Paul Y. Construction Co., LTD.

Contract No. DC/2008/09

Harbour Area Treatment Scheme
Stage 2A – Construction of Sewage Conveyance System from Ap Lei Chau to Aberdeen

Environmental Monitoring and Audit
Monthly Report No. 26
February 2012
(Version 2.0)

Certified By _____
(Environmental Team Leader)

REMARKS:

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

CINOTECH accepts no responsibility for changes made to this report by third parties

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EXECUTIVE SUMMARY

Introduction

1. This is the 26th monthly Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Limited for Contract No. DC/2008/09 "Harbour Area Treatment Scheme Stage 2A – Construction of Sewage Conveyance System from Ap Lei Chau to Aberdeen" (the Project). This report documents the findings of EM&A Works conducted in February, 2012.

2. The major site activities undertaken in the reporting month included:

- Forward and backward reaming at Q1 and Q2 in Abd-i;
- Construction of noise enclosure for HDD power pack in Abd-i;
- Mobilization and set-up for HDD equipments in ALC-i; and
- Trial Butt Fusion joint of HDPE in ALC-i.

Environmental Monitoring Works

3. Environmental monitoring for the Project was performed in accordance with the Project Specific EM&A Manual and the monitoring results were checked and reviewed. Site audits were conducted once per week. The implementation of the environmental mitigation measures, Event/Action Plans and environmental complaint handling procedures were also checked.

Air Quality and Noise (Aberdeen PTW)

4. Since Leighton Asia in joint venture with Leonhard Nilsen & Sonner AS (LNS) has been awarded contract for the construction of a sewage conveyance system from Aberdeen to Sai Ying Pun on Hong Kong Island, the air quality monitoring station at Dairy Farm Ice and Cold Storage (CM_AB1) and noise monitoring station at Wah Lai House, Wah Kwai Estate (M8) have been set up by Atkins China Ltd (ACL) (ET for Contract No. DC/2007/24 for HATS 2A) to monitor the air quality and noise in the vicinity of the sensitive receivers. Please refer to monthly environmental monitoring report for Contract No. DC/2007/24 for details on monitoring parameters, frequency and programme, monitoring equipment, monitoring methodology and QA/QC procedures.

Noise (Ap Lei Chau PTW)

5. Noise monitoring was conducted at M9 – Mei Chun Court, South Horizons in the reporting month accordance with the Project Specific EM&A Manual.

6. Summary of the event and action taken in the reporting month is tabulated in **Table I**.

Table I Summary Table for Events Recorded in the Reporting Month

Parameter	No. of Exceedance		No. of Events Due to this Project	Action Taken
	Action Level	Limit Level		
1-hr TSP	0	0	0	N/A
24-hr TSP	0	0	0	N/A
Noise	0	0	0	N/A

1-hour TSP Monitoring

7. All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

24-hour TSP Monitoring

8. All 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Construction Noise

9. All construction noise monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Environmental Licenses and Permits

10. Environmental related licenses/permits granted to the Project include the Chemical Waste Producer License, a billing account for Disposal of construction waste, Waste Water Discharge License and Construction Noise Permit. No new license/permit was granted in the reporting month. All permits/licenses obtained for the Project are summarized in **Table 2.1** in the section 2**.**

Key Information in the Reporting Month

11. Summary of key information in this reporting month is tabulated in **Table II**.

Table II Summary Table for Key Information in the Reporting Month

Event	Event Details		Action Taken	Status	Remark
	Number	Nature			
Complaint received	0	---	N/A	N/A	---
Changes to the assumptions and key construction / operation activities recorded	0	---	N/A	N/A	---
Notifications of any summons & prosecutions	0	---	N/A	N/A	---

Future Key Issues

12. Major site activities for the coming two months will include:

- Forward and backward reaming at Q1 and Q2 in Abd-i;
- Construction of noise barrier for Q2 power pack at Abd-i;
- Pre-installation test for HDPE pipe in AbdPTW-iii;
- Construction of tie-in-pit in AbdPTW-iii – ELS & Shaft Construction; and
- Mobilization and set-up for HDD equipments in ALC-i.

13. The future environmental concerns will be mainly on surface runoff and ponding water due to rainy weather; and dust and waste generated from the construction works.

1 INTRODUCTION

Background

1.1 Paul Y. Construction Company, Limited (the Contractor) was commissioned by Drainage Services Department (DSD) to undertake the construction of "Harbour Area Treatment Scheme Stage 2A – Construction of Sewage Conveyance System from Ap Lei Chau to Aberdeen" (hereinafter called the "the Project") under Contract No. DC/2008/09. The Contractor was further commissioned by DSD to appoint a Monitoring Team and carry out the impact monitoring for the Project.

1.2 The sewage conveyance system (SCS) comprises a network of interconnected sewage tunnels and vertical shafts. The vertical shaft collect sewage from the preliminary treatment works in North Point, Wan Chai East, Central, Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau. The preliminary treatment works handle the sewage collected from the catchment areas which comes from around 70% of the population of Hong Kong Island. The collected sewage if conveyed to the Stonecutters Island Sewage Treatment Works via a total of 21km of deep tunnels with depths in general varying from 70m to 160m below sea level.

1.3 In the Project, SCS connecting Aberdeen and Ap Lei Chau will be constructed using twin pipes of 1.3km long with 600mm in diameter. The depth of the pipes will be over 80m from sea level generally. Site layout plan of the Project is shown in **Figure 1**. The construction was commenced on 17 August 2009. The anticipated date of completion is August 2012.

1.4 An Environmental Permit (EP) No. EP-322/2008 was issued on 19 November 2008 for Harbour Area Treatment Scheme (HATS) Stage 2A to Drainage Services Department as the Permit Holder. Later, the Environmental Permit (EP-322/2008/A) was issued in July 2009 for varying Figure 1d and 1e of the Environmental Permit No. EP 322/2008. Another Environmental Permit (EP-322/2008/B) was issued in November 2009 for varying Figure 1c of the Environmental Permit (EP-322/2008/A). After, the Environmental Permit (EP-322/2008/C) was issued in May 2010 for vary condition 3.13 of Part C of the Environmental Permit No. EP-322/2008/B. Next, the Environmental Permit (EP-322/2008/D) was issued in July 2010 for varying Figure 1d, adding conditions 3.14 and 3.15 in Part C and adding Figure 6 to show details of the production/drop shaft of Environmental Permit No. EP 322/2008/C. And then, the updated Environmental Permit (EP-322/2008/E) was issued in November 2010 for deleting Figure 2 of the Environmental Permit No. EP-322/2008/D, adding Figures 2a and 2b, and varying Condition 3.5 in Part C.

1.5 Cinotech Consultants Limited was commissioned by the Contractor to undertake the Environmental Monitoring and Audit (EM&A) works for the Project. Dr. Priscilla CHOY of Cinotech Consultants Ltd. was appointed as the ET Leader as per the Clause 25.30 of the Particular Specification of the Contract. This is the 26th monthly EM&A report summarizing the EM&A works for the Project in February, 2012.

Project Organizations

1.6 Different parties with different levels of involvement in the project organization include:

- Project Proponent – Drainage Services Department (DSD)
- Engineer's Representative (ER) – AECOM
- Contractor – Paul Y. Construction Company Limited
- Environmental Team (ET) – Cinotech Consultants Ltd.
- Independent Environmental Checker (IEC) – Mott MacDonald Hong Kong Ltd

1.7 The responsibilities of respective parties are detailed in Section 1.25 to 1.33 of the Project Specific EM&A Manual of the Project.

