



## Permanent Aviation Fuel Facility (EP-262/2007/B)

**Eighth Quarterly Environmental Monitoring and Audit Report – October 2008 to December 2008**

19 January 2009

**Environmental Resources Management**

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

[www.erm.com](http://www.erm.com)



## Permanent Aviation Fuel Facility for Hong Kong International Airport

### Environmental Certification Sheet EP-262/2007/B


#### Reference Document/Plan

Document/ <del>Plan to be Certified</del> / Verified:	Eighth Quarterly EM&A Report - Oct 2008 to Dec 2008
Date of Report:	19 January 2009
Date received by ET:	19 January 2009
Date received by IEC:	19 January 2009


#### Reference EM&A Manual Recommendation

EM&A Manual Recommendation:	Sections 13.5 and 13.5.3
Content:	EM&A Reports
13.5 A maximum of 4 copies of each EM&A Report shall be submitted	
13.5.3 The ET Leader will submit Quarterly EM&A Summary Reports for the construction phase EM&A works only.	

#### ET Certification

I hereby certify that the above referenced document/ <del>plan</del> complies with the above referenced sections of the EM&A Manual recommendation	
Craig A Reid, Environmental Team Leader:	
Date:	19 January 2009

#### IEC Verification

I hereby verify that the above referenced document/ <del>plan</del> complies with the above referenced sections of the EM&A Manual recommendation	
Dr Guiyi Li, Independent Environmental Checker:	
Date:	22 Jan 2009

Notes: EP-262/2007/B has replaced the former EP-262/2007/A, EP-262/2007 and EP-139-2002/A for the PAFF project after the resubmission of revised EM&A Manual and revised EIA Report respectively.

**Permanent Aviation Fuel Facility (EP-262/2007/B)  
Eighth Quarterly Environmental Monitoring and Audit Report  
October 2008 to December 2008**


19 January 2009

Prepared by: Karen Lui/Clement Pang/Craig A Reid

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For and on behalf of  
Environmental Resources Management

Approved by: Craig A Reid

Signed: 

Position: Environmental Team Leader

Date: 19 January 2009

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## **EXECUTIVE SUMMARY**

The construction works for the Permanent Aviation Fuel Facility resumed on 9 July 2007. This **eighth** quarterly Environmental Monitoring and Audit (EM&A) report presents the EM&A work carried out during the period from **1 October to 31 December 2008** in accordance with the *EM&A Manual*.

### *Breaches of all Action and Limit Levels*

No exceedances of any Action and Limit Levels applicable to the project were observed during the reporting period.

### *Complaint Log*

No environmental complaint was received during the reporting period.

### *Notifications of any Summons and Successful Prosecutions*

No environmental summons or prosecutions was received in this reporting period.

### *Reporting Changes*

There was no reporting changes in the reporting period.

### *Future Key Issues*

- Dust release and suppression;
- Dredging activities; and
- Water quality monitoring and dolphin monitoring during dredging activities.

Leighton Contractors (Asia) Limited (LCAL) has appointed ERM-Hong Kong, Limited (ERM) as the Environmental Team (ET) to implement the Environmental Monitoring and Audit (EM&A) programme for the Permanent Aviation Fuel Facility (the Project) during construction works.

The construction works for PAFF commenced in November 2005 based upon the previous EIA (EIAO Register Number AEIAR-062-2002) conducted and the Environmental Permit EP-139/2002 granted on the 28<sup>th</sup> August 2002. Due to minor changes to the detailed layout of the site and the site boundary, application for Variation to the Environmental Permit (VEP) (VEP-133/2004) was submitted to the Director of Environmental Protection (DEP) for approval. The variation to the EP (EP-139/2002/A) was granted by EPD in February 2004.

However, the decision by EPD to grant the above Environmental Permit was subject to a Judicial Review. The Judicial Review sided in the favour of the DEP, as did the subsequent Judgement from the Court of Appeal from the High Court for Judicial Review in March 2005. However, the DEP's decision to grant the EP was quashed by the Judgement of the Court of Final Appeal of July 2006.

The construction works were stopped following the Judgement of the Court of Final Appeal of July 2006. As such, in order to continue with the construction of the project, the project went through the statutory procedures under the EIAO again with a new design in order to obtain an environmental permit. The revised EIA was submitted in 2007 and the environmental permit (EP-262/2007) was granted in May 2007. EP-262/2007 has been amended to EP262/2007/A and issued by the EPD on 30 November 2007.

It should be noted that at the time of reporting, a further Variation to the Environmental Permit has been approved, primarily to allow for dredging works to continue during March 2008. As such, EP-262/2007/A has been amended to EP-262/2007/B and issued by the EPD on 27 February 2008.

The construction works and EM&A requirements resumed on 9 July 2007 following the latest requirements of the EP-262/2007 and EM&A Manual. Details regarding the EM&A requirements and changes should refer to the updated EM&A Manual. For the marine works, all piling activities were completed before the previous suspension of construction works in 2006.

## 1.1

### **PURPOSE OF THE REPORT**

This is the **eighth** EM&A Report which summarizes the monitoring results and audit findings for the EM&A programme during the reporting period from **1 October** to **31 December 2008**.

## 1.2 KEY CONTACT INFORMATION

Key contact information of the Project is presented in *Table 1.1*.

**Table 1.1** *Contact Information*

Name	Position	Telephone	Facsimile	E-mail
<b>Airport Authority Hong Kong - Environmental Permit Holder</b>				
Mr Amin Ebrahim	Assistant General Manager Aviation Logistics	2183 3108	2824 2786	ebraa@hkairport.com
<b>Contractor - Leighton (Asia) Construction Limited</b>				
Brian Gillon	Project Director	2823 1111	2529 8784	brian.gillon@leightonasia.com
Boyd Merrett	Project Manager	2404 8900	2404 0081	boyd.merrett@leightonasia.com
<b>Franchisee's Site Representative - ECO Aviation Fuel Development Limited</b>				
Philip Siu	Franchisee's Site Representative	2963 2820	2563 6311	philip.siu@towngas.com
<b>Environmental Team - ERM-Hong Kong Limited</b>				
Craig Reid	Environmental Team Leader	2271 3000	2723 5660	craig.reid@erm.com
<b>Independent Environmental Checker - Hyder Consulting Limited</b>				
Dr Kwok-leung Pun	Independent Environmental Checker	2911 2233	2805 5028	KwokLeung.Pun@hyderconsulting.com



## 2 ENVIRONMENTAL STATUS

### 2.1 PROJECT AREA

The project area is in Area 38 of Tuen Mun and the pipelines are located at Urmston Road between Tuen Mun Area 38 and Sha Chau. The site is illustrated in *Annex A*.

### 2.2 ENVIRONMENTAL SENSITIVE RECEIVERS

No air and noise sensitive receivers were identified close to the project area. However, water sensitive receivers and ecological sensitive receivers were identified in the EIA study, and are shown in *Annex B*.

### 2.3 MAJOR CONSTRUCTION ACTIVITIES

A summary of the major works undertaken in this reporting period is shown in *Table 2.1*. Dredging operation has been suspended from 1 April to 31 August 2008 and was resumed on 1 September 2008. *Table 2.2* presented the cumulative quantity of excavated materials up to 31 December 2008. Daily and cumulative dredging production rates are illustrated in *Figure 2.1*.

*Table 2.1 Summary of Works Undertaken During the Reporting Period*

Area	Works undertaken
Tuen Mun Area 38	Tank Farm and Bund Wall Construction Permanent Drainage Construction Operational & Fire Services Buildings Construction Jetty Works (Non-piling)
Submarine Pipeline Route	Dredging Operations

*Table 2.2 Cumulative Quantity of Excavated Materials up to 31 December 2008*

Type of Excavated Materials	Cumulative Bulk Volume (m <sup>3</sup> )
<i>From 17 December 2007 to 31 March 2008</i>	
Contaminated Mud	105,974
Uncontaminated Mud	97,815
<i>From 1 September to 31 December 2008</i>	
Contaminated Mud	0
Uncontaminated Mud	117,967

### 2.4 MONITORING SCHEDULE OF THE REPORTING PERIOD

Daily water quality monitoring during dredging activities was recommenced on 1 September 2008. The monitoring schedule conducted during the reporting month is presented in *Annex C*.

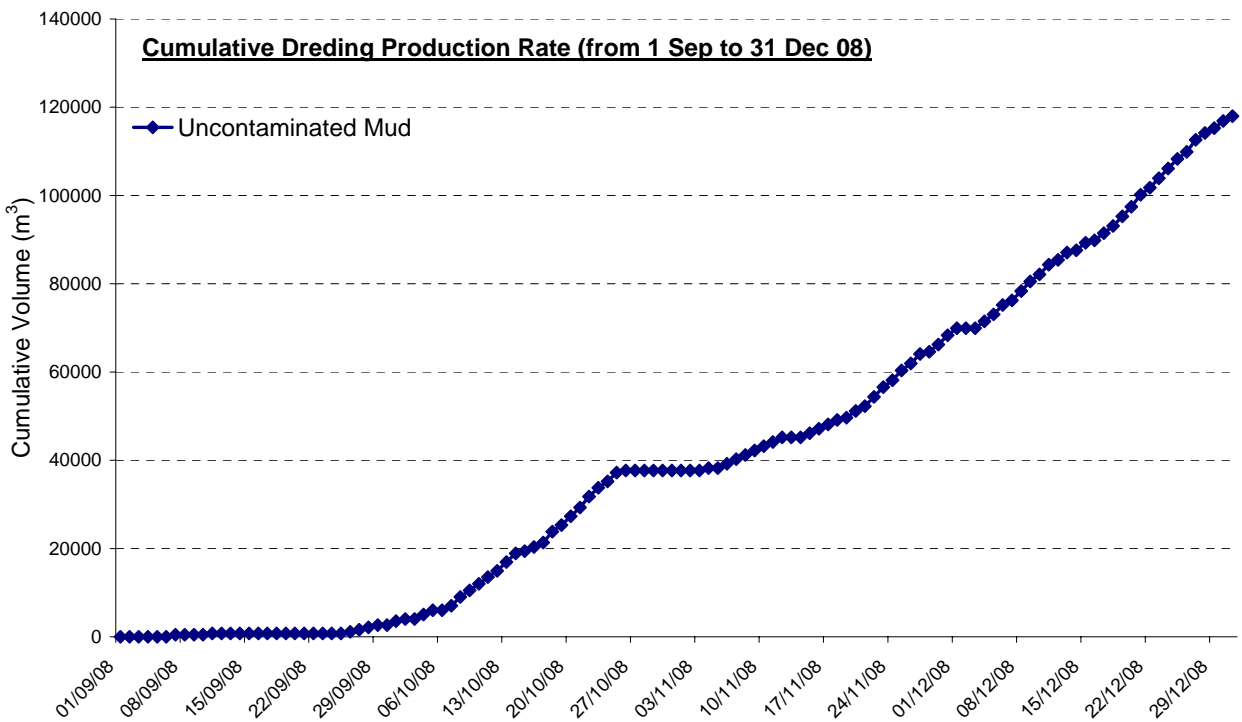
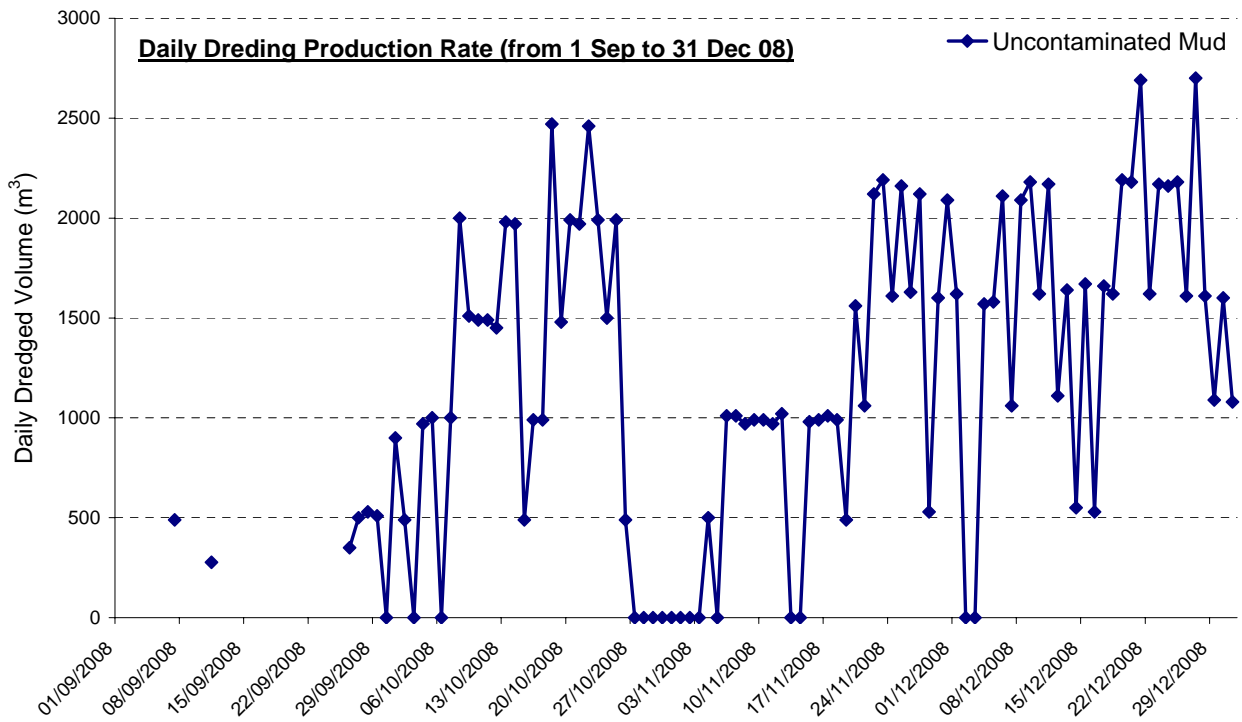


Figure 2.1 Daily and cumulative volumes (m<sup>3</sup>) of excavated materials from 1 September to 31 December 2008. Excavated materials contained uncontaminated mud only.



A summary of the relevant permits, licences, and/or notifications on environmental protection for this Project since July 2007 is presented in *Table 2.3*.

