.20	4.10	4.70	4.30	4.90	4.60	4.49	-
SS (mg/L)	7.0	8.0	8.0	7.0	7.0	12.0	8.17	-
Remarks	-							

Date	01/13/2008							
Station	D1							
Time (hh:mm)	15:40 - 15:43							
Ambient Temperature (°C)	20							
Weather	Sunny							
Water Depth (m)	9.60							
Monitoring Depth (m)	1.00		4.70		8.00			
Tide	Mid-Flood							
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth-averaged*	*Bottom*
Water Temperature (°C)	19.8	19.8	19.8	19.8	19.7	19.8	19.76	-
Salinity (ppt)	29.6	29.6	29.5	29.6	29.6	29.6	29.59	-
pH	7.7	7.7	7.7	7.7	7.7	7.7	7.72	
D.O. Saturation (%)	97.6	96.5	98.1	96.6	102.2	97.3	98.05	-
D.O. (mg/L)	7.48	7.40	7.53	7.41	7.85	7.46	7.52	7.66
Turbidity (NTU)	4.90	4.20	5.90	4.50	5.10	4.80	4.92	-
SS (mg/L)	6.0	4.0	6.0	7.0	5.0	5.0	5.50	-
Remarks	-							

Flow Tracking Data

Position	Easting	Northing	Depth	Time	Speed	Direction	Date
C1	814484.85	825372.09	8.7	160905	0	0	20080113
C1	814614.09	825363.72	2.6	161526	0.3399	93.7	20080113
C1	814711.23	825375.28	2.6	162013	0.3409	83.2	20080113
C1	814815.9	825365.12	2.6	162507	0.3577	95.5	20080113

	Impact Station			Control Station	
Depth-averaged SS levels (mg/L)	SR1	D1	U1	C1	C2
Mid-ebb	8.2	5.50	7.33	6.83	20.00
Mid-flood	8.33	9.50	7.33	8.33	12.00
Mid-ebb elevations (w.r.t. C2)	-11.83	-14.50	-12.67		
Mid-ebb elevations (w.r.t. C1)	0.00	1.17	-1.00		

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

Annex E6 - Water Quality Results, Action and Limit Levels at mid-flood tide for 13 January 2008

Date	01/13/2008							
Station	C1							
Time (hh:mm)	09:23 - 09:29							
Ambient Temperature (°C)	19							
Weather	Sunny							
Water Depth (m)	7.90							
Monitoring Depth (m)	1.10		3.60		6.20			
Tide	Mid-Ebb							
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth-averaged*	*Bottom*
Water Temperature (°C)	19.6	19.6	19.6	19.6	19.6	19.6	19.62	-
Salinity (ppt)	29.8	29.8	29.9	29.9	29.9	29.9	29.87	-
pH	7.6	7.7	7.6	7.7	7.6	7.7	7.64	
D.O. Saturation (%)	91.2	91.2	91.6	91.3	93.4	91.7	91.74	-
D.O. (mg/L)	7.00	7.00	7.03	7.01	7.17	7.04	7.04	7.11
Turbidity (NTU)	5.20	5.10	5.90	6.00	6.30	6.70	5.90	-
SS (mg/L)	10.0	6.0	7.0	9.0	10.0	8.0	8.33	-
Remarks	-							

Date	01/13/2008							
Station	U1							
Time (hh:mm)	09:46 - 09:49							
Ambient Temperature (°C)	19							
Weather	Sunny							
Water Depth (m)	9.00							
Monitoring Depth (m)	1.00		4.50		7.70			
Tide	Mid-Ebb							
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth-averaged*	*Bottom*
Water Temperature (°C)	19.8	19.8	19.7	19.7	19.7	19.7	19.74	-
Salinity (ppt)	29.9	29.9	29.9	29.9	29.9	29.9	29.86	-
pH	7.7	7.7	7.7	7.7	7.7	7.7	7.73	
D.O. Saturation (%)	96.4	94.1	96.6	94.6	97.3	95.4	95.72	-
D.O. (mg/L)	7.38	7.20	7.40	7.24	7.45	7.31	7.33	7.38
Turbidity (NTU)	5.90	5.80	7.50	7.70	8.40	8.00	7.25	-
SS (mg/L)	7.0	9.0	14.0	11.0	11.0	13.0	10.83	-
Remarks	-							