1.8 The key contacts of the Project are shown in **Table 1.1**.

Table 1.1 Key Project Contacts

Party	Role	Name	Position	Phone No.	Fax No.
AECOM	Engineer's Representative	Mr. Edwin SW Tang	Senior Resident Engineer	6336 6813	2603 7883
P.Y. Construction Ltd	Contractor	Mr. Eric Chong	Environmental Officer	9222 0307	2833 5604
		Ms. Emily Law	Assistant Environmental Officer	9134 8190	
Cinotech	Environmental Team	Dr. Priscilla CHOY	Environmental Team Leader	2151 2089	3107 1388
		Mr. Charles Ma	Project Coordinator and Audit Team Leader	2151 2078	
		Mr. Henry LEUNG	Monitoring Team Leader	2151 2087	
Mott MacDonald Hong Kong Ltd	Independent Environmental Checker	Dr. Anne F Kerr	Independent Environmental Checker	2828 5793	2827 1823
		Mr. Terence Kong	Deputy Independent Environmental Checker	2828 5919	
		Ms. Florence SY Yuen	Deputy Independent Environmental Checker	2828 5768	

Construction Programme

1.9 The site activities undertaken in the reporting month were:

- Forward and backward reaming at Q1 and Q2 in Abd-i;
- Construction of noise enclosure for HDD power pack in Abd-i;
- Mobilization and set-up for HDD equipments in ALC-i; and
- Trial Butt Fusion joint of HDPE in ALC-i.

Summary of EM&A Requirements

1.10 The EM&A programme requires construction phase air quality and noise monitoring as well as environmental site audits. The EM&A requirements are described in the following sections, including:

- All monitoring parameters;
- Action and Limit levels for all environmental parameters;
- Event / Action Plans;
- Environmental mitigation measures, as recommended in the EIA report; and
- Environmental requirements in contract documents.

1.11 The advice on the implementation status of environmental protection and pollution control/mitigation measures is summarized in **Appendix A**.

1.12 This report presents the environmental monitoring and audit works for the Project in the reporting month.

2 NOISE MONITORING

Monitoring Requirements

2.1 Noise monitoring was conducted in accordance with the Project Specific EM&A Manual. **Appendix B** shows the established Action and Limit Levels for the environmental monitoring works.

Monitoring Locations

2.2 According to the Project Specific EM&A Manual, two designated monitoring stations, M8 and M9 were selected for impact noise monitoring, as shown in **Figure 2 and Figure 3**. **Table 2.1** describes the locations of the noise monitoring stations.

Table 2.1 Locations of Noise Monitoring Stations

Monitoring Stations	Locations
M8 (Aberdeen PTW)	Wah Lai House, Wah Fu Estate
M9 (Ap Lei Chau PTW)	Mei Chun Court, South Horizons

Monitoring Equipments

2.3 **Table 2.2** summarizes the noise monitoring equipment models being used in the reporting month.

Table 2.2 Noise Monitoring Equipments

Equipments	Model and Make	Quantity
Integrating Sound Level Meter	SVANTEK Model SVAN955, SVAN957	2
Calibrator	B&K 4231, SV30A	2

Monitoring Parameters, Frequency and Duration

Table 2.3 Noise Monitoring Parameters, Frequency and Duration

Stations	Parameters	Period	Frequency
M8(1)	L_{eq}(30 min.) (L_{10} and L_{90} were also recorded as supplementary information)	0700-1900 hrs. on normal weekdays	Once a week
M8(1)	L_{eq}(15 min.) (L_{10} and L_{90} were also recorded as supplementary information)	1900-2300 hrs.	If construction works are extended to include works during the hours of 1900 – 0700 as well as public holidays and Sundays, additional weekly impact monitoring shall be carried out during respective restricted periods
M9(2)	L_{eq}(30 min.) (L_{10} and L_{90} were also recorded as supplementary information)	0700-1900 hrs. on normal weekdays	Once a week
M9(2)	L_{eq}(15 min.) (L_{10} and L_{90} were also recorded as supplementary information)	1900 – 0700 hrs. as well as public holidays and Sundays	Once a week during respective restricted periods

Remarks: (1) Noise monitoring at Wah Kwai Estate (M8) was carried out by Atkins China Ltd.

(2) Noise monitoring at Mei Chun Court (M9) was carried out by Cinotech Consultants Ltd.

2.4 Since Leighton Asia in joint venture with Leonhard Nilsen & Sonner AS (LNS) has been awarded contract for the construction of a sewage conveyance system from Aberdeen to Sai Ying Pun on Hong Kong Island, the air quality monitoring station at Dairy Farm Ice and Cold Storage (CM_AB1) and noise monitoring station at Wah Lai House, Wah Kwai Estate (M8) have been set up by Atkins China Ltd (ACL) (ET for Contract No. DC/2007/24 for HATS 2A) to monitor the air quality and noise in the vicinity of the sensitive receivers. Please refer to monthly environmental monitoring report for Contract No. DC/2007/24 for details on monitoring parameters, frequency and programme, monitoring equipment, monitoring methodology and QA/QC procedures for monitoring station M8. Monitoring methodology and QA/QC procedures for monitoring station M9 are described in the section below.

Monitoring Methodology and QA/QC Procedures

Field Monitoring

2.5 The monitoring procedures are as follows:

- The microphone head of the sound level meter was positioned 1m exterior of the noise

sensitive facade and lowered sufficiently so that the building's external wall acts as a reflecting surface.

- The battery condition was checked to ensure good functioning of the meter.
- Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:

  - frequency weighting : A
  - time weighting : Fast
  - measurement time : 30 minutes

- Prior to and after noise measurement, the meter was calibrated using the calibrator for 94.0 dB at 1000 Hz. If the difference in the calibration level before and after measurement is more than 1.0 dB, the measurement was considered invalid and repeat of noise measurement was required after re-calibration or repair of the equipment.
- The wind speed at the monitoring station was checked with the portable wind meter. Noise monitoring was cancelled in the presence of fog, rain, and wind with a steady speed exceeding 5 m/s, or wind with gusts exceeding 10 m/s.
- Noise measurement was paused during periods of high intrusive noise if possible and observation was recorded when intrusive noise was not avoided.
- At the end of the monitoring period, the L_{eq}, L_{10} and L_{90} were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.

Maintenance and Calibration

2.6 Maintenance and Calibration procedures were as follows:

- The microphone head of the sound level meter and calibrator were cleaned with a soft cloth at quarterly intervals.
- The sound level meter and calibrator were checked and calibrated at yearly intervals. Copies of calibration certificates are attached in **Appendix C**.

Results and Observations

2.7 All noise monitoring at station M8 and M9 were conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

2.8 The environmental monitoring schedule for the reporting month is shown in **Appendix D.**

2.9 The details and graphical presentations of the noise monitoring results at M9 are shown in **Appendix E.** Please refer to the monthly environmental report for Contract No. DC/2007/24 for the noise monitoring results at M8. The weather during the monitoring sessions was mainly sunny or cloudy.

3 ENVIRONMENTAL AUDIT

Site Audits

3.1 Site audits were carried out by ET on weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site. The summaries of site audits are attached in **Appendix F**.

