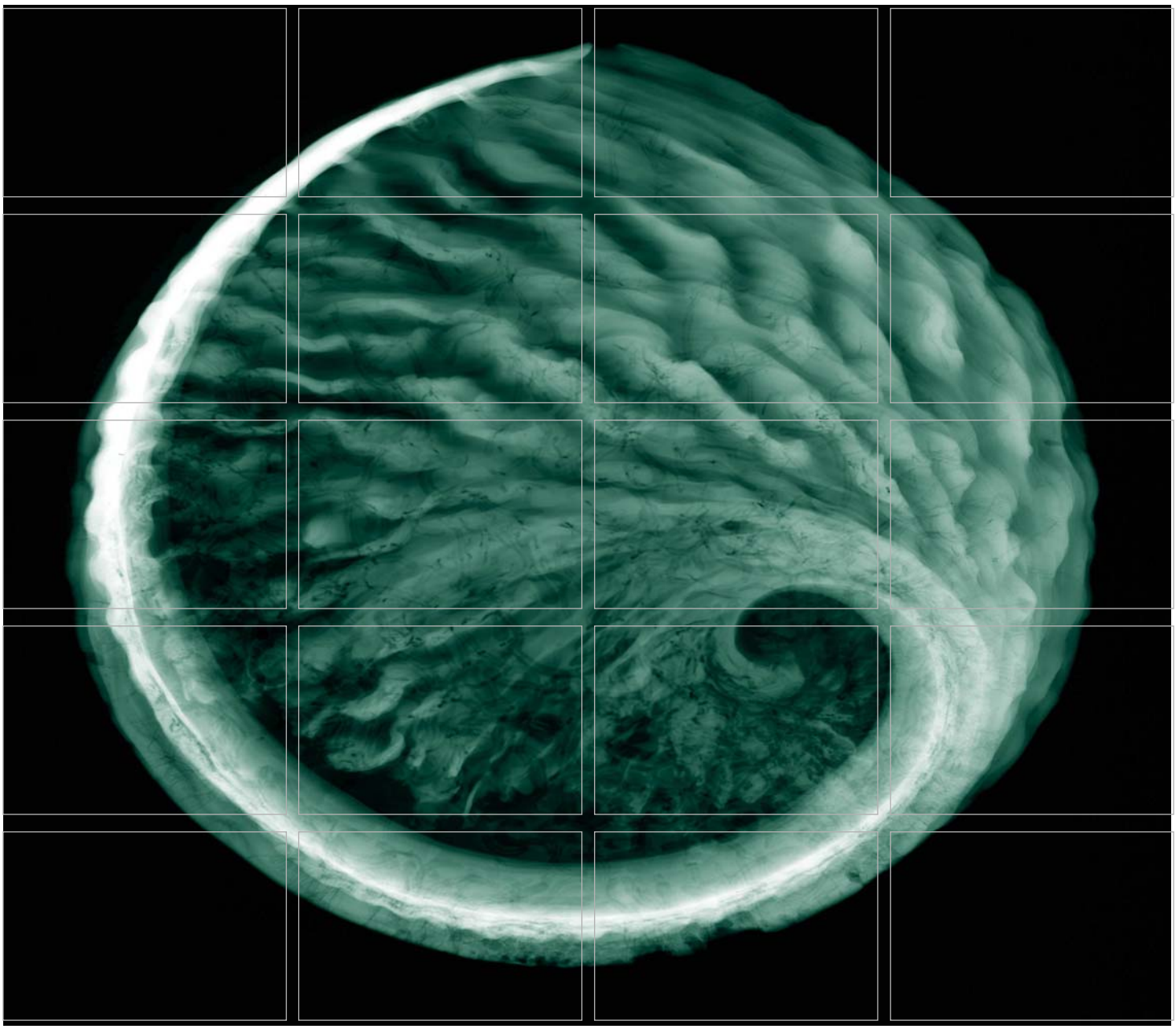


Permanent Aviation Fuel Facility (EP-262/2007/B)

Eleventh Quarterly Environmental Monitoring and Audit Report – July 2009 to September 2009

13 October 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

香港機場管理局 AIRPORT AUTHORITY HONG KONG

Permanent Aviation Fuel Facility for Hong Kong International Airport

Environmental Certification Sheet
EP-262/2007/B

Reference Document/Plan

Document/~~Plan~~ to be ~~Certified~~/ Verified:	Eleventh Quarterly EM&A Report – Jul 2009 to Sep 2009
Date of Report:	13 October 2009
Date received by ET:	13 October 2009
Date received by IEC:	13 October 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/~~plan~~ complies with the above referenced sections of the EM&A Manual recommendation

Craig A Reid, Environmental Team Leader: Date: 13 October 2009

IEC Verification

I hereby verify that the above referenced document/~~plan~~ complies with the above referenced sections of the EM&A Manual recommendation

pp Dr Guiyi Li, Independent Environmental Checker: Date: 14 Oct 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.

