ENVIRONMENTAL MONITORING &
AUDIT REPORT

Hip Hing Joint Venture

Hong Kong Convention and Exhibition Centre Expansion Project:
Final Environmental Monitoring and Audit Report

December 2009

Environmental Resources Management
21/F Lincoln House
979 King's Road
Taikoo Place
Island East, Hong Kong
Telephone: (852) 2271 3000
Facsimile: (852) 2723 5660
E-mail: post.hk@erm.com
http://www.erm.com

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December 2009

Reference 0050690

For and on behalf of
ERM-Hong Kong, Limited

Approved by: Dr Robin Kennish

Signed:

Position: Director

Certified by:
(Environmental Team Leader – Marcus Ip)

Date: 8 December 2009

NATURE & TECHNOLOGIES (HK) LIMITED
科技環保(香港)有限公司
Unit 2 & 3, 4/F., Wellborne Commercial Centre, 8 Java Road, North Point, Hong Kong.
香港北角渣華道8號威邦商業中心4樓2及3室 Tel電話 : (852) 2877 3122 Fax傳真 : (852) 2511 0922
Email電郵: enquiry@nt.com.hk Web page網址 : http://www.nt.com.hk

Our Ref: 3.16/014/2006/at

8 December 2009

Maunsell Consultants Asia Ltd
Grand Central Plaza, Tower 2
138 Shatin Rural Committee Road
Shatin, N.T., Hong Kong

Attn: Ms Vera Chan

Dear Sir/Madam,

Hong Kong Convention Centre Expansion Project
Final Environmental Monitoring and Audit Report
(Environmental Permit No.: EP-239/2006/B)

With reference to the captioned document concerning the Final EM&A report received from ERM on 2 December 2009, we are pleased to provide our verification for the document pursuant to condition 3 of the Environmental Permit (EP) No. EP-239/2006/B.

Yours faithfully,
Nature & Technologies (HK) Limited

Ir Dr Gabriel C K Lam
Independent Environmental Checker

cc:
- Hong Kong Trade Development Council (Attn: Mr. K. F. Chan)
- Hip Hing Ngo Kee Joint Venture (Attn: Mr. Eric Lau & Mr. William Tam)
- ERM (Attn: Mr. Marcus Ip)

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EXECUTIVE SUMMARY

The construction works for Hong Kong Convention and Exhibition Centre Expansion Project commenced on 1 August 2006. The termination of the construction phase EM&A programme was approved by EPD on 4 November 2009. This is the Final Environmental Monitoring and Audit (EM&A) report presenting the EM&A work carried out and data collected over the Project period in accordance with the EM&A Manual.

Summary of Construction Works undertaken during the Project

The major construction works undertaken during the Project period included:

- Construction and demolition of the temporary footbridge;
- Demolition of the existing Atrium Link;
- Construction and demolition of a temporary working platform;
- Construction of foundations and pile caps for the ALE; and
- Construction of superstructure for the ALE.

Environmental Monitoring and Audit Progress

A summary of the monitoring activities in the Project period is listed below:

24-hour Total Suspended Particulates (TSP) monitoring	1 set/week
1-hour TSP monitoring	3 sets/week
Marine water quality monitoring (during pile works)	3 sets/week
Additional marine water quality monitoring (4 weeks after completion of piling and 4 weeks in the first dry season after completion of pile installation)	3 sets/week
Environmental site inspection	once/week
Landscape and Visual Monitoring	once/2 weeks

Air Quality

24-hour and 1-hour TSP monitoring were carried out at the designated monitoring stations (AM1 & AM2) during the construction phase of the Project. There were no exceedances recorded during the Project period. Review of air monitoring data reveals that that the air quality has returned to the state before the commencement of the construction of the Project.

Marine Water Quality

Marine water quality monitoring at the designated monitoring stations (W3, W4 and W5) was conducted during the installation and extraction of temporary marine piles in the marine channel. Exceedances of marine water quality monitoring parameters were recorded over the monitoring period. Review of marine water quality monitoring results indicated that the marine water quality has returned to ambient conditions at upstream monitoring stations.

Additional Marine Water Quality

Additional water quality monitoring at the designated monitoring stations (C1, C2 and M1) was conducted during and after the installation of temporary marine piles. Exceedances of additional marine water quality monitoring parameters were recorded over the monitoring period. Review of additional marine water quality monitoring results indicated that the marine water quality has returned to ambient conditions at upstream monitoring stations.

Construction Waste Management

Inert C&D materials and non-inert C&D wastes were generated over the Project period. Recommended mitigation measures in the EIA were implemented by the Contractor as far as practicable and were considered effective in minimizing the total quantity of wastes generated during the construction period.

Landscape and Visual Impact Issues

Design of the Atrium Link Extension and the waterfront promenade has been refined during the course of Construction Phase of Project. The recommended mitigation measures in the EIA and EM&A manual have been implemented as far as practicable by the Contractor and were considered effective in minimizing the landscape and visual impact from the Project.

Environmental Site Inspection

Regular site inspections were carried out over the construction period to ensure relevant requirements in the EIA, the EM&A Manual and the EP were properly implemented by the Contractor. From findings during the site inspections, there were no outstanding environment issues for the construction phase of the Project. Handover of Project site from Contractor to HKTDC has been completed on 6 November 2009. Trees transplanted during the construction period will continue to be maintained by the Contractor during the Defect-Liability Period from 1 October 2009 to 30 September 2010 with no further environmental follow-up actions considered necessary.

Environmental Non-conformance

Exceedances of marine water parameters were recorded during the implementation of the marine water monitoring and additional marine water quality monitoring programme. For exceedances related to project works, appropriate mitigation measures have been implemented by the Contractor to avoid reoccurrence of exceedances. At instances when exceedances were considered to be caused by natural fluctuations, appropriate mitigation measures were still been implemented by the Contractor to ensure marine water quality was properly safeguarded from Project works.

No environmental non-compliance was identified during the Project period. No environmental complaint or summons was received during the Project period.

1 INTRODUCTION

ERM-Hong Kong, Limited (ERM) was appointed by Hip Hing Joint Venture as the Environmental Team (ET) to implement the Environmental Monitoring and Audit (EM&A) programme for Hong Kong Convention and Exhibition Centre Expansion Project (the Project).

1.1 PURPOSE OF THE REPORT

This is the final construction phase EM&A report which summarises and reviews the impact monitoring results and audit findings of the EM&A programme for the entire construction phase of the Project.

1.2 STRUCTURE OF THE REPORT

The structure of the report is as follows:

Section 1 : **Introduction**
details the scope and structure of the report.

Section 2 : **Project Information**
summarises background and scope of the Project, site description, project organisation and contact details for the construction phase of the Project.

Section 3 : **Environmental Monitoring Requirements**
summarises the construction phase monitoring parameters, monitoring frequency, monitoring locations, Action and Limit Levels and Event / Action Plans.

Section 4 : **Implementation Status on Environmental Mitigation Measures**
summarises the implementation of environmental protection measures for the construction phase of the Project.

Section 5 : **Review of EM&A Data and EIA Predictions**
reviews and compares the EM&A data collected during the construction phase of the Project with the EIA predictions and annotates with explanation for any discrepancies.

Section 6 : **Environmental Non-conformance**
summarises any environmental exceedance, environmental complaints and environmental summons received during the construction phase of the Project.

Section 7 : **Conclusion**

2 PROJECT INFORMATION

2.1 BACKGROUND

The Project was proposed by Hong Kong Trade Development Council (HKTDC) to expand its existing facilities to provide additional space for trade fairs to be held at the Hong Kong Convention and Exhibition Centre (HKCEC). The Project is located in North Wan Chai and occupies the aerial space between Phase I and Phase II of the HKCEC. The new Atrium Link Extension (ALE) spans across the marine channel between Phase I and Phase II of the HKCEC to accommodate three main levels of Exhibition Hall Extensions. The level of the main roof of the Extension is of similar height as that of the podium roof of the Phase I building. A northern row of permanent supporting columns is located on land close to Expo Drive Central and similarly a southern row lands near to Convention Avenue. No permanent intermediate columns are required in the above-mentioned marine channel.

The major works activities for the ALE, as described in *Hong Kong Convention and Exhibition Centre, Atrium Link Extension – Environmental Impact Assessment Report* (EIAO Register No: AEIAR-100/2006) (EIA), comprised the following:

- Construction and demolition of a temporary footbridge;
- Demolition of the existing Atrium Link;
- Construction and demolition of a temporary working platform;
- Construction of foundations and pile caps for the ALE; and
- Construction of superstructure for the ALE.

The potential environmental impacts of the Project were assessed in the EIA, which was approved on 21 April 2006 under the *Environmental Impact Assessment Ordinance* (EIAO). An Environmental Permit (EP-239/2006) for the Project was granted on 12 May 2006. An application for variation of the Environmental Permit was made on 25 January 2007, an amended Environmental Permit (EP-239/2006/A) was granted on 12 February 2007. An application for further variation of the Environmental Permit was made on 18 April 2008, and an amended Environmental Permit (EP-239/2006/B) was granted on 12 May 2008. Condition 3.1 of Environmental Permit EP-239/2006/B requires that an EM&A programme as set out in the EM&A Manual and its supplement be implemented.

The construction works commenced on 1 August 2006, and all major construction works were completed by 30 September 2009. Termination of the construction phase EM&A programme was approved by EPD on 4 November 2009 (see EPD letter ref no. EP2/H5/A/14 Pt.10 in *Annex I*).

2.2 *SITE DESCRIPTION*

The works areas of the Project are illustrated in *Annex A*.

2.3 *PROJECT ORGANISATION*

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

3.1 AIR QUALITY MONITORING

3.1.1 Monitoring Location

In accordance with the EM&A Manual, 24-hour and 1-hour Total Suspended Particulates (TSP) levels were conducted at the monitoring stations listed in *Table 3.1*. Maps and photographs showing the monitoring stations are presented in *Annex C1*.

Table 3.1 Air Quality Monitoring Stations

Monitoring Station	Description
AM1	Pedestrian Plaza
AM2	Renaissance Harbour View Hotel Hong Kong

3.1.2 Monitoring Parameters and Frequency

Air quality monitoring was conducted in accordance with the requirements stipulated in the EM&A Manual (*Table 3.2*).

Table 3.2 Air Quality Monitoring Parameter and Frequency

Parameter	Frequency
24-hour TSP	Once every 6 days
1-hour TSP	3 times every 6 days

3.1.3 Action and Limit Levels

The Action and Limit levels were established in accordance with the EM&A Manual and are presented in *Table 3.3*.

Table 3.3 Action and Limit Levels for Air Quality

Parameter	Air Monitoring Station	Action Level, μgm^{-3}	Limit Level, μgm^{-3}
24-hour TSP	AM1	161	260
	AM2	168	260
1-hour TSP	AM1	327	500
	AM2	329	500

3.1.4 Event Action Plan

The Event / Action Plan (EAP) for air quality monitoring are presented in *Annex F*.

3.2 MARINE WATER QUALITY MONITORING

3.2.1 Monitoring Location

In accordance with the EM&A Manual, marine water quality monitoring was conducted at the designated monitoring stations listed in *Table 3.4* during the installation and removal of temporary marine piles. The map and photographs showing the monitoring stations are presented in *Annex C2.*

Table 3.4 Marine Water Quality Monitoring Locations

Station	Location	Intake Level	Easting	Northing
W3	Hong Kong Convention and Exhibition Centre Phase I Cooling Water Intake	7.5m below the existing pump house floor	835852	815907
W4	Wan Chai Tower/ Revenue Tower/ Immigration Tower Cooling Water Intake [(a)]	5m below the top of the existing sea wall	835944	815885
W5	Great Eagle Centre, China Resources Building Cooling Water Intake	5m below the top of the existing sea wall	835963	815886

Note:
(a) The cooling water intake for Wan Chai Tower / Revenue Tower/ Immigration Tower was partially relocated to the new pump house adjacent to Station W3.

3.2.2 Monitoring Parameters and Frequency

Marine water quality monitoring was conducted in accordance with *Table 3.5* during the period of installation and removal of temporary marine piles.

Table 3.5 Marine Water Quality Monitoring Parameters & Frequency

Parameter	Frequency	No. of Samples per Monitoring Event	Duration
Dissolved Oxygen (DO) Suspended Solids (SS) Turbidity	3 days per week at mid-flood & mid-ebb tides	2	During installation and removal of temporary marine piles.

Reference was made to the predicted tides at Quarry Bay, which is the tidal station nearest to the Site, published on the web site of Hong Kong Observatory (http://www.hko.gov.hk/tide/eQUBtide.htm). Where mid-ebb or mid-flood tides occurred beyond the normal working hours (in the middle of the night or early morning), the marine water quality monitoring session was moved to within normal working hours (0800-1800) when potential water quality impacts from disturbed sediments are expected to be highest, to ensure that these potential water quality impacts are captured.

Measurements of suspended solids (SS), turbidity in Nephelometric Turbidity Units (NTU) and dissolved oxygen (DO) in mgL^{-1} were undertaken at designated monitoring stations. The first parameter was determined in the laboratory with the latter two were measured in-situ.

3.2.3 *Action and Limit Levels*

The Action and Limit levels were established in accordance with the EM&A Manual and are presented in *Table 3.6*.

Table 3.6 Action and Limit Levels for Marine Water Quality

Parameter	Tide	Action Level	Limit Level
Dissolved Oxygen (DO) in mgL^{-1}	Mid-Ebb	3.26	3.23
	Mid-Flood	3.25	3.14
Suspended Solids (SS) in mgL^{-1}	Mid-Ebb	9.00	10.00
	Mid-Flood	8.18	8.40
Turbidity (Tby) in NTU	Mid-Ebb	5.32	6.19
	Mid-Flood	4.76	5.79

3.2.4 *Event / Action Plan*

The Event / Action Plan (EAP) for marine water quality monitoring is presented in *Annex F*.

3.3 *ADDITIONAL MARINE WATER QUALITY MONITORING*

As part of the Application for Variation of Environmental Permit (Application No. VEP-227/2007) submitted on 25 January 2007, the Permit Holder undertook to conduct additional marine water quality monitoring in the marine channel in connection with the installation of temporary marine piles, in addition to the water quality monitoring at the three designated stations discussed above. The additional marine water quality monitoring programme in the *Supplement to EM&A Manual* was submitted to the EPD on 4 April 2007 and was approved on 9 May 2007.

In accordance with the requirements in the following sections, additional marine water quality monitoring was conducted from 21 March to 21 May 2007 and from 19 November 2007 to 14 December 2007.

3.3.1 *Monitoring Locations*

Two control stations and an impact monitoring station were selected for the collection of data on marine water quality within and outside the marine channel. The locations of the control stations and the impact monitoring station are presented in *Table 3.7* and *Annex C2*.

Table 3.7 Monitoring Stations for Additional Marine Water Quality Monitoring Programme

Station	Location	Monitoring Water Depth	Easting	Northing
C1[(a)]	Adjoins Expo Drive	Surface, middle and bottom	835645	815900
C2[(b)]	Adjoins Expo Drive East	Surface, middle and bottom	836014	815926
M1[(c)]	Approximately at the centre of the marine channel	Surface, middle and bottom	835852	815907

Station	Location	Monitoring Water Depth	Easting	Northing

Notes:
(a) C1 has been assigned the upstream station during mid-ebb tide with reference to the flow pattern within and in the vicinity of the marine channel.
(b) C2 has been assigned the upstream station during mid-flood tide with reference to the flow pattern within and in the vicinity of the marine channel.
(c) Taking into account the foreseeable difficulty in accessing the exact centre of the marine channel, monitoring station M1 was chosen to be the same location as W3 under the current monitoring programme but outside the silt screen.

3.3.2 Monitoring Parameters and Frequency

Table 3.8 summarises the monitoring frequency and water quality parameters adopted for the additional marine water quality monitoring programme. Duplicate in-situ measurements and water samples for testing suspended solids (SS), and one water sample for testing total inorganic nitrogen (TIN) were taken for each sampling event.

Table 3.8 Additional Marine Water Quality Monitoring Frequency and Parameters

Activity	Monitoring Frequency	Monitoring Parameters
During the installation of temporary marine piles	Three days per week at mid-flood and mid-ebb tides	Dissolved Oxygen (DO), Turbidity, Suspended Solid (SS), Total Inorganic Nitrogen (TIN)
Four-week monitoring immediately after the completion of the installation of the temporary marine piles	Three days per week at mid-flood and mid-ebb tides	Dissolved Oxygen (DO), Turbidity, Suspended Solid (SS), Total Inorganic Nitrogen (TIN)
Four-week monitoring during the dry season after the completion of the installation of the temporary marine piles	Three days per week at mid-flood and mid-ebb tides	Dissolved Oxygen (DO), Turbidity, Suspended Solid (SS), Total Inorganic Nitrogen (TIN)

Measurements were taken at three water depths, namely 1 m below water surface, mid-depth and 1 m above sea bed, except where the water depth is less than 6 m, in which case the mid-depth sample was omitted. Where the water depth was less than 3 m, monitoring was undertaken only at mid-depth.

Reference was made to the predicted tides at Quarry Bay, which is the tidal station nearest to the Site, published on the web site of Hong Kong Observatory (http://www.hko.gov.hk/tide/eQUBtide.htm). Where mid-ebb or mid-flood tides occurred beyond the normal working hours (in the middle of the night or early morning), the water quality monitoring was conducted during the working hours, during which the potential water quality impacts from disturbed sediments are expected to be highest, to ensure that these potential water quality impacts are captured.

3.3.3 Action and Limit Levels

The Action and Limit levels were established based on the baseline monitoring data collected on 26 - 28 December 2006 as included in the Supplement to EM&A Manual and are presented in *Table 3.9*.

Table 3.9 Action and Limit Levels for Additional Marine Water Quality Monitoring

Parameter	Tide	Action Level		Limit Level	
Dissolved Oxygen[a][b] (DO) in mgL^{-1}	Mid-Ebb	3.26		3.23	
	Mid-Flood	3.25		3.14	
Suspended Solids[a][c] (SS) in mgL^{-1}	Mid-Ebb	9.00	or 120 % of upstream control station's SS at the same tide of the same day	10.00	or 130 % of upstream control station's SS at the same tide of the same day
	Mid-Flood	8.18		8.40	
Turbidity[a][c] (Tby) in NTU	Mid-Ebb	5.32	or 120 % of upstream control station's Tby at the same tide of the same day	6.19	or 130 % of upstream control station's Tby at the same tide of the same day
	Mid-Flood	4.76		5.79	
Total Inorganic Nitrogen[a][d] (TIN) in mgL^{-1}	Mid-Ebb	0.43[e]	or 120 % of upstream control station's TIN at the same tide of the same day	0.45[e]	or 130 % of upstream control station's TIN at the same tide of the same day
	Mid-Flood	0.49		0.51	

Notes:

(a) Action and Limit Levels are established from the baseline water quality monitoring results obtained between 6 June and 5 July 2006 before the commencement of marine works.

(b) For DO, non-compliance of the water quality criterion occurs when the monitoring result is lower than the limits.

(c) For turbidity, SS and TIN, non-compliance of the water quality criterion occurs when the monitoring result is higher than the limits.

(d) Action and Limit Levels are established from the water quality monitoring results obtained between 26 and 28 December 2006 for the monitoring locations WC1 and WC2 located within the marine channel.

(e) Given that the calculated 95th and 99th percentiles of monitoring data obtained between 26 and 28 December 2006 are the same (ie 0.44 mgL^{-1}), and therefore 0.43 and 0.45 mgL^{-1} will be adopted as the Action and Limit Levels respectively for mid-ebb tide to allow a clear distinction between Action and Limit Levels.

3.3.4 Event / Action Plan

The Event / Action Plan (EAP) for additional marine water quality monitoring is presented in *Annex F*.

4 *IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS*

The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Report, the Environmental Permit and EM&A Manual. The implementation status of environmental mitigation and status of submissions required under the EP for the construction phase of the Project are summarised in *Annex G*.

5.1 AIR QUALITY

The monitoring data for 24-hour TSP and 1-hour TSP levels at AM1 and AM2 during the construction phase of the Project are presented in *Figures D1* to *D4* of *Annex D*. No exceedance of action or limit level was recorded during the construction phase. The weather conditions during the monitoring for the construction phase varied from sunny to rainy. Local influence on air quality near the monitoring stations was observed to have originated mainly from vehicle emissions along Convention Avenue and Fleming Road and minor works by other parties.

The air quality monitoring results from May to November 2009 (ie the last six months of the construction phase) presented in *Figures D5* to *D6* of *Annex D* indicate that the impact monitoring data fall in general within the range of the baseline data for the respective environmental parameters, and provide support to the fact that the air quality have returned to the state before the commencement of the construction of the Project. The air quality monitoring programme is considered effective in reflecting the air quality at the sensitive receivers in the proximity of the Project.

As construction dust impact was only considered in a qualitative manner in the EIA, no quantitative predictions are available for comparison with the monitoring date. Instead, a comparison between the monitoring results and the Hong Kong Air Quality Objectives (HKAQO) was made (*Table 5.1*).

Table 5.1 Comparison of the HKAQO and Air Quality Monitoring Results

Monitoring Station	Corresponding ASR in EIA	HKAQO, μgm^{-3}	Measured 24-hour TSP Monitoring Results, μgm^{-3} (a) (b)	
		24 hour (1)	Average	Range
AM1	AM8	260	80	23 – 160
AM2	AM6	260	71	14 - 161

Notes:

(a) Only 24-hour TSP monitoring results were compared as there is no 1 hour TSP criterion in HKAQO.

(b) Average and range of data were calculated between the commencement of construction works and the Project period.

The comparison in *Table 5.1*shows that both the average and range of 24-hour TSP levels recorded since the commencement of the construction works were well below the 24-hour TSP criterion in the HKAQO. Mitigation measures recommended in *Section 4.24* of EIA were implemented throughout the construction period and were considered sufficient and effective.

5.2 MARINE WATER QUALITY

The monitoring data and graphical presentations during the installation and extraction of temporary marine piles for the temporary working platform in the marine channel are summarised in *Annex E1*. The marine water quality monitoring results presented in *Annex E2* indicate that the marine water quality, except for the exceedances listed in *Table 6.1* of *Section 6*, was in general within the range of baseline conditions. The water quality in the marine channel is of a similar order as the ambient conditions prior to the installation and removal of temporary marine piles in the marine channel.

Additional marine water quality monitoring was carried out at the designated monitoring stations. Graphical presentations of the additional marine water quality monitoring results are presented in *Annex E3*. The results indicate that the marine water quality, except for exceedances listed in *Table 6.2* of *Section 6*, was either in compliance with the specified criteria or within the range of baseline conditions. The water quality in the marine channel is of a similar order as the ambient conditions prior to the installation of temporary marine piles in the marine channel.

The marine water monitoring programme was considered sufficient and effective in reflecting the water quality in the marine channel.

The hydrodynamic modelling assessment undertaken in the approved EIA Report was targeted at assessing the potential effects of the marine works on the flushing capacity of the water channel during the construction phase and no prediction was made on the change in water quality. As a result, no comparison can be made with the monitoring results.

5.3 WASTE MANAGEMENT

Waste generated from this Project includes inert construction and demolition (C&D) materials and non-inert C&D wastes. A detailed breakdown of waste disposal quantities for each month of the construction phase is presented in *Annex H*.. The total quantities of different types of waste generated during the construction phase of the Project are compiled by the Contractor from relevant waste disposal records, eg trip tickets, and summarised in *Table 5.2*. The C&D wastes and inert C&D materials generated from the construction of the Project were disposed of at SENT Landfill / Tseung Kwan O Area 137 Fill Bank and the public fill barging point at Quarry Bay respectively.

Table 5.2 Quantities of Waste Generated from the Project

Period	Quantity		
	C&D Materials (inert) [a]	C&D Materials (non-inert) [b]	Chemical Waste
August 2006 - November 2009	21,983.3 tonnes	12,051.7 tonnes (2,681.5 tonnes of steel materials were sent to recyclers during the construction of the Project)	288 Litres

Notes:

(a) Inert C&D materials include bricks, concrete, building debris, rubble and excavated soil. No inert C&D material was reused in this Project during the construction of the Project. Non-reused inert C&D materials were disposed of at the public fill barging point at Quarry Bay.

(b) C&D wastes include steel materials generated from demolition of footbridge, the existing Atrium Link and working platform, paper / cardboard packaging waste, chemical waste and other wastes such as general refuse. The C&D wastes other than general refuse were disposed of at SENT Landfill / Tseung Kwan O Area 137 temporary construction waste sorting facility.

The breakdown of wastes generated in this Project as predicted in the EIA and the cumulative quantities of waste actually generated during the construction the Project are presented in *Table 5.3*. The total amount of inert C&D materials generated for the construction of foundations and pile caps and that of general refuse exceed the predictions made in the EIA. The difference observed in the case of inert C&D wastes generated could be results of changes in design between the approval of the EIA and the finalisation of the design for construction, hence the quantities of materials involved. A significant quantity of general refuse was also produced, contrary to the predictions in the EIA report, during the construction period. Non-inert materials from construction works (such as the packaging for construction materials) and refuse generated by workers were likely the major contributors in this category.

Table 5.3 Comparison of Estimated and Actual Amounts of Waste Generated

Type of Material	Estimated Amount of C&D Materials in EIA (inert & non-inert)	Accumulated Actual Amount of C&D Materials Recorded [a] (inert & non-inert)
Demolition of temporary footbridge	585 tonnes	0
Demolition of existing Atrium Link	4,680 tonnes	2,681.5 tonnes
Demolition of temporary working platform	390 tonnes	0
Construction of foundations and pile caps	20,000 tonnes	27,945.4 tonnes
General Refuse	Insignificant	6055.9 tonnes
Chemical Waste	Small	288 litres

Note:

(a) The actual amount of C&D Materials was recorded since the commencement of construction works.