Date	01/13/2008							
Station	C2							
Time (hh:mm)	10:20 - 10:24							
Ambient Temperature (°C)	19							
Weather	Sunny							
Water Depth (m)	13.70							
Monitoring Depth (m)	0.90		6.60		12.00			
Tide	Mid-Ebb							
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth-averaged*	*Bottom*
Water Temperature (°C)	19.6	19.6	19.6	19.6	19.6	19.6	19.60	-
Salinity (ppt)	29.9	29.9	29.9	29.9	29.9	29.9	29.88	-
pH	7.8	7.8	7.8	7.8	7.8	7.8	7.75	
D.O. Saturation (%)	85.8	85.4	85.9	85.6	86.2	85.6	85.76	-
D.O. (mg/L)	6.59	6.56	6.60	6.57	6.62	6.57	6.59	6.60
Turbidity (NTU)	8.40	8.00	8.60	9.30	10.30	8.70	8.89	-
SS (mg/L)	10.0	11.0	15.0	10.0	11.0	15.0	12.00	-
Remarks	-							

Date	01/13/2008							
Station	SR1							
Time (hh:mm)	09:35 - 09:38							
Ambient Temperature (°C)	19							
Weather	Sunny							
Water Depth (m)	4.90							
Monitoring Depth (m)	0.90		2.40		4.20			
Tide	Mid-Ebb							
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth-averaged*	*Bottom*
Water Temperature (°C)	19.6	19.7	19.7	19.7	19.7	19.7	19.68	-
Salinity (ppt)	29.9	29.9	29.9	29.9	29.9	29.9	29.88	-
pH	7.7	7.7	7.7	7.7	7.7	7.7	7.71	
D.O. Saturation (%)	93.2	90.6	92.8	90.7	98.9	91.3	92.91	-
D.O. (mg/L)	7.15	6.95	7.12	6.95	7.58	7.00	7.13	7.29
Turbidity (NTU)	5.40	4.70	5.10	5.30	5.70	5.60	5.33	-
SS (mg/L)	9.0	9.0	7.0	9.0	9.0	7.0	8.33	-
Remarks	-							

Date	01/13/2008							
Station	D1							
Time (hh:mm)	10:02 - 10:06							
Ambient Temperature (°C)	19							
Weather	Sunny							
Water Depth (m)	8.90							
Monitoring Depth (m)	0.90		4.10		7.20			
Tide	Mid-Ebb							
Trial	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	*Depth-averaged*	*Bottom*
Water Temperature (°C)	19.7	19.8	19.7	19.7	19.7	19.7	19.73	-
Salinity (ppt)	29.9	29.9	29.9	29.9	29.9	29.9	29.87	-
pH	7.7	7.8	7.7	7.8	7.8	7.7	7.75	
D.O. Saturation (%)	90.3	88.3	91.2	88.5	94.6	89.0	90.30	-
D.O. (mg/L)	6.91	6.76	6.98	6.78	7.25	6.82	6.92	7.04
Turbidity (NTU)	5.50	5.30	6.40	6.20	6.70	6.70	6.16	-
SS (mg/L)	7.0	9.0	9.0	8.0	11.0	13.0	9.50	-
Remarks	-							

Flow Tracking Data

Position	Easting	Northing	Depth	Time	Speed	Direction	Date
C1	814476.61	825369.94	8.2	103345	0	0	20080113
C1	814338.55	825382.98	8.1	103926	0.4067	275.4	20080113
C1	814224.61	825374.82	8.6	104403	0.4124	265.9	20080113
C1	814111.21	825363.15	8.5	104905	0.3775	264.1	20080113

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