REPORT

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

Eleventh Quarterly Environmental Monitoring and Audit Report
July 2009 to September 2009

13 October 2009

Prepared by: Francesca Zino/Karen Lui/Craig A Reid

Document Code: 0018105_EM&AR_11th Quarterly_Oct 09_v0.doc

For and on behalf of
Environmental Resources Management

Approved by: Craig A Reid

Signed:

Position: Environmental Team Leader

Date: 13 October 2009

This report has been prepared by Environmental Resources Management the trading name of 'ERM Hong-Kong, Limited', with all reasonable skill, care and diligence within the terms of the Contract with the client, incorporating our General Terms and Conditions of Business and taking account of the resources devoted to it by agreement with the client.

We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.

This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk.

CONTENTS

LIST OF TABLES

LIST OF ANNEXES

EXECUTIVE SUMMARY

The construction works for the Permanent Aviation Fuel Facility resumed on 9 July 2007. This **eleventh** quarterly Environmental Monitoring and Audit (EM&A) report presents the EM&A work carried out during the period from **1 July** to **30 September 2009** in accordance with the *EM&A Manual*.

Breaches of all Action and Limit Levels

No water quality monitoring was conducted (due to no dredging work) during the reporting period that required comparison against Action and Limit Levels.

Complaint Log

No environmental complaints were received during the reporting period.

Notifications of any Summons and Successful Prosecutions

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

Reporting Changes

There were no reporting changes in the reporting period.

Future Key Issues

- Dust release and suppression;
- Backfilling of rock armour over the pipelines; and,
- Dredging operation for the repair of pipeline.

1 INTRODUCTION

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 28th 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.

The decision by EPD to grant the above Environmental Permit was, however, 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. A further Variation to the Environmental Permit has been approved to allow dredging works to continue until 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 **eleventh** EM&A Report which summarizes the monitoring results and audit findings for the EM&A programme during the reporting period from **1 July** to **30 September 2009**.

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
Airport Authority Hong Kong – Environmental Permit Holder				
Anthony Wong	Assistant General Manager Aviation Logistics	2183 3099	2824 2786	anthony.wong@hkairport.com
Contractor – Leighton (Asia) Construction Limited				
Brian Gillon	Project Director	2823 1111	2529 8784	brian.gillon@leightonasia.com
Boyd Merrett	Project Manager	2404 8900	2404 0081	boyd.merrett@leightonasia.com
Franchisee's Site Representative – ECO Aviation Fuel Development Limited				
Philip Siu	Franchisee's Site Representative	2963 2820	2563 6311	philip.siu@towngas.com
Environmental Team – ERM-Hong Kong Limited				
Craig Reid	Environmental Team Leader	2271 3000	2723 5660	craig.reid@erm.com
Independent Environmental Checker – Hyder Consulting Limited				
Dr Guiyi Li	Independent Environmental Checker	2911 2233	2805 5028	guiyi.li@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

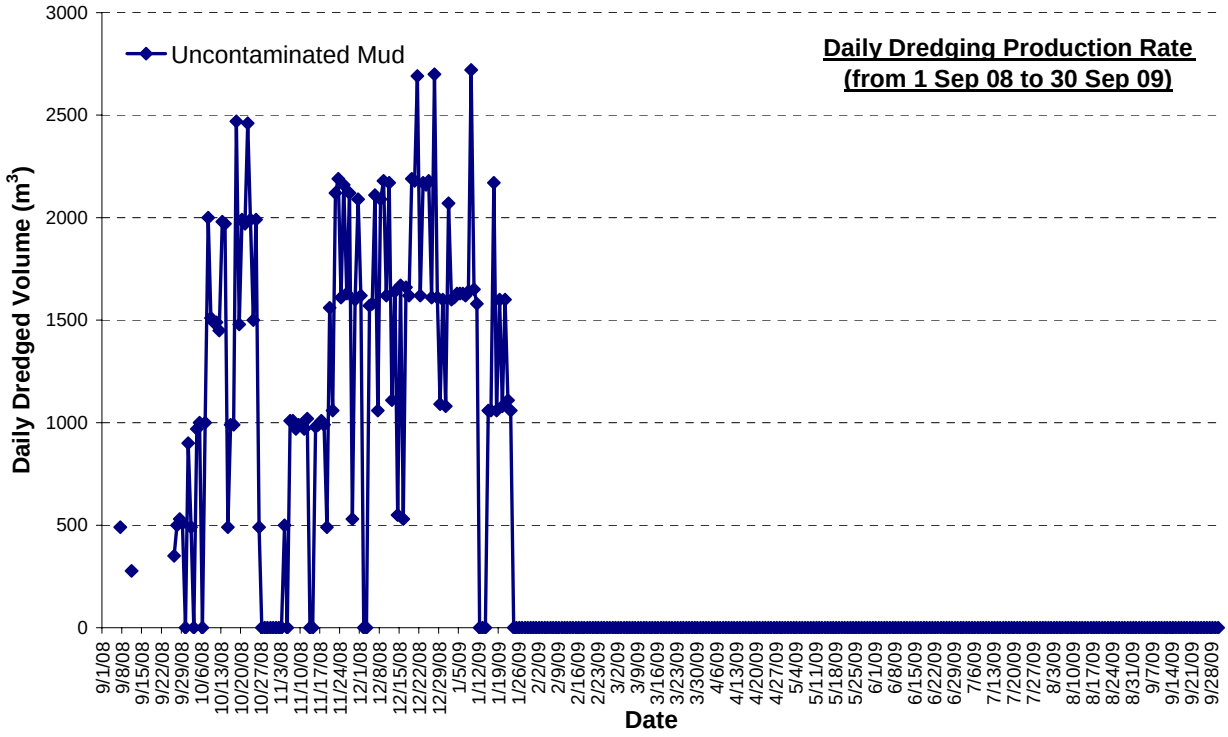
A summary of the major works undertaken in this reporting period is shown in ***Table 2.1***. Marine dredging operations were completed on 23 January 2009. ***Table 2.2*** presents the cumulative quantity of excavated materials up to that date. Daily and cumulative dredging production rates are illustrated in ***Figure 2.1***.