*Table 2.2 Summary of Environmental Licensing, Notification and Permit Status*

Permit/ Licenses/ Notification	Reference	Validity Period	Remarks
Environmental Permit	EP-262/2007/B	Throughout Project	Issued on 27 February 2008 (EP-262/2007/A on 30 November 2007, EP-262/2007 issued on 31 May 2007, EP-139/2002 originally granted on 28 August 2002 and EP-139/2002/A granted on 24 February 2004 were superseded)
Chemical Waste Producer Registration	WPN 5111-421-L2174-25	Throughout Project	Issued on 10 November 2005
Notification of Construction Works under Air Pollution Control (Construction Dust) Regulation	H2104/UIID/5542/DG/DH/PL	Throughout Project	Notification on 6 July 2007
Construction Noise Permit	GW-RW0676-07	21 December 2007 to 19 June 2008	For land-based works including air compressors, breakers, excavators, wheeled loaders, mobile cranes, concrete lorry mixers, hand-held pokers, bar benders/cutters, wood saws, grinders, submarine water pump, lorries with crane, dump trucks, rollers, ventilation fans and generators
	GW-RW0677-07	21 December 2007 to 29 February 2008	For marine dredging operation including grab dredger, tug boat, split hopper barge and motor sampan
	GW-RW0678-07	21 December 2007 to 18 June 2008	For marine jetty works including concrete pump derrick barges, hand-held grinders, generators, air compressors, boring machines, water pumps, tug boat, grout mixers and grout pumps

Permit/ Licenses/ Notification	Reference	Validity Period	Remarks
	GW-RW0094-08	1 March to 31 March 2008	For marine dredging operation including grab dredger, tug boat, split hopper barge and motor sampan
	GW-RW0312-08	04 July 2008 to 22 December 2008	For marine jetty works including concrete pump derrick barges, hand-held grinders, generators, air compressors, boring machines, water pumps, tug boat, grout mixers and grout pumps
	GW-RW0313-08	04 July 2008 to 19 December 2008	For land-based works including air compressors, breakers, excavators, wheeled loaders, mobile cranes, concrete lorry mixers, hand-held pokers, bar benders/cutters, wood saws, grinders, submarine water pump, lorries with crane, dump trucks, rollers, ventilation fans and generators
	GW-RW0373-08	1 August 2008 to 20 January 2009	For land-based works including air compressors, breakers, excavators, wheeled loaders, mobile cranes, concrete lorry mixers, hand-held pokers, bar benders/cutters, wood saws, grinders, submarine water pump, lorries with crane, dump trucks, rollers, ventilation fans, generators, stirrer, jet chisel, water jet machine and dehumidifier
	GW-RW0368-08	1 September to 30 November 2008	For marine dredging operation including grab dredger, tug boat, split hopper barge and motor sampan
Marine Dumping Permit	EP/MD/08-064	13 December 2007 to 29 February 2008	For Type 1 – Open Sea Disposal
	EP/MD/08-065	13 December 2007 to 12 January 2008	For Type 1d & Type 2 marine disposal
	EP/MD/08-071	13 January 2008 to 12 February 2008	For Type 1d & Type 2 marine disposal
	EP/MD/08-090	3 March to 31 March 2008	For Type 1d & Type 2 marine disposal

Permit/ Licenses/ Notification	Reference	Validity Period	Remarks
	EP/MD/08-091	3 March to 31 March 2008	For Type 1 - Open Sea Disposal
	EP/MD/09-018	1 September to 30 September 2008	For Type 1d & Type 2 marine disposal
	EP/MD/09-032	1 October to 31 October 2008	For Type 1d & Type 2 marine disposal
	EP/MD/09-017	1 September to 30 November 2008	For Type 1 - Open Sea Disposal
	EP/MD/09-039	1 December 2008 to 31 January 2009	For Type 1 - Open Sea Disposal
Wastewater Discharge License	EP760/421/011399/1	15 March 2006 to 31 March 2011	Issued on 15 March 2006

## 2.6 COMMUNITY LIAISON GROUP MEETING

According to the EP requirements, a Community Liaison Group (CLG) shall be established within three months after commencement of construction of the Project. The major duty of CLG is to advise on and monitor the proper design, construction and operation of the Project. The CLG comprises representatives from Airport Authority, members of Tuen Mun community and academics. During the reporting period, a meeting was organised by the CLG on 3 December 2008. Details of the CLG (including Membership and its Terms of Reference) and the meeting minutes can be found on the Project website (<http://www.paffhk.com>).

## 2.7 SUMMARY OF NON-COMPLIANCE WITH THE ENVIRONMENTAL QUALITY PERFORMANCE LIMITS

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

## 2.8 SUMMARY OF ENVIRONMENTAL COMPLAINTS

No environmental complaint was received during the reporting period. A statistical summary of environmental complaints since project commencement is presented in *Annex D*.

## 2.9 SUMMARY OF ENVIRONMENTAL SUMMONS

No summons was received in this reporting period. A statistical summary of legal proceeding since project commencement is presented in *Annex D*.

### 3.1 PREVIOUS ENVIRONMENTAL DEFICIENCIES AND FOLLOW-UP ACTIONS

As no environmental complaint was received over the last reporting period, no follow-up action was required.

Weekly site inspections were carried out by the ET on 2, 10, 15, 24 and 30 October 2008, 4, 12, 20 and 26 November 2008, and 4, 11, 18, 23 and 31 December 2008. No non-compliances were found. Environmental deficiencies and follow-up actions/mitigation measures were identified during the inspections and summarised in *Table 3.1*.

**Table 3.1** *Environmental Deficiencies (Observations) from Site Inspections during Reporting Period*

Reporting Month	Observation	Follow-up Action
October 2008	Open sand and soil piles were observed near the tank farms and surcharge area	Contractor was reminded to cover open piles with impervious sheets in non-working hours
	Sediment plumes were observed in the water at the discharge outlet near the operation building	Contractor was recommended to check the efficiency of sedimentation facilities and to review the effluent discharge arrangements in the tank farm area
	Oil sheen was observed on the edge of the dredging barge deck and on the floor behind the workshop	Contractor was recommended to arrange clearance of the oil sheen as soon as possible.
	Oil interceptor and the car washing facility was observed to be filled with sediments	The Contractor was recommended to clear the sediments in the respective facilities as soon as possible
	Chemical wastes were stored on the deck of the barge without spillage preventive measures and chemical waste storage area on the dredging barge was observed to be full.	Contractor was recommended to store chemical wastes in bunded areas to avoid potential spillages and arranged collection as soon as the storage area is full.
	Waste drums in the chemical waste storage were not labelled	Contractor was recommended to label the containers with proper stickers with reference to the Code of Practice on the <i>Packaging, Labelling and Storage of Chemical Wastes under the Waste Disposal Ordinance (Cap. 354)</i>

Reporting Month	Observation	Follow-up Action
	Machinery inside the workshop was placed on the floor without drip trays.	The Contractor was recommended to provide drip trays for the temporary storage of oily machines in works area
	Water was observed in the chemical waste storage	The Contractor was recommended to clear the water from the storage and dispose the collected wastewater properly
November 2008	Waste trucks were observed to be leaving the work site with open skips	Contractor was reminded to ensure that skip doors on loaded waste trucks were closed prior to departure from site
	Sediments were observed in the oil interceptor and the car washing facility	Contractor was recommended to clear sediments in the respective facilities as soon as possible
	Soil, grit and refuse were observed in the storm drains along the southern boundary of the site	The Contractor was reminded to clear the storm drains as soon as possible to avoid runoffs of refuse into the sea
	Stagnant water ponds were observed in the tank farm area	Contractor was reminded to clear stagnant pools on site to avoid mosquito breeding
	Water hose behind the workshop was observed to be leaking	Contractor was recommended to fix the leaking hose as soon as possible to avoid water wastage and unnecessary site runoffs
	General refuse was observed to be mixed with inert wastes in skips near the tank farms and the operation building	Contractor was recommended to provide enough waste skips for proper segregation of inert and non-inert wastes on site
	Plastics were observed in the yellow bin of a set of 3-color bins near the tank farms	Contractor was recommended to put paper, plastics and aluminium wastes in respective 3-color bins at all times
	Chemical wastes were placed behind the workshop without drip trays and proper chemical labels	Contractor was recommended to provide drip trays for the temporary storage of chemical wastes in areas aside from the main chemical waste store
	Chemical waste store near the workshop was observed to be full	Contractor was recommended to arrange collection of chemical wastes by a licensed Contractor as soon as possible

Reporting Month	Observation	Follow-up Action
December 2008	Waste trucks left the work site without properly using the wheel-wash facility	Contractor was reminded to ensure that no soil and grit were carried onto the neighbouring public road by vehicles leaving the construction site
	Excavators in the surcharge area were observed to be operating without dust control measures	Contractor was reminded to implement dust suppression measures (ie water spraying) regularly when dusty activities are conducted on site
	Loading works near the oil interceptor was observed to be generating lots of dust	Contractor was recommended to spray excavated materials prior to loading in order to avoid wind erosion
	Stop plug of a drip tray under a diesel generator near the oil interceptor was observed to be missing	Contractor was reminded to replace the missing stop plug and to ensure the stop plug is tightly fastened onto the drip tray
	No chemical waste labels were observed on a few waste oil drums on the dredging barge	Contractor was recommended to label the waste oil drums with chemical waste labels
	General wastes were piled up behind the tank farms without receptor bins	Contractor was reminded to replace bins for temporary storage of wastes as soon as possible
	Chemical waste store near the operation building was observed to be full	Contractor was recommended to arrange collection of chemical wastes by a licensed Contractor as soon as possible

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

### 3.2

#### **IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS**

The implementation status of environmental mitigation measures and requirements as stated in the *EIA Report, Environmental Permits* and *EM&A Manual* during the reporting period is summarized in *Annex E*.



## 4 ENVIRONMENTAL MONITORING

### 4.1 AIR AND NOISE

Air and Noise monitoring was not required for the project.

### 4.2 WATER QUALITY

In accordance to the EM&A Manual water quality monitoring recommenced on 1 September 2008 alongside dredging activities. QA/QC reports for Suspended Solids testing and monitoring results have been presented in 24<sup>th</sup>, 25<sup>th</sup> and 26<sup>th</sup> Monthly EM&A Reports. Graphical presentations of the monitored parameter over the past four months (the last month of the previous quarter and the present quarter) are included in *Annex F*.

Although some exceedances of the Action and Limit (AL) Levels of dissolved oxygen (DO) and suspended solids (SS) have been recorded in previous quarter (see 23<sup>th</sup> Monthly EM&A Report), results of the reporting period demonstrated that all measured turbidity, DO and SS levels of all Impact Stations were compliant with the AL Levels specified in the *EM&A Manual*.

### 4.3 POPS MONITORING

Biweekly monitoring of POPs in water samples was conducted on 8 and 22 October, 12 and 26 November, and 10 and 24 December. At the time of this report, all results were available except for those sampled on 24 December. All POPs parameters (ie total PCBs, total DDTs and total PAHs) were below detection limits. Monitoring results and QA/QC reports for POPs testing have been presented in 24<sup>th</sup>, 25<sup>th</sup> and 26<sup>th</sup> Monthly EM&A Reports.

### 4.4 WASTE MANAGEMENT

According to EP Condition 3.3, the Contractor's revised Waste Management Plan (Revision 5) (WMP), which has been certified by the ET and IEC, was submitted to the EPD on 5 November 2008.

### 4.5 CULTURAL HERITAGE

The *Watching Brief Report*, verified by the Independent Environmental Checker, was submitted to the EPD and AMO on 9 May 2008.

### 4.6 LANDSCAPE AND VISUAL

According to the EIA report and EM&A Manual, mitigation measures and site inspection are required during the landscaping/planting works. The

berm/landscaping bund appeared to have vegetation grown during the project suspension period. The transplanted trees appeared to be in a good and healthy condition.

The weekly site inspections included audits on landscape and visual issues to ensure that the site was in orderly acceptable manner.

#### **4.7** *LAND CONTAMINATION, HAZARD TO LIFE AND FUEL SPILL RISK*

The ET and IEC verified updated design audit plan which was submitted to the EPD on 7 November 2007.

Weekly site inspection covered the waste management aspects which included measures to prevent land contamination by chemical wastes.

#### **4.8** *ECOLOGY*

##### *Dolphin Visual Monitoring*

In accordance with *EM&A Manual*, dolphin monitoring has been undertaken during dredging activities since 1 September 2008. During the reporting period, a total of 27 dolphin sightings were recorded. Appropriate action was taken in accordance with the *EM&A Manual*. The sighting locations and field records are presented in *Annex G*.

#### **4.9** *EM&A MANUAL*

The *EM&A Manual* for the Project has been updated by the ET to include the detailed arrangements of setting up a Community Liaison Group, carrying out design audit, and monitoring of Persistent Organic Pollutants (POPs) during construction of the Project. Further comments were received from the EPD and a revised *EM&A Manual* has been verified by the IEC and was submitted to EPD on 2 December 2008.

#### **4.10** *BASELINE WATER QUALITY MONITORING*

The *Final Baseline Monitoring Report* was submitted to the EPD on 20 February 2008 and placed under the EIAO register.

## 5 *FUTURE KEY ISSUES AND CONCLUSION*

### 5.1 *KEY ISSUES FOR THE NEXT REPORTING PERIOD*

Key issues to be considered in the next month will be:

- Dust release and suppression;
- Operation of dredging activities; and,
- Water quality monitoring and dolphin monitoring during the dredging activities.

### 5.2 *IMPACT PREDICTION FOR THE NEXT REPORTING PERIOD*

Provided that environmental mitigation measures including good on-site practises are properly implemented, no unacceptable adverse environmental impacts are expected.

### 5.3 *WORKS AND MONITORING SCHEDULE FOR THE NEXT REPORTING PERIOD*

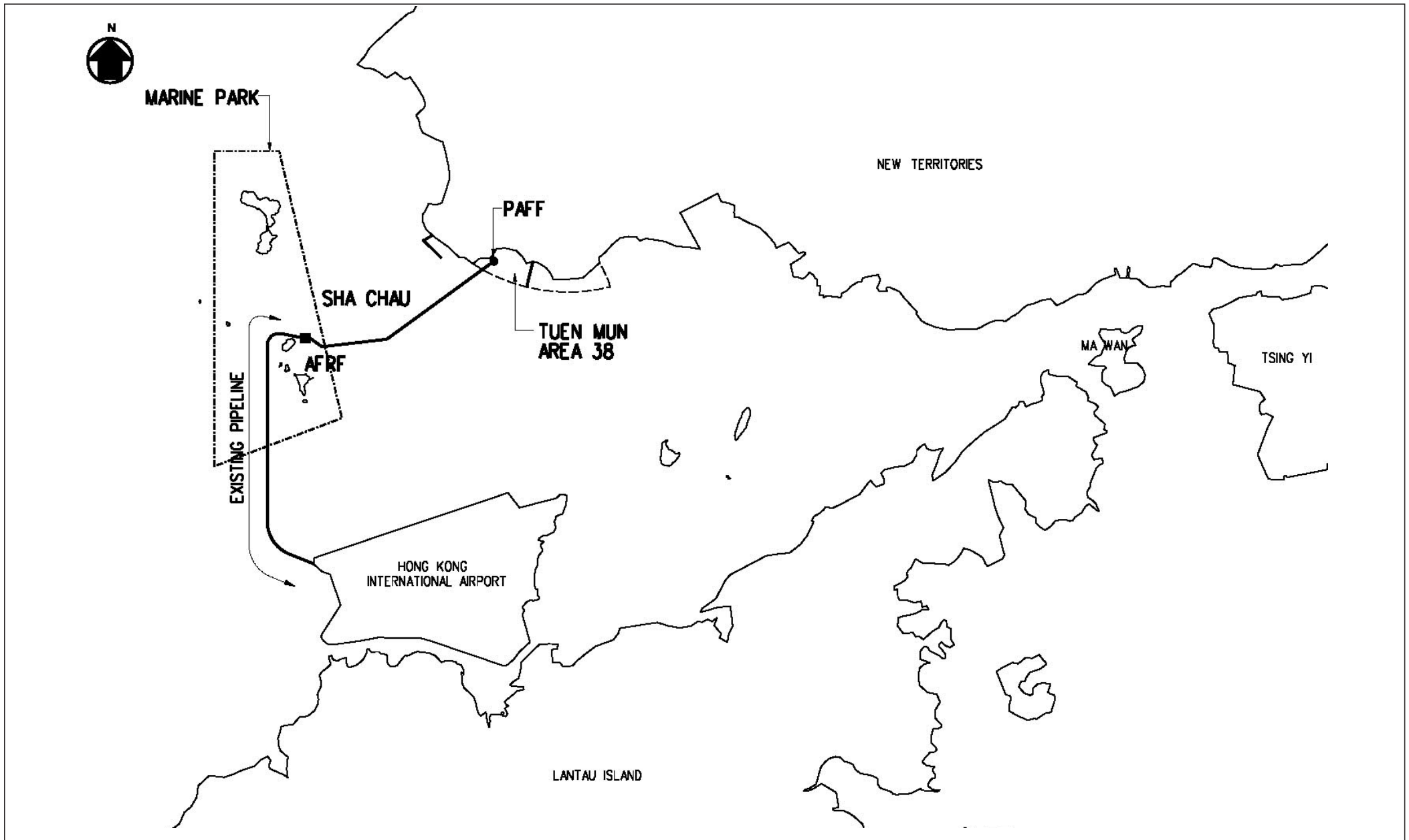
Work programme for the next reporting period includes jetty platform works (non-piling), site works (construction works for tank farm, operational and fire services buildings, pump platform, drainages, bund wall, security wall etc) and dredging operation. Weekly site inspections will be undertaken in accordance with the *EM&A Manual*.

### 5.4 *CONCLUSION*

The EM&A works were conducted throughout the construction period and the relevant monitoring was conducted in accordance with the EP's requirements. Mitigation measures were used to minimise the environmental impacts, where appropriate. Some environmental deficiencies were observed during the site inspections and the Contractor implemented corrective action to mitigate the issues. Overall, the site was in an orderly manner.