Mitigation measures recommended in *Sections 6.35* to *6.41* of the EIA were implemented by the Contractor as far as practicable and were considered effective in reducing the total quantity of wastes generated during the construction period.

5.4 LANDSCAPE AND VISUAL ISSUES

Over the construction phase of the Project, mitigation measures were implemented to minimise the landscape and visual impact from the Project. Hoardings, partition walls, screens and temporary footbridges were implemented at different stages of the Project to ameliorate the visual impacts of the construction activities or to screen the work site from the view of pedestrians or users of nearby buildings. Protective measures were also implemented by the Contractor for existing trees on site over the construction period. Construction workers were instructed to avoid entering the premises of the existing HKCEC to minimise direct visual impact to users within.

The design of the exterior outlook of the Atrium Link Extension was refined to provide a visually more pleasing structure. The east and west elevations of the ALE was designed to merge with the existing architectural design of the existing HKCEC with linear lines and different degrees of opacity in the windows to break down the scale of the façade. The colours and materials used for the west façade of the Project were intended to provide a harmonious image with the existing HKCEC. Smaller exhibition halls were placed at the upper levels of the Project to create cascades in order to reduce bulkiness of the building. Considerations were also given to the lighting regime to avoid night-time glare to nearby sensitive receivers.

The landscape design of the waterfront promenade was refined to provide a relaxing atmosphere for the users. Trees were planted along the promenade and the waterfront area and up-lighted at night. Shrub species were planted to screen columns, staircases and fire exits as far as practicable. The promenade was paved with concrete blocks of various colours and textures as well as granite tiles to enhance visual quality.

The recommended mitigation measures for the construction phase of the Project in *Section 7.71* and *Table 7.7* of the EIA were implemented by the Contractor as far as practicable, in some cases with further improvements, and were considered effective in minimising the landscape and visual impact from the Project.

5.5 ENVIRONMENTAL SITE INSPECTION

Weekly Site Inspection

Weekly site inspections were carried out by the ET during the construction phase of the Project. These inspections ensured that mitigation measures in the EIA, the EM&A Manual and the requirements in the EP and its subsequent amendments were properly implemented by the Contractor. Findings of the last weekly site inspection indicate that there are no outstanding environment issues related to the construction of the Project. No follow-up actions by the Contractor are considered necessary.

Landscape and Visual Inspection

Bi-weekly landscape and visual monitoring is required under *Section 6.7* of the EM&A Manual to ensure that the design, implementation and maintenance of landscape and visual mitigation measures are fully achieved. Inspections by Earthasia Limited, the Landscape Architect of the Project, commenced in January 2007. Landscape and visual mitigation measures were implemented by the Contractor as indicated in *Annex G*.

The Site was handed over by the Contractor to HKTDC 6 November 2009 and witnessed by the Project Manager and the RSE of the Project. The Site Handover Record is presented in *Annex J*. Trees transplanted during the construction period will continue to be maintained by the Contractor over the Defect-Liability Period from 1 October 2009 to 30 September 2010. No other follow-up actions for environmental issues by the Contractor are considered necessary.

5.6 CONCLUSION OF REVIEW

The EIA predictions and the monitoring results obtained during the construction phase of the Project have been reviewed. The EIA concluded that the Project would not cause adverse impacts to the environment and it is considered that the monitoring results in general verify that conclusion. Recommendations given in the EIA are also considered to be adequate and effective for minimising the environmental impacts.

6.1 SUMMARY OF ENVIRONMENTAL EXCEEDANCE

No exceedance of the Action and Limit Levels for 24-hour and 1-hour TSP levels was recorded for the entire construction phase of the Project.

Marine water quality exceedances recorded during the construction phase of the Project are summarised in *Tables 6.1* and *6.2*.

Table 6.1 Summary of Exceedance recorded during Marine Water Quality Monitoring for the Construction Phase of the Project

Reporting Period	Station	Exceedance Recorded
October 2006	W3	Exceedance of Action and Limit Level for Turbidity on 17, 19, 20, 21, 24, 26 and 28 October 2006 Exceedance of Action and Limit Level for Suspended Solids on 17, 19 and 20 October 2006 Exceedance of Action and Limit Level for Dissolved Oxygen on 21 October 2006 Exceedance of Action Level for Turbidity on 31 October 2006
	W4	Exceedance of Action and Limit Level for Dissolved Oxygen on 17 and 21 October 2006 Exceedance of Action and Limit Level for Turbidity on 17, 19, 21, 24, 27 and 28 October 2006 Exceedance of Action and Limit Level for Suspended Solids on 17 and 28 October 2006 Exceedance of Action Level for Turbidity on 20 October 2006
	W5	Exceedance of Action Level for Dissolved Oxygen on 17 and 21 October 2006 Exceedance of Action and Limit Level for Turbidity on 17, 19, 20, 21, 24, 26 and 28 October 2006 Exceedance of Action and Limit Level for Suspended Solids on 17, 21, 26 and 28 October 2006 Exceedance of Action Level for Dissolved Oxygen on 19 October 2006 Exceedance of Action Level for Turbidity on 31 October 2006
November 2006	W3	Exceedance of Action Level for Turbidity on 2 November 2006
	W4	Exceedance of Action Level for Turbidity on 2 November 2006
	W5	Exceedance of Action Level for Turbidity on 2 November 2006
February 2007	W4	Exceedance of Action Level for Dissolved Oxygen on 21 February 2007
March 2007	W3	Exceedance of Action Level for Turbidity on 23 March 2007 Exceedance of Action Level for Turbidity on 28 March 2007 Exceedance of Action Level for Turbidity on 30 March 2007
	W4	Exceedance of Action Level for Turbidity on 26 March 2007
April 2007	W3	Exceedance of Action Level for Turbidity on 4 April 2007 Exceedance of Limit Level for Turbidity on 16 April 2007 Exceedance of Action Level for Turbidity on 23 April 2007
	W4	Exceedance of Action Level for Turbidity on 4 April 2007 Exceedance of Limit Level for Turbidity on 16 April 2007
	W5	Exceedance of Action Level for Turbidity on 4 April 2007 Exceedance of Limit Level for Turbidity on 16 April 2007
April 2009	W3	Exceedance of Action Level for Turbidity on 27 April 2009 at mid-flood

Reporting Period	Station	Exceedance Recorded
	W4	Exceedance of Action Level for Turbidity on 27 April 2009 at mid-flood
	W5	Exceedance of Action Level for Turbidity on 27 April 2009 at mid-flood
May 2009	W4	Exceedance of Action Level for Turbidity on 22 May 2009 at mid-flood
	W5	Exceedance of Action Level for Turbidity on 22 May 2009 at mid-flood
	W4	Exceedance of Action Level for Turbidity on 25 May 2009 at mid-flood
	W5	Exceedance of Action Level for Turbidity on 25 May 2009 at mid-flood
June 2009	W5	Exceedance of Action Level for Turbidity on 1 June 2009 during the mid-flood tide
	W4	Exceedance of Action Level for Turbidity on 17 June 2009 during the mid-flood tide
September 2009	W4	Exceedance of Action Level for Turbidity on 4 Sept 2009 during the mid-flood tide
	W5	Exceedance of Action Level for Turbidity on 4 Sept 2009 during the mid-flood tide

Table 6.2 ***Summary of Exceedance recorded during Additional Marine Water Quality Monitoring for the Construction Phase of the Project***

Reporting Period	Station	Exceedance Recorded
May 2007	M1	Exceedance of Action Level for TIN on 9 May 2007
December 2007	M1	Exceedance of Action Level for TIN on 7 December 2007 during mid-ebb and mid-flood tides
	M1	Exceedance of Action Level for TIN on 10 December 2007 during mid-flood tide

Exceedances of marine water quality monitoring parameters recorded from 17 to 21 October 2006 and on 16 April 2007 were found to be caused by works in the Project but all other exceedances recorded were concluded to be caused by natural fluctuation rather than the works of the Project. For exceedances caused by the works of the Project, the Contractor implemented suitable mitigation measures immediately after the exceedances were identified to avoid further occurrence. The silt curtains deployed to protect existing cooling water intakes were also inspected regularly to ensure their integrity and effectiveness. All in all, the mitigation measures and follow-up actions upon notice of exceedance implemented by the Contractor were considered sufficient and effective.

6.2 SUMMARY OF ENVIRONMENTAL NON-COMPLIANCE

No non-compliance event was recorded during the construction phase of the Project.

6.3 SUMMARY OF ENVIRONMENTAL COMPLAINT

No complaint was received during the construction phase of the Project.

6.4 SUMMARY OF ENVIRONMENTAL SUMMONS AND PROSECUTION

No summons or prosecution on environmental matters was received during the construction phase of the Project.

7 CONCLUSIONS

This Final Environmental Monitoring and Audit (EM&A) Report summarises the EM&A work undertaken and the EM&A data collected during the construction phase of the Project in accordance with the EM&A Manual and the requirements under the relevant EP and its subsequent amendments.

Air quality monitoring, marine water quality monitoring and additional marine water quality monitoring were conducted during the construction phase of the Project in accordance with the requirements of the EM&A Manual and those of the EP and its subsequent amendments. The monitoring programme was considered effective in reflecting the environmental conditions at the designated representative sensitive receivers. The monitoring results obtained during the last six months of the construction phase indicate that the air quality and marine water quality parameters have in general returned to the state prior to the commencement of the construction of the Project. The monitoring results also indicate that the construction of the Project has not caused adverse impacts on the environment with implementation of appropriate mitigation measures and this observation is in line with the corresponding predictions in the EIA.

Inert C&D materials and non-inert C&D wastes were generated from the construction of the Project. Mitigation measures recommended in the EIA were implemented by the Contractor as far as practicable and were considered effective in reducing the total quantities of wastes generated during the construction period.

Design of the Atrium Link Extension and the waterfront promenade has been refined during the course of Construction Phase of Project. The recommended mitigation measures in the EIA and EM&A manual have been implemented as far as practicable by the Contractor were considered effective in minimizing the landscape and visual impact from the Project. Handover of Project site from Contractor to HKTDC has been completed on 6 November 2009. Trees transplanted during the construction period will continue to be maintained by the Contractor during the Defect-Liability Period from 1 October 2009 to 30 September 2010 with no further environmental follow-up actions considered necessary.

Regular site inspections were conducted by the ET to monitor the implementation status of environmental mitigation measures during the construction phase of the Project. Findings from the last weekly site inspection indicate that there are no outstanding environment issues related to the construction of the Project.

No air quality exceedance was recorded during the entire construction phase of the Project. A number of marine water quality exceedances were recorded. For exceedances attributed to the works of the Project, appropriate and sufficient mitigation measures were implemented by the Contractor.

No complaint and summons/prosecution was received during the construction phase of the Project.

Annex A

Locations of Works Areas

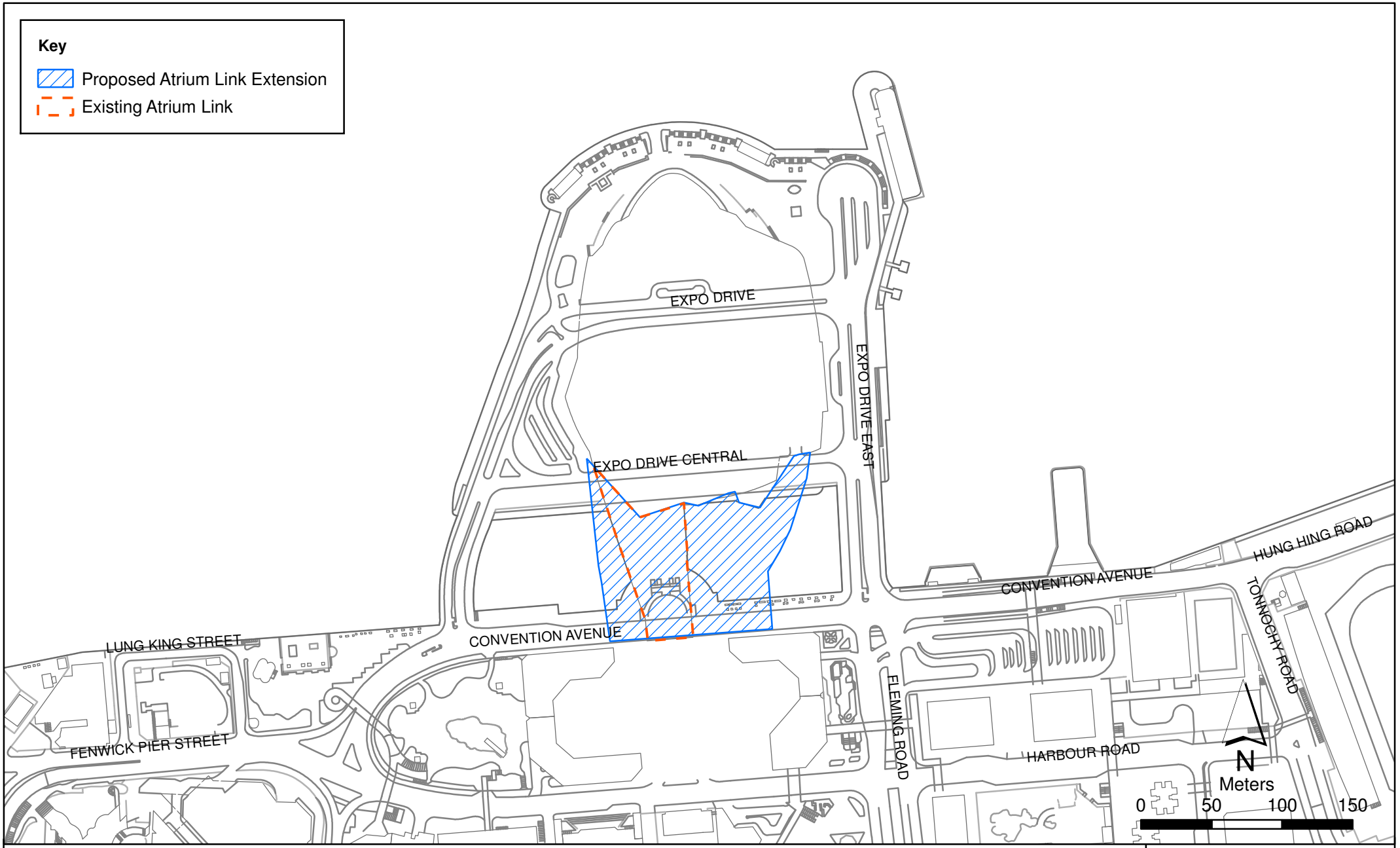


Figure A1

Location of Atrium Link Extension

File: 0050690_4.mxd
Date: 11/09/2006

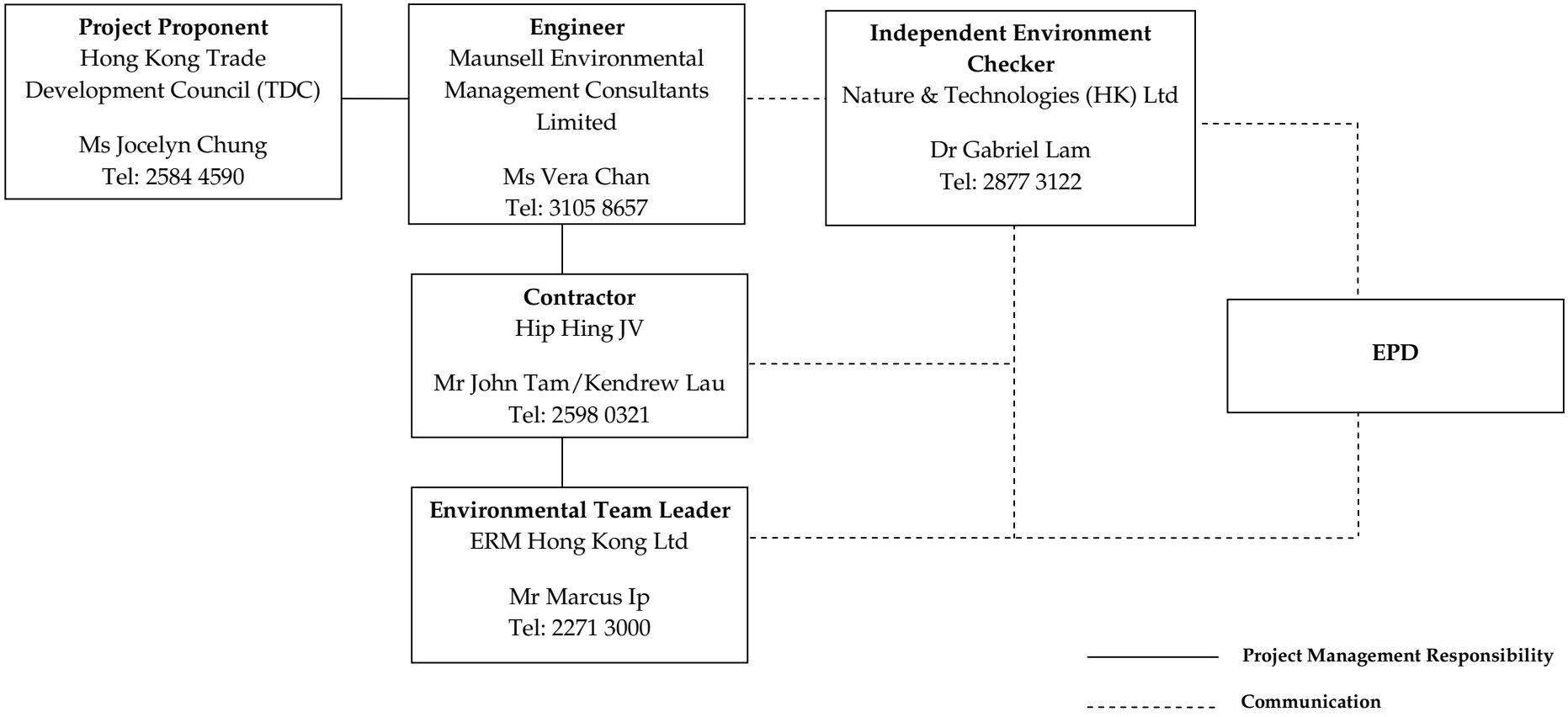
Environmental Resources Management

ERM

Annex B

Project Organization Chart and Contact Detail

Project Organization (with contact details)



Annex C

Locations of Air and Marine Water Quality Monitoring Stations

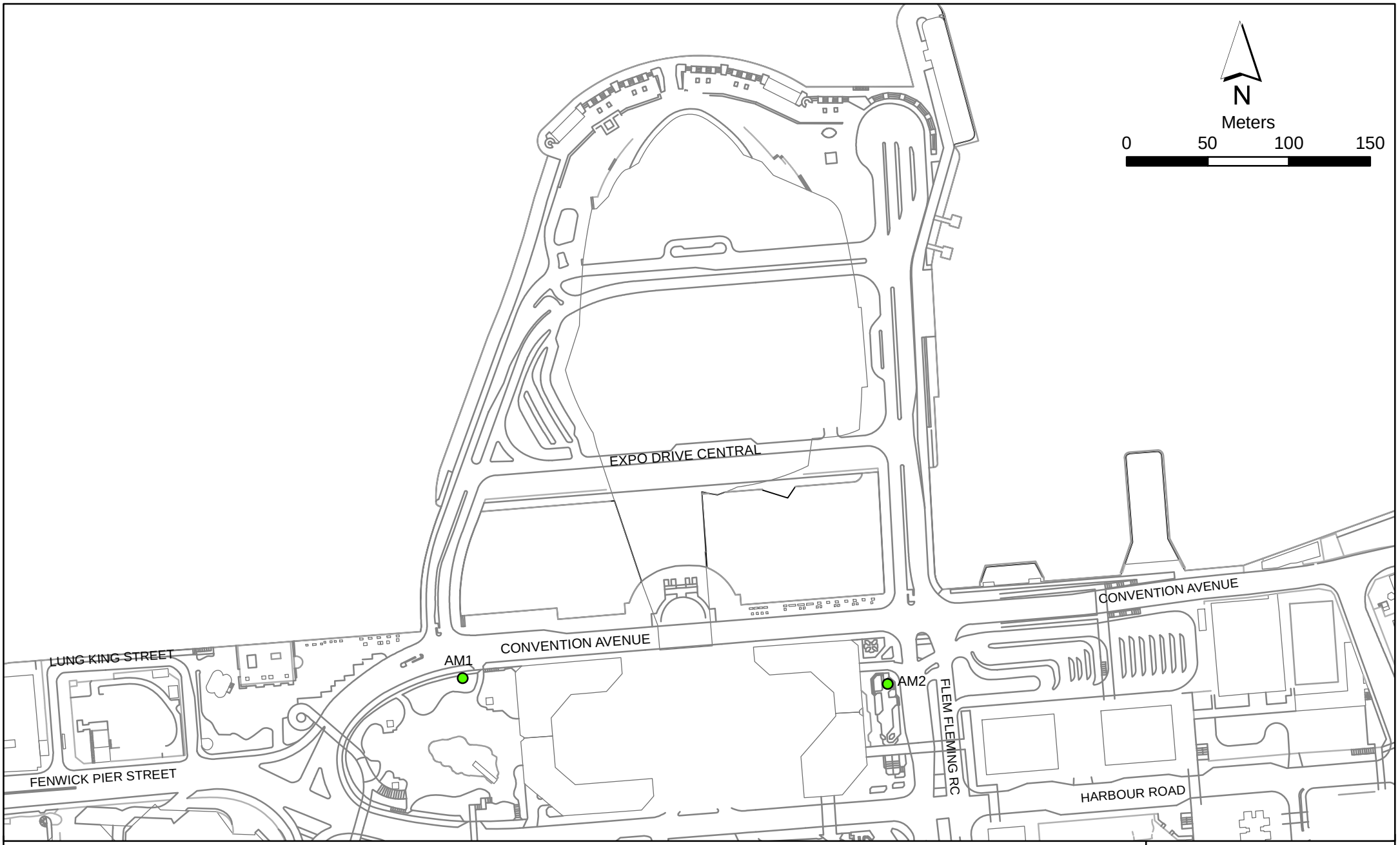


Figure C1

Air Quality Monitoring Station

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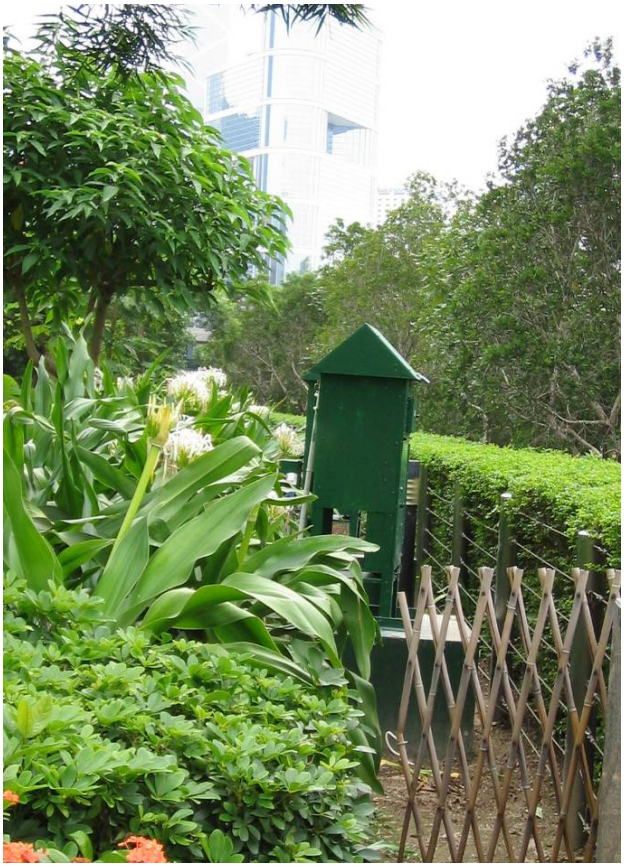
Date: 11/11/2009

Environmental Resources Management

ERM



Air Quality Monitoring Station (AM1)

Air Quality Monitoring Station (AM2)

Marine Water Quality Monitoring Stations (inside Silt Screen)

Monitoring Station	*Description*	*Easting*	*Northing*
W3	Hong Kong Convention and Exhibition Centre Phase I	835852	815908
W4	Wan Chai Tower/Revenue Tower/Immigration Tower	835944	815885
W5	Great Eagle Centre/China Resources Building	835963	815886

Additional Marine Water Quality Monitoring Stations

Monitoring Station	Description	EASTING	NORTHING
C1	Control Station 1	835645	815900
C2	Control Station 2	836014	815926
M1	Monitoring Station 1	835852	815907

