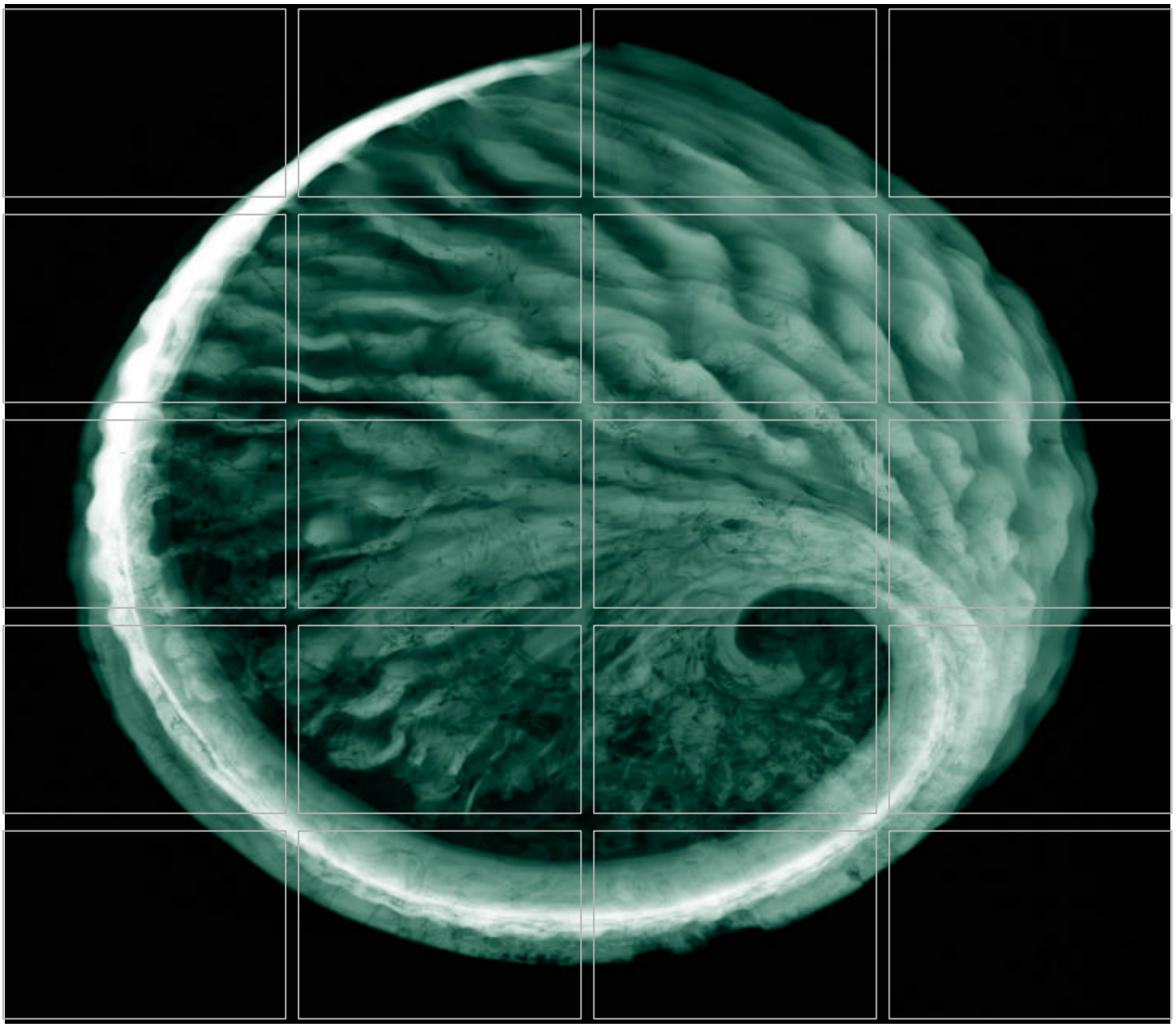

Permanent Aviation Fuel Facility (EP-139/2002/A)

First Monthly Environmental Monitoring and Audit Report – December 2005

24th February 2006

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REPORT

Permanent Aviation Fuel Facility (EP-139/2002/A)

First Monthly Environmental Monitoring and Audit Report – December 2005

24th February 2006

Prepared by: Jor Fan/Craig A Reid

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For and on behalf of
Environmental Resources Management

Approved by: Freeman Cheung

Signed: 

Position: Environmental Team Leader

Date: 24th February 2006

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EXECUTIVE SUMMARY

The construction works of Permanent Aviation Fuel Facility was commenced on 18 November 2005. This first monthly Environmental Monitoring and Audit (EM&A) report presents the EM&A works carried out during the period from 18 November to 15 December 2005 in accordance with the EM&A Manual.

Summary of construction works undertaken during this reporting period

The major works included site preparation works and marine piling works at Tuen Mun Area 38.

Environmental Monitoring and Audit Progress

Air and Noise monitoring was not required for the project. Water quality monitoring was not required as there was no dredging activity. Marine archaeological monitoring was not required as no dredging activity was implemented along the pipeline in the reporting period. Landscape and visual monitoring was not required as there was no landscaping work on site.

Marine mammal visual and acoustic spot monitoring were conducted for three days in November. No dolphin was observed visually or detected acoustically within the 500m exclusion zone. During the visual monitoring conducted for piling activities, Chinese White Dolphin (*Sousa chinensis*) were observed within the 500m exclusion zone on the 24th and 25th November 2005. No piling activity was conducted during the sightings and at least 30 minutes clearance time was implemented before piling commenced.

Construction Waste Management

Chemical wastes, C&D waste, general refuses and recyclables were produced during the reporting period.

Environmental Site Auditing

Three weekly environmental site audits were carried out by the ET in the reporting period. Details of the audit findings and implementation status are presented in *Section 6*.

Environmental Complaint

Two environmental complaints were received during and before the reporting period regarding dust emission from the site. Complaint logs were completed and sent to EPD accordingly. Details of the complaints and follow up actions are presented in *Section 7*.

Environmental Summons

No environmental summons was received in this reporting period.

Future Key Issues:

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

- Impacts on dolphins due to piling works;
- Noise from operating machinery and equipment; and,
- Dust release and suppression.

1 INTRODUCTION

ERM-Hong Kong, Limited (ERM) was appointed by the Leighton Contractors (Asia) Limited (LCAL) 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.

1.1 PURPOSE OF THE REPORT

This is the 1st EM&A report which summarizes the monitoring results and audit findings for the EM&A programme during the reporting period from **18 November 2005** to **14 December 2005**.

1.2 STRUCTURE OF THE REPORT

The structure of the report is as follows:

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

Section 2 : **Project Information**
summarizes background and scope of the project, site description, project organization and contact details, construction programme, the construction works undertaken and the status of Environmental Permits/Licenses during the reporting period.

Section 3 : **Environmental Monitoring Requirement**
summarizes the monitoring parameters, monitoring programmes, monitoring methodology, monitoring frequency, monitoring location, Action and Limit Levels, Event Action Plans, environmental mitigation measures as recommended in the EIA report and relevant environmental requirements.

Section 4 : **Implementation Status on Environmental Mitigation Measures**
summarizes the implementation of environmental protection measures during the reporting period.

Section 5 : **Monitoring Results**
summarizes the monitoring results obtained in the reporting period.

Section 6 : **Environmental Site Auditing**
summarizes the audit findings of the weekly site inspections undertaken within the reporting period.

Section 7 : **Environmental Non-conformance**
summarizes any monitoring exceedance, environmental complaints, environmental summons and impact prediction review within the reporting period.

Section 8 : **Key Future Issues**
summarizes future key issues as assessed from works programme and work method statement as well as forecast of the works programme, impact predictions and monitoring schedule for next one month.

Section 9 : **Recommendations and Conclusions**

2 PROJECT INFORMATION

2.1 BACKGROUND

The Project comprises of the following activities:

- Construction of a jetty to accommodate aviation fuel tankers;
- Construction of a tank farm for storage of aviation fuel; and
- Construction of twin sub-sea pipelines to transfer aviation fuel to the airport.

The potential environmental impacts of the Project have been studied in the following Environmental Impact Assessment (EIA) Report:

(i) *"Permanent Aviation Fuel Facility for Hong Kong International Airport"* (EIAO Register No: AEIAR-062/2002). The EIA was approved with conditions on 2 August 2002 under the *Environmental Impact Assessment Ordinance* (EIAO). An Environmental Permit (EP-139/2002/E) associated with the constructionworks was also granted on 28 August 2002.

During the finalisation of the construction plans and designs for the Project, the need for minor changes to the detailed layout of the site and the site boundary were identified and consequently an Application for Variation to the Environmental Permit (VEP) (VEP-133/2004) was submitted to the Director of Environmental Protection (DEP) for approval of the following changes:

- A change in the detailed layout of the site, in particular the designed height and dimension of the tanks. The height of the tanks has been reduced in compliance with FSD's specific requirements, where as the diameters of some tanks have been increased as a consequence of compliance with FSD's tanks height reduction requirements in order to maintain the designed fuel storage capacity of the tank farm.
- To shift the whole site by 10 metres to the southeast to accommodate Land's Department's commitment of land extension to Shiu Wing Steel.

The VEP application (VEP-133/2004) was made by AAHK on 28th January 2004 and the amended EP (EP-139/2002/A) was granted by DEP on 24 February 2004.

The EIA study concluded that no air and noise sensitive receivers were found, thus air and noise monitoring are not required. However, water quality EM&A is required during all dredging activities as well as when marine construction works are taking place within 1km of the Lung Kwu Chau and

Sha Chau Marine Park. The water quality monitoring stations are shown in ***Annex A***.

Construction works (marine piling activity) commenced on 18 November 2005 and are scheduled to be completed by mid 2007.

2.2 SITE DESCRIPTION

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

2.3 PROJECT ORGANIZATION

The project organization chart and contact details are shown in ***Annex C***.

2.4 CONSTRUCTION PROGRAMME

The work programme for the Project is presented in ***Annex D***. A summary of the major construction activities undertaken in this reporting period is shown in ***Table 2.1***.

Table 2.1 Summary of Works Undertaken from 18 November to 14 December 2005

Area	Works undertaken
Tuen Mun Area 38	Marine Piling Works Site Preparation Works

2.5 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS

A summary of the relevant permits, licences, and/or notifications on environmental protection for this Project as of June 2005 is presented in ***Table 2.2***.

Table 2.2 Summary of Environmental Licensing, Notification and Permit Status

Permit/ Licenses/ Notification	Reference	Validity Period	Remarks
Environmental Permit	EP-139/2002	Throughout Project	Issued on 2 August 2002
Variation of Environmental Permit	VEP-133/2004	Throughout Project	Issued on 28 January 2004
Amended Environmental Permit	EP-139/2002/A	Throughout Project	Issued on 24 February 2004
Chemical Waste Producer Registration	WPN 5111-421-L2174-25	Throughout Project	Issued on 10 November 2005
Notification of	001004989	Throughout	Notification on 5

Permit/ Licenses/ Notification	Reference	Validity Period	Remarks
Construction Works under Air Pollution Control (Construction Dust) Regulation		Project	November 2005 (Tank Farm at TM Area 38, Jetty at Urmston Road and Fuel Pipeline
Construction Noise Permit	PP-RW0024-05	12 Nov 05 to 31 Mar 06	Issued on 7 November 2005, for Hydraulic Hammer (single acting) driving steel pile
Construction Noise Permit	GW-RW0785-05	7 Dec 05 to 31 Mar 06	Issued on 7 December 2005, for General Works (Welding) at Jetty Area
Water Discharge License	--	--	To be applied

- Sewage which will be generated, collected and disposal offsite appropriately.

3.4 WATER QUALITY

3.4.1 Introduction

In accordance with the recommendations of the EIA and conditions of approval from Country and Marine Parks Authority (CMPA), water quality EM&A is required during all dredging activities as well as when marine construction works are taking place within 1 km of the Lung Kwu Chau and Sha Chau Marine Park. In addition, baseline water quality monitoring will be required prior to the commencement of construction activities. The following Section provides details of the water quality monitoring to be undertaken by the ET to verify the distance of sediment plume dispersion and to identify whether the potential exists for any indirect impacts to occur to ecological sensitive receivers. The water quality monitoring programme will be carried out to ensure that any deteriorating water quality is readily detected and timely action taken to rectify the situation.

3.4.2 Sampling Methodology

Water Quality Parameters

Measurements of Dissolved Oxygen (DO) concentration (mg L^{-1}), DO saturation (%), Salinity (mg L^{-1}), Temperature (°C) and Turbidity (NTU) will be taken *in situ* by the ET at monitoring stations identified in *Section 6.4* below. Water samples for the measurement of SS (mg L^{-1}) will also be collected for laboratory analysis.

In addition to the water quality parameters, other relevant data will also be measured and recorded in field monitoring logs (***Annex E***), including the location of the sampling stations, water depth, time, weather conditions, sea conditions, tidal stage, current direction and speed, special phenomena and work activities undertaken around the monitoring and works area that may influence the monitoring results. Observations on any special phenomena and work underway at the construction site at the time of sampling will also be recorded.

Sampling Procedures and Monitoring Equipment

For water quality monitoring, the following equipment will be supplied and used by the Contractor:

- ***Dissolved Oxygen and Temperature Measuring Equipment*** - The instrument will be a portable, weatherproof dissolved oxygen measuring instrument complete with cable, sensor, comprehensive operation manuals, and will be operable from a DC power source. It will be capable of measuring: dissolved oxygen levels in the range of 0 - 20 mg L^{-1} and 0 - 200% saturation; and a temperature of 0 - 45 degrees Celsius.

3 ENVIRONMENTAL MONITORING REQUIREMENTS

3.1 AIR QUALITY

As no air sensitive receiver is present in the vicinity of the project site, air quality monitoring is not required for either the construction or operation phase of the project. However, site inspection was conducted weekly to ensure that dust is avoided as practically as possible and mitigation measures were implemented to ensure that dust emission is reduced to a practical minimum.

3.2 NOISE

As no noise sensitive receiver is present in the vicinity of the project site, noise monitoring is not required during the construction phase of the project. However, site inspection was conducted weekly to ensure that noise impact should be reduced as far as practicable and unnecessary noise impact is avoided.

3.3 WASTE MANAGEMENT

Wastes generated from this Project included construction and demolition (C&D) materials including C&D wastes and public fill, chemical waste and general refuse. W*aste Management Plan (WMP)* is required within one month of the commencement of the project. The WMP should include recommendations on the procedures for handling of C&D materials, excavated materials, chemical waste and general refuse. However, we have not received contractor's WMP at the time of preparing this report, and the contractor indicated that the WMP for this project would be available shortly.

Weekly site inspection was conducted on site which included waste management issues, to ensure that all wastes produced during the construction phase are managed in accordance to good waste management practices and statutory regulations and requirements.

From the Contractor's information, the Project is expected to generate the following during the construction phase:

- Dredged marine mud (274,000m^3 of uncontaminated mud);
- Excavated materials suitable for reclamation and public fill (estimated at 66,000m^3, much of which will be re-used on site);
- C&D materials (expected to be minor);
- Chemical waste (not expected to generate large quantities during construction); and,

It will have a membrane electrode with automatic temperature compensation complete with a cable of not less than 35 m in length. Sufficient stocks of spare electrodes and cables will be available for replacement where necessary (for example, YSI model 59 metre, YSI 5739 probe, YSI 5795A submersible stirrer with reel and cable or an approved similar instrument).

- ***Turbidity Measurement Equipment*** - Turbidity within the water will be measured *in situ* by the nephelometric method. The instrument will be a portable, weatherproof turbidity-measuring unit complete with cable, sensor and comprehensive operation manuals. The equipment will be operated from a DC power source, it will have a photoelectric sensor capable of measuring turbidity between 0 - 1000 NTU and will be complete with a cable with at least 35 m in length (Hach 2100P or an approved similar instrument).

- ***Salinity Measurement Instrument*** - A portable salinometer capable of measuring salinity in the range of 0 - 40 ppt will be provided for measuring salinity of the water at each monitoring location.

- ***Suspended Solid Measurement Equipment*** - A water sampler (eg Kahlsico Water Sampler), which is a PVC cylinder (capacity not less than 2 litres), which can be effectively sealed with latex cups at both ends, will be used for sampling. The sampler will have a positive latching system to keep it open and prevent premature closure until released by a messenger when the sampler is at the selected water depth. Water samples for suspended solids measurement will be collected in high-density polythene bottles, packed in ice (cooled to 4°C without being frozen), and delivered to the laboratory in the same day as the samples were collected.

- ***Water Depth Gauge*** - A portable, battery-operated echo sounder (Seafarer 700 or a similar approved instrument) will be used for the determination of water depth at each designated monitoring station. This unit will either be hand-held or affixed to the bottom of the work boat if the same vessel is to be used throughout the monitoring programme.

- ***pH Measuring Equipment*** - A portable pH meter capable of measuring a range between 0.0 and 14.0 will be provided to measure pH under the specified conditions (eg. Orion Model 250A or an approved similar instrument).

- ***Positioning Device*** - A hand-held or boat-fixed type differential Global Positioning System (DGPS) or other equivalent instrument of similar accuracy will be used during monitoring to ensure the accurate recording of the position of the monitoring vessel before taking measurements. Marine anchors will not be used when sampling the impact stations within or on the boundaries of the Lung Kwu Chau and Sha Chau Marine Park.

- ***Water Sampling Equipment*** - A water sampler, consisting of a PVC or glass cylinder of not less than two litres, which can be effectively sealed with cups at both ends, will be used (Kahlsico Water Sampler 13SWB203 or an approved similar instrument). The water sampler will have a positive latching system to keep it open and prevent premature closure until released by a messenger when the sampler is at the selected water depth.

All *in-situ* monitoring instruments will be checked, calibrated and certified by a laboratory accredited under HOKLAS or any other international accreditation scheme before use, and subsequently re-calibrated at 3 monthly intervals throughout all stages of the water quality monitoring. Responses of sensors and electrodes will be checked with certified standard solutions before each use. Wet bulb calibration for the DO meter will be carried out before measurement at each monitoring location. The turbidity meter will be calibrated to establish the relationship between turbidity readings (in NTU) and levels of SS (in mg L^{-1}) where possible.

For the on site calibration of field equipment, the BS 1427:1993, "Guide to Field and on-site test methods for the analysis of waters" will be observed.

Sufficient stocks of spare parts will be maintained for replacements when necessary. Back-up monitoring equipment will also be available so that monitoring can proceed uninterrupted even when some equipment is under maintenance, calibration, etc.

3.4.3 Laboratory Measurement and Analysis

Analysis of suspended solids will be carried out in a HOKLAS or other international accredited laboratory. Water samples of about 500mL will be collected at the monitoring stations for carrying out the laboratory SS determination. The SS determination work will start within 24 hours after collection of the water samples. The analyses will follow the standard methods as described in APHA *Standard Methods for the Examination of Water and Wastewater*, *19th Edition*, unless otherwise specified (APHA 2540D for SS) with a detection limit of 1 mg L^{-1} or less.

The submitted information should include pre-treatment procedures, instrument use, Quality Assurance/Quality Control (QA/QC) details (such as blank, spike recovery, number of duplicate samples per-batch etc), detection limits and accuracy. The QA/QC details will be in accordance with requirements of HOKLAS or another internationally accredited scheme. The limits of detection for the *in-situ* and laboratory measurements that will be obtained are shown in ***Table 3.1***.

Table 3.1 Detection Limits and Precision for Water Quality Parameters

Parameter	Limit of Detection
Dissolved Oxygen	0.1 mg L^{-1}
Salinity	0.01 ppt
Temperature	0.1 °C
PH	0.01 units
Turbidity (NTU)	0.1 NTU
Suspended Solids	1 mg L^{-1}

3.4.4 Monitoring Locations

Water quality monitoring will be conducted during all dredging activities as well as when marine construction works are taking place within 1 km of the Lung Kwu Chau and Sha Chau Marine Park. Monitoring stations are discussed below.

Monitoring Stations During Dredging Activities

Water quality impact monitoring stations shall be positioned 500m to the north/northwest and south/southeast of any dredger when operating at a distance greater that 1 km from the boundary of the Lung Kwu Chau and Sha Chau Marine Park. These stations will provide data on water quality when dredging is in progress outside the Marine Park. These stations shall be located upstream (IMO1) and downstream (IMO2) of the dredger and shall move on a daily basis so that they are in current streams that could be affected by the dredging.

Monitoring Stations During Construction Activities (including Dredging) within 1 km of the Marine Park

When construction works, including dredging, are taking place within 1 km of the Lung Kwu Chau and Sha Chau Marine Park water quality monitoring will take place at impact and control stations. These stations are shown in ***Annex A*** and detailed in ***Table 3.2***.

Table 3.2 Location of Marine Water Quality Monitoring Stations

Monitoring Station Identification	Type	Location	Northing	Easting
MPB1	Impact	Northeast Sha Chau	824172	807060
MPB2	Impact	East Sha Chau	823184	807212
MP	Impact	North Sha Chau	824753	806140
C1 (NM3)	Control	South Tuen Mun	824049	812527
C2 (NM5)	Control	East Lung Kwu Chau	827245	807707
C3 (NM6)	Control	North Airport	820288	807584

The status and locations of water quality sensitive receivers and the marine works location may change after issuing the EM&A Manual. If required, the ET in consultation with the Contractor will propose updated monitoring locations and seek approval from the FSR, the IEC and the DEP.

Impact stations MPB1 and MPB2 have been selected at positions on the Marine Park boundary 500m from the nearest dredging point to assess any potential impacts that may be caused by the works. An additional impact station, MP is located within the main body of the Marine Park at a point approximately equidistant between the Sha Chau island cluster and Lung Kwu Chau.

The control stations have been selected to be within the same body of water as the impact monitoring stations but will be outside the area of influence of the works and, as far as practicable, not affected by any other works. It should be noted that the control stations are located at the exact same co-ordinates as EPD's routine monitoring stations NM3, NM5 and NM6. This will facilitate reference to a substantial volume of baseline data should this later be found necessary.

3.4.5 Baseline Monitoring

Baseline monitoring will be conducted to collect representative water quality data from the key areas along the pipelines alignment. This baseline monitoring will provide data for comparison with water quality data collected during dredging works.

Baseline monitoring will be conducted at each impact (MPB1, MPB2 and MP) and control station (C1 to C3) on a daily basis on flood and ebb tides for a period of 1 week prior to the commencement of marine works. Baseline monitoring will commence no earlier than two months before construction works are due to commence.

During baseline monitoring, measurements will be taken at each station at three depths, 1 m below the sea surface, mid depth and 1 m above the seabed.

The ET will be responsible for undertaking the baseline monitoring and submitting the results within 10 working days from the completion of the baseline monitoring work to the IEC for certification.

3.4.6 Impact Monitoring

Impact water quality monitoring will be conducted when dredging activities are taking place at a distance greater than 1 km from the Lung Kwu Chau and Sha Chau Marine Park as well as when marine construction works are taking place within 1 km of the park boundary. As with baseline monitoring, measurements during monitoring of dredging works will be taken at all designated monitoring stations on a daily basis on both flood and ebb tides (during dredging). However, during Marine Park monitoring, only stations within the Marine Park boundary (ie MPB1, MPB2 and MP) will be sampled

on both the flood and ebb tides. Control stations to the south and east of the works area (ie C1 and C3) will be sampled on the flood tide only. The Control station to the northwest of the works area, C2, will be sampled on the ebb tide only. If sediment laden plumes from the works area or elsewhere are observed in the vicinity of the control stations during sampling, this will be recorded and brought to the immediate attention of the ET.

3.4.7 Water Quality Compliance

Water quality monitoring will be evaluated against Action and Limit Levels. The key assessment parameters are dissolved oxygen and suspended sediment and thus Action and Limit Levels based on the assessment criteria are identified for these. However turbidity can also provide valuable instantaneous information on water quality and thus an Action Limit is also recommended for this parameter to facilitate quick responsive action in the event of any apparent unacceptable deterioration attributable to the works. The proposed Action and Limit Levels are shown in ***Table 3.3***.

Action and Limit levels are used to determine whether operational modifications are necessary to mitigate impacts to water quality. In the event that the levels are exceeded, appropriate actions in Event and Action Plan (***Annex E)*** should be undertaken and a review of works should be carried out by the Contractor.

Any noticeable change to water quality will be recorded in the survey reports and will be investigated and remedial actions will be undertaken to reduce impacts. Particular attention will be paid to the Contractor's implementation of the recommended mitigation measures.

Table 3.3 Action and Limit Levels for Water Quality

Parameters	Action (mg/L)	Limit (mg/L)
DO in mg/L (Depth Average & Bottom)	Depth Average 4.5 mg/l and upstream control stations' mean DO (at the same tide of the same day)	Depth Average 4.0 mg/l and upstream control stations' mean DO (at the same tide of the same day)
DO in mg/L (Depth Average & Bottom)	Bottom 2.5 mg/l and upstream control stations' mean DO (at the same tide of the same day)	Bottom 2.0 mg/l and upstream control stations' mean DO (at the same tide of the same day)
Suspended Solids (Depth averaged)	30 mg/l and 130% of upstream control stations' mean SS (at the same tide of the same day)	39 mg/l and 130% of upstream control stations' mean SS (at the same tide of the same day)

Parameters	Action (mg/L)	Limit (mg/L)
Turbidity in NTU (Depth averaged)	130% of upstream control stations' mean Turbidity (at the same tide of the same day)	N/A

Notes:

- For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
- For SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
- All the figures given in the table are for reference only and these may be amended with the agreement of DEP.
- "Depth Averaged" is calculated by taking the arithmetic mean of the in-situ parameters readings at all three depths. For suspended solids "depth averaged" is calculated by combining all three samples into one mixed sample which is analysed to produce a physical arithmetic mean.

It should be noted that all Action Limit levels presented in ***Table 3.3*** may be revised based on the baseline data to be collected in advance of construction works. If deemed necessary, the ET in consultation with the Contractor will propose revised Action Limit levels and seek approval from the FSR, the IEC and the DEP.

The IEC will be empowered to audit the environmental performance of construction, all aspects of the EM&A programme, validate and confirm the accuracy of monitoring results, monitoring equipment, monitoring locations and procedures. If any exceedance occurs, the ET, IEC, FSR and the Contractor will follow the actions stated in the Event and Action Plan (***Annex E***).

3.4.8 Water Quality Mitigation Measures

The EIA report has outlined a variety of recommended water quality mitigation measures. These are summarised in the Implementation Programme of Mitigation Measures (***Annex H***). Specifically the Contractor will be responsible for the design and implementation of the following measures:

- *Works within Marine Park*

- No construction work shall be carried out from shore or land within the Marine Park;

- No hydraulic dredging (trailer suction dredging) shall be carried out within the Marine Park; and

- Pipeline trench digging within the Marine Park shall be scheduled to coincide with maintenance dredging for the marine access channel for the Sha Chau Aviation Fuel Receiving Facility (AFRF).

Dredging

- No more than one dredger shall be in operation at any time during construction;
- No Lean Material Overboard (LMOB) system shall be used;
- No hopper dredger leaking pipe shall be used during construction;
- Bottom openings from barges and hopper dredgers shall be tightly sealed to prevent leakage of dredged materials. Freeboard on barges shall be provided to ensure that decks are not washed by wave action;
- No dredged material shall be splashed to the surrounding water during loading of dredged material to barges and hopper dredgers;
- No dredged material shall be overflowed from barges and hopper dredgers during loading or transportation; and
- Mechanical grabs will be designed and maintained to avoid spillage and should seal tightly while being lifted;
- Barges and hopper dredgers will have tight fitting seals to their bottom openings to prevent leakage of material;
- Any pipe leakages will be repaired quickly. Plant should not be operated with leaking pipes;
- Loading of barges and hoppers will be controlled to prevent splashing of dredged material to the surrounding water. Barges or hoppers will not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation;
- Excess material will be cleaned from the decks and exposed fitting of barges and hopper dredges before the vessel is moved;
- Adequate freeboard will be maintained on barges to ensure that decks are not washed by wave action;
- All vessels will 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; and
- The works will not cause foam, oil, grease or litter or other objectionable matter to be present in the water within and adjacent to the works site.

Works on Land

- Wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;

- Wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;

- Sewage effluent and discharges from on-site kitchen facilities will be directed to Government sewer in accordance with the requirements of the WPCO or collected for disposal offsite. The use of soakaways will be avoided;

- Storm drainage will 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 sand bag 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;

- Silt removal facilities, channels and manholes will be maintained and any deposited silt and grit will be removed regularly, including specifically at the onset of and after each rainstorm;

- Temporary access roads should be protected by crushed stone or gravel;

- Rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;

- Measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;

- Open stockpiles of construction materials (eg aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;

- 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;

- Discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;

- 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;

- Wheel wash overflow will be directed to silt removal facilities before being discharged to the storm drain;

- The section of construction road between the wheel washing bay and the public road should be protected with crushed stone or coarse gravel;

- Wastewater generated from concreting, plastering, internal decoration, cleaning work and other similar activities, will be screened to remove large objects;

- Vehicle and plant servicing areas, vehicle wash bays and lubrication facilities will be located under roofed areas. The drainage in these covered areas will be connected to foul sewers via a petrol interceptor in accordance with the requirements of the WPCO or collected for off site disposal;

- The contractors will prepare an oil / chemical cleanup plan and ensure that leakages or spillages are contained and cleaned up immediately;

- Waste oil should be collected and stored for recycling or disposal, in accordance with the Waste Disposal Ordinance;

- 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; and

- Surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

3.5 ECOLOGY

3.5.1 Introduction

The constraints on dredging and piling works defined within the EIA and Environmental Permit will act as appropriate mitigation measures to control the environmental impacts to marine ecological resources to within acceptable levels. Apart from the Indo-Pacific Humpback Dolphin, impacts of construction activities will be monitored through impacts to water quality.

In accordance with the recommendations of the EIA, ecology EM&A is required pre- and post-construction works and during piling and dredging activities for the PAFF jetty. The following section provides details of the ecology monitoring to be undertaken by the ET to ensure that the ecological works and construction mitigation procedures recommended in the EIA for the protection of the Indo-Pacific Humpback Dolphin (*Sousa chinensis*) are carried out as specified and are effective.

3.5.2 Construction Phase EM&A

The ET will be required to undertake the followings:

- Acoustic monitoring of dolphin presence/absence;

- Establishment of a dolphin exclusion zone;

- Undertake dolphin monitoring pre- and post-construction works and during piling and dredging activities for the PAFF jetty; and;

- Undertake underwater noise monitoring, with the assistance of suitably qualified specialists.

The ET will also be required to audit the effectiveness of the implementation of the ecological works, and other mitigation measures detailed below.

3.5.3 Dolphin Exclusion Zone: Around the Piling Barge

Visual Monitoring

A dolphin exclusion zone within a radius of 500m from the piling barge should be implemented during piling activities for the jetty. Piling should not begin until the qualifying person certifies that the area is continuously clear of dolphins for a period of 30 minutes (thereby adequately spanning the approximate maximum dive time of the dolphins of 4 minutes). Piling will cease if any dolphins move into the exclusion zone and will not resume until the qualified person confirms that the zone has been continuously clear of dolphins for a period of 30 minutes. The qualified person must be suitably trained in biology (minimum requirement of graduate qualification in marine biology of equivalent biological science with 5 yrs experience) and should be part of the ET.

Spot Acoustic Monitoring

Spot acoustic monitoring of the 500m dolphin exclusion zone during piling activities will be conducted for three days of the first week of piling to confirm that dolphins are not being missed by the visual monitoring carried out under Condition 3.22 of EP-139/2002/A. The monitoring would make use of specialist acoustic monitoring equipment and should be undertaken by a suitably experienced specialist. The qualified person for acoustic monitoring should be certified by the ET and verified by the IEC.

Dolphin Exclusion Zone: Around the Dredger in the Sha Chau and Lung Kwu Chau Marine Park

A dolphin exclusion zone within a radius of 250m of dredgers during dredging within the Marine Park should be implemented and the area visually inspected for dolphins prior to commencement of dredging. The dolphin exclusion zone should be monitored as described above for the piling barge by the qualified person(s) with an unobstructed, elevated view of the area. Dredging should not begin until the qualified person certifies that the area is continuously clear of dolphins for a period of 30 minutes. Should dolphins move into the area during dredging, cessation of dredging is not required.

3.5.4 Pre- and Post-Construction Dolphin Monitoring

Pre- and post-construction phase dolphin monitoring will be undertaken by a qualified person, to evaluate whether there have been any effects on the animals as a result of the construction works. The resulting data should be compatible with, and should be made available for, long-term studies of small cetacean ecology in Hong Kong.

Six, one-day survey events will be undertaken within 28 consecutive days for both the pre- and post-construction monitoring events (1). Pre-construction monitoring should be completed at least one month before the commencement of marine construction works. Similarly, post-construction monitoring should commence no later than 6 months following the completion of marine construction activities. Prior to the commencement of construction works a review of all new available dolphin data for North Lantau waters should be conducted and reported.

Monitoring will be led by the qualified person with observer who will receive suitable training in advance of providing observational assistance. The IEC would be required to audit the work of the ET. Monitoring will be conducted following the methodology presented in *Section 3.5.5*.

Pre- and post construction dolphin monitoring will allow the assessment of the overall efficacy of the project-specific mitigation measures through the implementation of an Action Plan (***Annex F***). Should dolphin numbers be significantly different (taking into account naturally occurring alterations to distribution patterns such as due to seasonal change) to the pre-construction activity (following the post-construction monitoring) recommendations for a further post-construction monitoring survey will be made. Data should be then be re-assessed and the need for any further monitoring established.

3.5.5 Vessel-based Observations

Line transect surveying techniques have now been standardised in Hong Kong Special Administrative Region Waters so that data from all surveys are directly comparable. The study area with line transects is presented in ***Annex F***. In order to provide a suitable long-term dataset for comparison, pre-and post construction phase dolphin monitoring will employ an identical methodology and follow the same line transects as those presented in ***Annex F***.

On each survey day, the survey vessel departed from Tung Chung New Pier. Observation for incidental sighting began immediately on departure from the assigned pier and continued until the vessel reached the survey area.

The survey vessel had an open upper deck, allowing for observer eye heights of 4 to 5m above water level and relatively unobstructed forward visibility between 270° and 90°. When on-effort, the vessel travelled along the survey

(1) Jefferson, T.A. and Leatherwood S (1997) Distribution and abundance of Indo-Pacific hump-backed dolphins (Sousa chinensis Osbeck, 1765) in Hong Kong waters. Asian Marine Biology 14(1997):93-110.

lines at a speed of approximately 7 to 8 knots (13 to 15 km/hr). The direction of the survey was alternated on different days to avoid possible biases related to the timing of the survey coverage.

Vessel-based transect observations by a three-person team were conducted by searching the 180° swath in front of the survey vessel (270° to 90°). The area behind the vessel was not searched, although dolphins observed here were recorded as off-effort sightings. A primary observer scanned the entire search path (270° to 90°) continuously with Fujinon 7X50 marine binoculars or equivalent as the second member of the team, designated the data "recorder", scanned the same area with the naked eye and occasional binocular check. The third observer on the boat rotated into the observation team after half an hour, thus relieving one of the initial team. Observers rotated every half an hour. While on-effort, observers were instructed to ignore potential sighting cues that could bias the sighting distance calibration (eg pair-trawl fishing vessels).

A critical consideration in the survey was to ensure a strict timed quantification of "sighting effort" in order to maximise the comparative value of the field survey results. The time and position for the start and end of a period of intensive, uninterrupted effort, and the sighting conditions such as visibility range and Beaufort scale associated with it were recorded. The collection of effort data allowed comparisons within a single study as well as between studies. Strict recording of time and speed travelling along the assigned transect ("on-effort") was always therefore recorded. Time spent during any deviation from the transect was recorded as "off-effort".

During periods of poor weather, when visibility is hindered (eg below 1km) or when Beaufort force 5 is reached, the survey would normally be postponed. Such conditions did not occur during the survey.

Sightings distant to 500m perpendicular distance and sightings of single dolphins that were hard to track were not pursued (although those distant to 500m ahead of the vessel were pursued). The initial sighting distance between the dolphin and the survey vessel and sighting angle was recorded in order to estimate the positions of the dolphins. These and other details of the sighting, include the exact location of the sighting, number of individuals were on every occasion discussed among the observation team and recorded immediately. Distances and angles were made as accurately as possible.

A global positioning system was available on board and used during every field survey. A sighting record was filled out at the initial sighting with time, position, distance and angle data filled in immediately and verified between primary observer and recorder. All other information on sea state, weather conditions (Beaufort Scale), as well as notes on dolphin appearance, behaviour, and any other information were completed at the end of the sighting.

A summary of equipment requirement is summarized in ***Table 3.4***.

Table 3.4 Summary of Equipment Requirement

Equipment	Type
Vessel for Monitoring	A monitoring boat which should have a flying bridge or upper deck with a relatively unobstructed forward visibility (270^{o} – 90^{o}) allowing for observer eye height of 4-5m above water
Observation	Fujinon 7X50 marine binoculars (or similar) with compass/reticule
Calibration	Leica Geovid laser range finder binnacles or equivalent
Records	Clipboard
Navigation and Positioning	Global Positioning System Device (Magellen NAV 5000D or similar approved) (+ spare batteries)

Data Monitoring

Completed sighting forms will be compiled and subjected to a quality control review before being entered into a database/spreadsheet programme. All data will be made available for long term studies of dolphin population.

3.5.6 Underwater Noise Monitoring

In order to determine whether the underwater noise levels indicated in Environmental Permit are achieved, recording of noise levels due to the PAFF piling is also required. Noise (dB) recording procedures should be based on the methods briefly described in Würsig *et al*. (2000) as summarised below.

Methodology and Frequency

Calibrated hydrophones should be used to gather sound recordings during the piling activity and an estimate of the efficacy of the bubble curtain at mitigating noise determined. As for the acoustic monitoring described above, this work should only be undertaken by suitably qualified personnel who have shown to be competent in this type of monitoring. The monitoring will be conducted using three survey vessels to record the level of sounds emitted both with and without the bubble jacket operating.

Noise from the survey vessels should be kept to a minimum (eg by switching off the engine and pumps together with other sources of noise interference) in order to avoid sounds from the boats influencing the noise recordings. Each survey vessel should have a DGPS and prior to any monitoring should inter-calibrate their recording equipment by anchoring next to each other at a suitable distance (eg 150m) from the pile driver to simultaneously record the sound levels using all three systems.

Following the inter-calibration exercise the survey vessels should position themselves at the three testing locations from the pile driver, namely 250, 500 and 1000m intervals west of the pile driver.

Recordings should be gathered over the initial three days of the first week of piling.

Bubble Jacket

As required under Condition 3.24 of EP-139/2002/A, bubble jacket should be used for piling work to reduce underwater piling noise and hence achieve the underwater mitigated noise levels. The mitigated noise levels are presented in ***Table 3.5***.

Table 3.5 The Mitigated Noise Level

Distance from Piling Work (m)	Noise Level (dB)
250	162
500	152
1000	145

Two months prior to construction, a trial of bubble jacket shall be carried out to demonstrate noise attenuation effect. The results should be submitted for approval.

"Ramping-up" of Piling Hammer

As required under Condition 3.26 of the EP-139/2002/A, the piling hammer at the beginning of each piling session will be ramped up gradually. Piling activities will be continuous without short-break and will avoid sudden random loud noise emission. Piling activities will occur on a regular basis, be scheduled to occur with similar activities and commence at the same time each day. No pilling works will be carried out during 11:00pm to 7:00am of the following day.

3.5.7 Mitigation Measures

Mitigation measures to minimise impacts on the Indo-Pacific Humpbacked Dolphin have been recommended in the EIA for implementation during the piling activities for the jetty and for all dredging works in the Sha Chau and Lung Kwu Chau Marine Park. No other significant ecological impacts are predicted as a result of the project; however, measures recommended to minimise impacts on water quality will also reduce impacts on ecological resources. The ecological mitigation measures to be implemented during the construction phase are as follows:

- Use a bubble jacket to contain each pile;
- Implementation of 500m dolphin exclusion zone during piling activities;

- Implementation of a 250m dolphin exclusion zone during dredging in the Sha Chau and Lung Kwu Chau Marine Park;
- Acoustic dolphin monitoring for 3 days of the first week of piling;
- Underwater noise monitoring during the initial three days of the first week of piling operations;
- Do not undertake piling during April to June to avoid peak calving periods of dolphin;
- Use acoustic decoupling methods to minimise noise being transmitted through the piling barge;
- Instigate "ramping-up" of the piling hammer to provide an advanced warning system to dolphins in the vicinity;
- Activities will be continuous without short-breaks and avoiding sudden random loud noise emissions;
- Events will be scheduled to occur on a regular basis with similar activities scheduled for the same time each day to minimise impacts attributed to elevated noise levels;
- The piling will be scheduled to allow an approximate rest period of 7 hours during the night time;
- All mitigation measures noted above should be reassessed to check they are effective. If there is evidence of a significant increase in dolphin mortality immediately following the beginning of construction work, piling work should be suspended until the causes of such mortality can be ascertained;
- Undertake a review of available long-term dolphin monitoring dataset prior to the construction works to ensure that future dolphin distribution patterns are consistent with the current assessment.

Details of the recommended mitigation measures are included within ***Annex G*** (Implementation Schedule) and the mitigation measures will be audited once per week as part of the site audit programme.

3.6 CULTURAL HERITAGE

3.6.1 Introduction

This section will provide details of the cultural heritage monitoring to be undertaken during the Project period.

3.6.2 *Background*

As part of the Environmental Permit Condition for this project (*EP-139/2002/A*), a marine archaeological investigation of the pipeline route undertaken by a qualified marine archaeologist is required. A geophysical survey was carried out at the same time as the site investigations for the engineering design.

In October 2002, a Phase 1 Marine Archaeological Investigation (MAI) was undertaken by a qualified marine archaeologist. The work comprised a desktop review, review of geophysical survey data and establishment of archaeological potential. A Phase 1 findings report was prepared and recommended a Phase 2 dive inspection to be undertaken at area potentially of archaeological importance to determine their archaeological significance. The Phase 2 dive inspection was undertaken in November 2002 and the findings confirmed the targets that could be examined by dive inspection were of no archaeological interest. However, two targets, which could not be examined by dive inspection, would need to be monitored during dredging of pipe trench. As such, mitigation measures will need to be employed during dredging.

3.6.3 *Mitigation Measures*

The outstanding requirement for mitigation measures is detailed as follows:

- During the dredging of the pipe trench, a watching brief will be implemented where the trench intersects sub-surface targets SS1 and SS2. The details of the SS1 and SS2 are shown in ***Table 3.6***.

Table 3.6 Sub-surface Targets

Target	Approximate Depth	Depth below sea bed (m)	Length (m)	Height (m)	Latitude	Longitude
SS1	19	2.5	30	4	22°21.9263′N	113°55.3930′E
SS2	21	Exposed(1)	18	2.5	22°21.8318′N	113°55.2557′E

(1) MAI Report does not specify the depth.

The watching brief will have the following components:

- Dredge operators to be made aware of the likely presence of a shipwreck near the coordinates given for SS1 and SS2 and are to report any unusual resistance or slowing down of the dredging in these areas.

- Dredging to cease in the nominated areas, SS1 and SS2, once dredging has reached –2m below original seabed surface. Divers, under the supervision of a licensed maritime archaeologist, are then to examine the trench for possible cultural remains of significance. If no targets of archaeological significance are found during the examination, dredging can re-commence. However, dredging is again to be ceased in the nominated areas once the dredging has reached –3m below the original seabed surface. Divers are to then again examine trench for targets of possible archaeological significance.

3.6.4 Construction Phase Audit

All mitigation measures which are recommended by the MAI will be undertaken by the Contractor and will be audited by the qualified archaeologist, from the ET, to ensure compliance with the intended aims of the recommended mitigation measures.

3.7 LANDSCAPE AND VISUAL

3.7.1 Introduction

This Section defines the EM&A requirements that have been recommended to ensure that the proposed landscape and visual mitigation measures are effectively implemented during the construction and operational phases.

3.7.2 General

The EIA has recommended the EM&A for landscape and visual resources is undertaken during both construction and operational phases of the project. The implementation and maintenance of landscape mitigation measures is a key aspect of this and should be checked to ensure that they are fully realised and that potential conflicts between the proposed landscape measures and any other project works and operational requirements are resolved at the earliest possible date and without compromise to the intention of the mitigation measures.

According to the *Condition 3.8* of the EP-139/2002/A, three sets of Landscape Plans for the Project should be deposited to the EPD within one month before the commencement of landscape works of the Project. The Landscape Plan will include the locations, design details, implementation schedules, and drawings in the scale of 1:1000 or other appropriate scale showing the landscape and visual mitigation measures. The Landscape Plan will be certified by the ET Leader and verified by the IEC as conforming to the

requirements set out in Section 8.10 of the approved EIA Report before deposit.

3.7.3 Design Phase Audit

The landscape measures proposed within the EIA to mitigate the landscape and visual impacts of the scheme should be embodied into the detailed landscape design drawings and contract documents including the protection of existing trees where possible, the transplanting of existing trees and the planting of new trees and shrubs. Designs should be checked to ensure that the measures are fully incorporated and that potential conflicts with civil engineering, geo-technical, structural, lighting, signage, drainage, underground utility and operational requirements are resolved prior to construction. The designs should include a 1.5m high perimeter landscaped bund, 4m high landscape mound and landscape works for the area of the site that is not required for fuel tanks.

The design phase EM&A requirements for landscape and visual resources comprise the audit of the detailed landscaping and visual specifications to be prepared during the detailed design together with ensuring that the design is sensitive to landscape and visual impacts and that landscape resources are retained as far as practicable. Monitoring of design works against the recommendations of the landscape and visual impact assessments within the EIA should be undertaken as and when the designs are produced to ensure that they fulfil the intentions of the mitigation measures.

The landscape and visual auditor shall review the designs as and when they are prepared and liaise with the landscape architect and design engineer to ensure all measures have been incorporated in the design in a format that can be specified to the Contractor for implementation. In the event of a non conformity, the Event/Action plan as detailed in ***Annex G*** below should be followed.

3.7.4 Baseline Monitoring

Baseline monitoring for the landscape will comprise a vegetation survey of the vegetation and trees on the site. Representative vegetation types will be identified along with typical species composition.

The landscape and visual baseline will be determined with reference to the landscape and visual impact assessments included in the EIA Report.

3.7.5 Construction and Operational Phase Audit

A specialist Landscape Sub-Contractor should be employed by the Contractor for the implementation of landscape construction works and subsequent maintenance operations during the 24 month establishment period. It is proposed that as the majority of the planting works in the area are not developed initially, the planting should be conducted within the first half of

the construction contract. Thus, the establishment works will be undertaken through the latter half of the construction contract.