Annex A

## Project Location



Annex A

Location of PAFF

FILE: 0018105bb1  
DATE: 12/11/2007






Environmental  
Resources  
Management



Annex B

Water Quality Monitoring  
Stations, Water Quality and  
Ecological Sensitive  
Receivers

**KEY**

-  Control Stations
-  Impact Stations
-  Marine Park
-  Proposed Pipeline
-  Potential IMO1 & IMO2 Monitoring Zone

Marine Park  
(Water Sensitive Receiver)

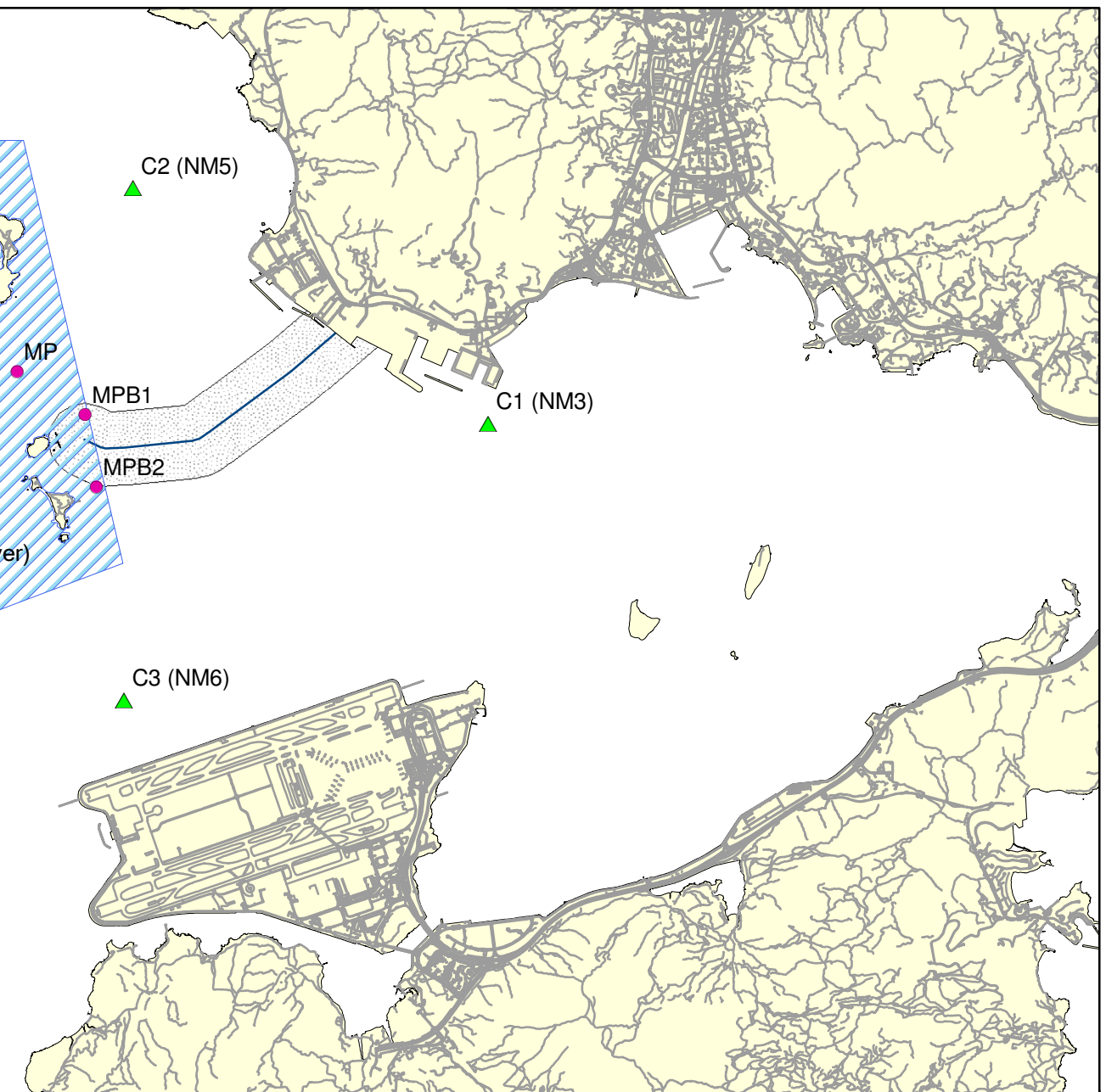
C2 (NM5)

C1 (NM3)

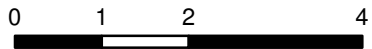
MPB1

MPB2

C3 (NM6)



Kilometers



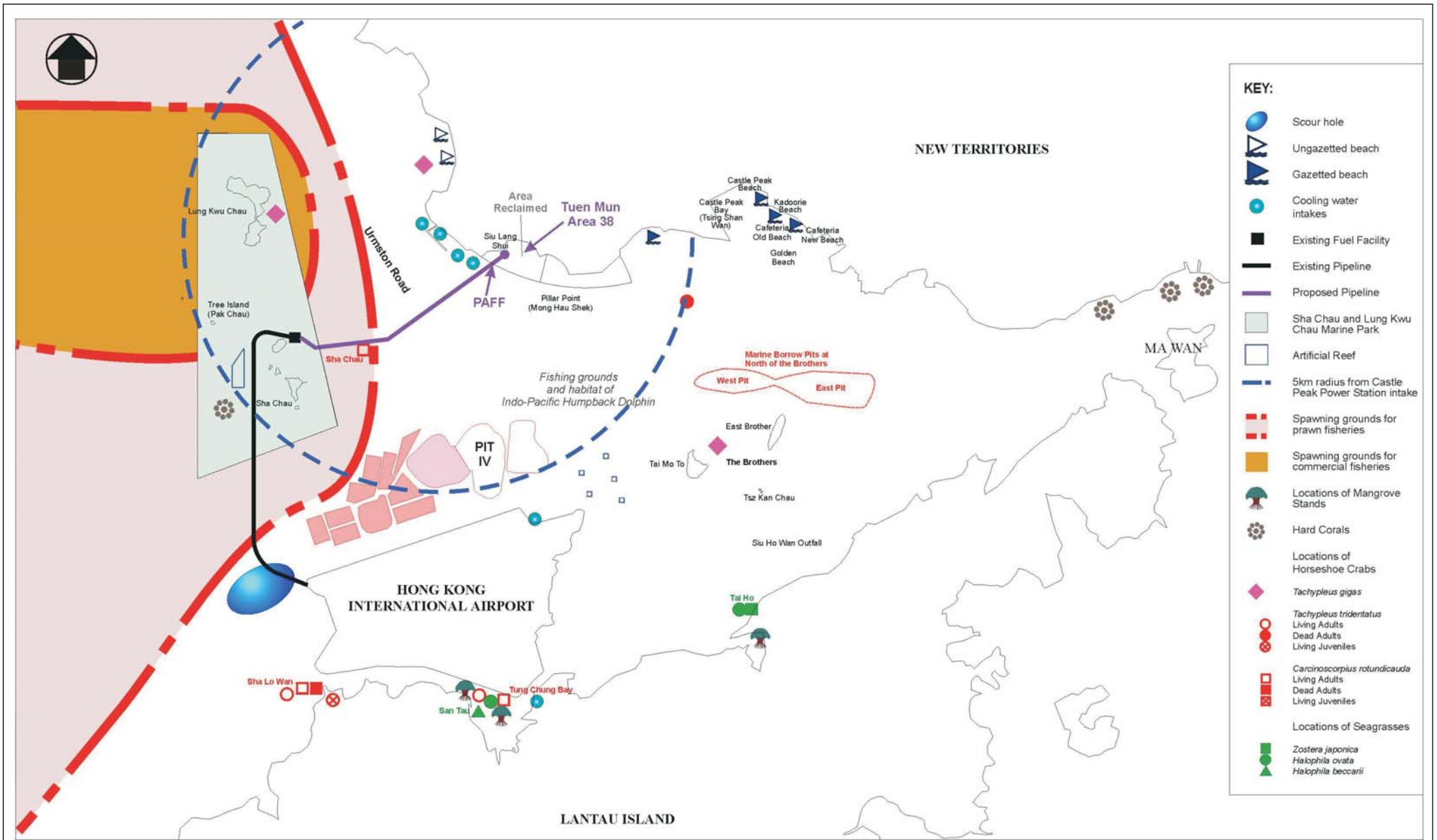
Annex B

### Water Sensitive Receiver and Water Quality Monitoring Locations

File: 0018105\_4.mxd  
Date: 23/01/2006

**Environmental  
Resources  
Management**





Annex B

Water Quality and Ecological Sensitive Receivers

FILE: C2475aa  
DATE: 12/11/2007

(Source : PAFF for Hong Kong International Airport EIA, Mouchel 2002)

Environmental  
Resources  
Management





Annex C

## Monitoring Schedule for the Reporting Period and Next Month

**PAFF**  
**Tentative Impact Water Quality Monitoring Schedule for October 2008**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			01-Oct	02-Oct	03-Oct	04-Oct
			Mid-Ebb 14:02 Mid-Flood 19:48	Mid-Flood 08:46 Mid-Ebb 14:33	Mid-Flood 09:28 Mid-Ebb 15:04	Mid-Flood 10:18 Mid-Ebb 15:37
05-Oct	06-Oct	07-Oct	08-Oct	09-Oct	10-Oct	11-Oct
Mid-Ebb 11:22 Mid-Flood 16:09	Mid-Ebb 04:48 Mid-Flood 17:06	Mid-Ebb 05:44 Mid-Flood 18:13	<b>(POP sampling)</b> Mid-Ebb 06:58 Mid-Flood 19:48	Mid-Flood 16:57 Mid-Ebb 22:16	Mid-Ebb 09:24 Mid-Flood 17:05	Mid-Ebb 10:17 Mid-Flood 17:24
12-Oct	13-Oct	14-Oct	15-Oct	16-Oct	17-Oct	18-Oct
Mid-Ebb 11:02 Mid-Flood 17:44	Mid-Ebb 11:42 Mid-Flood 18:02	Mid-Ebb 12:21 Mid-Flood 18:25	Mid-Ebb 13:00 Mid-Flood 18:51	Mid-Ebb 13:40 Mid-Flood 19:20	Mid-Ebb 08:47 Mid-Flood 14:22	Mid-Flood 09:48 Mid-Ebb 15:09
19-Oct	20-Oct	21-Oct	22-Oct	23-Oct	24-Oct	25-Oct
Mid-Flood 10:54 Mid-Ebb 15:57	Mid-Flood 12:08 Mid-Ebb 16:41	Mid-Ebb 05:26 Mid-Flood 18:04	<b>(POP sampling)</b> Mid-Ebb 06:41 Mid-Flood 19:44	Mid-Flood 16:02 Mid-Ebb 21:47	Mid-Ebb 09:28 Mid-Flood 16:34	Mid-Ebb 10:24 Mid-Flood 17:01
26-Oct	27-Oct	28-Oct	29-Oct	30-Oct	31-Oct	
Mid-Ebb 11:10 Mid-Flood 17:25	Mid-Ebb 11:52 Mid-Flood 17:49	Mid-Ebb 12:30 Mid-Flood 18:12	Mid-Ebb 13:06 Mid-Flood 18:36	No WQ monitoring	No WQ monitoring	

**PAFF**  
**Impact Water Quality Monitoring Schedule for November 2008**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						01-Nov
						No WQ Monitoring*
02-Nov	03-Nov	04-Nov	05-Nov	06-Nov	07-Nov	08-Nov
No WQ Monitoring*	No WQ Monitoring*	No WQ Monitoring*	Mid-Ebb 4:42 Mid-Flood 17:23	Mid-Ebb 5:52 Mid-Flood 18:28	Mid-Ebb 15:25 Mid-Flood 21:21	Mid-Ebb 8:17 Mid-Flood 15:51
09-Nov	10-Nov	11-Nov	12-Nov	13-Nov	14-Nov	15-Nov
Mid-Flood 9:20 Mid-Flood 16:15	Mid-Flood 10:15 Mid-Ebb 16:38	Mid-Flood 11:05 Mid-Ebb 17:04	(POP sampling) Mid-Flood 11:51 Mid-Ebb 17:34	No WQ Monitoring	No WQ Monitoring	Mid-Flood 14:13 Mid-Ebb 19:18
16-Nov	17-Nov	18-Nov	19-Nov	20-Nov	21-Nov	22-Nov
Mid-Flood 9:58 Mid-Ebb 15:00	Mid-Flood 10:55 Mid-Ebb 15:49	Mid-Flood 11:56 Mid-Ebb 16:47	Mid-Flood 13:30 Mid-Ebb 18:29	Mid-Flood 14:19 Mid-Ebb 20:01	Mid-Flood 14:59 Mid-Ebb 21:10	Mid-Ebb 8:47 Mid-Flood 15:34
23-Nov	24-Nov	25-Nov	26-Nov	27-Nov	28-Nov	29-Nov
Mid-Ebb 9:47 Mid-Flood 16:04	Mid-Ebb 10:40 Mid-Flood 16:32	Mid-Ebb 11:28 Mid-Flood 16:58	(POP sampling) Mid-Ebb 12:10 Mid-Flood 17:23	Mid-Ebb 12:46 Mid-Flood 17:50	Mid-Ebb 13:20 Mid-Flood 18:32	Mid-Ebb 13:52 Mid-Flood 18:45
30-Nov						
Mid-Ebb 9:30 Mid-Flood 14:23						

\*Dredging operation was not carried out and hence no water quality monitoring was undertaken

**PAFF**  
**Impact Water Quality Monitoring Schedule for December 2008**

Sunday		Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		
		01-Dec		02-Dec		03-Dec		04-Dec		05-Dec		06-Dec		
	Mid-Flood	10:09	No WQ Monitoring*				Mid-Ebb	04:27	Mid-Flood	05:10	Mid-Ebb	13:56		
	Mid-Ebb	14:54					Mid-Flood	16:50	Mid-Ebb	13:21	Mid-Flood	20:09		
	07-Dec		08-Dec		09-Dec		10-Dec		11-Dec		12-Dec		13-Dec	
					(POP sampling)									
Mid-Ebb	14:27	Mid-Ebb	08:21	Mid-Ebb	09:29	Mid-Ebb	10:32	Mid-Ebb	11:31	Mid-Ebb	12:25	Mid-Ebb	13:15	
Mid-Flood	21:02	Mid-Flood	14:59	Mid-Flood	15:32	Mid-Flood	16:09	Mid-Flood	16:48	Mid-Flood	17:31	Mid-Flood	18:16	
	14-Dec		15-Dec		16-Dec		17-Dec		18-Dec		19-Dec		20-Dec	
Mid-Ebb	14:03	Mid-Flood	09:49	Mid-Flood	10:36	Mid-Flood	11:22	Mid-Flood	12:09	Mid-Flood	12:57	Mid-Flood	13:42	
Mid-Flood	19:04	Mid-Ebb	14:52	Mid-Ebb	15:41	Mid-Ebb	16:34	Mid-Ebb	17:35	Mid-Ebb	18:54	Mid-Ebb	20:14	
	21-Dec		22-Dec		23-Dec		24-Dec		25-Dec		26-Dec		27-Dec	
					(POP sampling)									
Mid-Flood	14:22	Mid-Ebb	09:02	Mid-Ebb	10:14	Mid-Ebb	11:08	Mid-Ebb	11:49	Mid-Ebb	12:25	Mid-Ebb	13:00	
Mid-Ebb	09:26	Mid-Flood	14:56	Mid-Flood	15:28	Mid-Flood	16:00	Mid-Flood	16:36	Mid-Flood	17:13	Mid-Flood	17:50	
	28-Dec		29-Dec		30-Dec		31-Dec		01-Jan		02-Jan		03-Jan	
Mid-Ebb	13:35	Mid-Ebb	14:09	Mid-Flood	09:41	Mid-Flood	10:09							
Mid-Flood	18:28	Mid-Flood	19:06	Mid-Ebb	14:45	Mid-Ebb	15:21							

\*Water quality monitoring was not conducted since no dredging operation was undertaken.