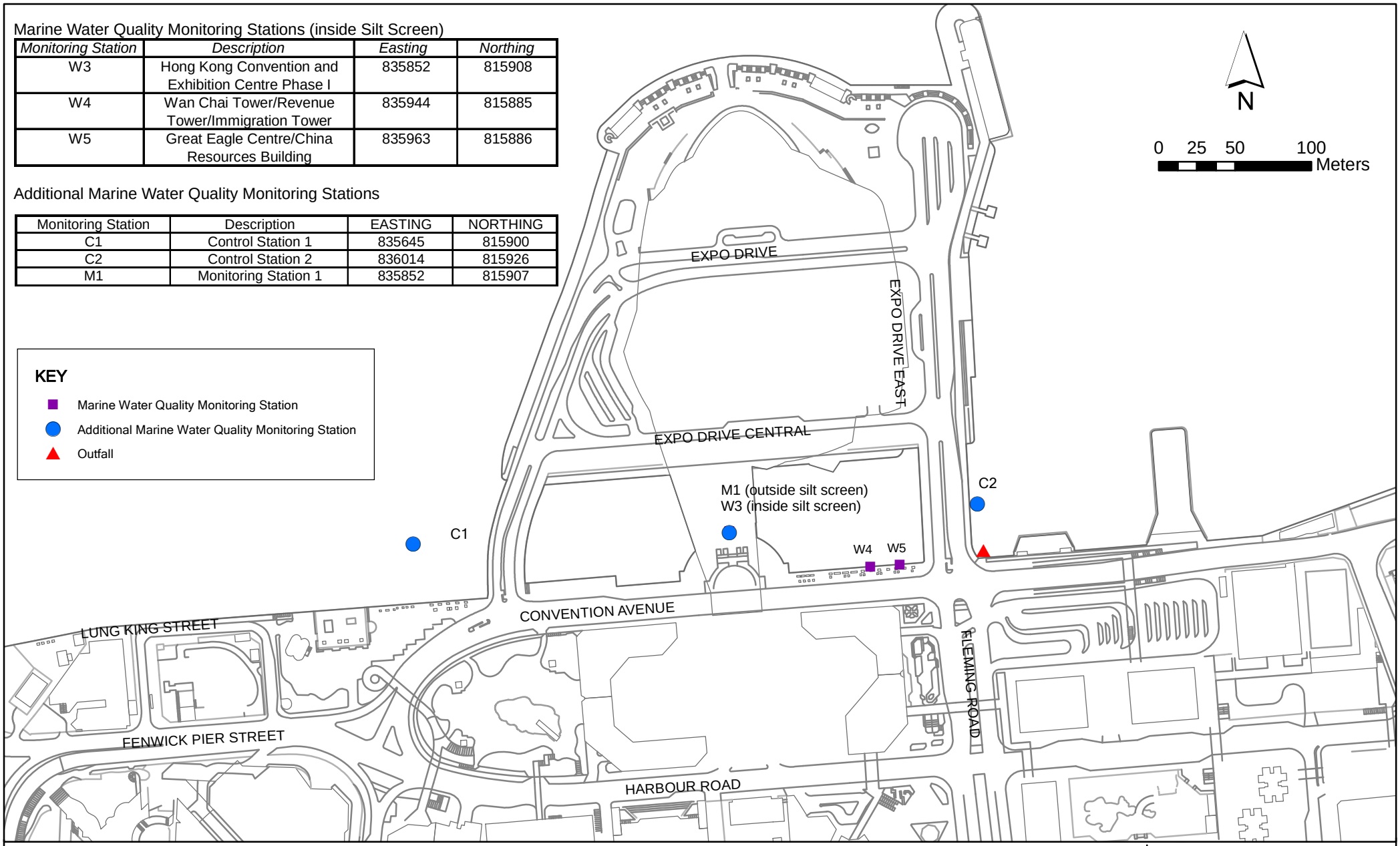


Figure C2

Marine Water Quality Monitoring Stations

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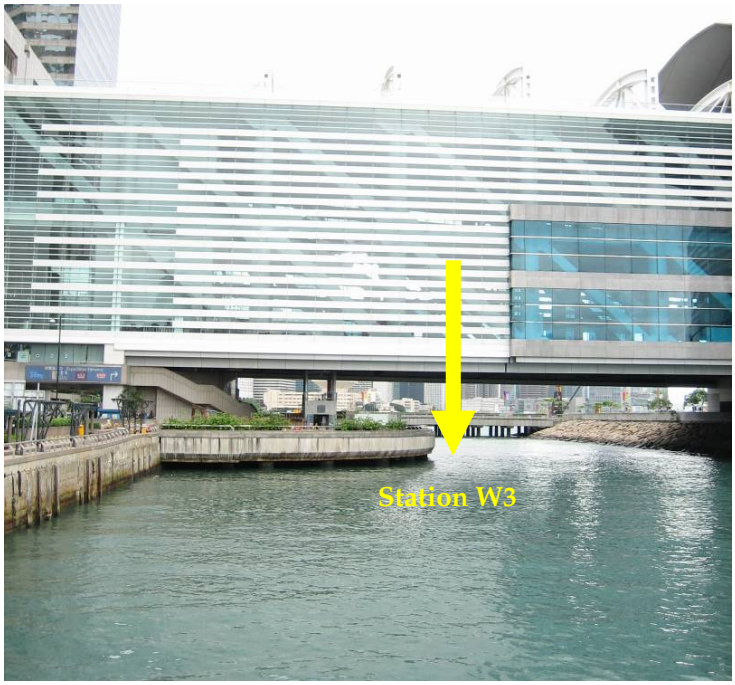
Date: 11/11/2009

Environmental Resources Management

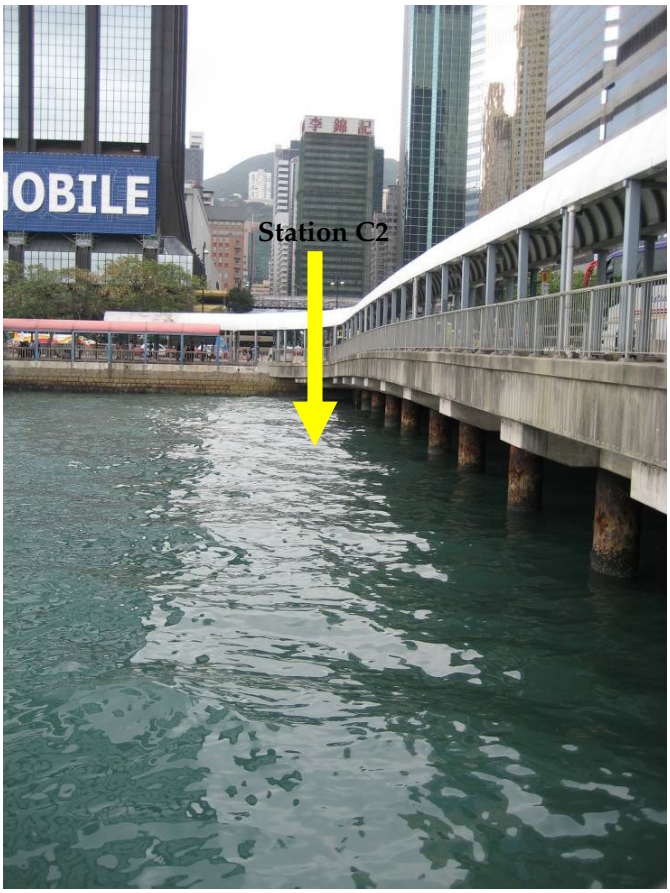
ERM



Marine Water Quality Monitoring Location – Station W3

Marine Water Quality Monitoring Location – Stations W4 and W5

Additional Marine Water Quality Monitoring Location – Station C1



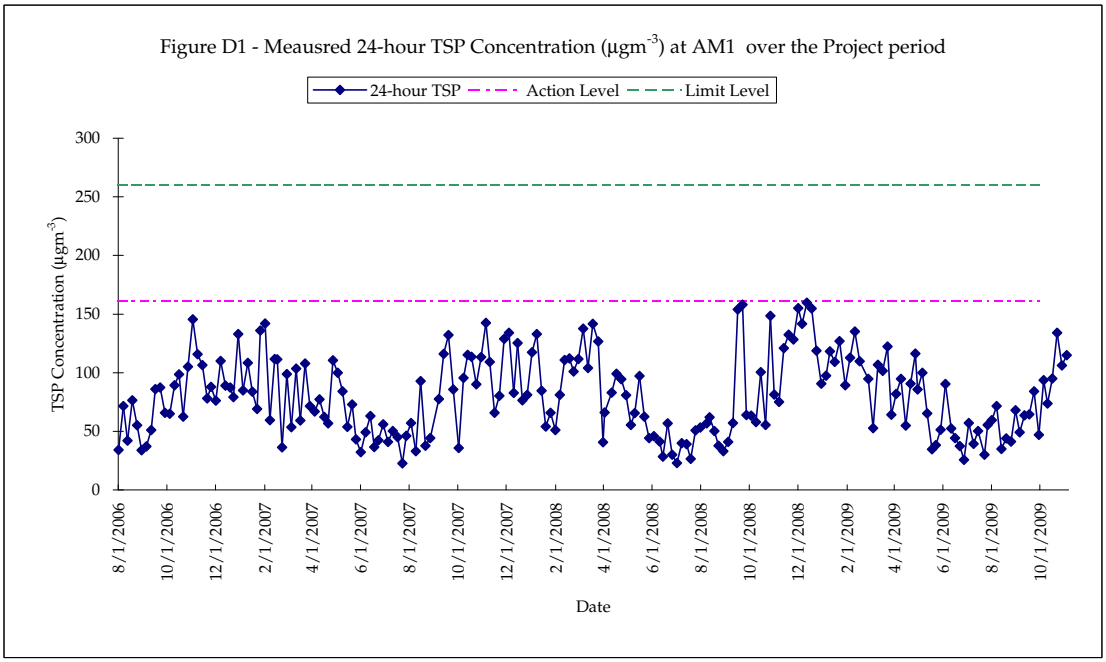
Additional Marine Water Quality Monitoring Location – Station C2

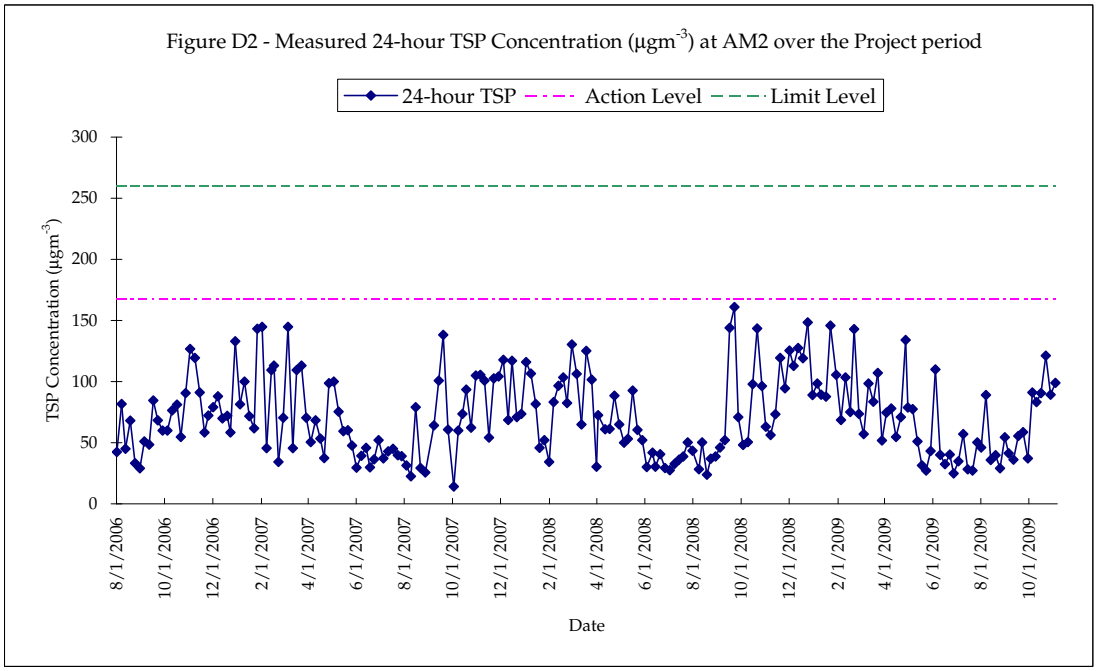
Additional Marine Water Quality Monitoring Location – Station M1

Annex D

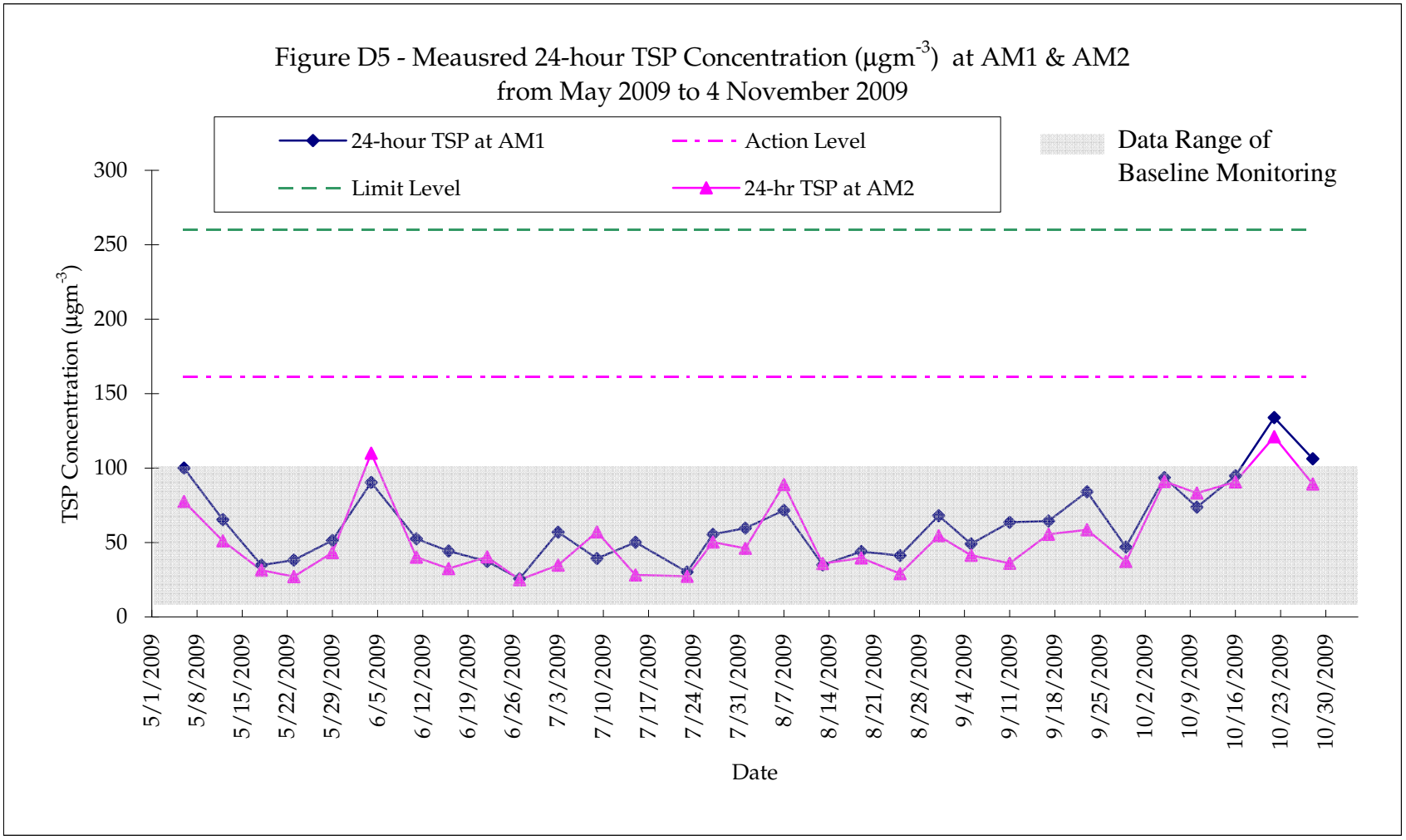
24-hour and 1-hour TSP Monitoring Results

Annex D - Measured 24-hour TSP at AM1 and AM2

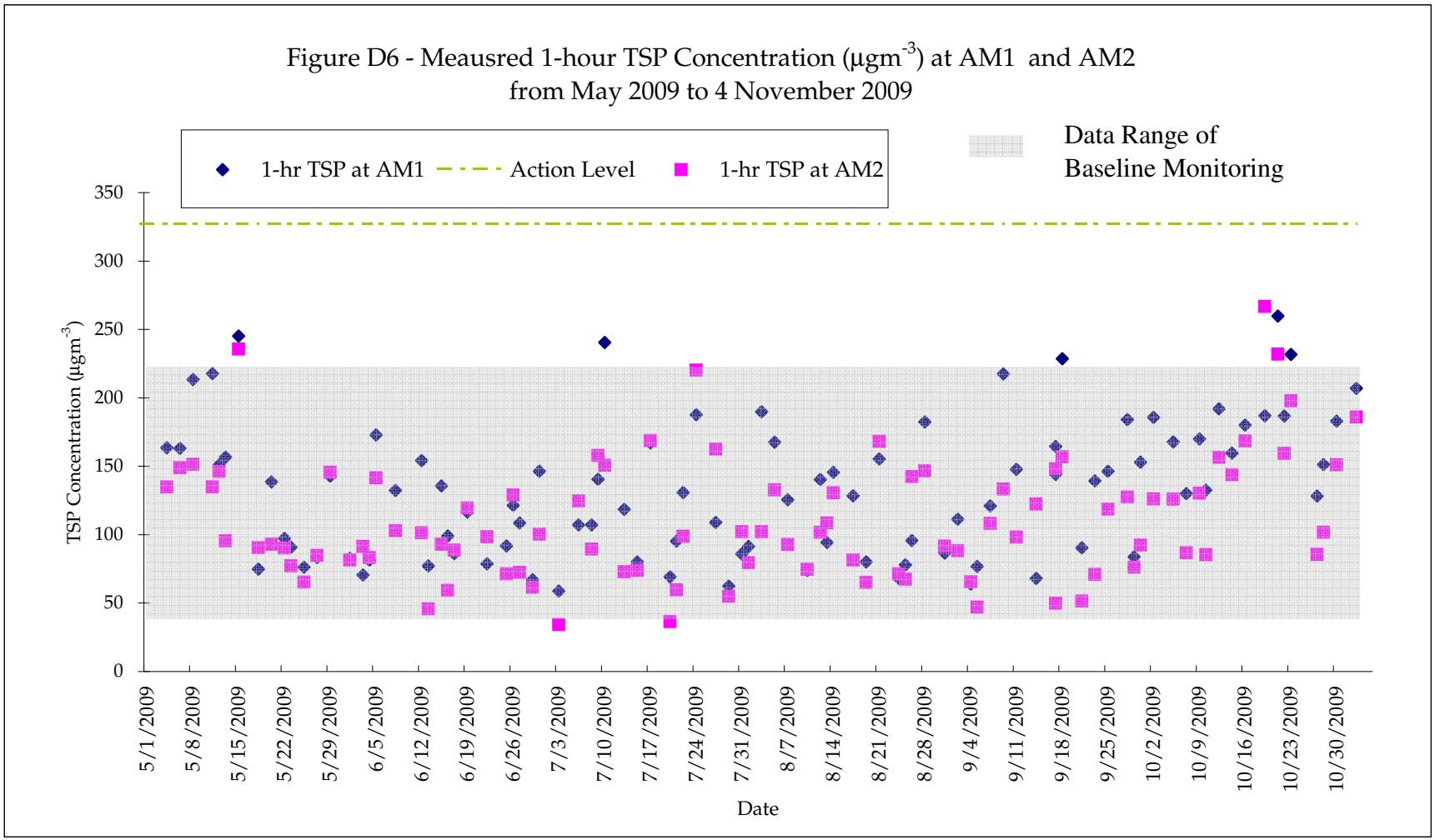




Annex D - Measured 24-hr TSP Monitoring Data



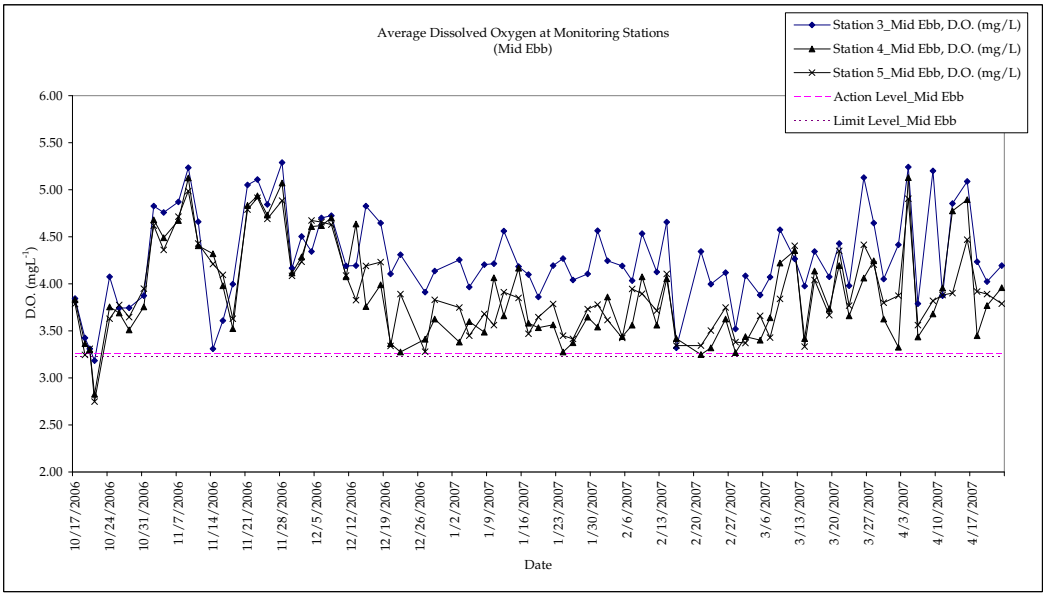
Annex D - Measured 1-hr TSP Monitoring Data

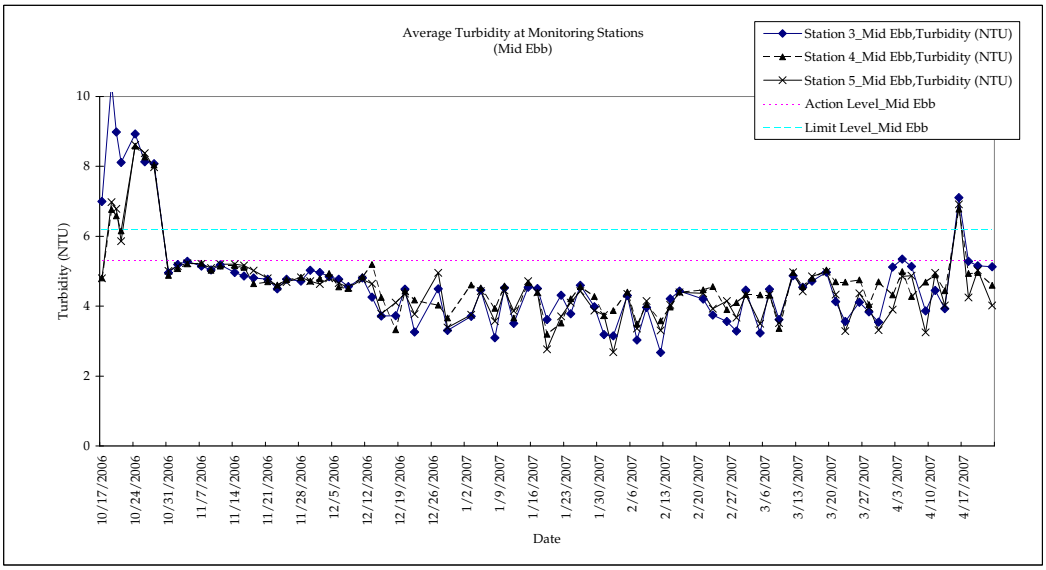


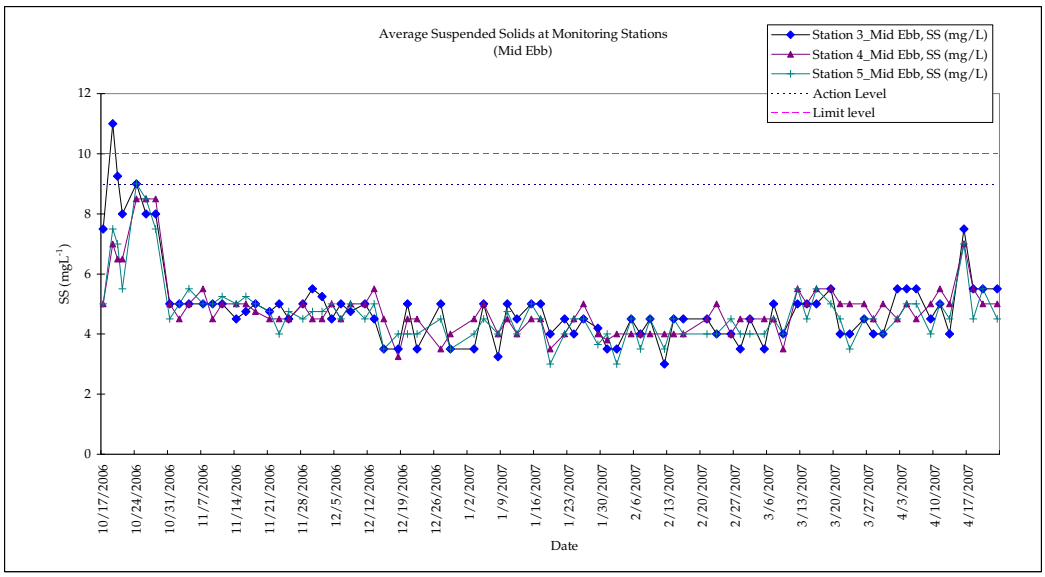
Annex E

Marine Water Quality Monitoring and Additional Marine Water Quality Monitoring Results