All measures undertaken by both the Contractor and the specialist Landscape Sub-Contractor during the construction phase and first year of the operational phase shall be audited by a Registered Landscape Architect of the ET, ensure compliance with the intended aims of the measures. Site inspections should be undertaken at least once every two weeks throughout the first half of the construction period when planting works are being undertaken. The operational phase audit (bimonthly for 12 months) will be commenced immediately after the completion of landscape planting works. The broad scope of the audit is detailed below but should also be undertaken with reference to the more specific checklist provided in ***Annex G***. Operational phase auditing will be restricted to the last 12 months of the establishment works of the landscaping proposals and thus only the items below concerning this period are relevant to the operational phase.

- the extent of the agreed works areas should be regularly checked during the construction phase. Any trespass by the Contractor outside the limit of the works, including any damage to existing trees shall be noted;

- the progress of the engineering works should be regularly reviewed on site to identify the earliest practical opportunities for the landscape works to be undertaken;

- all existing trees and vegetation within the study area which are not directly affected by the works are retained and protected;

- the methods of protecting existing vegetation proposed by the Contractor are acceptable and enforced;

- preparation, lifting transport and re-planting operations for any transplanted trees;

- all landscaping works are carried out in accordance with the specifications;

- the planting of new trees, shrubs, groundcover, climbers, ferns, grasses and other plans, together with the replanting of any transplanted trees are carried out properly and within the right season; and

- all necessary horticultural operations and replacement planting are undertaken throughout the Establishment Period to ensure the healthy establishment and growth of both transplanted trees and all newly established plants.

In the event of non-compliance the responsibilities of the relevant parties is detailed in the Event /Action plan provided on ***Annex G***.

3.8 LAND CONTAMINATION, HAZARD TO LIFE AND FUEL SPILL RISK

3.8.1 Introduction

This Section defines the EM&A requirements that have been recommended to ensure that appropriate measures to minimise land contamination, hazard to life and environmental risk be undertaken during the design phase of the project. A design phase audit is recommended to ensure that the design of the PAFF, including the spill response plan, comprise the necessary elements to control, detect, contain, clean up, handle and dispose any material that could lead to contaminated land or pose a risk to life or the environment.

3.8.2 Mitigation Measures

A series of mitigation measures were recommended to be integrated into the design, concerning considerations of land contamination, hazard to life and fuel spill risk. These mitigation measures were developed to minimise the likelihood of the loss of fuels from the system, hence minimise the associated contamination, hazard and risk. These measures are based on the need to specify procedures for detecting a leak and containing a leak if it occurs, and to define methods for clean up and disposal of the leak.

These measures are summarised in the Implementation Programme of Mitigation Measures (***Annex H***):

3.8.3 Spill Response Plan

Among those mitigation measures, the Spill Response Plan (SRP) should be noted specifically. It was predicted in the EIA report that some key sensitive marine ecological receivers were likely to be affected by the fuel spill accident from the PAFF. Therefore, the contingencies should be included in the SRP that any oil spill occurred in the following locations should adopt a rapid use of booms:

- Ma Wan fish culture zone;
- Lung Kwu Tan beach and horseshoe crab nursery area;
- Tai Ho Wan mangroves and seagrass stands;
- Tai O mangrove stand;
- gazetted beaches in Castle Peak Bay and along the coast to Sham Tseng; and
- coastline of Lung Kwu Tan, Sha Chau and Tree Island.

The SRP should also include, but not limited to the following elements:

- organisation of the oil spill response team and the responsibilities of each member;

- response strategies/procedures to be adopted in the case of an oil spill, including:

    - reporting to relevant Authorities;
    - identification of the source of spill;
    - containment of leaking fuel;
    - recovery and processing of free fuel;
    - clean up methodology; and
    - handling and disposal protocols.

- risk assessments to identify the maximum credible spill scenario for PAFF and other operational spill scenarios and the fate of a fuel spill;

- setting up of emergency centre in PAFF;

- communication means during oil spill and 24-hours emergency contact list;

- training and competence level requirement of PAFF staff;

- oil spill equipment required;

- sub-contracting services;

- drills and exercise requirements; and

- follow-up procedures.

Appropriate oil spill response training should be provided to the operating personnel on a regular basis and oil spill response drills be conducted to test the effectiveness of the SRP.

3.8.4 Design Phase Audit

The measures proposed within the EIA to mitigate for land contamination and risk to life and the environment should be embodied into the detailed design drawings and contract documents. Designs should be checked to ensure that the measures are fully incorporated and that potential conflicts with civil engineering, geo-technical, structural, lighting, signage, drainage, underground utility and operational requirements are resolved prior to construction.

The EM&A requirements for land contamination, hazard to life and risk to the environment comprise the audit during design phase. The audit should be focus on the integration of fuel spill control, leakage detection and leakage/spill containment into detailed engineering design.

Monitoring of design works should be undertaken as and when the designs are produced to ensure that they fulfil the integration of the mitigation measures. The design items for audit will include:

- pipeline leak detection and automatic shut-off system;
- pipeline rock armour protection;
- tank high level automatic shut-off system;
- bunding of tank;
- tank leak drainage isolation and containment system;
- on-site fire fighting equipment and system;
- jetty protection; and
- fuel delivery shut off valves.

The land and marine spill response plan should be audited to ensure its effectiveness in the event of an accident.

The ET should carry out the audit, review the designs as and when they are prepared and liaise with the design engineer to ensure all measures have been incorporated in the design in a format that can be specified to the Contractor for implementation.

4 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 H***.

However, the updated Implementation Status of the reporting period has not been received at the time of preparing the report.

5 MONITORING RESULTS

5.1 AIR AND NOISE MONITORING

Air and noise monitoring are not required for the project. However, weekly site inspection included the air and noise issues.

5.2 WATER QUALITY

Water quality monitoring at the monitoring stations is only required during the dredging phase of the project. No dredging activity was conducted during the report period, thus water quality monitoring was not required.

5.3 ECOLOGICAL MONITORING

5.3.1 Baseline (Pre-Construction) Monitoring

A baseline marine mammal monitoring was conducted before marine construction works for the Permanent Aviation Fuel Facility commence in accordance with the Environmental Permit (EP-139/2002/A). The baseline survey was conducted within 28 days of the construction works. Six, one-day surveys were conducted between 27th October and 1st November 2005. During the surveys, only one type of marine mammal, the Indo-Pacific Humpback Dolphin *(Sousa chinensis*) or Chinese White Dolphin was observed. Sightings occurred throughout the entire survey area; however, more sightings occurred towards the north of the Sha Chau and Lung Kwu Chau Marine Park. Sightings of the Indo-Pacific Humpback Dolphin were made during all of the survey days, with a minimum of 3 and maximum of 11 sightings recorded. The number of individuals ranged from 1 individual to a group size of 8 individuals; however, the majority (over 55%) were in group sizes of 1 to 2 individuals. All age classes of humpback dolphins were recorded including calves. For details, please refer to the 'Baseline Review and Pre-Construction Phase Dolphin Monitoring Report'.

5.3.2 Spot Acoustic Monitoring

Acoustic monitoring took place on 18th, 19th and 21st of November 2005 in Area 38, Tuen Mun from a piling barge. Acoustic and visual monitoring began at least 30 minutes prior to piling activities and continued until the piling work ceased. A total of 8 hours of acoustic monitoring took place over the 3 day period. During this time, no dolphins were detected within the 500m dolphin exclusion zone visually or acoustically.

The purpose of this study was to verify that visual monitoring of the 500m dolphin exclusion zone was effective. As no dolphins were detected within the 500m exclusion zone through out the survey period, it is not possible verify the visual observations within the conditions outlined. However, on 22nd of November, one adult and one spotted juvenile were visually observed at a distance of 780m from the observation site and approximately 500m apart. No

vocalisations were detected during this time on the hydrophone. Whilst certainly not quantitative, with the lack of any other data, this event could suggest that in this area of Hong Kong, under the survey conditions, the visual monitoring was more effective than acoustic monitoring for dolphin presence.

Although unlikely, it is possible that due to the heavy boat traffic across Urmston Rd and other construction activities taking place in Tuen Mun, vocalisations with in the 500m exclusion zone could have been masked by background noise. Previous acoustic studies of S. *chinensis* in this area have proven unsuccessful due to the levels of back ground noise in the area[1]. This survey was further hindered by the positioning of the tug-boat within metres of the hydrophone during acoustic surveying. The engine noise produced during this time would have masked any dolphin acoustic activity from a short distance.

Whilst this spot acoustic monitoring method could be useful in quieter areas of Hong Kong, it is unlikely under such acoustically challenging circumstances that this methodology would successfully confirm visual monitoring of the dolphin exclusion zone.

5.3.3 Underwater Noise Monitoring

Underwater Noise Monitoring was conducted for three days between 23rd and 25th November 2005 during the PAFF piling activity. However, the data is currently being processed and shall be available in the next EM&A Monthly report.

5.3.4 Visual Monitoring

As the piling activities were only conducted at Tuen Mun Area 38 during the reporting period, 500m exclusion zone was used for the marine mammal monitoring.

A qualified person was present to conduct the visual monitoring during and at least 30 minutes before the marine piling activities which were commenced. The 'Begin Effort' time, which was determined by the contractor, was the time the visual monitoring commenced. "Begin Effort' time varied from 30 minutes to few hours before the actual piling activities began. Only Chinese White Dolphins *(Sousa chinensis*) have been spotted occasionally at or close to the site during the reporting period. Dolphins were spotted mostly outside the 500m exclusion zone, except two occasions (24th and 25th November 2005) that dolphins were found within the 500m exclusion zone. On the 24th November sighting, no piling activity was conducted during the dolphin sighting and no dolphin was spotted during the dolphin clearance time. On the 25th November sighting, no piling activity was conducted at the time of dolphin sighting and piling activities only began 30 minutes after no dolphin

(1) Ruxton, J., (2002) Vocal Repertoire of the Indo-Pacific Humpback Dolphin, *Sousa chinensis* (Osbeck 1765), in Hong Kong Waters. MSc Thesis, University of Wales, Swansea.

was present within the exclusion zone. The records of the visual monitoring conducted are presented in ***Annex I***.

5.4 WASTE MANAGEMENT

Auditing the contractor's Waste Management Plan (WMP) is part of the EM&A requirements but we have not received the WMP at the time of preparing this monthly report. WMP will be audited upon the contractor's submission.

5.5 CULTURAL HERITAGE

From the Marine Archaeological Investigation Report, two targets, which could not be examined by dive inspection, would need to be monitored during dredging of pipe trench. During the dredging of the pipe trench, a watching brief will be implemented where the trench intersects sub-surface targets SS1 and SS2.

As no dredging activity was conducted along the pipe trench during the reporting period, marine archaeological monitoring was not required.

5.6 LANDSCAPE AND VISUAL

According to the EIA report and EM&A manual, mitigation measures and site inspection are required during the landscaping/planting works. However, no landscaping or planting works were conducted on site during the reporting period.

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

5.7 LAND CONTAMINATION, HAZARD TO LIFE AND FUEL SPILL RISK

According to the EIA report and EM&A manual, mitigation measures and design phase audit are required to minimise the risk of fuel spill and hazards. As there was no construction works related to such issues in the reporting period, audit on the mitigation design and measures was not required. However, weekly site inspection covered the waste management aspects which included measures to prevent land contamination by chemical wastes.

- Weekly site inspections were carried out by the ET on the 21st November, 3rd and 10th December 2005. The site was in good orderly manner and no non-compliance was found. However, water ponding was observed on the 10th December near the pier.

Summary of Findings over the three site inspections:

Air Quality

- No noticeable dust emission was observed during the stockpile loading activity and vehicle movement within the site;
- Stockpiles were wetted at least twice a day to avoid dust emission;
- Stockpiles storage was concentrated in particular area to minimize potential wind erosion;
- Unpaved road was wetted regularly;
- Site temporary entrance/exit was paved and wheel-washing facility was provided at the site exit to avoid dust deposit in the access road;

Noise

- No noisy activity was found during the audit;
- Construction Noise Permit was issued for the marine piling activity;
- Silenced generator was used on the piling barge to reduce noise emission;
- Bubble jacket was used during the marine percussive piling activity;

Water Quality

- Wastewater treatment facility had not been installed on site. However, no wastewater discharge was found on site. According to the contractor, wastewater discharge license will be applied;
- Water ponding was observed at the pier near the piles storage;
- Manholes outside the site were free of sand;
- Chemical toilets were installed on site;
- No sediment plume was observed during the marine piling activities;
- Chemical waste was stored with drip tray in accordance with the code of practice;

7 ENVIRONMENTAL NON-CONFORMANCE

7.1 SUMMARY OF ENVIRONMENTAL NON-COMPLIANCE

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

7.2 SUMMARY OF ENVIRONMENTAL COMPLAINT

Two environmental complaints were received during and before the reporting period. The ET's Interim Reports and Complaint Logs of the two complaints were sent to EPD on the 25th November and 5th December 2005 respectively. A copy of the Interim Reports and Complaint Logs are attached in ***Annex J***. A statistical summary of environmental complaints since project commencement is presented in ***Table 7.1***.

Table 7.1 Statistical Summary of Environmental Complaints

Reporting Period	Complaint Statistics		
	Frequency	Cumulative	Complaint Nature
Before construction works	1	1	Dust
18/11/05 – 16/12/05	1	2	Dust

7.3 SUMMARY OF ENVIRONMENTAL SUMMONS

No summons was received in this reporting period. A statistical summary of legal proceeding since project commencement is presented in ***Table 7.2***.

Table 7.2 Statistical Summary of Environmental Summons

Reporting Period	Environmental Summons		
	Frequency	Cumulative	Summon Nature
18/11/05 – 16/12/05	0	0	--

8 FUTURE KEY ISSUES

8.1 KEY ISSUES FOR THE NEXT ONE MONTH

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

- Impacts on dolphins due to piling works;
- Noise from operating machinery and equipment; and,
- Dust release and suppression.

8.2 IMPACT PREDICTION FOR THE NEXT ONE MONTH

Provided that environmental mitigation measures including good on-site practises are properly implemented, unacceptable adverse impacts are not expected to arise.

8.3 WORKS AND MONITORING PROGRAMME FOR THE NEXT ONE MONTH

Work programme for the next one month includes piling works. Monitoring of dolphin exclusion zone and bubble curtains will be conducted daily, as required. Regular site inspections will also be undertaken.

9.1 CONCLUSIONS

The Environmental Monitoring and Audit (EM&A) Report presents the EM&A works undertaken during the period from 18 November to 15 December 2005 in accordance with EM&A Manual and the requirement under EP-139/2002, VEP-133/2004 and EP-139/2002/A.

Air and Noise monitoring were not required for the project. Water quality monitoring was not required as no dredging activity was implemented during the reporting period.

Marine Mammal Monitoring

Visual Monitoring and Acoustic Spot Monitoring were conducted for a total of three piling days in November 2005. No dolphin was spotted or detected within the 500m exclusion zone from the piling barge. Two *Sousa chinensis* were spotted visually at a distance of 780m from the barge but no vocalisation was detected by the acoustic monitor.

During the visual monitoring of marine mammal on the 24th and 25th November 2005, *Sousa chinensis* were found within the exclusion zone. No piling was conducted at the time of sighting and piling activities began at least 30 minutes after dolphin clearance from the exclusion zone.

Underwater Noise Monitoring

Underwater Noise Monitoring was conducted for three consecutive days in November. However, the data is still in process and the monitoring results will be discussed in the next EM&A monthly report.

Construction Waste Management

The contractor has not submitted the Waste Management Plan at the time of preparing this report.

Environmental Complaint

Two environmental complaints were received during and before the reporting period (31st October and 24 November 2005) regarding dust emission from the site. EPD inspected the site on the 2nd November 2005 and issued a record of inspection to the contractor for dust generation when vehicles were driven inside the site.

Environmental Summons

No environmental summons was received in this reporting period.

9.2 FOLLOW UP ACTION AND RECOMMENDATION

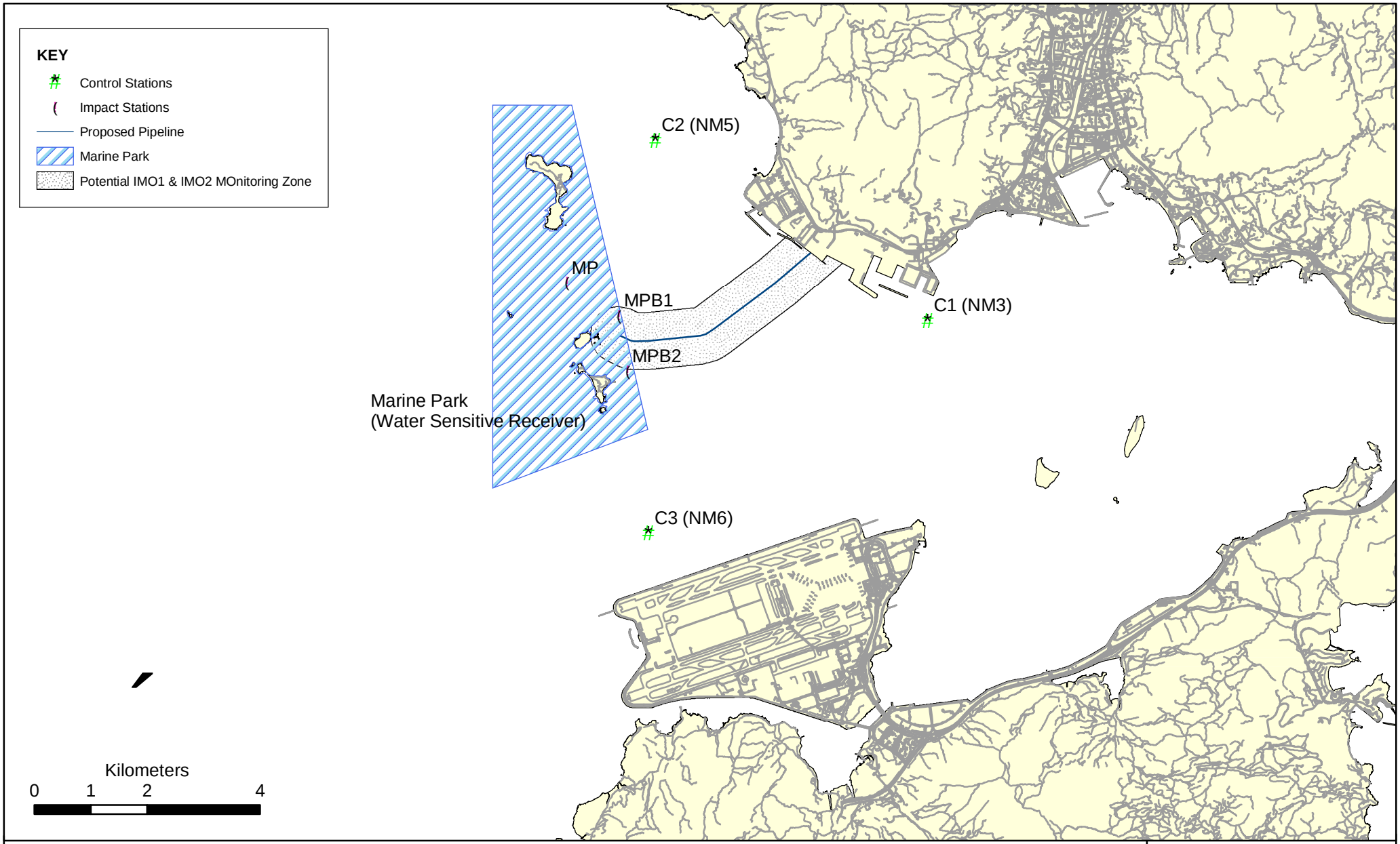
The contractor is advised to implement suitable mitigation measures, in particular to ensure dust emission is avoided on site. Water truck was used at least twice a day to wet the soil and stockpile to avoid dust emission from wind erosion, loading activity and vehicle movement. The stockpiles were stored in particular area, rather than scattered places on site to minimise wind erosion. The use of tarpaulin sheet is also considered by the contractor for large quantities of stockpile storage.

The contractor indicated that wastewater discharge license for site drainage on site will be applied.

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.

Annex A

Water Quality Monitoring Locations, Water Quality and Ecological Sensitive Receivers



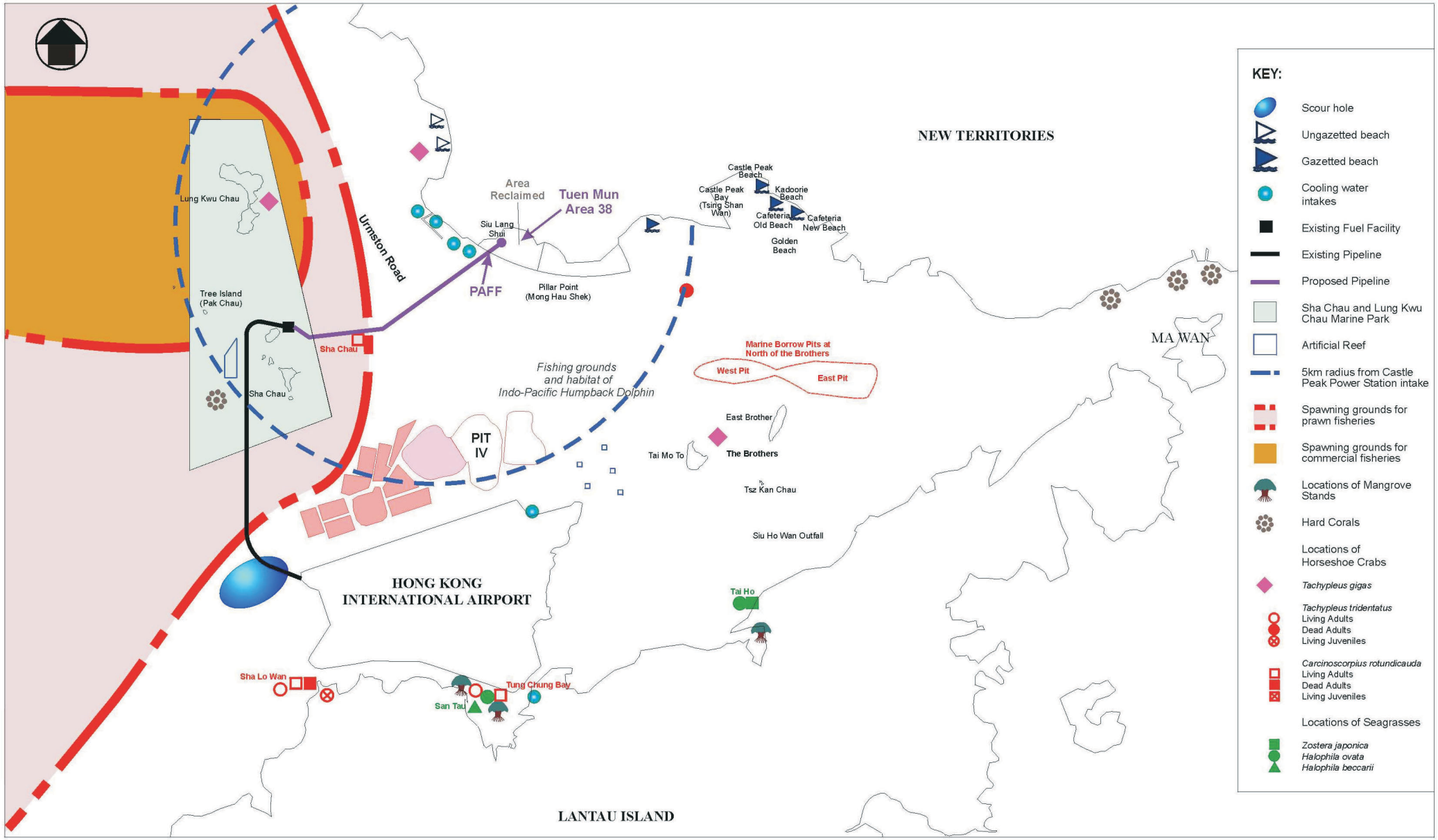
Annex A

Water Quality Monitoring Locations

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

Environmental Resources Management

ERM



Annex A

Water Quality and Ecological Sensitive Receivers

FILE: C2475aa
DATE: 25/01/2006

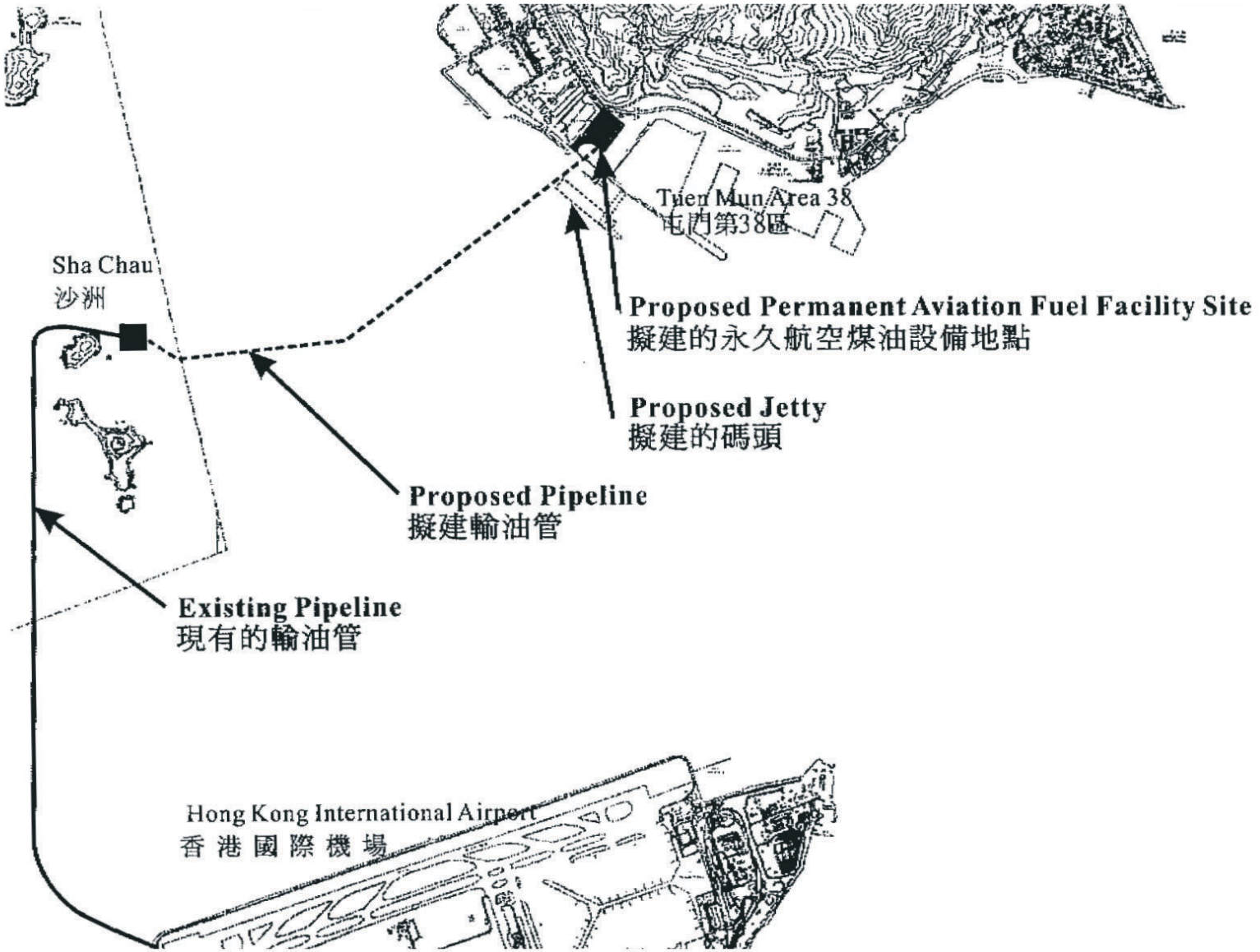
(Soure : PAFF for Hong Kong International Airport EIA, Mouchel 2002)

Environmental Resources Management

ERM

Annex B

Project Location



NOT TO SCALE

Annex B

PROJECT LOCATION

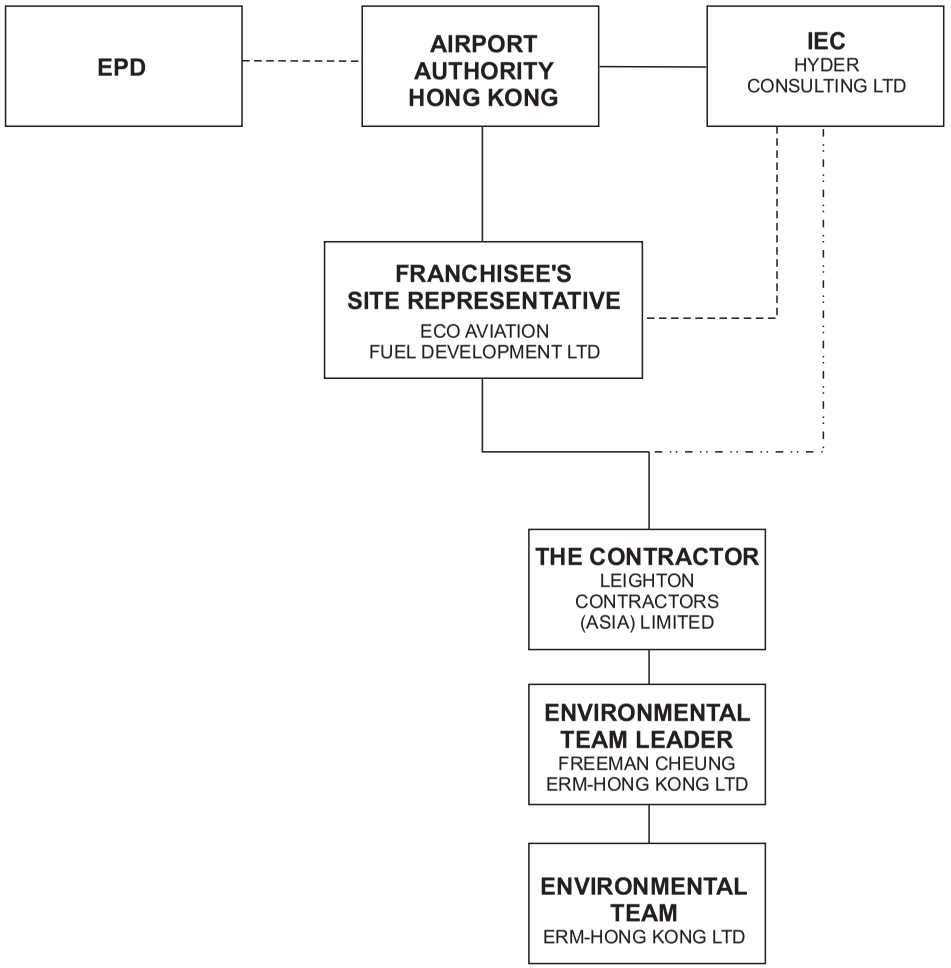
Environmental Resources Management

ERM

FILE: 0018105aa1
DATE:12/12/2005

Annex C

Organisation Chart



Annex C

ORGANISATION CHART

FILE: 0018105aa
DATE: 13/12/05

Environmental Resources Management

ERM

Annex D

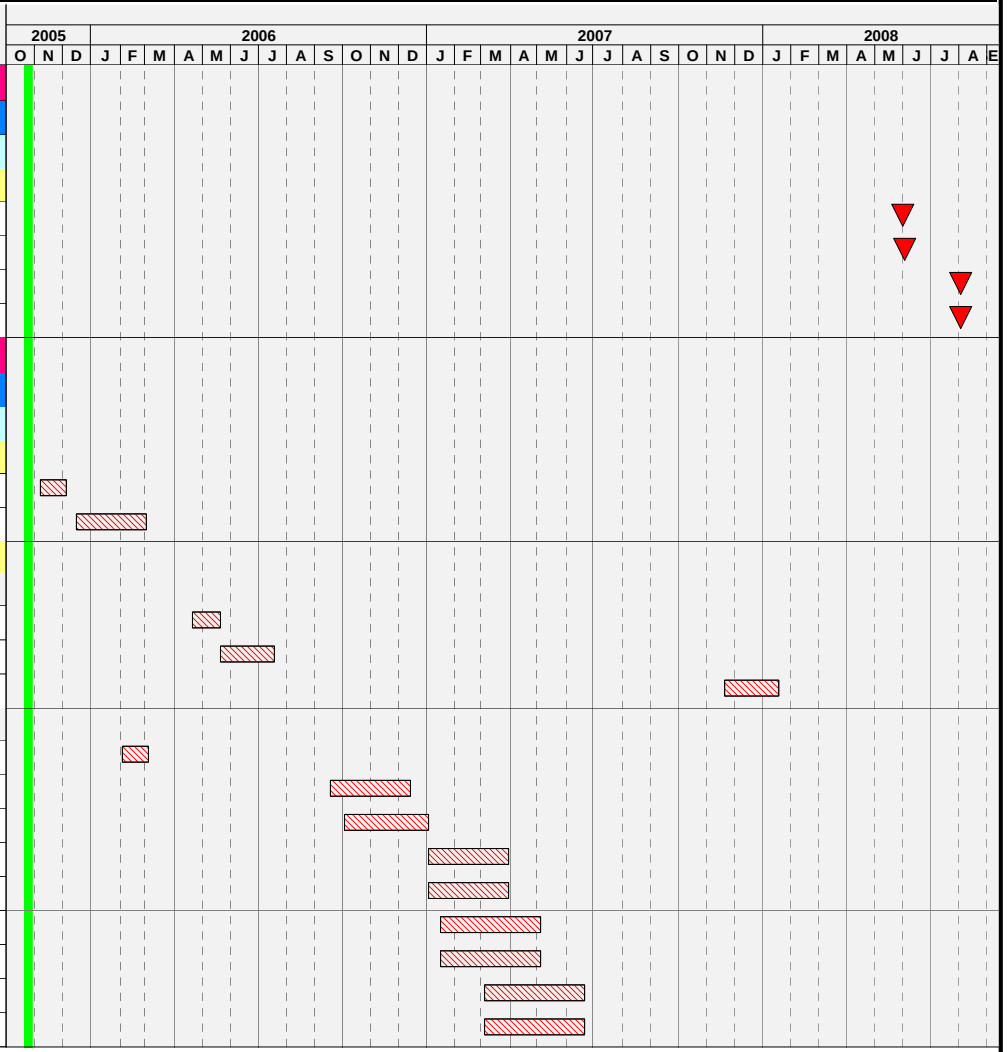
Works Programme

Data Date 25OCT05
Run Date 15DEC05 12:31

H-2104 BASE LINE PROGRAM - REVISION "I"
WP: CONSTRUCTION PROGRAM

Current Schedule: BLRI
Target 1: None
Target 2: None

Act. ID	Activity Description	Orig Dur	ES	EF	TF
CC-A GENERAL & PRELIMINARIES					
CC-A.10 Contract Key Dates & Milestones					
CC-A.10.10 Contract Dates					
CC-A.10.10.10 Completion Dates					
KD01	STAGE 1 Calculated (Ready for Trial Operation)	0		31MAY08	0
KD01CONT	STAGE 1 CONTRACT DATE (Ready for Trial Op)	0		01JUN08*	0
KD02	STAGE 2 Calculated (Ready for Commercial Operat)	0		01AUG08	0
KD02CONT	STAGE 2 CONTRACT DATE (Ready for Commercial Op)	0		01AUG08*	0
CC-B TANK FARM & FACILITIES					
CC-B.90 Construction Works					
CC-B.90.10 Civil Works					
CC-B.90.10.10 Establishment & Inital Works					
1809	SI Works Tanks T5 & T6	24	08NOV05*	05DEC05	43
PREP	Site Preparation; Temp. Fencing; Gates, etc	57	17DEC05	02MAR06	14
CC-B.90.10.15 Drainage & Under Ground Services					
CC-B.90.10.15.10 U/G Fuel Pipes					
1165	Excavate U/GFuel Piping (Rcpt Platform to TF)	24	22APR06	20MAY06	33
1202	Install U/GFuel Piping EVA X-ing (Rcpt to TF)	48	22MAY06	19JUL06	33
1166	Install/ U/G Receipt Fuel Piping (S'wall - Rcpt)	48	20NOV07	18JAN08	38
CC-B.90.10.15.20 U/G Drainage					
1167	U/G Drains/Sump EVA X-ing to Interceptor (@T-01)	24	04FEB06	03MAR06	14
1069	Subsoil Drains (betw Acs Rd & T-1/3)	72	18SEP06	14DEC06	36
1044	Rd Drains - Pipe & MH (betw Acs Rd & T-1/3)	72	04OCT06*	02JAN07	24
1058	Rd Drains - Pipe & MH (South of T5/6)	72	03JAN07	30MAR07	72
1072	Subsoil Drains (South of T5/6)	72	03JAN07	30MAR07	72
1057	Rd Drains - Pipe & MH (Sea Side T1/2/5)	90	15JAN07	04MAY07	26
1070	Subsoil Drains (Sea Side T1/2/5)	90	15JAN07	04MAY07	26
1059	Rd Drains - Pipe & MH (betw T2/4/6 & Future TF)	90	05MAR07	20JUN07	23
1074	Subsoil Drains (betw T2/4/6 & Future TF)	90	05MAR07	20JUN07	23



Level 1 CostC
DESIGN, GENERAL & PRELIMINARIES
TANK FARM
JETTY
SUB-MARINE PIPE LINE

Current Schedule
Original IPS (Rev I)
Progress Bar
Critical Activity

Leighton Contractors (Asia) Limited

PAFF - PERMANENT AVIATION FUEL FACILITY

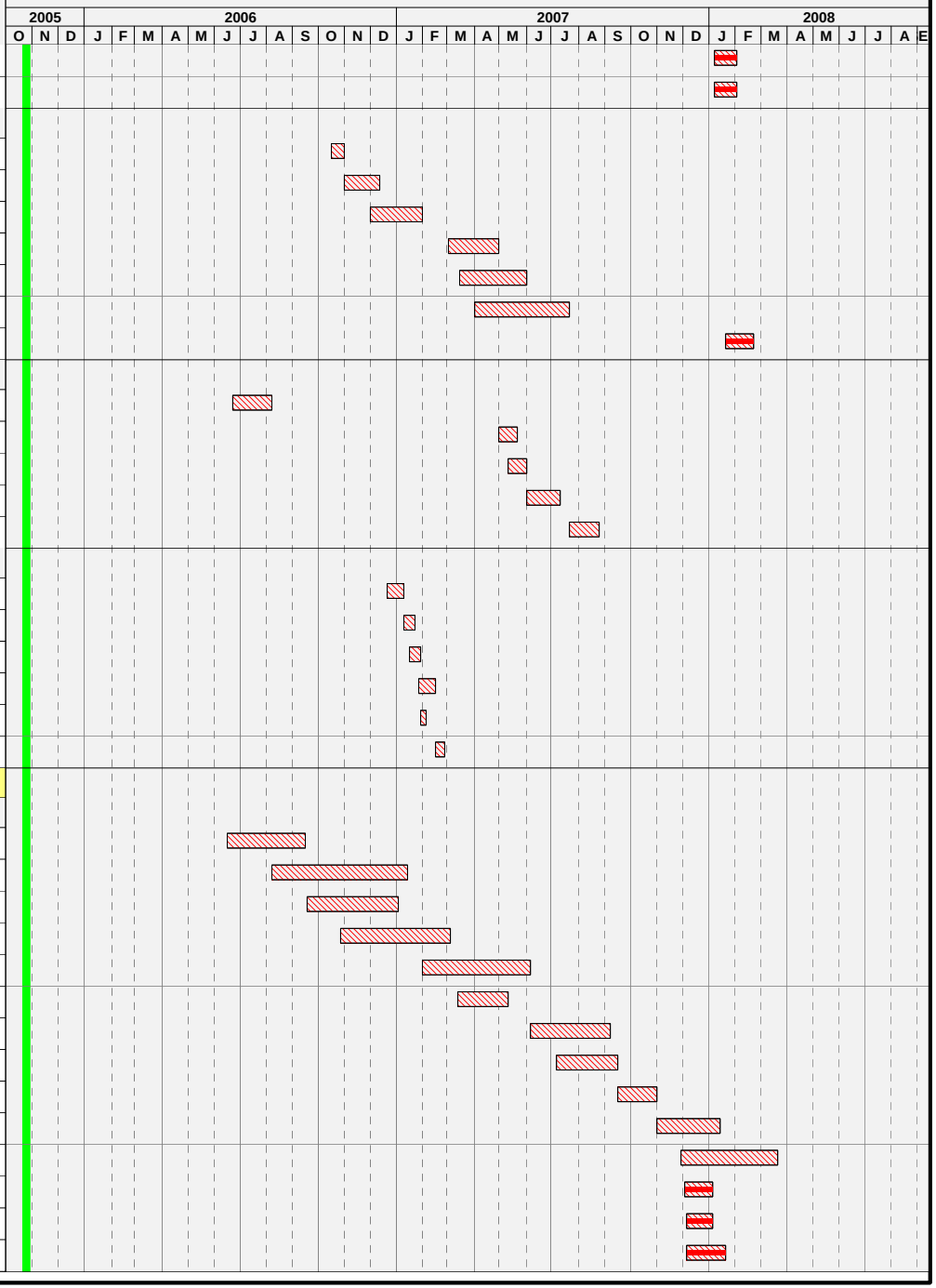
WORKS PROGRAM

Proj. Name: BLRI
Targ 1 Name:
Layout: NS MASTER LAYOUT
Filter: WP: CONSTRUCTION PROGRAM
Run Date: 15DEC05 12:31
Data Date: 25OCT05
Prepared by N. Sero

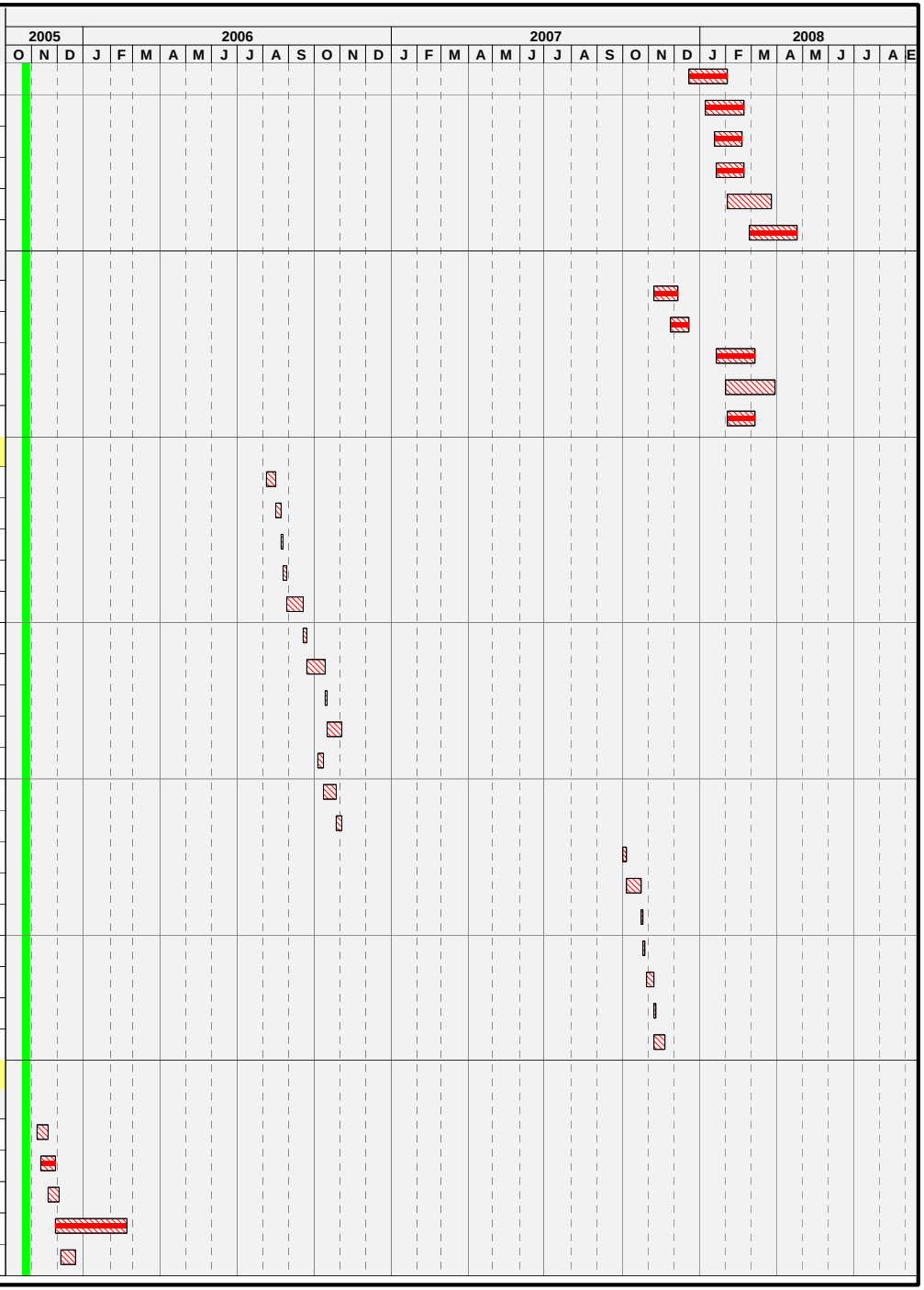
PAFF/LC/01/SCH/G/001 Rev I

Date	Revision	Checked	Approved
08MAY01	A - Dsg Prog for Approval	NS	BG
31MAY01	B - Rev.Dsg & Constr.	NS	BG
09SEP02	C - Site L'put Delays	NS	BG
06MAR03	D - Land Grant Delays	NS	BG
07APR03	E - Orgnl IPS Reinstated	NS	BG
23SEP05	H - Changed Access	NS	BG
15DEC05	Construct. Full Revision	NS	BG