**PAFF**  
**Tentative Impact Water Quality Monitoring Schedule for January 2009**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				01-Jan	02-Jan	03-Jan
				Mid-Flood 10:38 Mid-Ebb 16:00	Mid-Flood 11:08 Mid-Ebb 16:44	Mid-Flood 11:41 Mid-Ebb 17:37
04-Jan	05-Jan	06-Jan	07-Jan	08-Jan	09-Jan	10-Jan
Mid-Flood 12:15 Mid-Ebb 18:47	Mid-Flood 12:52 Mid-Ebb 19:54	Mid-Ebb 07:18 Mid-Flood 13:33	Mid-Ebb 08:45 Mid-Flood 14:19	Mid-Ebb 10:14 Mid-Flood 15:14	Mid-Ebb 11:21 Mid-Flood 16:14	(POP sampling) Mid-Ebb 12:17 Mid-Flood 17:15
11-Jan	12-Jan	13-Jan	14-Jan	15-Jan	16-Jan	17-Jan
Mid-Ebb 13:08 Mid-Flood 18:13	Mid-Ebb 13:55 Mid-Flood 19:07	Mid-Ebb 14:39 Mid-Flood 19:58	Mid-Flood 10:00 Mid-Ebb 15:22	Mid-Flood 10:35 Mid-Ebb 16:06	Mid-Flood 11:07 Mid-Ebb 16:52	Mid-Flood 11:38 Mid-Ebb 17:49
18-Jan	19-Jan	20-Jan	21-Jan	22-Jan	23-Jan	24-Jan
Mid-Flood 12:06 Mid-Ebb 19:01	Mid-Ebb 06:12 Mid-Flood 12:36	Mid-Flood 09:06 Mid-Ebb 21:48	Mid-Flood 10:15 Mid-Ebb 22:34	Mid-Flood 10:58 Mid-Ebb 23:14	Mid-Ebb 11:25 Mid-Flood 15:55	(POP sampling) Mid-Ebb 12:11 Mid-Flood 16:58
25-Jan	26-Jan	27-Jan	28-Jan	29-Jan	30-Jan	31-Jan
Mid-Ebb 12:47 Mid-Flood 17:45	No WQ Monitoring*			Mid-Flood 09:16 Mid-Ebb 14:51	Mid-Flood 09:36 Mid-Ebb 15:24	Mid-Flood 09:55 Mid-Ebb 16:01

\* Water quality monitoring will not be conducted since no dredging operation will be undertaken

Annex D

## Cumulative Complaints Statistics

*Summary of Environmental Complaints*

Reporting Period	Complaint Statistics		
	Frequency	Cumulative	Complaint Nature
Before construction works	1	1	Dust
18/11/05 - 15/12/05	1	2	Dust
15/12/05 - 14/01/06	0	2	Nil
15/01/06 - 14/02/06	0	2	Nil
15/02/06 - 14/03/06	0	2	Nil
15/03/06 - 14/04/06	0	2	Nil
15/04/06 - 14/05/06	0	2	Nil
15/05/06 - 14/06/06	0	2	Nil
15/06/06 - 14/07/06	0	2	Nil
Re-commencement of construction works on 9 <sup>th</sup> July 2007			
09/07/07 - 31/07/07	0	2	Nil
01/08/07 - 31/08/07	0	2	Nil
01/09/07 - 30/09/07	0	2	Nil
01/10/07 - 31/10/07	0	2	Nil
01/11/07 - 30/11/07	0	2	Nil
01/12/07 - 31/12/07	0	2	Nil
01/01/08 - 31/01/08	0	2	Nil
01/02/08 - 29/02/08	0	2	Nil
01/03/08 - 31/03/08	0	2	Nil
01/04/08 - 30/04/08	0	2	Nil
01/05/08 - 31/05/08	0	2	Nil
01/06/08 - 30/06/08	0	2	Nil
01/07/08 - 31/07/08	0	2	Nil
01/08/08 - 31/08/08	0	2	Nil
01/09/08 - 30/09/08	0	2	Nil
01/10/08 - 31/10/08	0	2	Nil
01/11/08 - 30/11/08	0	2	Nil
01/12/08 - 31/12/08	0	2	Nil

### *Summary of Environmental Summons*

Reporting Period	Environmental Summons		
	Frequency	Cumulative	Summon Nature
18/11/05 – 15/12/05	0	0	Nil
16/12/05 – 14/01/06	0	0	Nil
15/01/06 – 14/02/06	0	0	Nil
15/02/06 – 14/03/06	0	0	Nil
15/03/06 – 14/04/06	0	0	Nil
15/04/06 – 14/05/06	0	0	Nil
15/05/06 – 14/06/06	0	0	Nil
15/06/06 – 14/07/06	0	0	Nil

Re-commencement of construction works on 9<sup>th</sup> July 2007

09/07/07 – 31/07/07	0	0	Nil
01/08/07 – 31/08/07	0	0	Nil
01/09/07 – 30/09/07	0	0	Nil
01/10/07 – 31/10/07	0	0	Nil
01/11/07 – 30/11/07	0	0	Nil
01/12/07 – 31/12/07	0	0	Nil
01/01/08 – 31/01/08	0	0	Nil
01/02/08 – 29/02/08	0	0	Nil
01/03/08 – 31/03/08	0	0	Nil
01/04/08 – 30/04/08	0	0	Nil
01/05/08 – 31/05/08	0	0	Nil
01/06/08 – 30/06/08	0	0	Nil
01/07/08 – 31/07/08	0	0	Nil
01/08/08 – 31/08/08	0	0	Nil
01/09/08 – 30/09/08	0	0	Nil
01/10/08 – 31/10/08	0	0	Nil
01/11/08 – 30/11/08	0	0	Nil
01/12/08 – 31/12/08	0	0	Nil



Annex E

Implementation  
Programme of Mitigation  
Measures

## ANNEX E IMPLEMENTATION SCHEDULE

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location / Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Schedule			Maintenance Agency	Implementation Status
						D	C	O		
<b>Water Quality</b>										
6.7	6.8.1	There should be no access to the shore or working from land within the Marine Park. No marine anchors shall be used within the Marine Park.	Marine Park / Pipeline Dredging	Contractor	TMEIA		Y		N/A	On going
6.7	6.8.1	No hydraulic dredging within Marine Park.	Marine Park / Pipeline Dredging	Contractor	TMEIA		Y		N/A	Completed
6.7	6.8.1	Dredging for pipeline trench should be timed to coincide with maintenance dredging for Sha Chau AFRF marine access channel if relevant.	Sha Chau ARFR Marine access channel	Airport Authority	TMEIA		Y		N/A	On going
6.4		The work rate for dredging should not exceed 4,000 m <sup>3</sup> /hr for the TSHD and 7,000 m <sup>3</sup> /day for the grab dredger.	Marine Park / Pipeline Dredging	Contractor	TMEIA		Y		N/A	On going
6.7	6.8.1	Standard good dredging practice measures shall be written in the dredging contract.	Marine Park / Pipeline Dredging	Franchisee	TMEIA		Y		N/A	On going
6.7	6.8.1	Use of Lean Material Overboard (LMOB) systems shall be prohibited. No mud overflow is to be permitted for dredging using TSHD.	Dredged areas/ Pipeline Dredging	Contractor	TMEIA Marine Fill Committee Guidelines. DASO permit conditions		Y		N/A	Not applicable
6.7	6.8.1	Mechanical grabs shall be designed and maintained to avoid spillage and should seal tightly while being lifted.	Dredged areas/ Pipeline Dredging	Contractor	TMEIA Marine Fill Committee Guidelines. DASO permit conditions		Y		N/A	On going
6.7	6.8.1	Barges and hopper dredgers shall have tight fittings seals to their bottom openings to prevent leakage of material.	Dredged areas/ Pipeline Dredging	Contractor	TMEIA Marine Fill Committee Guidelines. DASO permit conditions		Y		N/A	On going

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location / Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Schedule			Maintenance Agency	Implementation Status
						D	C	O		
6.7	6.8.1	Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes	Dredged areas/ Pipeline Dredging	Contractor	TMEIA Marine Fill Committee Guidelines. DASO permit conditions		Y		N/A	Not applicable
6.7	6.8.1	Loading of barges and hoppers shall be controlled to prevent splashing of dredged material to the surrounding water. Barges or hoppers shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation.	Dredged areas/ Pipeline Dredging	Contractor	TMEIA Marine Fill Committee Guidelines. DASO permit conditions		Y		N/A	On going
6.7	6.8.1	Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved.	Dredged areas/ Pipeline Dredging	Contractor	TMEIA Marine Fill Committee Guidelines. DASO permit conditions		Y		N/A	On going
6.7	6.8.1	Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action.	Dredged areas/ Pipeline Dredging	Contractor	TMEIA Marine Fill Committee Guidelines. DASO permit conditions		Y		N/A	On going
6.7	6.8.1	All vessels shall be sized such that adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash.	Dredged areas/ Pipeline Dredging	Contractor	TMEIA Marine Fill Committee Guidelines. DASO permit conditions		Y		N/A	On going
6.7	6.8.1	The works shall not cause foam, oil, grease, letter or other objectionable matter to be present in the water within and adjacent to the works site.	Dredged areas/ Pipeline Dredging	Contractor	TMEIA Marine Fill Committee Guidelines. DASO permit conditions		Y		N/A	Ongoing

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location / Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Schedule			Maintenance Agency	Implementation Status
						D	C	O		
6.7	6.8.1	Placement of pipeline trench backfill should be undertaken in a controlled manner to minimise impacts. Backfilling with rock should be undertaken either down pipe or by a reverse grab operation or other controlled technique to ensure that this material does not mound on the seabed	Pipeline trench/ Pipeline Dredging	Contractor	TMEIA Minimise disturbance		Y		N/A	Pending
6.7	6.8.1	Wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters.	Land site/ Throughout construction period	Contractor	TMEIA ProPECC Note 1/94. WPCO TM on Effluent Standards		Y		N/A	Ongoing
6.7	6.8.1	Sewage effluent and discharges from on-site kitchen facilities shall be directed to Government sewer in accordance with the requirements of the WPCO or collected for disposal offsite. The use of soakaways shall be avoided.	Land site/ Throughout construction period	Contractor	TMEIA ProPECC Note 1/94. WPCO TM on Effluent Standards		Y		N/A	Ongoing
6.7	6.8.1	Storm drainage should be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sandbag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks.	Land site/ Throughout construction period	Contractor	TMEIA ProPECC Note 1/94. WPCO TM on Effluent Standards		Y		N/A	Ongoing
6.7	6.8.1	Silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm.	Land site/ Throughout construction period	Contractor	TMEIA ProPECC Note 1/94. WPCO TM on Effluent Standards		Y		N/A	Ongoing

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location / Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Schedule			Maintenance Agency	Implementation Status
						D	C	O		
6.7	6.8.1	Temporary access roads should be surfaced with crushed stone or gravel.	Land site/ Throughout construction period	Contractor	TMEIA ProPECC Note 1/94. WPCO TM on Effluent Standards		Y		N/A	Ongoing
6.7	6.8.1	Rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities.	Land site/ Throughout construction period	Contractor	TMEIA ProPECC Note 1/94. WPCO TM on Effluent Standards		Y		N/A	Ongoing
6.7	6.8.1	Measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system.	Land site/ Throughout construction period	Contractor	TMEIA ProPECC Note 1/94. WPCO TM on Effluent Standards		Y		N/A	Ongoing
6.7	6.8.1	Open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms.	Land site/ Throughout construction period	Contractor	TMEIA ProPECC Note 1/94. WPCO TM on Effluent Standards		Y		N/A	Ongoing
6.7	6.8.1	Manholes (including any newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers.	Land site/ Throughout construction period	Contractor	TMEIA ProPECC Note 1/94. WPCO TM on Effluent Standards		Y		N/A	Ongoing
6.7	6.8.1	Discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system.	Land site/ Throughout construction period	Contractor	TMEIA ProPECC Note 1/94. WPCO TM on Effluent Standards		Y		N/A	Ongoing

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location / Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Schedule			Maintenance Agency	Implementation Status
						D	C	O		
6.7	6.8.1	All vehicles and plant should be cleaned before they leave the construction site to ensure that no earth, mud or debris is deposited by them on roads. A wheel washing bay should be provided at every site exit.	Land site/ Throughout construction period	Contractor	TMEIA ProPECC Note 1/94. WPCO TM on Effluent Standards		Y		N/A	Ongoing
6.7	6.8.1	Wheel wash overflow shall be directed to silt removal facilities before being discharged to the storm drain.	Land site/ Throughout construction period	Contractor	TMEIA ProPECC Note 1/94. WPCO TM on Effluent Standards		Y		N/A	Ongoing
6.7	6.8.1	The section of construction road between the wheel washing bay and the public road should be surfaced with crushed stone or coarse gravel.	Land site/ Throughout construction period	Contractor	TMEIA ProPECC Note 1/94. WPCO TM on Effluent Standards		Y		N/A	Ongoing
6.7	6.8.1	Wastewater generated from concreting, plastering, internal decoration, cleaning work and other similar activities, shall be screened to remove large objects.	Land site/ Throughout construction period	Contractor	TMEIA ProPECC Note 1/94. WPCO TM on Effluent Standards		Y		N/A	Ongoing
6.7	6.8.1	Vehicle and plant servicing areas, vehicle wash bays and lubrication facilities shall be located under roofed areas. The drainage in these covered areas shall be connected to foul sewers via a petrol interceptor in accordance with the requirements of the WPCO or collected for off site disposal.	Land site/ Throughout construction period	Contractor	TMEIA ProPECC Note 1/94. WPCO TM on Effluent Standards		Y		N/A	Ongoing
6.7	6.8.1	The contractors shall prepare oil/chemical cleanup plan and ensure that leakages or spillages are contained and cleaned up immediately.	Land site/ Throughout construction period	Contractor	TMEIA ProPECC Note 1/94. WPCO TM on Effluent Standards		Y		N/A	Ongoing

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location / Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Schedule			Maintenance Agency	Implementation Status
						D	C	O		
6.7	6.8.1	Waste oil should be collected and stored for recycling or disposal, in accordance with the Waste Disposal Ordinance.	Land site/ Throughout construction period	Contractor	TMEIA ProPECC Note 1/94. WPCO TM on Effluent Standards		Y		N/A	Ongoing
6.7	6.8.1	All fuel tanks and chemical storage areas should be provided with locks and be sited on sealed areas. The storage areas should be surrounded by bunds with a capacity equal to 110% of the storage capacity of the largest tank.	Land site/ Throughout construction period	Contractor	TMEIA ProPECC Note 1/94. WPCO TM on Effluent Standards		Y		N/A	Ongoing
6.7	6.8.1	Surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.	Land site/ Throughout construction period	Contractor	TMEIA ProPECC Note 1/94. WPCO TM on Effluent Standards		Y		N/A	Ongoing
6.7	6.8.1	Wastewater from pipe commissioning dewatering exercises shall be stored on site and for chemical analysis and safe disposal in accordance with the WPCO.	Tank Farm/Tank farm commissioning	Franchisee	TMEIA WPCO TM on Effluent Standards		Y		N/A	Ongoing
6.7	Section 6	All construction works shall be subject to routine audit to ensure implementation of all EIA recommendations and good working practice.	Land site/ Throughout construction period	Contractor	EM&A Manual		Y		N/A	Ongoing
6.7	Section 6	Submarine section of aviation fuel pipeline shall be covered with rock armour protection which shall not protrude above the level of the adjacent natural seabed.	Submarine pipeline	Franchisee	TMEIA Rock armour to minimum thickness of 1m	Y	Y		Franchisee	On going
6.7	Section 6	Detailed emergency response procedures shall be drawn up. These will include requirements to maintain floating oil booms, absorbent materials and skimmers on site at all times.	All facilities	Franchisee	TMEIA Industry Standards e.g. Oil Companies International Marine Forum			Y	Franchisee	Pending

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location / Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Schedule			Maintenance Agency	Implementation Status
						D	C	O		
6.7	Section 6	Coupling points on the jetty will be protected with slop collection utilities.	Jetty	Franchisee	TMEIA Rock armour to minimum thickness of 1m		Y		Franchisee	On going
6.7	Section 6	Auxiliary tanks shall be permanently maintained at the tank farm for recovered fuel and slops.	Tank farm	Franchisee	TMEIA			Y	Franchisee	Pending
6.7	Section 6	Oily drainage systems and slop collection systems will connect to an oil/water separator.	Tank farm	Franchisee	TMEIA Industry Standards e.g. Oil Companies International Marine Forum		Y		Franchisee	On going
6.7	Section 6	All tanks shall be bunded to a capacity of at least 150% of the largest individual tank in each compound by 2040. Tank pits shall be protected by an impermeable bed (e.g. geotextile sheeting) to prevent seepage of aviation fuel to ground. A leak detection system shall be installed beneath the containment membrane.	Tank farm	Franchisee	TMEIA Hong Kong Code of Practice for Oil Installations, 1992		Y		Franchisee	On going
6.7	Section 6	There shall be no direct outlet from the bund. A collection pump shall be included in the base. Removal of accumulated rainwater shall be activated manually and discharged to storm drain via an oil/water separator.	Tank farm	Franchisee	TMEIA		Y		Franchisee	On going
6.7	Section 6	Contingency procedures shall be drawn up to ensure containment and safe disposal of any fuel lost from tanks or pipework. Suitable absorbent materials (e.g. sand or earth) shall be kept on site to deal with spillages.	Tank farm	Franchisee	TMEIA Hong Kong Code of Practice for Oil Installations, 1992			Y	Franchisee	Pending
6.7	Section 6	Valves shall be installed within the storm drainage system to facilitate the retention of spillages.	Tank farm	Franchisee	TMEIA		Y		Franchisee	On going



EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location / Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Schedule			Maintenance Agency	Implementation Status
						D	C	O		
6.10	Section 6	Water quality monitoring shall be undertaken for suspended solids, turbidity, and dissolved oxygen.	Design monitoring stations as defined in EM&A Manual, section 6. Construction period when dredging takes place within 1000m of Marine Park and along entire length of the pipeline	Contractor	EM&A Manual		Y		N/A	Ongoing
6.10	Section 6	Routine water quality monitoring in the vicinity of the PAFF site to check the effectiveness of the proposed precautionary measures implemented for on-site spill control. The details of the monitoring to be undertaken will be prepared by the Franchisee as part of the PAFF Operations Manual and the details will be agreed with the relevant authorities within 3 months of the commencement of operation of the PAFF. Monitoring should include but not be limited to the parameters of TPH and PAH and reference should be made to the existing monitoring programme undertaken for the fuel tank farm on the HKIA platform.	Operational phase. Location and frequency to be determined and agreed with relevant authorities	Franchisee	EM&A Manual		Y		N/A	Pending
<b>Ecology</b> 7.8	5.3	Undertake post construction dolphin abundance monitoring.	Construction	Contractor	TMEIA		Y		N/A	Pending

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location / Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Schedule			Maintenance Agency	Implementation Status
						D	C	O		
7.8	5.3	A 250m dolphin exclusion zone shall be implemented and dredging shall not begin until the observer has confirmed that the area has been clear for 30 minutes.	250m around dredger/throughout dredging in Marine Park and along the length of pipeline	Contractor	TMEIA		Y		N/A	Ongoing
7.8	5.3	Avoidance of dolphin main calving season between March and August.	Throughout dredging in Marine Park and along the length of the pipeline	Contractor	TMEIA		Y		N/A	Ongoing
<b>Landscape &amp; Visual</b>										
8.10	7.2.1	The construction programme for the PAFF should be reduced to the shortest possible period.	PAFF site / throughout construction period	Contractor	TMEIA	Y	Y		N/A	Ongoing
8.10	7.2.1	The extent and periphery of the works areas should be managed so that they are as small as possible and do not appear cluttered, untidy and unattractive, particularly to road traffic along Lung Mun Road.	PAFF site / throughout construction period	Contractor	TMEIA		Y	Y	N/A	Ongoing
8.10	7.2.1	Temporary hoarding barriers should be of a recessive visual appearance in both colour and form.	PAFF site / throughout construction period	Contractor	TMEIA	Y	Y		N/A	Ongoing
8.10	7.2.1	Materials should be stored in areas with the least obstruction to residents, pedestrians and traffic.	PAFF site / throughout construction period	Contractor	TMEIA		Y	Y	N/A	Ongoing

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location / Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Schedule			Maintenance Agency	Implementation Status
						D	C	O		
8.10	7.2.1	All material stockpiles should be covered with an impermeable material and sandbagging diversions should be placed around exposed soil.	PAFF site / throughout construction period	Contractor	TMEIA	Y	Y		N/A	Ongoing
8.10	7.2.1	Conservation of existing and imported soil resources.	PAFF site / throughout construction period of fuel tank expansion	Contractor	TMEIA			Y	N/A	Ongoing
8.10	7.2.1	A landscape perimeter bund comprising containment bund-wall, access road and planting buffer shall be built and maintained around the tank farm.	PAFF site / throughout construction period	Project Proponent	TMEIA	Y	Y	Y	Franchisee	Ongoing
8.10	7.2.1	The design of the PAFF should incorporate materials, details and textures which are visually recessive.	PAFF site / design	Project Proponent	TMEIA	Y	Y		N/A	Ongoing
8.10	7.2.1	Colours should be of low chromatic intensity to reduce the potential contrast between the structure and their background.	PAFF site tanks / design	Project Proponent	TMEIA	Y	Y		N/A	Ongoing
8.10	7.2.1	Visually permeable security fencing should be used around the perimeter.	Site perimeter	Project Proponent	TMEIA	Y	Y	Y	N/A	Ongoing
8.10	7.2.1	Minimum amount of lighting for the tanks shall be used, only applied for safety at the key access points and staircases.	Tanks / Operational phase	Project Proponent	TMEIA	Y	Y	Y	N/A	Ongoing
8.10	7.2.1	Limited lighting intensity on the site.	PAFF site / Operational phase	Project Proponent	TMEIA	Y	Y	Y	N/A	Ongoing
8.10	7.2.1	Directional down lighting is suggested to minimise light spill to the surrounding area.	PAFF site / Operational phase	Project Proponent	TMEIA	Y	Y	Y	N/A	Ongoing

## Cultural Heritage

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location / Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Schedule			Maintenance Agency	Implementation Status
						D	C	O		
9.8.1	9.2.1	<p>Undertake a watching brief during dredging of the pipeline within 25m either side of anomalies SS1 and SS2. This should comprise:</p> <ul style="list-style-type: none"> <li>Dredge operators to be made aware of the potential presence of cultural heritage material. The operators would be required to report to the AMO any unusual resistance and/or recovery of timbers, anchors or other wreck related material. Any obstacles encountered during the dredging that are of timber should be reported to the marine archaeologist. The obstacle should be avoided and not removed until it has been assessed by the marine archaeologist as to whether the obstacle is of cultural heritage importance;</li> <li>A marine archaeologist shall be on board the dredging barge during dredging within 25m either side of SS1 and SS2 in the event of any unusual resistance occurring or blockages which requires the dredge head to be brought on deck for cleaning and examination; and,</li> </ul>	Within vicinity of SS1 and SS2	Franchisee	TMEIA		Y		N/A	Ongoing

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location / Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Schedule			Maintenance Agency	Implementation Status
						D	C	O		
		<ul style="list-style-type: none"> <li>Dredging to cease in the nominated area SS1 after 3 meters of sediment removal and after 1 metre for SS2. A dive survey will then be undertaken to examine the trench for possible cultural remains.</li> </ul>								
9.8.2	9.2.1	During the course of the watching brief, if the targets are identified as being potentially archaeologically important, then an immediate marine archaeological impact assessment in accordance with EIAO TM Annex 19 will be required to be undertaken by a qualified marine archaeologist.	With vicinity of SS1 and SS2	Franchisee	TMEIA		Y		N/A	Ongoing
9.8.4	9.2.1	Any changes, additions or alterations to the dredging method and alignment should be further assessed by marine archaeologist to determine if any further assessment is required.	Pipeline alignment	Franchisee	TMEIA		Y		N/A	Ongoing
<b>Fuel Spill Risk</b>										
11.4.1	10.2	Tank farms will be constructed in a bunded area surrounding the tanks which will have collection capacity of 150% of the maximum content of the largest tank.	Tank farm / Design Phase	Franchisee	TMEIA		Y		N/A	On going
11.4.1	10.2	Emergency shut down valves shall be installed within the wider site storm drainage system.	Tank farm / Design Phase	Franchisee	TMEIA		Y		N/A	On going
11.4.1	10.2	An impermeable membrane shall be installed in the tank foundation beneath the tank bottom.	Tank farm / Design Phase	Franchisee	TMEIA		Y		N/A	On going
11.4.1	10.2	Pipeline to be covered with a protective rock armour layer.	Pipelines/ Design Phase	Franchisee	TMEIA		Y		Franchisee	On going
11.4.1	10.2	An integrated leak detection system shall be installed to all pipelines to provide early detection of any leak.	Pipelines/ Design Phase	Franchisee	TMEIA		Y		N/A	On going

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location / Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Schedule			Maintenance Agency	Implementation Status
						D	C	O		
11.4.1	10.2	An automatic shut-off system shall be implemented for pipelines.	Pipelines/ Design Phase	Franchisee	TMEIA	Y			N/A	On going
11.4.1	10.2	A workboat shall be on standby at the jetty during tanker berthing.	Jetty/ During Tanker Berth	Franchisee	TMEIA	Y		Y	N/A	Pending
11.4.1	10.2	Skimmers shall be available for quick deployment in case of a spill.	Jetty/ During Tanker Berth	Franchisee	TMEIA	Y		Y	N/A	Pending
11.4.1	10.2	An emergency response plan shall be prepared prior to the operation of the PAFF.	Jetty/ During Tanker Berth	Franchisee	TMEIA	Y		Y	N/A	Pending
11.4.1	10.2	Operator-training programme shall be implemented.	Jetty/ During Tanker Berth	Franchisee	TMEIA	Y		Y	N/A	Pending
11.6	10.4	During the planning of the later phase of the tank farm development, in order to ensure that the required mitigation measures are undertaken at that time, review the EIA report only if the latest technology, industrial standards and statutory requirements have changed by that time.	During planning stage for future tank construction	Franchisee	TMEIA			Y	N/A	Pending

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location / Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Schedule			Maintenance Agency	Implementation Status
						D	C	O		
11.6	10.4	Regular inspections and audits will be undertaken by the Franchisee during the operational phase of the facility: <ul style="list-style-type: none"> <li>Two inspections every year of the tank farm, jetty and pipelines including one undertaken pursuant to the Joint Inspection Group (JIG) explained above;</li> <li>Inspection of the whole sub sea pipelines every 5 to 10 years;</li> <li>Health, Safety and Environmental audit of the facility once every 3 years; and,</li> <li>Inspection of the structural integrity of the tanks once per year.</li> </ul>	Operation	Franchisee	TMEIA			Y	N/A	Pending
11.6	10.4	Prepare an Environmental Management Plan to ensure the on-going adequacy of the fuel spill contingency plan and that it is being implemented as required and that the above mitigation measures have been incorporated and are effective.	Within 3 months of start of operation of the PAFF with audits every 24 months	Franchisee	TMEIA			Y	N/A	Pending
<b>Land Contamination</b>										
13.5.1	10.2	Bunding shall be provided by all fuel storage areas to at least 150% of largest individual tank in each compound.	Tank farm / Design	Franchisee	TMEIA	Y			N/A	On going
13.5.1	10.2	Relevant design standards for storage tanks, pipework, containment and drainage shall be adhered to.	Tank farm / Design	Franchisee	TMEIA	Y			N/A	On going
13.5.1	10.2	Plant inspections and maintenance shall be undertaken once per month.	Tank farm / Design	Franchisee	TMEIA	Y	Y	Y	N/A	On going
13.5.1	10.2	Impermeable lining shall be provided for all tank pits.	Tank farm / Design	Franchisee	TMEIA	Y			N/A	On going

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location / Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Schedule			Maintenance Agency	Implementation Status
						D	C	O		
13.5.1	10.2	Leak detection systems shall be provided to all valves.	Tank farm / Design	Franchisee	TMEIA	Y			N/A	On going
13.5.1	10.2	Surface drainage shall be contained and treated prior to discharge.	Tank farm / Design	Franchisee	TMEIA	Y	Y	Y	N/A	On going
13.5.1	10.2	Emergency spill response plans shall be prepared.	Tank farm / Design	Franchisee	TMEIA	Y		Y	N/A	Pending
13.5.1	10.2	Spill control materials and equipment shall be provided on site.	Tank farm / Design	Franchisee	TMEIA	Y		Y	N/A	Pending
13.5.1	10.2	Runoff from the roof of site buildings and landscaped areas shall be conveyed in closed drains to the nearest storm water drain to prevent the generation of excessive quantities of surface water which may be polluted.	Tank farm / Design	Franchisee	TMEIA	Y		Y	N/A	On going
13.5.5	10.2	Suitable absorbent materials (e.g. sand or earth) shall be kept on site to deal with spills. Chemical dispersants shall not be employed.	Tank farm / Design	Franchisee	TMEIA	Y			N/A	Pending
13.5.5	10.2	The facility shall be designed, constructed, operated and maintained in full accordance with the Code of Practice for Oil Installations, 1992.	Tank farm / Design	Franchisee	TMEIA	Y	Y	Y	N/A	On going
13.5.5	10.2	Tank pressure testing shall be carried out routinely to check for possible tank leaks. Product inventory monitoring shall be integrated into site management procedures to check for any abnormal or unexpected product loss.	Tank farm / Design	Franchisee	TMEIA	Y	Y	Y	N/A	On going
13.5.5	10.2	Tank overflow monitoring systems shall be installed and regularly tested. Inlet valves shall be designed to automatically shutdown on exceedance of "high-high level" to prevent over-filling.	Tank farm / Design	Franchisee	TMEIA	Y	Y	Y	N/A	On going
13.5.5	10.2	Pipe leakages shall be routinely checked for by means of a pressure sensitive leak detection system and routine inventory control.	Tank farm / Design	Franchisee	TMEIA	Y	Y	Y	N/A	On going



EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location / Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Schedule			Maintenance Agency	Implementation Status
						D	C	O		
13.5.5	10.2	Drainage from areas of hardstanding shall be treated by means of oil/ water separators prior to discharge to storm drain. All surface drainage shall be fitted with closure valves to provided additional containment and facilitate clean up of any leaks.	Tank farm / Design	Franchisee	TMEIA	Y	Y	Y	N/A	On going
13.5.5	10.2	The delivery pipeline from the jetty and the supply line to the airport shall be fitted with pressure sensitive leak detectors.	Tank farm / Design	Franchisee	TMEIA	Y	Y		N/A	On going
<b>Waste Management</b>										
14.7.2	8.3.1	The Contractor shall identify a coordinator for the management of waste.	Contract mobilisation	Contractor	TMEIA		Y		N/A	Ongoing
14.7.2	8.3.1	The waste coordinator shall prepare and implement a Waste Management Plan which specifies procedures such as ticketing system, to facilitate tracking of loads and to ensure that illegal disposal of waste does not occur, and protocols for the maintenance of records of the quantities of wastes generated, recycled and disposal.	Contract mobilisation	Contractor	TMEIA, Works Branch Technical Circular No. 5/99 for the Trip-ticket System for Disposal of Construction and Demolition Material		Y		N/A	Ongoing

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location / Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Schedule			Maintenance Agency	Implementation Status
						D	C	O		
14.7.2	8.3.1	The Contractor shall apply for and obtain the appropriate licenses for the disposal of public fill, chemical waste and effluent discharges.	Contract mobilisation	Contractor	TMEIA, Land (Miscellaneous Provisions) Ordinance (Cap 28); Waste Disposal Ordinance (Cap 354); Dumping at Sea Ordinance (Cap 466); Water Pollution Control Ordinance.		Y		N/A	Ongoing
14.7.2	8.3.1	No waste shall be burnt on site.	PAFF Site throughout construction period	Contractor	TMEIA		Y		N/A	Ongoing
14.7.2	8.3.1	Excavated material shall be used on site for purposes of landscaping or formation of bund walls as far as possible.	All site / throughout construction period	Contractor	TMEIA		Y		N/A	Ongoing
14.7.2	8.3.1	All material shall be reused on site as far as practicable, including formwork plywood, topsoil and excavated material.	All site / throughout construction period	Contractor	TMEIA		Y		N/A	Ongoing
14.7.2	8.3.1	Suitable provisions shall be included in the construction contract to ensure that the Contractor sorts and recycles waste.	Contract preparation stage	HyD	TMEIA		Y		N/A	Ongoing