Table 2.1 Summary of Works Undertaken During the Reporting Period

Area	Works undertaken
Tuen Mun Area 38	• Tank Farm, Roof Truss and Bund Wall Construction • Permanent Drainage Construction • Operational & Fire Services Buildings Construction • Jetty Works (Non-piling) • Pre-Commission and Commissioning Activities for Phase 1A (the first four tanks)
Submarine Pipeline Route	• Riser connections at seawall and Sha Chau • Backfilling and placing of rock armour over the pipelines

Table 2.2 Cumulative Quantity of Excavated Materials

Type of Excavated Materials	Cumulative Bulk Volume (m^3)
From 17 December 2007 to 31 March 2008	
Contaminated Mud	105,974
Uncontaminated Mud	97,815
From 1 September 2008 to 23 January 2009	
Contaminated Mud	0
Uncontaminated Mud	149,147



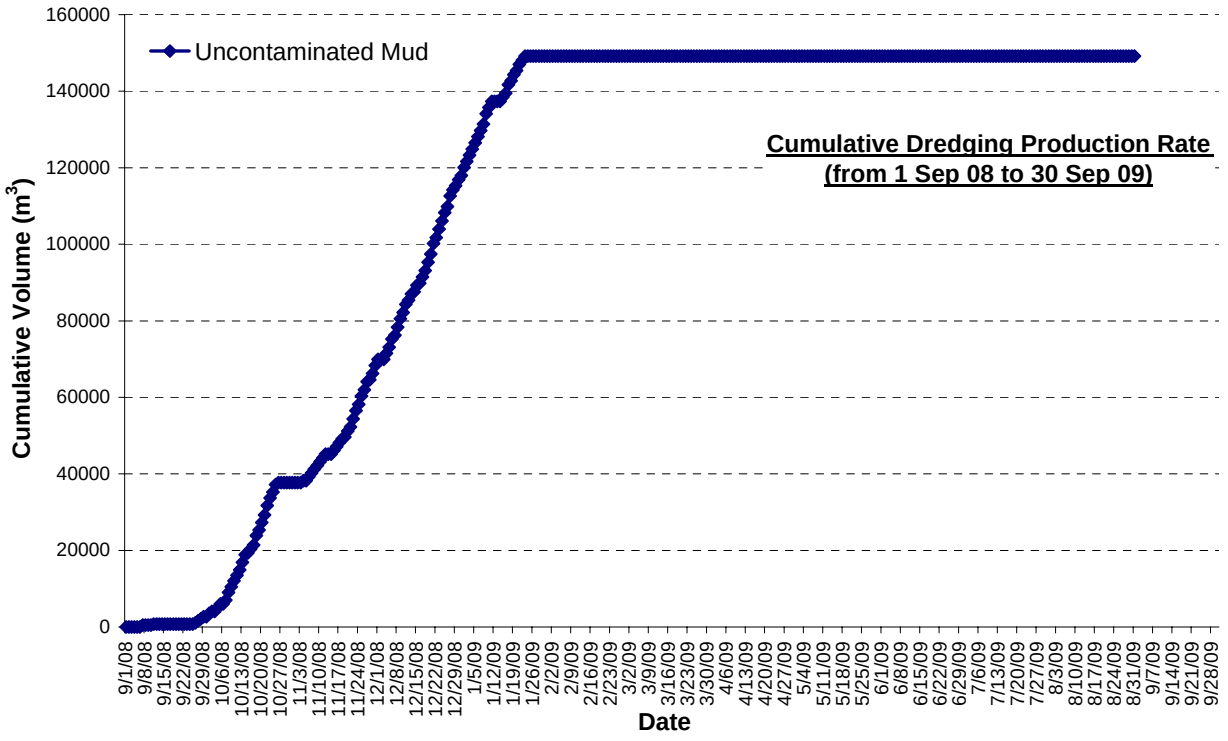


Figure 2.1 Daily and cumulative volumes (m³) of excavated materials from 1 September 2008 to 30 September 2009. Excavated materials contained uncontaminated mud only.

ERM

Ref: 0018105_Figure 2.1_dredging volume.doc

2.4 MONITORING SCHEDULE OF THE REPORTING PERIOD

No water quality monitoring was conducted during the reporting period, hence presentation of the monitoring schedule is not applicable.