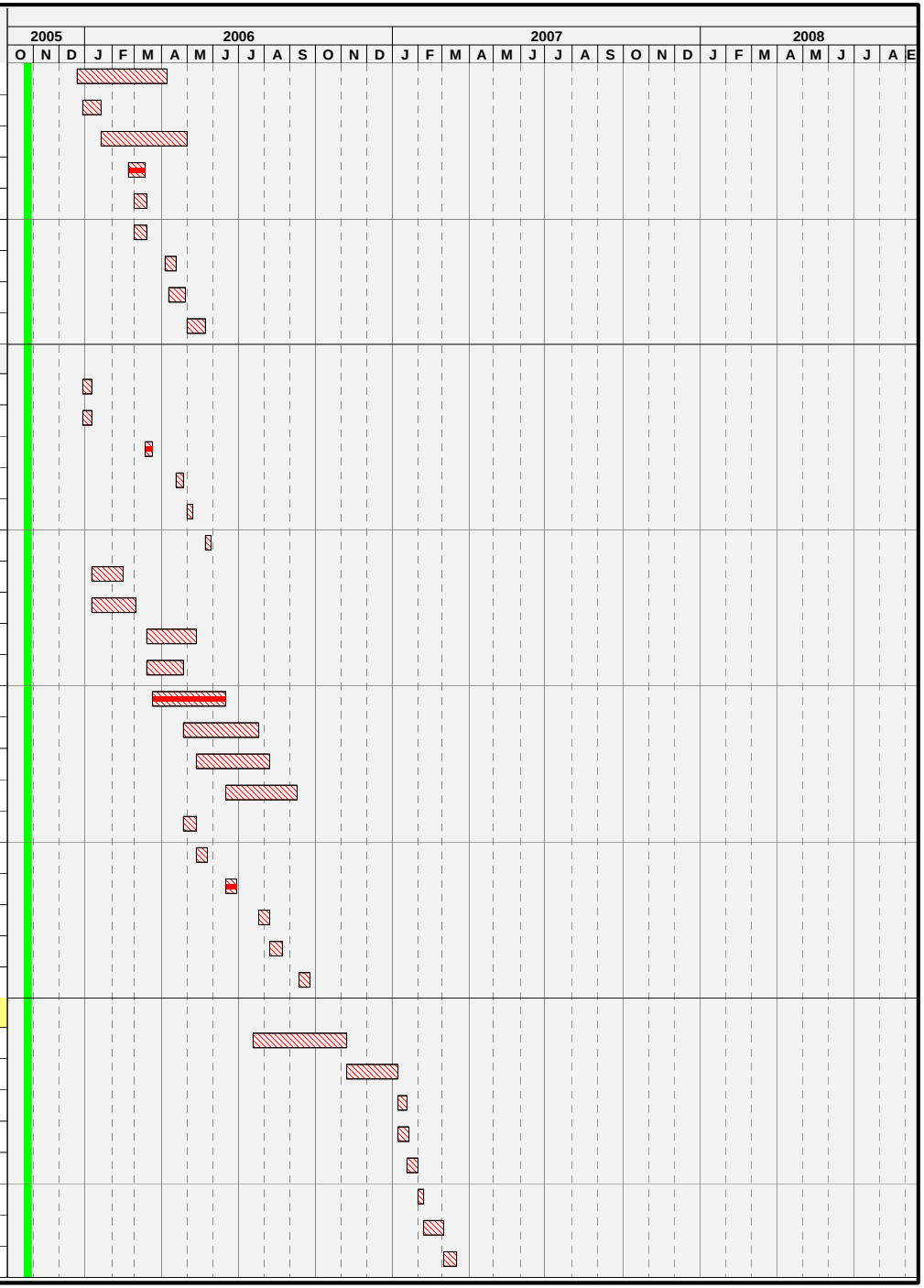
Act. ID	Activity Description	Orig Dur	ES	EF	TF
1060	Rd Drains - Pipe & MH (Constr opening)	24	07JAN08	02FEB08	0
1075	Subsoil Drains (Constr opening)	24	07JAN08	02FEB08	0
CC-B.90.10.15.30	U/G Fire Services				
1213	Exc. F.Serv U/G Pipe(OpBldg - Bwall Ring Main)	12	17OCT06	30OCT06	26
1214	Install U/G F.Serv Pipe (admin to bund wall)	36	01NOV06	12DEC06	26
1023	U/G FServ Ring Main (betw Acs Rd & T-1/3)	36	01DEC06	30JAN07	24
1028	U/G FServ Ring Main (South of T5/6)	36	03MAR07	28APR07	72
1027	U/G FServ Ring Main (Sea Side T1/2/5)	66	15MAR07	01JUN07	26
1029	U/G FS Ring Main (betw T2/4/6 & Future TF)	66	02APR07	20JUL07	23
1139	U/G FServ Ring Mains (Constr opening)	24	21JAN08	20FEB08	0
CC-B.90.10.15.40	U/G Cable Ducts				
1188	U/G El Cable Ducts OpBldg to TF incl. EVA Xing	36	24JUN06	07AUG06	23
1180	E&I - BWall Perim U/G CblDuct (South of T5/6)	18	30APR07	21MAY07	72
1179	E&I - BWall Perim U/G CblDuct (Accss Rd - T-1/3)	18	12MAY07	01JUN07	56
1120	E&I - BWall Perim U/G CblDuct (Sea Side T-1/2/5)	30	02JUN07	10JUL07	74
1169	E&I - BWall Perim UG CblDuct (Future TF T-3/4/6)	30	21JUL07	25AUG07	23
CC-B.90.10.15.50	U/G Plumbing				
4640	Plumbing Pipe to Building Trench Excavation	12	21DEC06	08JAN07	207
4642	Plumbing Pipe to Planter Area Trench Excavation	12	09JAN07	22JAN07	207
4643	Plumbing Pipe to Planter Area Pipe Installation	12	15JAN07	27JAN07	207
4641	Plumbing Pipe to Building Pipe Installation	18	26JAN07	15FEB07	328
4644	Plumbing Pipe to Planter Area Backfilling	6	29JAN07	03FEB07	207
4645	Plumbing Pipe to Building Backfilling	6	16FEB07	26FEB07	328
CC-B.90.10.25	Walls; Fences; Walkovers; Crossovers				
CC-B.90.10.25.10	Bund and Security Wall/Fence				
1039	Bund Wall Between Access Rd & T-001/3	78	16JUN06	16SEP06	36
1194	B'Wall Seaside of T-001/2/5	120	08AUG06	13JAN07	23
1040	Bund Wall South of Tanks T-005/6	84	18SEP06	02JAN07	72
1193	Bund Wall Between T-003/4/6 & Future T.Tarm	102	27OCT06	03MAR07	23
1045	Security Wall Between Access Rd & T-001/3	102	31JAN07	04JUN07	24
1076	Security Single Fence/Gts Betw Accs Rd & T-001/3	48	13MAR07	09MAY07	263
1517	Security Wall Seaside of T-001/2/5	78	05JUN07	07SEP07	24
1055	Security Wall South of Tanks T-005/6	60	06JUL07	15SEP07	60
1077	Security Single Fence/Gat South of Tanks T-005/6	36	17SEP07	30OCT07	61
1518	Security Single Fence/Gate Seaside of T-001/2/5	60	31OCT07	12JAN08	61
1340	Security Double Fence/Gates - Future TFarm	90	29NOV07	20MAR08	24
1204	Bund Wall Constr Open. (between T4&T6)	24	04DEC07	04JAN08	1
1203	Bund Wall Constr Open. (between T3&T4)	24	05DEC07	05JAN08	0
1399	Construct 500mm Bund Walls - Between T1/3 & T2/4	36	05DEC07	19JAN08	0



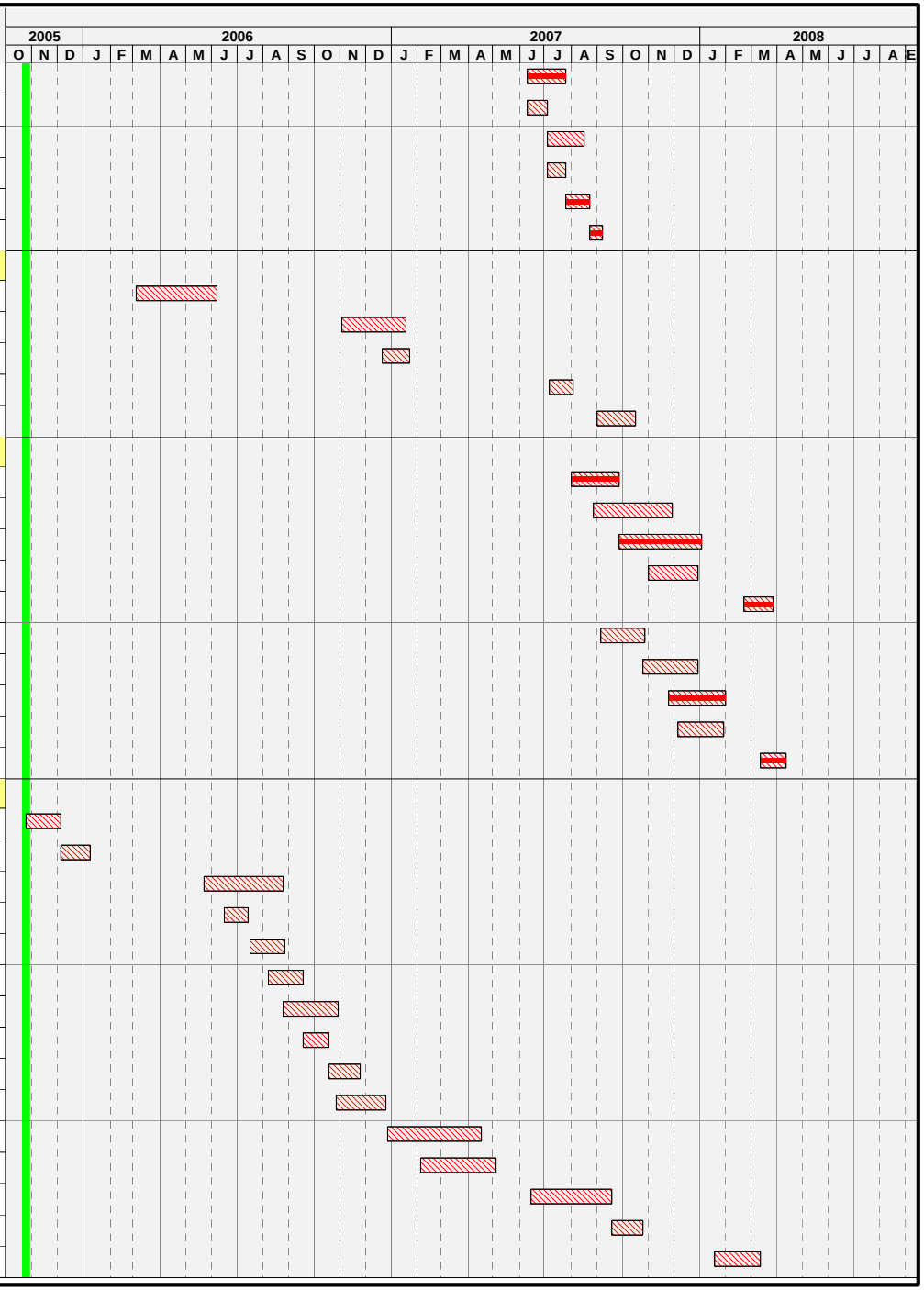
Act. ID	Activity Description	Orig Dur	ES	EF	TF
1472	Construct 500mm Bund Walls - Between T2/4 & T5/6	36	18DEC07	01FEB08	1
1391	Construct 500mm Bund Walls - Between T5 & T6	36	07JAN08	20FEB08	6
1385	Construct 500mm Bund Walls - Between T2 & T4	24	19JAN08	19FEB08	7
1370	Construct 500mm Bund Walls - Between T1 & T3	24	21JAN08	20FEB08	6
1521	Security Dbl Fences Swall/OpBldg/PumpPltf Area	36	02FEB08	25MAR08	38
1187	Bund Wall Contain.Barrier - Finishing Works	48	28FEB08	24APR08	0
CC-B.90.10.25.20	Wallkovers & Elevated Crossovers				
1514	Install Tanks T-1/2/3/4 Elevated Crossovers	24	07NOV07	04DEC07	0
1516	Install Tanks T5/6;T2/5;T4/6 Elevated Crossovers	18	27NOV07	17DEC07	1
1368	Install Tanks T-1/2/3/4 Fuel Pipe Wallkovers	36	21JAN08	05MAR08	0
1175	Install Bund Wall Walkovers	48	31JAN08	29MAR08	21
1486	Install Tanks T-5/6 Fuel Pipe Wallkovers	24	02FEB08	04MAR08	1
CC-B.90.10.35	Seawall Works				
4600	Wall K - Open Excavation Behind	9	05AUG06	15AUG06	26
4602	Wall K - Remove Existing Coping and Block	6	16AUG06	22AUG06	26
4604	Wall K - Install Precast Intake Pipe Inlet Block	3	23AUG06	25AUG06	26
4605	Wall K - Install 1st Layer PC Block	2	26AUG06	28AUG06	26
4606	Wall K - Bedding, Infill and Install Intake Pipe	18	29AUG06	18SEP06	26
4610	Wall K - Install Remaining PC Block	4	19SEP06	22SEP06	26
4612	Wall K - Construct Staircase, In-situ Concrete	15	23SEP06	13OCT06	26
4615	Wall K - Install PC Wave Reflecting Block	2	14OCT06	16OCT06	26
4617	Wall K - Backfill Behind Wall	14	17OCT06	02NOV06	26
4601	Wall C - Open Excavation Behind	5	06OCT06	12OCT06	68
4603	Wall C - Remove Coping, Blocks & Bermstones	12	13OCT06	26OCT06	68
4607	Wall C - Trench at Seawall Foundation	4	27OCT06	01NOV06	68
4609	Wall C - Bagged Concrete, Fill, Bermstones	4	02OCT07	05OCT07	38
4611	Wall C - Install PC Block	15	06OCT07	23OCT07	38
4613	Wall C - Infill Concrete to Cell	2	24OCT07	25OCT07	38
4614	Wall C - Fuel Pipe Tie-in	2	26OCT07	27OCT07	38
4616	Wall C - Insitu Concrete Coping	9	29OCT07	07NOV07	38
4618	Wall C - Install PC Wave Reflecting Block	2	08NOV07	09NOV07	42
4619	Wall C - Backfill Behind Wall	10	08NOV07	19NOV07	38
CC-B.90.10.45	Tanks Foundations				
CC-B.90.10.45.10	Ground Treatment & Preloading				
1377	Mobilise Band Drains S/C	12	07NOV05*	19NOV05	26
1386	Apply Surcharge - Tank T-1	15	11NOV05*	28NOV05	0
1376	Excavate & Install Band Drains Tank T-2	12	21NOV05	03DEC05	26
1396	Surcharge Consolidation Period - Tank T-1	84	29NOV05	20FEB06	0
1387	Apply Surcharge - Tank T-2	15	05DEC05	22DEC05	26



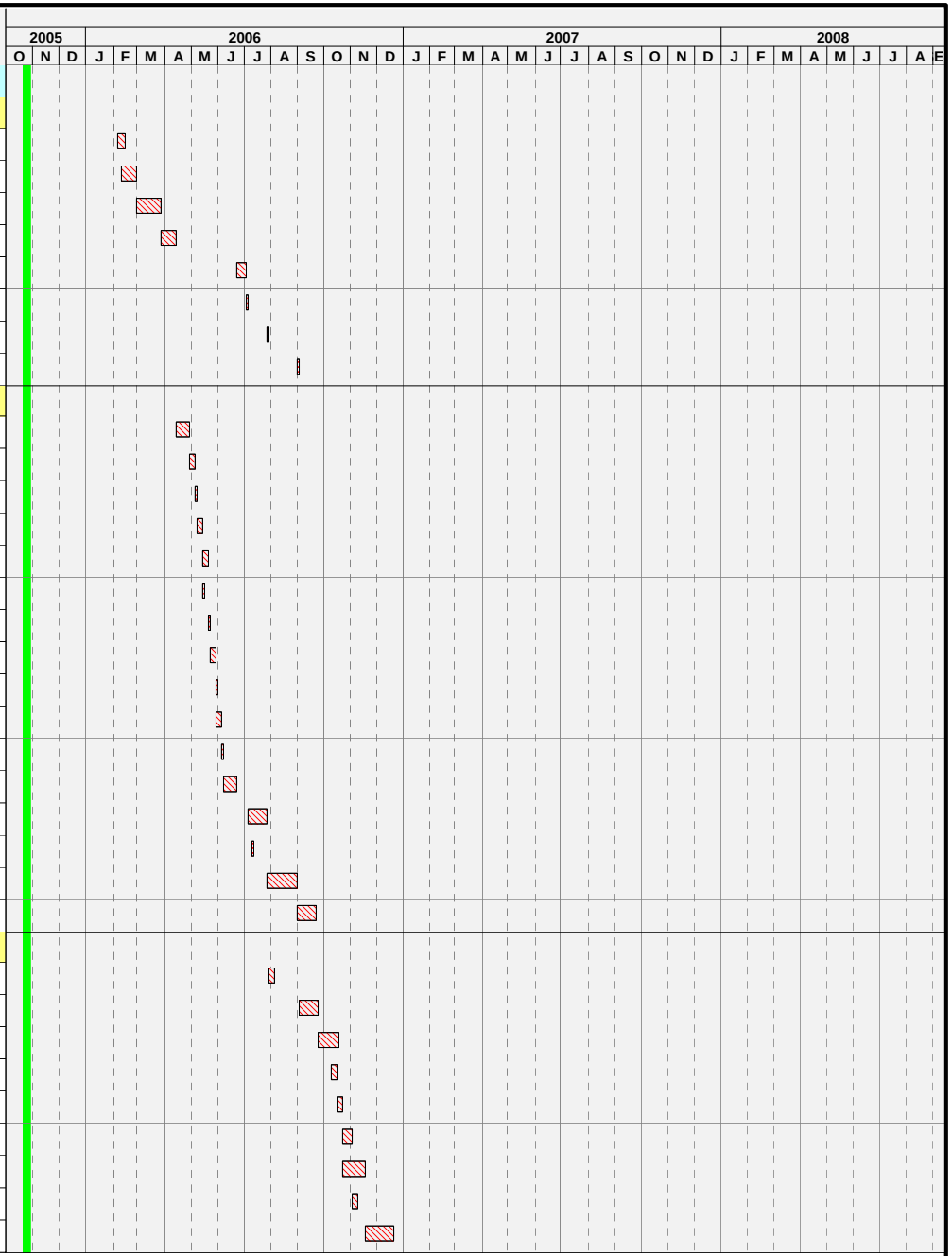
Act. ID	Activity Description	Orig Dur	ES	EF	TF
1397	Surcharge Consolidation Period - Tank T-2	84	23DEC05	08APR06	26
1389	Apply Surcharge - Tank T-5	15	30DEC05	18JAN06	43
1398	Surcharge Consolidation Period - Tank T-5	84	19JAN06	02MAY06	43
1406	Surcharge Removal/Excavate - Tank T-1	18	21FEB06	13MAR06	0
1419	Excavate for Tank T-3 Ring Beam	12	01MAR06	14MAR06	18
1450	Excavate for Tank T-4 Ring Beam	12	01MAR06	14MAR06	45
1471	Excavate for Tank T-6 Ring Beam	12	06APR06	19APR06	74
1407	Surcharge Removal/Excavate - Tank T-2	18	10APR06	29APR06	26
1409	Surcharge Removal/Excavate - Tank T-5	18	03MAY06	23MAY06	43
CC-B.90.10.45.20	Tank Foundations				
1366	Tank 3- Plate Bearing Tests	6	30DEC05	07JAN06	41
1367	Tank 4 - Plate Bearing Tests	6	30DEC05	07JAN06	56
1356	Tank 1 Plate Bearing Tests	6	14MAR06	20MAR06	0
1363	Tank 6 - Plate Bearing Tests	6	20APR06	26APR06	74
1361	Tank 2 - Plate Bearing Tests	6	02MAY06	08MAY06	26
1362	Tank 5 - Plate Bearing Tests	6	24MAY06	30MAY06	43
1042	Tank 3 Fuel Tank Ring Beams/Vlv.Plinth (1x1/4)	30	09JAN06	15FEB06	41
1043	Tank 4 Fuel Tank Ring Beams/Vlv Plinths (half 1)	42	09JAN06	01MAR06	56
1047	Tank 3 Fuel Tank Ring Beams/Vlv.Plinths (3x1/4)	48	15MAR06	11MAY06	18
1050	Tank 4 Fuel Tank Ring Beams/Vlv Plinths (half 2)	36	15MAR06	26APR06	45
1026	Tank 1 Fuel Tank Ring Beams & Valve Plinths	72	21MAR06	15JUN06	0
1052	Tank 6 Fuel Tank Ring Beams & Valve Pliths	72	27APR06	24JUL06	74
1041	Tank 2 Fuel Tank Ring Beams & Valve Plinths	72	12MAY06	07AUG06	23
1051	Tank 5 Fuel Tank Ring Beams & Valve Pliths	72	16JUN06	09SEP06	30
1197	Tank 4 Fuel Tank Ring Beam Containment Barrier	12	27APR06	11MAY06	45
1198	Tank 3 Fuel Tank Ring Beam Containment Barrier	12	12MAY06	25MAY06	18
1196	Tank 1 Fuel Tank Ring Beam Containment Barrier	12	16JUN06	29JUN06	0
1282	Tank 6 Fuel Tank Ring Beam Containment Barrier	12	25JUL06	07AUG06	74
1195	Tank 2 Fuel Tank Ring Beam Containment Barrier	12	08AUG06	21AUG06	47
1242	Tank 5 Fuel Tank Ring Beam Containment Barrier	12	11SEP06	23SEP06	30
CC-B.90.10.55	Miscellaneous Foundations and Supports				
1025	Construct Receipt/Pump Platform	90	20JUL06	06NOV06	33
1032	Product Recovery Tank Foundations & Containment	48	07NOV06	05JAN07	33
1172	Construct Filter/Water Separator Pump Plinths	9	06JAN07	16JAN07	54
1173	Construct Drain Down Tank Chamber	12	06JAN07	19JAN07	195
1256	Transfer Pump Plinths	12	17JAN07	30JAN07	54
1257	Pig Traps Plinths	6	31JAN07	06FEB07	54
1244	Install Pipe Supports/Sleepers to Rcpt/Recovery	18	07FEB07	02MAR07	54
1168	Diesel Tank Foundation & Containment Bund	12	03MAR07	16MAR07	107



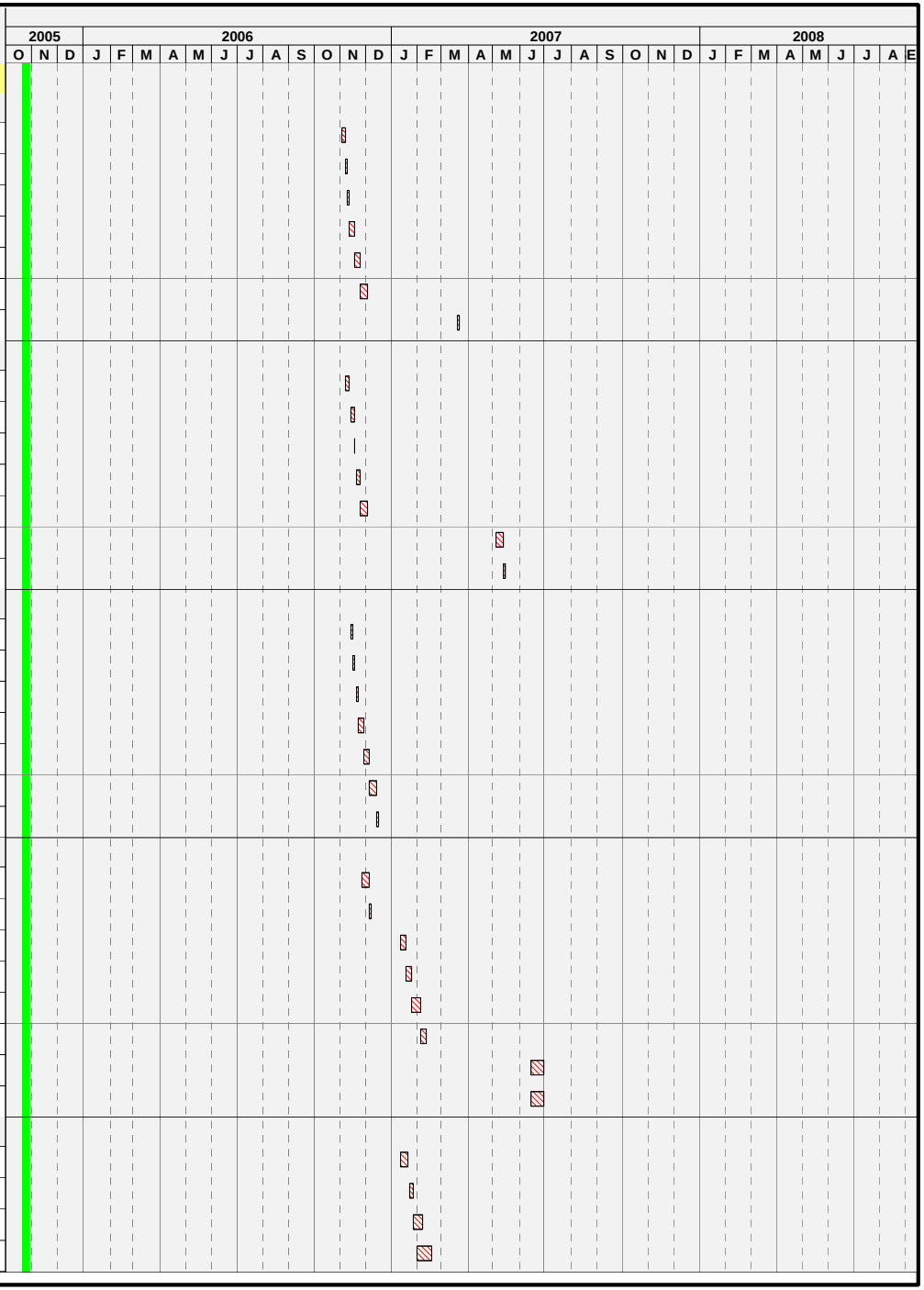
Act. ID	Activity Description	Orig Dur	ES	EF	TF
1176	Pipe Sleepers - Median Run To TanksT-1/2/3/4	36	11JUN07	25JUL07	0
1318	Install FS Pipe Supports/Sleepers (T-3/4/6)	18	11JUN07	04JUL07	21
1177	Pipe Sleepers - Lateral Runs to Tanks T-1/2/3/4	36	05JUL07	16AUG07	19
1333	Install FS Pipe Supports/Sleepers (T-1/2/5)	18	05JUL07	25JUL07	21
1178	Pipe Sleepers - Medians Run to Tanks T-5/6	24	27JUL07	23AUG07	13
1201	Pipe Sleepers - Lateral Runs to Tanks T-5/6	12	24AUG07	06SEP07	13
CC-B.90.10.60	Miscellaneous Structures				
1161	Constr. Oil Interc. & U/G Drains (Outside BWall)	78	04MAR06	06JUN06	44
1210	Construct Small Boat Landing	60	03NOV06	16JAN07	378
1200	Construct Nitrogen Store Building	24	21DEC06	22JAN07	331
1162	Erect Product Recovery Tank Maint. Steel Platf.	24	06JUL07	03AUG07	90
1164	Erect Receipt/Pump Maint. Steel Platform	36	01SEP07	16OCT07	54
CC-B.90.10.65	Road Works				
1079	Road Construction (betw Acs Rd & T-1/3)	48	01AUG07*	27SEP07	9
1087	Road Construction (betw T2/4/6 & Future TF)	78	27AUG07	28NOV07	23
1085	Road Construction (Sea Side T1/2/5)	78	28SEP07	02JAN08	9
1086	Road Construction (South of T5/6)	48	01NOV07	29DEC07	23
1107	Road Construction (Constr opening)	30	21FEB08	26MAR08	0
1056	Foot Path (betw Acs Rd & T-1/3)	24	05SEP07	26OCT07	99
1063	Foot Path (betw T3/4/6 & Future TF)	48	25OCT07	29DEC07	47
1061	Foot Path (Sea Side T1/2/5)	48	24NOV07	30JAN08	9
1062	Foot Path (South of T5/6)	30	06DEC07	28JAN08	23
1064	Foot Path (Constr opening)	18	13MAR08	10APR08	0
CC-B.90.10.75	Landscaping Works				
1143	Lndscp - Preparation for Tree Transplant	36	25OCT05	05DEC05	41
1355	Lndscp - Tree Remove (T-3/4) & Tree Transplant	24	06DEC05	07JAN06	41
1531	Landsape 1.5m Mounds (Future TF Ring Beams Area)	78	24MAY06	25AUG06	472
1526	Landsape 1.5m Mound (North of Acs Rd & T-1/3)	24	16JUN06	15JUL06	421
1539	New Trees/Shrubs/Grass (North of Acs Rd & T-1/3)	36	17JUL06	26AUG06	421
1528	Landsape 1.5m Mound (Sea Side T1/2/5)	36	08AUG06	18SEP06	295
1533	New Trees (Future TF Ring Beams Area)	52	26AUG06	28OCT06	472
1527	Landsape 1.5m Mound (South of T5/6)	24	18SEP06	18OCT06	301
1540	New Trees/Shrubs (South of T5/6)	30	19OCT06	23NOV06	301
1529	Landsape 1.5m Mound (Future TF Perimiter Area)	48	27OCT06	23DEC06	210
1542	New Trees/Shrubs/Gras (Future TF Perimiter Area)	90	27DEC06	16APR07	210
1541	New Trees/Shrubs (Sea Side T1/2/5)	72	05FEB07	04MAY07	207
1192	Construct Car Park	78	14JUN07	18SEP07	107
1534	New Trees/Shrubs (North of OpBldg)	30	19SEP07	25OCT07	107
1535	New Trees/Shrubs/Grass (South of OpBldg)	42	19JAN08	11MAR08	38



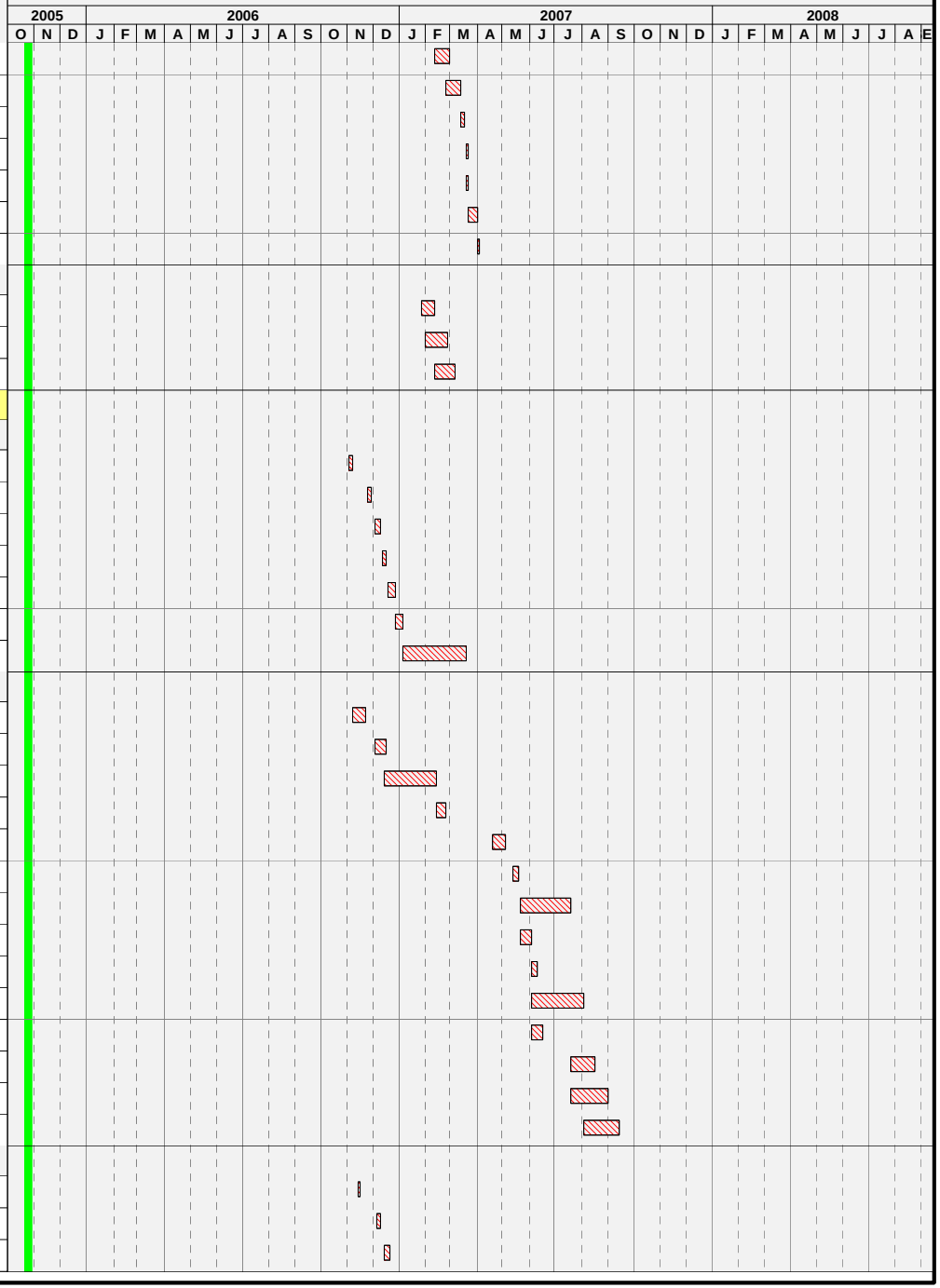
Act. ID	Activity Description	Orig Dur	ES	EF	TF
CC-B.90.20	**Buildings**				
CC-B.90.20.10	Excavation & Lateral Support				
4311	Bldg - Open Excavation to +3.475	8	07FEB06	15FEB06	27
4312	Bldg - Area A Drive Sheet Piles	15	10FEB06	27FEB06	27
4313	Bldg - SP Record Plan, BA14 & Consent for ELS	28	28FEB06	27MAR06	31
4315	Bldg - Area A Excavation with Lateral Support	15	28MAR06	14APR06	26
4316	Bldg - Remove Sheet Pile	8	24JUN06	04JUL06	26
4317	Bldg - Area B Excavation to +0.085	2	05JUL06	06JUL06	26
4318	Bldg - Grid C-F Backfill and Blinding	3	27JUL06	29JUL06	26
4314	Bldg - Grid A-C Backfill and Blinding	2	01SEP06	02SEP06	50
CC-B.90.20.20	Substructure				
4321	Bldg - IC Blinding, Base & Wall to -2.0	12	15APR06	28APR06	26
4322	Bldg - IC 7 days Curing for Wall to -2.0	7	29APR06	05MAY06	32
4323	Bldg - IC Backfill to -2.0 & Remove Shoring -1.5	2	06MAY06	08MAY06	26
4324	Bldg - IC Construct Wall to +0.0	5	09MAY06	13MAY06	26
4326	Bldg - IC 7 days Curing for Wall to +0.0	7	14MAY06	20MAY06	32
4325	Bldg - IC Install Internal Shoring at -0.2	2	15MAY06	16MAY06	30
4327	Bldg - IC Backfill to +0.0 & Remove Shoring +0.5	2	22MAY06	23MAY06	26
4328	Bldg - IC Construct Wall to +2.0	5	24MAY06	29MAY06	26
4329	Bldg - IC Install Internal Shoring at +1.8	2	30MAY06	01JUN06	29
4330	Bldg - IC 7 days Curing for Wall to +2.0	7	30MAY06	05JUN06	31
4331	Bldg - IC Backfill to +2.0 & Remove Shoring +2.5	2	06JUN06	07JUN06	26
4332	Bldg - IC Construct Intake Chamber Wall, G/F S&B	14	08JUN06	23JUN06	26
4333	Bldg - Construct Footing and Wall Grid C to E	16	07JUL06	26JUL06	26
4334	Bldg - IC Remove Internal Shoring	2	11JUL06	12JUL06	46
4319	Bldg - Construct Footing and Wall Grid A - C	31	27JUL06	31AUG06	50
4320	Bldg - Holding Tank	18	01SEP06	21SEP06	68
CC-B.90.20.30	Superstructure				
4338	Bldg - Grid E-Pit Ground Slab & Beam	5	31JUL06	04AUG06	26
4335	Bldg - Grid A-C Ground Slab and Trench	18	04SEP06	23SEP06	50
4336	Bldg - Grid A-C Column and Wall	18	25SEP06	18OCT06	50
4337	Bldg - Grid A-C Roof	7	09OCT06	16OCT06	50
4339	Bldg - Grid C-E Ground Slab	5	17OCT06	21OCT06	50
4340	Bldg - Water Tanks at G/F	9	23OCT06	02NOV06	224
4341	Bldg - Grid C-F Gnd to 1/F Column, Wall & Slab	22	23OCT06	17NOV06	50
4342	Bldg - Roof at Water Tank Area	6	03NOV06	09NOV06	224
4343	Bldg - Grid C-F 1st/F Column/Wall to Roof (incl)	28	18NOV06	20DEC06	50



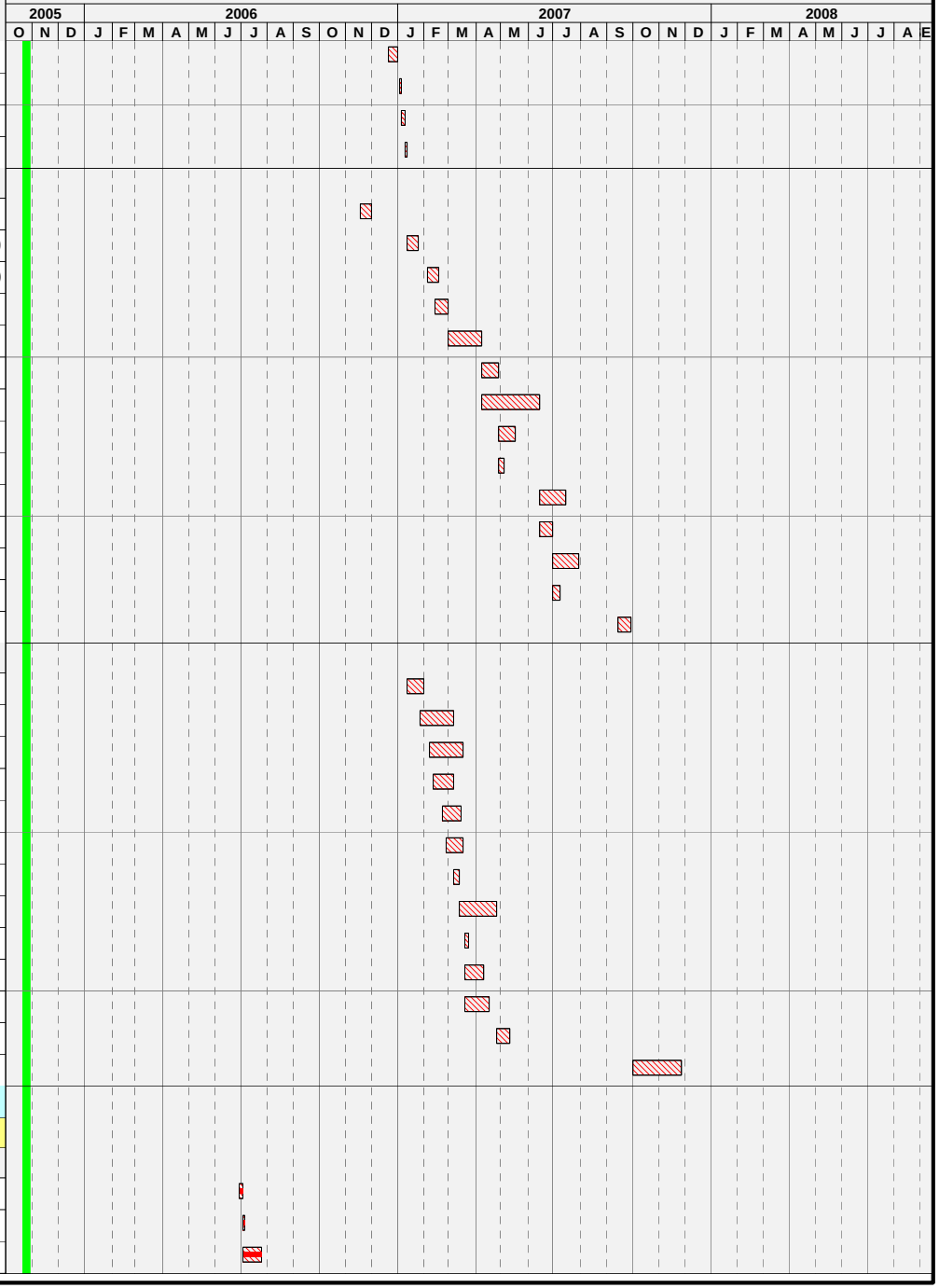
Act. ID	Activity Description	Orig Dur	ES	EF	TF
CC-B.90.20.40	Builders Work and Finishes				
CC-B.90.20.40.10	Transformer Room				
4344	Bldg - Tx Room Blockworks	3	03NOV06	07NOV06	165
4345	Bldg - Tx Room Ceiling Plater	2	08NOV06	09NOV06	190
4346	Bldg - Tx Room Door / Louvre Frame	1	10NOV06	10NOV06	190
4347	Bldg - Tx Room Wall Plaster	5	11NOV06	16NOV06	190
4348	Bldg - Tx Room Floor Screeding	7	17NOV06	24NOV06	190
4349	Bldg - Tx Room Ceiling and Wall Paint	7	25NOV06	02DEC06	190
4350	Bldg - Tx Room Door Leaf and Louvre	1	20MAR07	20MAR07	327
CC-B.90.20.40.20	Genset Room, Switch Room & Compressor Room				
4351	Bldg - Machine Room Blockworks	4	08NOV06	11NOV06	165
4352	Bldg - Machine Room Ceiling Plater	4	13NOV06	16NOV06	165
4353	Bldg - Machine Room Door / Louvre Frame	2	17NOV06	18NOV06	165
4354	Bldg - Machine Room Wall Plaster	5	20NOV06	24NOV06	165
4355	Bldg - Machine Room Floor Screeding	7	25NOV06	02DEC06	165
4356	Bldg - Machine Room Ceiling and Wall Paint	7	05MAY07	12MAY07	91
4357	Bldg - Machine Room Door Leaf and Louvre	2	14MAY07	15MAY07	281
CC-B.90.20.40.30	Laboratory and Workshop				
4358	Bldg - Lab & WS Blockworks	2	13NOV06	14NOV06	328
4359	Bldg - Lab & WS Ceiling Plater	4	15NOV06	18NOV06	328
4360	Bldg - Lab & WS Door / Louvre Frame	2	20NOV06	21NOV06	328
4361	Bldg - Lab & WS Wall Plaster	5	22NOV06	27NOV06	328
4362	Bldg - Lab & WS Floor Screeding	7	28NOV06	05DEC06	328
4363	Bldg - Lab & WS Ceiling and Wall Paint	7	06DEC06	13DEC06	328
4364	Bldg - Lab & WS Door Leaf and Louvre	2	14DEC06	15DEC06	338
CC-B.90.20.40.40	Fire Service Room				
4365	Bldg - FR Waterproofing & Rendering to Tank	7	27NOV06	04DEC06	224
4366	Bldg - FR Cover and Step to Tank	2	05DEC06	06DEC06	224
4367	Bldg - FR Ceiling Plaster	6	11JAN07	17JAN07	107
4368	Bldg - FR Wall Plaster	6	18JAN07	24JAN07	107
4369	Bldg - FR Screeding	9	25JAN07	03FEB07	107
4370	Bldg - FR Ceiling Paint	6	05FEB07	10FEB07	107
4371	Bldg - FR Door and Louvre	12	14JUN07	28JUN07	244
4388	Bldg - FR Walls Paint	12	14JUN07	28JUN07	244
CC-B.90.20.40.50	Office Area & Control Room				
4372	Bldg - OA Blockworks	9	11JAN07	20JAN07	191
4373	Bldg - OA Door / Window Frame	4	22JAN07	25JAN07	191
4374	Bldg - OA Wall Plaster	10	26JAN07	06FEB07	219
4375	Bldg - OA Screeding	15	01FEB07	17FEB07	219