3.2 Site audits were conducted on 7th, 14th and 28st February 2012 by the representatives of ET, ER and Contractor. Joint site audit with the representatives of IEC, ER, Contractor and ET was carried out on 24th February 2012.

Status of Environmental Licensing and Permitting

3.3 All permits/ licenses obtained for the Project are summarized in **Table 3.1**. No new permit/ license were granted in the reporting month.

Status of Waste Management

3.4 The amount of waste generated by the activities of the Project in reporting month is shown in **Appendix G**.

Implementation Status of Environmental Mitigation Measures

3.5 According to the EIA Study Report and the Project Specific EM&A Manual of the Project, the mitigation measures detailed in the documents are recommended to be implemented during the construction phase. A summary of the EMIS is provided in **Appendix A.**

Table 3.1 Summary of Environmental Licensing and Permit Status

Permit / License /Account No.	Valid Period		Details	Status
	From	To		
Billing Account for Disposal of Construction Waste				
7009265	21/08/09	N/A	Disposal of Construction waste	Valid
Chemical Waste Producer				
5213-173-P2973-02	02/11/10	N/A	Disposal of Chemical waste in accordance with EPD's instructions	Valid
5213-173-P2973-03	02/11/10	N/A	Disposal of Chemical waste in accordance with EPD's instructions	Valid
5113-174-P2781-19	21/09/09	N/A	Disposal of Chemical waste in accordance with EPD's instructions	Valid
Wastewater Discharge License				
WT00005967-2010	03/02/10	28/02/15	Permit issued on 03/02/10	Valid
WT00007236-2010	16/08/10	31/08/15	Permit issued on 16/08/10	Valid
WT00007486-2010	09/09/10	30/09/15	Permit issued on 09/09/10	Valid
Construction Noise Permit (CNP)				

Permit / License /Account No.	Valid Period		Details	Status
	From	To		
GW-RS1129-11	20/12/11	19/06/12	*Location:* Site area near Sewage Treatment Plant, 50 Lee Nam Road, Ap Lei Chau, Hong Kong (DSD Contract No. DC/2008/09) *Days and hours for the use of Powered mechanical equipment:* Any day not being a general holiday between 0000 – 0700 hours and 1900 – 2400 hours. General Holidays (including Sundays) between 0000 – 2400 hours.	Superseded on 16/01/2012
GW-RS0811-11	15/09/11	14/03/12	*Location:* Site area of opposite to sewage screening plant, Tin Wan Praya Road, Tin Wan, Hong Kong (DSD Contract No. DC/2008/09) *Days and hours for the use of Powered mechanical equipment:* Any day not being a general holiday between 0000 – 0700 hours and 1900 – 2400 hours. General Holidays (including Sundays) between 0000 – 2400 hours.	Superseded on 20/01/2012
GW-RS0026-12	16/01/12	12/07/12	*Location:* Site area near Sewage Treatment Plant, 50 Lee Nam Road, Ap Lei Chau, Hong Kong (DSD Contract No. DC/2008/09) *Days and hours for the use of Powered mechanical equipment:* Any day not being a general holiday between 0000 – 0700 hours and 1900 – 2400 hours. General Holidays (including Sundays) between 0000 – 2400 hours.	Valid
GW-RS0059-12	20/01/12	19/07/12	*Location:* Site area of opposite to sewage screening plant, Tin Wan Praya Road, Tin Wan, Hong Kong (DSD Contract No. DC/2008/09) *Days and hours for the use of Powered mechanical equipment:* Any day not being a general holiday between 0000 – 0700 hours and 1900 – 2400 hours. General Holidays (including Sundays) between 0000 – 2400 hours.	Valid

3.6 During the site inspections in the reporting month, no non-conformance was identified. The observations and recommendations made during the audit sessions are summarized in **Table 3.2**.

Table 3.2 Observations and Recommendations of Site Audits

Parameters	Date	Observations	Remedial Actions
Water Quality	07/02/12	Reminder: The contractor was reminded to provide mitigation measures to avoid bentonite water leaving the site at ALC-i.	The situation was observed improved/rectified in audit session 120214.
	24/02/12	Reminder: Wastewater should be discharged properly to the discharge point according to wastewater discharge license at AbdPtw.	The situation was observed improved/rectified in audit session 120228.
Air Quality	28/02/12	Reminder: Emission from mud pump should be controlled.	The situation will be followed up in the following audit session.
	28/02/12	Reminder: Broken bentonite bag should be covered.	The situation will be followed up in the following audit session.

Table 3.3 Observations and Recommendations of Site Audit Followed up for Previous Month

Parameters	Date	Observations / Recommendations	Remedial Actions
Air Quality	31/01/11	Observation: Smoke emitting from mud pumps at ALC-i was observed. The contractor was reminded to maintain the equipments in regular basis.	The situation was observed improved/rectified in audit session 120207.

3.7 Joint site audit with the representatives of IEC, ER, Contractor and ET was carried out on 26th February 2012 in the reporting month. The observations and recommendations made by IEC during the audit sessions are summarized in **Table 3.4**.

Table 3.4 IEC's Observations and Recommendations of Site Audit

27/01/12	**Follow-up (for previous month)**	1. No excessive smoke emission was observed from mud pumps at ALC-i.
	Reminder(s)	1. Bentonite water in the tank would be pumped out before sediment removal activities. 2. Improper discharge pipe was removed.

Implementation Status of Event/Action Plans

3.8 The Event/Action Plans for air quality and noise are presented in **Appendix H**.

Aberdeen PTW

1-hr TSP

3.9 All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

24-hr TSP

3.10 All 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Construction Noise

3.11 All construction noise monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Summary of Complaint, Notification of Summons and Prosecution

3.12 No environmental related complaint, prosecution or notification of summons was received in the reporting month.

3.13 There was no environmental complaint, prosecution or notification of summons received since the Project commencement. The Complaint Log is attached in **Appendix I**.

4 FUTURE KEY ISSUES

Key Issues for the Coming Month

4.1 Key issues to be considered in the coming month include:

- Surface runoff generated from the construction activities;
- Dust emission from loading and unloading excavated materials, excavation works and exposed stockpiles;
- Noise nuisance from operation of equipments/ machineries;
- Maintenance of de-silting facilities and drainage system such as U-channels;
- Formation of ponding water on site due to rain;
- Blockage of U-channel by accumulated silt;
- Mosquito breeding due to the ponding water and stagnant water around the site areas;
- Accumulation of C&D waste and general waste on site; and
- Oil spillage/ leakage from the equipment on site.

Monitoring Schedule for the Next Month

4.2 The tentative environmental monitoring schedule for the next month is shown in **Appendix D**.

Construction Program for the Coming Two Months

4.3 A tentative construction programme is provided in **Appendix J**. The major construction activities in the coming two months will include:

- Forward and backward reaming at Q1 and Q2 in Abd-i;
- Construction of noise barrier for Q2 power pack at Abd-i;
- Pre-installation test for HDPE pipe in AbdPTW-iii;
- Construction of tie-in-pit in AbdPTW-iii – ELS & Shaft Construction; and
- Mobilization and set-up for HDD equipments in ALC-i.

5 CONCLUSIONS AND RECOMMENDATIONS

Conclusions

5.1 EM&A works were conducted regularly in the reporting month in accordance with the Project Specific EM&A Manual. The results were checked and reviewed.