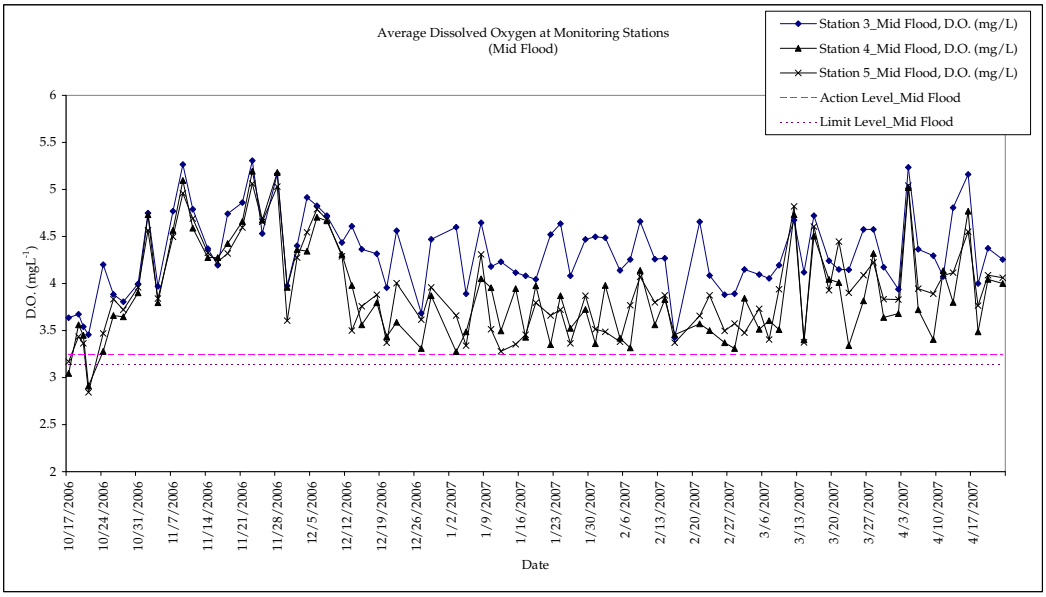
Annex E1 - Marine Water Quality Monitoring Results (Mid Ebb) from 17 October 2006 to 23 April 2007

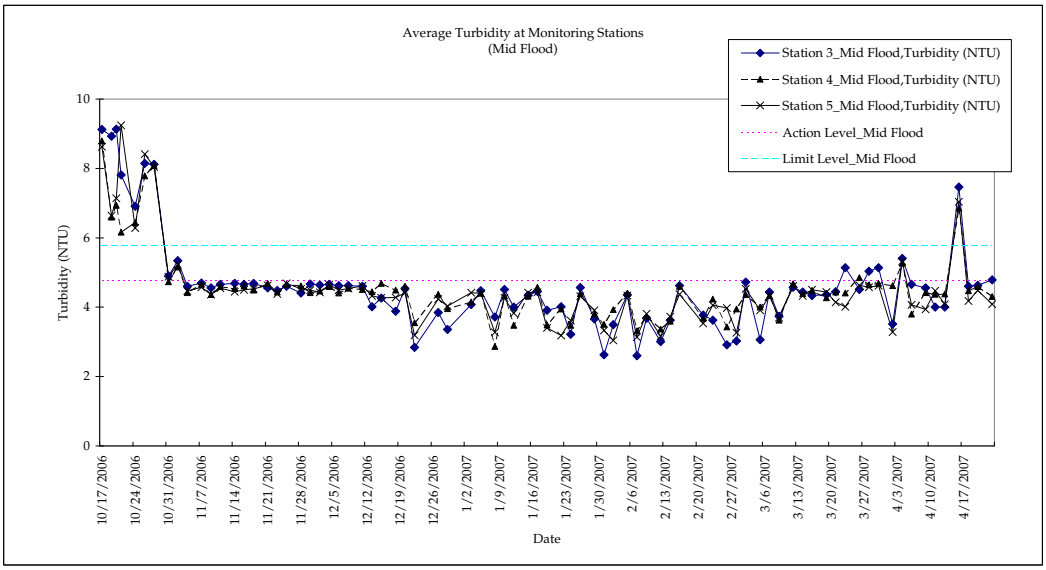


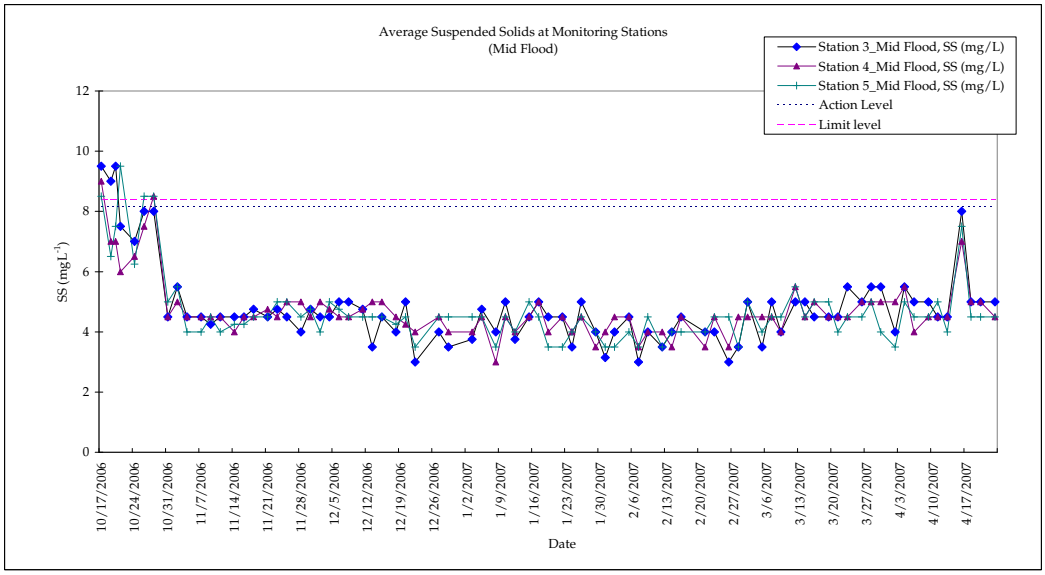




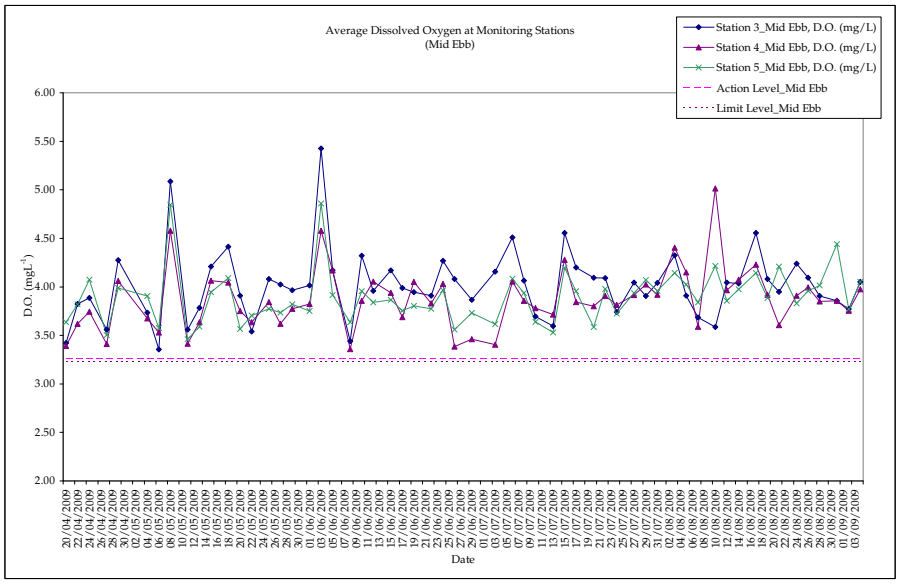
Annex E1 - Marine Water Quality Monitoring Results (Mid Flood) from 17 October 2006 to 23 April 2007

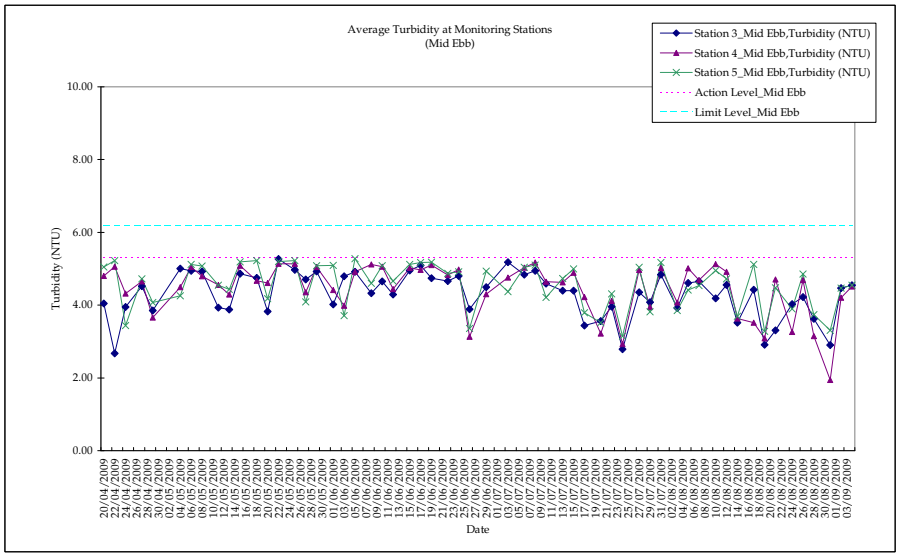


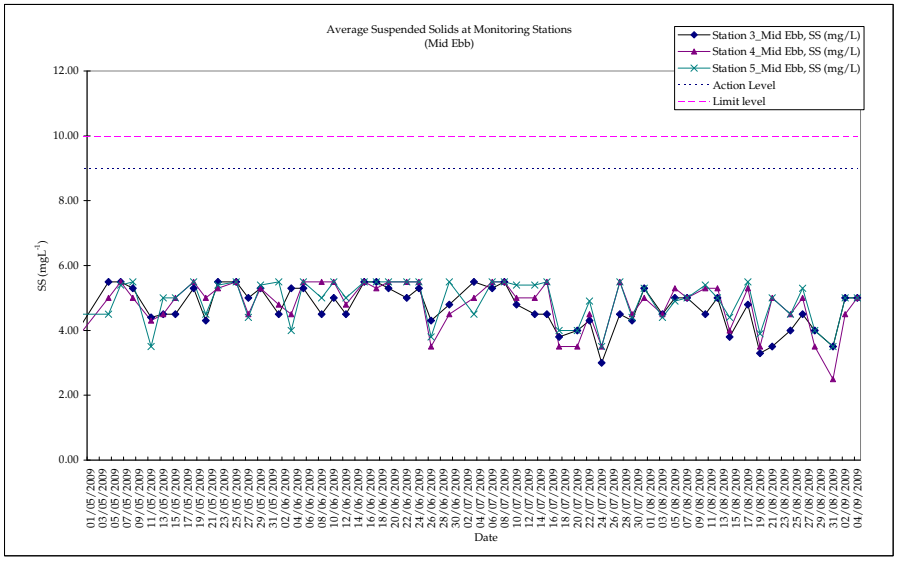




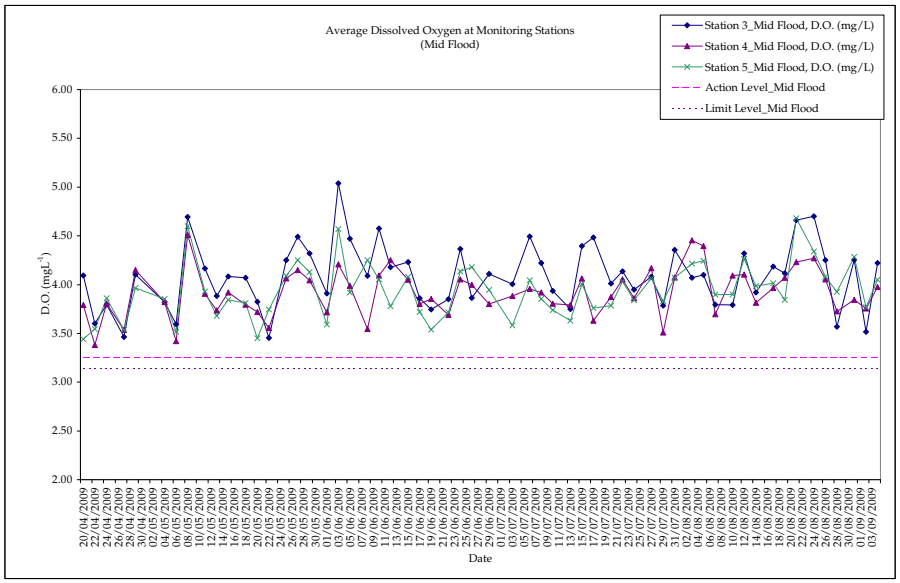
Annex E1 - Marine Water Quality Monitoring Results (Mid-Ebb) from 20 April to 4 September 2009

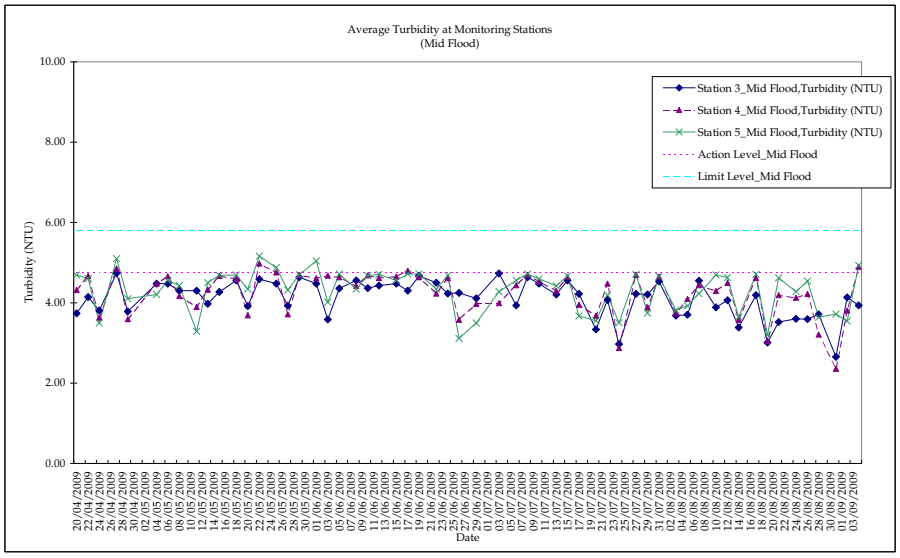


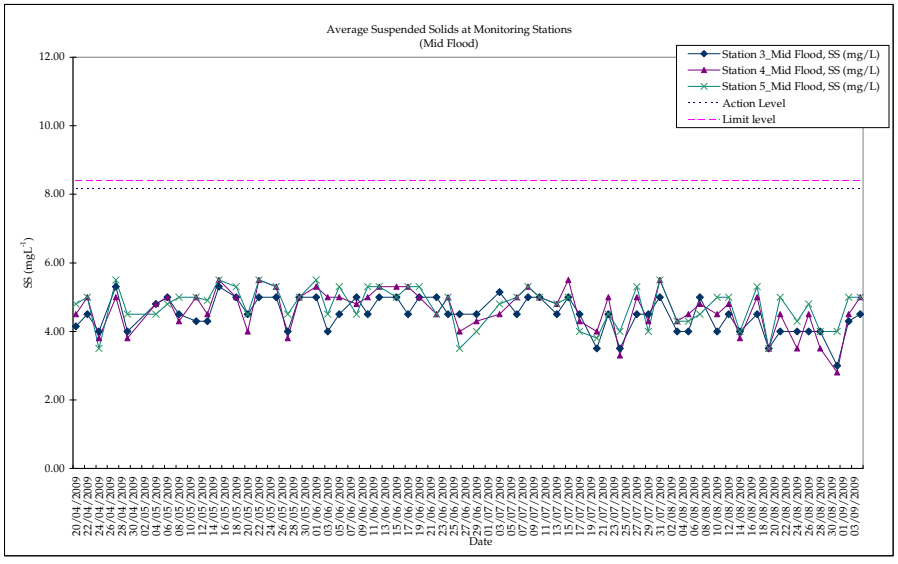




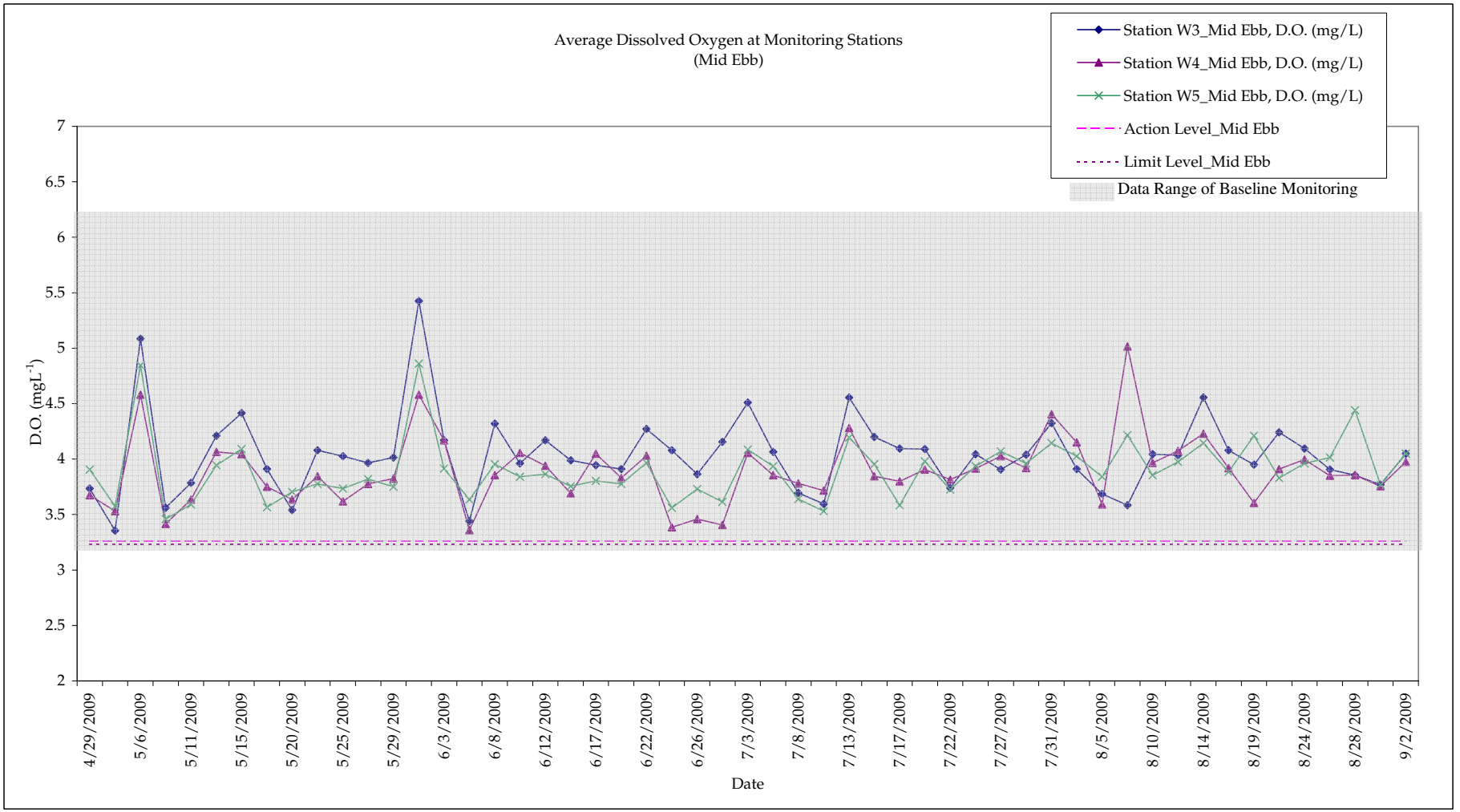
Annex E1 - Marine Water Quality Monitoring Results (Mid-Flood) from 20 April 2009 to 4 September 2009



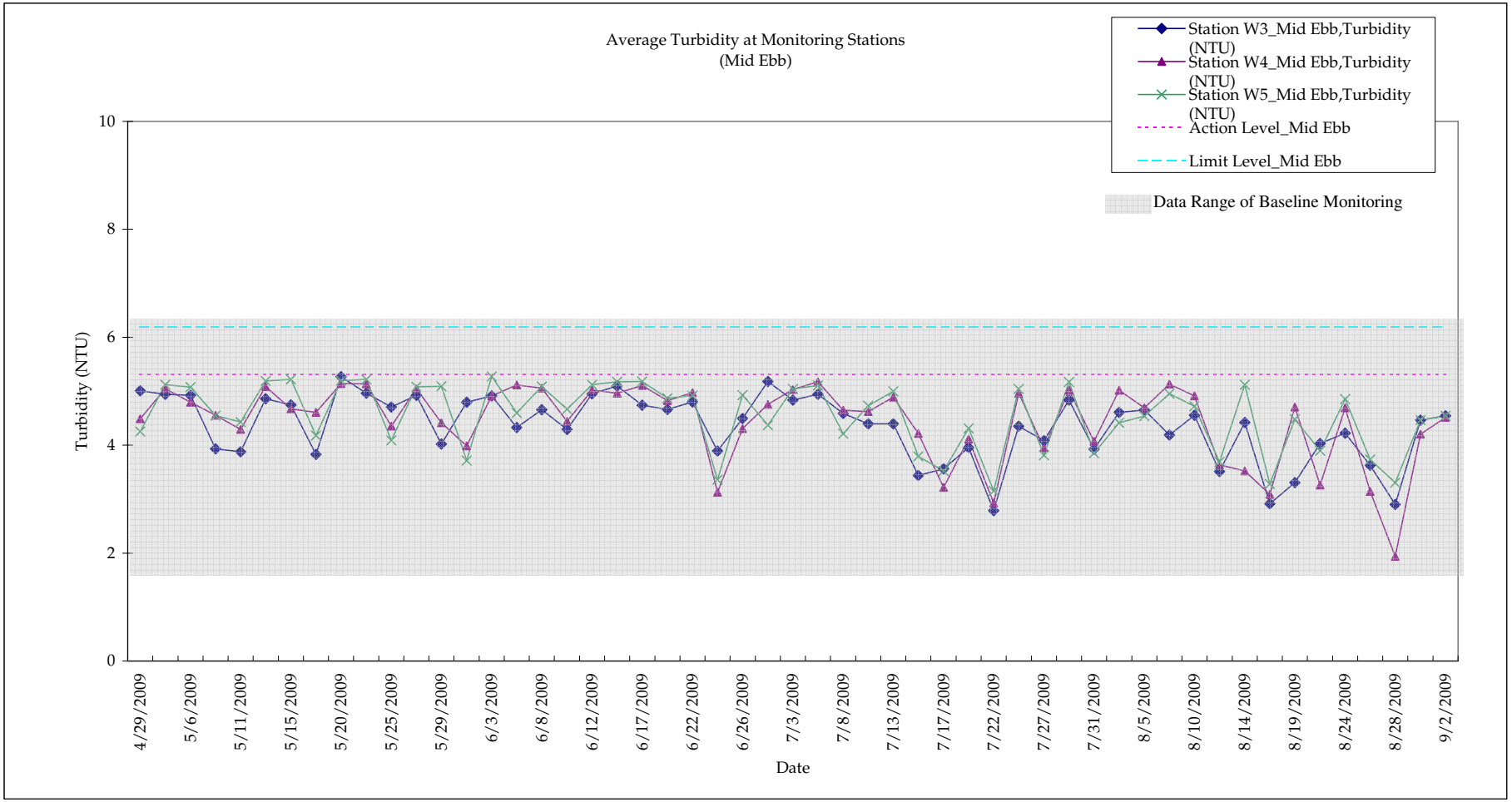




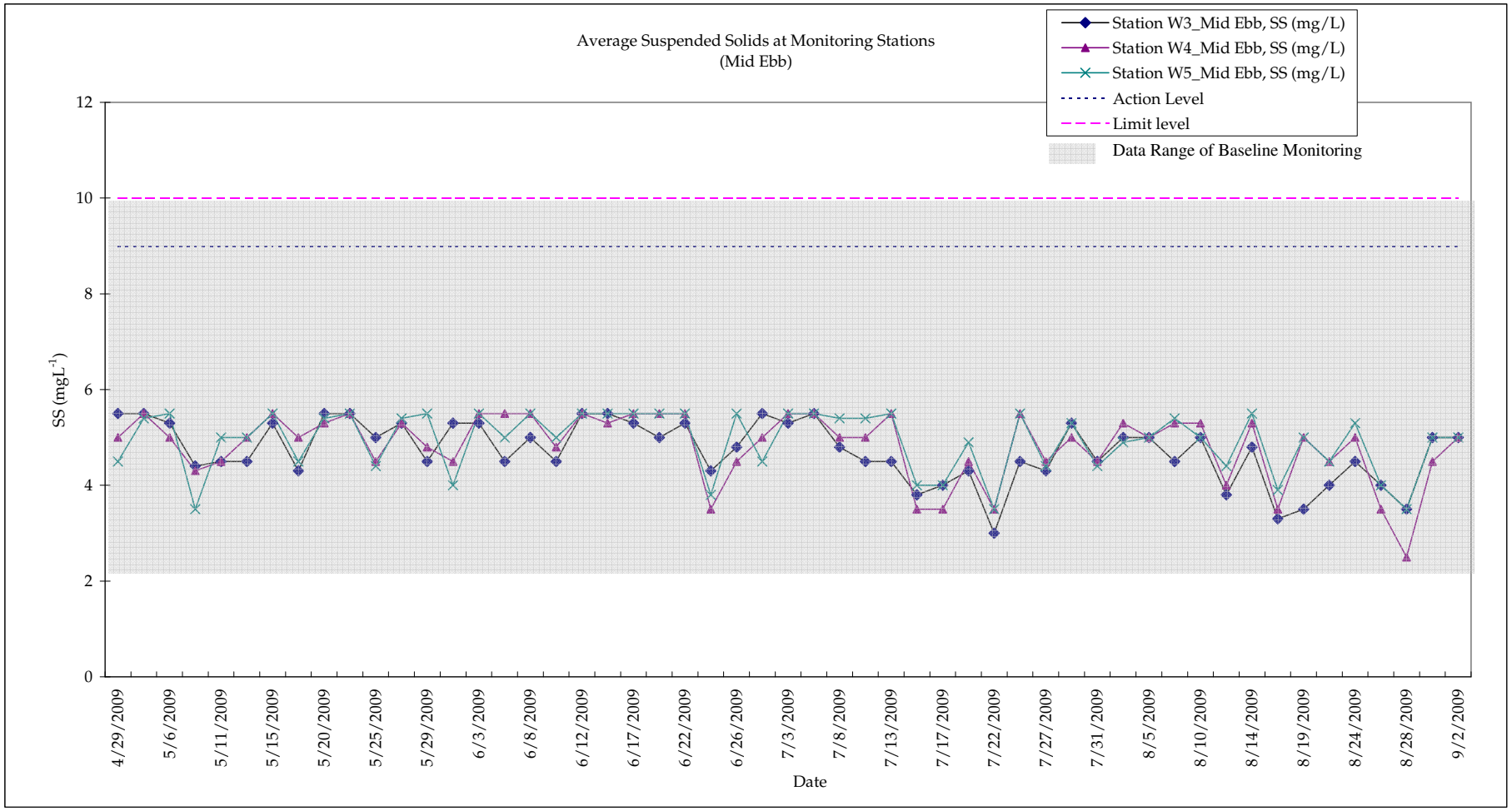
Annex E2 - Measured Dissolved Oxygen (Mid-Ebb) during Marine Water Quality Monitoring (May - September 2009)