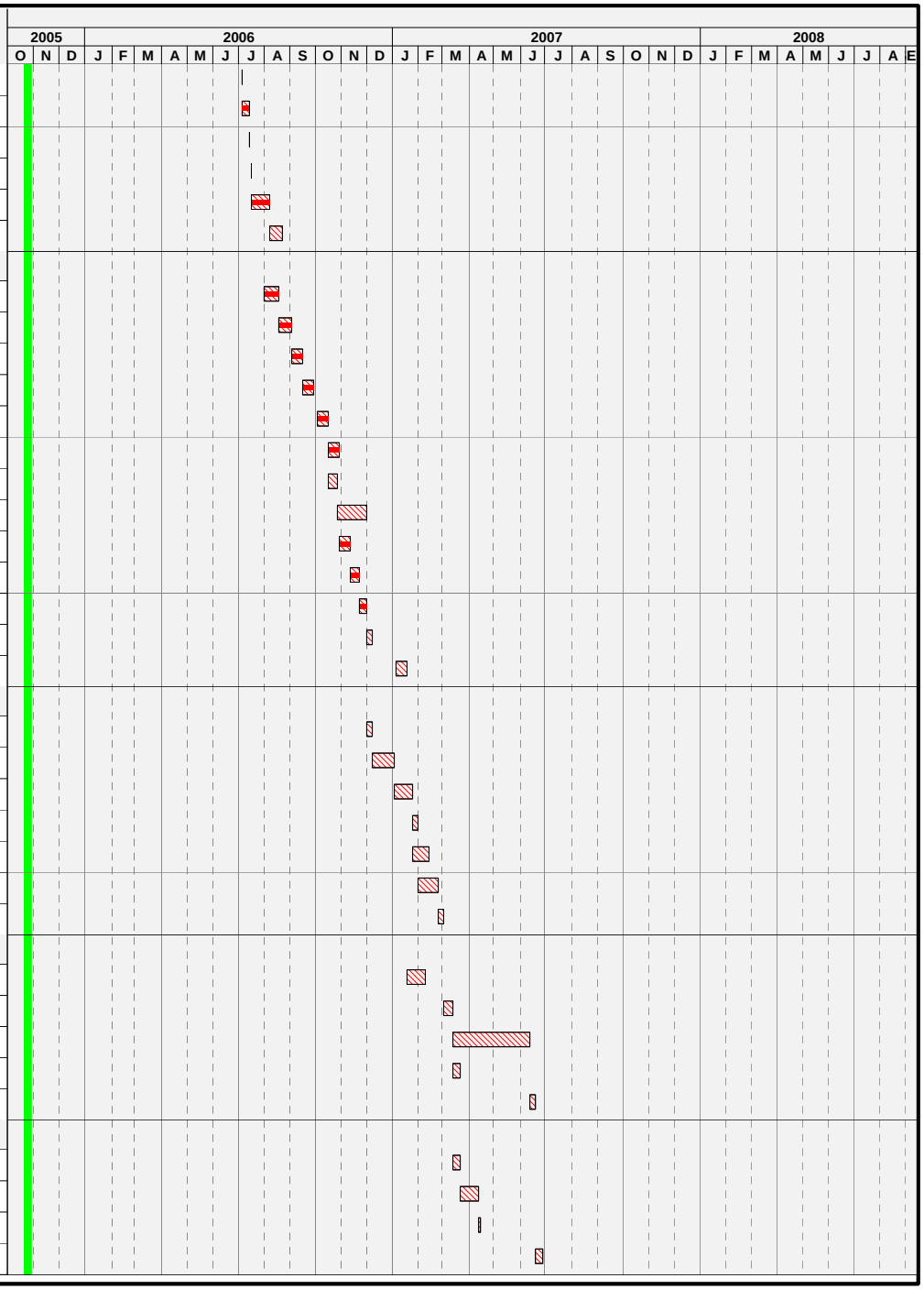
Act. ID	Activity Description	Orig Dur	ES	EF	TF
4376	Bldg - OA Ceiling Grid	9	10FEB07	27FEB07	246
4377	Bldg - OA Wall & Floor Tile	12	24FEB07	13MAR07	219
4378	Bldg - Door Leaf and Louvre	4	14MAR07	17MAR07	263
4379	Bldg - OA Sanitary Fitment	4	19MAR07	22MAR07	313
4380	Bldg - Fixture	4	19MAR07	22MAR07	314
4381	Bldg - Flooring to Dry Area	8	23MAR07	31MAR07	314
4382	Bldg - Ceiling Panel	3	02APR07	04APR07	314
CC-B.90.20.40.60	External Works				
4383	Bldg - External Wall Plastering	13	26JAN07	09FEB07	191
4384	Bldg - Roofing	20	30JAN07	24FEB07	227
4385	Bldg - External Wall Painting	17	10FEB07	05MAR07	191
CC-B.90.20.50	Building Services				
CC-B.90.20.50.10	Transformer Room				
4386	Bldg - Tx Room Conduit	3	03NOV06	06NOV06	165
4387	Bldg - Tx Room Wiring	3	25NOV06	28NOV06	200
4389	Bldg - Tx Room Air Ducting & Fan	6	04DEC06	09DEC06	190
4391	Bldg - Tx Room Electrical Fixtures & Termination	6	11DEC06	16DEC06	190
4392	Bldg - Tx Room T&C Prior Handover to CLP	6	18DEC06	27DEC06	190
4393	Bldg - Tx Room Handover to CLP	6	28DEC06	04JAN07	190
4394	Bldg - Tx Room CLP Installation (Tx & HV SWGR)	60	05JAN07	19MAR07	190
CC-B.90.20.50.20	Genset Room, Switch Room & Compressor Room				
4395	Bldg - Machine Rooms Conduit	12	08NOV06	21NOV06	332
4396	Bldg - Machine Rooms Wiring Small Power & Lights	12	04DEC06	16DEC06	322
4433	Bldg - Generator Set Installation	48	15DEC06	13FEB07	155
4434	Bldg - Generator Set Control Panel & Wiring	6	14FEB07	23FEB07	210
4448	Bldg - Install Piping to Diesel Tank (outdoor)	12	20APR07	04MAY07	91
4398	Bldg - Machine Rooms Air Ducting & Fan	6	14MAY07	19MAY07	91
4400	Bldg - LV Switch Board Installation	48	21MAY07	18JUL07	91
4412	Bldg - UPS Installation & Wiring (ELV Room)	12	21MAY07	02JUN07	121
4401	Bldg - Install ELV Pannel (ELV Room)	6	04JUN07	09JUN07	121
4410	Bldg - Switch Board Wiring, Connection	48	04JUN07	02AUG07	163
4435	Bldg - Install MCB Boards (Switch Room)	12	04JUN07	16JUN07	175
4397	Bldg - Install & Terminate Small Power & Light.	24	19JUL07	16AUG07	151
4399	Bldg - Interconnect. Cabling All El. Rooms	36	19JUL07	30AUG07	91
4436	Bldg - Interconnect. Terminations All El. Rooms	36	03AUG07	14SEP07	127
CC-B.90.20.50.30	Laboratory and Workshop				
4402	Bldg - Lab & WS Conduit	2	13NOV06	14NOV06	368
4403	Bldg - Lab & WS Wiring	3	06DEC06	08DEC06	350
4404	Bldg - Lab & WS FS Main & Sub-main	6	14DEC06	20DEC06	328



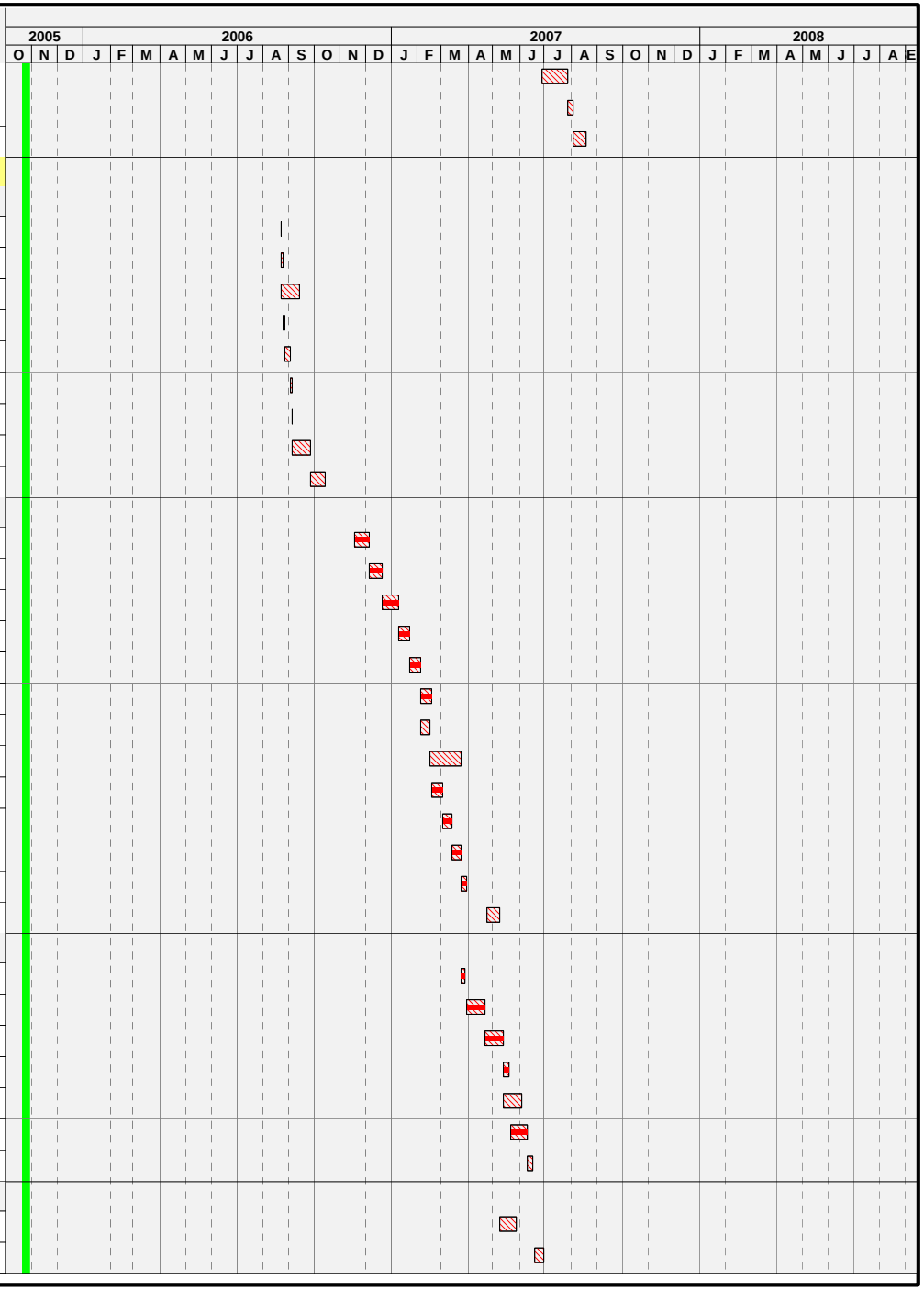
Act. ID	Activity Description	Orig Dur	ES	EF	TF
4405	Bldg - Lab & WS Air Ducting & Fan	6	21DEC06	30DEC06	328
4406	Bldg - Lab & WS Sprinkler Head, FE	3	02JAN07	04JAN07	328
4437	Bldg - Small Power & Lighting Fixtures	3	05JAN07	08JAN07	328
4407	Bldg - Lab & WS Termination	3	09JAN07	11JAN07	328
CC-B.90.20.50.40	Fire Service Room				
4414	Bldg - FS Room Install Hoisting Beam	12	18NOV06	01DEC06	176
4408	Bldg - FS Room Conduit	12	11JAN07	24JAN07	1,179
4409	Bldg - FS Room Wiring (small Power/Lighting)	12	05FEB07	17FEB07	1,170
4411	Bldg - FS Room Air Ducting & Fan	12	12FEB07	28FEB07	107
4438	Bldg - FS Room Install Sea Water Turbine Pumps	32	01MAR07	07APR07	107
4439	Bldg - FS Room Foam Concentrate Pumps	16	09APR07	26APR07	107
4441	Bldg - FS Room Piping Works	36	09APR07	13JUN07	107
4440	Bldg - FS Room Sprinkler and Fire Serv Pumps	16	27APR07	16MAY07	107
4446	Bldg - FS Room Foam Concentrate Tanks	6	27APR07	04MAY07	117
4442	Bldg - FS Room Power/Controls Cabling	24	14JUN07	14JUL07	166
4444	Bldg - FS Room Small Power/Light Fixtures	12	14JUN07	28JUN07	184
4443	Bldg - FS Room Power/Controls Terminations	24	29JUN07	30JUL07	166
4445	Bldg - FS Room Small Power/Light Terminations	6	29JUN07	07JUL07	184
4447	Bldg - FS Room FS cabling	12	15SEP07	29SEP07	91
CC-B.90.20.50.50	Office Area & Control Room				
4415	Bldg - OA Conduit	18	11JAN07	31JAN07	245
4416	Bldg - OA FS Main & Sub-main	18	26JAN07	06MAR07	246
4417	Bldg - OA Pipe and Air Ducting	18	06FEB07	16MAR07	246
4418	Bldg - OA Plumb and Drainage Pipe	18	10FEB07	06MAR07	219
4419	Bldg - OA Small Power/Lighting Wiring	18	22FEB07	14MAR07	230
4420	Bldg - Install MVAC Units/Piping @ Roof	18	26FEB07	17MAR07	227
4421	Bldg - Plumbing Incoming Connection	6	07MAR07	13MAR07	321
4422	Bldg - OA Disabled Hoist Installation	36	14MAR07	25APR07	219
4423	Bldg - OA MVAC Connection	6	19MAR07	24MAR07	245
4424	Bldg - OA Sprinkler Head, HR, FE	18	19MAR07	09APR07	263
4425	Bldg - OA Small Power/Light Fixtures & Terminate	24	19MAR07	16APR07	227
4430	Bldg - OA Install Telemetry Equipment	12	26APR07	10MAY07	279
4431	Bldg - OA SCADA Equipment	48	02OCT07	26NOV07	91
CC-B.90.30	**Tanks Erection**				
CC-B.90.30.15	Tank T-1				
CC-B.90.30.15.10	Annular & Bottom Plates				
3100	T1 - Check foundation level	2	30JUN06	03JUL06	0
3101	T1 - Excavate for sump pit	2	04JUL06	05JUL06	0
3106	T1 - Laydown, fit-up & weld bottom plates	18	04JUL06	25JUL06	5



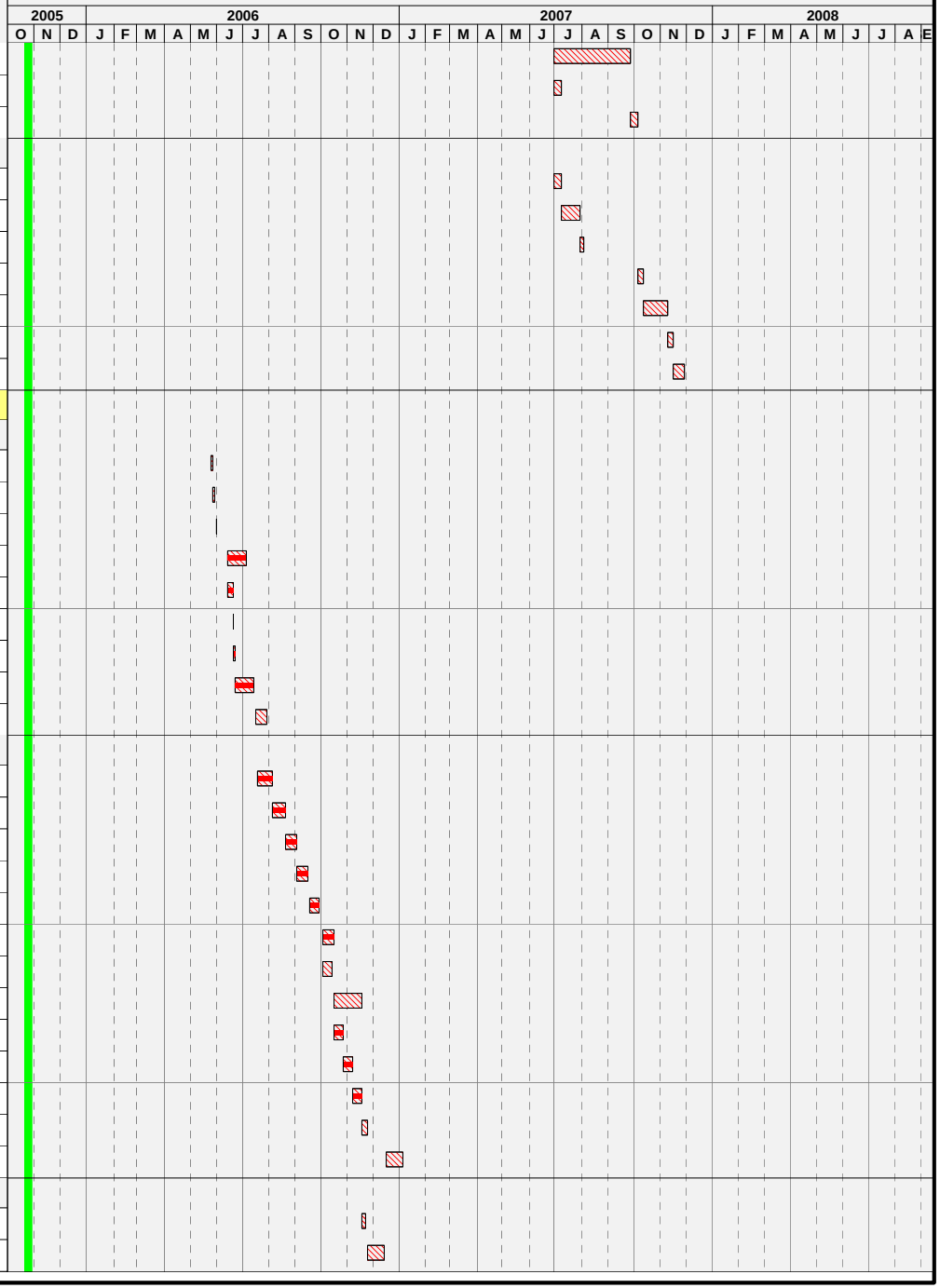
Act. ID	Activity Description	Orig Dur	ES	EF	TF
3102	T1 - Install sump	1	06JUL06	06JUL06	0
3103	T1 - Laydown and fit-up annular plates	6	07JUL06	14JUL06	0
3104	T1 - Weld annular to annular plates	1	15JUL06	15JUL06	0
3105	T1 - Radiograph test weld of annular plates	1	17JUL06	17JUL06	0
3107	T1 - Weld bottom plates to annular plates	18	18JUL06	07AUG06	0
3108	T1 - Vacuum test bottom plates; Repair works	12	08AUG06	21AUG06	59
CC-B.90.30.15.20	Shell Plates & Appurtenances				
3110	T1 - Install/Weld 1st course shell plates	15	01AUG06	17AUG06	0
3111	T1 - Install/Weld 2nd course shell plates	13	18AUG06	01SEP06	0
3112	T1 - Install/Weld 3rd course shell plates	12	02SEP06	15SEP06	0
3113	T1 - Install/Weld 4th course shell plates	12	16SEP06	29SEP06	0
3114	T1 - Install/Weld 5th course shell plates	11	03OCT06	16OCT06	0
3115	T1 - Install/Weld 6th course shell plates	11	17OCT06	28OCT06	0
3120	T1 - Install/Weld shell manholes & nozzles	10	17OCT06	27OCT06	52
3121	T1 - Erect/weld spiral staircase & wind girder	28	28OCT06	30NOV06	52
3116	T1 - Install/Weld 7th course shell plates	10	30OCT06	10NOV06	0
3117	T1 - Install/Weld 8th course shell plates	9	11NOV06	21NOV06	0
3350	T1 - Install/Weld 9th course shell plates	9	22NOV06	01DEC06	0
3118	T1 - Erect/weld top angle/girder	5	02DEC06	07DEC06	22
3119	T1 - Remove erection jigs & remedial work	12	04JAN07	17JAN07	39
CC-B.90.30.15.30	Roof Plates & Appurtenances; Internals				
3123	T1 - Erect temporary support column	4	02DEC06	06DEC06	23
3124	T1 - Erect /weld roof steelwork	18	08DEC06	02JAN07	22
3125	T1 - Install/weld roof plates	18	03JAN07	23JAN07	22
3126	T1 - Install/weld roof manholes & nozzles	6	24JAN07	30JAN07	22
3128	T1 - Install various tank's internals	18	24JAN07	13FEB07	28
3127	T1 - Install roof handrails/walkway/platform	18	31JAN07	23FEB07	22
3129	T1 - Pneumatic test roof plates & remadial works	6	24FEB07	02MAR07	22
CC-B.90.30.15.40	Tanks Hydrotest				
3130	T1 - Temp. piping & hydrotest preparation	18	18JAN07	07FEB07	39
3131	T1 - Water filling of tank	9	03MAR07	13MAR07	22
3132	T1 - Tank Settlement	90	14MAR07	11JUN07	27
3141	T1 - Pressure Test	6	14MAR07	20MAR07	77
3133	T1 - Drain Tank; Remove temp. pipework	6	12JUN07	18JUN07	20
CC-B.90.30.15.50	Tanks Painting				
3138	T1 - Erect scaff/canvass for external painting	6	14MAR07	20MAR07	77
3139	T1 - External painting of shell/roof plate	18	21MAR07	11APR07	77
3140	T1 - Dismantle external scaffold	3	12APR07	14APR07	77
3134	T1 - Internal scaffold for shell/roof plate	6	20JUN07	26JUN07	66



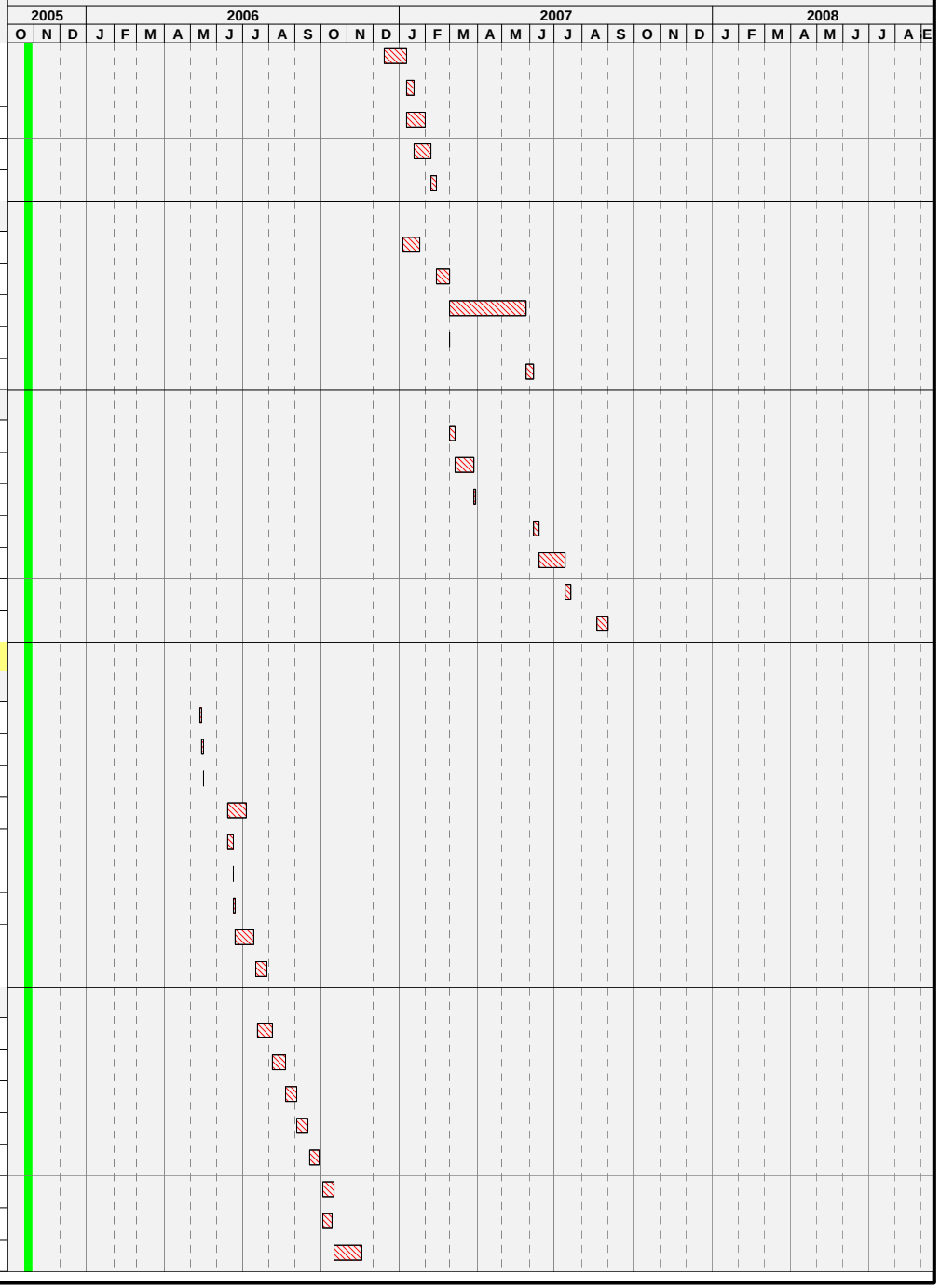
Act. ID	Activity Description	Orig Dur	ES	EF	TF
3135	T1 - Internal paint shell/roof plate	24	27JUN07	27JUL07	66
3136	T1 - Dismantle Internal Scaffold/Clean Tank	6	28JUL07	03AUG07	66
3137	T1 - Paint internal bottom plate/Clean Tank	12	04AUG07	17AUG07	150
CC-B.90.30.25 Tank T-2					
CC-B.90.30.25.10 Annular & Bottom Plates					
3150	T2 - Check foundation level	2	22AUG06	23AUG06	47
3151	T2 - Excavate for sump pit	2	24AUG06	25AUG06	47
3152	T2 - Laydown, fit-up & weld bottom plates	18	24AUG06	13SEP06	52
3153	T2 - Install sump	1	26AUG06	26AUG06	47
3154	T2 - Laydown and fit-up annular plates	6	28AUG06	02SEP06	47
3155	T2 - Weld annular to annular plates	1	04SEP06	04SEP06	47
3156	T2 - Radiograph test weld of annular plates	1	05SEP06	05SEP06	47
3157	T2 - Weld bottom plates to annular plates	18	06SEP06	26SEP06	47
3158	T2 - Vacuum test bottom plates; Repair works	12	27SEP06	13OCT06	183
CC-B.90.30.25.20 Shell Plates & Appurtenances					
3159	T2 - Install/Weld 1st course shell plates	15	18NOV06	05DEC06	0
3160	T2 - Install/Weld 2nd course shell plates	13	06DEC06	20DEC06	0
3161	T2 - Install/Weld 3rd course shell plates	12	21DEC06	08JAN07	0
3162	T2 - Install/Weld 4th course shell plates	12	09JAN07	22JAN07	0
3163	T2 - Install/Weld 5th course shell plates	11	23JAN07	03FEB07	0
3164	T2 - Install/Weld 6th course shell plates	11	05FEB07	16FEB07	0
3165	T2 - Install/Weld shell manholes & nozzles	10	05FEB07	15FEB07	32
3167	T2 - Erect/weld spiral staircase & wind girder	28	16FEB07	23MAR07	32
3166	T2 - Install/Weld 7th course shell plates	9	17FEB07	02MAR07	0
3168	T2 - Install/Weld 8th course shell plates	9	03MAR07	13MAR07	0
3169	T2 - Install/Weld 9th course shell plates	9	14MAR07	23MAR07	0
3172	T2 - Erect/weld top angle/girder	5	24MAR07	29MAR07	0
3173	T2 - Remove erection jigs & remedial work	12	23APR07	07MAY07	29
CC-B.90.30.25.30 Roof Plates & Appurtenances; Internals					
3174	T2 - Erect temporary support column	4	24MAR07	28MAR07	1
3175	T2 - Erect /weld roof steelwork	18	30MAR07	20APR07	0
3176	T2 - Install/weld roof plates	18	21APR07	12MAY07	0
3177	T2 - Install/weld roof manholes & nozzles	6	14MAY07	19MAY07	0
3178	T2 - Install various tank's internals	18	14MAY07	02JUN07	21
3179	T2 - Install roof handrails/walkway/platform	18	21MAY07	09JUN07	0
3180	T2 - Pneumatic test roof plates & remadial works	6	11JUN07	16JUN07	15
CC-B.90.30.25.40 Tanks Hydrotest					
3181	T2 - Temp. piping & hydrotest preparation	18	08MAY07	28MAY07	32
3182	T2 - Water filling of tank	9	18JUN07	28JUN07	15



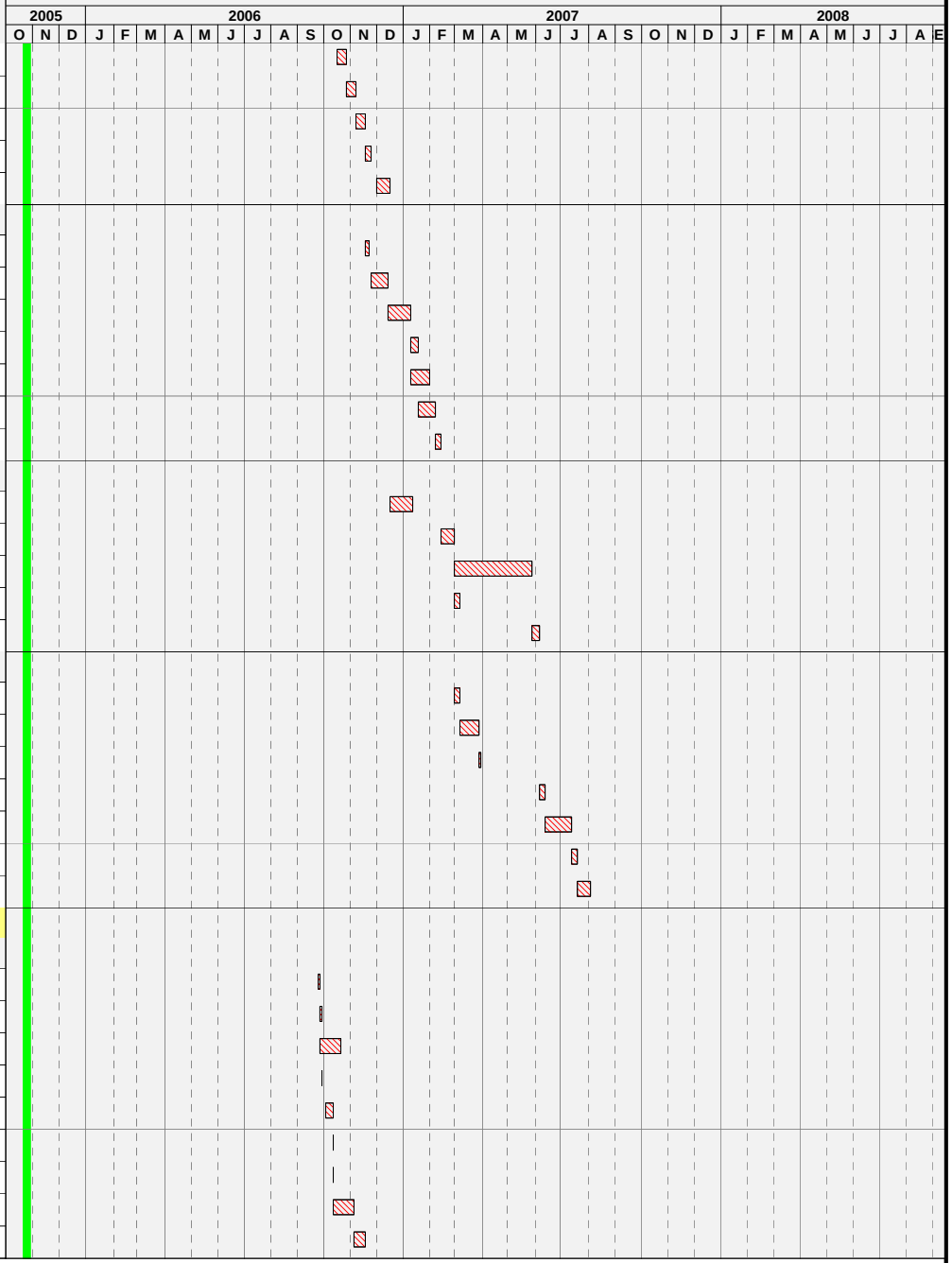
Act. ID	Activity Description	Orig Dur	ES	EF	TF
3183	T2 - Tank Settlement	90	29JUN07	26SEP07	20
3212	T2 - Pressure Test	6	29JUN07	07JUL07	15
3184	T2 - Drain Tank; Remove temp. pipework	6	27SEP07	04OCT07	16
CC-B.90.30.25.50	Tanks Painting				
3189	T2 - Erect scaff/canvass for external painting	6	29JUN07	07JUL07	15
3190	T2 - External painting of shell/roof plate	18	09JUL07	30JUL07	15
3191	T2 - Dismantle external scaffold	3	31JUL07	02AUG07	15
3185	T2 - Internal scaffold for shell/roof plate	6	05OCT07	11OCT07	16
3186	T2 - Internal paint shell/roof plate	24	12OCT07	08NOV07	16
3187	T2 - Dismantle Internal Scaffold/Clean Tank	6	09NOV07	15NOV07	16
3188	T2 - Paint internal bottom plate/Clean Tank	12	16NOV07	29NOV07	88
CC-B.90.30.35	Tank T-3				
CC-B.90.30.35.10	Annular & Bottom Plates				
3192	T3 - Check foundation level	2	26MAY06	27MAY06	18
3193	T3 - Excavate for sump pit	2	29MAY06	30MAY06	18
3195	T3 - Install sump	1	01JUN06	01JUN06	18
3194	T3 - Laydown, fit-up & weld bottom plates	18	14JUN06	05JUL06	10
3196	T3- Laydown and fit-up annular plates	6	14JUN06	20JUN06	8
3197	T3 - Weld annular to annular plates	1	21JUN06	21JUN06	8
3198	T3 - Radiograph test weld of annular plates	1	22JUN06	22JUN06	8
3199	T3 - Weld bottom plates to annular plates	18	23JUN06	15JUL06	8
3200	T3 - Vacuum test bottom plates; Repair works	12	17JUL06	29JUL06	66
CC-B.90.30.35.20	Shell Plates & Appurtenances				
3201	T3 - Install/Weld 1st course shell plates	15	19JUL06	04AUG06	0
3202	T3 - Install/Weld 2nd course shell plates	13	05AUG06	19AUG06	0
3203	T3 - Install/Weld 3rd course shell plates	12	21AUG06	02SEP06	0
3204	T3 - Install/Weld 4th course shell plates	12	04SEP06	16SEP06	0
3205	T3 - Install/Weld 5th course shell plates	11	18SEP06	29SEP06	0
3206	T3 - Install/Weld 6th course shell plates	11	03OCT06	16OCT06	0
3207	T3 - Install/Weld shell manholes & nozzles	10	03OCT06	14OCT06	51
3209	T3 - Erect/weld spiral staircase & wind girder	28	16OCT06	17NOV06	51
3208	T3 - Install/Weld 7th course shell plates	9	17OCT06	26OCT06	0
3210	T3 - Install/Weld 8th course shell plates	9	27OCT06	07NOV06	0
3211	T3 - Install/Weld 9th course shell plates	9	08NOV06	17NOV06	0
3214	T3 - Erect/weld top angle/girder	5	18NOV06	23NOV06	31
3215	T3 - Remove erection jigs & remedial work	12	16DEC06	03JAN07	51
CC-B.90.30.35.30	Roof Plates & Appurtenances; Internals				
3216	T3 - Erect temporary support column	4	18NOV06	22NOV06	32
3217	T3 - Erect /weld roof steelwork	18	24NOV06	14DEC06	31



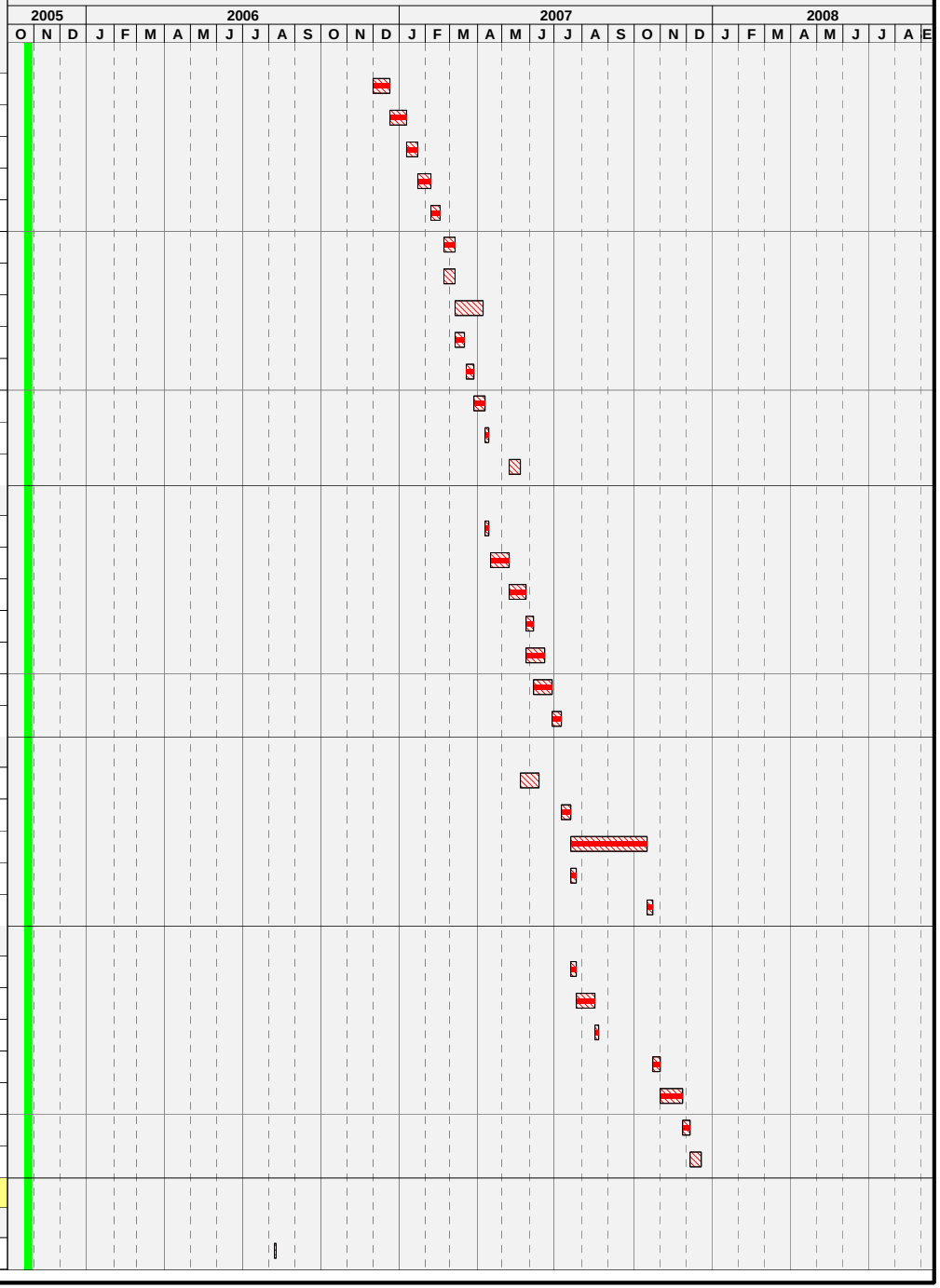
Act. ID	Activity Description	Orig Dur	ES	EF	TF
3218	T3 - Install/weld roof plates	18	15DEC06	09JAN07	31
3219	T3 - Install/weld roof manholes & nozzles	6	10JAN07	16JAN07	31
3220	T3 - Install various tank's internals	18	10JAN07	30JAN07	37
3221	T3 - Install roof handrails/walkway/platform	18	17JAN07	06FEB07	31
3222	T3 - Pneumatic test roof plates & remadial works	6	07FEB07	13FEB07	31
CC-B.90.30.35.40	Tanks Hydrotest				
3223	T3 - Temp. piping & hydrotest preparation	18	04JAN07	24JAN07	51
3224	T3 - Water filling of tank	9	14FEB07	27FEB07	34
3225	T3 - Tank Settlement	90	28FEB07	28MAY07	41
3254	T3 - Pressure Test	1	28FEB07	28FEB07	89
3226	T3 - Drain Tank; Remove temp. pipework	6	29MAY07	04JUN07	32
CC-B.90.30.35.50	Tanks Painting				
3231	T3 - Erect scaff/canvass for external painting	6	28FEB07	06MAR07	89
3232	T3 - External painting of shell/roof plate	18	07MAR07	27MAR07	89
3233	T3 - Dismantle external scaffold	3	28MAR07	30MAR07	89
3227	T3 - Internal scaffold for shell/roof plate	6	05JUN07	11JUN07	78
3228	T3 - Internal paint shell/roof plate	24	12JUN07	12JUL07	78
3229	T3 - Dismantle Internal Scaffold/Clean Tank	6	13JUL07	19JUL07	78
3230	T3 - Paint internal bottom plate/Clean Tank	12	18AUG07	31AUG07	150
CC-B.90.30.45	TankT-4				
CC-B.90.30.45.10	Annular & Bottom Plates				
3234	T4 - Check foundation level	2	12MAY06	13MAY06	45
3235	T4 - Excavate for sump pit	2	15MAY06	16MAY06	45
3237	T4 - Install sump	1	17MAY06	17MAY06	45
3236	T4 - Laydown, fit-up & weld bottom plates	18	14JUN06	05JUL06	25
3238	T4 - Laydown and fit-up annular plates	6	14JUN06	20JUN06	23
3239	T4 - Weld annular to annular plates	1	21JUN06	21JUN06	23
3240	T4 - Radiograph test weld of annular plates	1	22JUN06	22JUN06	23
3241	T4 - Weld bottom plates to annular plates	18	23JUN06	15JUL06	23
3242	T4 - Vacuum test bottom plates; Repair works	12	17JUL06	29JUL06	81
CC-B.90.30.45.20	Shell Plates & Appurtenances				
3243	T4 - Install/Weld 1st course shell plates	15	19JUL06	04AUG06	15
3244	T4 - Install/Weld 2nd course shell plates	13	05AUG06	19AUG06	15
3245	T4 - Install/Weld 3rd course shell plates	12	21AUG06	02SEP06	15
3246	T4- Install/Weld 4th course shell plates	12	04SEP06	16SEP06	15
3247	T4 - Install/Weld 5th course shell plates	11	18SEP06	29SEP06	15
3248	T4 - Install/Weld 6th course shell plates	11	03OCT06	16OCT06	15
3249	T4 - Install/Weld shell manholes & nozzles	10	03OCT06	14OCT06	39
3251	T4 - Erect/weld spiral staircase & wind girder	28	16OCT06	17NOV06	39



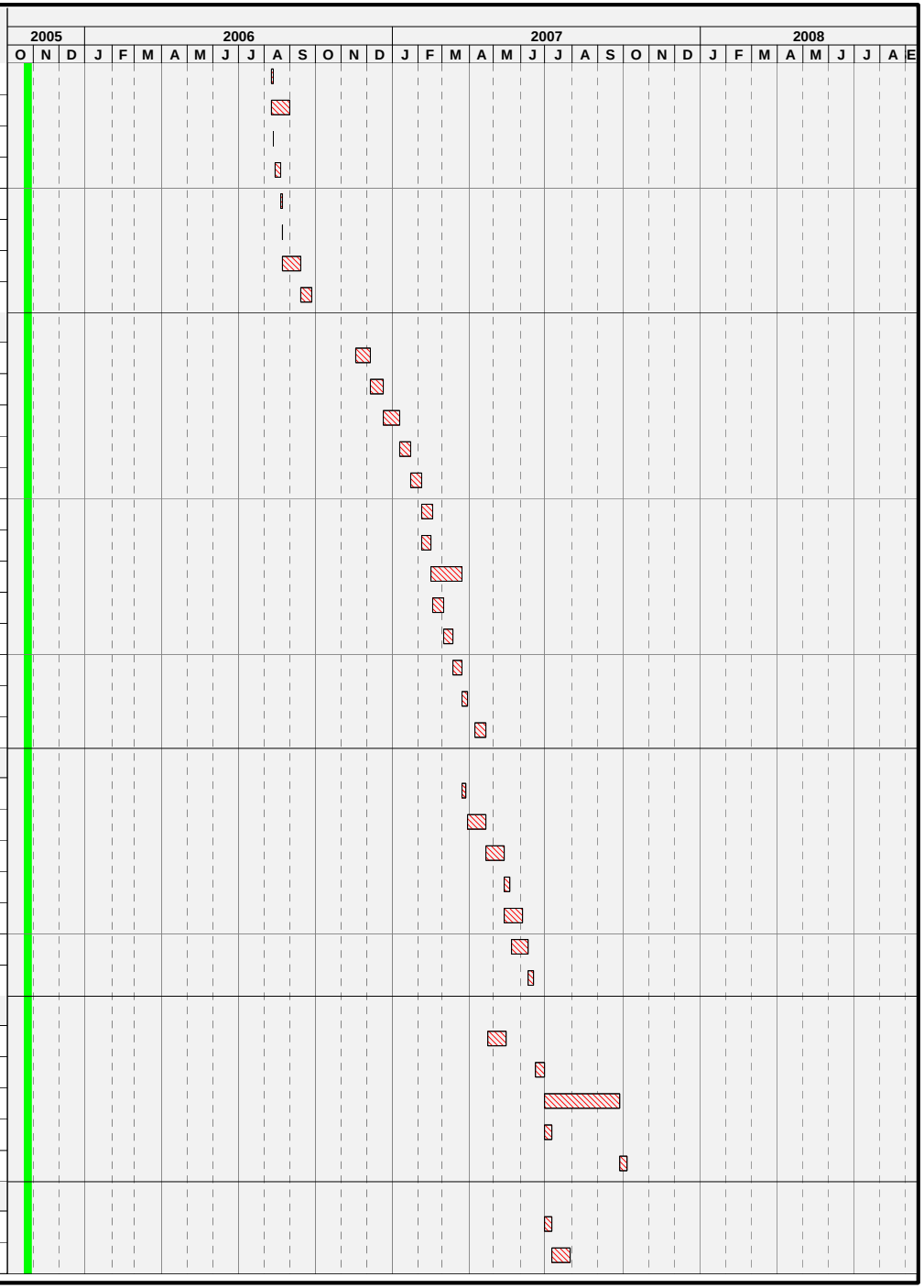
Act. ID	Activity Description	Orig Dur	ES	EF	TF
3250	T4 - Install/Weld 7th course shell plates	9	17OCT06	26OCT06	15
3252	T4 - Install/Weld 8th course shell plates	9	27OCT06	07NOV06	15
3253	T4 - Install/Weld 9th course shell plates	9	08NOV06	17NOV06	15
3256	T4 - Erect/weld top angle/girder	5	18NOV06	23NOV06	43
3257	T4 - Remove erection jigs & remedial work	12	02DEC06	15DEC06	72
CC-B.90.30.45.30	Roof Plates & Appurtenances; Internals				
3258	T4 - Erect temporary support column	4	18NOV06	22NOV06	44
3259	T4 - Erect /weld roof steelwork	18	24NOV06	14DEC06	43
3260	T4 - Install/weld roof plates	18	15DEC06	09JAN07	43
3261	T4 - Install/weld roof manholes & nozzles	6	10JAN07	16JAN07	43
3262	T4 - Install various tank's internals	18	10JAN07	30JAN07	49
3263	T4 - Install roof handrails/walkway/platform	18	17JAN07	06FEB07	43
3264	T4 - Pneumatic test roof plates & remadial works	6	07FEB07	13FEB07	43
CC-B.90.30.45.40	Tanks Hydrotest				
3265	T4 - Temp. piping & hydrotest preparation	18	16DEC06	10JAN07	72
3266	T4 - Water filling of tank	9	14FEB07	27FEB07	43
3267	T4 - Tank Settlement	90	28FEB07	28MAY07	51
3296	T4 - Pressure Test	6	28FEB07	06MAR07	127
3268	T4 - Drain Tank; Remove temp. pipework	6	29MAY07	04JUN07	41
CC-B.90.30.45.50	Tanks Painting				
3273	T4 - Erect scaff/canvass for external painting	6	28FEB07	06MAR07	127
3274	T4 - External painting of shell/roof plate	18	07MAR07	27MAR07	127
3275	T4 - Dismantle external scaffold	3	28MAR07	30MAR07	127
3269	T4 - Internal scaffold for shell/roof plate	6	05JUN07	11JUN07	78
3270	T4 - Internal paint shell/roof plate	24	12JUN07	12JUL07	78
3271	T4 - Dismantle Internal Scaffold/Clean Tank	6	13JUL07	19JUL07	78
3272	T4 - Paint internal bottom plate/Clean Tank	12	20JUL07	03AUG07	174
CC-B.90.30.55	Tank T-5				
CC-B.90.30.55.10	Annular & Bottom Plates				
3276	T5 - Check foundation level	2	25SEP06	26SEP06	30
3277	T5 - Excavate for sump pit	2	27SEP06	28SEP06	30
3278	T5 - Laydown, fit-up & weld bottom plates	18	27SEP06	20OCT06	35
3279	T5 - Install sump	1	29SEP06	29SEP06	30
3280	T5 - Laydown and fit-up annular plates	6	03OCT06	10OCT06	30
3281	T5 - Weld annular to annular plates	1	11OCT06	11OCT06	30
3282	T5 - Radiograph test weld of annular plates	1	12OCT06	12OCT06	30
3283	T5 - Weld bottom plates to annular plates	18	13OCT06	03NOV06	30
3284	T5 - Vacuum test bottom plates; Repair works	12	04NOV06	17NOV06	157