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location / Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Schedule			Maintenance Agency	Implementation Status
						D	C	O		
14.7.2	8.3.1	Re-use and recycling of waste must always be considered first. Waste disposal shall only be undertaken in the last resort. Any surplus material generated shall be sorted on site into construction and demolition (C&D) waste and the public fill fraction. A sorting facility shall be set up on the site.	All areas / throughout construction period	Contractor	TMEIA		Y		N/A	Ongoing
14.7.2	8.3.1	The site and surroundings shall be kept tidy and litter free.	All areas / throughout construction period	Contractor	TMEIA		Y		N/A	Ongoing
14.7.2	8.3.1	The C&D waste shall be disposed of at a licensed landfill or deposited at an authorised waste transfer facility and the material suitable for public fill delivered to a public filling area, public filling barging point or public fill stockpile area after obtaining the appropriate licence.	CEDD public fill stockpile in Mui Wo, North Lantau or Mui Wo refuse transfer stations / Throughout construction period	Contractor	TMEIA		Y		N/A	Ongoing
14.7.2	8.3.1	Stockpile material shall avoid vegetated areas.	All areas / throughout construction period	Contractor	TMEIA		Y		N/A	Ongoing
14.7.2	8.3.1	Stockpiles shall be covered by tarpaulin and/or watered as required.	All areas / throughout construction period, particularly during dry season	Contractor	TMEIA, Public Health and Municipal Services Ordinance (Cap 132) and the Public Cleansing and Prevention of Nuisances (Regional Council) By-laws		Y		N/A	Ongoing

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location / Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Schedule			Maintenance Agency	Implementation Status
						D	C	O		
14.7.2	8.3.1	Storage of material on site should be kept to a minimum.	All areas / throughout construction period	Contractor	TMEIA, Public Cleansing and Prevention of Nuisances (Regional Council) By-laws		Y		N/A	Ongoing
14.7.2	8.3.1	Excavated material in trucks shall be covered by tarpaulins.	All areas, particularly at site exits / throughout construction period	Contractor	TMEIA, Reduce the potential for spillage and dust. Public Health and Municipal Services Ordinance (Cap 132) and the Public Cleansing and Prevention of Nuisances (Regional Council) By-laws		Y		N/A	Ongoing
14.7.2	8.3.1	Wheel washing facilities shall be used by all trucks leaving the site to prevent the transfer of mud onto public roads.	Site entrances and exits / throughout construction period	Contractor	TMEIA, Public Cleansing and Prevention of Nuisances (Regional Council) By-laws		Y		N/A	Ongoing

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location / Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Schedule			Maintenance Agency	Implementation Status
						D	C	O		
14.7.2	8.3.1	Suitable chemical waste storage areas should be formed at the works site for temporary storage pending collection.	Works site/ throughout construction period	Contractor	TMEIA, Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. A Guide to the Chemical Waste Control Scheme		Y		N/A	Ongoing
14.7.2	8.3.1	A licensed contractor shall be employed to collect chemical waste for delivery to a licensed treatment facility.	Chemical waste treatment facility at Tsing Yi / throughout construction period	Contractor	TMEIA, Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. A Guide to the Chemical Waste Control Scheme		Y		N/A	Ongoing
14.7.2	8.3.1	Temporary storage areas for general refuse should be enclosed to avoid environmental impacts.	All areas/ throughout construction period	Contractor	TMEIA, Public Health and Municipal Services Ordinance		Y		N/A	Ongoing
14.7.2	8.3.1	Sufficient dustbins should be provided for storage of waste.	All areas/ throughout construction period	Contractor	TMEIA, Public Cleansing and Prevention of Nuisances Ordinance (Regional Council) By-laws, Public Health and Municipal Services Ordinance		Y		N/A	Ongoing

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location / Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Schedule			Maintenance Agency	Implementation Status
						D	C	O		
14.7.2	8.3.1	General refuse should be cleared daily and should be disposed of to the nearest licensed facility.	All areas, WENT landfill or NWNT refuse transfer stations/ throughout construction period	Contractor	TMEIA, Sanitation and Conservancy (Regional Council) By-laws		Y		N/A	Ongoing
14.7.2	8.3.1	Waste oils, chemicals or solvents shall not be disposed of to drain.	PAFF site/ throughout construction period	Contractor	TMEIA		Y		N/A	Ongoing
14.7.2	8.3.1	Good site practice shall be implemented to avoid waste generation and promote waste minimisation.	PAFF site/ throughout construction period	Contractor	TMEIA		Y			Ongoing
14.7.2	8.3.1	Waste materials such as paper, metal, timber and waste oil shall be recycled as far as practicable.	PAFF site/ throughout construction period	Contractor	TMEIA		Y		N/A	Ongoing
14.7.2	8.3.1	Temporary structures used during construction shall be provided in the form of proprietary Protakabin type units sited on areas of permanent hard paving units as far as practicable.	PAFF site/ throughout construction period	Contractor	TMEIA		Y		N/A	Ongoing
14.7.2	8.3.1	Dredged marine mud shall be disposed of in a gazetted marine disposal ground under the requirements of the Dumping at Sea Ordinance.	PAFF site/ throughout construction period				Y		N/A	Ongoing
14.7.2	8.3.1	All waste containers shall be in good condition and fitted with lids or covers to prevent waste from escaping or the ingress of water.	PAFF site/ throughout construction period	Contractor	TMEIA		Y		N/A	Ongoing
14.7.2	8.3.1	All waste containers shall be in a secure area on hardstanding.	PAFF site/ throughout construction period	Contractor	TMEIA		Y		N/A	Ongoing

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location / Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Schedule			Maintenance Agency	Implementation Status
						D	C	O		
14.7.2	8.3.1	Emergency equipment to deal with any spillage or fire shall be kept on site.	PAFF site/ throughout construction period		TMEIA		Y		N/A	Ongoing
14.7.2	8.3.1	All containers used for storage of chemical waste shall be maintained in good condition and clearly labelled in both English and Chinese.	PAFF site/ throughout construction period	Contractor	TMEIA		Y		N/A	Ongoing
14.7.2	8.3.1	All storage areas for chemical waste shall be: <ul style="list-style-type: none"> <li>Clearly labelled;</li> <li>Enclosed on at least 3 sides;</li> <li>Have impermeable floor and bunding sufficient to fully retain any spillage or leakages;</li> <li>Ventilated; and,</li> <li>Covered to prevent rainfall from entering.</li> </ul>	PAFF site/ throughout construction period	Contractor	TMEIA		Y		N/A	Ongoing
14.7.2	8.3.1	All types of asbestos including sources (such as clutch linings) shall be treated as chemical waste. Asbestos containing wastes shall be kept separate from other wastes.	PAFF site/ throughout construction period	Contractor	TMEIA		Y		N/A	Ongoing
14.7.2	8.3.1	All leaking containers shall be contained and removed from site as soon as is reasonably practicable.	PAFF site/ throughout construction period	Contractor	TMEIA		Y		N/A	Ongoing
14.7.2	8.3.1	Training shall be provided to workers about the concepts of site cleanliness and appropriate waste management procedures, including waste reduction, reuse and recycling.	PAFF site/ throughout construction period	Contractor	TMEIA		Y		N/A	Ongoing

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location / Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Schedule			Maintenance Agency	Implementation Status
						D	C	O		
14.7.2 Section 5	8.3.1	EM&A of waste handling, storage, transportation, disposal procedures and documentation through the site audit programme shall be undertaken.	All areas/ throughout construction period	Contractor	TMEIA		Y		N/A	Ongoing



Annex F

Graphical Presentation of  
Impact Water Quality  
Monitoring Results for the  
Reporting Period

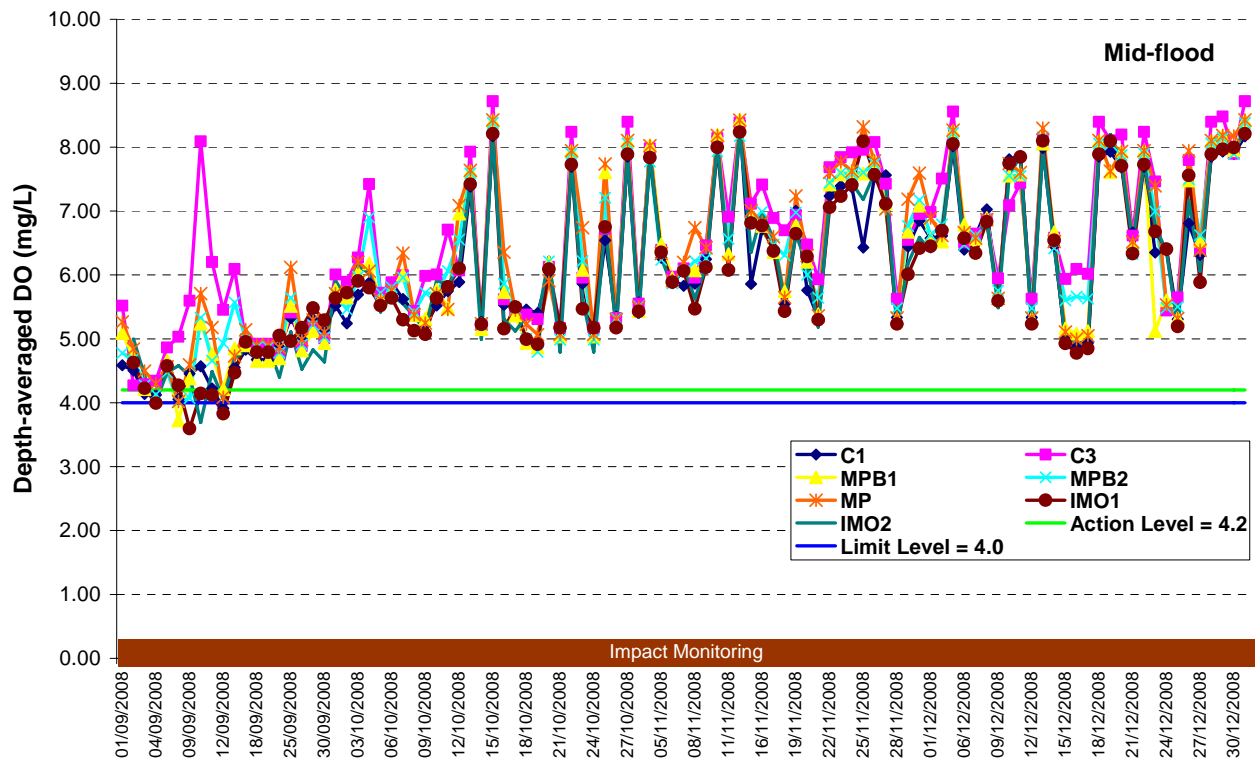
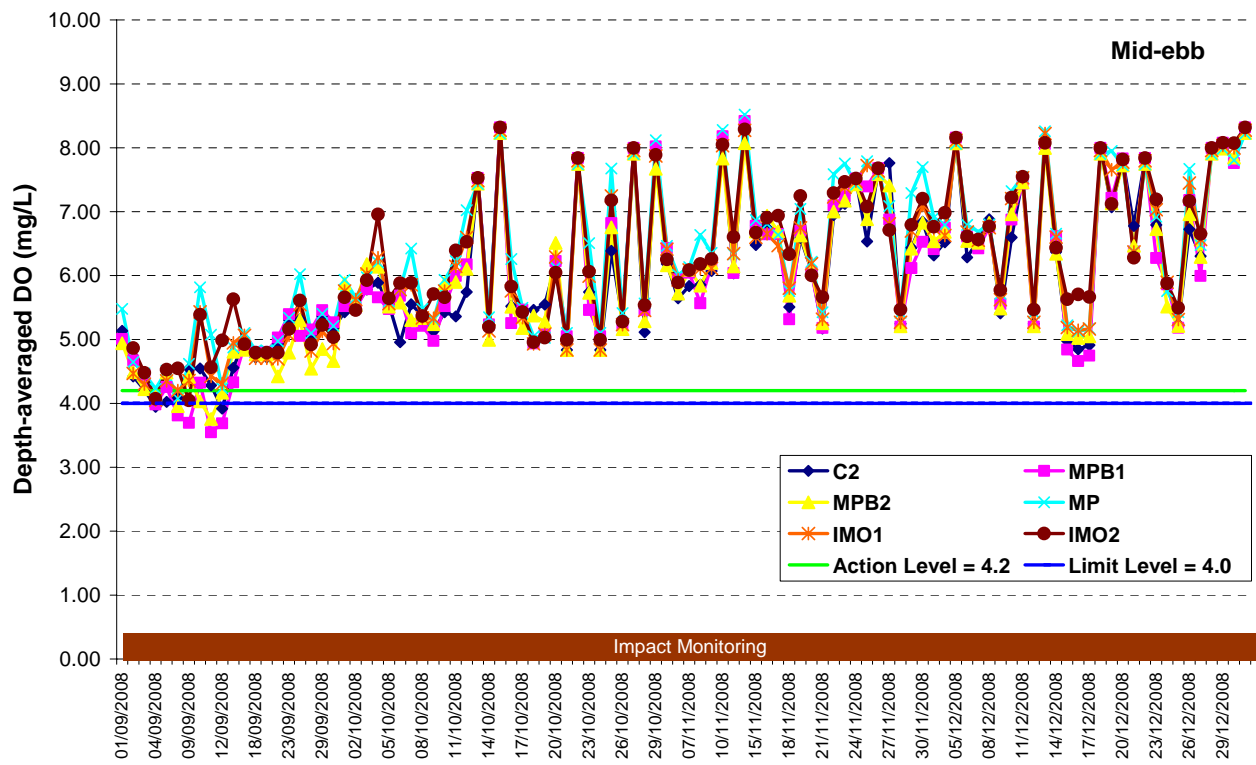


Figure G1 Dissolved oxygen concentration (depth-averaged) (mg/L) of water samples from the eight sampling locations at mid-ebb and mid-flood between 1 Sep to 31 Dec 08.



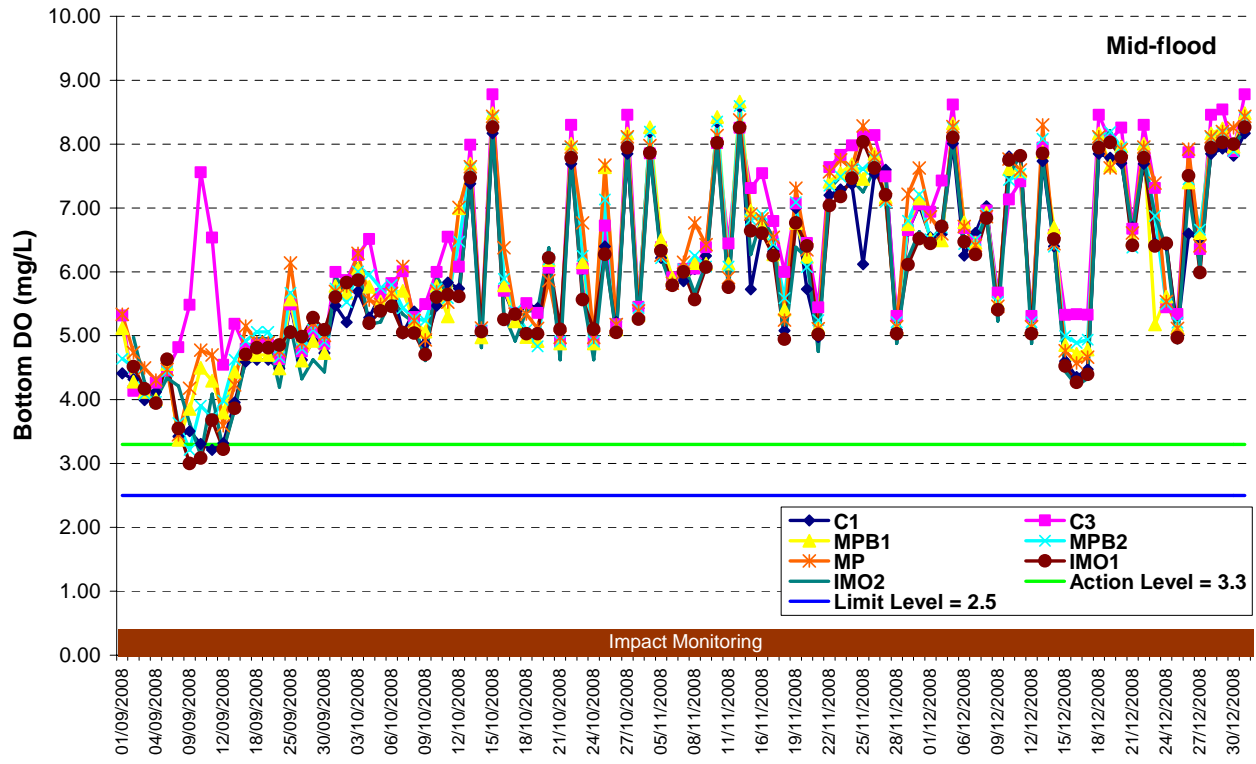
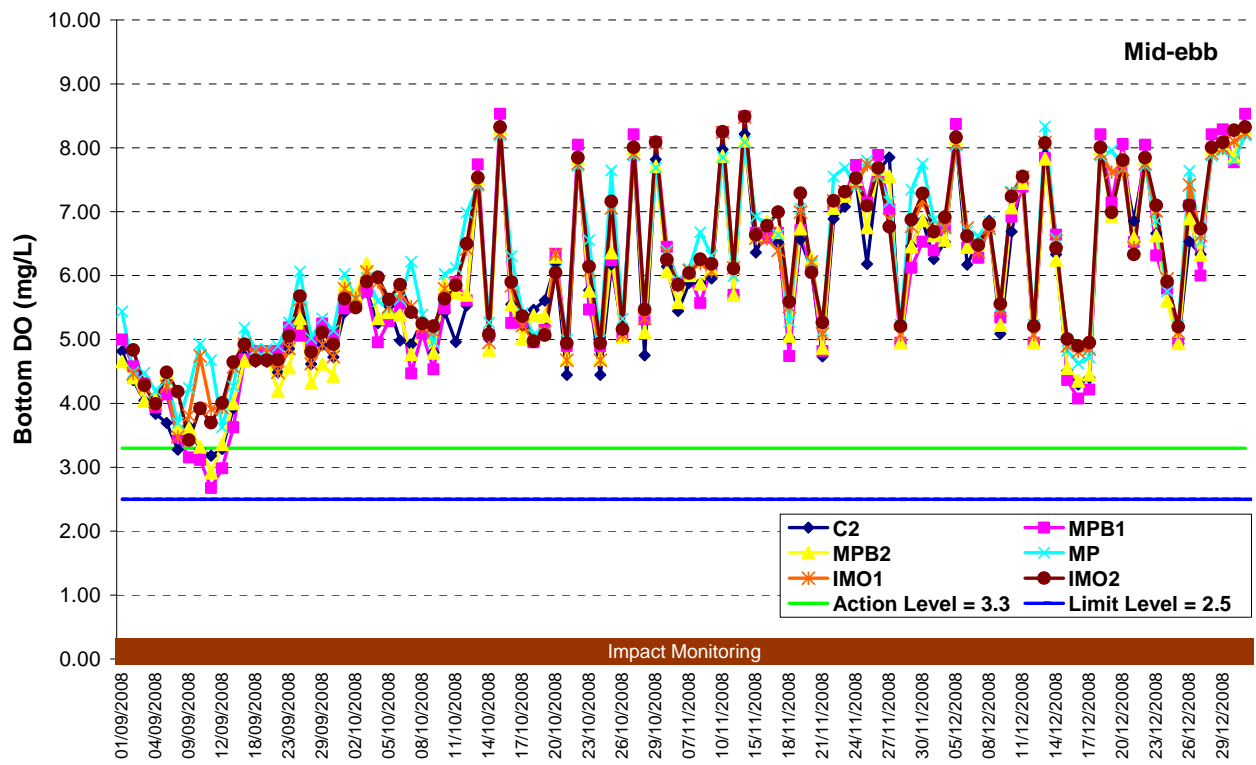