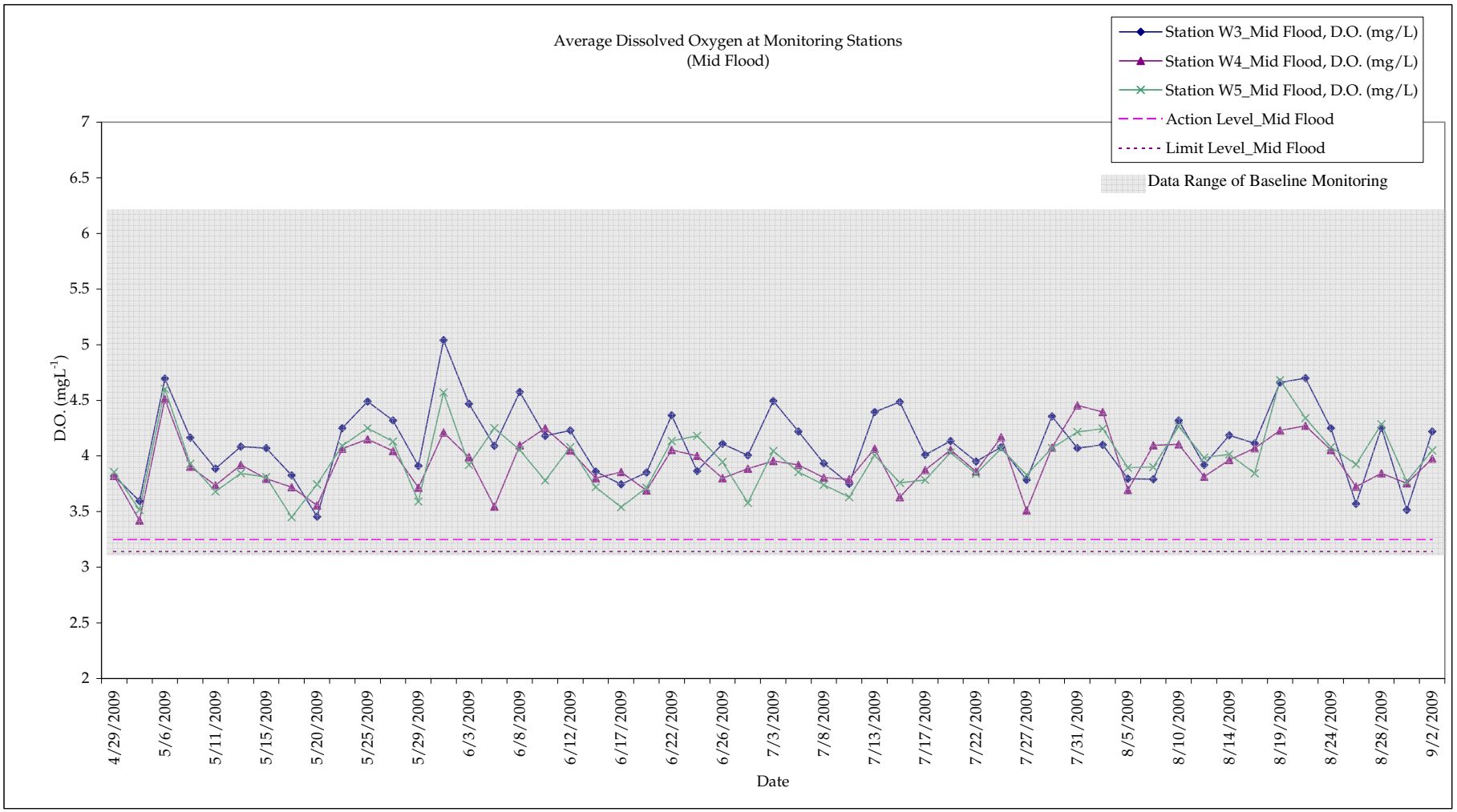
Annex E2 - Measured Turbidity (Mid-Ebb) during Marine Water Quality Monitoring (May - September 2009)



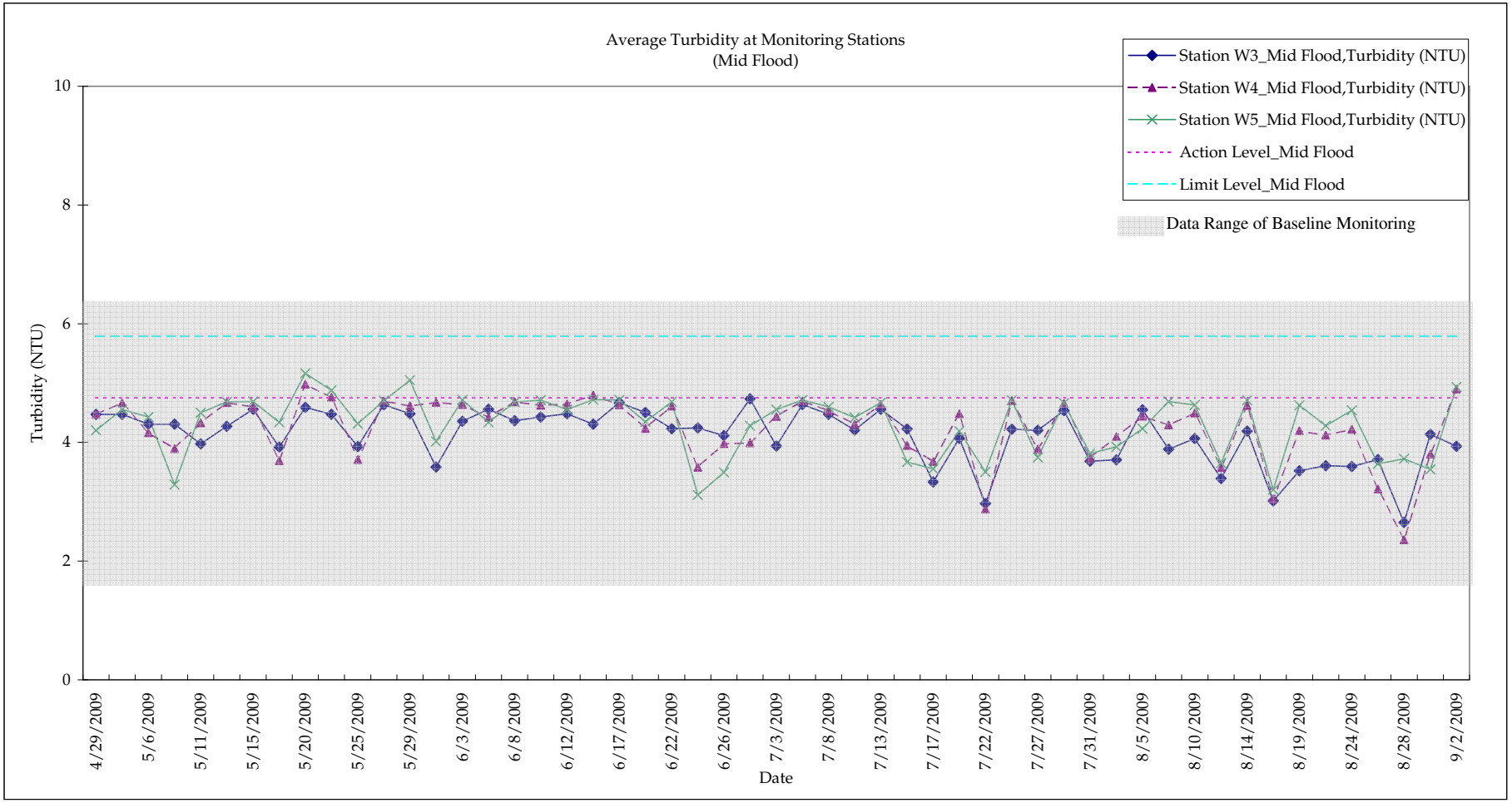
Annex E2 - Measured Suspended Solids (Mid-Ebb) during Marine Water Quality Monitoring (May - September 2009)



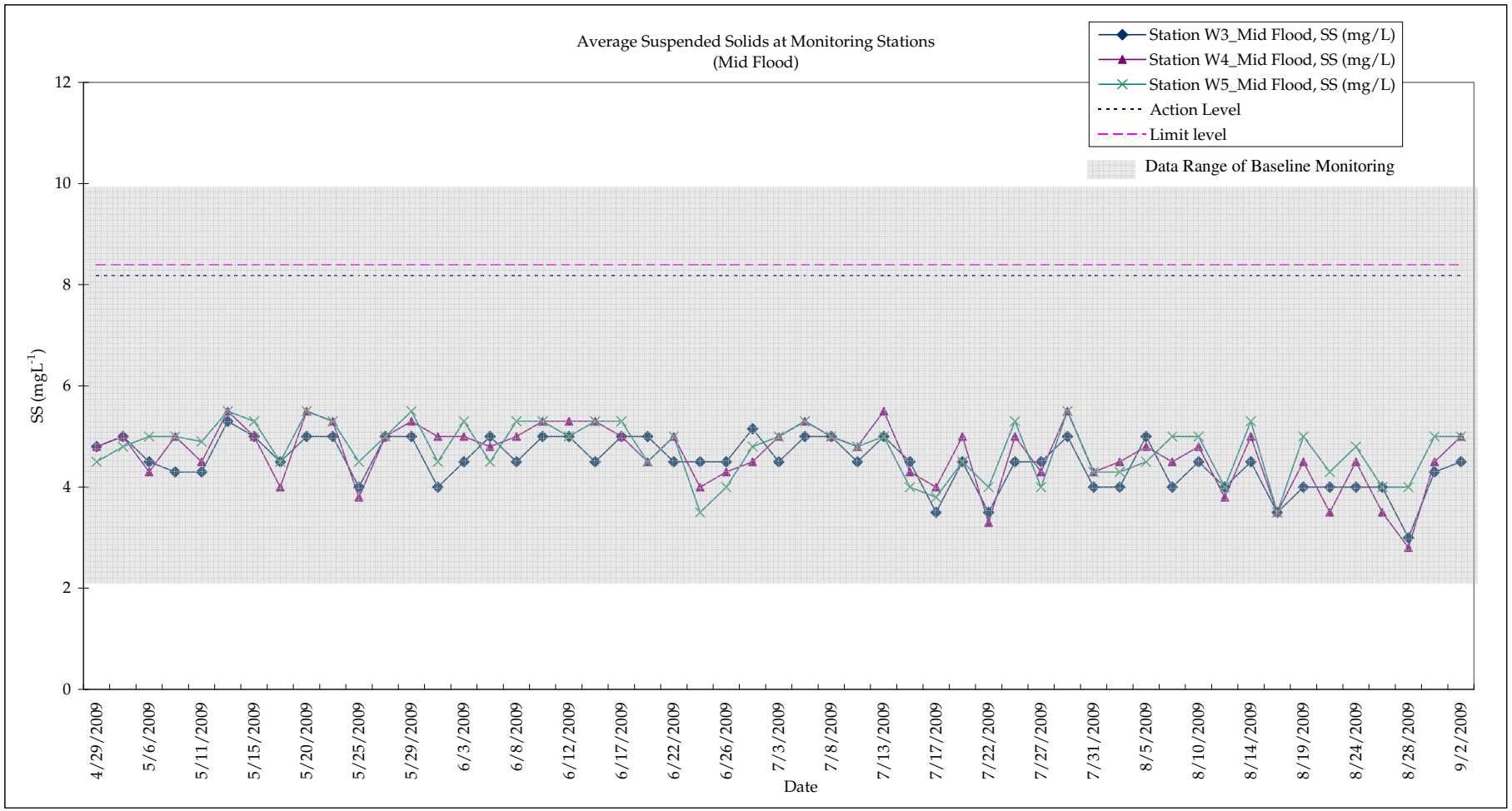
Annex E2 - Measured Dissolved Oxygen (Mid-Flood) during Marine Water Quality Monitoring (May - September 2009)



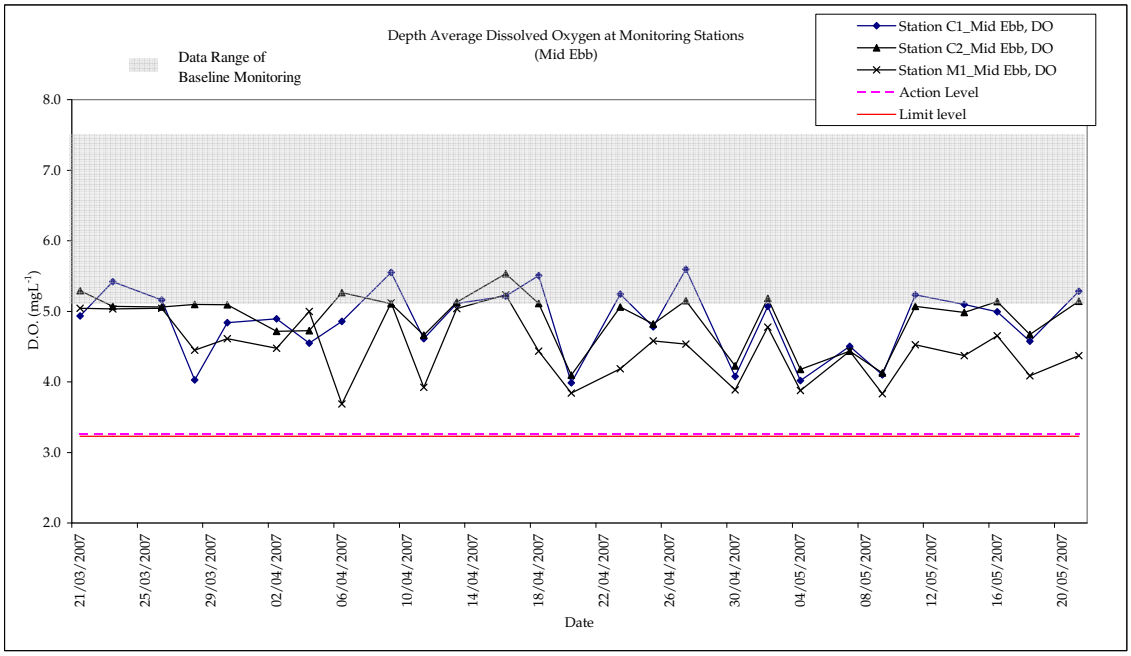
Annex E2 - Measured Turbidity (Mid-Flood) during Marine Water Quality Monitoring (May - September 2009)

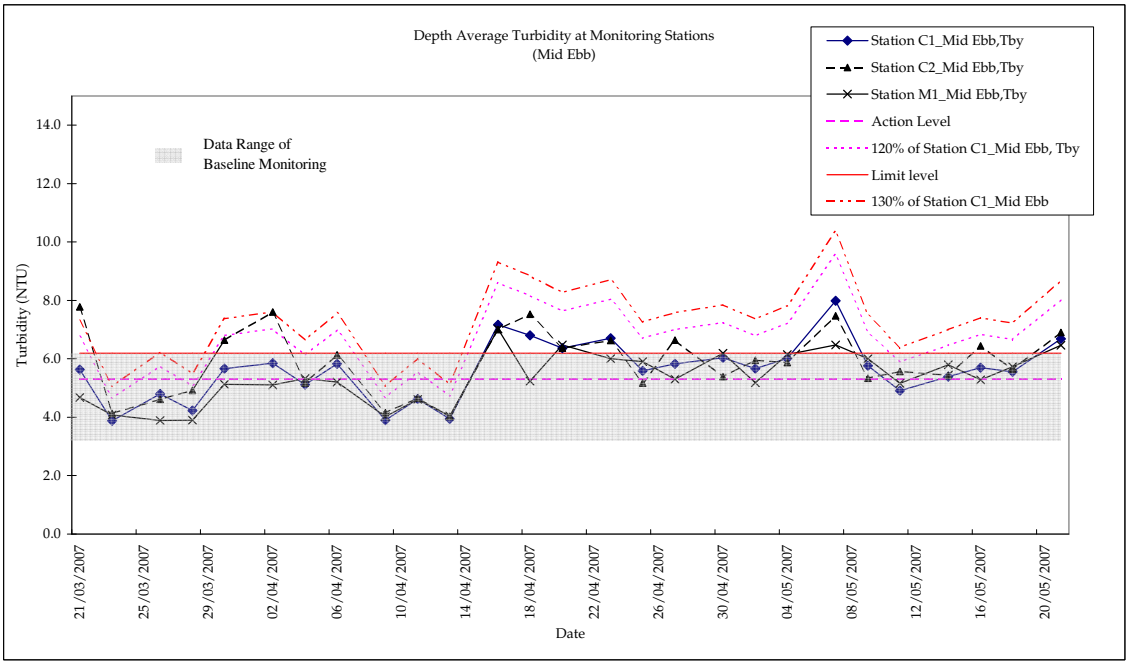


Annex E2 - Measured Suspended Solids (Mid-Flood) during Marine Water Quality Monitoring (May - September 2009)

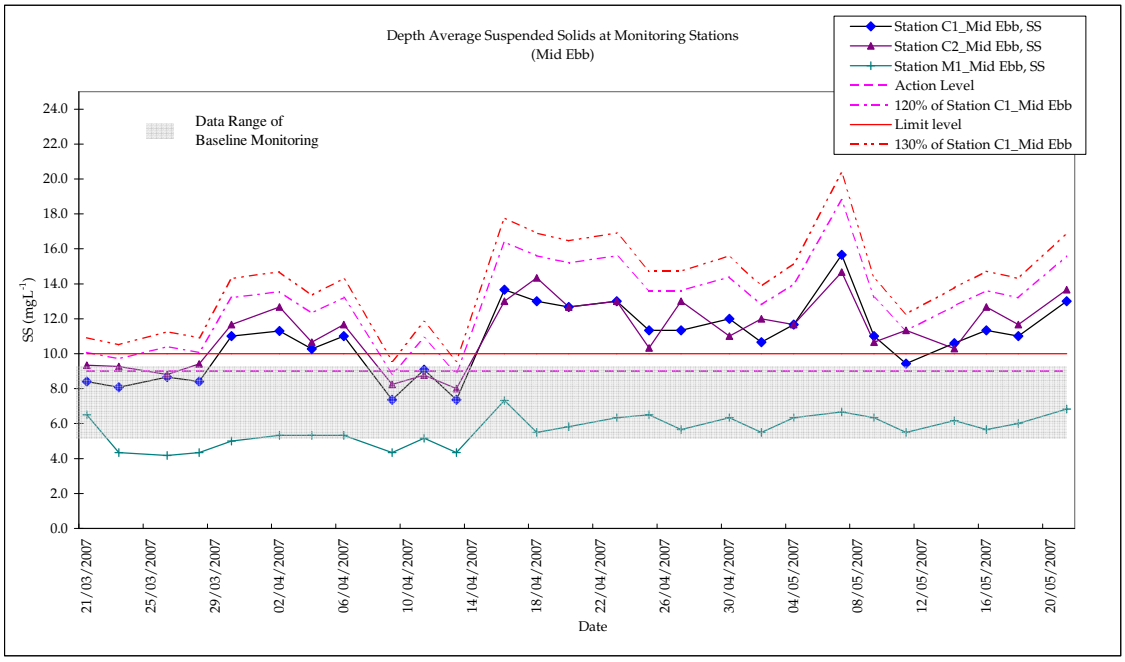


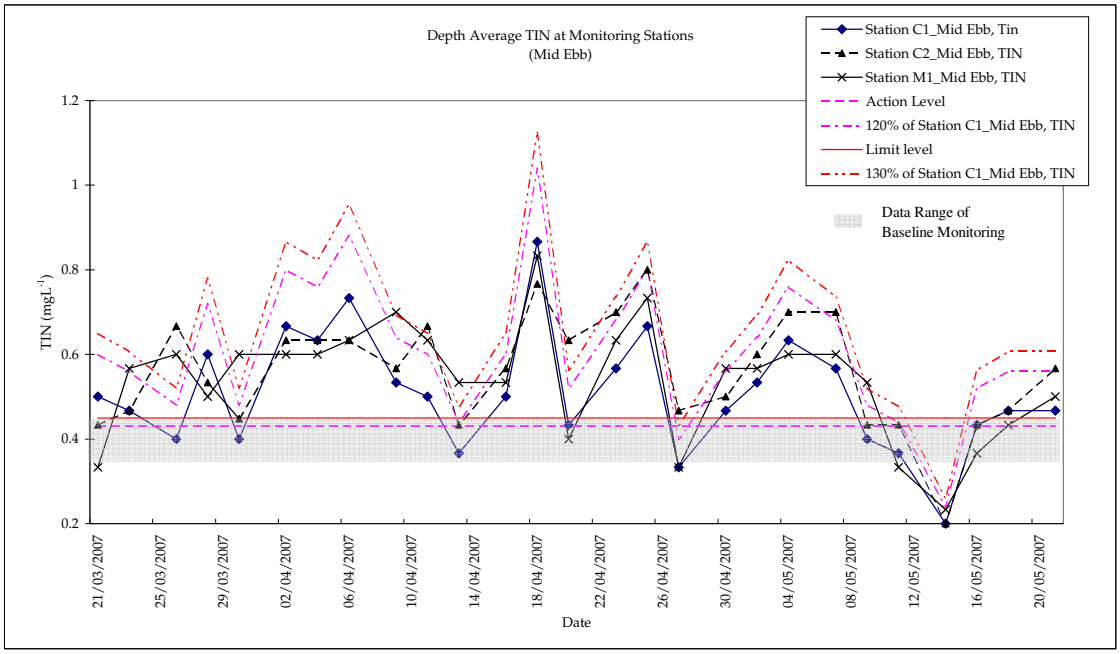
Annex E3 - Additional Marine Water Quality Monitoring Results (Mid-Ebb) from 21 March to 21 May 2007 and 19 November to 14 December 2007