1-hour TSP Monitoring

5.2 All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

24-hour TSP Monitoring

5.3 All 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Construction Noise Monitoring

5.4 All construction noise monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Complaint and Prosecution

5.5 No environmental prosecutions and complaints were received in the reporting month.

Recommendations

5.6 According to the environmental audits performed in the reporting month, the following recommendations were made:

Water Quality

- To avoid accumulation of stagnant water on site.

Air Quality

- To provide water spraying on dried site areas or materials regularly;
- To remain good site practice on handling excavated or dusty material for dust suppression (e.g. stockpiles of material shall be covered by tarpaulin); and
- To regularly check and maintain the mechanical equipments to avoid black smoke emission.

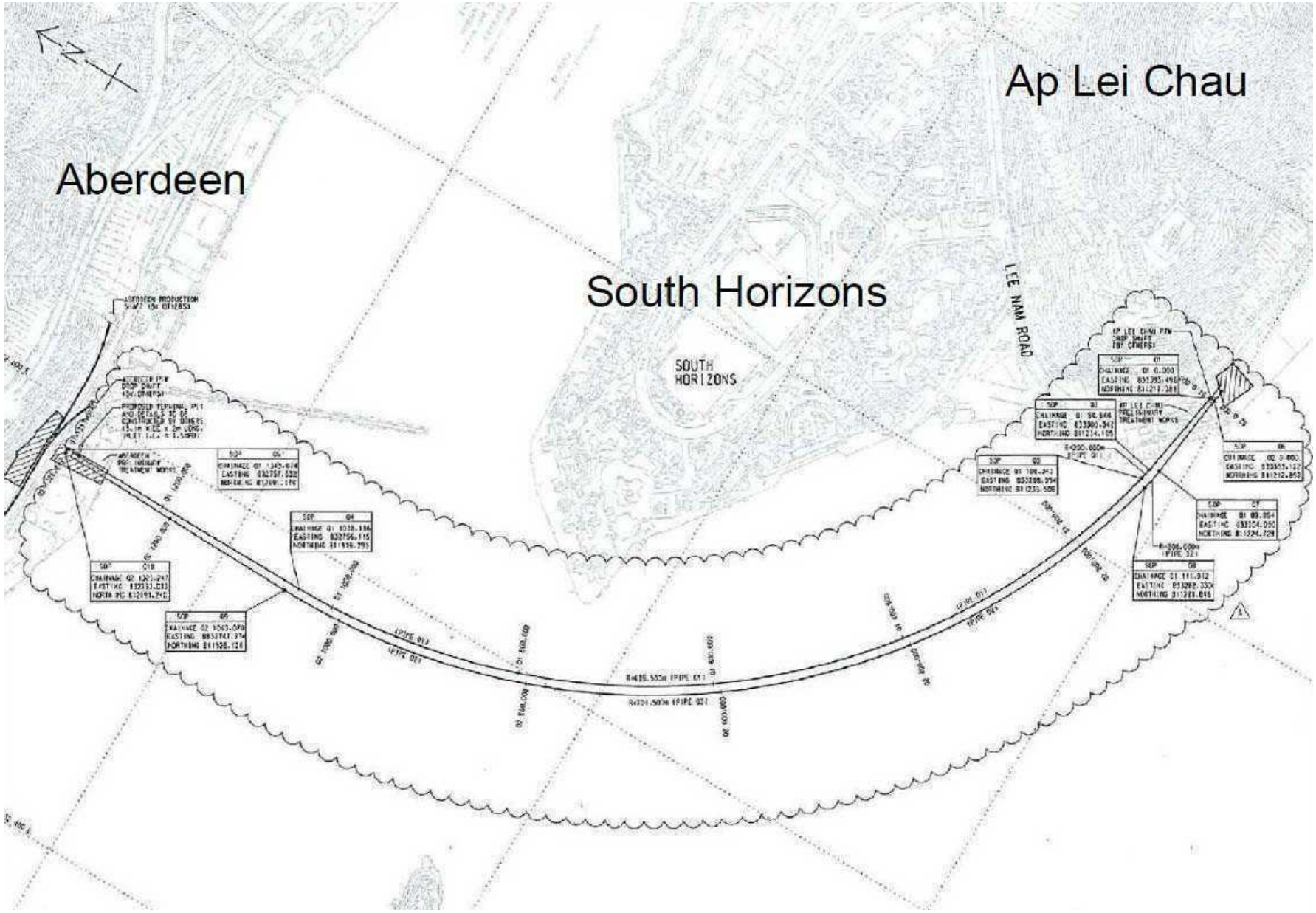
Noise

- To space out noisy equipments and position them as far away as possible from sensitive receivers;
- To provide adequate lubricant on mechanical equipments to reduce frictional noise; and
- To regularly check and maintain the mechanical equipments to avoid abnormal noise nuisance.

Waste / Chemical Management

- To provide proper and sufficient rubbish bins / skips for waste collection;
- To provide proper and sufficient storage area or drip trays for oil containers on site;
- To avoid and check for any accumulation of waste materials or rubbish on site; and
- To avoid any discharge or accidental spillage of chemical waste or oil directly from the equipment.

FIGURES



CONTRACT NO. DC/2008/09
Harbour Area Treament Scheme Stage 2A Construction of Sewage Conveyance System from Ap Lei Chau to Aberdeen

Site Layout Plan

Scale	Project No.
N.T.S	MA9042
Date	Figure
Jan-10	1

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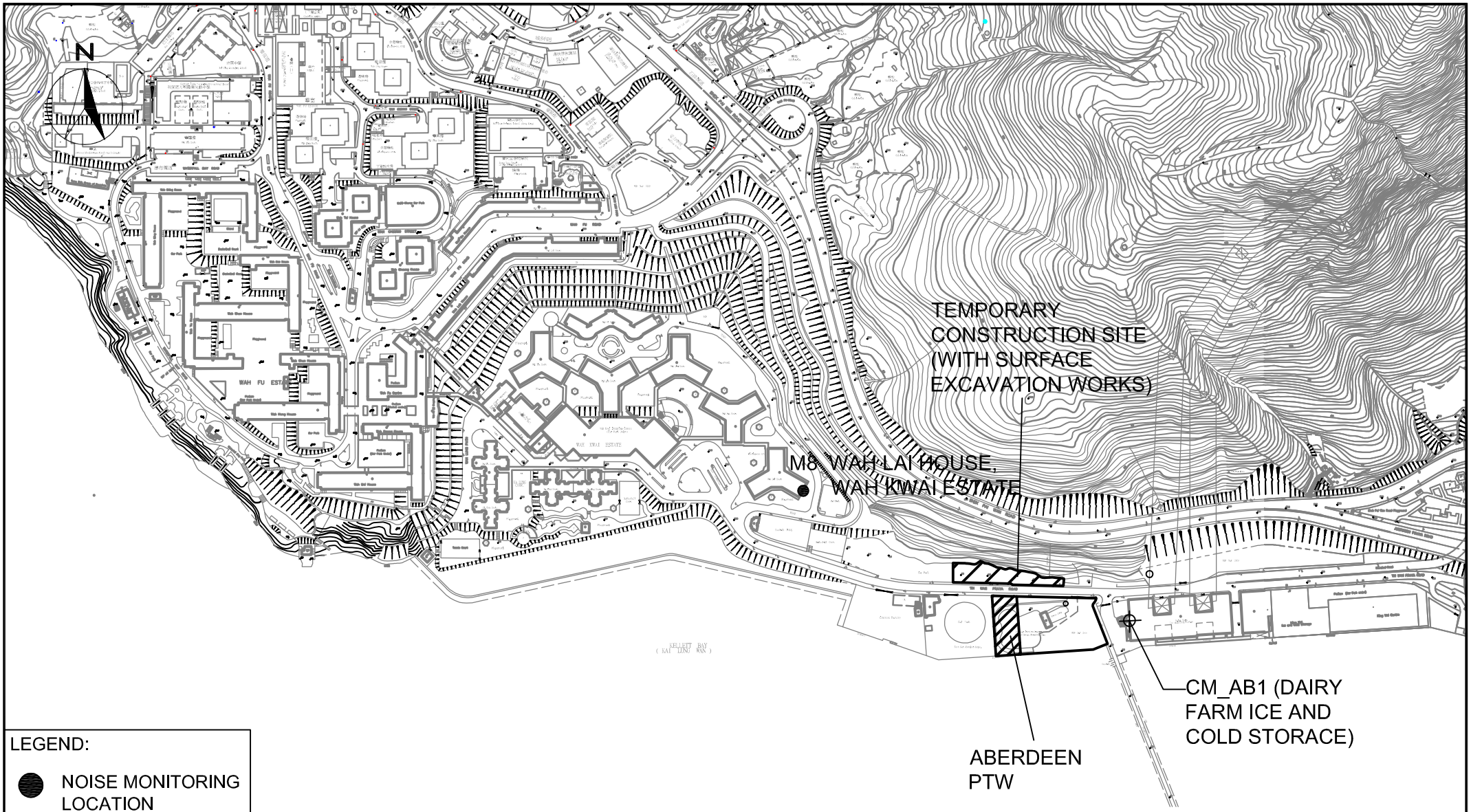