Figure G2 Dissolved oxygen concentration (bottom) (mg/L) of water samples from the eight sampling locations at mid-ebb and mid-flood between 1 Sep to 31 Dec 08.



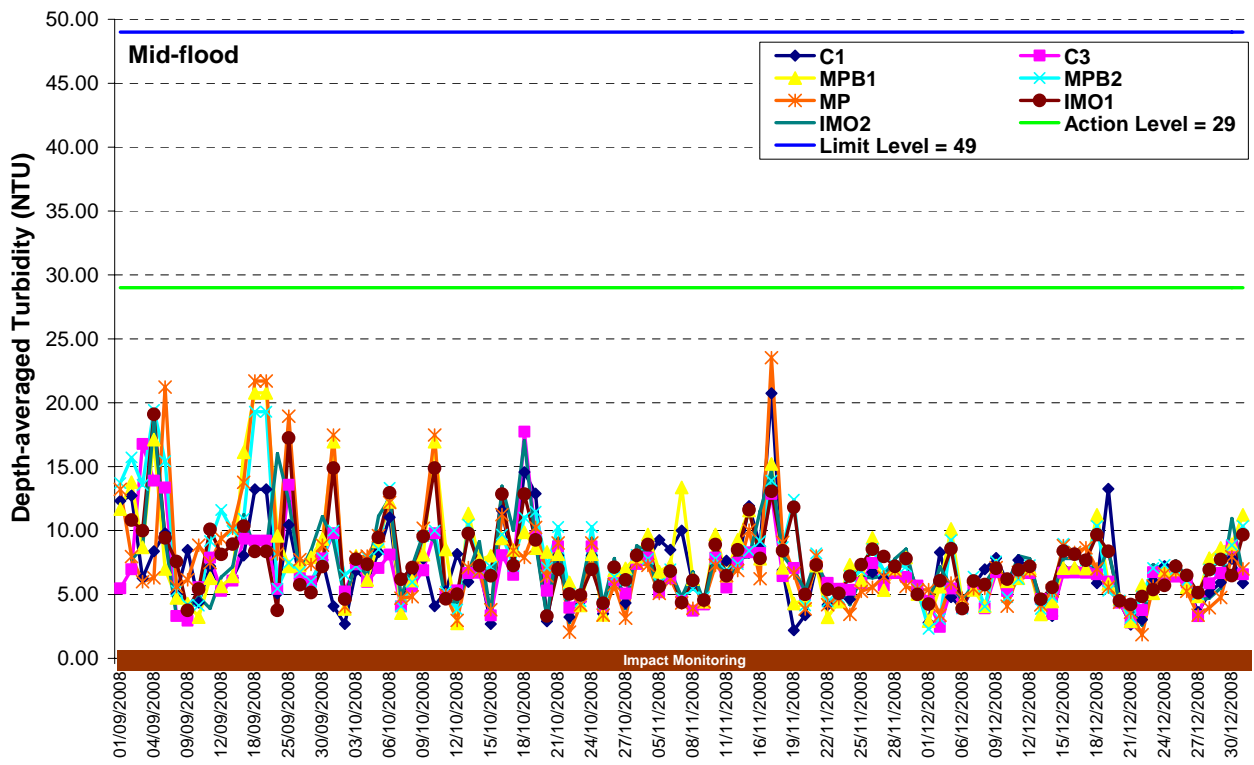
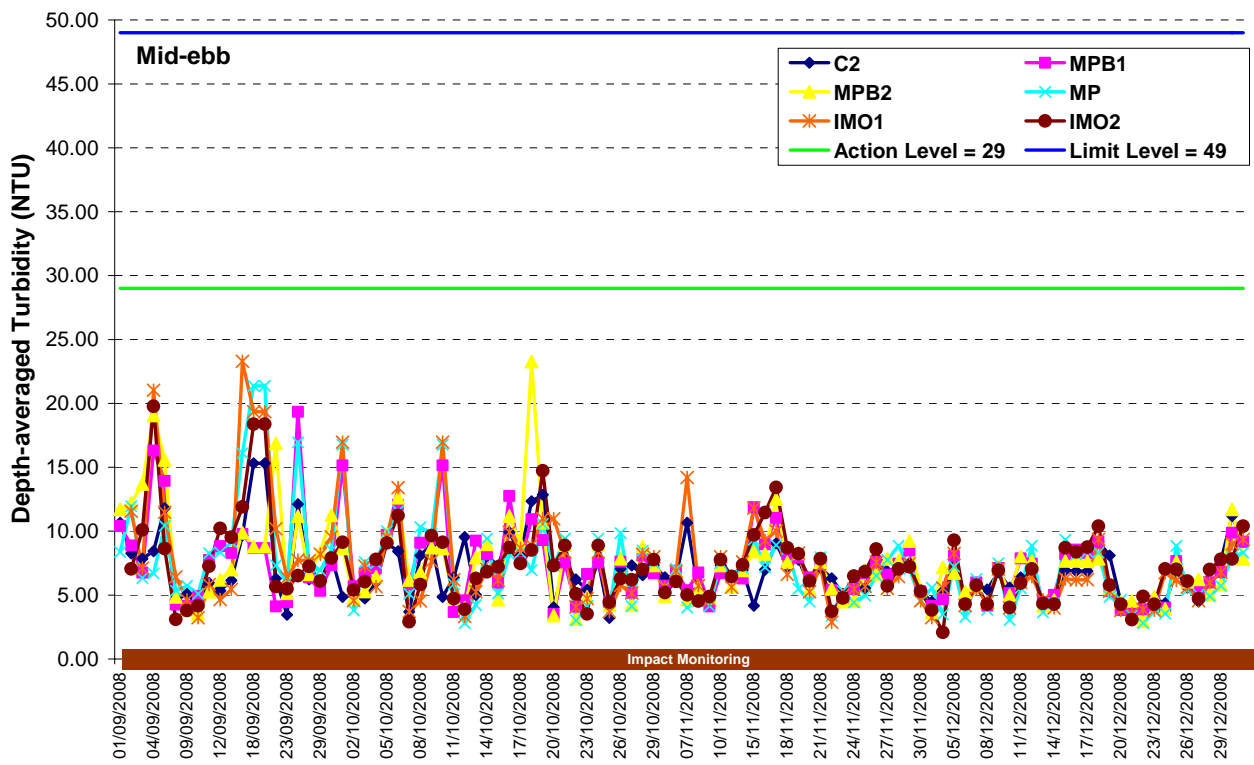


Figure G3 Depth-averaged turbidity (NTU) of water samples from the eight sampling locations at mid-ebb and mid-flood between 1 Sep to 31 Dec 08.



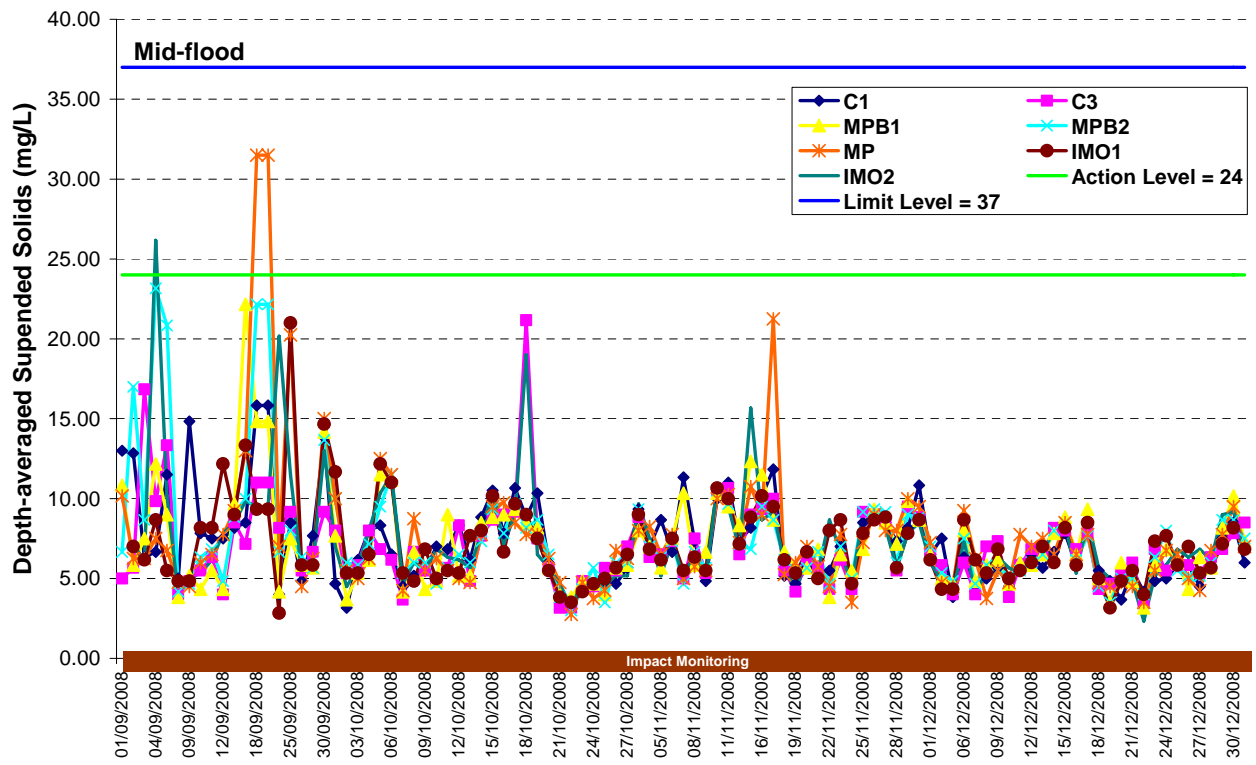
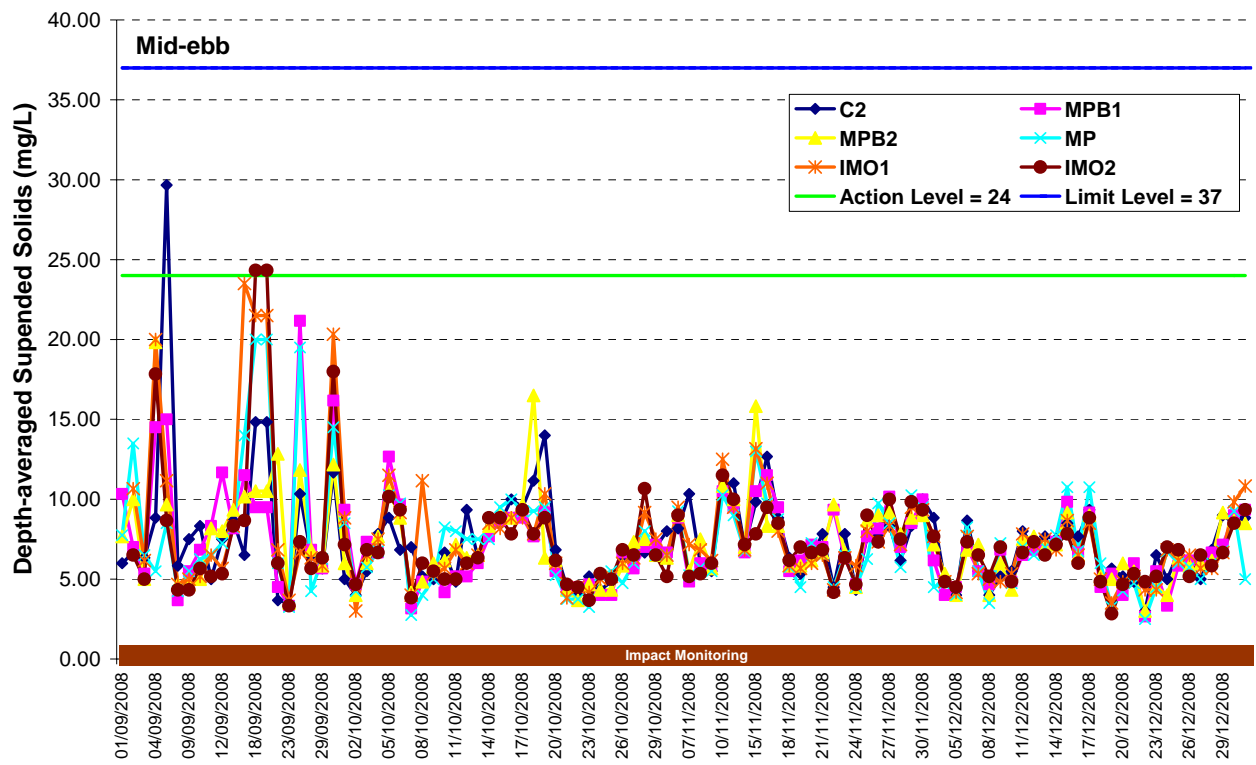


Figure G4 Depth-averaged suspended solids concentration (mg/L) of water samples from the eight sampling locations at mid-ebb and mid-flood between 1 Sep to 31 Dec 08.