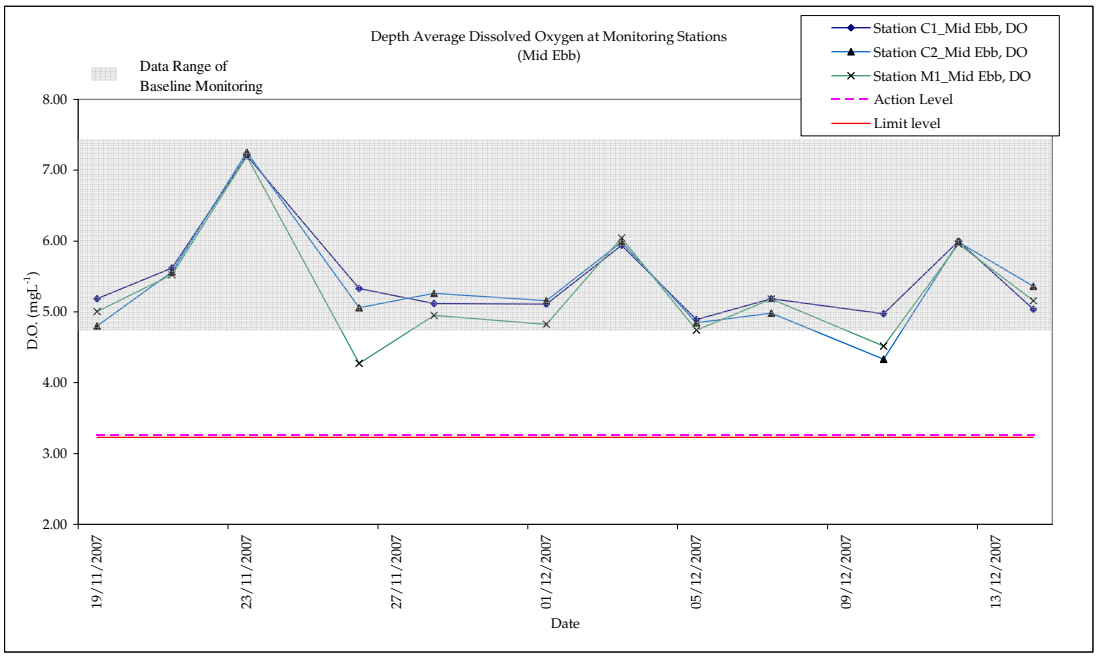


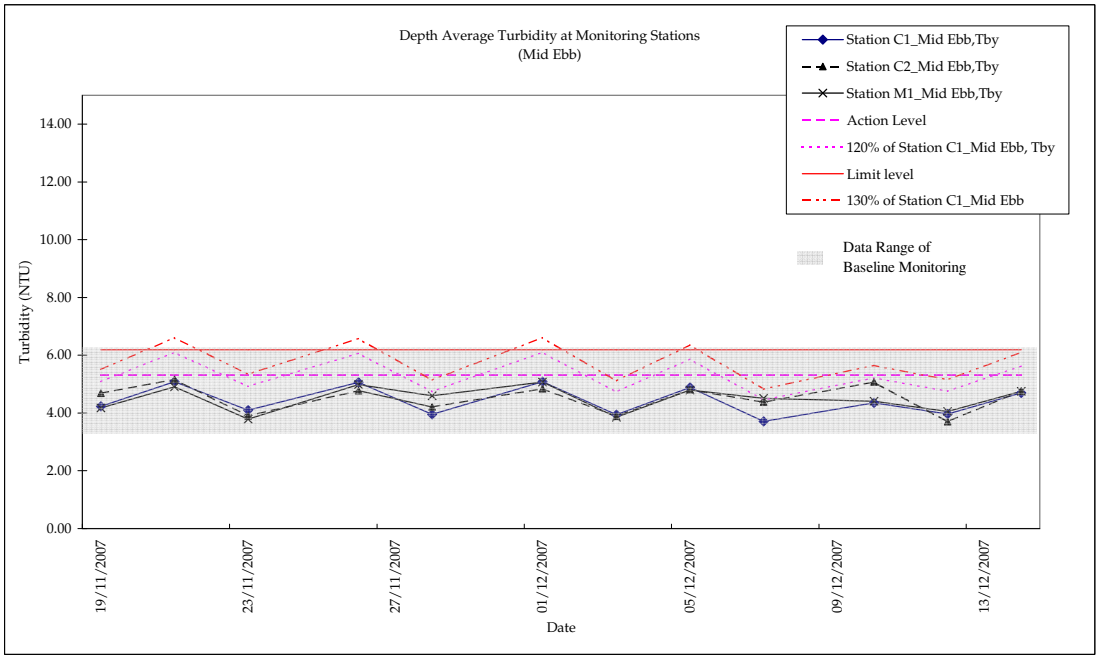
Annex E3 - Additional Marine Water Quality Monitoring Results (Mid-Ebb) from 21 March to 21 May 2007 and 19 November to 14 December 2007



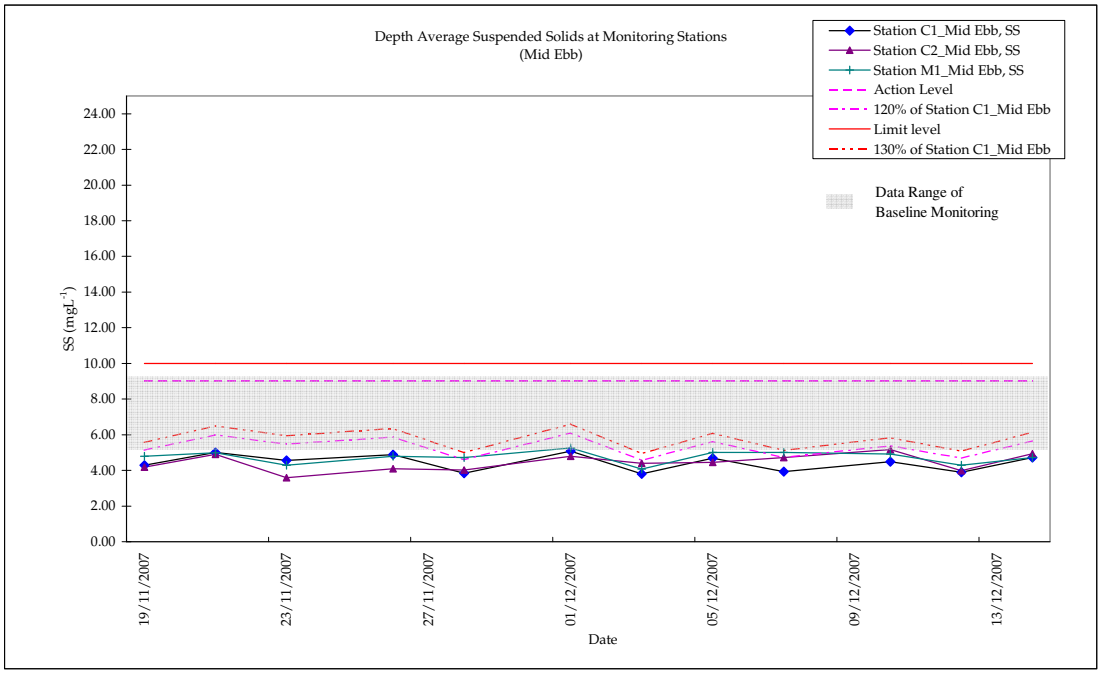


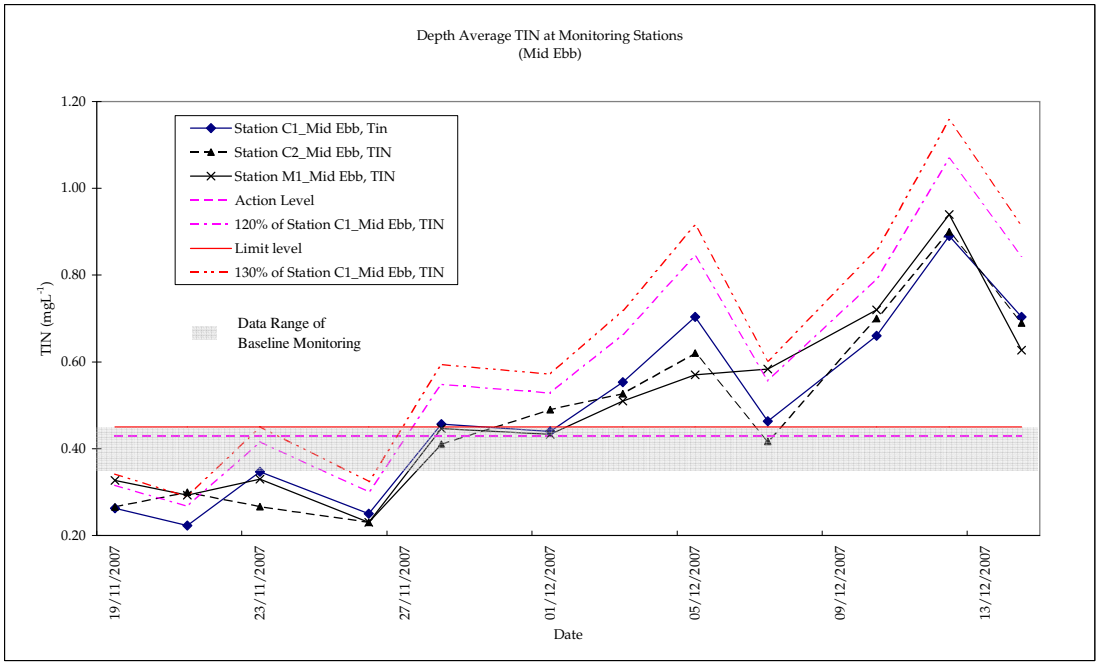
Annex E3 - Additional Marine Water Quality Monitoring Results (Mid-Ebb) from 21 March to 21 May 2007 and 19 November to 14 December 2007



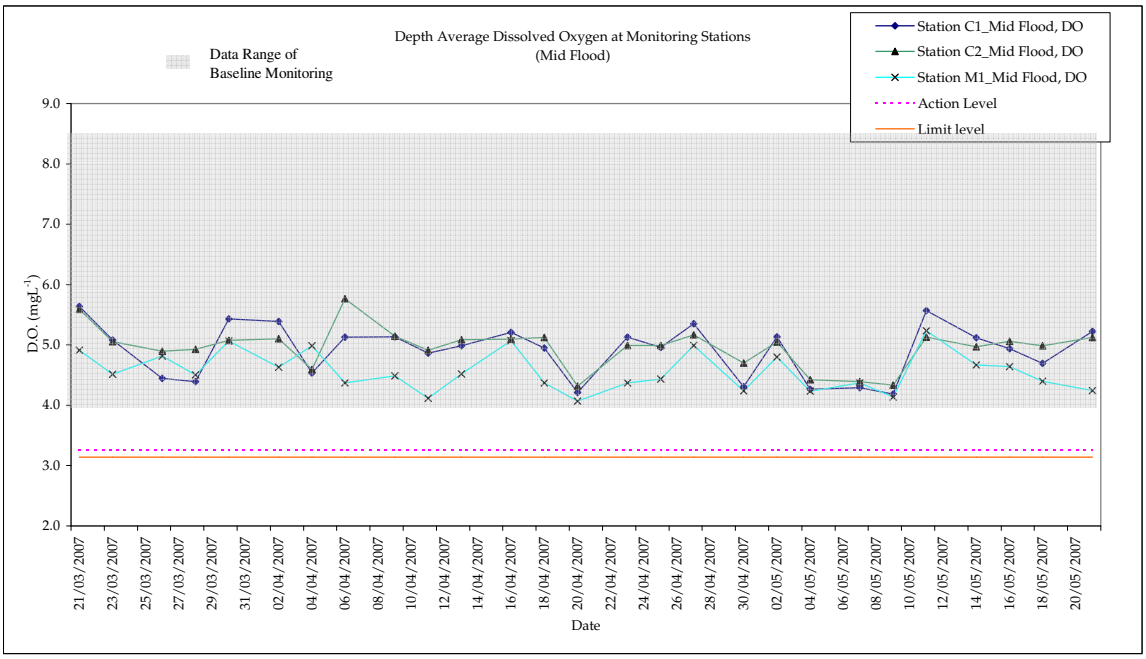


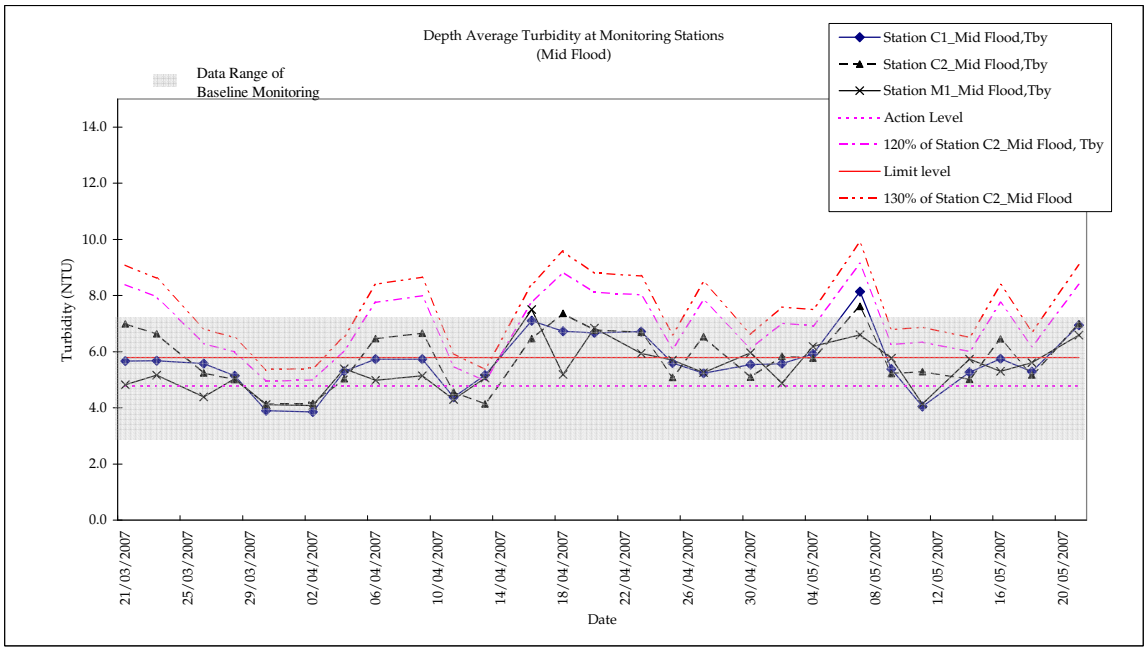
Annex E3 - Additional Marine Water Quality Monitoring Results (Mid-Ebb) from 21 March to 21 May 2007 and 19 November to 14 December 2007



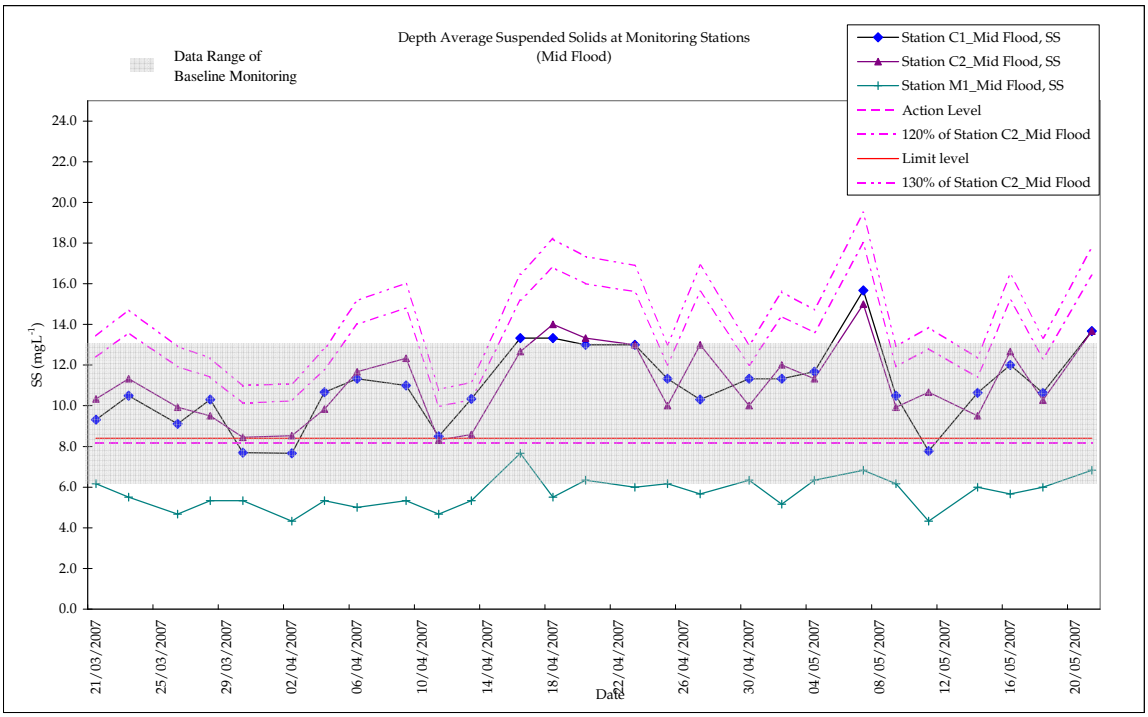


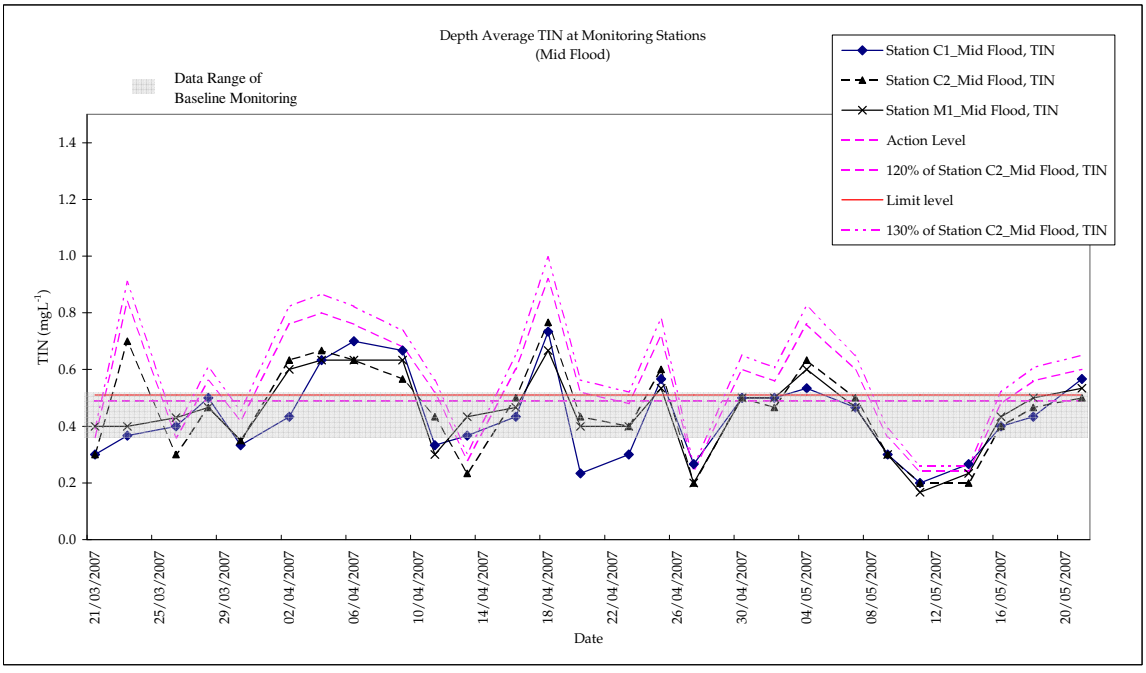
Annex E3 - Additional Marine Water Quality Monitoring Results (Mid-Flood) from 21 March to 21 May 2007 and 19 November to 14 December 2007



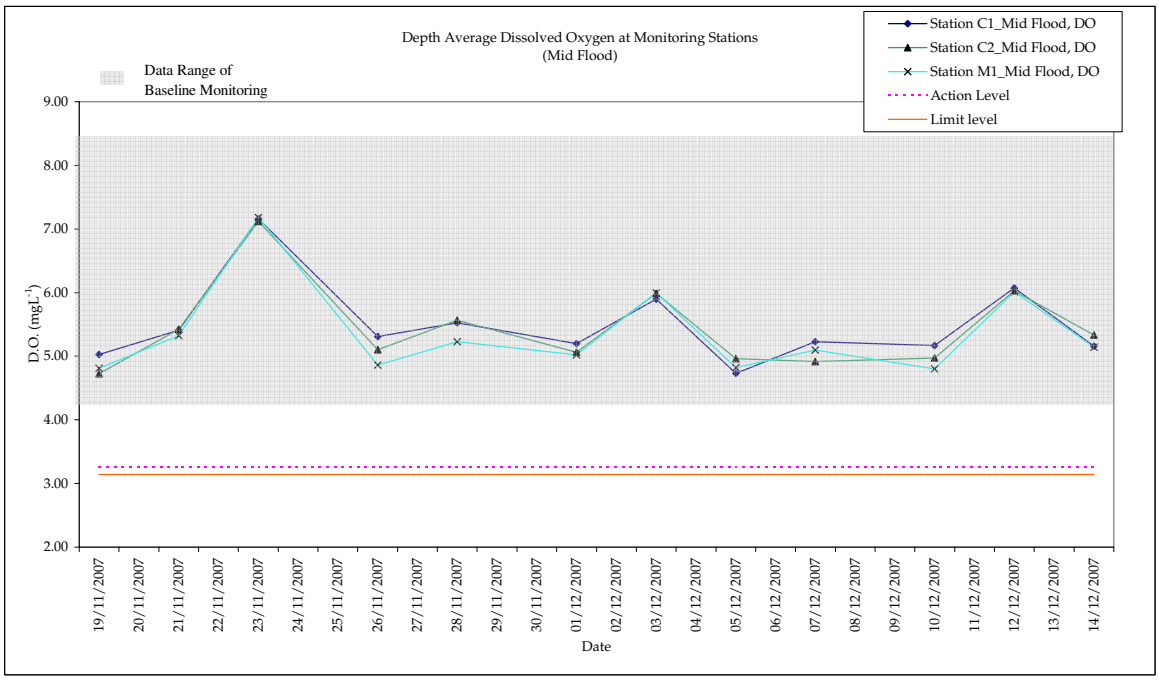


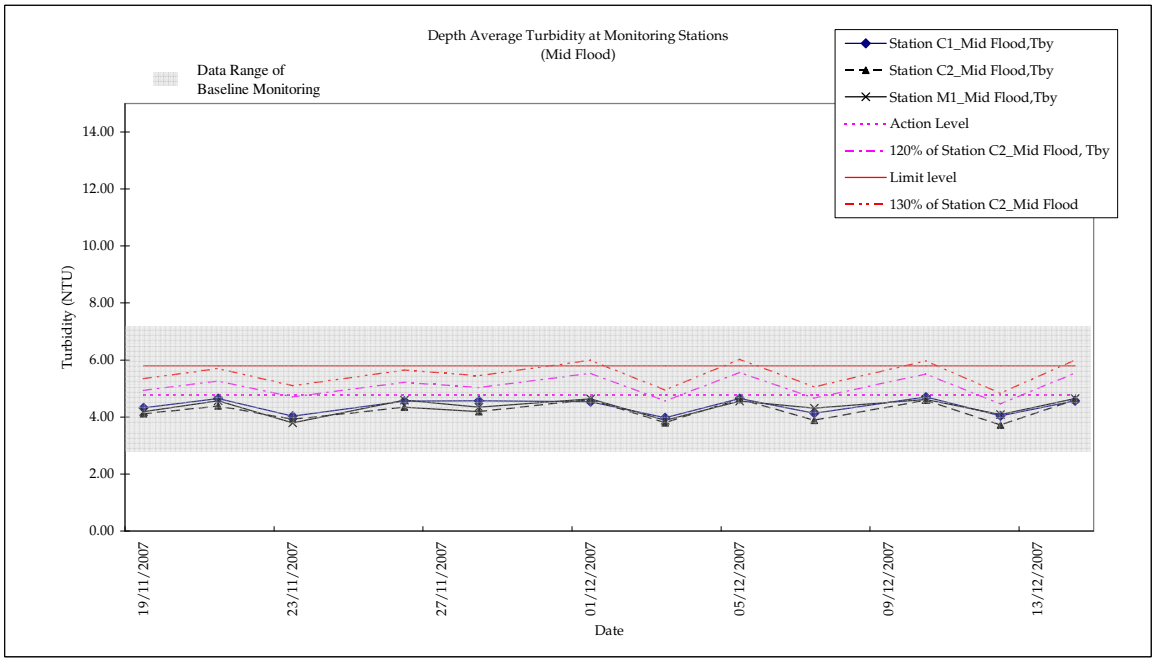
Annex E3 - Additional Marine Water Quality Monitoring Results (Mid-Flood) from 21 March to 21 May 2007 and 19 November to 14 December 2007