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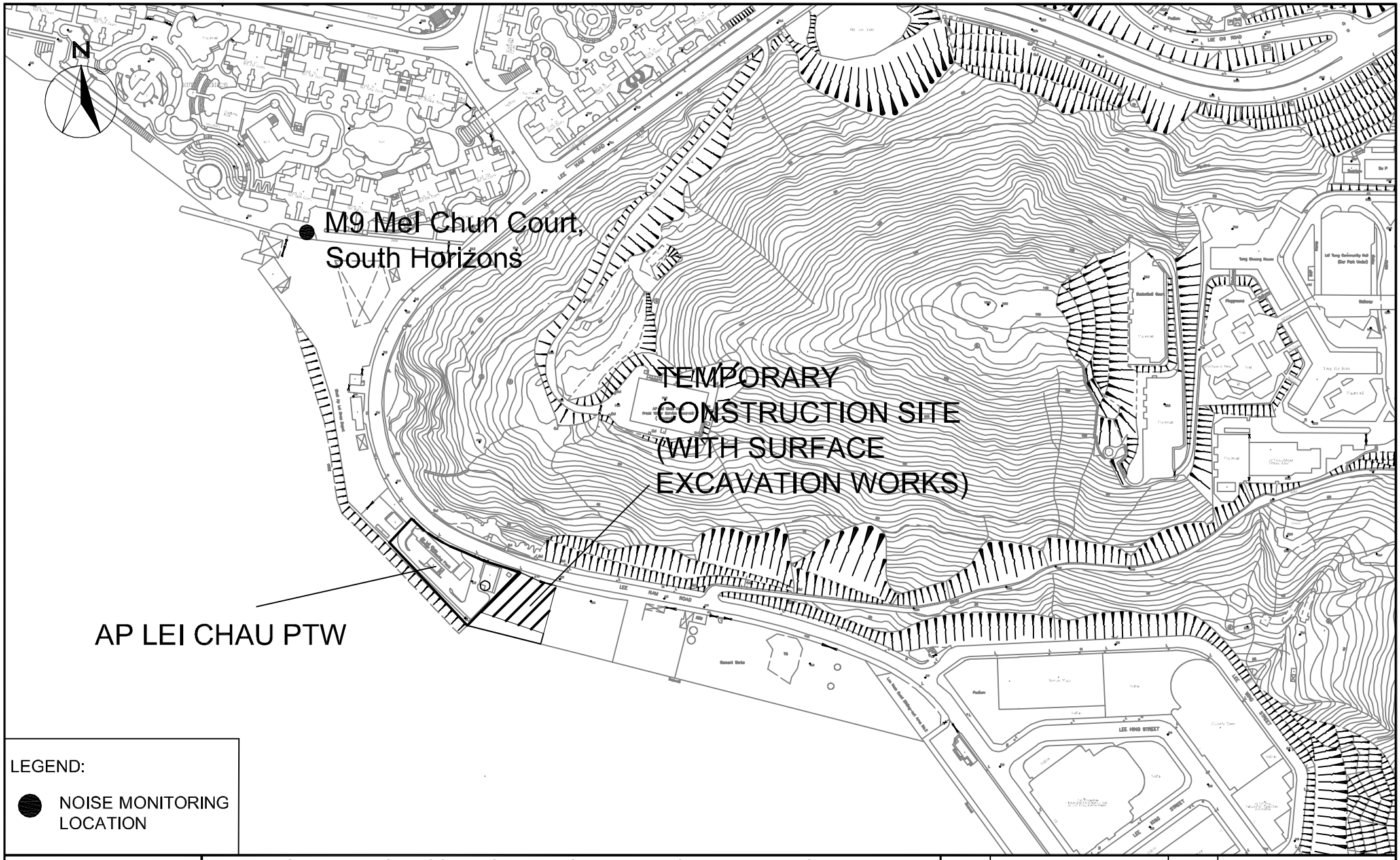
Contract NO. DC/2008/09-HATS Stage 2A Construction of Sewage Conveyance System from Ap Lei Chau to Aberdeen
LOCATIONS OF CONSTRUCTION NOISE AND DUST MONITORING STATIONS - ABERDEEN PTW

SCALE	N.T.S.	DATE	Oct 2009
CHECK	IT	DRAWN	TN
JOB No.	MA 9042	FIGURE NO. FIG 2	REV -

F:/Projects_Drawings\MA9042



LEGEND:

● NOISE MONITORING LOCATION

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Contract NO. DC/2008/09-HATS stage 2A Construction of sewage Conveyance System from Ap Lei Chau to Aberdeen
LOCATIONS OF CONSTRUCTION NOISE MONITORING STATIONS - AP LEI CHAU PTW

SCALE	N.T.S.	DATE	FEB 2010
CHECK	IT	DRAWN	MF
JOB No.	MA9042	FIGURE NO.	FIG 3
		REV	-

F:\Projects_Drawings\MA9042

APPENDIX A
ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

APPENDIX A– Summary of Environmental Mitigation Implementation Schedule

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation Status
A Air Quality							
3.64	Watering twice per day within the worksites at North Point PTW, Wan Chai East PTW, Fung Mat Road Site, Sandy Bay PTW, Wah Fu PTW, Aberdeen PTW and SCS worksite at Aberdeen; • Watering 4 times per day within worksites at the Central PTW; • Barging points, if any, should be continuous watering throughout the whole unloading process; and • Watering 8 times per day within worksites at the SCS works area at Wan Chai East and North Point, SCISTW and the Disinfection Facilities of SCISTW.	To reduce dust nuisance	Contractor	Work site / during construction	Construction phase	EIAO-TM & Air Quality Objective	√
3.74	Implementation of dust suppression measures stipulated in Air Pollution Control (Construction Dust) Regulation. The following mitigation measures, good site practices and a comprehensive dust monitoring and audit programme are recommended to minimize cumulative dust impacts. • Skip hoist for material transport should be totally enclosed by impervious sheeting; • Vehicle washing facilities should	To reduce dust nuisance	Contractor	Work site / during construction	Construction phase	EIAO-TM & Air Quality Objective	√