Annex G

## Dolphin Sighting Records

**Project name: EM&A for Permanent Aviation Fuel Facility (PAFF)**

**Activity: Dolphin Impact Monitoring - Field Log Sheet**

\*Remark: Record the number of dolphin occurrence within the 500m exclusion (A) prior to dredging and (B) during dredging

\*\* Sighting recorded when there is no dredging

Week	Date		Dredger 1		Observers' Names	
			No. of Dolphin Occurrence*	Sighting No.		
1	Mon	01-Sep	No Dredging	-	Richard Huang	
	Tue	02-Sep	15	1-7	Anton Tsang	
	Wed	03-Sep	2	8	Anton Tsang	
	Thu	04-Sep	2	9	Richard Huang	
	Fri	05-Sep	1	10	Anton Tsang	
	Sat	06-Sep	No Dredging			
	Sun	07-Sep	No Dredging			
2	Mon	08-Sep	No Dredging	-	Richard Huang	
	Tue	09-Sep	0	-	Anton Tsang	
	Wed	10-Sep	0	-	Anton Tsang	
	Thu	11-Sep	0	-	Richard Huang	
	Fri	12-Sep	0	-	Anton Tsang	
	Sat	13-Sep	No Dredging			
	Sun	14-Sep	No Dredging			
3	Mon	15-Sep	No Dredging			
	Tue	16-Sep	0	-	Richard Huang	
	Wed	17-Sep	0	-	Anton Tsang	
	Thu	18-Sep	0	-	Richard Huang	
	Fri	19-Sep	0	-	Anton Tsang	
	Sat	20-Sep	No Dredging			
	Sun	21-Sep	No Dredging			
4	Mon	22-Sep	No Dredging	-	Ivy So	
	Tue	23-Sep	No Dredging	-	Anton Tsang	
	Wed	24-Sep	Typhoon			No Monitoring
	Thu	25-Sep	0	-	Richard Huang	
	Fri	26-Sep	0	-	Ivy So	
	Sat	27-Sep	No Dredging			
	Sun	28-Sep	No Dredging			

5	Mon	29-Sep	0	-	Ivy So
	Tue	30-Sep	4	11	Ivy So
	Wed	01-Oct	0	-	Richard Huang
	Thu	02-Oct	0	-	Ivy So
	Fri	03-Oct	0	-	Ivy So
	Sat	04-Oct	0	-	Ivy So
	Sun	05-Oct	0	-	Richard Huang
6	Mon	06-Oct	0	-	Ivy So
	Tue	07-Oct	0	-	Richard Huang
	Wed	08-Oct	0	-	Ivy So
	Thu	09-Oct	4	12-13	Ivy So
	Fri	10-Oct	0	-	Ivy So
	Sat	11-Oct	3	14	Ivy So
	Sun	12-Oct	1	15	Richard Huang
7	Mon	13-Oct	3	16	Ivy So
	Tue	14-Oct	0	-	Ivy So
	Wed	15-Oct	No Dredging	-	Ivy So
	Thu	16-Oct	0	-	Chung
	Fri	17-Oct	0	-	Ivy So
	Sat	18-Oct	0	-	Ivy So
	Sun	19-Oct	2	17	Richard Huang
8	Mon	20-Oct	0	-	Ivy So
	Tue	21-Oct	0	-	Ivy So
	Wed	22-Oct	5	18-20	Ivy So
	Thu	23-Oct	0	-	Richard Huang
	Fri	24-Oct	0	-	Ivy So
	Sat	25-Oct	0	-	Ivy So
	Sun	26-Oct	0	-	Richard Huang



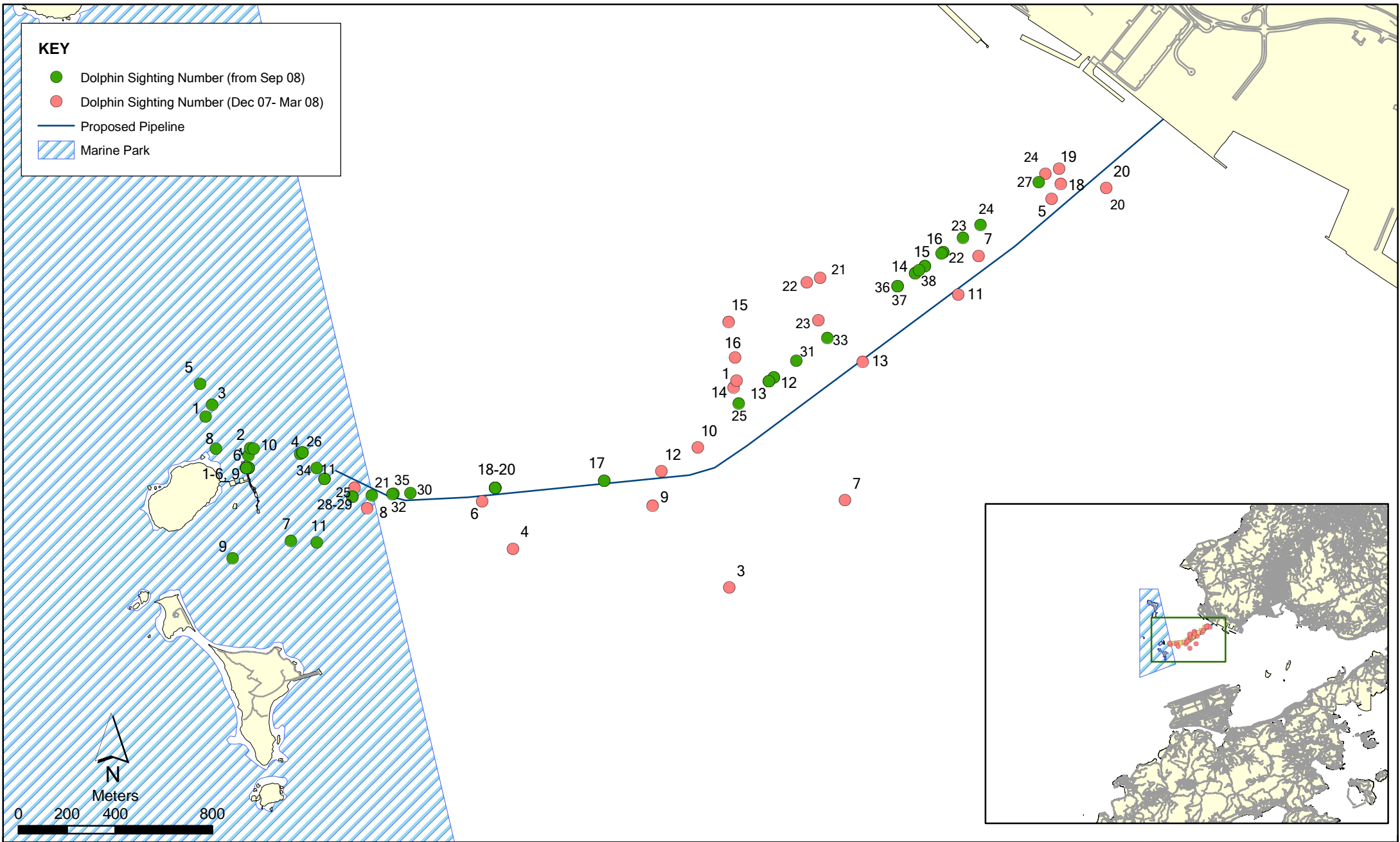
9	Mon	27-Oct	No Dredging	-	No Monitoring
	Tue	28-Oct	No Dredging	-	Ivy So
	Wed	29-Oct	No Dredging	-	No Monitoring
	Thu	30-Oct	No Dredging	-	No Monitoring
	Fri	31-Oct	No Dredging	-	Ivy So
	Sat	01-Nov	No Dredging	-	No Monitoring
	Sun	02-Nov	No Dredging	-	No Monitoring
10	Mon	03-Nov	No Dredging	-	No Monitoring
	Tue	04-Nov	No Dredging	-	No Monitoring
	Wed	05-Nov	No Dredging	-	Anton Tsang
	Thu	06-Nov	0	-	Richard Huang
	Fri	07-Nov	1	21-22	Anton Tsang
	Sat	08-Nov	No Dredging	-	Ivy So
	Sun	09-Nov	0	-	Richard Huang
11	Mon	10-Nov	1	23	Anton Tsang
	Tue	11-Nov	1	24	Anton Tsang
	Wed	12-Nov	0	-	Anton Tsang
	Thu	13-Nov	No Dredging	-	No Monitoring
	Fri	14-Nov	No Dredging	-	No Monitoring
	Sat	15-Nov	0	-	Ivy So
	Sun	16-Nov	1	25	Richard Huang
12	Mon	17-Nov	0	-	Anton Tsang
	Tue	18-Nov	0	-	Anton Tsang
	Wed	19-Nov	0	-	Anton Tsang
	Thu	20-Nov	0	-	Richard Huang
	Fri	21-Nov	11	26	Anton Tsang
	Sat	22-Nov	1	27	Ivy So
	Sun	23-Nov	0	-	Richard Huang

13	Mon	24-Nov	4	28-29	Anton Tsang
	Tue	25-Nov	0	-	Anton Tsang
	Wed	26-Nov	0	-	Anton Tsang
	Thu	27-Nov	0	-	Richard Huang
	Fri	28-Nov	0	-	Anton Tsang
	Sat	29-Nov	0	-	Ivy So
	Sun	30-Nov	0	-	Richard Huang
14	Mon	01-Dec	0	-	Anton Tsang
	Tue	02-Dec	No Dredging	-	No Monitoring
	Wed	03-Dec	No Dredging	-	No Monitoring
	Thu	04-Dec	3	30	Ivy So
	Fri	05-Dec	2	31	Ivy So
	Sat	06-Dec	0	-	Ivy So
	Sun	07-Dec	3	32	Ivy So
15	Mon	08-Dec	2	33	Anton Tsang
	Tue	09-Dec	0	-	Anton Tsang
	Wed	10-Dec	0	-	Richard Huang
	Thu	11-Dec	0	-	Ivy So
	Fri	12-Dec	1	34	Anton Tsang
	Sat	13-Dec	1	35	Ivy So
	Sun	14-Dec	0	-	Ivy So
16	Mon	15-Dec	2	36-37	Ivy So
	Tue	16-Dec	0	-	Anton Tsang
	Wed	17-Dec	1	38	Richard Huang
	Thu	18-Dec	0	-	Ivy So
	Fri	19-Dec	0	-	Anton Tsang
	Sat	20-Dec	0	-	Ivy So
	Sun	21-Dec	0	-	Richard Huang

17	Mon	22-Dec	0	-	Anton Tsang
	Tue	23-Dec	0	-	Anton Tsang
	Wed	24-Dec	0	-	Richard Huang
	Thu	25-Dec	0	-	Ivy So
	Fri	26-Dec	0	-	Ivy So
	Sat	27-Dec	0	-	Ivy So
	Sun	28-Dec	0	-	Richard Huang
18	Mon	29-Dec	0	-	Anton Tsang
	Tue	30-Dec	0	-	Anton Tsang
	Wed	31-Dec	0	-	Richard Huang

**KEY**

- Dolphin Sighting Number (from Sep 08)
- Dolphin Sighting Number (Dec 07- Mar 08)
- Proposed Pipeline
- ▨ Marine Park



Dolphin Sighting Locations (as of 31 December 2008)

Permanent Aviation Fuel Facility (PAFF) - Dolphin Sighting Records

Sighting No.	Date	Time		Dredger Coordinates (N-Lat)	Dredger Coordinates (E-Long)	Sighting Distance (m)	#Sighting Angle from Dredging Machine (o)	Group size	Group Composition*	Beaufort	Boat Association	Behaviour	Other comments
1	2/9/2008	1000	4315	823838.545	806678.150	275	320	4	2UA, 1 SA, 1 SJ	1	None	Feeding, Traveling	Before Dredging
			4321	823840.556	806672.460								
2	2/9/2008	1024	4315	823838.545	806678.150	80	5	2	2UA	1	None	Breaching, Spy-hopping	Before Dredging
			4321	823840.556	806672.460								
3	2/9/2008	1035	4315	823838.545	806678.150	300	330	2	1UA, 1SA	1	None	Traveling	Before Dredging
			4321	823840.556	806672.460								
4	2/9/2008	1045	4315	823838.545	806678.150	220	75	3	1UA, 1SA, 1UJ	1	None	Traveling	Before Dredging
			4321	823840.556	806672.460								
5	2/9/2008	1108	4315	823838.546	806678.151	400	330	1	1SA	1	None	Traveling	Before Dredging
			4321	823840.557	806672.461								
6	2/9/2008	1411	4315	823838.547	806678.152	50	0	1	1UA	2	None	Traveling	During Dredging
			4321	823840.558	806672.462								
7	2/9/2008	1530	4315	823838.548	806678.153	350	150	2	2UA	2	None	Traveling	During Dredging
			4321	823840.559	806672.463								
8	3/9/2008	1535	4306	823841.180	806687.338	155	300	2	2UA	1	None	Traveling	During Dredging
			4300	823842.903	806693.345								
9	4/9/2008	1336	4306	823841.181	806687.339	380	190	2	2UA	2	None	Traveling	During Dredging
			4300	823842.904	806693.346								
10	5/9/2008	1711	4315	823838.546	806678.151	80	15	1	1UA	2	None	Traveling	Dredging Stopped
			4321	823840.557	806672.461								
11	30/9/2008	1050	3925	823794.421	807000.841	250	350	4	4UA	2	None	Traveling	Before Dredging
			4015	823867.660	806948.534								
12	9/10/2008	1001	1900	824212.899	808853.818	200	10	3	3UA	2	None	Traveling	During Dredging
			1925	824198.037	808833.716								
13	9/10/2008	1427	1925	824198.037	808833.716	100	35	1	1UA	3	None	Traveling	Before Dredging
			1970	824171.284	808797.532								
14	11/10/2008	0839	1175	824643.917	809436.783	220	15	3	3 UA	2	None	Traveling	Before Dredging
			1160	824652.835	809448.845								
15	12/10/2008	0839	1125	824673.643	809476.988	240	160	1	1UA	2	None	Traveling	During Dredging
			1170	824646.890	809440.804								
16	13/10/2008	0818	1030	824730.121	809553.376	170	160	3	1SS, 1 SA, 1 UA	2	None	Breaching, Feeding	Before Dredging
			1025	824733.094	809557.397								
17	19/10/2008	11:04	2730	823785.196	808154.203	270	270	2	2UA	2	None	Traveling	Dredger was moving
			2680	823792.332	808203.670								
18	22/10/2008	1420	3180	823757.391	807705.065	550	30	3	3 UA	2	None	Traveling	During Dredging
			3220	823754.942	807665.140								
19	22/10/2008	1528	3180	823757.392	807705.066	180	55	2	2 UA	2	None	Traveling	During Dredging
			3220	823754.943	807665.141								
20	22/10/2008	1625	3180	823757.393	807705.067	200	45	3	3UA	2	Hang	Feeding	Dredging Stopped
			3220	823754.944	807665.142								
21	7/11/2008	1210	3690	82376.168	807196.022	700	345	5	3UA, 2SA	2	Hang	Traveling, Feeding	Dredging Stopped
			3760	823721.882	807126.153								
22	7/11/2008	1618	1040	824724.176	809545.335	200	45	1	1UA	1	None	Traveling	During Dredging
			1015	824739.039	809565.468								
23	10/11/2008	1249	930	824789.572	809633.785	20	275	1	1UA	3	None	Traveling	Dredging Stopped
			905	824804.435	809653.888								
24	11/11/2008	1605	840	824843.078	809706.153	30	97	1	1UA	3	None	Traveling	During Dredging
			820	824854.968	809722.235								
25	16/11/2008	0843	2080	824105.888	808709.082	290	270	1	1UA	2	None	Traveling	During Dredging
26a	21/11/2008	1430	4074	823904.923	806909.628	50	70	5	2UA, 2SS, 1UJ	2	None	Traveling, Breaching, Porpoising, Feeding	During Dredging
			4059	823904.280	806922.380								
26b	21/11/2008	1430	4074	823904.923	806909.628	300	335	6	2UA, 2SA, 1SJ, 1UC	2	None	Traveling, Breaching, Feeding	During Dredging
			4059	823904.280	806922.380								
# Sighting 26a & 26b later merged into 1 large group at about 100 away from dredging machine at 335o, so they are regarded as one sighting													
27	22/11/2008	1558	545	825018.457	809946.360	100	325	1	1UA	3	None	Traveling	During Dredging
			490	825051.155	809987.585								
28	24/11/2008	1220	3770	823721.270	807116.172	400	345	1	1UA	4	None	Traveling	Dredging Stopped
			4030	823879.867	806939.816								
29	24/11/2008	1233	3770	823721.270	807116.172	250	305	3	2UA, 1SS	4	None	Traveling (1UA traveled past the side of	Dredging Stopped



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