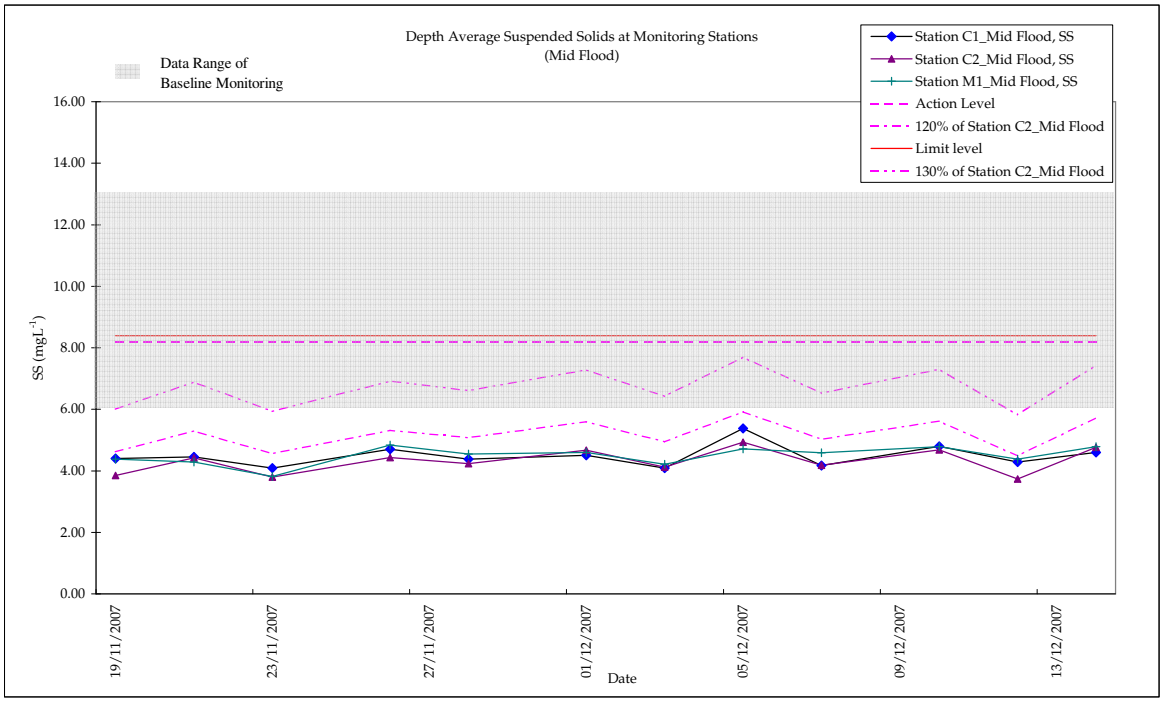


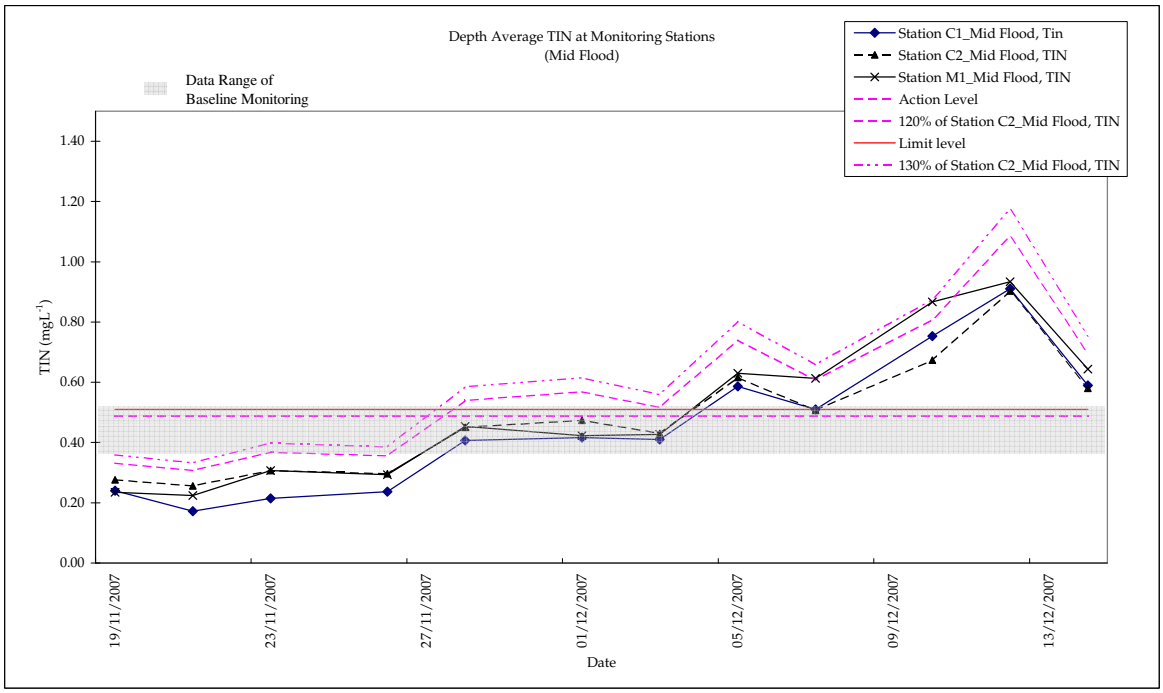
Annex E3 - Additional Marine Water Quality Monitoring Results (Mid-Flood) from 21 March to 21 May 2007 and 19 November to 14 December 2007





Annex E3 - Additional Marine Water Quality Monitoring Results (Mid-Flood) from 21 March to 21 May 2007 and 19 November to 14 December 2007





Annex F

Event / Action Plans for Air and Marine Water Quality Monitoring

Table F1 Event Action Plans for Air Quality

Event Action Level	Action			
	ET	Contractor	ER	IEC
Exceedance for one sample	1. Identify source 2. Notify IEC, ER and Contractor within 1 working day after receiving the laboratory results. 3. Conduct additional monitoring to investigate the causes. 4. Report the investigation results and if exceedance is due to contractor's construction works to the IEC, ER and Contractor. 5. Increase monitoring frequency to once per 2 days for 24-hour TSP and daily for 1-hour TSP until exceedance stops if exceedances are considered related to contractor's construction works and report the results to IEC, ER and Contractor within 1 working day after receiving the laboratory results.	1. Take immediate action to avoid further exceedance and rectify any unacceptable practice. 2. Submit air mitigation proposal to IEC and ER for agreement within 3 working days if ET indicated that exceedance is related to the construction works 3. Implement agreed proposal within a time scale agreed with ER and IEC.	1. Confirm receipt of notification of failure in writing. 2. Notify Contractor. 3. Require Contractor to submit air mitigation proposal. 4. Ensure remedial measures are properly implemented.	1. Review monitoring data and investigation report submitted by ET. 2. Review Contractor's air mitigation proposal and advise the ER accordingly. 3. Supervise and confirm in writing the implementation of remedial measures within 2 working days after receipt of the mitigation proposal.
Exceedance for two or more consecutive samples	1. Identify source 2. Notify EPD, IEC, ER and Contractor within 1 working day after receiving the laboratory results 3. Conduct additional monitoring to investigate the causes. 4. Report the investigation results and if exceedances are due to contractor's construction works to EPD, IEC, ER and Contractor within 3 working days after additional monitoring. 5. Increase monitoring frequency to daily for 24-hour TSP and 1-hour TSP if exceedances are considered related to contractor's construction works until exceedance stops, and report the results to EPD, IEC, ER and Contractor within 1 working day after receiving the laboratory results. 6. If exceedances continue after 1-week monitoring events, request ER to arrange meeting with ER, IEC and contractor to discuss remedial actions.	1. Take immediate action to avoid further exceedance and rectify any unacceptable practice 2. In consultation with the IEC, submit air mitigation proposal to IEC and ER for agreement within 3 working days of notification if ET indicated that exceedances are related to construction works 3. Implement agreed proposal within a time scale agreed with ER and IEC. 4. Amend working methods if appropriate.	1. Confirm receipt of notification of failure in writing. 2. Notify Contractor. 3. Require Contractor to submit air mitigation proposal. 4. Ensure remedial measures are properly implemented.	1. Review monitoring data and investigation report submitted by ET. 2. Discuss amongst ER, ET and Contractor in order to formulate air mitigation proposal. 3. Review Contractor's air mitigation proposal and advise the ER accordingly. 4. Supervise and confirm in writing the implementation of remedial measures within 2 working days after receipt of the mitigation proposal.

Event Limit Level	Action			
	ET	**Contractor**	**ER**	**IEC**
Exceedance for one sample	1. Identify source 2. Notify EPD, IEC, ER and Contractor within 1 working day after receiving the laboratory results 3. Conduct additional monitoring to investigate the causes. 4. Report the investigation results and if exceedances are due to contractor's construction works to EPD, IEC, ER and Contractor within 3 working days after additional monitoring. 5. Increase monitoring frequency to daily if exceedances are considered related to contractor's construction works until exceedance stops, and report the results to EPD, IEC, ER and Contractor within 1 working day after receiving the laboratory results.	1. Take immediate action to avoid further exceedance and rectify any unacceptable practice 2. In consultation with the IEC, submit air mitigation proposal to IEC and ER for agreement within 3 working days of notification if ET indicated that exceedances are related to construction works 3. Implement agreed proposal within a time scale agreed with ER and IEC. 4. Amend working methods if appropriate.	1. Confirm receipt of notification of failure in writing. 2. Notify Contractor. 3. Require Contractor to submit air mitigation proposal. 4. Ensure remedial measures are properly implemented.	1. Review monitoring data and investigation report submitted by ET. 2. Discuss amongst ER, ET and Contractor in order to formulate air mitigation proposal. 3. Review Contractor's air mitigation proposal and advise the ER accordingly. 4. Supervise and confirm in writing the implementation of remedial measures within 2 working days after receipt of the mitigation proposal.
Exceedance for two or more consecutive samples	1. Identify source 2. Notify EPD, IEC, ER and Contractor within 1 working day after receiving the laboratory results 3. Conduct additional monitoring to investigate the causes. 4. Report the investigation results and if exceedances are due to contractor's construction works to EPD, IEC, ER and Contractor within 3 working days after additional monitoring. 5. Increase monitoring frequency to daily if exceedances are considered related to contractor's construction works until exceedance stops, and report the results to EPD, IEC, ER and Contractor within 1 working day after receiving the laboratory results. 6. If exceedances continue after 2 consecutive monitoring events, request ER to arrange meeting with IEC and contractor to discuss remedial actions.	1. Take immediate action to avoid further exceedance and rectify any unacceptable practice 2. In consultation with the IEC, submit air mitigation proposal to IEC and ER for agreement within 3 working days of notification if ET indicated that exceedances are related to construction works 3. Implement agreed proposal within a time scale agreed with ER and IEC. 4. Amend working methods and proposal if appropriate. 5. Stop relevant portion(s) of works as required by ER, ET and IEC	1. Confirm receipt of notification of failure in writing. 2. Notify Contractor. 3. Require Contractor to submit air mitigation proposal. 4. Ensure remedial measures are properly implemented. 5. If exceedances continue arrange meeting with Contractor, IEC and ET and to consider what portion(s) of works should be further mitigated or have to stop.	1. Review monitoring data and investigation report submitted by ET. 2. Discuss amongst ER, ET and Contractor in order to formulate air mitigation proposal. 3. Review Contractor's air mitigation proposal and advise the ER accordingly. 4. Supervise and confirm in writing the implementation of remedial measures within 2 working days after receipt of the mitigation proposal.

Table F2 Event Action Plans for Marine Water Quality

Event	Action			
	ET	**IC(E)**	**ER**	**Contractor**
Action level being exceeded by one sampling day	1. Repeat in-situ measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IC(E) and Contractor; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IC(E) and Contractor; 6. (The above actions should be taken within 1 working day after the exceedance is identified) 7. Repeat measurement on next day of exceedance.	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures. 4. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Discuss with IC(E) on the proposed mitigation measures; 2. Make agreement on the mitigation measures to be implemented. 3. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET and IC(E) and propose mitigation measures to IC(E) and ER; 6. Implement the agreed mitigation measures. 7. (The above actions should be taken within 1 working day after the exceedance is identified)
Action level being exceeded by more than one consecutive sampling days	1. Identify source(s) of impact; 2. Inform IC(E) and Contractor; 3. Check monitoring data, all plant, equipment and Contractor's working methods; 4. Discuss mitigation measures with IC(E) and Contractor; 5. Ensure mitigation measures are implemented; 6. Prepare to increase the monitoring frequency to daily; 7. (The above actions should be taken within 1 working day after the exceedance is identified) 8. Repeat measurement on next working day of exceedance.	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures. 4. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Discuss with IC(E) on the proposed mitigation measures; 2. Make agreement on the mitigation measures to be implemented; 3. Assess the effectiveness of the implemented mitigation measures. 4. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Inform the Engineer and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET and IC(E) and propose mitigation measures to IC(E) and ER within 3 working days; 6. Implement the agreed mitigation measures. 7. (The above actions should be taken within 1 working day after the exceedance is identified)

Event	Action			
	ET	**IC(E)**	**ER**	**Contractor**
Limit level being exceeded by one sampling day	1. Repeat in-situ measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IC(E), contractor and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IC(E), ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit level. 8. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures. 4. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Discuss with IC(E), ET and Contractor on the proposed mitigation measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Assess the effectiveness of the implemented mitigation measures. 5. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Inform the Engineer and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET , IC(E) and ER and propose mitigation measures to IC(E) and ER within 3 working days; 6. Implement the agreed mitigation measures. 7. (The above actions should be taken within 1 working day after the exceedance is identified)
Limit level being exceeded by more than one consecutive sampling days	1. Identify source(s) of impact; 2. Inform IC(E), contractor and EPD; 3. Check monitoring data, all plant, equipment and Contractor's working methods; 4. Discuss mitigation measures with IC(E), ER and Contractor; 5. Ensure mitigation measures are implemented; 6. Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days. 7. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures. 4. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Discuss with IC(E), ET and Contractor on the proposed mitigation measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Assess the effectiveness of the implemented mitigation measures; 5. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the marine work until no exceedance of Limit level. 6. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET , IC(E) and ER and propose mitigation measures to IC(E) and ER within 3working days; 6. Implement the agreed mitigation measures; 7. As directed by the Engineer, to slow down or to stop all or part of the marine work or construction activities. 8. (The above actions should be taken within 1 working day after the exceedance is identified)

Table F3 Event Action Plans for Additional Marine Water Quality Monitoring

Event	Action			
	ET	**IC(E)**	**ER**	**Contractor**
Action level being exceeded by one sampling day	1. Repeat in-situ measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IC(E) and Contractor; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IC(E) and Contractor; (The above actions should be taken within 1 working day after the exceedance is identified) 6. Repeat measurement on next day of exceedance.	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Discuss with IC(E) on the proposed mitigation measures; 2. Make agreement on the mitigation measures to be implemented. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET and IC(E) and propose mitigation measures to IC(E) and ER; 6. Implement the agreed mitigation measures. (The above actions should be taken within 1 working day after the exceedance is identified)
Action level being exceeded by more than one consecutive sampling days	1. Identify source(s) of impact; 2. Inform IC(E) and Contractor; 3. Check monitoring data, all plant, equipment and Contractor's working methods; 4. Discuss mitigation measures with IC(E) and Contractor; 5. Ensure mitigation measures are implemented; 6. Prepare to increase the monitoring frequency to daily; (The above actions should be taken within 1 working day after the exceedance is identified)	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Discuss with IC(E) on the proposed mitigation measures; 2. Make agreement on the mitigation measures to be implemented; 3. Assess the effectiveness of the implemented mitigation measures. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Inform the Engineer and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET and IC(E) and propose mitigation measures to IC(E) and ER within 3 working days; 6. Implement the agreed mitigation measures. (The above actions should be

Event	Action			
	ET	IC(E)	ER	Contractor
	7. Repeat measurement on next working day of exceedance.			taken within 1 working day after the exceedance is identified)
Limit level being exceeded by one sampling day	1. Repeat in-situ measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IC(E), contractor and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IC(E), ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit level. 8. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures. 4. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Discuss with IC(E), ET and Contractor on the proposed mitigation measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Assess the effectiveness of the implemented mitigation measures. 5. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Inform the Engineer and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET , IC(E) and ER and propose mitigation measures to IC(E) and ER within 3 working days; 6. Implement the agreed mitigation measures. 7. (The above actions should be taken within 1 working day after the exceedance is identified)
Limit level being exceeded by more than one consecutive sampling days	1. Identify source(s) of impact; 2. Inform IC(E), contractor and EPD; 3. Check monitoring data, all plant, equipment and Contractor's working methods; 4. Discuss mitigation measures with IC(E), ER and Contractor; 5. Ensure mitigation measures are implemented; 6. Increase the monitoring	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures. (The above actions should be taken within 1 working day after	1. Discuss with IC(E), ET and Contractor on the proposed mitigation measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Assess the effectiveness of the implemented mitigation measures;	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET , IC(E) and ER and propose mitigation measures to IC(E) and ER within 3 working days;

Event	Action			
	ET	**IC(E)**	**ER**	**Contractor**
	frequency to daily until no exceedance of Limit level for two consecutive days. (The above actions should be taken within 1 working day after the exceedance is identified)	the exceedance is identified)	5. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the marine work until no exceedance of Limit level. (The above actions should be taken within 1 working day after the exceedance is identified)	6. Implement the agreed mitigation measures; 7. As directed by the Engineer, to slow down or to stop all or part of the marine work or construction activities. (The above actions should be taken within 1 working day after the exceedance is identified)

Annex G

Summary of Implementation Status

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Construction Phase			
Air Quality	The Air Pollution Control (Construction Dust) Regulation shall be implemented and good site practices shall be incorporated in the contract clauses to minimize construction dust impact. A number of practical measures are listed below: • skip hoist for material transport should be totally enclosed by impervious sheeting; • every vehicle should be washed to remove any dusty materials from its body and wheels before leaving a construction site; • the area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; • where a site boundary adjoins a road, streets or other accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the entire length except for a site entrance or exit; • every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in an area sheltered on the top and the 3 sides; • all dusty materials should be sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet; • the height from which excavated materials dropped should be controlled to a minimum practical height to limit fugitive dust generation from unloading; • the load of dusty materials carried by vehicle leaving a construction site should be covered entirely by clean impervious sheeting to ensure dust materials do not leak from the vehicle; and • instigation of an environmental monitoring auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.	Work site / during construction	√

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Operational Phase			
Air Quality	Some fresh air intakes of the Hong Kong Convention and Exhibition Centre Phase I, Renaissance Harbour View Hotel and Grand Hyatt Hotel (ASRs A4, A5 and A6) should be re-diverted to the new air vent shaft provided for Atrium Link Extension where fresh air intake located at +55.8mPD.	Location of ASRs A4, A5 & A6 / Design & Operation Stage (Long-term and Interim Scenario)	Diversion of fresh air intakes were completed in June 2009.
Air Quality	Monitoring of NO_2 concentration underneath the Atrium Link Extension should be conducted.	Underneath the deckover / The first six months upon completion of the ALE.	Measures to be commenced in operational phase
Construction Phase			
Noise	Good Site Practice: • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program; • silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction program; • mobile plant, if any, should be sited as far from NSRs as possible; • machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and • material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities; Environmental audit shall be carried out to ensure that appropriate noise control measures would be properly implemented.	Construction work areas / Construction period	√

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Operational Phase			
Noise	The following noise reduction measures should be considered as far as practicable during detailed design: • choose quieter plant such as those which have been effectively silenced; • include noise levels specification when ordering new plant; • locate fixed plant away from any NSRs as far as practicable; • locate fixed plant in plant rooms with thick walls or specially designed enclosure; • locate noisy machines in basement or a completely separate building; and • develop and implement a regularly scheduled plant maintenance programme in order to maintain controlled level of noise.	Plant Room / Design and Operation Stage	√
Construction Phase			
Water Quality	There should be no permanent structure in the water channel.	At the ALE sea channel / during operational phase	√
Water Quality	No dredging and no reclamation should be carried out for the Project.	At work sites / during construction phase	√
Water Quality	The marine pile layout as shown in Figure 3 of the Environmental Permit should be adopted. No more than approximately 80 numbers of temporary marine piles should be installed in the ALE sea channel during the construction phase. The dimension of each temporary marine pile should be 800mm nominal diameter. These piles should be driven into position and internal space should not be excavated, i.e. left as soil. No dredging or soil /sediment excavation should be carried out. Marine piles would be removed by reverse driving.	At work sites / during construction phase	√
Water Quality	Two layers of silt curtain should be installed around each of the marine piling and pile extraction locations. The proposed silt curtain should be extended to seabed with sinker blocks and regularly inspected and maintained to ensure it is serviceable.	At marine work sites and nearby seawater intakes / during marine piling and marine pile extraction	√ Notes: Extraction of temporary marine piles were completed on 4 September 2009 and silt curtains are

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	All marine works should be carried out in a controlled manner such that release of sediments into the marine environment would be minimized. All wastewater generated from the piling activities should be collected and be treated before controlled discharge. Spoil should also be properly collected for proper disposal.		no longer necessary to be implemented.
Water Quality	In view of the close vicinity of the seawater intakes to the work site, silt screens are recommended to be deployed at the seawater intakes shown in Figure 5.2 of the EIA report during the whole construction period. Silt screens to be provided at seawater intakes should be regularly checked and maintained to ensure that they are serviceable. Refuse collection vessel should be mobilized on a need basis to collect any floating refuse lost from/ trapped at the work site during the construction period.	At seawater intakes / during the whole construction period	√ Notes: Extraction of temporary marine piles were completed on 4 September 2009 and silt curtains are no longer necessary to be implemented.
Water Quality	Surface run-off from construction sites should be discharged into storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sedimentation basins. Channels or earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Perimeter channels at site boundaries should be provided where necessary to intercept storm runoff from outside the site so that it will not wash across the site. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks. Silt removal facilities, channels and manholes should be maintained and the deposited silt and grit should be removed regularly, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times. Any practical options for the diversion and re-alignment of drainage should comply with both engineering and environmental requirements in order to ensure adequate hydraulic capacity of all drains. Minimum distances of 100 m should be maintained between the discharge points of construction site runoff and the nearby saltwater intakes.	Works areas / construction period	√

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	There is a need to apply to EPD for a discharge license for discharge of effluent from the construction site under the WPCO. The discharge quality must meet the requirements specified in the discharge license. All the runoff and wastewater generated from the works areas should be treated so that it satisfies all the standards listed in the TM-DSS. Reuse and recycling of the treated effluent can minimize water consumption and reduce the effluent discharge volume. The beneficial uses of the treated effluent may include dust suppression, wheel washing and general cleaning. It is anticipated that only a small quantity of wastewater would be generated from the works areas. Any effluent discharge from the construction activities should be diverted away from the sea channel so as to avoid adverse water quality impact. Construction works should be programmed to minimize excavation works in rainy seasons (April to September). If excavation in soil could not be avoided in these months or at any time of year when rainstorms are likely, for the purpose of preventing soil erosion, temporary exposed slope surfaces should be covered e.g. by tarpaulin, and temporary access roads should be protected by crushed stone or gravel, as excavation proceeds. Intercepting channels should be provided (e.g. along the crest / edge of excavation) to prevent storm runoff from washing across exposed soil surfaces. Arrangements should always be in place to ensure that adequate surface protection measures can be safely carried out well before the arrival of a rainstorm.	Works areas / construction period	√
Water Quality	Earthworks final surfaces should be well compacted and the subsequent permanent work or surface protection should be carried out immediately after the final surfaces are formed to prevent erosion caused by rainstorms. Appropriate drainage like intercepting channels should be provided where necessary. Measures should be taken to minimize the ingress of rainwater into trenches. If excavation of trenches in wet seasons is necessary, they should be dug and backfilled in short sections. Rainwater pumped out from trenches or foundation excavations	Works areas / construction period	√

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	should be discharged into storm drains via silt removal facilities. Open stockpiles of construction materials (e.g. aggregates, sand and fill material) on sites should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system. Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers. Discharge of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system.		
Water Quality	Good site practices should be adopted to remove rubbish and litter from construction sites so as to prevent the rubbish and litter from spreading from the site area. It is recommended to clean the construction sites on a regular basis.	Works areas / construction period	√
Water Quality	Under normal circumstances, groundwater pumped out of wells, etc. for the lowering of ground water level in basement or foundation construction should be discharged into storm drains after the removal of silt in silt removal facilities.	Works areas / construction period	√
Water Quality	Water used in ground boring and drilling or rock /soil anchoring should as far as practicable be re-circulated after sedimentation. When there is a need for final disposal, the wastewater should be discharged into storm drains via silt removal facilities.	Works areas / construction period	√
Water Quality	Wastewater generated from the washing down of mixing trucks and drum mixers and similar equipment should whenever practicable be recycled. The discharge of wastewater should be kept to a minimum.	Works areas / construction period	√

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	To prevent pollution from wastewater overflow, the pump sump of any water recycling system should be provided with an on-line standby pump of adequate capacity and with automatic alternating devices. Under normal circumstances, surplus wastewater may be discharged into foul sewers after treatment in silt removal and pH adjustment facilities (to within the pH range of 6 to 10). Disposal of wastewater into storm drains will require more elaborate treatment.		
Water Quality	All vehicles and plant should be cleaned before they leave a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. A wheel washing bay should be provided at every site exit if practicable and wash-water should have sand and silt settled out or removed before discharging into storm drains. The section of construction road between the wheel washing bay and the public road should be paved with backfall to reduce vehicle tracking of soil and to prevent site run-off from entering public road drains.	Works areas / construction period	√
Water Quality	Bentonite slurries used in diaphragm wall and bore-pile construction should be reconditioned and reused wherever practicable. If the disposal of a certain residual quantity cannot be avoided, the used slurry may be disposed of at the marine spoil grounds subject to obtaining a marine dumping licence from EPD on a case-by-case basis. If the used bentonite slurry is intended to be disposed of through the public drainage system, it should be treated to the respective effluent standards applicable to foul sewer, storm drains or the receiving waters as set out in the WPCO Technical Memorandum on Effluent Standards.	Works areas / construction period	√
	Water used in water testing to check leakage of structures and pipes should be reused for other purposes as far as practicable.	Works areas / construction period	√

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	Surplus unpolluted water could be discharged into storm drains. Sterilization is commonly accomplished by chlorination. Specific advice from EPD should be sought during the design stage of the works with regard to the disposal of the sterilizing water. The sterilizing water should be reused wherever practicable. Discharge of sterilization effluent should be properly pre-treated for compliance with TM/WPCO requirements, such as but not limited to total residual chlorine.		
Water Quality	Effluent discharges from building construction and other construction site activities are subject to WPCO control. Before commencing any demolition works, all sewer and drainage connections should be sealed to prevent building debris, soil, sand etc. from entering public sewers/drains. Wastewater generated from building construction activities including concreting, plastering, internal decoration, cleaning of works and similar activities should not be discharged into the stormwater drainage system. If the wastewater is to be discharged into foul sewers, it should undergo the removal of settleable solids in a silt removal facility, and pH adjustment as necessary.	Works areas / construction period	√
Water Quality	Acidic wastewater generated from acid cleaning, etching, pickling and similar activities should be neutralized to within the pH range of 6 to 10 before discharging into foul sewers. If there is no public foul sewer in the vicinity, the neutralized wastewater should be tinkered off site for disposal into foul sewers or treated to a standard acceptable to storm drains and the receiving waters.	Works areas / construction period	√ Note: No acidic wastewater was generated.
Water Quality	Wastewater collected from canteen kitchens, including that from basins, sinks and floor drains, should be discharged into foul sewer via grease traps capable of providing at least 20 minutes retention during peak flow.	Works areas / construction period	√

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	Drainage serving an open oil filling point should be connected to storm drains via a petrol interceptors with peak storm bypass. Vehicle and plant servicing areas, vehicle wash bays and lubrication bays should as far as possible be located within roofed areas. The drainage in these covered areas should be connected to foul sewers via a petrol interceptor. Oil leakage or spillage should be contained and cleaned up immediately. Waste oil should be collected and stored for recycling or disposal in accordance with the Waste Disposal Ordinance.		
Water Quality	It is recommended to provide sufficient chemical toilets in the works areas. The toilet facilities should be more than 30 m from the seafront or any watercourse. A licensed waste collector should be deployed to clean the chemical toilets on a regular basis. Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the nearby environment. Regular environmental audit on the construction site can provide an effective control of any malpractices and can encourage continual improvement of environmental performance on site.	Works areas / construction period	√
Water Quality	Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	Works areas / construction period	√
Water Quality	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas	Works areas / construction period	√

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	appropriately equipped to control these discharges. Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows: • suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport; • chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents; and • storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.		
Water Quality	To minimize the potential water quality impacts from the construction works located at or near the storm system or seafront, the following mitigation measures should be adopted: • the use of less or smaller construction plants may be specified to reduce the disturbance to the seabed; • temporary sewerage system should be designed to prevent wastewater from entering the storm system and sea; • temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from any water courses during carrying out of the construction works; • stockpiling of construction materials and dusty materials should be covered and located away from any water courses; • construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nearby water receivers; • construction activities, which generate large amount of wastewater, should be carried out in a distance away from the waterfront, where practicable;	Works areas / construction period	√

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	• mitigation measures to control site runoff from entering the nearby water environment should be implemented to minimize water quality impacts. Surface channels should be provided along the edge of the waterfront within the work sites to intercept the runoff; • construction effluent, site run-off and sewage should be properly collected and/or treated; • proper shoring may need to be erected in order to prevent soil/mud from slipping into the storm culvert/sea; and • supervisory staff should be assigned to station on site to closely supervise and monitor the works.		
Water Quality	If monitoring of the treated effluent quality from the Works Areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the WPCO license which is under the ambit of regional office (RO) of EPD. The contractor should submit detailed monitoring programme to EPD for approval before commencement of the construction activities.	Works areas / construction period	√
Water Quality	Monitoring of the water quality at the seawater intakes inside the ALE sea channel should be conducted.	ALE sea channel / Before construction period and during installation and removal of temporary marine piles.	√
Water Quality	All barges should be fitted with tight seals to their bottom opening to prevent leakage of materials. The decks of all vessels should be kept tidy and free of oil or other substances that might be accidentally or otherwise washed overboard. Loading of barges should be controlled to prevent splashing of materials to the surrounding environment and barges should under no circumstances be filled to a level which would cause overflowing of material or sediment laden water during loading and transportation. All barges should maintain adequate clearance between vessels and the seabed at all states of the tide and should operate at a reduced speeds to ensure that undue turbidity is not generated by turbulence from vessel movement	Works areas / construction period	√ Note: No barge will be required for the project.