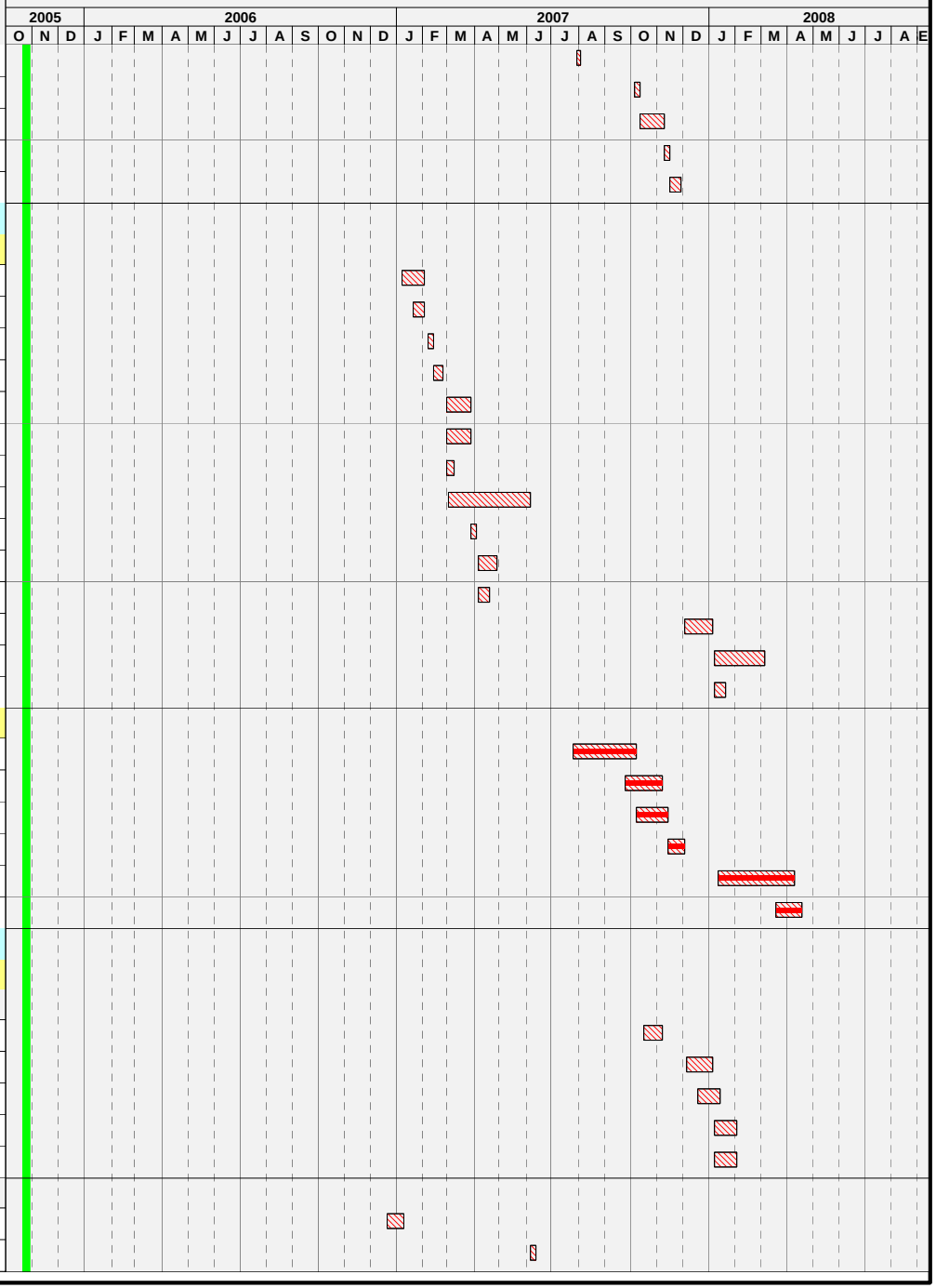
Act. ID	Activity Description	Orig Dur	ES	EF	TF
CC-B.90.30.55.20	Shell Plates & Appurtenances				
3285	T5 - Install/Weld 1st course shell plates	15	02DEC06	19DEC06	0
3286	T5 - Install/Weld 2nd course shell plates	13	20DEC06	08JAN07	0
3287	T5 - Install/Weld 3rd course shell plates	12	09JAN07	22JAN07	0
3288	T5 - Install/Weld 4th course shell plates	12	23JAN07	05FEB07	0
3289	T5 - Install/Weld 5th course shell plates	11	06FEB07	17FEB07	0
3290	T5 - Install/Weld 6th course shell plates	11	22FEB07	06MAR07	0
3291	T5 - Install/Weld shell manholes & nozzles	10	22FEB07	05MAR07	32
3293	T5 - Erect/weld spiral staircase & wind girder	28	06MAR07	07APR07	32
3292	T5 - Install/Weld 7th course shell plates	10	07MAR07	17MAR07	0
3294	T5 - Install/Weld 8th course shell plates	9	19MAR07	28MAR07	0
3295	T5 - Install/Weld 9th course shell plates	9	29MAR07	09APR07	0
3298	T5 - Erect/weld top angle/girder	5	10APR07	14APR07	0
3299	T5 - Remove erection jigs & remedial work	12	08MAY07	21MAY07	20
CC-B.90.30.55.30	Roof Plates & Appurtenances; Internals				
3300	T5 - Erect temporary support column	5	10APR07	14APR07	0
3301	T5 - Erect /weld roof steelwork	18	16APR07	07MAY07	0
3302	T5 - Install/weld roof plates	18	08MAY07	28MAY07	0
3303	T5 - Install/weld roof manholes & nozzles	7	29MAY07	05JUN07	0
3304	T5 - Install various tank's internals	18	29MAY07	18JUN07	7
3305	T5 - Install roof handrails/walkway/platform	18	06JUN07	27JUN07	0
3306	T5 - Pneumatic test roof plates & remadial works	7	28JUN07	07JUL07	0
CC-B.90.30.55.40	Tanks Hydrotest				
3307	T5 - Temp. piping & hydrotest preparation	18	22MAY07	11JUN07	20
3308	T5 - Water filling of tank	9	09JUL07	18JUL07	0
3309	T5 - Tank Settlement	90	19JUL07	16OCT07	0
3338	T5 - Pressure Test	6	19JUL07	25JUL07	0
3310	T5 - Drain Tank; Remove temp. pipework	6	17OCT07	23OCT07	0
CC-B.90.30.55.50	Tanks Painting				
3315	T5 - Erect scaff/canvass for external painting	6	19JUL07	25JUL07	0
3316	T5 - External painting of shell/roof plate	18	27JUL07	16AUG07	0
3317	T5 - Dismantle External scaffold	3	17AUG07	20AUG07	0
3311	T5 - Internal scaffold for shell/roof plate	6	24OCT07	30OCT07	0
3312	T5 - Internal paint shell/roof plate	24	31OCT07	27NOV07	0
3313	T5 - Dismantle Internal Scaffold/Clean Tank	6	28NOV07	04DEC07	0
3314	T5 - Paint internal bottom plate/Clean Tank	12	05DEC07	18DEC07	72
CC-B.90.30.65	Tank T-6				
CC-B.90.30.65.10	Annular & Bottom Plates				
3318	T6 - Check foundation level	2	08AUG06	09AUG06	74



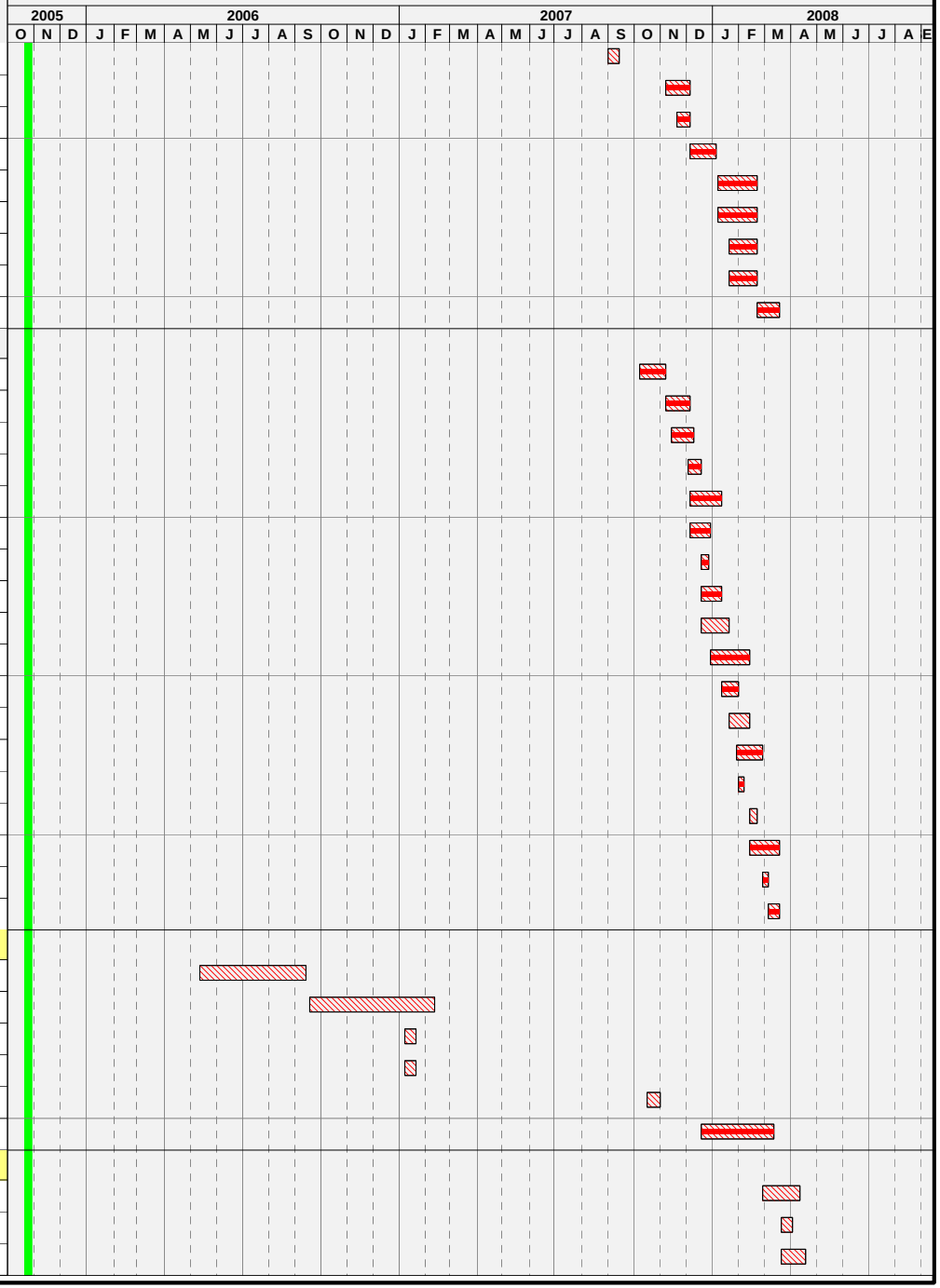
Act. ID	Activity Description	Orig Dur	ES	EF	TF
3319	T6 - Excavate for sump pit	2	10AUG06	11AUG06	74
3320	T6 - Laydown, fit-up & weld bottom plates	18	10AUG06	30AUG06	79
3321	T6 - Install sump	1	12AUG06	12AUG06	74
3322	T6 - Laydown and fit-up annular plates	6	14AUG06	19AUG06	74
3323	T6 - Weld annular to annular plates	1	21AUG06	21AUG06	74
3324	T6 - Radiograph test weld of annular plates	1	22AUG06	22AUG06	74
3325	T6 - Weld bottom plates to annular plates	18	23AUG06	12SEP06	74
3326	T6 - Vacuum test bottom plates; Repair works	12	13SEP06	26SEP06	198
CC-B.90.30.65.20	Shell Plates & Appurtenances				
3327	T6 - Install/Weld 1st course shell plates	15	18NOV06	05DEC06	15
3328	T6 - Install/Weld 2nd course shell plates	13	06DEC06	20DEC06	15
3329	T6 - Install/Weld 3rd course shell plates	12	21DEC06	08JAN07	15
3330	T6 - Install/Weld 4th course shell plates	12	09JAN07	22JAN07	15
3331	T6 - Install/Weld 5th course shell plates	11	23JAN07	03FEB07	15
3332	T6 - Install/Weld 6th course shell plates	11	05FEB07	16FEB07	15
3333	T6 - Install/Weld shell manholes & nozzles	10	05FEB07	15FEB07	20
3335	T6 - Erect/weld spiral staircase & wind girder	28	16FEB07	23MAR07	20
3334	T6 - Install/Weld 7th course shell plates	9	17FEB07	02MAR07	15
3336	T6 - Install/Weld 8th course shell plates	9	03MAR07	13MAR07	15
3337	T6 - Install/Weld 9th course shell plates	9	14MAR07	23MAR07	15
3340	T6 - Erect/weld top angle/girder	5	24MAR07	29MAR07	15
3341	T6 - Remove erection jigs & remedial work	12	09APR07	21APR07	44
CC-B.90.30.65.30	Roof Plates & Appurtenances; Internals				
3342	T6 - Erect temporary support column	4	24MAR07	28MAR07	16
3343	T6 - Erect /weld roof steelwork	18	30MAR07	20APR07	15
3344	T6 - Install/weld roof plates	18	21APR07	12MAY07	15
3345	T6 - Install/weld roof manholes & nozzles	6	14MAY07	19MAY07	15
3346	T6 - Install various tank's internals	18	14MAY07	02JUN07	21
3347	T6 - Install roof handrails/walkway/platform	18	21MAY07	09JUN07	15
3348	T6 - Pneumatic test roof plates & remadial works	6	11JUN07	16JUN07	15
CC-B.90.30.65.40	Tanks Hydrotest				
3349	T6 - Temp. piping & hydrotest preparation	18	23APR07	14MAY07	44
3360	T6 - Water filling of tank	9	18JUN07	28JUN07	15
3361	T6 - Tank Settlement	90	29JUN07	26SEP07	20
3362	T6 - Pressure Test	6	29JUN07	07JUL07	53
3352	T6 - Drain Tank; Remove temp. pipework	6	27SEP07	04OCT07	16
CC-B.90.30.65.50	Tanks Painting				
3357	T6 - Erect scaff/canvass for external painting	6	29JUN07	07JUL07	53
3358	T6 - External painting of shell/roof plate	18	09JUL07	30JUL07	53



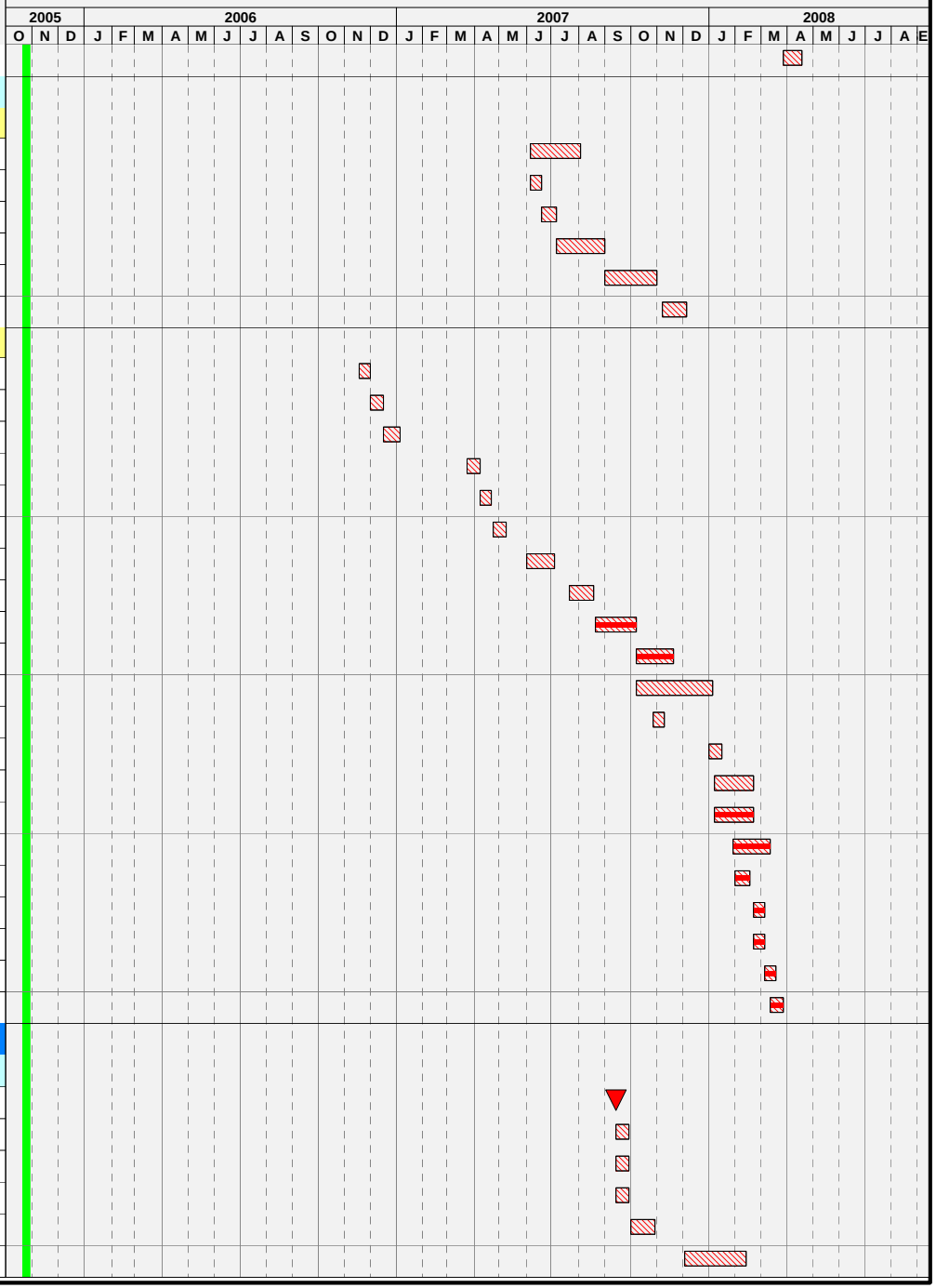
Act. ID	Activity Description	Orig Dur	ES	EF	TF
3359	T6 - Dismantle scaffold & clean tank	3	31JUL07	02AUG07	53
3353	T6 - Internal scaffold for shell/roof plate	6	05OCT07	11OCT07	16
3354	T6 - Internal paint shell/roof plate	24	12OCT07	08NOV07	16
3355	T6 - Dismantle Internal Scaffold/Clean Tank	6	09NOV07	15NOV07	16
3356	T6 - Paint internal bottom plate/Clean Tank	12	16NOV07	29NOV07	88
CC-B.90.40 Mechanical Works					
CC-B.90.40.10 Receipt & Product Recovery					
1033	Install Product Recovery Tanks	24	06JAN07	02FEB07	63
1255	Install Drain Down Tank	12	20JAN07	02FEB07	195
1170	Removable PigLunch/Trap V-08-05/06 (jetty loop)	6	07FEB07	13FEB07	60
1265	Install Pig Launchers V-18-01/02 (Sha Chau)	6	14FEB07	23FEB07	60
1171	Receipt/Pump Platform - Transfer Pumps	24	01MAR07*	28MAR07	86
1181	Install Filter/Water Separators	24	01MAR07*	28MAR07	86
1264	Install Drain Down Pumps	6	01MAR07*	07MAR07	170
1034	Receipt/Pump Platform - Piping & Misc Eqp.	78	03MAR07	04JUN07	54
1035	Install Product Recovery Pumps	6	29MAR07	04APR07	146
1067	Product Recovery Piping & Misc Eqp	18	06APR07	26APR07	146
1174	Install Diesel Tank T-100-001	12	06APR07	19APR07	91
1071	Install Sealed Sample Tanks	24	04DEC07	04JAN08	122
1036	Receipt/Pump Platform - Pipe Painting	48	07JAN08	05MAR08	73
1068	Product Recovery Pipe Painting	12	07JAN08	19JAN08	109
CC-B.90.40.20 Tank Farm					
1030	Main Run Piping Between Tanks T-1/2/3/4	60	27JUL07	08OCT07	0
1031	Lateral Piping to the Tanks T-1/2/3/4	36	24SEP07	06NOV07	0
1053	Main Run Piping Between Tanks T-5/6	30	09OCT07	12NOV07	0
1054	Lateral Piping to the Tanks T-5/6	18	13NOV07	03DEC07	0
1228	Paint Above Ground Piping - Tank Farm	72	12JAN08	09APR08	0
1046	Final Connections to Tank Nozzles	24	20MAR08	17APR08	0
CC-B.90.50 Electrical & Controls					
CC-B.90.50.10 Power & Lighting					
CC-B.90.50.10.10 Receipt Platform & Product Recovery					
1262	E&I - Cable Ladders to Rcpt/Recovery Platforms	18	17OCT07	06NOV07	54
1145	E&I - Pull Elec/Control Cables Receipt/Recovery	24	05DEC07	05JAN08	30
1236	E&I - Terminate Power Cbl Rcpt/Recovery Platf.	12	19DEC07	12JAN08	30
1151	E&I - Install/Term Lght Fixures Receipt/Recovery	24	07JAN08	02FEB08	36
1525	E&I - Install/Hook Instrumentation Pump/Recovery	24	07JAN08	02FEB08	36
CC-B.90.50.10.20 Bund Wall Perimiter Area					
1501	E&I - Install U/G Cbl Duct SwitchRoom - FS Room	12	21DEC06	08JAN07	283
1496	E&I - Install Pillar Boxes @ Receipt Platform	6	05JUN07	11JUN07	121



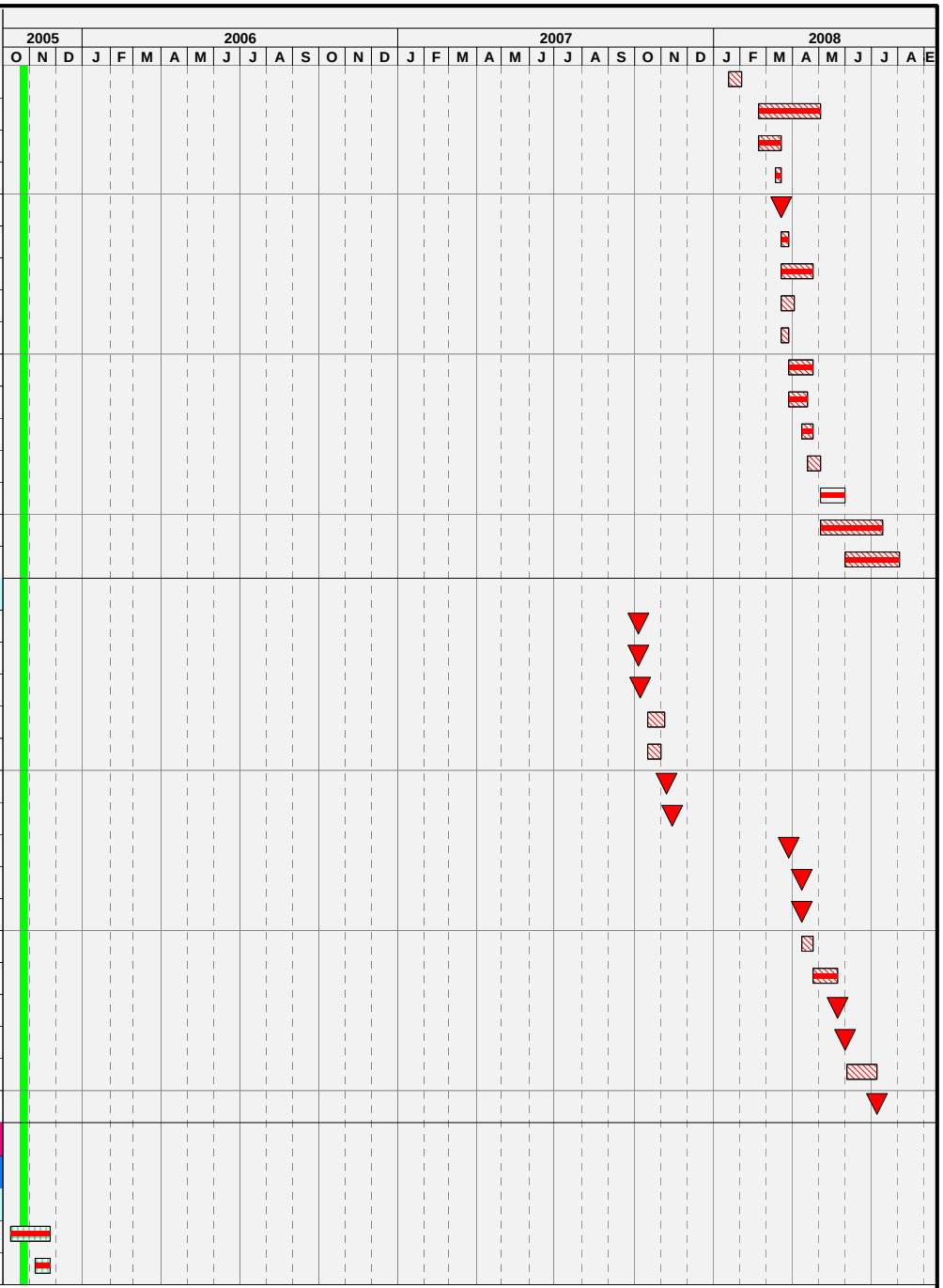
Act. ID	Activity Description	Orig Dur	ES	EF	TF
1125	E&I - Pull U/G Power Cbl SwitchRoom - FS Room	12	31AUG07	14SEP07	91
1207	E&I - Pull U/G Cable SwRoom to TF Cbl Trays	24	07NOV07	04DEC07	1
1123	E&I - Install TF Area Pillar Boxes	12	21NOV07	04DEC07	0
1208	E&I - Pull U/G Cable to Pillar Boxes	24	05DEC07	05JAN08	0
1260	E&I - BWall Perim U/G Cabling (Sea Side T-1/2/5)	36	07JAN08	20FEB08	0
1346	E&I - BWall Perim UG Cabling (Future TF T-3/4/6)	36	07JAN08	20FEB08	0
1350	E&I - BWall Perim U/G Cabling (Accss Rd - T-1/3)	24	21JAN08	20FEB08	0
1352	E&I - BWall Perim U/G Cabling (South of T5/6)	24	21JAN08	20FEB08	0
1121	E&I - Bund Wall Perimiter Light fixtures/Teminat	24	21FEB08	19MAR08	0
CC-B.90.50.10.30	Within Bund Wall				
1359	E&I - Cable Ladders Median Run T-1/2/3/4	25	09OCT07	06NOV07	0
1122	E&I - Cable Ladders to T-1/2/3/4	24	07NOV07	04DEC07	0
1360	E&I - Cable Ladders Median Run T-5/6	24	13NOV07	10DEC07	0
1216	E&I - Cable Ladders to T-5/6	12	04DEC07	17DEC07	0
1163	E&I - Pull Power/Control Cable Tanks T-1/2/3/4	28	05DEC07	10JAN08	1
1369	E&I - Cable Ladders T-1/2/3/4 X-overs	18	05DEC07	28DEC07	0
1390	E&I - Cable Ladders T-5/6;2/5;4/6 X-over	6	18DEC07	27DEC07	1
1513	E&I - Pull Power/Control Cable to Tanks T-5/6	18	18DEC07	11JAN08	0
1142	E&I - Install/Hook up Instrumentation T-1/2/3/4	24	19DEC07	19JAN08	30
1126	E&I - Pull Lght Cable to the Tanks T-1/2/3/4	36	29DEC07	13FEB08	0
1218	E&I - Terminate Power Cables Within Bundwall	18	11JAN08	31JAN08	10
1147	E&I - Install/Hook up Instrumentation T-5/6	18	21JAN08	13FEB08	30
1130	E&I - Pull Lght Cable to the Tanks T-5/6	24	28JAN08	27FEB08	0
1219	E&I - Terminate Cbl to Motor OpValves T-5/6	4	01FEB08	05FEB08	10
1140	E&I - Instal/Term Lght Fixtures T-1/2/3/4 X-over	6	14FEB08	20FEB08	24
1146	E&I - Install/Terminate Light Fixtures T-1/2/3/4	30	14FEB08	19MAR08	0
1141	E&I - Instal/Term Lght Fixt T-5/6;2/5;4/6 X-over	6	28FEB08	05MAR08	12
1137	E&I - Install/Terminate Light Fixtures T-5/6	12	06MAR08	19MAR08	0
CC-B.90.50.20	Earthing & Lightining				
1206	E&I - Earth Cable to Ring Beams	12	12MAY06	12SEP06	33
1157	E&I - Earth Tape Ring Bund Wall Perimiter	48	18SEP06	10FEB07	272
1152	E&I - Earth Tape Ring to Receipt/Recovery	12	06JAN07	19JAN07	327
1211	E&I - U/G Earth Tape from OpBldg to TF	12	06JAN07	19JAN07	291
1156	E&I - Earth Bonding to Recipt/Recovery	12	17OCT07	30OCT07	108
1205	E&I - Earth Bonds to Pipe/Trays/Step Over	48	18DEC07	12MAR08	0
CC-B.90.50.30	Security System				
1209	E&I - Install Perimiter Sensor Cable & Processor	36	29FEB08	11APR08	24
1217	E&I - Install Microwave Beam Detector	12	21MAR08	03APR08	36
1220	E&I - Install Alarms/El.Locks	24	21MAR08	18APR08	24



Act. ID	Activity Description	Orig Dur	ES	EF	TF
1212	E&I - Install Dome Cameras	18	28MAR08	18APR08	24
CC-B.90.60 Fire Services					
CC-B.90.60.10 Receipt & Product Recovery					
1261	FS - Fire Services Piping to Receipt Platform	48	05JUN07	03AUG07	54
1288	FS - Fire Services Piping Works to Prod Recovery	12	05JUN07	18JUN07	90
1290	FS - Fire Services Deluge to Product Recovery	12	20JUN07	05JUL07	90
1263	FS - Deluge System to Receipt Platform	48	06JUL07	31AUG07	54
1345	FS - Paint Fire Serv Piping - Receipt/Recovery	48	01SEP07	30OCT07	102
1110	FS - Detect/Control Cabl/Term - Receipt/Recovery	24	07NOV07	04DEC07	96
CC-B.90.60.20 Tank Farm					
3255	FS - T4 - Install FS pipe/supp (Tank Shell/Roof)	12	18NOV06	01DEC06	39
3213	FS - T3 - Install FS pipe/supp (Tank Shell/Roof)	12	02DEC06	15DEC06	39
3122	FS - T1 - Install FS pipe/supp (Tank Shell/Roof)	12	16DEC06	03JAN07	39
3339	FS - T6 - Install FS pipe/supp (Tank Shell/Roof)	12	24MAR07	07APR07	20
3171	FS - T2 - Install FS pipe/supp (Tank Shell/Roof)	12	09APR07	21APR07	20
3297	FS - T5 - Install FS pipe/supp (Tank Shell/Roof)	12	23APR07	07MAY07	20
1259	FS - Risers Over Bund Wall Sea Side (T-1/2/5)	24	02JUN07	03JUL07	40
1320	FS - Risers Over BnWall Future TF Side (T-3/4/6)	24	21JUL07	18AUG07	39
1327	FS - Piping to Tanks (T-1/2/5) (from sea side)	38	21AUG07	06OCT07	0
1330	FS - Piping to Tanks(T-3/4/6 from future TFside)	38	08OCT07	20NOV07	0
1336	FS - Paint Fire Services Piping - Tank Farm	72	08OCT07	05JAN08	30
1332	FS - Install Street Hydrants Admin/Accss Rd	12	27OCT07	09NOV07	111
1311	FS - Cntrl Stat/Mons BWall Future TFSide(T1/2/5)	12	31DEC07	14JAN08	47
1258	FS - Detection & Controls - Within Bund Wall	36	07JAN08	20FEB08	30
1312	FS - Pull UG CntrlCable BWall Perimiter SeaSide	36	07JAN08	20FEB08	0
1353	FS - Pull UG CntrlCbl BWall Perim Future TFSide	36	28JAN08	12MAR08	0
1299	FS - Cntrl Station/Mons BWall SeaSide (T-1/2/5)	12	31JAN08	16FEB08	9
1313	FS -Terminate Cables BWall Perimiter SeaSide	12	21FEB08	05MAR08	6
1317	FS - Install Street Hydr Future TF Side T-3/4/6	12	21FEB08	05MAR08	6
1314	FS - Install Street Hydrants Sea Side T-1/2/5	12	06MAR08	19MAR08	6
1354	FS -Terminate Cables BWall Perim Future TFSide	12	13MAR08	26MAR08	0
CC-B.99 Testing & Commissioning					
CC-B.99.10 Main Contractor Testing/Pre-commissioning					
POWB	Power to Admin Building	0		14SEP07	127
4427	Plumbing & Drainage Testing - Admin Bldg	12	15SEP07	29SEP07	169
4428	Small Power & Lighting Testing - Admin Bldg	12	15SEP07	29SEP07	169
4429	HVAC Testing - Admin Bldg	12	15SEP07	29SEP07	169
4426	Fire Services Test/Commiss - Admin. Bldg	24	02OCT07	29OCT07	121
1078	Hydro Test of Process Pipe Work - Field	54	04DEC07	12FEB08	19

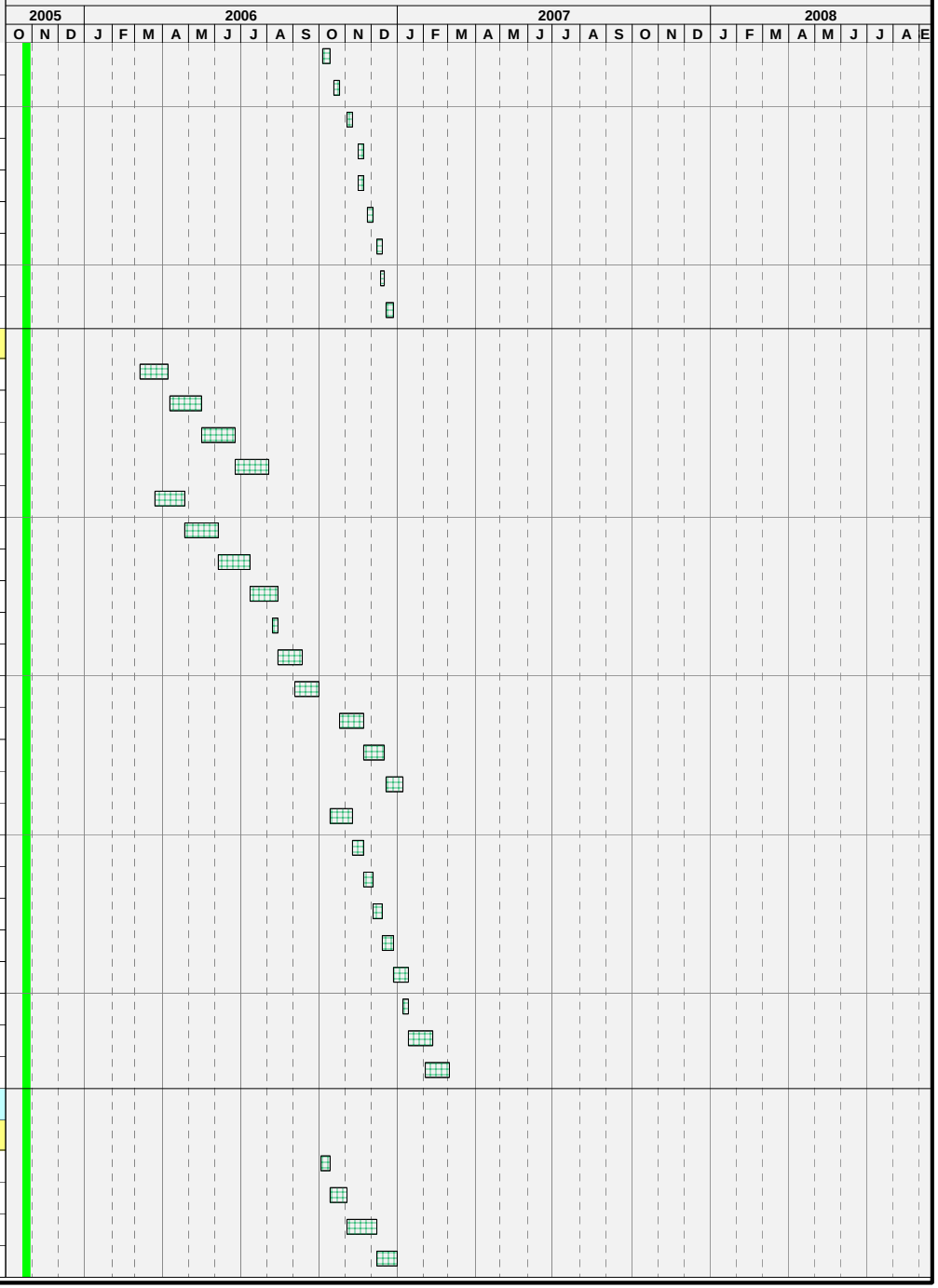


Act. ID	Activity Description	Orig Dur	ES	EF	TF
1108	Hydro Test U/G Pipe - S'wall - Rcpt Platf.	12	19JAN08	01FEB08	61
1065	Process Mech/Pipe Test & Pre-Commissioning	48	21FEB08	02MAY08	0
1114	E&I - Test/Precommiss. Power Distribution	24	21FEB08	19MAR08	0
1111	E&I - Test Earthing & Lightning	6	13MAR08	19MAR08	0
POWTF	Power to Tank Farm Areas	0		19MAR08	0
1112	E&I - Directional Test of Motors	6	20MAR08	26MAR08	0
1116	E&I - Loop checks; Instrumentation Checks; SCADA	30	20MAR08	24APR08	0
1522	E&I - Test Lighting	12	20MAR08	02APR08	18
1524	E&I - Telemetry Test/Precomm.	6	20MAR08	26MAR08	24
1080	FireServ Test Deluge/Foam Test/Commiss - Field	24	27MAR08	24APR08	0
1334	Fire Services Alarm & Detect Test/Comms - Field	18	27MAR08	17APR08	6
1239	Fire Serv Hydrants & Monitors Test/Comms - Field	12	11APR08	24APR08	0
1189	E&I - Security System Test/Precommission	12	19APR08	03MAY08	24
1066	Process Lines Cleaning & N2 Purging	25	03MAY08	31MAY08	0
COMMSS	INTEGRATED COMMISSIONING	61	03MAY08	14JUL08	0
TRIAL	TRIAL OPERATION	62	01JUN08	01AUG08	0
CC-B.99.20	**Statutory Inspections & Approvals**				
4753	Submit WWO 046 Part 4	0	06OCT07		163
4754	Submit Form H for Plumbing & Drainage	0	06OCT07		163
4757	Submit Form 5 for Lift Hoist	0	09OCT07		137
4759	WSD Inspection	18	16OCT07	05NOV07	163
4763	EMSD Inspection Lift Hoist	14	16OCT07	31OCT07	137
4764	EMSD Issue Form 6 Lift	0		07NOV07	137
4760	WSD Issue WWO 046 Part 5	0		13NOV07	163
4756	Submit FS 314 for FS Installation	0	27MAR08		0
4755	Submit Form FX 172 for Ventilation	0	11APR08		0
4765	Submit FS 501	0	11APR08		0
4767	Prepare BA13 & associated documents	12	11APR08	24APR08	46
FSDTF	FSD Inspection	24	25APR08	23MAY08	0
4768	AP Submit BA13 & Associated Documents	0		23MAY08	22
4769	FSD Issue Fire Certificate	0		31MAY08	0
BDTF	BD Inspection	30	02JUN08	07JUL08	22
4771	BD Issue Occupational Permt	0		07JUL08	22
CC-C	**JETTY STRUCTURE & FACILITIES**				
CC-C.90	**Construction Works**				
CC-C.90.05	**Piling & Pile Testing Prior to Main Works**				
1418	Dolphin Monitoring	30	10OCT05A	23NOV05	0
1428	Initial Mobilisation for Test Piles	14	08NOV05	23NOV05	0

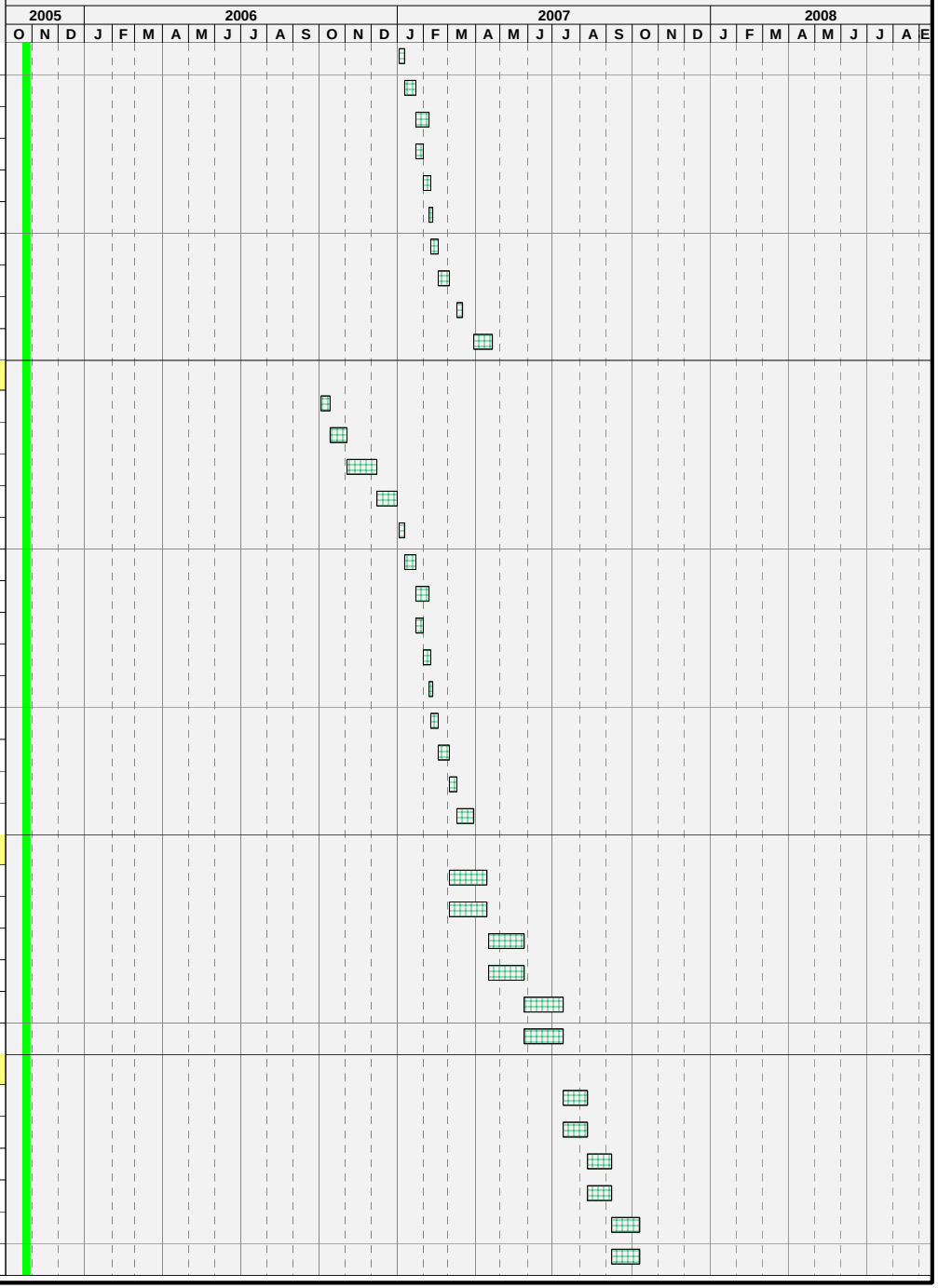


Act. ID	Activity Description	Orig Dur	ES	EF	TF
1358	Drive Test Prelim. Pile & Temp Support Piles	20	24NOV05	16DEC05	0
1408	Acoustic Monitoring & Recording	3	24NOV05	26NOV05	42
1364	Set up platform & post-prove drilling	7	02DEC05	09DEC05	0
1365	Install Rock Anchor (pile no. 12A-N)	6	10DEC05	16DEC05	0
1371	Set up test frame for compress. load test	16	14DEC05	06JAN06	0
1372	Static compression load test	4	07JAN06	11JAN06	0
1373	Test: Set up frame for tension load test	14	12JAN06	27JAN06	0
1378	BD Approval of Pile Test No. 12-N at LP2	28	14JAN06	17FEB06	0
1374	Test: Static tension load test	3	28JAN06	03FEB06	0
1375	Test: Submission of Test Reports	2	04FEB06	06FEB06	10
CC-C.90.10 Piling - Main Works					
CC-C.90.10.10 Drive Casings					
1308	Pitching & Final Set Piles OLP 2 (7 piles)	5	18FEB06	23FEB06	0
1425	Pitching & Final Set Piles BD6 (7 piles)	4	24FEB06	28FEB06	0
1400	Pitching & Final Set Piles BD5 (7 piles)	4	01MAR06	04MAR06	0
1401	Pitching & Final Set Piles OLP 1 (12 piles)	7	06MAR06	13MAR06	0
1405	Pitching & Final Set Piles BD4 (7 piles)	4	14MAR06	17MAR06	0
1402	Pitching & Final Set Piles BD3 (7 piles)	4	18MAR06	22MAR06	0
1424	Pitching & Final Set Piles BD2 (7 piles)	4	23MAR06	27MAR06	0
1423	Pitching & Final Set Piles BD1 (7 piles)	4	28MAR06	31MAR06	0
1481	Drive Piles - BA14 Submission	6	01APR06	08APR06	130
1412	Drive Piles MD3 (3 piles)	3	03OCT06	05OCT06	119
1413	Drive Piles MD4 (4 piles)	3	06OCT06	10OCT06	119
1411	Drive Piles MD5 (3 piles)	3	11OCT06	13OCT06	119
1427	Drive Piles MD2 (4 piles)	4	14OCT06	18OCT06	119
1426	Drive Piles MD1 (3 piles)	3	19OCT06	21OCT06	119
1432	Drive Piles EP1 (3 piles)	3	23OCT06	25OCT06	119
1429	Drive Piles MD6 (4 piles)	4	26OCT06	30OCT06	119
1430	Drive Piles MD7 (3 piles)	3	01NOV06	03NOV06	119
1431	Drive Piles EP2 (3 piles)	3	04NOV06	07NOV06	165
CC-C.90.10.20 Pile Cut Off & Bracing					
1382	Cut off/Bracing/Platform OPL2 (12 piles)	9	24FEB06	06MAR06	34
1434	Cut off/Bracing/Platfor BD5 (7 piles; 2 anchors)	7	06MAR06	13MAR06	88
1435	Cut off/Bracing/Platform OLP1 (12 piles)	9	14MAR06	23MAR06	25
1433	Cut off/Bracing/Platfor BD6 (7 piles; 2 anchors)	7	31MAR06	08APR06	34
1445	Cut off/Bracing/Platfor BD3 (7 piles; 2 anchors)	7	19APR06	26APR06	25
1446	Cut off/Bracing/Platfor BD2 (7 piles; 2 anchors)	7	27MAY06	05JUN06	25
1444	Cut off/Bracing/Platfor BD4 (7 piles; 2 anchors)	7	17JUN06	24JUN06	34
1447	Cut off/Bracing/Platfor BD1 (7 piles; 2 anchors)	7	03JUL06	11JUL06	25