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation Status
	be provided at every vehicle exit point; • The area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcore; • Where a site boundary adjoins a road, streets or other areas accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the entire length except for a site entrance or exit; Use of regular watering, with complete coverage, to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather; • Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering shall be applied to aggregate fines; • Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs; • Tarpaulin covering of all dusty						

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation Status
	vehicle loads transported to, from and between site locations; • Imposition of speed controls for vehicles on unpaved site roads. Ten kilometers per hour is the recommended limit; • Every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in an area sheltered on the top and the 3 sides; • Every vehicle should be washed to remove any dusty materials from its body and wheels before leaving the construction sites; and • Instigation of an environmental monitoring and auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.						
3.76	Good housekeeping for SCISTW and PTWs listed below should be followed to ameliorate any odour impact from the plant and these standard practices should be included in the plant operator manual. • Screens should be cleaned regularly to remove any accumulated organic debris • Grit and screening transfer	To ensure compliance of the odour criterion stipulated in the EIAO-TM.	Plant Operator	All PTWs and SCISTW	Operation phase	EIAO-TM	√

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation Status
	systems should be flushed regularly with water to remove organic debris and grit • Grit and screened materials should be transferred to closed containers to minimize odour escape • Scum and grease collection wells and troughs should be emptied and flushed regularly to prevent putrefaction of accumulated organics • Skim and remove floating solids and grease from primary clarifiers regularly • Frequent sludge withdrawal from tanks is necessary to prevent the production of gases • Sludge cake should be transferred to closed containers • Sludge containers should be flushed with water regularly						
3.77	To avoid excessive extraction of the foul air from the drop shafts of the sedimentation tanks and also from the effluent flume structure of SCISTW to deodorization system, the extraction vent(s) of the deodorization system should be located away from the top openings of the drop shafts.	To ensure compliance of the odour criterion stipulated in the EIAO-TM	Engineer	SCISTW	Design Stage	EIAO-TM	√
3.80	Commissioning tests for all deodorization system should be included in the Design and	To ensure compliance of the odour criterion stipulated in the	Engineer	All PTW and SCISTW	After completion of construction	EIAO-TM	N/A

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	Construction Contract Document.	EIAO-TM					
B Airborne Noise							
4.56–4.61	Construction Phase • Use of quiet PME, movable barriers and acoustic mats	To reduce construction noise impacts	Contractor	All work sites	Construction phase	EIAO-TM	√
4.67	Good Site Practice: • Only well-maintained plant shall be operated on-site and plant shall be serviced regularly during the construction program. • Silencers or mufflers on construction equipment shall be utilized and shall be properly maintained during the construction program. • Mobile plant, if any, shall be sited as far away from NSRs as possible. • Machines and plant (such as trucks) that may be in intermittent use shall be shut down between works periods or shall be throttled down to a minimum. • Plant known to emit noise strongly in one direction shall, wherever possible, be orientated so that the noise is directed away from the nearby NSRs. • Material stockpiles and other structures shall be effectively utilized, wherever practicable, in screening noise from on-site construction activities.	To reduce construction noise impacts	Contractor	All work sites	Construction phase	EIAO-TM	√

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation Status
4.63	Operation Phase • Use of acoustic louvers for air supply fans/extraction fans of transfer pumping stations and ventilation fans of deodourization unit at Sandy Bay PTW, Cyberport PTW and Wah Fu PTW.	To reduce fixed plant noise impact	DSD	Sandy Bay PTW, Cyberport PTW and Wah Fu PTW	Design stage and operation stage	EIAO-TM and NCO	N/A
4.64	The maximum allowable sound power level (SWL) of each new transformer at Sandy Bay PTW shall be limited to 89 dB(A).	To reduce fixed plant noise impact	DSD	Sandy Bay PTW	Design stage and operation stage	EIAO-TM and NCO	N/A
C Water Quality							
6.349 to 6.375	Construction Phase *Construction Site Runoff and General Construction Activities* The mitigation measures as outlined in the *ProPECC PN 1/94 Construction Site Drainage* should be adopted where applicable.	To control water quality impact from construction site runoff and general construction activities	Contractor	All work sites	Construction phase	EIAO-TM, WPCO	√
6.376	*Effluent Discharge* There is a need to apply to EPD for a discharge licence for discharge of effluent from the construction site under the WPCO. The discharge quality must meet the requirements specified in the discharge licence. If monitoring of the treated effluent quality from the works areas is	To control water quality impact from effluent discharges from construction sites	Contractor	All work sites	Construction phase	EIAO-TM, WPCO	√

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation Status
	required during the construction phase of the Project, the monitoring should be carried out in accordance with the WPCO license which is under the ambit of regional office (RO) of EPD. Minimum distances of 100 m should be maintained between the discharge points of construction site effluent and the existing saltwater intakes.						
6.377	*Accidental Spillage of Chemicals* Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal(Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	To control water quality impact from accidental chemical spillage	Contractor	All work sites	Construction phase	EIAO-TM, WPCO, WDO	√
6.378	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control	To control water quality impact from accidental chemical spillage	Contractor	All work sites	Construction phase	EIAO-TM, WPCO, WDO	√

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation Status
	these discharges.						
6.379	Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows: • Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. • Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents. • Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.	To control water quality impact from accidental chemical spillage	Contractor	All work sites	Construction phase	EIAO-TM, WPCO, WDO	√
6.380	Construction Works in Close Proximity of Storm Drains or Seafront To minimize the potential water quality impacts from the construction works located at or near any watercourse, the	To control water quality impact from construction works in close proximity of storm drains or seafront	Contractor	All work sites	Construction phase	EIAO-TM, WPCO	√

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	practices outlined below should be adopted where applicable. • The use of less or smaller construction plants may be specified to reduce the disturbance to the storm water courses or marine environment. • Temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from any water courses during carrying out of the construction works. • Stockpiling of construction materials and dusty materials should be covered and located away from any water courses. • Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nearby water receivers. • Construction activities, which generate large amount of wastewater, should be carried out in a distance away from the waterfront, where practicable. • Proper shoring may need to be						

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	erected in order to prevent soil/mud from slipping into the storm culvert or sea.						
6.381	Temporary Sewage Bypass It is recommended that the temporary sewage bypass required for (i) the modification to the existing pumping station at SCISTW and (ii) the interconnection between the existing main pumping station and the new pumping station on Stonecutters Island, if needed, should be scheduled at the same time as far as practicable in order to minimise the temporary discharge duration. It is also recommended that all the modification and interconnection to the existing facilities (including the modification to the existing NWKPS) should be programmed to avoid temporary sewage bypass in wet or bathing season (March to October) to minimize the potential impacts. Relevant government departments including EPD and LCSD should be informed of the planned sewage bypass prior to any discharge. During the sewage bypass period, water quality monitoring should be carried out at	To minimise the water quality impact arising from the planned temporary sewage bypass	DSD	SCISTW	Design Stage and Construction Phase	EIAO-TM and WPCO	√