2.5 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS

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 2.3 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/U1D/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

Permit/ Licenses/ Notification	Reference	Validity Period	Remarks
	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
	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

Permit/ Licenses/ Notification	Reference	Validity Period	Remarks
	GW-RW0054-09	16 February 2009 to 5 August 2009	For land-based and marine works including passenger launch, winch, welding machine, grinder, generator, power pack, tug boat, crane, air compressor, roller, hoist and derrick barge
	GW-RW0261-09	3 July 2009 to 3 November 2009	For land-based and marine works including derrick barge, grinder, crane, tug boat, drill, welding machine, hopper barge, motor sampan, air compressor
	GW-RW0299-09	21 July 2009 to 20 January 2010	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 etc
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
	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

Permit/ Licenses/ Notification	Reference	Validity Period	Remarks
Wastewater Discharge License	*EP760/421/011399/l*	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) was established within three months after commencement of construction of the Project. The major duty of the 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 13 September 2009. 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 C.***

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 C.***

3.1 PREVIOUS ENVIRONMENTAL DEFICIENCIES AND FOLLOW-UP ACTIONS

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

Weekly site inspections were carried out by the ET on 3, 10, 16, 21 and 31 July 2009, 5, 14, 19 and 28 August 2009, and 2, 10, 18, 23 and 28 September 2009. Overall, the site was in good orderly manner and 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
July 2009	Unpaved areas were not watered regularly	The Contractor was reminded to water regularly on the unpaved areas to avoid dust generation.
	Stagnant water pools were observed in the drip trays of machinery, in the tank farm area, near the tanks, in the new wheelwash near the pump platform and in the bunding around diesel drums.	The Contractor was reminded to regularly clear stagnant water and check the efficiency of the drainage system,.
	Water exiting the sedimentation tank near the temporary exit on the western side of the site was observed to be muddy which may also have lead to a muddy discharge observed in the marine area.	The Contractor was reminded to ensure the tank functions properly so that the site runoff can be settled before discharge.
	A slight sediment plume was observed at the drainage discharge outfall at the jetty area.	The Contractor was reminded to check efficiency of the septic tanks regularly, especially after heavy rain.
	Leaking water was found coming from the tap water system next to the workshop, a hose pipe near the jetty area and two pressure pumps.	The Contractor was reminded to maintain tap water systems in good condition, repair the leaking hose-pipe and keep the pumps in good condition, all to avoid accumulation of stagnant water.

Reporting Month	Observation	Follow-up Action
	General and construction wastes such as paper waste, aluminium cans and plastic bottles were accumulated in the tank farm area, the workshop area and near the operation building without proper receptacles.	The Contractor was reminded to clear the waste or provide bins for temporary storage as soon as possible and also to provide recycling bins where appropriate.
	Empty paint cans were found strewn in the chemical storage area.	The Contractor was reminded to separate these from the chemical waste and store them in the designated area.
	Chemical waste drums were found to have accumulated without labels and the drip trays were not in good condition.	The Contractor was reminded to clear the waste drums and replace the drip trays as soon as possible.
August 2009	Stagnant water pools were observed in various areas (eg drip trays machinery (air compressor), the diesel tank and drums, and under the dehumidifier by Tank 8)	The Contractor was reminded to cover the diesel tank and generator in the workshop area with the tarpaulin during rain storms, clear water in the bunded areas and regularly clear stagnant water. The contractor was also reminded to attach a pipe to the dripping pipe coming from the dehumidifier to ensure the water was disposed of properly and not left to accumulate in a stagnant pool.
	Water being pumped out of Tank 12 was not going into the drainage system and the water hose leaving the sediment tank by Tank 12 was not going directly into the drainage system.	The Contractor was asked to source a longer hose so that water being pumped from Tank 12 was directed into the drainage system and ensure the pipe was directed into the drainage system.
	A bund stopper and some water pipes were found to be leaking in the Tank Farm area.	The Contractor was reminded to reseal the join and repair the pipes to keep them all in good working order.
	A sediment plume was observed at the drainage discharge outfall at the jetty area. After investigation, it was concluded that the plume was probably due to the heavy rain during the previous night and the disrepair of the sandbags and filters.	The Contractor was reminded to repair the sandbags and filters on all the open drains and check the efficiency of the sediment tanks/ silt retention measures regularly, especially after heavy rain.
	A thin film of oil was observed on the steps going down to the water in the jetty area.	The Contractor was asked to investigate the source of the problem and clear the oil sheen as soon as possible.