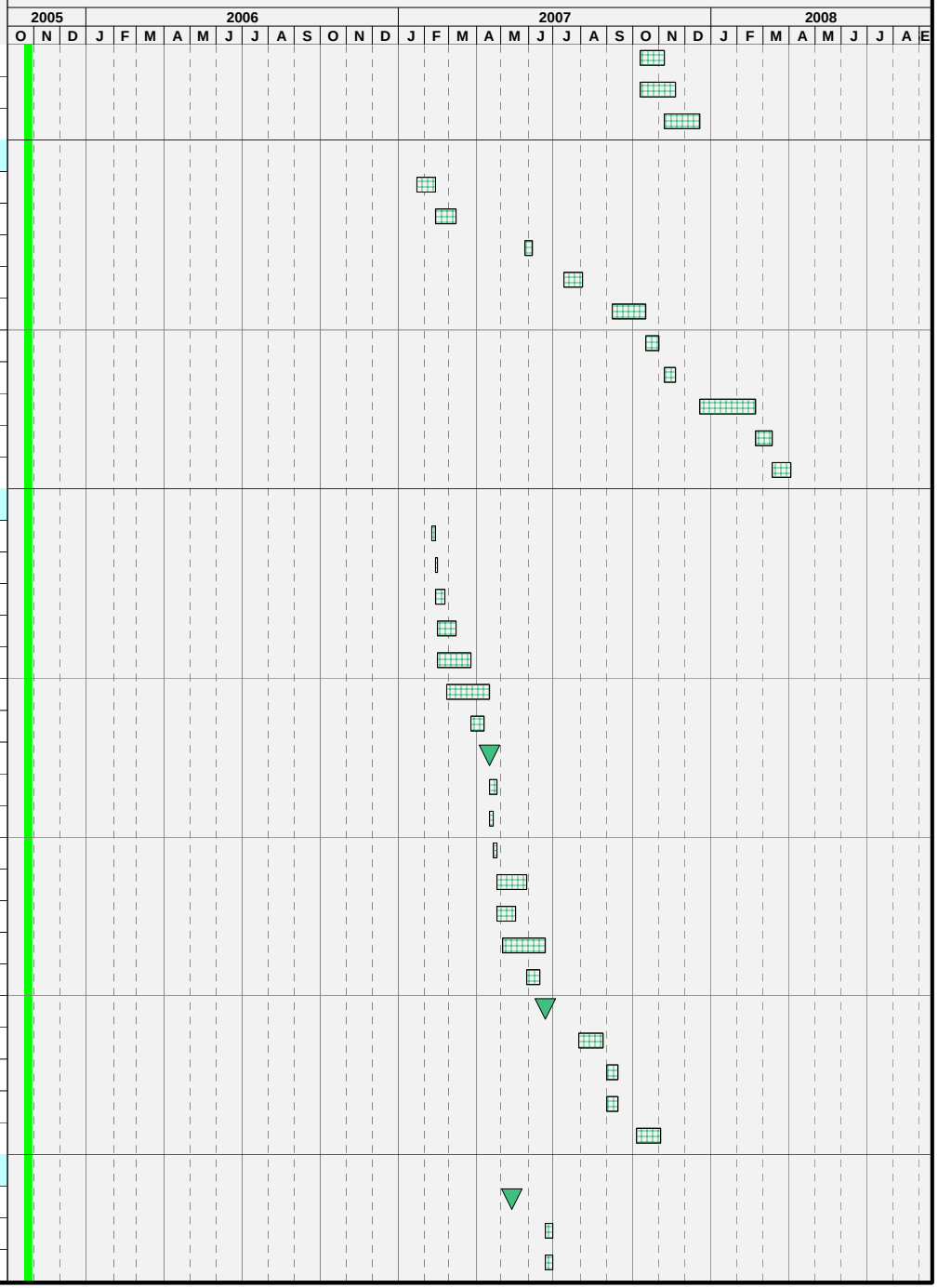
Act. ID	Activity Description	Orig Dur	ES	EF	TF
1459	Cut off/Bracing/Platfor MD3 (4 piles; 2 anchors)	6	06OCT06	13OCT06	131
1453	Cut off/Bracing/Platfor MD2 (7 piles; 2 anchors)	6	19OCT06	25OCT06	137
1461	Cut off/Bracing/Platform MD4 (4 piles)	6	03NOV06	09NOV06	131
1455	Cut off/Bracing/Platfor MD1 (7 piles; 2 anchors)	6	15NOV06	21NOV06	137
1463	Cut off/Bracing/Platform MD5 (4 piles)	6	15NOV06	21NOV06	131
1465	Cut off/Bracing/Platform MD6 (4 piles)	6	27NOV06	02DEC06	131
1466	Cut off/Bracing/Platform MD7 (4 piles)	6	08DEC06	14DEC06	131
1457	Cut off/Bracing/Platform EP1 (3 piles, 1 anchor)	6	11DEC06	16DEC06	137
1470	Cut off/Bracing/Platform EP2 (3 piles; 1 anchor)	6	18DEC06	27DEC06	131
CC-C.90.10.30	Pile Internal Works				
1319	Pile Internal Works OPL2 (12 piles)	28	07MAR06	08APR06	34
1420	Pile Internal Works BD6 (7 piles; 2 anchors)	32	10APR06	17MAY06	34
1421	Pile Internal Works BD5 (7 piles; 2 anchors)	32	18MAY06	24JUN06	34
1440	Pile Internal Works BD4 (7 piles; 2 anchors)	32	26JUN06	03AUG06	34
1422	Pile Internal Works OLP1 (12 piles)	28	24MAR06	26APR06	25
1441	Pile Internal Works BD3 (7 piles; 2 anchors)	32	27APR06	05JUN06	25
1442	Pile Internal Works BD2 (7 piles; 2 anchors)	29	06JUN06	11JUL06	25
1443	Pile Internal Works BD1 (7 piles; 2 anchors)	29	12JUL06	14AUG06	25
1482	Submit BA14 Internal Works OLP1 & OLP2 Areas	6	08AUG06	14AUG06	25
1469	BD Select & Coring Test OLP1 & OLP2 Areas	24	15AUG06	11SEP06	25
1483	BD Consent Superstructure OLP1 & OLP2 Areas	28	04SEP06	01OCT06	31
1452	Pile Internal Works MD2 (4 piles; 2 anchors)	22	26OCT06	21NOV06	137
1454	Pile Internal Works MD1 (4 piles; 2 anchors)	22	22NOV06	16DEC06	137
1456	Pile Internal Works EP1 (3 piles; 1 anchor)	13	18DEC06	05JAN07	137
1458	Pile Internal Works MD3 (4 piles; 2 anchors)	22	14OCT06	09NOV06	131
1460	Pile Internal Works MD4 (4 piles)	10	10NOV06	21NOV06	131
1462	Pile Internal Works MD5 (4 piles)	10	22NOV06	02DEC06	131
1464	Pile Internal Works MD6 (4 piles)	10	04DEC06	14DEC06	131
1468	Pile Internal Works MD7 (4 piles)	8	15DEC06	27DEC06	131
1467	Pile Internal Works EP2 (3 piles; 1 anchor)	13	28DEC06	12JAN07	131
1484	BA14 Internal Works - Balance	6	06JAN07	12JAN07	131
1473	BD Select & Coring Test - Balance	24	13JAN07	09FEB07	131
1485	BD Consent Superstructure - Balance	28	02FEB07	01MAR07	162
CC-C.90.20	**Jetty Superstructure**				
CC-C.90.20.10	Opearational Platform OLP1 Concrete Works				
1379	OLP1 - Install Headstocks on Raking Piles	9	03OCT06	13OCT06	24
1380	OLP1 - Install Longitudinal Beam Shells	15	14OCT06	01NOV06	24
1381	OLP1 - Infill Concrete (top pile; beam shells)	30	02NOV06	06DEC06	24
1383	OLP1 - Install Precast Deck Units Between Beams	18	07DEC06	30DEC06	24



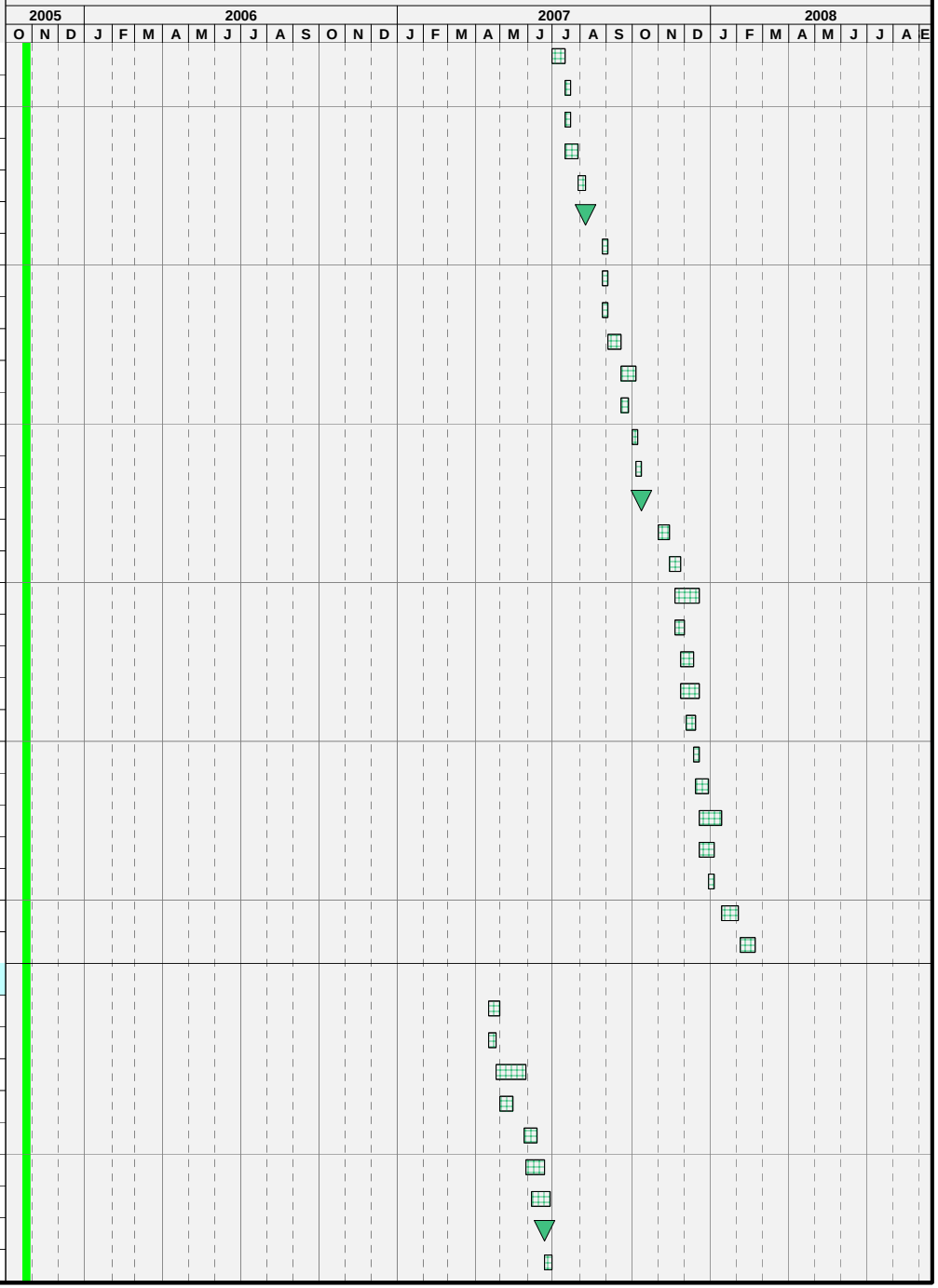
Act. ID	Activity Description	Orig Dur	ES	EF	TF
1384	OLP1 - Install Oil Intercept & Water Pre-cast Ta	6	02JAN07	08JAN07	24
P1S	OLP1 - Cast In-situ Top Slab	12	09JAN07	22JAN07	24
1388	OLP1 - Load Arm Kerbs and Plinths	12	23JAN07	05FEB07	85
1395	OLP1 - Accomodation Kiosk Slab	6	23JAN07	29JAN07	24
1403	OLP1 - Accomodation Kiosk External Walls	9	30JAN07	08FEB07	24
1437	OLP1 - Install N2 store Plinth	4	06FEB07	09FEB07	135
1404	OLP1 - Accomodation Kiosk Internal Walls	7	09FEB07	16FEB07	24
1410	OLP1 - Accomodation Kiosk Roof	9	17FEB07	02MAR07	24
1414	OLP1 - Accomodation Kiosk Roof W'proof & Tiling	6	10MAR07	16MAR07	108
1415	OLP1 - Accomodation Kiosk ABWF/BS Works	18	31MAR07	21APR07	96
CC-C.90.20.20	Operational Platfrom OLP2 Concrete Works				
3400	OLP2 - Install Headstocks on Raking Piles	9	03OCT06	13OCT06	28
3401	OLP2 - Install Longitudinal Beam Shells	15	14OCT06	01NOV06	28
3402	OLP2 - Infill Concrete (top pile; beam shells)	30	02NOV06	06DEC06	28
3403	OLP2 - Install Precast Deck Units Between Beams	18	07DEC06	30DEC06	28
3404	OLP2 - Install Oil Intercept & Water Pre-cast Ta	6	02JAN07	08JAN07	28
P2S	OLP2 - Cast In-situ Top Slab	12	09JAN07	22JAN07	28
3406	OLP2 - Load Arm Kerbs and Plinths	12	23JAN07	05FEB07	31
3408	OLP2 - Accomodation Kiosk Slab	6	23JAN07	29JAN07	28
3412	OLP2 - Accomodation Kiosk External Walls	9	30JAN07	08FEB07	28
3416	OLP2 - Install N2 store Plinth	4	06FEB07	09FEB07	81
3414	OLP2 - Accomodation Kiosk Internal Walls	7	09FEB07	16FEB07	48
3422	OLP2 - Accomodation Kiosk Roof	9	17FEB07	02MAR07	48
3424	OLP2 - Accomodation Kiosk Roof W'proof & Tiling	6	03MAR07	09MAR07	96
3425	OLP2 - Accomodation Kiosk ABWF/BS Works	18	10MAR07	30MAR07	96
CC-C.90.20.30	Berthing Dolphins Concrete Works				
1439	Construct BD4 (pre-cast; in-situ RC)	36	03MAR07	14APR07	24
1449	Construct BD6 (pre-cast; in-situ RC)	36	03MAR07	14APR07	48
1438	Construct BD3 (pre-cast; in-situ RC)	36	16APR07	28MAY07	24
1448	Construct BD5 (pre-cast; in-situ RC)	36	16APR07	28MAY07	48
1392	Construct BD1 (pre-cast; in-situ RC)	36	29MAY07	12JUL07	48
1416	Construct BD2 (pre-cast; in-situ RC)	36	29MAY07	12JUL07	24
CC-C.90.20.40	Morring Dolphins & End Protection RC Works				
1474	Construct MD3	24	13JUL07	10AUG07	48
1476	Construct MD5	24	13JUL07	10AUG07	24
1451	Construct MD2	24	11AUG07	07SEP07	73
1475	Construct MD4	24	11AUG07	07SEP07	24
1417	Construct MD1	24	08SEP07	09OCT07	73
1477	Construct MD6	24	08SEP07	09OCT07	49



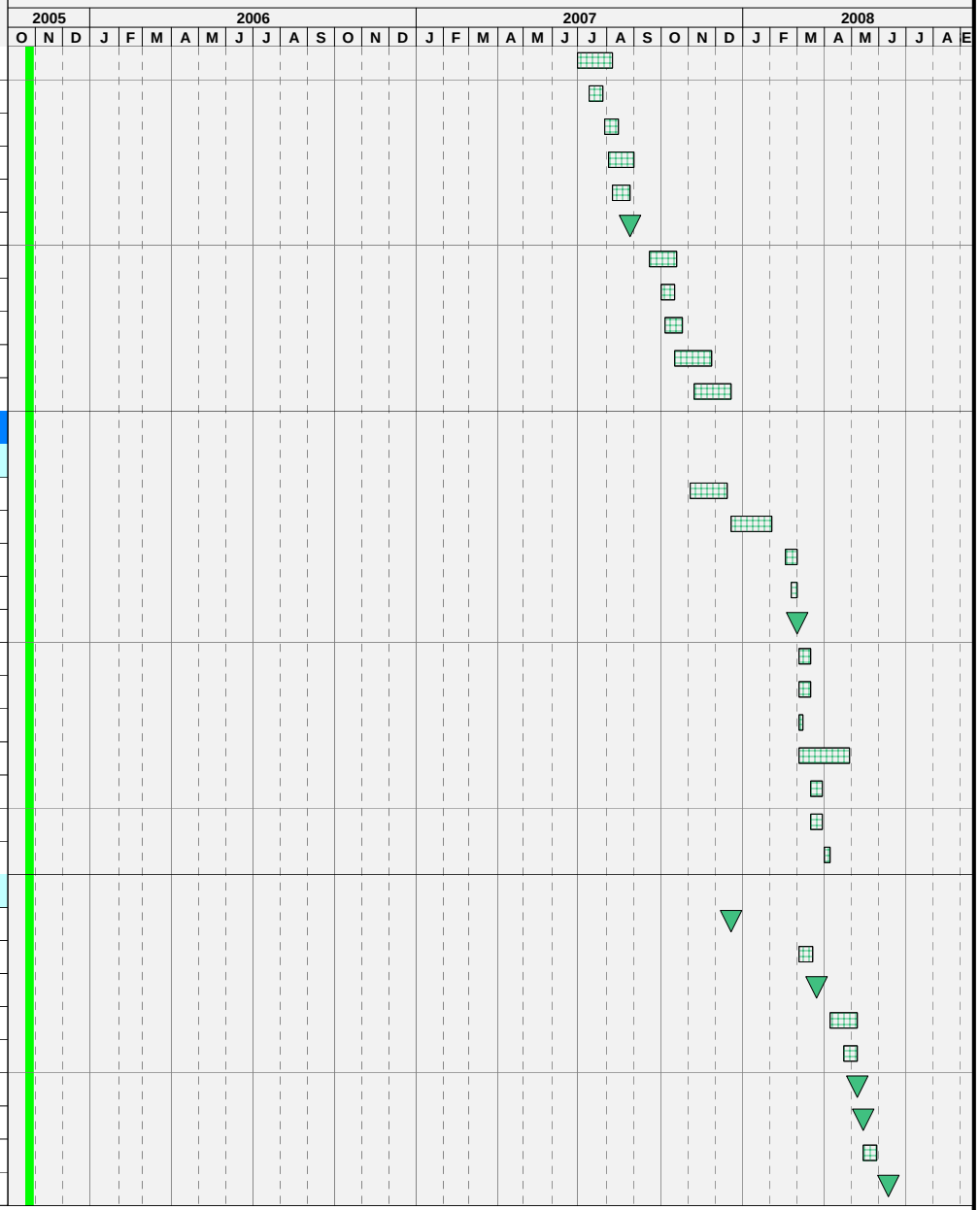
Act. ID	Activity Description	Orig Dur	ES	EF	TF
1478	Construct MD7	24	10OCT07	06NOV07	49
1479	Construct EP1 (in-situ)	36	10OCT07	20NOV07	73
1480	Construct EP2 (in-situ)	36	07NOV07	18DEC07	49
CC-C.90.30	**Pipe Bridges; Walkways; Marine Equipment**				
3407	OLP2 - Install Access Stairs	18	23JAN07	12FEB07	73
1394	OLP1 - Install Access Stairs	18	13FEB07	08MAR07	109
3439	Install Wallkway BD5 to BD6 (OLP2)	6	29MAY07	04JUN07	132
3440	Install Wallkway BD1 to BD4 (OLP1)	18	13JUL07	03AUG07	114
3441	Install Wallkway BD4 to BD5 (MD3/4/5)	30	08SEP07	16OCT07	24
3443	Install Wallkway BD1 to MD1	12	17OCT07	30OCT07	72
3442	Install Wallkway BD6 to MD7	12	07NOV07	20NOV07	66
1226	Install Marine Eqp (bollards; Fenders; End Prot)	48	19DEC07	20FEB08	49
1393	OLP1 - Install Fenders	18	21FEB08	12MAR08	49
3413	OLP2 - Install Fenders	18	13MAR08	02APR08	49
CC-C.90.40	**Top Side Mechanical Works**				
3419	OLP2 - Install Product Recovery Pump	3	09FEB07	12FEB07	28
3415	OLP2 - Install Product Recovery Header	3	13FEB07	15FEB07	28
3418	OLP2 - Install Lifting Davit	6	13FEB07	22FEB07	73
3417	OLP2 - Install Marine Loading Arms (2 off)	14	16FEB07	07MAR07	50
3421	OLP2 - Install Proces Piping	30	16FEB07	26MAR07	28
3423	OLP2 - Install Valves/In-Line Eqp	6	27FEB07	17APR07	28
3426	OLP2 - Install Small Bore Piping	12	27MAR07	10APR07	28
1304	Substantially Complete Product Mechanical - OLP2	0		17APR07	28
1491	OLP1 - Install Lifting Davit	6	18APR07	24APR07	76
1495	OLP1 - Install Product Recovery Pump	3	18APR07	20APR07	28
1436	OLP1 - Install Product Recovery Header	3	21APR07	24APR07	28
1487	OLP1 - Install Proces Piping	30	25APR07	30MAY07	28
1490	OLP1 - Install Marine Loading Arms (3 off)	18	25APR07	16MAY07	46
1489	OLP1 - Install Valves/In-Line Eqp	6	03MAY07	21JUN07	28
1488	OLP1 - Install Small Bore Piping	12	31MAY07	13JUN07	28
1254	Substantially Complete Product Mechanical - OLP1	0		21JUN07	28
3437	OLP2 - Paint Product Piping	24	31JUL07	27AUG07	58
1502	OLP1 - Install Fuel Risers	12	31AUG07	14SEP07	63
3411	OLP2 - Install Fuel Risers	12	31AUG07	14SEP07	63
1511	OLP1 - Paint Product Piping	24	05OCT07	01NOV07	28
CC-C.90.50	**Electrical & Controls**				
3445	Commence Electrical Works	0	14MAY07*		79
3429	OLP2 - Install Pillar Box	6	22JUN07	28JUN07	46
3434	OLP2 - Install Security Cameras/Emrg. Break Cont	6	22JUN07	28JUN07	70



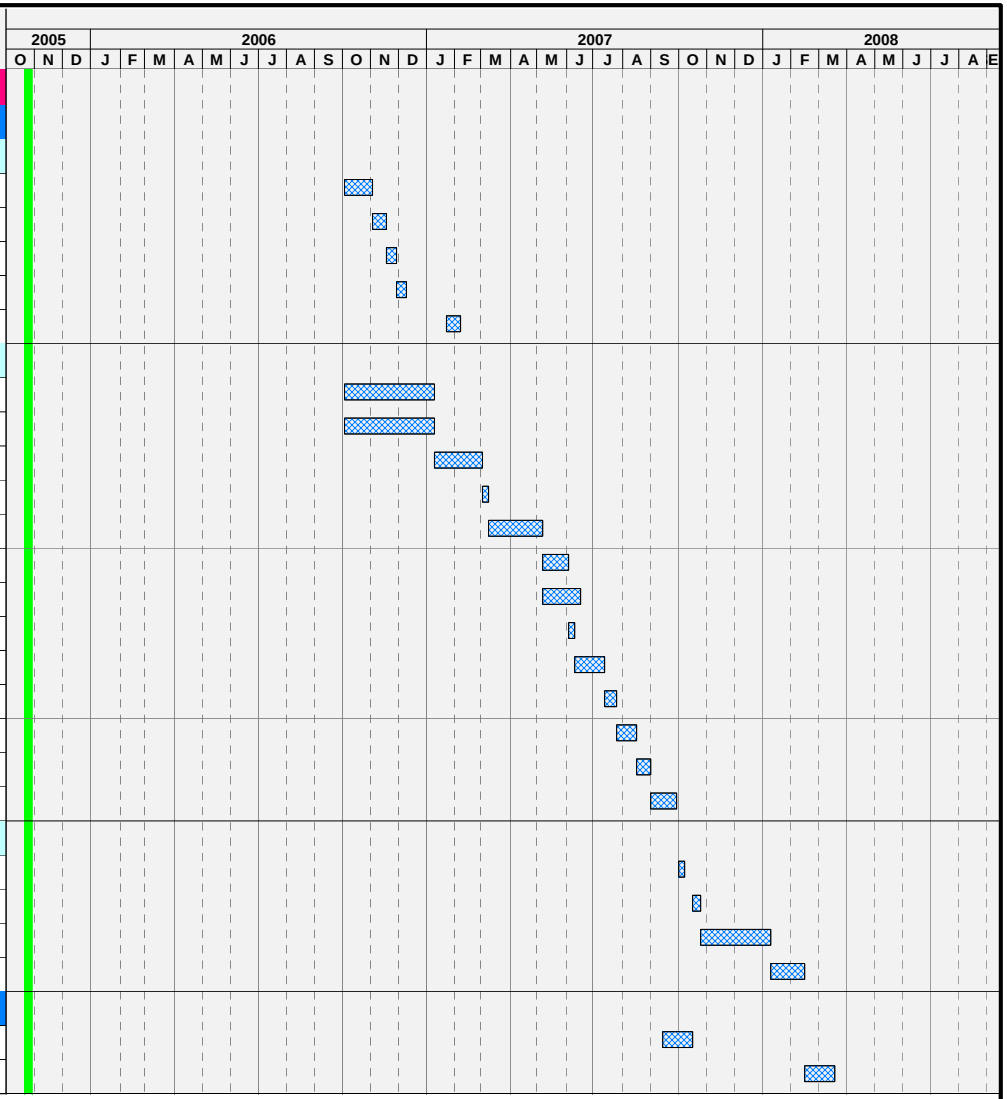
Act. ID	Activity Description	Orig Dur	ES	EF	TF
3431	OLP2 - Install Cable Trays	12	29JUN07	14JUL07	46
3428	OLP2 - Install Earthing/Lightning	6	16JUL07	21JUL07	58
3432	OLP2 - Install Lighting Fixtures	6	16JUL07	21JUL07	52
3433	OLP2 - Pull Control/Power Cables	12	16JUL07	30JUL07	46
3435	OLP2 - Terminate Power/Control Cables	6	31JUL07	06AUG07	46
3444	Substantially Complete OLP2 Electrical	0		06AUG07	46
1492	OLP1 - Install Pillar Box	6	28AUG07	03SEP07	28
1494	OLP1 - Install Lighting Fixtures	6	28AUG07	03SEP07	106
1519	OLP1 - Install Security Cameras/Emrg. Break Cont	6	28AUG07	03SEP07	106
1493	OLP1 - Install Cable Trays	12	04SEP07	18SEP07	28
1497	OLP1 - Pull Control/Power Cables	12	19SEP07	04OCT07	28
1508	OLP1 - Install Earthing/Lightning	6	19SEP07	25SEP07	94
3438	OLP2 - Terminate Incomming Cables from Tank Farm	6	02OCT07	08OCT07	151
1509	OLP1 - Terminate Power/Control Cables	6	05OCT07	11OCT07	82
1515	Substantially Complete OLP1 Electrical	0		11OCT07	82
1227	Install Cable Trays OLP1 to MD1	12	31OCT07	13NOV07	90
1252	Install Lighting Fixtures OLP1 to MD1	12	14NOV07	27NOV07	90
1221	Earthing & Lightninig Dolphins/Walkways	24	21NOV07	18DEC07	66
1222	Install Cable Support System OLP2 to MD7	10	21NOV07	01DEC07	78
1231	Pull Power/Lighting Cables OLP1 to MD1	12	28NOV07	11DEC07	90
1233	Install Cable Support System OLP2 to OLP1	18	28NOV07	18DEC07	42
1250	Install Lighting Fixtures OLP2 to MD7	10	03DEC07	13DEC07	78
1224	Terminate Power/Lighting Cables OLP1 to MD1	6	12DEC07	18DEC07	90
1237	Pull Power/Lighting Cables OLP2 to MD7	10	14DEC07	28DEC07	78
1251	Install Lighting Fixtures OLP2 to OLP1	18	19DEC07	12JAN08	42
1503	Earthing Cable Between OPL1 and OLP2	12	19DEC07	05JAN08	54
1322	Terminate Power/Lighting Cables OLP2 to MD7	6	29DEC07	05JAN08	78
1238	Pull Power/Lighting Cables OLP2 to OLP1	18	14JAN08	02FEB08	42
1325	Terminate Power/Lighting Cables OLP2 to OLP1	12	04FEB08	20FEB08	42
CC-C.90.60	**Fire Services**				
1504	Install BD6 Foam Monitor Structure/Monitors	12	16APR07	28APR07	201
3420	OLP2 - Install FS Mechanical Equipment	6	18APR07	24APR07	28
3427	OLP2 - Install FS Piping/Valves	30	25APR07	30MAY07	28
1506	Install BD4 Foam Monitor Structure/Monitors	12	30APR07	14MAY07	201
1505	Install BD5 Foam Monitor Structure/Monitors	12	29MAY07	11JUN07	177
3430	OLP2 - Install Drencher Piping	18	31MAY07	21JUN07	28
1512	Install FS Piping/Eqp to BD5/6 Foam Monitors	18	05JUN07	26JUN07	168
1344	Substantialy Complete FS Mechanical - OLP2	0		21JUN07	28
1498	OLP1 - Install FS Mechanical Equipment	6	22JUN07	28JUN07	28



Act. ID	Activity Description	Orig Dur	ES	EF	TF
1499	OLP1 - Install FS Piping/Valves	30	29JUN07	06AUG07	28
1507	Install BD1 Foam Monitor Structure/Monitors	12	13JUL07	27JUL07	141
3436	OLP2 - Paint - FS Piping	12	31JUL07	13AUG07	112
1520	Install FS Piping/Eqp to BD4/1 Monitors	24	04AUG07	31AUG07	114
1500	OLP1 - Install Drencher Piping	18	07AUG07	27AUG07	28
1338	Substantialy Complete FS Mechanical - OLP1	0		27AUG07	28
1326	Fire Detection and Alarm Installation	24	19SEP07	18OCT07	130
3410	OLP2 - Install Water/Foam Risers	12	02OCT07	15OCT07	79
1510	OLP1 - Paint - FS Piping	18	05OCT07	25OCT07	70
1323	Fire Services Piping between Loading Platforms	36	17OCT07	27NOV07	24
1331	Paint FS Piping between Loading Platforms	36	07NOV07	18DEC07	24
CC-C.99	**Testing & Commissioning**				
CC-C.99.10	**Main Contractor Testing/Pre-commissioning**				
1229	J - Hydrotest Product Piping	36	02NOV07	13DEC07	28
1302	J - Hydrotest Fire Services Piping	36	19DEC07	02FEB08	24
1310	J - Power Supply to Jetty Test/Precommission	12	18FEB08	01MAR08	15
1301	J - Test & Pre-Commission Earthing/Lightning	6	25FEB08	01MAR08	15
POWJ	J - Power to Jetty Available from TF	0		01MAR08*	15
1241	J - Test & Commis Fire Services Drencher & Spray	12	03MAR08	15MAR08	15
1248	J - Test & Pre-Commission Lighting & Power	12	03MAR08	15MAR08	33
1300	J - Test & Pre-Commission Security System	6	03MAR08	08MAR08	70
1303	J - Precommission Product Mechanical/Piping	48	03MAR08	28APR08	28
1328	J - Test & Commiss Fire Services Hydrant System	12	17MAR08	29MAR08	15
1329	J - Test & Commission Fire Services Foam System	12	17MAR08	29MAR08	15
1307	J - Test & Commission Fire Detection & Alarm	6	31MAR08	07APR08	15
CC-C.99.20	**Statutory Inspection & approvals**				
3866	J - Submit FS 314 for FS Installation	0	19DEC07		78
3873	J - EMSD Inspection Lifting Davits	14	03MAR08	18MAR08	31
3875	J - Submit FS 501	0	24MAR08		15
3876	J - FSD Inspection	24	08APR08	06MAY08	15
3877	J - Prepare BA13 & associated documents	12	22APR08	06MAY08	43
3878	J - AP Submit BA13 & Associated Documents	0		06MAY08	43
3879	J - FSD Issue Fire Certificate	0		14MAY08	15
3880	J - BD Inspection	12	15MAY08	28MAY08	43
3881	J - BD Issue Occupational Permt	0		11JUN08	43



Act. ID	Activity Description	Orig Dur	ES	EF	TF
CC-D SUB-MARINE PIPE LINE					
CC-D.90 Construction Works					
CC-D.90.10 Dredging					
1339	Mobilise Dredging Equipment	24	03OCT06*	01NOV06	70
1102	Dredge Pipe Trench (Ch 0 - 1900)	14	02NOV06	17NOV06	70
1285	Dredge Pipe Trench (Ch 1900 - 4200)	8	18NOV06	27NOV06	70
1286	Dredge Shau Chau Turning Circle	10	28NOV06	08DEC06	132
1298	Dredge from TF to Jetty (for utility services)	12	23JAN07	05FEB07	182
CC-D.90.20 Supply and Install Pipe					
1291	Set Up Winches at Ch 0	78	03OCT06	08JAN07	38
1292	Set Up Barge/Fab. & L'way Fclty @ Ch 2458 bend	78	03OCT06	08JAN07	38
1103	Fabricate & Pull Pipes (Ch 0-2458)	42	09JAN07	01MAR07	38
1293	Prepare Pipe Laying Barge for Lay Barge Method	6	02MAR07	08MAR07	38
1287	Fab & Pull Pipes; Install Bends (Ch 2458 - 4310)	48	09MAR07	05MAY07	38
1296	Install Risers to Sha Chau Jetty	24	07MAY07	02JUN07	38
1297	Modification Works @ Sha Chau and Connections	36	07MAY07	16JUN07	135
1138	Install Riser Pipe Through Seawall	6	04JUN07	09JUN07	38
1295	Set up Pulling Eqp (TF to Jetty)	24	11JUN07	11JUL07	38
1305	Install Sub-marine Fuel Pipe to OLP1	12	12JUL07	25JUL07	38
1306	Install Sub-marine Fuel Pipe to OLP2	18	27JUL07	16AUG07	38
1309	Install Sub-marine Fuel Pipe Loop OLP1 to OLP2	12	17AUG07	30AUG07	38
1294	Lay Utility Pipes & Power Cable from TF to Jetty	24	31AUG07	29SEP07	38
CC-D.90.30 Backfill					
1109	Backfill Utility Trench (TF to Jetty)	6	02OCT07	08OCT07	69
1113	Backfill Fuel Line Loop OLP1 to OLP2	9	16OCT07	25OCT07	63
1104	Backfill Pipe Trench (Ch 0 - 2458)	60	26OCT07	08JAN08	63
1289	Backfill Pipe Trench (Ch 2458 - 4310)	30	09JAN08	15FEB08	63
CC-D.99 Testing & Commissioning					
1105	Preliminary Hydrotest	24	15SEP07	15OCT07	63
1106	Clean & Pig the Pipelines	26	16FEB08	17MAR08	63



Annex E

Water Quality Monitoring Log and Event & Action Plan for Water Quality

Annex E Water Quality Monitoring Log

Location					
Date					
Start Time	(hh:mm)				
Weather					
Sea Conditions					
Tidal Mode					
Water Depth	(m)				
Monitoring Depth			Surface	Middle	Bottom
Salinity					
Temperature	(^{0}C)				
DO Saturation	(%)				
DO	(mg/l)				
Turbidity	(NTU)				
SS Sample Identification					
SS	(mg/l)				
Observed Construction Activities		<100m from location			
		>100m from location			
Other Observations					

	Name & Designation	**Signature**	**Date**
Recorded by:	_____	_____	_____
Checked by:	_____	_____	_____

Note: The SS results are to be filled in once they are available from the laboratory.

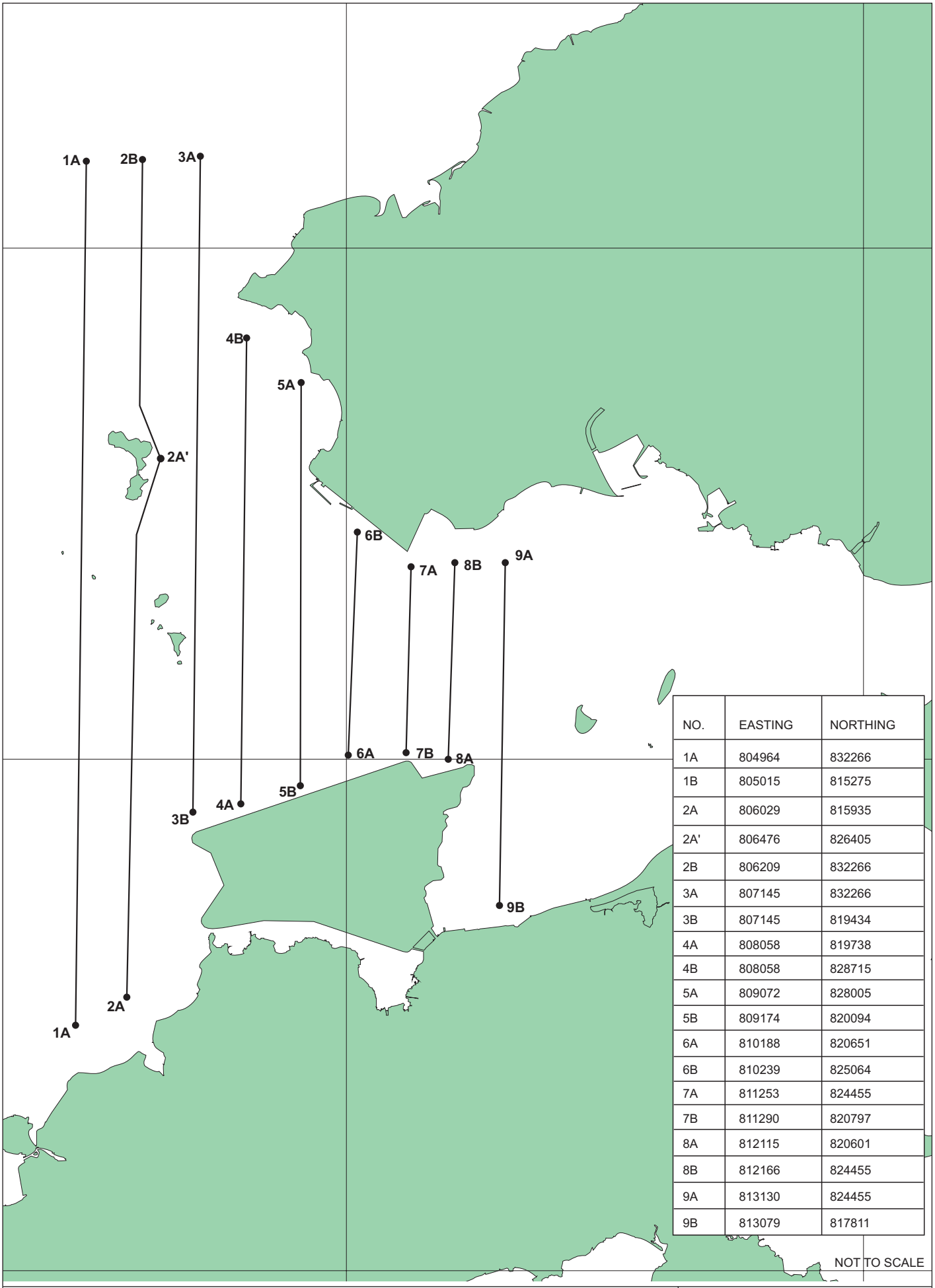
Annex E Event and Action Plan for Water Quality

EVENT	ACTION			
	ET	**IEC**	**FSR**	**Contractor**
Action Level being exceeded by one sampling day	1. Repeat *in-situ* measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform the IEC and the Contractor and FSR; 4. Check monitoring data, all plant, equipment and the Contractor's working methods; 5. Discuss mitigation measures with the IEC and the Contractor;	1. Discuss with the ET and the Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by the Contractor and advise the FSR accordingly; 3. Access the effectiveness of the implemented mitigation measures.	1. Discuss with the IEC on the proposed mitigation measures; 2. Make agreement on the mitigation measures to be implemented.	1. Inform the FSR and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with the ET and the IEC and propose mitigation measures to the IEC and the FSR; 6. Implement the agreed mitigation measures.
Action Level being exceeded by more than one consecutive sampling days	1. Repeat *in-situ* measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform the IEC and the Contractor and FSR; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with the IEC and the Contractor; 6. Ensure mitigation measures are implemented;	1. Discuss with the ET and the Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by the Contractor and advise the FSR accordingly; 3. Access the effectiveness of the implemented mitigation measures.	1. Discuss with the IEC on the proposed mitigation measures; 2. Make agreement on the mitigation measures to be implemented; 3. Access effectiveness of the implemented mitigation measures;	1. Inform the FSR and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with the ET and the IEC and propose mitigation measures to the IEC and FSR within 3 working days; 6. Implement the agreed mitigation measures.

EVENT	ACTION			
	ET	**IEC**	**FSR**	**Contractor**
Limit Level being exceeded by one consecutive sampling day	1. Repeat *in-situ* measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform the IEC, the Contractor and the DEP; 4. Check monitoring data, all plant, equipment and the Contractor's working methods; 5. Discuss mitigation measures with the IEC, the FSR and the Contractor; 6. Ensure mitigation measures are implemented;	1. Discuss with the ET / Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by the Contractor and advise the FSR accordingly; 3. Access the effectiveness of the implemented mitigation measures.	1. Discuss with the IEC, the ET and the Contractor on the proposed mitigation measures; 2. Request the Contractor to critically review the working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Access the effectiveness of the implemented mitigation measures.	1. Inform the Engineer and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with the ET, the IEC and the FSR and propose mitigation measures to the IEC and the FSR within 3 working days; 6. Implement the agreed mitigation measures.
Limit Level being exceeded by more than one consecutive sampling days	1. Repeat *in-situ* measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform the IEC, the Contractor and DEP; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with the IEC, the FSR and the Contractor; 6. Ensure mitigation measures are implemented;	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by the Contractor and advise the FSR accordingly; 3. Access the effectiveness of the implemented mitigation measures.	1. Discuss with the IEC, the ET and the Contractor on the proposed mitigation measures; 2. Request Contractor to critically review working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Access effectiveness of the implemented mitigation measures; 5. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the marine work until no exceedance of Limit Level.	1. Inform the FSR and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with the ET, the IEC and the FSR and propose mitigation measures to the IEC and the FSR within 3 working days; 6. Implement the agreed mitigation measures; 7. As directed by the FSR, slow down or stop all or part of the construction activities.

Annex F

Line Transects and Action Plan for Dolphin Monitoring



NO.	EASTING	NORTHING
1A	804964	832266
1B	805015	815275
2A	806029	815935
2A'	806476	826405
2B	806209	832266
3A	807145	832266
3B	807145	819434
4A	808058	819738
4B	808058	828715
5A	809072	828005
5B	809174	820094
6A	810188	820651
6B	810239	825064
7A	811253	824455
7B	811290	820797
8A	812115	820601
8B	812166	824455
9A	813130	824455
9B	813079	817811

NOT TO SCALE

Annex F

LINE TRANSECTS FOR DOLPHIN MONITORING

FILE: 0018105aa2
DATE: 13/12/2005

Environmental Resources Management

ERM

Annex F Action Plan for Dolphin Monitoring

EVENT	ACTION			
	ET	**IEC**	**FSR**	**Contractor**
Dolphin numbers recorded in the post-construction monitoring are significantly lower than those recorded in the pre-construction monitoring	1. Repeat statistical data analysis to confirm findings; 2. Review historical data to ensure differences are as a result of natural variation or previously observed seasonal differences; 3. Identify source(s) of impact; 4. Inform the IEC, FSR and Contractor; 5. Check monitoring data, all plant, equipment and Contractor's working methods; 6. Discuss mitigation measures with the IEC and Contractor.	1. Discuss with the ET and the Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by the Contractor and advise the FSR accordingly; 3. Access the effectiveness of the implemented mitigation measures.	1. Discuss with the IEC on the proposed mitigation measures; 2. Make agreement on the mitigation measures to be implemented.	1. Inform the FSR and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with the ET and the IEC and propose mitigation measures to the IEC and the FSR; 6. Implement the agreed mitigation measures.