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	the water sensitive receivers to quantify the water quality impacts and to determine when the baseline water quality conditions are restored. Also, a framework of the response procedures has been formulated to minimize the impact of temporary discharges. Details are provided in the standalone EM&A Manual.						
6.344	Operational Phase Dual power supply, standby facilities for the main treatment units and standby equipment parts / accessories should be provided as far as possible at the SCISTW to minimize the chance of emergency discharge.	To minimize the water quality impact from emergency discharge	DSD	SCISTW and all the Stage 2 PTWs	Design stage and operation stage	EIAO-TM and WPCO	N/A
6.344	The response procedure and monitoring requirements for emergency discharge as stated in EM&A Manual should be followed.	To minimize water quality impact due to emergency discharge	DSD	SCISTW	Operation stage	EIAO-TM and WPCO	N/A
6.345	Standby unit(s) and dual (backup) power supply would be provided at all the Stage 2 PTWs to reduce the risk of equipment breakdown at the PTWs.	To minimize water quality impact due to emergency discharge	DSD	Stage 2 PTWs	Design stage and operation stage	EIAO-TM and WPCO	N/A
6.346	In case of total power outage of the dechlorination plant, the uninterruptible power supply (UPS)	To minimize the discharge of chlorinated effluent under emergency	DSD	SCISTW	Design stage and operation stage	EIAO-TM and WPCO	N/A

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	system to be provided would switch the power supply of the sodium bisulphite dosing pump to a backup battery almost instantaneously, allowing continuous dosage of sodium bisulphite for at least half an hour so that sufficient time can be provided for shutting down the chlorination plant to avoid the possibility of discharge of chlorinated effluent.	situations					
6.347	The model predicted that if Stage 2B is not implemented for HATS in 2021 as scheduled, the nutrient contents (both P and N) in the marine water would ultimately increase to exceed the baseline Stage 1 level when the HATS flow is reaching its design capacity of 2.45M m3/day. It is recommended that the future review study for Stage 2B should review the validity of the model predictions provided in this EIA and confirm the need of enhanced nutrient removal for HATS after 2021.	To minimize the nutrient exceedances after 2021	DSD	SCISTW	Investigation Stage of Stage 2B	EIAO-TM and WPCO	√
6.348	It should be noted that the mixing zone for TIN predicted for Stage 2B was large with an area of about 30 km2 and the area of exceedance would encroach on the nearby water sensitive receivers (e.g. Ma	To minimize the TIN exceedances during Stage 2B	DSD	SCISTW	Investigation Stage of Stage 2B	EIAO-TM and WPCO	√

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	Wan Fish Culture Zone). This is due to the elevated oxidized nitrogen assumed for the proposed nitrification process at Stage 2B as well as the increased HATS effluent flow assumed for Stage 2B. It is recommended that these water quality issues should be further investigated / assessed under the future EIA for Stage 2B. Further mitigation measures / alternative treatment designs should also be considered under the future EIA for Stage 2B to mitigate / minimize the potential TIN exceedances						
D Human Health and Ecological Risk							
7.47 & 8.66	A monitoring programme would be implemented to protect human health and ecological resources from increased TRC and CBP concentrations in seawater.	To protect human health and ecological resources from exposure to toxic substances from the effluent discharges	DSD	Water body near SCISTW	Operation phase		N/A
E Waste Management							
9.107	Reusable steel or concrete panel shutters, fencing and hoarding and signboard should be used as a preferred alternative to items made of wood, to minimise wastage of wood. Attention should be paid to WBTC No. 19/2001 - Metallic Site Hoardings and Signboards to reduce the amountof timber used on construction sites.	To minimize wastage of wood	Contractor	Work sites	Construction phase	WBTC No. 19/2001	√

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	Metallic alternatives to timber are readily available and should be used rather than new timber. Precast concrete units should be adopted wherever feasible to minimize the use of timber formwork.						
9.109	All waste materials should be segregated into categories covering • excavated materials suitable for reuse on-site; • excavated materials suitable for public filling facilities; • remaining C&D waste for landfill; • chemical waste; and • general refuse for landfill.	To implement on-site sorting facilitating reuse and recycling of materials as well as proper disposal of waste.	Contractor	Work sites	Construction phase		√
9.113	Recommendations to achieve waste reduction include:- • Sort C&D waste from demolition of existing facilities to recover recyclable portions such as metals; • Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal; • Encourage collection of aluminium cans, PET bottles and	To implement on-site sorting facilitating reuse and recycling of materials as well as proper disposal of waste.	Contractor	Work sites	Construction phase		√

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	paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force; • Any unused chemicals or those with remaining functional cpacity shall be recycled; and • Proper storage and site practices to minimise the potential for damage or contamination of construction materials.						
9.115	Recommendations for good site practices during construction activities include:- • Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site • Training of site personnel in proper waste management and chemical waste handling procedures • Develop and provide toolbox talk for on-site sorting of C&D materials to enhance worker's awareness in handling, sorting, reuse and recycling of C&D materials. • Provision of sufficient waste	To implement good site practice for handling, sorting, reuse and recycling of C&D materials	Contractor	Work sites	Construction phase	Waste Disposal Ordinance (Cap.54) ETWB TCW No.19/2005	√

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	disposal points and regular collection of waste • Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors						
9.125	Bentonite slurries used in diaphragm wall construction should be reconditioned and reused wherever practicable. The disposal of residual used bentonite slurry should follow the good practice guidelines stated in ProPECC PN 1/94 Construction Site Drainage	To enhance reuse of bentonite and proper disposal of residual bentonite slurry.	Contractor	Work sites	Construction phase	ProPECC PN 1/94	√
9.131	Adequate number of portable toilets at temporary works areas or the PTWs to ensure that sewage from site staff would be properly collected.	To collect sewage from site staffs properly.	Contractor	Work sites	Construction phase		√
9.133	General refuse should be stored in enclosed bins, skips or compaction units separating from C&D material and disposed of at designated landfill.	To separate general refuse from C&D material and proper disposal of the refuse	Contractor	Work sites	Construction phase		√
9.135	The recyclable component of the municipal waste generated by the workforce, such as aluminium cans, paper and cleansed plastic containers should be separated from other waste. Provision and collection of recycling bins for different types of	To facilitate recycling of recyclable materials.	Contractor	Work sites	Construction phase		√

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	recyclable waste should be set up by the Contractor. The Contractor should also be responsible for arranging recycling companies to collect these materials						
9.137	If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the approved Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	To proper handling of chemical waste	Contractor	Work sites	Construction phase	Waste Disposal (Chemical Waste) (General) Regulation	√

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9.142	Prior to excavation of the marine deposit layer, the deposit should be tested in accordance with the ETWB TC(W) No. 34/2002 and the results should be presented in a Preliminary Sediment Quality Report. The marine deposit should be disposed of at the disposal site designated by the Marine Fill Committee (MFC) or Director of Environmental Protection (DEP) depending on the test results.	To proper disposal of marine deposit according to the contamination level	Contractor	Work sites	Construction phase	ETWB TC(W) No.34/2002	√
9.148	The sludge tanks should be air-tighten. Rotating brushes or other alternative devises should be installed at the upper frame of the sludge tank washing facilities to provide better cleaning of the surface around the top loading opening of the sludge tanks. Prior to making such provision, the top covers of the sludge transfer tanks should be water cleaned manually after unloading.	To alleviate potential odour emitted from sludge tanks	Operator	SCISTW	Operation Phase		N/A
9.150	Since the air tightness of tankers highly relies on the effectiveness of rubber seals at the loading openings and unloading doors, odour leakage from tankers are commonly resulted from the aging rubber seals. It is recommended to develop a preventive maintenance	To control potential odour emitted from sludge tanks	Operator	SCISTW	Operation Phase		N/A