Reporting Month	Observation	Follow-up Action
	A drain by the pumping station was found to be blocked, with a pool of water above it.	The Contractor was reminded to repair the drain as soon as possible and ensure the whole drainage system was in good repair.
	The cement holding the bunding in place round the diesel tank and generator in the workshop area was found to be in a state of disrepair.	The Contractor was advised to re-cement the bunding round the diesel tank and generator.
	Empty paint cans were found strewn in the chemical storage area.	The Contractor was reminded to separate the paint cans from the chemical waste and store them in the appropriate area.
	The chemical waste storage containers were found to be without sufficient ventilation.	The Contractor was reminded to cut ventilation holes in the storage containers and install ventilation windows.
	Stockpiles of construction waste were found accumulated without proper receptacles on the tank circular road in the tank farm area and/or inside Tank 10.	The Contractor was reminded to clear the waste or provide bins for temporary storage as soon as possible.
September 2009	Black smoke was seen regularly being emitted from the rock-filling barge.	The contractor was advised to inspect/service the engine as soon as possible..
	Unpaved areas were not watered regularly	The Contractor was reminded to water regularly the unpaved areas to avoid dust generation
	Oil sheen was observed in the bunding around the diesel tank in the Workshop area.	The Contractor was advised to clear the oily water as soon as possible and dispose of the contaminated water appropriately.
	Stagnant pools of water were observed underneath the de-humidifier leading into Tank 8, due to a constant drip originating from the machine. These pools were also observed around the hose and dripping pipe.	The Contractor was advised to secure the hose to the dripping pipe, ensure the pipe led into a drain and clear the stagnant water as soon as possible.
	The water hose leaving the sediment tank by Tank 10 was not going directly into the drainage system. .	The Contractor was reminded to move the pipe so that it went into the drainage system

Reporting Month	Observation	Follow-up Action
	Stagnant water pools were observed in the bunding around the diesel drum near Tank 11, in the bunding round the air compressor near Tank 11, in the bunding around the generator near Tank 10 and in the Tank Farm area, some with white cooling agent in it.	The Contractor was reminded to clear water in the bunded areas and regularly clear stagnant water.
	Water was observed pouring out of the water tank by the wheel washing facility, not leading into a drain. .	The Contractor was advised to pipe the water into a drain or run it through a sediment tank.
	Empty paint cans were found strewn next to Tank 8.	The Contractor was reminded to place the paint cans in an appropriate receptacle and dispose of them appropriately.
	The chemical waste storage container by the Workshop was leaking slightly from the ceiling.	The contractor was advised to repair the leak as soon as possible.
	The chemical waste storage containers were found to be without sufficient ventilation.	The Contractor was reminded to install ventilation windows in the storage containers.
	The waste paper recycling bins were found to be overflowing and the skip by Tank 8 was found to be full.	The Contractor was advised to arrange for the collection of this waste as soon as possible.
	A small container of lubricant was found in the chemical waste storage behind the Workshop area.	The Contractor was advised to pour this into the big drum of chemical waste as soon as possible.
	Stockpiles of construction waste were found accumulated without proper receptacles near the chemical waste storage between the Workshop area and Tank 10, outside the exit from the Jetty area and outside the entrance between the main entrance and the Jetty area entrance.	The Contractor was reminded to clear the waste or provide bins for temporary storage 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 D***.

4 ENVIRONMENTAL MONITORING

4.1 AIR AND NOISE

Air and Noise monitoring is not required for the project.

4.2 WATER QUALITY

No dredging activities were scheduled from 24 January 2009 onwards, hence no water quality monitoring was required during the quarter.

4.3 POPS MONITORING

No dredging activities were scheduled from 24 January 2009 onwards, hence persistent organic pollutants (POPs) monitoring was not required during the quarter.

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 weekly site inspections included general audits on landscape and visual issues to ensure that the site was in orderly and 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

Dolphin visual monitoring was not required as no dredging works were scheduled for the reporting period.

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. The revised *EM&A Manual*, which has been verified by the IEC, was submitted to the EPD on 1 April 2009.

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 reporting period will be:

- dust release and suppression;
- backfilling of rock armour over pipelines; and,
- dredging operation for the repair of pipeline;

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:

- backfilling and placing of rock armour works;
- dredging operation for the repair of pipeline;
- riser connections at Sha Chau;
- jetty platform works (non-piling);
- site works (construction works for tank farm, roof truss, operational and fire services buildings, drainages, bund wall, security wall etc); and,
- pre-commission and commissioning activities for Phase 1A (the first four tanks).

Weekly site inspections will be undertaken in accordance with the *EM&A Manual*.