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	or propeller wash.		
Water Quality	Connection of sewage generated from the ALE will be connected to the existing public sewer. For handling, treatment and disposal of other operational stage effluent, the practices outlined in ProPECC PN 5/93 should be adopted where applicable. Consensus from DSD should be sought on technical details of the drainage and sewerage proposals.	Project site / design and construction period	√
Construction Phase			
Waste	Recommendations for good site practices during the construction activities include: • nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all Wastes generated at the site; • training of site personnel in proper waste management and chemical handling procedures; • provision of sufficient waste disposal points and regular collection of waste; • appropriate measures to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; and • regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.	Work site / during the construction period	√
Waste	Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include: • sorting of demolition debris and excavated materials from demolition works to recover reusable/ recyclable portions (ie soil, broken concrete, metal, etc); • segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal; • encourage collection of aluminum cans by individual	Work site / during the construction period	√

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	collectors by providing separate labeled bins to enable this waste to be segregated from other general refuse generated by the work force; • proper storage and site practices to minimize the potential for damage to contamination of construction materials; and • plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste.		
Waste	<u>General Refuse</u> General refuse should be stored in enclosed bins or compaction units separate from C&D material. A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D material. Preferably an enclosed and covered area should be provided to reduce the occurrence of 'wind blown' light material.	Work site / during the construction period	√
Waste	<u>Construction and Demolition Material</u> • In order to minimize the impact resulting from collection and transportation of C&D material for off-site disposal, the C&D material from the following construction activities should be reused and recycled as far as possible to reduce the net amount of C&D material generated from the Project; • a Waste Management Plan should be prepared in accordance with ETWB TCW No. 19/2005; • a recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be proposed; • in order to monitor the disposal of C&D and solid wastes at public filling facilities and landfills and to control fly-tipping, a trip-ticket system should be included. One may make reference to ETWB TCW No.31/2004 for details; • the large amount of C&D waste generated is mainly due to	Work site / during the construction period	√

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	the piling works of large diameter piles' excavation at the sea front site. If however marine sediment is found during pile excavation, the handling and disposal of such wastes will be managed in accordance with the requirements of the DASO and the current ETWB Tech. Circular no. 34/2002.		
Waste	Chemical Wastes If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a Chemical Waste Producer and to follow the guidelines stated in the *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes*. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container Indicating the corresponding chemical characteristics of the chemical waste, such as explosives, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the Chemical Waste Treatment Centre at Tsing Yi, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation. For this Project, the amount of chemical wastes produced would be small.	Work site / during the construction period	√
Operational Phase			
Waste	General Refuse Similar to the existing situation, the main waste type generated during the operation stage of the Project will be general refuse generated by the public and staff. These include waste paper, food wrappings and beverage containers. The disposal of future waste arisings generated at the HKCEC would follow the existing handling and disposal arrangement. Provided proper arrangements are made with licensed contractors to collect the generated waste, adverse waste-related impact is not anticipated	During the operation period	Measures to be commenced in operational phase

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	during the operation stage. It is expected that there will be a 5-7% increase ratio in the future operations.		
Construction Phase			
Landscape & Visual	Due consideration of appearance and view to 'hide' the construction through careful use of: (a) hoarding design; (b) temporary partition walls; (c) screen for hotels; and (d) temporary footbridge.	Entire works area and adjacent hotels	√
Landscape & Visual	Due consideration to protect existing trees.	Entire works area	√
Landscape & Visual	Due consideration of visual impact from construction activities: (a) construction workers access to reach construction areas without passing through hotels and existing HKCEC; and (b) construction light.	Entire works area	√
Operational Phase			
Landscape & Visual	Sensitive soft and hard landscape design for exposed rooftop garden and shady covered area underneath the Atrium Link Extension. Maximize greening opportunity via various in-situ planting and potted planting to achieve 30% of the roof area as planting area for the project.	Roof top and area underneath the Atrium Link Extension	√
Landscape & Visual	Sensitive building architecture to visually reduce the bulkiness of the building structure, to visually break down the scale of the facades, and to create rooftops for greening opportunities.	Building of the Atrium Link Extension	√
Landscape & Visual	Appearance and view considerations: (a) avoid industrial feel of building service elements; (b) interior visual screens for lower levels of the hotels; (c) consider relocation of facilities of interior spaces of hotels; and	Entire proposed works and adjacent hotels	√

Summary of Mitigation Measures Implementation Schedule

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	(d) careful lighting design at roofs and for building façade to avoid night-time glare.		
Landscape & Visual	Transplanting of trees to adjacent locations.	Convention Avenue	√
Landscape & Visual	Reinstatement of existing waterfront public footpaths along Convention Avenue and the existing open spaces near Fenwick Street.	Convention Avenue and Fenwick Street	√

Remark:
√ Compliance of Mitigation Measures
<> Compliance of Mitigation but need improvement
x Non-compliance of Mitigation Measures
▲ Non-compliance of Mitigation Measures but rectified by Hip Hing JV
Δ Deficiency of Mitigation Measures but rectified by Hip Hing JV

Annex H

Waste Flow Table

HKCEC – Atrium Link Extension Project

Name of Project Proponent: HKTDC
Project Commencement Date: August 2006
Construction Completion Date: September 2009

Monthly Summary Waste Flow Table for Year 2006

Year	Actual Quantities of inert C&D Materials (in 10^3 Kg) [1]					Actual Quantities of C&D Wastes (in 10^3 Kg) [4]									
	Total Quantity Generated	Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Steel Materials				Paper/cardboard packaging		Chemical Waste		General refuse	Other waste
						Demolition of existing Atrium Link		Demolition of existing working platform							
	(a)	(b)	(c)	(d)	(a)-(b)-(c)-(d)	Recycle	Disposal	Recycle	Disposal	Recycle	Disposal	Recycle	Disposal	Disposal	Disposal
January	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
February	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
March	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
April	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
May	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
June	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
July	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
August	264	0	1	0	263	0	0	0	0	0	1	0	0	50	81
Septembe	1509 [2]	0	2	0	1507	0	0	0	0	0	1	0	0	60	215
October	1380	0	2 [3]	0	1378	30 [5]	0	0	0	0	1	0	0	55	532[6]
November	2091	0	1 [3]	0	2090	100 [5]	0	0	0	0	1.5	0	0	50	115[6]
December	1717	0	1 [3]	0	1716	80 [5]	0	0	0	0.2	0.1	0	0	60	50
Total	6961	0	7	0	6954	210	0	0	0	0.2	4.6	0	0	275	993

Note:
[1] Inert C&D materials include bricks, concrete, building debris, rubble and excavated soil.
[2] Inert C&D material mainly generated from construction of foundation.
[3] Reused for building bunds and making sand bags.
[4] C&D wastes include steel materials generated from demolition, paper / cardboard packaging waste, chemical waste and other wastes such as general refuse. Wastes other than general refuse will be disposed of at Tsueng Kwan O Area 137 temporary construction waste sorting facility.
[5] Waste from demolition of steel structure at existing Atrium Link of HKCEC (Phase 2).
[6] Wastes include materials associated with additional and alternation (A&A) works of HKCEC (e.g. demolition of E&M equipment and finishing materials, bamboo scaffolding) and piling works.

HKCEC – Expansion Project

Name of Project Proponent: HKTDC
Project Commencement Date: August 2006
Construction Completion Date: September 2009

Monthly Summary Waste Flow Table for Year 2007

Year	Actual Quantities of inert C&D Materials (in 10^3 Kg) [1] [2]					Actual Quantities of C&D Wastes (in 10^3 Kg) [4]									
	Total Quantity Generated	Broken Concrete [3]	Reused in the Contract	Reused in other Projects [3]	Disposed as Public Fill	Steel Materials				Paper/cardboard packaging		Chemical Waste (L)		General refuse	Other waste [6]
						Demolition of existing Atrium Link		Demolition of existing working platform							
	(a)	(b)	(c)	(d)	(a)-(b)-(c)-(d)	Recycle	Disposal	Recycle	Disposal	Recycle	Disposal	Recycle	Disposal	Disposal	Disposal
January	924	462	0.5	0	462	90 [5]	0	0	0	0.2	0.05	0	0	60	80
February	814	110	0.5	0	704	5 [5]	0	0	0	0.2	0.07	0	288	66	55
March	583	66	0.5	0	517	0	0	0	0	0	0.05	0	0	77	33
April	1034	165	0.5	0	867	0	0	0	0	0.4	0.05	0	0	55	44
May	275.5	33	0.5	0	242	10 [5]	0	0	0	0.4	0.04	0	0	55	154
June	1654	0	0	0	1654	50	0	0	0	0.5	0.03	0	0	80	150
July	614	0	0.5	0	613.5	60	0	0	0	0.5	0.04	0	0	85	298
August	944	0	0.5	0	943.5	1400	0	0	0	0.6	0.01	0	0	70	380
Sep	310	0	0.5	0	309.5	514	0	0	0	0.5	0.02	0	0	50	245
October	406.5	0	0.5	0	406	100	0	0	0	0.5	0.01	0	0	40	38
November	1016.5	0	0.5	0	1016	20	0	0	0	0.5	0.02	0	0	45	150
December	297	0	0.5	0	296.5	0.5	0	0	0	0.5	0.02	0	0	25	67
Total	8872.5	836	5.5	0	8031	2249.5	0	0	0	4.8	0.41	0	288	708	1694

Note:
[1] Inert C&D materials include bricks, concrete, building debris, rubble and excavated soil.
[2] Inert C&D material mainly generated from demolition of atrium link.
[3] Broken concrete fro recycling into aggregates.
[4] C&D wastes include steel materials generated from demolition, paper / cardboard packaging waste, chemical waste and other wastes such as general refuse. Wastes other than general refuse will be disposed of at Tsueng Kwan O Area 137 temporary construction waste sorting facility.
[5] Waste from demolition of steel structure at existing Atrium Link of HKCEC (Phase 2).
[6] Wastes include materials associated with additional and alternation (A&A) works of HKCEC (e.g. demolition of E&M equipment and finishing materials, bamboo scaffolding) and piling works.

HKCEC – Expansion Project

Name of Project Proponent: HKTDC
Project Commencement Date: August 2006
Construction Completion Date: September 2009

Monthly Summary Waste Flow Table for Year 2008

Year	Actual Quantities of inert C&D Materials (in 10^3 Kg) [1] [2]					Actual Quantities of C&D Wastes (in 10^3 Kg) [4]									
	Total Quantity Generated	Broken Concrete [3]	Reused in the Contract	Reused in other Projects [3]	Disposed as Public Fill	Steel Materials				Paper/cardboard packaging		Chemical Waste (L)		General refuse	Other waste [6]
						Demolition of existing Atrium Link		Demolition of existing working platform							
	(a)	(b)	(c)	(d)	(a)-(b)-(c)-(d)	Recycle	Disposal	Recycle	Disposal	Recycle	Disposal	Recycle	Disposal	Disposal	Disposal
January	495	0	0	0	495	10 [5]	0	0	0	0.2	0.04	0	0	30	122
February	539	0	0	0	539	20 [5]	0	0	0	0.5	0.02	0	0	33.4	20
March	485	0	0	0	485	5	0	0	0	0.5	0.02	0	0	20.0	59
April	545	0	0	0	545	1	0	0	0	0.5	0.02	0	0	25.0	80
May	35	0	0	0	35	0	0	0	0	1.0	0.05	0	0	28.0	70
June	40	0	0	0	40	0	0	0	0	1.5	0.05	0	0	44.0	63.3
July	83	0	0	0	83	50	0	0	0	1.5	0.05	0	0	67.0	43.8
August	217.5	0	0	0	217.5	60	0	0	0	2.0	0.05	0	0	59.0	257.0
Sep	9.0	0	0	0	9.0	50	0	0	0	2.5	0.05	0	0	74.0	126.7
October	15	0	0	0	15	10	0	0	0	3.0	0.05	0	0	40.0	90.5
November	20	0	0	0	20	0	0	0	0	4.0	0.05	0	0	130.5	151.0
December	350.5	0	0	0	350.5	0	0	0	0	3.0	0.05	0	0	462.0	336.5
Total	2819	0	0	0	2819	196[5]	0	0	0	23.2	0.45	0	0	972.9	1329.3

Note:
[1] Inert C&D materials include bricks, concrete, building debris, rubble and excavated soil.
[2] Inert C&D material mainly generated from demolition of atrium link.
[3] Broken concrete fro recycling into aggregates.
[4] C&D wastes include steel materials generated from demolition, paper / cardboard packaging waste, chemical waste and other wastes such as general refuse. Wastes other than general refuse will be disposed of at Tsueng Kwan O Area 137 temporary construction waste sorting facility.
[5] Waste from demolition of steel structure at existing Atrium Link of HKCEC (Phase 2).
[6] Wastes include materials associated with additional and alternation (A&A) works of HKCEC (e.g. demolition of E&M equipment and finishing materials, bamboo scaffolding) and piling works.

HKCEC – Expansion Project

Name of Project Proponent: HKTDC
Project Commencement Date: August 2006
Construction Completion Date: September 2009

Monthly Summary Waste Flow Table for Year 2009

Year	Actual Quantities of inert C&D Materials (in 10^3 Kg) [1] [2]					Actual Quantities of C&D Wastes (in 10^3 Kg) [4]									
	Total Quantity Generated	Broken Concrete [3]	Reused in the Contract	Reused in other Projects [3]	Disposed as Public Fill	Steel Materials				Paper/cardboard packaging		Chemical Waste (L)		General refuse	Other waste [6]
						Demolition of existing Atrium Link		Demolition of existing working platform							
	(a)	(b)	(c)	(d)	(a)-(b)-(c)-(d)	Recycle	Disposal	Recycle	Disposal	Recycle	Disposal	Recycle	Disposal	Disposal	Disposal
January	485.8	0	0	0	485.8	6 [5]	0	0	0	0.3	0.05	0	0	815	370.5
February	105.0	0	0	0	105.0	0	0	0	0	0.3	0.05	0	0	1610	586.5
March	305.0	0	0	0	305.0	0	0	3.0	0	0.3	0.05	0	0	927.5	250.8
April	200.0	0	0	0	200.0	0	0	3.0	0	0.3	0.02	0	0	312.5	210.5
May	825.0	0	0	0	825.0	0	0	3.0	0	0.3	0.02	0	0	115	105
June	400.0	0	0	0	400.0	0	0	3.0	0	0.3	0.01	0	0	100	80
July	350	0	0	0	350	0	0	3.0	0	0.3	0.01	0	0	80	60
August	100	0	0	0	100	0	0	2.0	0	0.3	0.01	0	0	50	50
Sep	50	0	0	0	50	0	0	0	0	0.1	0.01	0	0	20	20
October	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
November	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
December															
Total	2821	0	0	0	2821	6[5]	0	17	0	2.5	0.23	0	0	3840.0	1733

Note:
[1] Inert C&D materials include bricks, concrete, building debris, rubble and excavated soil.
[2] Inert C&D material mainly generated from demolition of atrium link.
[3] Broken concrete fro recycling into aggregates.
[4] C&D wastes include steel materials generated from demolition, paper / cardboard packaging waste, chemical waste and other wastes such as general refuse. Wastes other than general refuse will be disposed of at Tsueng Kwan O Area 137 temporary construction waste sorting facility.
[5] Waste from demolition of steel structure at existing Atrium Link of HKCEC (Phase 2).
[6] Wastes include materials associated with additional and alternation (A&A) works of HKCEC (e.g. demolition of E&M equipment and finishing materials, bamboo scaffolding) and piling works.

Annex I

Approval Letter for Termination of Construction Phase EM&A Programme by EPD

本署檔號 OUR REF: (4) in EP2/H5/A/14 Pt.10
來函檔號 YOUR REF:
電話 TEL. NO.: 2835 1155
圖文傳真 FAX NO.: 2591 0558
電子郵件 E-MAIL:
網址 HOMEPAGE: http://www.epd.gov.hk

Environmental Protection Department
Branch Office
28th Floor, Southorn Centre,
130 Hennessy Road,
Wan Chai, Hong Kong.

環境保護署分處
香港灣仔
軒尼詩道
一百三十號
修頓中心廿八樓

4 November 2009

Urgent By Post & Fax: 21699023

Hong Kong Trade Development Council,
Level 1, Shop No. 11, Expo Galleria,
1, Harbour Plaza, Wanchai, Hong Kong
(Attn: Ms. Jocelyn CHUNG, Deputy Head, HKCEC Extension Project)

Dear Ms. Chung,

Environmental Impact Assessment Ordinance (EIAO), Cap. 499
Project Title: Hong Kong Convention and Exhibition Centre Expansion Project
Environmental Permit No. : EP-239/2006/B
Termination of Construction Phase EM&A Programme

I refer to the letter (ref: AKWL:VCML:JWHW:lc1:98705/EN100-776) dated 28 October 2009 from your consultant, AECOM, submitting to us the captioned proposal for termination of construction phase EM&A programme.

As stated in the submitted information/documents, all major construction works of the captioned Project have been completed including that the removal of all temporary marine piles was completed in September 2009, the owners/management parties of the existing monitoring stations and nearby seawater intakes have no objection to the proposed termination of the monitoring / have no outstanding complaint. The recent monitoring results generally fall within the corresponding ranges of baseline conditions. The proposal has been certified by the ET Leader, verified by the IEC and supported by the consulting engineer - AECOM.

Given the above information, we agree to the captioned proposal. Please follow up with the remaining EM&A programme including the submission of the construction stage Final EM&A Report and the implementation of operational EM&A programme.

Sent to: Marcus Ip Ref:
Received by: Date:
Action taken:
→ prepare Final EM&A Report
→ terminate air monitoring.
Date Received by ERM
Log Ref: IF-1106

Yours sincerely,

(Victor YEUNG)
Senior Environmental Protection Officer
for Director of Environmental Protection

c.c.

AECOM	(Attn: Mr. Albert Li)	Fax: 2317 5901
IEC / Nature & Technologies	(Attn: Dr. Gabriel Lam)	Fax: 2511 0922
ET Leader / ERM	(Attn: Mr Marcus Ip)	Fax: 2723 5660
Hip Hing – Ngo Kee JV	(Attn: Mr. Eric Lau)	Fax: 2845 9295

c.c. internal: S(RS)4, S(MA)3

Annex J

Site Handover Record

Hong Kong Convention and Exhibition Centre-Expansion Project

Handover Record Form

Location: Street Level of Short Term Tenancy Ref: HO – 022

Handover Date : 6/11/2009

Description of Works / Items for Handover:

1. Term Tenancy - NHX-347, ~~THK 1732~~ , ~~GLA-HK-840~~, as attached plan .
2. Transplanted trees ~~and retained trees~~ as attached list .
3. .WR1A for Convention Avenue (Original to Kiu Lok)

Prepared and Handover by HHJV (Andy Lam) Date : 6/11/2009	Witnessed by W&O : (Jason Chung) Date : 6/11/09
Acknowledged by HKTDC / Employer's Representative (CHAU CHOK KEI) Date: 6/11/09	Witnessed by AECOM (Vera Chan) Date: 6/11/09
Received by Kiu Lok (Wu Chi Keung) Date: 6-11-09	Received by ~~HKCEC~~ ( ) Date :

協興建築聯營
HIP HING JOINT VENTURE
新創建集團成員 Member of NWS Holdings

HKCEC Expansion Project

Handover inspection Record for Short Term Tenancy NHX 347

Handover date : 6/ 11/ 2009

Present : TDC , Kiu Lok , AECOM , W&O (H.K.) , W&O (BS) , Earthasia / HHJV

Defect / Follow up action by HHJV :

1. Ballard pole along Convention Avenue was in-completed.
2. Temporary fencing of Lifting platform .
3. Metal fencing door for pipe duct enclosure was in-completed.
4. Irrigation point at Convention Avenue is still outstanding , HHJV would undertake to execute till water supply connection .
5. Railing of ramp at Expo Drive was in-completed.
6. WR1A Form at Existing Site Office area is still outstanding .
7. Temporary fencing of Electrical cabinet at Existing Site Office .
   Submit contact person of HHJV for emergency call.
8. Maintenance the 20 no.s transplanted trees during DLP .
9. Defects issued by Designer / Consultant to be rectified.

Recorded by : Andy Lau

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HHJV - HKCEC Expansion Project
Transplanted and Retained Tree Report(Up to 15 Aug 09)

Tree No.	Quantity	Retained	Transplanted	Existing Tree				
				Species		Existing Size		
				Botanical Name	Chinese Name	Height (m)	Crown Spread (m)	Trunk Diameter (m)
T1	1		x	Acacia Confusa	台灣相思	2	1.5	0.1
T2	1		x	Casuarina Equisetifolia	木麻王	1.8	1	0.1
T3	1		x	Acacia Confusa	台灣相思	2	1.5	0.1
T4	1		x	Acacia Confusa	台灣相思	2	2	0.1
T5	1		x	Bauhinja Blakeana	洋紫荊	6	4	0.3
T5a	1		x	Callistemon Viminahs	串錢柳	2	1	0.05
T6	1		x	Bauhinja Blakeana	洋紫荊	6	4	0.3
T7	1		x	Hibiscus Tilaceus	黃槿	8	5	0.5
T8	1		x	Bauhinja Blakeana	洋紫荊	3	1.5	0.2
T9	1		x	Bauhinja Blakeana	洋紫荊	2.5	1	0.1
T10	1		x	Bauhinja Blakeana	洋紫荊	3.5	1.5	0.2
~~T11~~	~~1~~	~~x~~		~~Bauhinja Blakeana~~	~~洋紫荊~~	~~3.5~~	~~3~~	~~0.2~~
T12	1	x		Bauhinja Blakeana	洋紫荊	4	3.5	0.2
~~T13~~	~~1~~	~~x~~		~~Hibiscus Tilaceus~~	~~黃槿~~	~~8~~	~~5~~	~~0.5~~
Group A	9		x	Cinnamomum Camphora(9nos.)	樟樹	1.5-2	2	0.15

6/14/09