Annex G

Landscape and Visual Impacts - Event Action Plans for Design and Construction Phases and Construction / Operation Phase Audit Checklist

Annex G Landscape and Visual Impacts

Event / Action Plan for Design Phase

Action Level	Landscape and Visual Auditor	Project Engineer (PE)	Project Landscape Architect (PLA)
Non Conformity (with Design Standards and Specification)	• Identify Source • Inform PE and PLA • Discuss remedial actions with PE, PLA • Verify remedial actions when complete	• Notify PLA • Discuss remedial actions with PLA • Ensure remedial designs are fully incorporated	• Amend designs • Discuss remedial actions with PE

Construction/Operational Phase Audit Checklist

Area of Works	Items to be Monitored
Advance planting	monitoring of implementation and maintenance of planting, and against possible incursion, physical damage, fire, pollution, surface erosion, etc.
Protection of all trees to be retained	identification and demarcation of trees / vegetation to be retained, erection of physical protection (e.g. fencing), monitoring against possible incursion, physical damage, fire, pollution, surface erosion, etc.
Clearance of existing vegetation	identification and demarcation of trees / vegetation to be cleared, checking of extent of works to minimise damage, monitoring of adjacent areas against possible incursion, physical damage, fire, pollution, surface erosion, etc.
Transplanting of trees	identification and demarcation of trees / vegetation to be transplanted, monitoring of extent of pruning / lifting works to minimise damage, timing of operations, implementation of all stages of preparatory and translocation works, and maintenance of transplanted vegetation, etc.
Plant supply	monitoring of operations relating to the supply of specialist plant material (including the collecting, germination and growth of plants from seed) to ensure that plants will be available in time to be used within the construction works.
Soiling, planting, etc.	monitoring of implementation and maintenance of soiling and planting works and against possible incursion, physical damage, fire, pollution, surface erosion, etc.
Decorative treatment of site hoarding	implementation and maintenance, to ensure compliance with agreed designs.
Architectural treatment of retaining walls, elevated road structures and other engineering works.	implementation and maintenance of mitigation measures, to ensure compliance with agreed designs.
Establishment Works	monitoring of implementation of maintenance operations during Establishment Period

Event / Action Plan for Construction Phase

Action Level	ET[1]	IEC[1]	FSR[1]	Contractor[1]
Non-conformity on one occasion	1. Identify Source 2. Inform the Contractor, IEC and the FSR 3. Discuss remedial actions with the IEC, the FSR and the Contractor 4. Monitor remedial actions until rectification has been completed	1. Check report 2. Check the Contractor's working method 3. Discuss with the ES and the Contractor on possible remedial measures 4. Advise the FSR on effectiveness of proposed remedial measures. 5. Check implementation of remedial measures.	1. Notify Contractor 2. Ensure remedial measures are properly implemented	1. Amend working methods 2. Rectify damage and undertake any necessary replacement
Repeated Non-conformity	1. Identify Source 2. Inform the Contractor, IEC and the FSR 3. Increase monitoring frequency 4. Discuss remedial actions with the IEC, the FSR and the Contractor 5. Monitor remedial actions until rectification has been completed 6. If exceedance stops, cease additional monitoring	1. Check monitoring report 2. Check the Contractor's working method 3. Discuss with the ES and the Contractor on possible remedial measures 4. Advise the FSR on effectiveness of proposed remedial measures 5. Supervise implementation of remedial measures.	1. Notify the Contractor 2. Ensure remedial measures are properly implemented	1. Amend working methods 2. Rectify damage and undertake any necessary replacement

Note: (1) ET – Environmental Team, IEC – Independent Environmental Checker, FSR – Franchisee's Site Representative

Annex H

Implementation Programme of Mitigation Measures

Annex H Required Submissions Specified in Environmental Permit (Implementation Programme of Mitigation Measures)

EP PART C	Timing	Condition	Responsibility for Action	Latest Date for Completion of Action*	Status
1A General Submission Requirements					
1.9	During Submissions	All submissions, as required under this Permit, shall be rectified in accordance with the comments, if any, made by the Director within one month of the receipt of the Director's comments or otherwise as specified by the Director.	All parties, as appropriate.		Ongoing
1.10	During Submissions	All submissions approved by the Director, all submissions deposited without comments by the Director, or all submissions rectified in accordance with comments by the Director under this Permit shall be construed as part of the permit conditions described in Part C of this Permit. Any variation of the submissions shall be approved by the Director in writing or as prescribed in the relevant permit conditions. All submissions or any variation of the submissions shall be certified by the Environmental Team (ET) Leader and verified by the Independent Environmental Checker (IEC) referred to in Conditions 2.1 and 2.2 below, before submitting to the Director under this Permit.	All parties, as appropriate.		Ongoing
1.11	During Submissions	The Permit Holder shall release all finalized submissions as required under this Permit to the public by depositing copies in the Environmental Impact Assessment Ordinance Register Office, or in any other places, or any internet websites as specified by the Director, or by any other means as specified by the Director for public inspection. For this purpose, the Permit Holder shall provide sufficient copies of the submissions.	All parties, as appropriate.		Ongoing
1.12	During Submissions	All submissions to the Director required under this Permit shall be delivered either in person or by registered mail to the Environmental Impact Assessment Ordinance Register Office (currently at 27/F, Southorn Centre, 130 Hennessy Road, Wanchai, Hong Kong). Electronic copies of all finalized submissions required under this Permit shall be prepared in Hyper Text Markup Language (HTML) (version 4.0 or later) and in Portable Document Format (PDF version 4.0 or later), unless otherwise agreed by the Director, and shall be submitted at the same time as the hard copies.	All parties as appropriate.		Ongoing

EP PART C	Timing	Condition	Responsibility for Action	Latest Date for Completion of Action*	Status
1.14	Timing consideration for interpreting submissions.	For the purpose of this Permit, "commencement of construction" does not include works related to site clearance and preparations, or other works as agreed by the Director.	None.		
1.13	At least 1 month prior to construction	**Notification of Commencement Date:** The Permit Holder shall notify the Director in writing the commencement date of construction of the Project no later than one month prior to the commencement of construction of the Project. The Permit Holder shall notify the Director in writing immediately if there is any change of the commencement date of the construction.	• AA to inform EPD of commencement date (cc to ERM/LCAS).		Completed
2.1 (PART – see EM&A Section)	At least 1 month prior to construction (BC)	**Environmental Team:** An ET shall be established by the Permit Holder no later than one month before commencement of construction of the Project. The ET shall not be in any way an associated body of the Contractor or the IEC for the Project. The ET shall be headed by an ET Leader. The ET leader shall be a person who has at least 7 years' of experience in environmental monitoring and auditing (EM&A) or environmental management. The ET and the ET Leader shall be responsible for the implementation of the EM&A programme in accordance with the requirements as contained in the EM&A Manual.	• AA to inform EPD that ERM have been appointed as the ET (cc to ERM/LCAS).		Completed
2.2 (PART – see EM&A Section)	At least 1 month prior to construction (BC)	**Independent Environmental Consultant:** An IEC shall be employed by the Permit Holder no later than one month before commencement of construction of the Project. The IEC shall not be in any way an associated body of the Contractor or the ET for the Project. The IEC shall be a person who has at least 7 years' of experience in EM&A or environmental management.	• AA to inform EPD that Hyder have been appointed as the IEC (cc to ERM/LCAS/Hyder)		Completed

EP PART C	Timing	Condition	Responsibility for Action	Latest Date for Completion of Action*	Status
2.3	At least 1 month prior to construction (BC)	**Qualified Person:** A qualified person with degree in biology shall be employed to carry out monitoring and visual inspection of dolphin under Conditions 3.3, 3.20 and 3.22 of this Permit. The qualification and experience of the qualified person shall be certified by ET Leader and verified by the IEC. The qualified person shall form part of the ET.	• ERM to provide the qualified person and submit his/her qualification and experience with the certification to LCAS/IEC • Hyder to forward Verification Form to AA (cc to LCAS/ERM)		Complete
2.4	At least 1 month prior to construction (BC)	**Updating of EM&A Manual:** The Permit Holder shall, no later than one month before the commencement of the Project, submit to the Director for approval four hard copies and one electronic copy of an updated EM&A Manual for the Project. The updated EM&A Manual shall be certified by the ET Leader and verified by the IEC as conforming to the information and recommendations contained in the EIA Report. The updated EM&A Manual shall include the setting up of additional water quality monitoring stations for all marine construction activities.	• ET to prepare and certify updated EM&A manual to IEC/AA (cc to LCAS) • IEC to forward verification Form to AA (cc to ERM/LCAS) • AA to forward updated EM&A manual, certification & verification Forms to EPD (cc to ERM/ Hyder/LCAS)		Completed, with further revision Ongoing
3.1	Within 1 month after start of construction (C)	**Management Organization:** The Permit Holder shall, within one month after commencement of construction of the Project, inform the Director in writing the management organization of the main construction companies and/or any form of joint ventures associated with the construction of the Project. The submitted information shall include at least an organization chart, names of responsible persons and their contact details.	• LCAS to provide their management organization to AA (cc to ERM) • AA to forward this information to EPD (cc to ERM/ LCAS/Hyder)		Completed

EP PART C	Timing	Condition	Responsibility for Action	Latest Date for Completion of Action*	Status
3.2	At least 2 months prior to commencement of the works (BC)	**Testing Results of the Bubble Jacket Trial** Trial of bubble jacket shall be carried out to demonstrate noise attenuation effect of 3 dB or more as recommended in the approved EIA Report (Register No. AEIAR-062/2002). The Permit Holder shall, at least 2 months before commencement of piling works, submit the testing results of the bubble jacket trial to the Director for approval and shall deposit 15 copies of the testing results of the bubble jacket trial to the Secretary of the EIA Sub-committee of the Advisory Council on the Environment (ACE) at 10/F., Citibank Tower, 3 Garden Road, Central, Hong Kong. The Director may require the Permit Holder to make a presentation to the ACE on the bubble jacket trial to seek approval prior to commencement of construction. The submission shall be certified by ET Leader and verified by the IEC before submission to the Director.	• LCAS to provide testing result of the Bubble Jacket Trail to ET and IEC. • ET to forward certification Form to AA/IEC (cc to LCAS) • IEC to forward verification form to AA (cc to ERM/LCAS) • AA to forward testing result, certificate & verification Forms to EPD (cc to ERM/ Hyder/LCAS)		Completed
3.3	At least 1 month prior to marine construction (BC)	**Dolphin Monitoring Programme and Action Plan** Dolphin monitoring for pre- and post-construction activities shall be carried out. The Permit Holder shall submit the dolphin monitoring programme and the action plan to the Director for approval at least 1 month before commencement of marine construction works of the Project. The action plan shall include recommendations for further monitoring should dolphin numbers be significantly different to the pre-construction activity. The submission shall be certified by ET Leader and verified by the IEC before submission to the Director. The monitoring shall be undertaken by a qualified person (minimum requirement of graduate qualification in marine biology of equivalent biological science with 5 yrs experience).	• ET to prepare the monitoring programme and the action plan and submit to IEC/AA (cc to LCAS) • IEC to forward verification Form to AA (cc to ERM/LCAS) • AA to forward the monitoring programme and action; and verification Forms to EPD (cc to ERM/ Hyder/LCAS)		Completed

EP PART C	Timing	Condition	Responsibility for Action	Latest Date for Completion of Action*	Status
3.4	At least 2 months before the commence of the survey	**Marine Archaeology Investigation:** A qualified marine archaeologist shall be engaged to carry out a marine archaeological investigation of the pipeline route. The Permit Holder shall submit the methodology for the survey and the curriculum vitae of the qualified marine archaeologist to the Director for approval at least one month before commencement of any field work of the marine archaeological investigation.	• ET to provide the qualified person and methodology of the survey. • ET to provide the marine archaeological investigation result to LCAS/IEC. • ET to forward certification Form to AA/IEC (cc to LCAS)		Completed
	Within 2 months after completion of the survey	The Permit Holder shall, within 2 months after completion of the marine archaeological investigation, submit the results of the survey and the recommendations to avoid, minimize and mitigate any archaeological impact to the Director for approval. The submissions shall be certified by ET Leader and verified by the IEC before submission to the Director.	• IEC to forward verification Form to AA (cc to ERM/LCAS) • AA to forward the result, certificate & verification Forms to EPD (cc to ERM/ IEC/LCAS)		

EP PART C	Timing	Condition	Responsibility for Action	Latest Date for Completion of Action*	Status
3.6	Within 1 month after the commencement of construction (C)	**Waste Management Plan (WMP)** The Permit Holder shall, within one month after the commencement of construction of the Project, deposit with the Director three hard copies and one electronic copy of a Waste Management Plan (WMP) for the construction stage of the Project. The WMP shall be certified by the ET Leader and verified by the IEC as conforming to the information and recommendations contained in the approved EIA Report (Register No. AEIAR-062/2002). The WMP shall describe the arrangements for avoidance, reuse, recovery and recycling, storage, collection, treatment and disposal of different categories of waste to be generated from the construction activities and shall include the recommended mitigation measures on waste management in Section 14.7 of the approved EIA Report (Register No. AEIAR-062/2002). The WMP shall indicate the disposal location(s) of all surplus excavated spoil and other waste. A trip ticket system shall be included in the WMP. Surplus excavated spoil and other wastes shall only be disposed of at designated disposal locations unless otherwise approved by the Director. All measures recommended in the approved WMP shall be fully and properly implemented by the Permit Holder and any person working on the Project throughout the construction period.	• LCAS to provide the WMP to ET and IEC. • ET to forward certification Form to AA/IEC (cc to LCAS) • IEC to forward verification Form to AA (cc to ERM/LCAS) • AA to forward the WMP, certificate & verification Forms to EPD (cc to ERM/ IEC/LCAS)		Ongoing

EP PART C	Timing	Condition	Responsibility for Action	Latest Date for Completion of Action*	Status
3.8	At least 1 month before construction in these areas (BC)	**Landscape Plan** At least one month before commencement of the landscape works, the Permit Holder shall deposit with the Director 3 sets of the landscape plan prepared for the Project. The landscape plan shall include the locations, design details, implementation schedules, and drawings in the scale of 1:1000 or other appropriate scale showing the landscape and visual mitigation measures. The measures shall include 1.5m high perimeter landscaped bund, 4m high landscape mound and landscape works for the area of the site which is not initially required for fuel tanks. The landscape plan shall be certified by the ET Leader and verified by the IEC as conforming to the requirements set out in Section 8.10 of the approved EIA Report (Register No. AEIAR-062/2002) before deposit.	• LCAS to provide the landscape plan to ET and IEC. • ET to forward certification Form to AA/IEC (cc to LCAS) • IEC to forward verification Form to AA (cc to ERM/LCAS) • AA to forward the landscape plant, certificate & verification Forms to EPD (cc to ERM/ IEC/LCAS)		Ongoing
3.9 (PART – see Table 2)	At least 1 month before commencement of the implementation (BO).	**Measures to Prevent Fuel Spill, Land Contamination and Water Quality Impact during Operation:** The Permit Holder shall, at least one month before commencement of implementation of the measures to prevent fuel spill, land contamination and water quality impact during operation of relevant parts of the Project, deposit with the Director 3 sets of design drawings with explanatory statements showing details of measures to be used in relevant parts of the Project. Before submission to the Director, the drawings shall be certified by the ET Leader and verified by the IEC as conforming to the information and recommendations contained in the approved EIA Report (Register No. AEIAR-062/2002).	• LCAS to provide the design drawing to ET and IEC. • ET to forward certification Form to AA/IEC (cc to LCAS) • IEC to forward verification Form to AA (cc to ERM/LCAS) • AA to forward the design drawing, certificate & verification Forms to EPD (cc to ERM/ IEC/LCAS		Pending

EP PART C	Timing	Condition	Responsibility for Action	Latest Date for Completion of Action*	Status
4.1	At least 3 months before operation of the Project (BO)	**Measures to Prevent Fuel Spill, Land Contamination and Water Quality Impacts during Operation** The Permit Holder shall be fully responsible for monitoring and audit the effectiveness of the measures and systems specified in Condition 3.9 of this Permit to prevent fuel spill, land contamination and water quality impact during operation of the Project. The Permit Holder shall, at least three month before operation of the Project, deposit with the Director 3 sets of audit report showing the incorporation of the measures and systems in the Project and the effectiveness of the measures and systems.	• AA to implement		Pending
4.2	Annually	The effectiveness of the measures and systems specified in Condition 3.9 of this Permit shall be tested and audited at least once a year. Annual audit report of the performance of the measures and systems shall be deposited with the Director.	• AA to implement		Pending
4.3	At least 2 months before operation of relevant parts (BO)	**Contingency Plan** The Permit Holder shall formulate a comprehensive contingency plan to handle the event of fire, fuel spillage and fuel leakage. The contingency plan shall at least detail the remedial actions, the emergency response planning and procedures, the logistic arrangements and coordination and the notification arrangements for the event of fire, fuel spillage and fuel leakage. Oil dispersant shall not be used. The Permit Holder shall carry out regular rehearsal of the contingency plan to ensure the effectiveness of the plan. The Permit Holder shall, at least two month before operation of relevant parts of the Project, deposit with the Director 5 sets of the contingency plan.	• AA to provide the contingency plan for the event of fire, fuel spillage and fuel leakage to EPD.		Pending

EP PART C	Timing	Condition	Responsibility for Action	Latest Date for Completion of Action*	Status
4.4	Prior operation (BO)	**Environmental Management System** The Permit Holder shall, before the operation of the Project or otherwise agreed by the Director, develop and implement an Environmental Management System (EMS) for the operation of the Project. The EMS is to ensure that the operation of the Project is in environmentally friendly manner and in accordance with all relevant environmental legislations. The EMS shall include at least regular audit of the Project to ensure that it is properly operated and maintained to avoid or minimize any environmental impact. The Permit Holder shall engage an Environmental Manager to oversee and implement the EMS. The Environmental Manager shall be a person who has at least 7 years' of experience in Environmental Monitoring and Audit (EM&A) or environmental management. The EMS shall be certified under ISO 14000 within 1 year after the operation of the Project or otherwise agreed by the Director.	• LCAS to implement the EMS.		Pending
5.2 (PART – see Table 2	At least 2 weeks before construction (BC)	**Baseline Monitoring Report** The Permit Holder shall submit two hard copies and one electronic copy of the Baseline Monitoring Report to the Director at least 2 weeks before commencement of construction of the Project. The submissions shall be certified by the ET Leader and verified by the IEC before submission to the Director. Additional copies of the submission shall be provided upon request by the Director.	• ET to prepare baseline monitoring report and forward to AA/IEC (cc to LCAS) • IEC to forward verification Form to AA (cc to LCAS/ERM) • AA to forward baseline monitoring report, certification & verification Form to EPD (cc to ERM/ IEC/LCAS)		Dolphin Baseline Report was completed.

EP PART C	Timing	Condition	Responsibility for Action	Latest Date for Completion of Action*	Status
5.3	Within 2 weeks after the end of the reporting month. (C/AC)	**Monthly EM&A Report** The Permit Holder shall submit two hard copies and one electronic copy of the monthly EM&A Report to the Director within 2 weeks after the end of the reporting month. The submissions shall be certified by the ET Leader and verified by the IEC before submission to the Director. Additional copies of the submission shall be provided upon request by the Director.	• ET to prepare EM&A report and forward to AA/IEC (cc to LCAS) • IEC to forward verification Form to AA (cc to LCAS/ERM) • AA to forward monthly EM&A report, certification & verification Form to EPD (cc to ERM/ Hyder/LCAS)		Ongoing
5.8	Within 1 month after the commencement of the Project	**Web Cameras Plan** Within three months of the commencement of construction of the Project, the Permit Holder shall install and thereafter maintain a system of web cameras covering the works areas at Tuen Mun site. The system shall provide real time visual monitoring of the site condition accessible by public through the dedicated web site set up by the Permit Holder under Condition 6.2 below. Within one month of the commencement of the Project, the Permit Holder shall propose a plan and a system of web cameras for the Director's agreement.	• LCAS to prepare the web camera plan to AA (cc to ERM) • AA to forward the web camera plan to EPD (cc to ERM/ LCAS/IEC)		Ongoing

EP PART C	Timing	Condition	Responsibility for Action	Latest Date for Completion of Action*	Status
6.1	At the same time as hard copies as described in Conditions 5.2 and 5.3.	**Electronic Reporting of EM&A Information** To facilitate public inspection of the EM&A Reports via the EIAO Internet Website and at the EIAO Register Office, electronic copies of these Reports shall be prepared in the Hyper Text Markup Language (HTML) (version 4.0 or later) and in Portable Document Format (PDF version 4.0 or later), unless otherwise agreed by the Director and shall be submitted at the same time as the hard copies as described in Conditions 5.2 and 5.3 of this Permit. For the HTML version, a content page capable of providing hyperlink to each section and sub-section of these Reports shall be included in the beginning of the document. Hyperlinks to all figures, drawings and tables in these Reports shall be provided in the main text from where the respective references are made. All graphics in these Reports shall be in interlaced GIF format unless otherwise agreed by the Director. The content of the electronic copies of these Reports must be the same as the hard copies.	• ET to prepare the EM&A report in the HTML and PDF format.		Ongoing
6.2	Within 6 weeks after the start of Construction (C)	The Permit Holder shall, set up a dedicated web site and notify the Director in writing the internet address where the environmental monitoring and project data is to be placed, within six weeks after the commencement of the Project. All environmental monitoring results described in Condition 6.1 above shall be made available to the public via a dedicated web site to be set up by the Permit Holder in the shortest possible time and in no event later than 2 weeks after the relevant environmental monitoring data are collected or become available, unless otherwise agreed with the Director.	• LCAS to prepare the web site and submit the internet address to AA (cc to ERM) • AA to forward the address to EPD (cc to ERM/ IEC/LCAS)		Ongoing

Table 2 General Conditions of the Environmental Permit

EP PART C	Timing	Condition	Responsibility for Action	Latest Date for Completion of Action*	Status
1A General Environmental Permit Conditions					
1.1	At all times (BC/C/AC)	The Permit Holder and any person working on the Project shall comply with all conditions set out in this Permit. Any non-compliance by any person may constitute a contravention of the Environmental Impact Assessment Ordinance (Cap. 499) and may become the subject of appropriate action being taken under the Ordinance.	• AA to write to LCAS to remind them of their obligation to comply with EP condition (cc to ERM).		Ongoing
1.2	At all times (BC/C/AC)	The Permit Holder shall ensure full compliance with all legislation from time to time in force including, without limitation to, the Noise Control Ordinance (Cap. 400), Air Pollution Control Ordinance (Cap. 311), Water Pollution Control Ordinance (Cap. 358), Dumping at Sea Ordinance (Cap. 466), Waste Disposal Ordinance (Cap. 354), Dangerous Goods Ordinance (Cap. 295), Shipping and Port Control Ordinance (Cap. 313), Marine Parks Ordinance (Cap. 476), Occupational Safety and Health Ordinance (Cap.509) and Factories and Industrial Undertakings Ordinance (Cap.59). This Permit does not of itself constitute any ground of defence against any proceedings instituted under any legislation or imply any approval under any legislation.	• AA to write to LCAS to remind them of their obligation to comply with all environmental legislation in force (cc to ERM).		Ongoing
1.3	At all times (BC/C/AC)	The Permit Holder shall ensure full compliance with all fire safety requirements formulated by the Fire Services Department to address the potential fire risks of all possible areas within the Project site including the jetty. Implementation of measures under this Permit does not of itself constitute any ground of defense against any fire safety requirements instituted by the Fire Services Department.	• AA to write to LCAS to remind them of their obligation to comply with all fire safety requirement (cc to ERM).		Ongoing
1B Posting and Notification of EP Requirements					

EP PART C	Timing	Condition	Responsibility for Action	Latest Date for Completion of Action*	Status
1.4	At all times (BC/C/AC)	The Permit Holder shall make copies of this Permit together with all documents referred to in this Permit and the documents referred to in Part A of the Permit readily available at all times for inspection by the Director or his authorised officers at all sites/offices covered by this Permit. Any reference to the Permit shall include all documents referred to in the Permit and also the relevant documents in the Register.	• LCAS to advise AA whether they have all necessary document (cc to ERM) • AA to provide document to LCAS, as required (cc to ERM) • LCAS to keep document at all sites/offices covered by this EP.		Ongoing
1.5	At start of construction works and during introduction of new site staff (C)	The Permit Holder shall give a copy of this Permit to the person(s) in charge of the site(s) and ensure that such person(s) fully understands all conditions and all requirements incorporated by the Permit. The site(s) refers to site(s) of construction and operation of the Project and shall mean the same hereafter.	• LCAS to advise AA of "Person in charge" for the site (cc to ERM) • AA to write to LCAS provide copy of EP to person in charge (cc to ERM)		Completed
1.6	Immediately prior to and during construction (BC/C)	The Permit Holder shall display conspicuously a copy of this Permit on the Project site(s) at all vehicular site entrances/exits or at a convenient location for public information at all times. The Permit Holder shall ensure that the most updated information about the Permit, including any amended permit, is displayed at such locations. If the Permit Holder surrenders a part or the whole of the Permit, the notice he sends to the Director shall also be displayed at the same locations as the original Permit. The suspended, varied or cancelled Permit shall be removed from display at the Project site(s).	• LCAS to display copy of full permit at all vehicular site entrances/exits or at a convenient location for public information at all times.		Completed
1C Design and Construction in Accordance with EIA/EP/EM&A					
1.7	During Construction and Operation (C/O)	The Permit Holder shall construct and operate the Project in accordance with the project description in Part B of this Permit.	• AA to write to LCAS to remind them of their obligation to comply with EP condition (cc to ERM)		Pending

EP PART C	Timing	Condition	Responsibility for Action	Latest Date for Completion of Action*	Status
1.8	At all times (BC/C/AC)	The Permit Holder shall ensure that the Project is designed, constructed and operated in accordance with the information and all recommendations described in the approved EIA Report (Register No. AEIAR-062/2002), other relevant documents in the Register, the information and mitigation measures described in this Permit, mitigation measures to be recommended in submissions that shall be deposited with or approved by the Director as a result of permit conditions contained in this Permit, and mitigation measures to be recommended under on-going surveillance and monitoring activities during all stages of the Project. Where recommendations referred to in the documents of the Register are not expressly referred to in this Permit, such recommendations are nevertheless to be implemented unless expressly excluded or impliedly amended in this Permit.	• AA to write to LCAS to remind them of their obligation to comply with all recommendations described in the approved EIA report, other relevant documents in the Register and the EP condition (c to ERM)		Completed
5.1	At all times	The EM&A programme shall be implemented in accordance with the procedures and requirements in the updated EM&A Manual approved under Condition 2.4 of this Permit. Any changes to the EM&A programme shall be justified by the ET Leader and verified by the IEC as conforming to the requirements set out in the EM&A Manual and shall seek the prior approval from the Director before their implementation.	• ERM to implement the EM&A programme		Ongoing
5.4	At all times	The actions described in the Event /Action Plans of the EM&A Manual shall be fully and properly carried out in accordance with the time frame as set out in the Event/Action Plans, or as agreed by the Director.	• LCAS/ERM to implement Event/Action plans		Ongoing
5.5	At all times	All environmental monitoring and audit data submitted under this Permit shall be true, valid and correct.	• ERM to submit the valid EM&A data		Ongoing
5.6	At all times	To ensure a high degree of transparency regarding the monitoring data and results in view of the public concern about the Project, all environmental monitoring and audit data and results and all submissions and all performance test data and results required by this Permit shall be made available by the Permit Holder to the public through a dedicated web site to be set up by the Permit Holder under Condition 6.2 below, in the shortest possible time and in no event later than 2 weeks after such information is available.	• ERM to upload the EM&A data, result and all submissions and all performance test data and results required by this Permit to the web site.		Ongoing

EP PART C	Timing	Condition	Responsibility for Action	Latest Date for Completion of Action*	Status
6.1	At all times	To facilitate public inspection of the EM&A Reports via the EIAO Internet Website and at the EIAO Register Office, electronic copies of these Reports shall be prepared in the Hyper Text Markup Language (HTML) (version 4.0 or later) and in Portable Document Format (PDF version 4.0 or later), unless otherwise agreed by the Director and shall be submitted at the same time as the hard copies as described in Conditions 5.2 and 5.3 of this Permit. For the HTML version, a content page capable of providing hyperlink to each section and sub-section of these Reports shall be included in the beginning of the document. Hyperlinks to all figures, drawings and tables in these Reports shall be provided in the main text from where the respective references are made. All graphics in these Reports shall be in interlaced GIF format unless otherwise agreed by the Director. The content of the electronic copies of these Reports must be the same as the hard copies.	• ERM to prepare the electronic copies of the EM&A reports in the HTML and PDF format		Ongoing
1D Measures to Prevent Fuel Spill, Land Contamination and Water Quality Impact During Operation					
3.9	During Operation	The measures shall include, but not limited to, the following requirements: a) <u>Bunding system of tank farm for storage of aviation fuel</u> All fuel tanks shall be located in bunded compounds with capacity of at least 110% of the largest individual tank in each compound. A security wall of breeze-block type shall be provided outside the bund wall to act as secondary containment in the event of overtopping of the bund. The security gate at the security wall shall be provided with a ramp and leak tight seal at the bottom of the gate up to the first hinge to contain any spill within the site. A drainage ditch with sloping catchment shall be provided outside the security wall to trap any liquid splash over the security wall and the security gate. b) <u>Drainage isolation and containment system of tank farm for storage of aviation fuel</u> Impermeable layer under fuel tanks shall be used to prevent seepage of aviation fuel to ground. Storm drainage system shall be equipped with valve, collection sump and oil separator to retain spilled fuel.	• LCAS to implement • ER to enforce		Pending Pending

EP PART C	Timing	Condition	Responsibility for Action	Latest Date for Completion of Action*	Status
		c) <u>Tank overfill monitoring system</u>			
		Overfill monitoring system with automatic shutdown inlet valve shall be provided for fuel tanks.			Pending
		d) <u>Installations at the jetty</u>			
		Installations at the jetty shall include the provision of defensive fenders to prevent possible collision from small craft and the provision of coupling points with slop collection utilities to prevent minor fuel spill during unloading. Slop collection utilities shall be connected to oil separator.			Pending
		e) <u>Fuel pipelines protective measures</u>			
		Fuel pipelines shall be covered with a protective rock armour layer of minimum thickness of 1m to prevent the pipelines from damaging by anchors.			Pending
		f) <u>Leak detection system for fuel pipelines</u>			
		Continuous leak detection system with automatic shut-off device shall be provided for fuel pipelines.			Pending
1E Measures to Mitigate Water Quality Impact During Construction					
3.10	During construction	No more than one dredger shall be in operation at any time during construction.	• LCAS to implement • ER to enforce		Pending
3.11	During construction	No Lean Material Overboard (LMOB) system shall be used.	• LCAS to implement • ER to enforce		Pending
3.12	During construction	No hopper dredger with leaking pipe shall be used during construction.	• LCAS to implement • ER to enforce		Pending
3.13	During construction	Bottom openings of barges and hopper dredgers shall be tightly sealed to prevent leakage of dredged materials. Freeboard on barges shall be provided to ensure that decks are not washed by wave action.	• LCAS to implement • ER to enforce		Pending
3.14	During construction	No dredged material shall be splashed to the surrounding water during loading of dredged material to barges and hopper dredgers.	• LCAS to implement • ER to enforce		Pending

EP PART C	Timing	Condition	Responsibility for Action	Latest Date for Completion of Action*	Status
3.15	During construction	No dredged material shall be overflowed from barges and hopper dredgers during loading or transportation.	• LCAS to implement • ER to enforce		Pending
3.16	During construction	To mitigate environmental impacts due to site runoff and other potential water pollution caused by construction activities, mitigation measures described in Appendix A shall be implemented throughout the construction period.	• LCAS to implement • ER to enforce		Pending
Appendix A (a) (i)	During construction	Surface run-off from the construction site shall be directed into adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins before discharge into storm drains. Channels, earth bunds or sand bag barriers shall be provided on site to properly direct stormwater to such silt removal facilities.	• LCAS to implement • ER to enforce		Pending
Appendix A (a) (ii)	During construction	Catchpits and perimeter channels shall be constructed in advance of site formation works and earthworks.	• LCAS to implement • ER to enforce		Pending
Appendix A (a) (iii)	During construction	Silt removal facilities, channels and manholes shall be maintained with the deposited silt and grit being removed at least once a week, and at the onset of and after each rainstorm to ensure that these facilities are functioning at all times.	• LCAS to implement • ER to enforce		Pending
Appendix A (a) (iv)	During construction	Open stockpiles of construction materials (e.g. aggregates and sand) on site shall be covered with tarpaulin or similar fabric during rainstorms. Measures such as providing sand bag barriers shall be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.	• LCAS to implement • ER to enforce		Pending
Appendix A (a) (v)	During construction	Manholes (including any newly constructed ones) shall 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. Discharges of surface run-off into foul sewers shall always be prevented in order not to unduly overload the foul sewerage system.	• LCAS to implement • ER to enforce		Pending

EP PART C	Timing	Condition	Responsibility for Action	Latest Date for Completion of Action*	Status
Appendix A (b)	During construction	At all parts of all works areas and construction sites, and throughout the full duration of the construction contract(s), debris and rubbish on site shall be handled and disposed of to avoid entering the water column and causing water quality impacts. Temporary on-site storage of excavated materials shall be covered with tarpaulin or similar fabric during rainstorms. Any washout of construction or excavated materials should be diverted to the drainage system via sediment traps. Stockpiling of the excavated material can be minimised by scheduling the construction programme in a way that one section of the alignment can be constructed and completed before the excavation works of the next section commence.	• LCAS to implement • ER to enforce		Pending
1F Measures to Protect Marine Park (Sha Chau & Lung Kwu Chau) and Avoid or Mitigate Ecological Impact During Construction					
3.17	During construction	No construction work shall be carried out from shore or land within the Marine Park.	• LCAS to implement • ER to enforce		Pending
3.18	During construction	No hydraulic dredging shall be carried out within the Marine Park.	• LCAS to implement • ER to enforce		Pending
3.19	During construction	Pipeline trench dredging within the Marine Park shall be scheduled to coincide with maintenance dredging for marine access channel for Sha Chau Aviation Fuel Receiving Facility.	• LCAS to implement • ER to enforce		Pending
3.20	During construction	A 250m dolphin exclusion zone during dredging within the Maine Park shall be implemented. Dredging work shall not be carried out until the area is certified by a qualified person to ensure continuously clear of dolphins within the 250m exclusion zone for 30 minutes.	• LCAS to implement the 250m dolphin exclusion zone • ER to enforce • ERM to provide the qualified person		Pending

EP PART C	Timing	Condition	Responsibility for Action	Latest Date for Completion of Action*	Status
3.21	During construction	Piling works shall not be carried out during April to June of the year to avoid peak calving period of dolphin.	• LCAS to implement • ER to enforce • ET to monitor whether piling works is undertaken during April to June		Ongoing
3.22	During construction	A 500m dolphin exclusion zone during piling activities for the jetty shall be implemented. Piling work shall not be carried out until the area is certified by a qualified person to ensure continuously clear of dolphins within the 500m exclusion zone for 30 minutes. Piling work shall cease if dolphins move into the 500m exclusion zone during piling. Piling work shall not be resumed until the area is certified by a qualified person to ensure continuously clear of dolphins for 30 minutes.	• LCAS to implement 500m dolphin exclusion zone • ER to enforce		Ongoing
3.23	During construction	Spot acoustic monitoring of the 500m dolphin exclusion zone during piling activities shall be conducted for three days of the first week of piling to confirm that dolphins are not missed in the visual inspection carried out under Condition 3.22 of this Permit. The spot acoustic monitoring shall be conducted in accordance with the procedures and requirements in the updated EM&A Manual approved under Condition 2.4 of this Permit.	• LCAS to provide spot acoustic monitoring		Completed
3.24	During construction	Bubble jacket shall be used for piling work to reduce underwater piling noise to achieve the following underwater mitigated noise levels: 162 dB at 250m, 152 dB at 500m and 145dB at 1000m.	• LCAS to implement • ER to enforce		Ongoing
3.25	During construction	Underwater noise monitoring shall be conducted during piling to ensure that the underwater mitigated noise levels as specified in Condition 3.24 of this Permit are achieved. Underwater mitigated noise levels shall be recorded over the initial three days of the first week of piling work. Underwater noise monitoring shall be conducted in accordance with the procedures and requirements in the updated EM&A Manual approved under Condition 2.4 of this Permit.	• LCAS to provide underwater noise monitoring		Ongoing

EP PART C	Timing	Condition	Responsibility for Action	Latest Date for Completion of Action*	Status
3.26	During construction	Piling hammer at the beginning of each piling session shall be ramped up gradually. Piling activities shall be continuous without short-break and shall avoid sudden random loud noise emission. Piling activities shall occur on a regular basis, be scheduled to occur with similar activities and commence at the same time each day. No piling works shall be carried out during 11:00 p.m. to 7:00 a.m.	• LCAS to implement • ER to enforce		Ongoing
3.27	During construction	Piling and related equipment installed on the piling barge shall be acoustically decoupled from the hull of the barge.	• LCAS to implement • ER to enforce		Ongoing

Table 3 Project Specific Mitigation Measures

Item No.	Location/Timing	EIA Reference	Mitigation Measures	Implementation Agent
1. Air Quality Measures				
	Land based areas / During construction	S 4.5.3	Twice daily watering of all exposed site areas shall be undertaken.	Contractor
	Land based areas / During construction	S 4.5.3	No debris or other materials shall be burnt on the works areas.	Contractor
	Land based areas / During construction	S 4.5.3	All exposed road surfaces and dust sources shall be maintained as wet.	Contractor
	Land based areas / During construction	S 4.5.3	Watering shall be undertaken during rock/concrete breaking.	Contractor
	Land based areas / During construction	S 4.5.3	Open dropping heights for excavated materials shall be controlled to a maximum height of 2m.	Contractor
	Land based areas / During construction	S 4.5.3	Stockpiles of imported material kept on site shall be contained within hoardings, dampened and/or covered during dry and windy weather.	Contractor
	Land based areas / During construction	S 4.5.3	Site hoarding not less than 2.4m at site boundary shall be provided.	Contractor
	Land based areas / During construction	S 4.5.3	Dust creating activities shall be reprogrammed in periods of high winds.	Contractor
	Land based areas / During construction	S 4.5.3	Areas of exposed soil shall be minimised to areas in which works have been completed shall be restored as soon as is practicable.	Contractor
	Land based areas / During construction	S4.5.3	Stockpiling of the excavated material can be minimised by scheduling the construction programme in a way that one section of the alignment can be constructed and completed before the excavation works of the next section commence.	Contractor
	Land based areas / During construction	S 4.5.3	Any vehicle used for moving materials which have the potential to create dust shall have properly fitting side and tail boards. Materials having the potential to create dust shall not be loaded to a level higher than the side and tail boards, and shall be covered by a clean tarpaulin. The tarpaulin shall be properly secured and shall extend at least 300mm over the edges of the side and tail boards.	Contractor
	Site entrances and exits / During construction	S 4.5.3	No earth, mud, debris, dust and the like shall be deposited on public facility shall be usable prior to any earthworks roads. Wheel washing excavation activity on the Site.	Contractor
	Land based Site / During construction	S 4.9.1	EM&A in the form of site audit of dusty activities.	Contractor
	PAFF/Operational phase	S 4.7.1	Best practicable means as specified by the Air Pollution Control Ordinance for Part IV specified process shall be adhered to.	Franshisee
2. Noise				

Item No.	Location/Timing	EIA Reference	Mitigation Measures	Implementation Agent
	Land based Site / During construction	S 5.7.1	Use quiet equipment with suitable noise levels and labels.	Franchisee
	Land based Site / During construction	S 5.7.1	Regular maintenance of equipment.	Contractor
	Land based Site / During construction	S 5.7.1	Ensure noise attenuation devices are fitted to plant and equipment.	Contractor
	Land based Site / During construction	S 5.7.1	Fitting more efficient exhaust sound reduction equipment and ensuring the Manufacturers' enclosure panels are kept closed on dump trucks, lorries, excavators and cranes.	Contractor
	Land based Site / During construction	S 5.7.1	Fitting suitably designed muffler or sound reduction equipment and using dampened bit to eliminate ringing on breakers.	Contractor
	Land based Site / During construction	S 5.7.1	Ensure all leaks in air lines are sealed on all pneumatic equipment.	Contractor
	Land based Site / During construction	S 5.7.1	Use temporary noise barriers where applicable.	Contractor
	Land based Site / During construction	S 5.7.1	Restrict or modify working hours to minimise high noise activities.	Contractor
	Land based Site / During construction	S 5.7.1	Provide awareness training in the need to minimise noise.	Contractor
	Land based Site / During construction	S 5.7.1	Proper planning of work area.	Contractor
	Land base Site/ During construction	S 5.7.1	Good site practice to limit noise emissions at source	Contractor
	Land based Site / During construction	S 5.9.1	EM&A in the form of site audit of noise activities	Contractor
3. Water Quality				
	Dredged areas/Design Phase	S 6.7.1.4	Standard good dredging practice measures shall be written into the dredging contract.	Franchisee
	Marine Park / Pipeline Dredging	S 6.7.1.1	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.	Contractor
	Marine Park / Pipeline Dredging	S 6.7.1.2	No hydraulic dredging within Marine Park.	Contractor
	Sha Chau AFRF Marine access channel	S 6.7.1.3	Dredging for pipeline trench should be timed to coincide with maintenance dredging for Sha Chau AFRF marine access channel.	Airport Authority
	Dredged areas/ Pipeline Dredging	S 6.7.1.4	Use of Lean Material Overboard (LMOB) systems shall be prohibited. No mud overflow is to be permitted for dredging using trailer suction hopper dredgers.	Contractor
	Dredged areas/ Pipeline Dredging	S 6.7.1.4	Mechanical grabs shall be designed and maintained to avoid spillage and should seal tightly while being lifted.	Contractor
	Dredged areas/ Pipeline Dredging	S 6.7.1.4	Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material.	Contractor
	Dredged areas/ Pipeline Dredging	S 6.7.1.4	Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes.	Contractor

Item No.	Location/Timing	EIA Reference	Mitigation Measures	Implementation Agent
	Dredged areas/ Pipeline Dredging	S 6.7.1.4	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.	Contractor
	Dredged areas/ Pipeline Dredging	S 6.7.1.4	Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved.	Contractor
	Dredged areas/ Pipeline Dredging	S 6.7.1.4	Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action.	Contractor
	Dredged areas/ Pipeline Dredging	S 6.7.1.4	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.	Contractor
	Dredged areas/ Pipeline Dredging	S 6.7.1.4	The works shall not cause foam, oil, grease, litter or other objectionable matter to be present in the water within and adjacent to the works site.	Contractor
	Pipeline trench / Pipeline Dredging	S 6.7.1.5	Placement of pipeline trench backfill should be undertaken in a controlled manner to minimize 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.	Contractor
	Land Site / During Construction	S 6.7.1.6	Wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters.	Contractor
	Land Site / During Construction	S 6.7.1.6	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.	Contractor
	Land Site / During Construction	S 6.7.1.6	Storm drainage shall 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.	Contractor
	Land Site / During Construction	S 6.7.1.6	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.	Contractor
	Land Site / During Construction	S 6.7.1.6	Temporary access roads should be surfaced with rushed stone or gravel.	Contractor

Item No.	Location/Timing	EIA Reference	Mitigation Measures	Implementation Agent
	Land Site / During Construction	S 6.7.1.6	Rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities.	Contractor
	Land Site / During Construction	S 6.7.1.6	Measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system.	Contractor
	Land Site / During Construction	S 6.7.1.6	Open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms.	Contractor
	Land Site / During Construction	S 6.7.1.6	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.	Contractor
	Land Site / During Construction	S 6.7.1.6	Discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system.	Contractor
	Land Site / During Construction	S 6.7.1.6	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.	Contractor
	Land Site / During Construction	S 6.7.1.6	Wheel wash overflow shall be directed to silt removal facilities before being discharged to the storm drain.	Contractor
	Land Site / During Construction	S 6.7.1.6	The section of construction road between the wheel washing bay and the public road should be surfaced with crushed stone or coarse gravel.	Contractor
	Land Site / During Construction	S 6.7.1.6	Wastewater generated from concreting, plastering, internal decoration, cleaning work and other similar activities, shall be screened to remove large objects.	Contractor
	Land Site / During Construction	S 6.7.1.6	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.	Contractor
	Land Site / During Construction	S 6.7.1.6	The contractors shall prepare an oil / chemical cleanup plan and ensure that leakages or spillages are contained and cleaned, up immediately.	Contractor
	Land Site / During Construction	S 6.7.1.6	Waste oil should be collected and stored for recycling or disposal, in accordance with the Waste Disposal Ordinance.	Contractor
	Land Site / During Construction	S 6.7.1.6	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.	Contractor

Item No.	Location/Timing	EIA Reference	Mitigation Measures	Implementation Agent
	Land Site / During Construction	S 6.7.1.6	Surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.	Contractor
	All works / During construction	S 6.10.1	All construction works shall be subject to routine audit to ensure implementation of all EIA recommendations and good working practice.	Contractor
	Submarine Pipeline / During Design and construction	S 6.7.2.1	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.	Franchisee
	Jetty / During construction	S 6.7.2.2	Coupling points on the jetty will be protected with slop collection utilities.	Franchisee
	Tank farm / During construction	S 6.7.2.2	Oily drainage systems and slop collection systems will connect to an oil/water separator.	Franchisee
	Tank farm / During construction	S 6.7.2.2	All tanks shall be bunded to a capacity of at least 110% of the largest individual tank in each compound. 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.	Franchisee
	Tank farm / During construction	S 6.7.2.2	Valves shall be installed within the storm drainage system to facilitate the retention of spillages.	Franchisee
	Impact monitoring stations located 500m north/northwest and south/south east of any dredger during dredging works at a distance greater than 1000m outside of the Marine Park	S 6.10.2	Water quality monitoring shall be undertaken for suspended solids, turbidity, and dissolved oxygen.	Contractor
	Designated monitoring stations as defined in EM&A Manual *Section 7* Construction period when dredging takes place within 1000m of Marine Park.	S 6.10.2	Water quality monitoring shall be undertaken for suspended solids, turbidity, and dissolved oxygen.	Contractor
	All facilities / Operational phase	S 6.7.2.2	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.	Franchisee
	Tank farm / Operational phase	S 6.7.2.2	Auxiliary tanks shall be permanently maintained at the tank farm for recovered fuel and slops.	Franchisee

Item No.	Location/Timing	EIA Reference	Mitigation Measures	Implementation Agent
	Tank farm/Operational phase	S 6.7.2.2	There shall be no direct outlet from the bund. A collection sump shall be included in the base. Removal of accumulated rainwater shall be activated manually and discharged to storm drain via an oil / water separator.	Franchisee
	Tank farm/Operational phase	S 6.7.2.2	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.	Franchisee
	Tank Farm / Tank farm Commissioning	S 6.7.1.7	Wastewater from pipe commissioning de-watering exercises shall be stored on site and for chemical analysis and safe disposal in accordance with the WPCO.	Franchisee
4. Ecology				
	Detailed Design Phase (D)	S 7.8.2.7	Specification for 500m dolphin exclusion zone during piling shall be prepared.	Consultant
	Detailed Design Phase (D)	S 7.8.2.8	Specification for 250m dolphin exclusion zone during dredging in the Marine Park shall be prepared.	Consultant
	Detailed Design Phase (D)	S 7.8.2.18	Specification for pre and post construction dolphin abundance monitoring.	Consultant
	Detailed Design Phase (D)	S 7.8.2.10	Specification for underwater noise monitoring during piling shall be prepared.	Consultant
	Detailed Design Phase (D)	S 7.8.2.9	Specification for acoustic monitoring shall be prepared.	Consultant
	Detailed Design Phase (D)	S 7.8.2.5	Design of bubble jacket for pile shall be prepared.	Consultant
	Detailed Design Phase (D)	S 7.8.2.13	Design of acoustic decoupling methods.	Consultant
	Prior to piling. (C)	S 7.8.2.17	Data review shall be undertaken using available long term data set prior to the works to check that dolphin distribution patterns are consistent with those assumed in the EIA.	Contractor
	Around each jetty pile / During piling activities. (C)	S 7.8.2.5	Implementation of bubble jacket to achieve a 3-5 dB reduction. Specific underwater noise targets are as follows: 162 dB at 250m, 152 dB at 500m and 145dB at 1000m.	Contractor
	500m around piling barge/ During piling activities. (C)	S 7.8.2.7	A 500m dolphin exclusion zone shall be implemented and piling shall not begin until the observer has confirmed that the area has been clear for 30 minutes.	Contractor
	250m around dredger in Marine Park / During dredging in Marine Park (C)	S 7.8.2.8	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.	Contractor
	Within dolphin exclusion zone/ 3 days in first week of piling (C)	S 7.8.2.9	Spot acoustic monitoring shall be undertaken for 3 days in the first week of piling.	Contractor
	250m, 500m and 1000m from piling barge/during piling. (C)	S 7.8.2.10	Underwater noise monitoring during percussive piling activities.	Contractor
	April to June	S 7.8.2.12	Piling shall be scheduled outside the period April to June.	Contractor