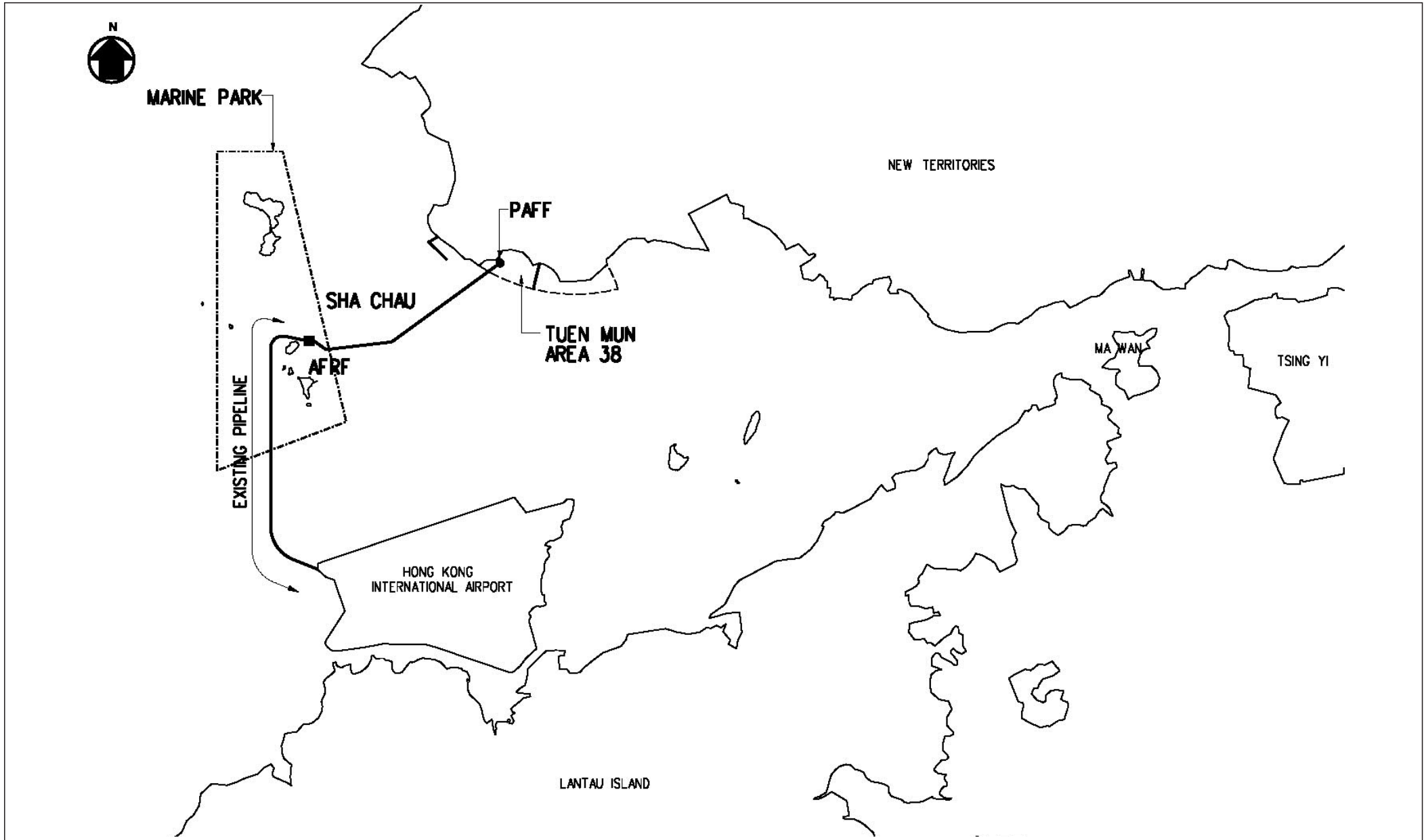
5.4 CONCLUSION

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

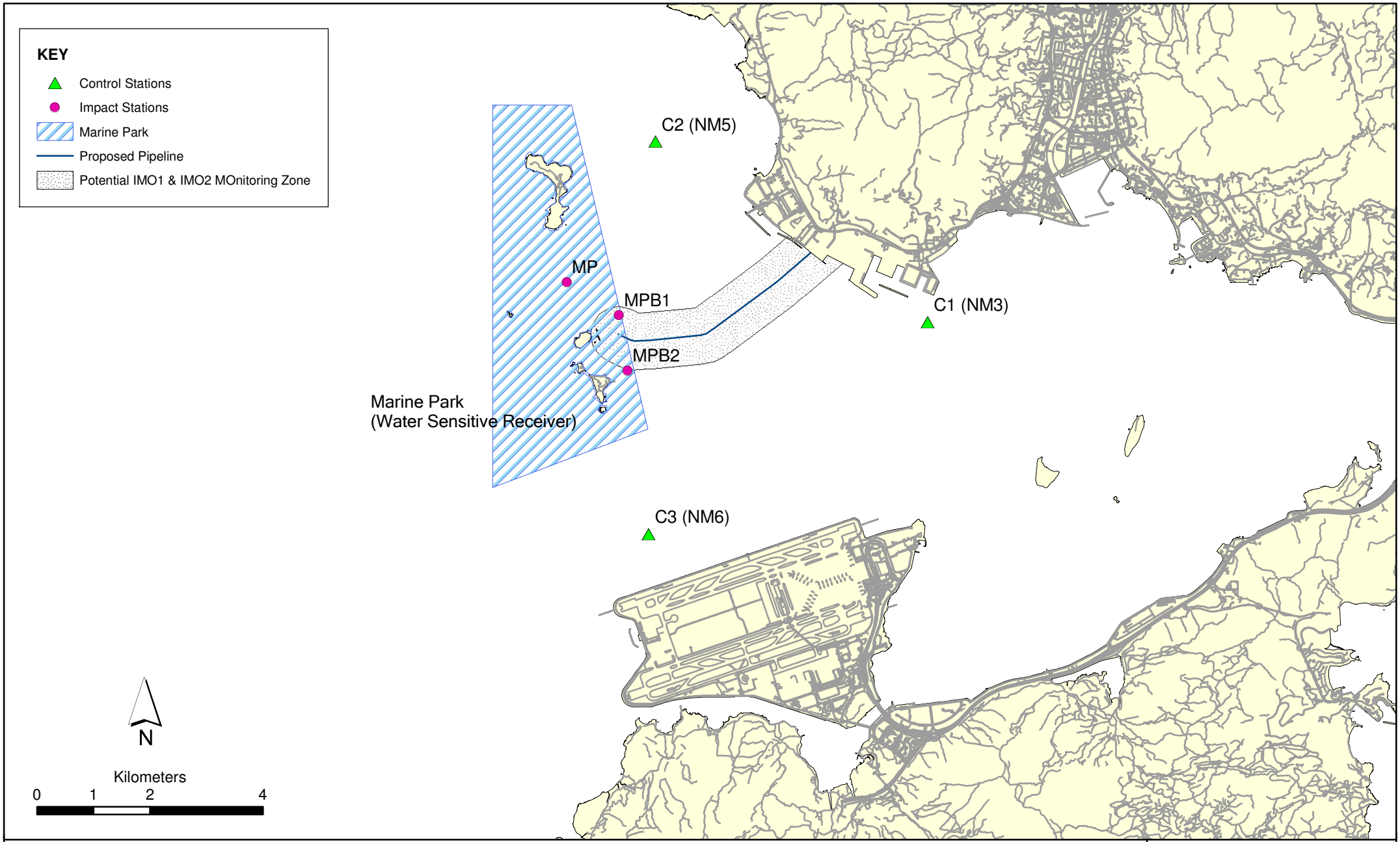
FILE: 0018105bb1
DATE: 12/11/2007

Environmental
Resources
Management

ERM

Annex B

Water Quality Monitoring Stations, Water Quality and Ecological Sensitive Receivers



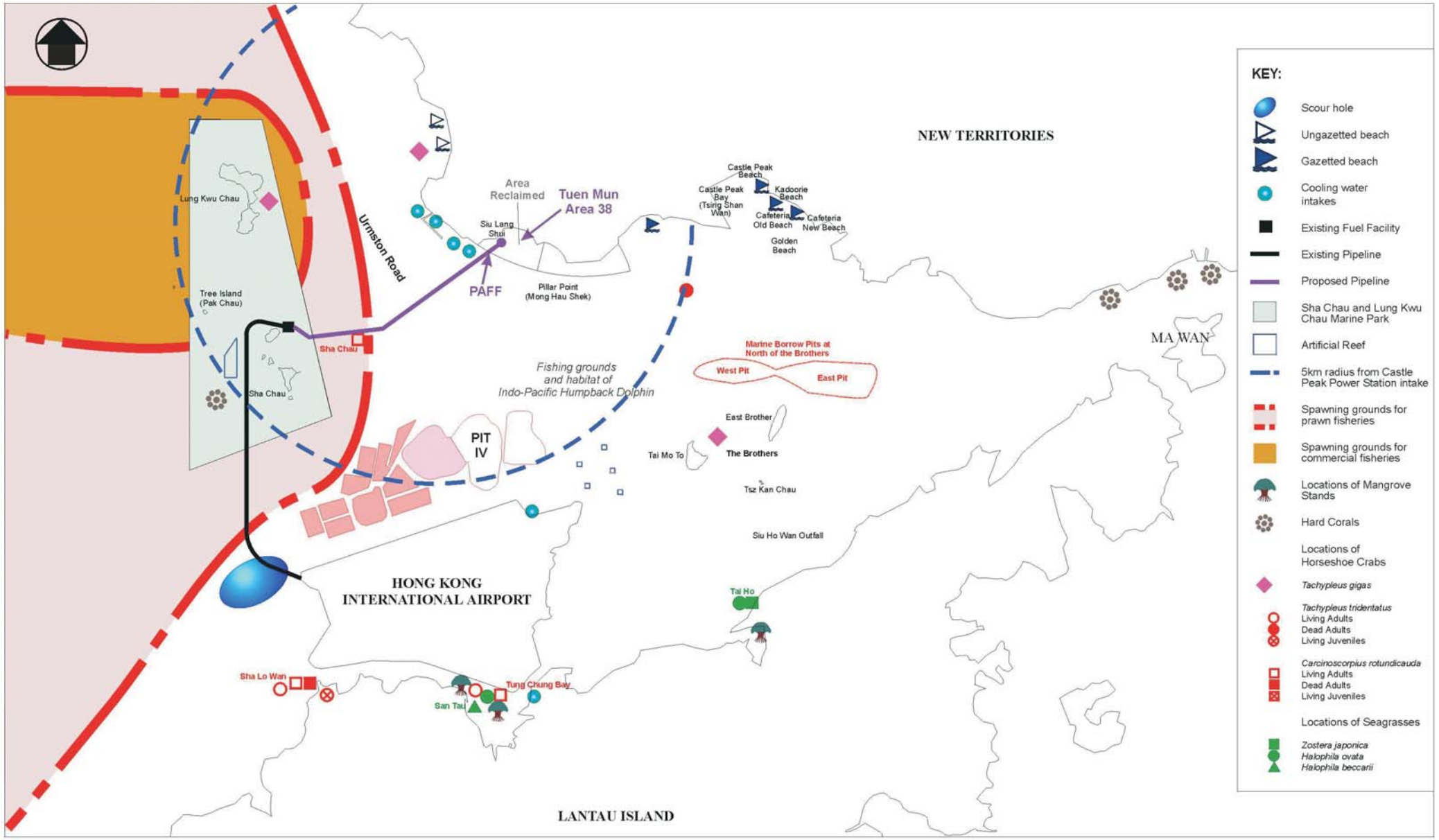
Annex B

Water Sensitive Receiver and Water Quality Monitoring Locations

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

Environmental Resources Management

ERM



Annex B

Water Quality and Ecological Sensitive Receivers

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

FILE: C2475aa
DATE: 12/11/2007

Environmental Resources Management

ERM

Annex C

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 9th 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
01/01/09 – 31/01/09	0	2	Nil
01/02/09 – 28/02/09	0	2	Nil
01/03/09 – 31/03/09	0	2	Nil
01/04/09 – 30/04/09	0	2	Nil
01/05/09 – 31/05/09	0	2	Nil
01/06/09 – 30/06/09	0	2	Nil
01/07/09 – 31/07/09	0	2	Nil
01/08/09 – 31/08/09	0	2	Nil
01/09/09 – 30/09/09	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 9th 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
01/01/09 – 31/01/09	0	0	Nil
01/02/09 – 28/02/09	0	0	Nil
01/03/09 – 31/03/09	0	0	Nil
01/04/09 – 30/04/09	0	0	Nil
01/05/09 – 31/05/09	0	0	Nil
01/06/09 – 30/06/09	0	0	Nil
01/07/09 – 31/07/09	0	0	Nil
01/08/09 – 31/08/09	0	0	Nil
01/09/09 – 30/09/09	0	0	Nil

Annex D

Implementation Programme of Mitigation Measures

ANNEX D IMPLEMENTATION SCHEDULE

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location / Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Schedule D	C	O	Maintenance Agency	Implementation Status
Water Quality										
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	Complete
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	Completed
6.4		The work rate for dredging should not exceed 4,000 m^3/hr for the TSHD and 7,000 m^3/day for the grab dredger.	Marine Park / Pipeline Dredging	Contractor	TMEIA		Y		N/A	Completed
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	Completed
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	Completed
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	Completed

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location / Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Schedule D	C	O	Maintenance Agency	Implementation Status
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	Completed
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	Completed
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	Completed
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	Completed
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	Completed

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location / Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Schedule D	C	O	Maintenance Agency	Implementation Status
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	Ongoing
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 D	C	O	Maintenance Agency	Implementation Status
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) onsite 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 D	C	O	Maintenance Agency	Implementation Status
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 D	C	O	Maintenance Agency	Implementation Status
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	Ongoing
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 D	C	O	Maintenance Agency	Implementation Status
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 D	C	O	Maintenance Agency	Implementation Status
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	Completed
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 prior to 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
Ecology										
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 500m 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	Completed
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	Completed