Item No.	Location/Timing	EIA Reference	Mitigation Measures	Implementation Agent
	Piling barge/During piling. (C)	S 7.8.2.13	Implement acoustic decoupling measures in accordance with specifications prepared during the design phase.	Contractor
	Piling barge/During piling. (C)	S 7.8.2.14	Ramping up of the piling hammer shall be implemented at the start of each piling session.	Contractor
	Piling barge/During piling. (C)	S 7.8.2.15	Piling activities shall be continuous and short breaks and random sudden noises avoided.	Contractor
	During piling. (C)	S 7.8.2.15	Piling events shall be scheduled to occur on a regular basis and commence at the same time each day.	Contractor
	Jetty / During piling. (C)	S 7.8.2.15	The piling shall be scheduled to allow a rest period of 7 hours during the night-time.	Contractor
	Jetty / During piling. (C)	S 7.8.2	All mitigation measures shall be audited to ensure effectiveness.	Contractor
	Jetty / During piling. (C)	S 7.11	Design and construction phase EM&A to prepared specifications and undertaken monitoring and audit during piling.	Contractor
5. Landscape and Visual				
	PAFF site/ During construction (D/C)	S8.10.2.1	Screen mounding including hydroseeded and part tree planted would be constructed and planted early on in the construction programme prior to the building of the Phase 1 tanks	Contractor
	PAFF site/ During construction (D/C)	S 8.10.2.3	The construction programme for the PAFF should be reduced to the shortest possible period and should be executed in phases with future phases of tanks built in sets of 2-4.	Contractor
	PAFF site/ During construction (C/O)	S 8.10.2.3	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.	Contractor
	PAFF site/ During construction (D/C)	S 8.10.2.3	Temporary hoarding barriers should be of a recessive visual appearance in both colour and form.	Contractor
	PAFF site/ During construction (C/O)	S 8.10.2.3	Materials should be stored in areas with the least obstruction to residents, pedestrians and traffic.	Contractor
	PAFF site/ During construction (C/O)	S 8.10.2.3	All material stockpiles should be covered with an impermeable material and sandbagging diversions should be placed around exposed soil.	Contractor
	PAFF site/ Construction period of fuel tank expansion (O)	S 8.10.2.2	Conservation of existing and imported soil resources. Existing soil resources on site will be conserved in stockpiles with a maximum height of 2m, and re-used in the formation of the proposed screen bund	Contractor

Item No.	Location/Timing	EIA Reference	Mitigation Measures	Implementation Agent
	PAFF site/ On commencement of construction (D/C)	S 8.10.3.1	Transplantation of existing road side whips affected by the proposed works and new compensatory planting works should be carried as early as possible in the construction period.	Project Proponent
	PAFF site/ On commencement of construction (D/C)	S 8.10.3	Temporary earth mounding, tree planting and hydroseeding should be implemented on the area of site not initially required for tanks.	Project Proponent
	PAFF site/ During construction (D/C/O)	S 8.10.3.1	A raised bund/earth mound comprising containment bund-wall, access road and planting buffer shall be built and maintained around the tank farm.	Project Proponent
	PAFF site/ During construction (D/C)	S8.10.3.1	The existing whips in the amenity areas and along the access road are proposed to be transplanted to form a planting buffer around the site at phase 2005. The planting buffer will comprise a mix of native species and species that have a tall habit and are fast growing.	Project Proponent
	PAFF site/ During construction (C)	S.8.10.3.2	A 24-month maintenance period will be needed to ensure transplantation/plant establishment is successful	Project Proponent
	PAFF site / Design (D/C)	S 8.10.4.3	The design of the PAFF should incorporate materials, details and textures which are visually recessive.	Project Proponent
	PAFF site tanks /Design (D/C)	S 8.10.4.2	Colours should be of low chromatic intensity to reduce the potential contrast between the structures and their background.	Project Proponent
	Site perimeter (D/C/O))	S 8.10	Visually permeable security fencing should be used around the perimeter.	Project Proponent
	Tanks / Operational phase (D/C/O)	S 8.10.5.1	Minimum amount of lighting for the tanks shall be used, only applied for safety at the key access points and staircases.	Project Proponent
	PAFF site/Operational phase (D/C/O)	S 8.10.5.1	Limited lighting intensity on the site.	Project Proponent
	PAFF site/ Operational phase	S 8.10.5.1	Directional down lighting is suggested to minimise light spill to the surrounding area	Project Proponent
	PAFF site/Operational phase (D/C/O)	S 8.13.10	Construction and operational stage EM&A to prepared and undertaken monitoring and audit of the compensatory planting/transplantation and planting establishment.	Contractor
6. Cultural Heritage				
	Along pipeline alignment / Prior to dredging works	S 9.7.7	A complete marine archaeological investigation shall be carried by a qualified marine archaeologist of the pipeline route before any construction works start.	Franchisee
	Along pipeline alignment / Prior to dredging works	S 9.7.7	The marine archaeological investigation shall comprise a geophysical survey followed by a diver survey, if required, to confirm the results of the geophysical survey.	Franchisee

Item No.	Location/Timing	EIA Reference	Mitigation Measures	Implementation Agent
	Along pipeline alignment / Prior to dredging works	S 9.7.7	The methodology for the survey shall be submitted to the Director of Environmental Protection for approval no less than one month before any field work commences and the results of the survey and any mitigation measures shall be to the approval of the Director of Environmental Protection.	Franchisee
	Along pipeline alignment / Prior to dredging works	S 9.7.7	The CV of the marine archaeologist shall be submitted to the EPD for approval prior to the start of the investigation at the time of submission of the methodology.	Franchisee
	Along pipeline alignment / Prior to dredging works	S 9.7.7	The MAI shall be carried out by a qualified marine archaeologist who shall apply for a license under the Antiquities and Monuments Ordinance, Cap 53.	Franchisee
	Along pipeline alignment/Prior to dredging works	S9.7.7	The Project Proponent shall comply with the recommendations of the MAI	Franchisee
	During dredging (c)		During the dredging of the pipe trench, a watching brief will be implemented where the trench intersects sub-surface targets SS1 and SS2.	Contractor
	During dredging (c)		Dredge operators to be made aware of the likely presence of a shipwreck near the coordinates given for SS1 and SS2 and are to report any unusual resistance or slowing down of the dredging in these areas.	Contractor
	During dredging (c)		Dredging to cease in the nominated areas, SS1 and SS2, after a few 3 and 2 m of sediment has been removed respectively. Divers, under the supervision of a licensed maritime archaeologist, are then to examine the trench for possible cultural remains of significance.	Contractor
7. Waste Management				
	Contract mobilisation / During construction (C)	S 14.7.2	The Contractor shall identify a coordinator for the management of waste.	Contractor
	Contract mobilisation / During construction (C)	S 14.7.2	The waste coordinator shall prepare and implement a Waste Management Plan which specifies procedures such as a ticketing system, to facilitate tracking of loads and to ensure that illegal disposal of wastes does not occur, and protocols for the maintenance of records of the quantities of wastes generated, recycled and disposed.	Contractor
	Contract mobilisation / During construction (C)	S 14.7.2	The Contractor shall apply for and obtain the appropriate licenses for the disposal of public fill, chemical waste and effluent discharges.	Contractor
	PAFF Site / During construction	S 14.7.2	No waste shall be burnt on site.	Contractor
	All sites / During construction (C)	S 14.7.2	Excavated material shall be used on site for purposes of landscaping or formation of bund walls.	Contractor

Item No.	Location/Timing	EIA Reference	Mitigation Measures	Implementation Agent
	All areas / During construction (C)	S 14.7.2	All material shall be reused on site as far as practicable, including formwork plywood, topsoil and excavated material.	Contractor
	Contract preparation stage (D)	S 14.7.2	Suitable provisions shall be included in the construction contract to ensure that the Contractor sorts and recycles waste.	HyD
	All areas / During construction (C)	S 14.7.2	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.	Contractor
	All areas / During construction (C)	S 14.7.2	The site and surroundings shall be kept tidy and litter free.	Contractor
	CED public fill stockpile in Mui Wo, North Lantau or Mui Wo refuse transfer stations/ During construction (C)	S 14.7.2	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.	Contractor
	Along alignment of haulage road and road link / Site Clearance activities (C)	S 14.7.2	Vegetation shall be stripped prior to site clearance, chopped and compacted using a mobile compactor to reduce the volume of material to be transported and disposed of.	Contractor
	All areas / During construction (C)	S 14.7.2	Stockpiled material shall avoid vegetated areas.	Contractor
	All areas / During construction, particularly dry season (C)	S 14.7.2	Stockpiles shall be covered by tarpaulins and/or watered as required.	Contractor
	All areas / During construction (C)	S 14.7.2	Storage of material on site should be kept to a minimum.	Contractor
	All areas, particularly at site exits / During construction (C)	S 14.7.2	Excavated material in trucks shall be covered by tarpaulins.	Contractor
	Site entrances and exits / During construction (C)	S 14.7.2	Wheel washing facilities shall be used by all trucks leaving the site to prevent the transfer of mud onto public roads.	Contractor
	Works site / During construction (C)	S 14.7.2	Suitable chemical waste storage areas should be formed at the works site for temporary storage pending collection	Contractor
	Chemical waste treatment facility at Tsing Yi/ During construction (C)	S 14.7.2	A licensed contractor shall be employed to collect chemical waste for delivery to a licensed treatment facility.	Contractor
	All areas / During construction (C)	S 14.7.2	Temporary storage areas for general refuse should be enclosed to avoid environmental impacts.	Contractor
	All areas / During construction (C)	S 14.7.2	Sufficient dustbins should be provided for storage of waste.	Contractor

Item No.	Location/Timing	EIA Reference	Mitigation Measures	Implementation Agent
	All areas, WENT Landfill or NWNT refuse transfer stations/ During construction (C)	S 14.7.2	General refuse should be cleared daily and should be disposed of to the nearest licensed facility.	Contractor
	Site offices, along alignments / During construction (C)	S 14.7.2	Nightsoil arising from chemical toilets and chemical treatment facilities should be transported by a licensed contractor to government Sewage Treatment Works for disposal.	Contractor
	PAFF site / During construction (C)	S 14.7.2	Waste oils, chemicals or solvents shall not be disposed of to drain.	Contractor
	PAFF site / During construction (C)	S 14.7.2	Good site practice shall be implemented to avoid waste generation and promote waste minimisation.	Contractor
	PAFF site / During construction (C)	S 14.7.2	Waste materials such as paper, metal, timber and waste oil shall be recycled as far as practicable.	Contractor
	PAFF site / During construction (C)	S 14.7.2	Temporary structures used during construction shall be provided in the form of proprietary Portakabin type units sited on areas of permanent hard paving units as far as practicable.	Contractor
		S 14.7.2	Dredged marine mud shall be disposed of in a gazetted marine disposal ground under the requirements of the Dumping at Seas Ordinance.	Contractor
	PAFF site / During construction (C)	S 14.7.2	All waste containers shall be in good condition and fitted with lids or covers to prevent waste from escaping or the ingress of water.	Contractor
	PAFF site / During construction (C)	S 14.7.2	All waste containers shall be in a secure area on hardstanding.	Contractor
	PAFF site / During construction (C)	S 14.7.2	Emergency equipment to deal with any spillage or fire shall be kept on site.	Contractor
	PAFF site / During construction (C)	S 14.7.2	All containers used for storage of chemical waste shall be maintained in good condition and clearly labelled in both English and Chinese.	Contractor
	PAFF site / During construction (C)	S 14.7.2	All storage areas for chemical waste shall be: 1. clearly labelled; 2. enclosed on at least 3 sides; 3. have impermeable floor and bunding sufficient to fully retain any spillage or leakages;ventilated; and 4. covered to prevent rainfall from entering.	Contractor
	PAFF site / During construction (C)	S 14.7.2	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.	Contractor
	PAFF site / During construction (C)	S 14.7.2	All leaking containers shall be contained and removed from site as soon as is reasonably practicable.	Contractor

Item No.	Location/Timing	EIA Reference	Mitigation Measures	Implementation Agent
	PAFF site / During construction (C)	S 14.7.2	Training shall be provided to workers about the concepts of site cleanliness and appropriate waste management procedures, including waste reduction, reuse and recycling.	Contractor
	All areas / During construction (C)	S 14.10.1	EM&A of waste handling, storage, transportation, disposal procedures and documentation through the site audit programme shall be undertaken.	Contractor

Annex I

Visual Monitoring Dolphin Sightings Record Sheet

Annex I

Visual Monitoring Dolphin Sighting Record Sheets

Note: Visibility (U = Unlimited [over 2km])

Land-based Observation Datasheet (ERM)

Date: 18 NOV 05 Weather: Sunny Site: PAFF Observers: JT

Time	Event	Beau	Visib.	Species	Group Size	Behaviour	Other Comments
4:02	BE	1	U	N/A			*lots of swell generated by passing traffic
4:50	EC	2	U	N/A			
5:04	EC	1	U	N/A			
5:14	EC	2	U	N/A			getting dark.
5:26	EE						Finish work.

Event: BE (Begin Effort); EE (End Effort); EC (Environmental Change); STG# (Porpoise / Dolphin Sighting)

Behaviour: Socializing; Feeding; Milling/Resting; Travelling; Other (please specify)

Other Comments: Location? How many adults and juveniles? Presence of mother-calf pair? Interaction with fishing boat? Any subgroups?

Land-based Observation Datasheet (ERM)

Date: 19 Nov 2005 Weather: Fine / Sunny Site: PAFF Observers: TG

Time	Event	Beau	Visib.	Species	Group Size	Behaviour	Other Comments
1:30	BE	2	U	N/A			Various boat traffic / some glare from SW
2:05	EC	1	U	N/A			" " " mainly ~200-600m from barge A
2:08	EC	2	U	N/A			"
2:50	EC	1	U	N/A			" " "
3:35	EC	1	U	N/A			
4:00	EC	2	U	N/A			some marine traffic / glare gone due to cloud
4:20	EC	2	U	N/A			glare returns - towards Sha Chau.
4:30	EE	2	U	N/A			piling finished

Event: BE (Begin Effort); EE (End Effort); EC (Environmental Change); STG# (Porpoise / Dolphin Sighting)

Behaviour: Socializing; Feeding; Milling/Resting; Travelling; Other (please specify)

Other Comments: Location? How many adults and juveniles? Presence of mother-calf pair? Interaction with fishing boat? Any subgroups?

Land-based Observation Datasheet (ERM)

Date: Nov 21 05 (Mon) Weather: Sunny Site: PAFF, Barge Observers: RICHARD HUANG

Time	Event	Beau	Visib.	Species	Group Size	Behaviour	Other Comments
9:52	OE	2	4	SC	1		~780m Sighted a SJ
10:02	OE	2	4	SC	1		~700m Probably the same one sighted previously
							10:17 Barge is being pulled out
							10:34 Barge is stopped moving
							11:35 Not yet piling has been started
							11:35 left as lunch time of worker
12:55	BE	3	4				12:57 Sighted a dolphin at ~1km away the barge
13:25	EC	2	4				13:44 Piling starts (shaking type)
13:46	EE	2	4				13:46 Piling ends
							22 Nov 05 No Piling Works will be conducted

parked near the coast.

Event: BE (Begin Effort); EE (End Effort); EC (Environmental Change); STG# (Porpoise / Dolphin Sighting)

Behaviour: Socializing; Feeding; Milling/Resting; Travelling; Other (please specify)

Other Comments: Location? How many adults and juveniles? Presence of mother-calf pair? Interaction with fishing boat? Any subgroups?

OE = ~~Off~~ Effort

SC = Sousa chinensis

SJ = Spotted juvenile

Land-based Observation Datasheet (ERM)

Date: 23 Nov 05 Weather: Sunny Site: PAFF, Piling Barge Observers: RICHARD HUAIYG

Time	Event	Beau	Visib.	Species	Group Size	Behaviour	Other Comments
13:30	BE	3	4				
13:47	EC	3-4	4				
15:03	EC	4	4				Big waves caused by policeboat & various traffic
15:04	EC	3-4	4				15:20 Piling works started
15:34	EC	3	4				
15:36	EE	3	4				15:36 Piling works ended

Event: BE (Begin Effort); EE (End Effort); EC (Environmental Change); STG# (Porpoise / Dolphin Sighting)

Behaviour: Socializing; Feeding; Milling/Resting; Travelling; Breaching; Porpoising; Other (please specify)

Other Comments: Location? How many adults and juveniles? Presence of mother-calf pair? Interaction with fishing boat? Any subgroups?

Land-based Observation Datasheet (ERM)

Date: 24 Nov 05 Weather: Sunny Site: PAFF, Piling Barge Observers: RICHARD HUANG

Time	Event	Beau	Visib.	Species	Group Size	Behaviour	Other Comments
10:00	BE	2	4				
10:12	STG	2	4	SC	4	Jumping	2 Spotted Juveniles were observed at 3 o'clock direction at 300 m away from the barge
							2 unspotted adults were observed at 3 o'clock direction at ~700 m away from the barge just outside the SW steel pilings
							10:20, 1 unspotted adult swam close to the barge & jumped at 12 o'clock at ~50m
							10:33 dolphins appeared to disappear
10:38	STG	2	4	SC	2	Jumping	2 Spotted juveniles were observed at 7 o'clock direction at 300 m
							10:45, no dolphin was sighted
							11:02, Probably the same 2 spotted juveniles sighted previously, now they were being observed at 650m at 3 o'clock direction. (Jumping & Travelling)
							11:12, 2 spotted juveniles were jumping at 7 o'clock direction at ~600m
11:13	STG	2	4	SC	1	Travelling	1 unspotted adult swam at 2 o'clock direction at 230m

Event: BE (Begin Effort); EE (End Effort); EC (Environmental Change); STG# (Porpoise / Dolphin Sighting)

Behaviour: Socializing; Feeding; Milling/Resting; Travelling; Breaching; Porpoising; Other (please specify)

Other Comments: Location? How many adults and juveniles? Presence of mother-calf pair? Interaction with fishing boat? Any subgroups?

SC = Sousa chinensis

Sea

12 o'clock

9 — 3

6

Coast

Land-based Observation Datasheet (ERM)

Date: 24 Nov 05 Weather: Sunny Site: PAFF, Piling Barge Observers: RICHARD HUANG

Time	Event		Beau	Visib.	Species	Group Size	Behaviour	Other Comments
								11:21 no dolphin was sighted
11:30	E	E	2	4				workers' lunch time
12:23	B	E	3	4				
12:41	E	C	3-4	4				13:23 Piling works started
13:58	E	E	3-4	4				13:58 Piling works ended

Event: BE (Begin Effort); EE (End Effort); EC (Environmental Change); STG# (Porpoise / Dolphin Sighting)

Behaviour: Socializing; Feeding; Milling/Resting; Travelling; Other (please specify)

Other Comments: Location? How many adults and juveniles? Presence of mother-calf pair? Interaction with fishing boat? Any subgroups?

Land-based Observation Datasheet (ERM)

Date: Nov 25 05 Weather: Sunny Site: PAFF Piling Barge Observers: RICHARD HUANG

Time	Event	Beau	Visib.	Species	Group Size	Behaviour	Other Comments
8:30	B E	2	4				
9:01	STG	2	4			Feeding	9:01, An unspotted adult was sighted at 2 o'clock direction at 200 m away from the piling barge, just near the green buoyant
							9:06, Another unspotted adult was sighted at 3 o'clock direction at 600 m (feeding)
							9:16, Now the dolphin swam near to the SW steel piles at 5 o'clock at 580m
							9:20, It swam to 3 o'clock at 650m
							9:33, Dolphin appeared to disappear
9:33	B E	2	4				9:37, Piling works started
							9:49, An unspotted adult was sighted at 3 o'clock at 650 m (feeding)
							9:55, It was sighted at 5 o'clock at 520m (feeding & jumping)
10:07	E E	2	4				10:07 Piling works ended
							10:11, No dolphin was sighted
							26,27 Nov 05 No piling works will be conducted

Event: BE (Begin Effort); EE (End Effort); EC (Environmental Change); STG# (Porpoise / Dolphin Sighting)

Behaviour: Socializing; Feeding; Milling/Resting; Travelling; Other (please specify)

Other Comments: Location? How many adults and juveniles? Presence of mother-calf pair? Interaction with fishing boat? Any subgroups?

Sea

12

9 — 3

6

Coast

Land-based Observation Datasheet (ERM)

Date: Nov 28 05 Weather: Cloudy / Sunny / Foggy Site: PAFF, Piling Barge Observers: RICHARD HUANG

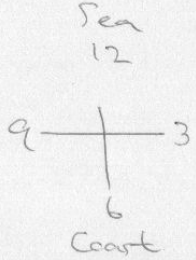
Time	Event		Beau	Visib.	Species	Group Size	Behaviour	Other Comments
9:38	o	E	2	u				Cloudy, just arrived
10:33	E	C	2	u				Getting sunny
								10:58 at 5 o'clock direction sighted a spotted subadult feeding near the piles at 684 m
								11:19 Dolphin appeared to disappeared
								11:34 Probably the same one now swam near the pile at 700 m at 5 o'clock undergoing feeding activities
								11:53 Dolphin appeared to disappear
16:00	B	E	2	u*				Foggy could not see Sha Chau *
16:48	E	C	2	u				Not so foggy now
17:59	E	C	2	u				Getting dark
								18:00 Piling works started
								18:08 Piling works ended
18:08	E	E	2	u				

Event: BE (Begin Effort); EE (End Effort); EC (Environmental Change); STG# (Porpoise / Dolphin Sighting)

Behaviour: Socializing; Feeding; Milling/Resting; Travelling; Other (please specify)

Other Comments: Location? How many adults and juveniles? Presence of mother-calf pair? Interaction with fishing boat? Any subgroups?

oE = off Effort



Land-based Observation Datasheet (ERM)

Date: Nov 29 05 Weather: Sunny / Foggy Site: PAFF, Piling Barge Observers: RICHARD HUANG

Time	Event	Beau	Visib.	Species	Group Size	Behaviour	Other Comments
9:14	BE	2	4				Sunny
9:27	EC	3	4				Big waves generated by boat traffic
9:37	EC	3	4				"
9:49	EC	2	4				9:53 Piling works started
10:25	EE	2	4				10:25 Piling works ended
							10:44 An unspotted adult was sighted at
							510 m at 3 o'clock direction
							10:49 Dolphin appeared to disappear
11:00	BE	2	4				11:39 Piling started
13:13	EC	2	4				Getting foggy now
13:26	EE	2	4				13:26 Piling ended
15:45	BE	2	4				Still foggy could not see Sha Chau
							16:21 Piling works started
16:34	EE	2	4				16:34 Piling works ended

Event: BE (Begin Effort); EE (End Effort); EC (Environmental Change); STG# (Porpoise / Dolphin Sighting)

Behaviour: Socializing; Feeding; Milling/Resting; Travelling; Other (please specify)

Other Comments: Location? How many adults and juveniles? Presence of mother-calf pair? Interaction with fishing boat? Any subgroups?

Foggy = could not see Sha Chau

Sea
12
9 + 3
6
Coast

Land-based Observation Datasheet (ERM)

Date: Nov 30 05 Weather: Sunny Site: PAFF, Piling Barge Observers: RICHARD HUANG

Time	Event	Beau	Visib.	Species	Group Size	Behaviour	Other Comments
14:50	B E	2	4				
15:23	E C	2-3	4				
15:49	E E	2	4				Piling works could not be conducted as pile has not been prepared. Workers were still assembling the protective cover for sensors lined all the way along the pile.

Event: BE (Begin Effort); EE (End Effort); EC (Environmental Change); STG# (Porpoise / Dolphin Sighting)

Behaviour: Socializing; Feeding; Milling/Resting; Travelling; Other (please specify)

Other Comments: Location? How many adults and juveniles? Presence of mother-calf pair? Interaction with fishing boat? Any subgroups?

Land-based Observation Datasheet (ERM)

Date: Dec 3 05 Weather: Hazy Site: PAFF Observers: JF

Time	Event		Beau	Visib.	Species	Group Size	Behaviour	Other Comments
10:05	B	E	2	U				Barge positioning
11:00	E	E	2	U				Contractor indicated that piling will only start at 1 pm
12:30	B	E	3	U				Pre-piling monitoring, vibro-piling commenced at 13:40
13:46	E	C	2	U				
15:20	E	E	2	U				Piling activity completed

Event: BE (Begin Effort); EE (End Effort); EC (Environmental Change); STG# (Porpoise / Dolphin Sighting)

Behaviour: Socializing; Feeding; Milling/Resting; Travelling; Other (please specify)

Other Comments: Location? How many adults and juveniles? Presence of mother-calf pair? Interaction with fishing boat? Any subgroups?

Land-based Observation Datasheet (ERM)

Date: Dec 5 05 Weather: Cloudy / Windy Site: PAFF, Piling Barge Observers: RICHARD HUANG

Time	Event		Beau	Visib.	Species	Group Size	Behaviour	Other Comments
13:51	B	E	2	4				14:51 piling works started
18:06	E	E	2	4				18:06 piling works ended
								No piling activity in the morning as the contractor was positioning the pile.
								The pile established today was a
								permanent one and a tilted one.

Event: BE (Begin Effort); EE (End Effort); EC (Environmental Change); STG# (Porpoise / Dolphin Sighting)

Behaviour: Socializing; Feeding; Milling/Resting; Travelling; Other (please specify)

Other Comments: Location? How many adults and juveniles? Presence of mother-calf pair? Interaction with fishing boat? Any subgroups?

Land-based Observation Datasheet (ERM)

Date: Dec 6 05 Weather: Cloudy, Cold. Site: Piling Barge Observers: RICHARD HUANG

Time	Event		Beau	Visib.	Species	Group Size	Behaviour	Other Comments
12:36	B	E	2-3	4				Today was windy & cold.
14:37	E	C	2	4				14:31 Piling works started
17:28	E	E	2	4				17:28 Piling works ended
								Today, 1 pile was established. This pile
								was a permanent one and it was a tilted
								one. Furthermore, building department
								came to collect data for this pile.

Event: BE (Begin Effort); EE (End Effort); EC (Environmental Change); STG# (Porpoise / Dolphin Sighting)

Behaviour: Socializing; Feeding; Milling/Resting; Travelling; Other (please specify)

Other Comments: Location? How many adults and juveniles? Presence of mother-calf pair? Interaction with fishing boat? Any subgroups?

Land-based Observation Datasheet (ERM)

Date: Dec 7 05 Weather: Sunny Site: PAFF Piling Barge Observers: RICHARD HUANG

Time	Event	Beau	Visib.	Species	Group Size	Behaviour	Other Comments
13:36	BE	2	4				14:23 Piling works started
16:50	EC	1-2	4				
17:40	EE	1-2	4				17:40 Piling works ended
							Today 1 permanent pile was established
							Piling was conducted sporadically as
							after 13:30 ... mainly piling was
							to provide signal for Piling Diving
							Analyser

Event: BE (Begin Effort); EE (End Effort); EC (Environmental Change); STG# (Porpoise / Dolphin Sighting)

Behaviour: Socializing; Feeding; Milling/Resting; Travelling; Other (please specify)

Other Comments: Location? How many adults and juveniles? Presence of mother-calf pair? Interaction with fishing boat? Any subgroups?

Land-based Observation Datasheet (ERM)

Date: Dec 8 05 Weather: Sunny Site: PAFF, Piling Barge Observers: RICHARD HUANG

Time	Event		Beau	Visib.	Species	Group Size	Behaviour	Other Comments
8:40	B	E	1-2	U				9:15 Piling works started (Vibro-type)
10:30	E	E	1-2	U				10:30 Piling works ended
14:46	B	E	3	U				15:34 Piling works started
17:12	E	C	2-3	U				
17:26	E	E	2-3	U				17:26 Piling works ended

Event: BE (Begin Effort); EE (End Effort); EC (Environmental Change); STG# (Porpoise / Dolphin Sighting)

Behaviour: Socializing; Feeding; Milling/Resting; Travelling; Other (please specify)

Other Comments: Location? How many adults and juveniles? Presence of mother-calf pair? Interaction with fishing boat? Any subgroups?

Land-based Observation Datasheet (ERM)

Date: Dec 9 05 Weather: Sunny Site: Piling Barge PAFF Observers: RICHARD HUANG

Time	Event	Beau	Visib.	Species	Group Size	Behaviour	Other Comments
14:25	BE	2	4				
14:40	EC	2	4*				15:58 Piling works started
17:52	EE	2	4*				17:52 Piling works ended

Event: BE (Begin Effort); EE (End Effort); EC (Environmental Change); STG# (Porpoise / Dolphin Sighting)

Behaviour: Socializing; Feeding; Milling/Resting; Travelling; Other (please specify)

Other Comments: Location? How many adults and juveniles? Presence of mother-calf pair? Interaction with fishing boat? Any subgroups?

* Getting Hazy

Contractor indicated piling will start at 1:30 pm.

Land-based Observation Datasheet (ERM)

Date: 10 Dec 05 Weather: Hazy Site: PATT Observers: JF

Time	Event	Beau	Visib.	Species	Group Size	Behaviour	Other Comments
1:00 pm	BE	3	U				Positioning & set up of Piling Activity
1:58 pm	EC	2	U				Piling started at 3:48 pm
3:31 pm	EC	3	U				3:52 pm, technical problems with piling ma
4:20 pm	EC	2	U				(No piling was conducted)
6:00 pm	EE	—	—	*Visual monitoring is unable to be conducted due to darkness			4:20 pm piling resumed.
							4:23 pm piling failure again
							4:38 pm piling resumed
							4:54 pm piling stopped
							5:02 pm piling resumed.
							5:15 pm piling stopped
							5:34 pm piling resumed & lasted fo
							5:40 pm piling resumed & lasted for
							5:42 pm piling resumed for 1 min
							5:44 pm piling resumed for 1 min
							5:46 pm piling resumed for 1 min
							5:49 pm piling resumed for 1 min
							5:54 pm piling resumed for 1 min
							6:00 pm No visual monitoring due t darkne

Event: BE (Begin Effort); EE (End Effort); EC (Environmental Change); STG# (Porpoise / Dolphin Sighting)

Behaviour: Socializing; Feeding; Milling/Resting; Travelling; Other (please specify)

Other Comments: Location? How many adults and juveniles? Presence of mother-calf pair? Interaction with fishing boat? Any subgroups?

Land-based Observation Datasheet (ERM)

Date: Dec 12 05 Weather: Cloudy / Sunny. Site: PAFF Piling Barge Observers: RICHARD HUANG

Time	Event		Beau	Visib.	Species	Group Size	Behaviour	Other Comments
10:00	B	E	2	4				10:37 Piling works started
11:06	E	C	2	4				11:06 Becoming Sunny
12:01	E	E	2	4				12:01 Morning piling works ended
14:20	B	E	2	4				15:44 Piling works started
17:13	E	E	2	4				17:13 Afternoon piling works ended

Event: BE (Begin Effort); EE (End Effort); EC (Environmental Change); STG# (Porpoise / Dolphin Sighting)

Behaviour: Socializing; Feeding; Milling/Resting; Travelling; Other (please specify)

Other Comments: Location? How many adults and juveniles? Presence of mother-calf pair? Interaction with fishing boat? Any subgroups?

Land-based Observation Datasheet (ERM)

Date: 13 Dec 05 Weather: Sunny/Cloudy Site: PAFF, Piling Barge Observers: RICHARD HUANG

Time	Event		Beau	Visib.	Species	Group Size	Behaviour	Other Comments
13:46	B	E	1-2	U				14:50 Piling work started. Sunny
16:04	E	C	1-2	U				16:04 Getting cloudy
16:46	E	C	2	U				
17:28	E	E	2	U				17:28 Piling works ended

Event: BE (Begin Effort); EE (End Effort); EC (Environmental Change); STG# (Porpoise / Dolphin Sighting)

Behaviour: Socializing; Feeding; Milling/Resting; Travelling; Other (please specify)

Other Comments: Location? How many adults and juveniles? Presence of mother-calf pair? Interaction with fishing boat? Any subgroups?

Land-based Observation Datasheet (ERM)

Date: 14 Dec 05 Weather: Cloudy / Sunny Site: PAFF Piling Barge Observers: RICHARD HUANG

Time	Event		Beau	Visib.	Species	Group Size	Behaviour	Other Comments
13:28	B	E	2	U				Cloudy
14:37	E	C	1-2	U				Becoming sunny, 15:01 Piling work started
16:21	E	C	2	U				Becoming wavy due to frequent boat traffic
16:46	E	C	1-2	U				
16:55	E	E	1-2	U				

Event: BE (Begin Effort); EE (End Effort); EC (Environmental Change); STG# (Porpoise / Dolphin Sighting)

Behaviour: Socializing; Feeding; Milling/Resting; Travelling; Other (please specify)

Other Comments: Location? How many adults and juveniles? Presence of mother-calf pair? Interaction with fishing boat? Any subgroups?

Annex J

Interim Reports and Complaint Logs

Environmental Resources Management

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

FAXED

BY POST AND FAX (2415 7191)

25th November 2005

Mr Suk Lun Leung
Env Protection Officer (Regional West)

Environmental Protection Department
Environmental Compliance Division
Regional Office (West)
7/F Tsuen Wan Government Offices
38 Sai Lau Kok Road
Tsuen Wan
New Territories

Our Ref: *C2475_0018105_25Nov04_Letter01.doc*

Dear Mr Leung

PERMANENT AVIATION FUEL FACILITY

- Interim Report and Complaint Log -

Further to your email dated 16th November 2005 providing details of an anonymous complaint received with regard to the above project, please find attached the Environmental Team's Interim Report on the event. Please note this report has been prepared in accordance with the procedures outlined in the Environmental Monitoring and Audit (EM&A) Manual for the project.

The report provides a record of the complaint (see Complaint Log attached the report), as well as details on the investigation, the subsequent actions and the future reporting requirements in the forthcoming EM&A reports.

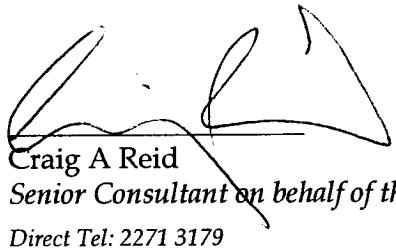
We trust you will find the attached assures you that the matter has been adequately dealt with and that procedures are now in place to prevent similar such complaints from arising in the future.

Registered Office
ERM-Hong Kong, Ltd
21/F Lincoln House
979 King's Road
Taikoo Place
Island East
Hong Kong

Offices worldwide

Thank you in advance and please don't hesitate to contact us should you have any questions.

Yours sincerely
For ERM Hong Kong, Ltd



Craig A Reid
Senior Consultant on behalf of the Environmental Team Leader
Direct Tel: 2271 3179
E-mail: craig.reid@erm.com

cc *Mr Martin Putnam, Airport Authority Hong Kong, by fax, 2183 3186*
Mr Brian Gillon, Leighton Contractors (Asia) Limited, by fax, 2529 8784

PERMANENT AVIATION FUEL RECEIVING FACILITY

EP-139/2002/A

- INTERIM REPORT -

1. Introduction

This report presents the handling procedure for complaints received through the Environmental Protection Department (EPD) during the construction of the Permanent Aviation Fuel Facility (PAFF). The complaints procedures have been based on the Environmental Monitoring and Audit (EM&A) Manual for the study and in accordance with the Environmental Permit (*EP-139/2002/A*).

2. Details of Complaint

A complaint was received by the Environmental Team (ET), ERM-Hong Kong, Ltd, through the EPD on 16th November 2005. According to the information provided by the EPD, an anonymous complaint against dust emission from construction site of PAFF was received by the department on 31st October 2005.

On 2nd November 2005, representatives from the EPD visited the PAFF construction site and found that no activity was carried out on that day. The EPD, however, notified the Contractor of the complaint and advised to take measures to reduce the dust emission.

A following site visit by representatives of the EPD was made on 14th November 2005 and it appeared the construction site was dry and the access road was not paved. Dust was generated when vehicles were driven inside the construction site. As a result, the EPD issued a record of inspection to the Contractor.

In accordance with the EM&A Manual, a completed complaints log is attached in *Attachment A*.

3. Details of Investigation

Following the receipt of complaint, the ET contacted the Contractor and was informed that the work being undertaken that could cause dust relates to the access road. Immediately when advised by the EPD the Contractor's Site Supervisor engaged a water truck to cover the site (*Figure 1*). Subsequent site visits have indicated the site has been watered and there is no indication of dust.

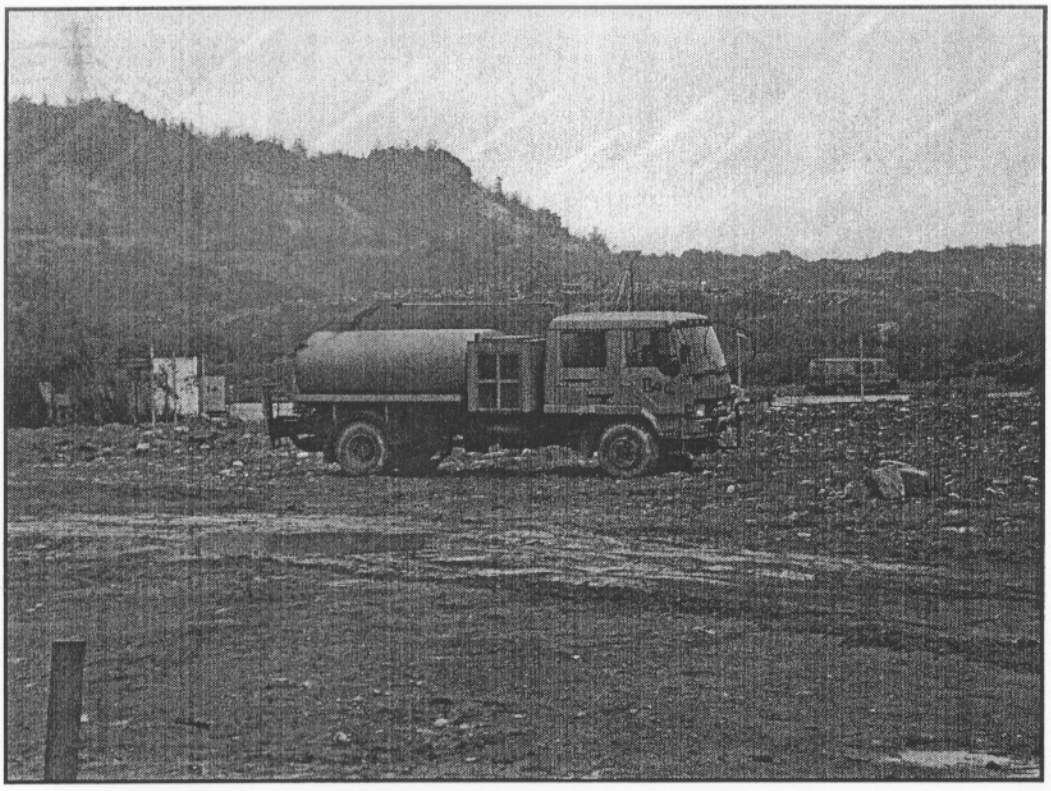


Figure 1 ***Water Truck stationed at Permanent Aviation Fuel Facility (PAFF) Construction Site (Photo: Leighton Contractors (Asia) Limited, November 2005)***

4. Follow-up Actions

The ET will conduct weekly site visits to the construction site of PAFF. As part of the site visits, visual monitoring of the potential for dust emissions will be made. The ET will ensure site watering has been conducted, where appropriate, and make reference to such in the site visit report. Site visit reports will be presented in the monthly EM&A reports during construction works.

Attachment A

Complaints Log

COMPLAINT LOG

Ref: *0018105_Complaints Log_24Nov05_v0.doc*

Log Ref.	Date / Location	Complainant/ Date of Contract	Details of Complaint	Investigation / Mitigation Action	File Closed
01	31st October 2005; Construction Site of Permanent Aviation Fuel Facility	Anonymous	Dust emission	The work being undertaken that could cause dust relates to the access road. Immediately when advised by the EPD the Contractor's Site Supervisor engaged a water truck to cover the site. Subsequent site visits have indicated the site has been watered and there is no indication of dust. The ET will conduct weekly site visits to the construction site of PAFF. As part of the site visits, visual monitoring of the potential for dust emissions will be made. The ET will ensure site watering has been conducted, where appropriate, and make reference to such in the site visit report. Site visit reports will be presented in the monthly EM&A reports during construction works.	Yes

Filed by Environmental Team Leader: 

Date: 25/11/05

Environmental Resources Management

21/F Lincoln House
979 King's Road
Taikoo Place
Island East
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Telephone : (852) 2271 3000
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http:// www.erm.com

FAXED - 5 DEC 2005

ERM

BY HAND - 5 DEC 2005

DCRF-568

BY POST AND FAX (2415 7191) ✓

5th December 2005

Mr Suk Lun Leung
Env Protection Officer (Regional West)

Environmental Protection Department
Environmental Compliance Division
Regional Office (West)
7/F Tsuen Wan Government Offices
38 Sai Lau Kok Road
Tsuen Wan
New Territories

Our Ref: *C2475_0018105_05Dec05_Letter01.doc*

Dear Mr Leung

PERMANENT AVIATION FUEL FACILITY

- Interim Report and Complaint Log -

Further to your email dated 29th November 2005 providing details of an anonymous complaint received with regard to the above project, please find attached the Environmental Team's Interim Report on the event. Please note this report has been prepared in accordance with the procedures outlined in the Environmental Monitoring and Audit (EM&A) Manual for the project.

The report provides a record of the complaint (see Complaint Log attached the report), as well as details on the investigation, the subsequent actions and the future reporting requirements in the forthcoming EM&A reports.

We trust you will find the attached assures you that the matter has been adequately dealt with and that procedures are now in place to prevent similar such complaints from arising in the future.

Registered Office
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21/F Lincoln House
979 King's Road
Taikoo Place
Island East
Hong Kong

Offices worldwide

Thank you in advance and please don't hesitate to contact us should you have any questions.

Yours sincerely
For ERM Hong Kong, Ltd

Freeman Cheung
Environmental Team Leader
Direct Tel: 2271 3104
E-mail: freeman.cheung@erm.com

cc *Mr Martin Putnam, Airport Authority Hong Kong, by fax, 2183 3186* ✓
Mr Brian Gillon, Leighton Contractors (Asia) Limited, by fax, 2529 8784 ✓
Mr Guiyi Li, Hyder Consulting Limited, by fax, 2805 5028 ✓

Figure 1 ***Water Truck stationed at Permanent Aviation Fuel Facility (PAFF) Construction Site (Photo: Leighton Contractors (Asia) Limited, November 2005)***

4. Follow-up Actions

The ET will conduct weekly site visits to the construction site of PAFF. As part of the site visits, visual monitoring of the potential for dust emissions will be made. The ET will ensure site watering has been conducted, where appropriate, and make reference to such in the site visit report. Site visit reports will be presented in the monthly EM&A reports during construction works.

PERMANENT AVIATION FUEL RECEIVING FACILITY

EP-139/2002/A

- INTERIM REPORT -

1. Introduction

This report presents the handling procedure for complaints received through the Environmental Protection Department (EPD) during the construction of the Permanent Aviation Fuel Facility (PAFF). The complaints procedures have been based on the Environmental Monitoring and Audit (EM&A) Manual for the study and in accordance with the Environmental Permit (*EP-139/2002/A*).

2. Details of Complaint

A complaint was received by the Environmental Team (ET), ERM-Hong Kong, Ltd, through the EPD on 29th November 2005. According to the information provided by the EPD, an anonymous complaint against dust emission from construction site of PAFF was received by the department on 24th November 2005. The EPD have stated they will follow up on the complaint.

In accordance with the EM&A Manual, a completed complaints log is attached in *Attachment A*.

3. Details of Investigation

Following the receipt of complaint, the ET contacted the Contractor and was informed that the Contractor will take the following actions to mitigate dusts on site:

- Water trucks will spray water on the site at least twice per day, or more if necessary, to keep dust down. The water truck in operation on site is presented in *Figure 1*;
- Cover the surplus stockpile excavated material as far as possible. Stockpiles on site are presented on *Figure 2* and the water truck shown watering the stockpiles are presented in *Figure 3*;
- Cover up the complete sand surcharge with tarpaulin (*Figure 4*). The partially covered sand surcharge is presented on *Figure 5*;
- Water small surplus stockpiles by the water truck (*Figure 6*).

In addition to the above, the general condition of the site entrance and access road are presented in *Figures 7* and *8*. The effects of the water trucks dousing the road to prevent dust generation are visible in both these pictures.

Figure 1 ***Water Truck stationed at PAFF Construction Site (Photo: Leighton Contractors (Asia) Limited, November 2005)***

Figure 2 ***Stockpile at PAFF Construction Site (Photo: Leighton Contractors (Asia) Limited, November 2005)***

Figure 3 ***Water Truck dousing stockpile at PAFF Construction Site (Photo: Leighton Contractors (Asia) Limited, November 2005)***

Figure 4 ***Sand surcharge at PAFF Construction Site (Photo: Leighton Contractors (Asia) Limited, November 2005)***

Figure 5 ***Sand surcharge partially covered with tarpaulin at PAFF Construction Site (Photo: Leighton Contractors (Asia) Limited, November 2005)***

Figure 6 ***Small stockpile doused with water at PAFF Construction Site (Photo: Leighton Contractors (Asia) Limited, November 2005)***

Figure 7 ***General condition of entrance to PAFF Construction Site (Photo: Leighton Contractors (Asia) Limited, November 2005)***

Figure 8 ***General condition of access road to PAFF Construction Site (Photo: Leighton Contractors (Asia) Limited, November 2005)***

4. Follow-up Actions

The ET will conduct weekly site visits to the construction site of PAFF. As part of the site visits, visual monitoring of the potential for dust emissions will be made. The ET will ensure site watering has been conducted, where appropriate, and make reference to such in the site visit report. Site visit reports will be presented in the monthly EM&A reports during construction works.

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