Landscape & Visual										
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 recessive 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 D	C	O	Maintenance Agency	Implementation Status
9.8.1	9.2.1	Undertake a watching brief during dredging of the pipeline within 25m either side of anomalies SS1 and SS2. This should comprise: • 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; • 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 bought on deck for cleaning and examination; and,	Within vicinity of SS1 and SS2	Franchisee	TMEIA		Y		N/A	Completed

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location / Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Schedule D	C	O	Maintenance Agency	Implementation Status
		• 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.								
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	Not applicable
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	Not applicable
Fuel Spill Risk										
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: • Two inspections every year of the tank farm, jetty and pipelines including one undertaken pursuant to the Joint Inspection Group (JIG) explained above; • Inspection of the whole sub sea pipelines every 5 to 10 years; • Health, Safety and Environmental audit of the facility once every 3 years; and, • Inspection of the structural integrity of the tanks once per year.	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.	Prior to the start of operation of the PAFF with audits every 12 months	Franchisee	TMEIA			Y	N/A	Pending
Land Contamination										
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 rood 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 overfill 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 provide 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
Waste Management										
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 D	C	O	Maintenance Agency	Implementation Status
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 D	C	O	Maintenance Agency	Implementation Status
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 pubic fill stockpile in Mui Wo, North Lantau or Mui Wo refuse transfer stations / Throughout construction	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 D	C	O	Maintenance Agency	Implementation Status
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 D	C	O	Maintenance Agency	Implementation Status
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 D	C	O	Maintenance Agency	Implementation Status
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	Completed
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 D	C	O	Maintenance Agency	Implementation Status
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: • Clearly labelled; • Enclosed on at least 3 sides; • Have impermeable floor and bunding sufficient to fully retain any spillage or leakages; • Ventilated; and, • Covered to prevent rainfall from entering.	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 an 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 D	C	O	Maintenance Agency	Implementation Status
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

ERM has over 100 offices
Across the following
countries worldwide

Argentina
Australia
Azerbaijan
Belgium
Brazil
Canada
Chile
China
France
Germany
Hong Kong
Hungary
India
Indonesia
Ireland
Italy
Japan
Kazakhstan
Korea
Malaysia
Mexico
The Netherlands
Peru
Poland
Portugal
Puerto Rico
Russia
Singapore
South Africa
Spain
Sweden
Taiwan
Thailand
UK
US
Vietnam
Venezuela

ERM's Hong Kong Office

21/F Lincoln House
Taikoo Place, 979 King's Road
Island East, Hong Kong
T: 2271 3000
F: 2723 5660

www.erm.com