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	programme for rubber seals of loading openings and unloading doors of sludge transfer tanks to ensure the tightness of covers and doors. Rubber seals should be regularly replaced within its design life as specified by suppliers.						
G Terrestrial Ecology							
10.93	All the proposed construction activities would be confined to developed area and wasteland of very low ecological value.	To avoid direct impact to any natural habitats identified within the assessment area.	Project proponent	All the works areas, PTWs and SCISTW	Design phase of project	EIAO TM Annex 16	√
10.94	To implement effective noise mitigation measures as recommended in Section 4.	To minimise noise disturbance impact to the associated wildlife during the construction phase.	Contractor	All the works areas, PTWs and SCISTW	Construction phase	EIAO TM Annex 16	√
10.95	Dust control practices such as regular watering, complete coverage of any aggregate or dusty material storage piles, and re-schedule of dusty activities during high-wind conditions as well as other measures recommended in Section 3, should be implemented.	To minimize indirect dust impact to the nearby vegetation during the construction works.	Contractor	All the works areas, PTWs and SCISTW	Construction phase	EIAO TM Annex 16	√
10.96	Fences/hoardings should be erected and installed along the boundary of the works areas.	To minimise disturbance impact to the nearby habitats and the associated wildlife.	Contractor	All the works areas, PTWs and SCISTW	Construction phase	EIAO TM Annex 16	√
10.97	Standard good site practices as suggested in Section 10 should be	To minimise disturbance impact to the nearby	Contractor	All the works areas,	Construction phase	EIAO TM Annex 16	√

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	implemented.	habitats and the associated wildlife.		PTWs and SCISTW			
10.98	Provision of proper drainage system and runoff control measures such as use of sand/silt traps, oil/grease separators, sedimentation tanks, etc.	To minimise site runoff of high level of sediment solids and other pollutions from entering the nearby water bodies.	Contractor	All the works areas, PTWs and SCISTW	Construction phase	EIAO TM Annex 16	√
10.99	Provision of compensatory planting of similar native tree species in no less than 1:1 compensatory ratio in terms of quality and quantity.	To compensate removal of individual trees directly affected by proposed works.	Contractor	All the works areas, PTWs and SCISTW	Post-construction phase	EIAO TM Annex 16 & ETWB TC (Works) No. 3/2006	√
H Marine Ecology							
11.137	To minimize the potential indirect impacts on water quality from construction site runoff and various construction activities, the practices outlined in ProPECC PN 1/94 Construction Site Drainage should be adopted.	To minimize the potential indirect impacts on water quality	Contractor	All the works area, PTWs and SCISTW	Construction Phase	EIAO-TM	√
11.138	To avoid/minimize the impact to corals, it is proposed that they are translocated to the eastern end of the existing seawall,which has similar hydrographic parameters and supports healthy growth of the same species and is thus considered as a suitable recipient site (Figure 11.13). Coral translocation should	To reduce adverse impacts on coral colonies recorded in the works area by translocation to an unaffected site.	Sub-contractor	Aberdeen PTW	Pre-construction Phase	EIAO-TM	√

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	be carried out during the winter season (November-March) in order to avoid disturbance to the transplanted colonies during the spawning period (i.e. July to October).	To reduce adverse impacts on coral colonies recorded in the works area by translocation to an unaffected site.	Sub-contractor	Aberdeen PTW	Pre-construction Phase	EIAO-TM	√
11.139	Dredging works will not be carried out and sheet piles or silt curtains will be used to contain filling material used during demolition/re-construction of the seawall. Water quality modelling predicts that no adverse impact on water quality at the proposed recipient (Figure 11.13) site would occur during construction works. Following this, no construction phase monitoring on translocated coral would be required. However post-translocation monitoring is suggested to be carried out every 3 months for one year. This would be carried out by a marine ecological specialist that is approved by the Director. Translocation plan for corals will be submitted to the Director for approval prior to the commencement of construction works						
11.141	It is recommended that temporary sewage bypass should be	To minimize water quality impact resulting	DSD	SCISTW	Design Stage and	EIAO-TM and WPCO	√

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	programmed to avoid temporary sewage bypass in wet or bathing season (March to October) in order to minimize the potential impacts. Relevant government departments including EPD and LCSD should be informed of the planned sewage bypass prior to any discharge. During the sewage bypass period, water quality monitoring should be carried out at the water sensitive receivers to quantify the water quality impacts and to determine when the baseline water quality conditions are restored. Also, a framework of the response procedures has been formulated to minimize the impact of temporary discharges. Details are provided in the standalone EM&A Manual.	from planned temporary sewage bypass.			Construction Phase		
11.142	Emergency discharges of screened sewage from PTWs would be the consequence of power or equipment failure at SCISTW. Dual power supply would be provided at the SCISTW to minimize the occurrence of power failure. In addition, standby facilities for the main treatment units and standby equipment parts / accessories would also be provided at the SCISTW in order to minimize the chance of emergency discharge. To provide a	To minimize water quality impact due to emergency discharge	DSD	SCISTW	Design stage and operation stage	EIAO-TM and WPCO	√

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	mechanism to minimise the impact of emergency discharges and facilitate subsequent management of any emergency, an emergency contingency plan has been formulated to clearly state the response procedure in case of total power or equipment failure at SCISTW (details refer to the standalone EM&A Manual). The plant operators of SCISTW should closely communicate with relevant departments including EPD and LCSD during the emergency discharge. An event and action plan and a detailed water quality monitoring programme for the emergency discharge is given in a standalone EM&A Manual.						
I Landscape and Visual							
Table 13.7	• Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical. • Existing trees to be retained on site should be carefully protected during construction. • Trees unavoidably affected by the works should be transplanted where practical. • Compensatory tree planting should be provided to compensate for felled trees.	To minimise potential visual intrusion to existing VSRs and compensate the possible loss of greenery from the Project	DSD	All the works areas, PTWs and SCISTW	Construction phase	EIAO-TM Annex 10, 18 ETWB TCW 2/2004 ETWB TCW No.3/2006	√

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	• Control of night-time lighting. • Erection of decorative screen hoarding compatible with the surrounding setting.						
Table 13.8	• Aesthetic design of the façade of PTW and associated structures to harmonize with the surrounding settings. • Shrub and Climbing Plants to soften proposed structures / Roof Greening. • Buffer Tree and Shrub Planting to screen proposed associated structures. • Reinstated of disturbed area	To minimise potential visual intrusion to existing VSRs and compensate the possible loss of greenery from the Project	DSD	All the works areas, PTWs and SCISTW	Operation phase	EIAO-TM Annex 10, 18 ETWB TCW 2/2004 ETWB TCW No.3/200	N/A
J Hazard to Life							
14A.198 & 14A.203	• Limiting magnitude of ground settlement associated with shafts & tunnels construction, excavation and seawall demolition to 13mm and subject to requirements from relevant authorities.	To prevent damage to gas facilities with the HKCG Depot.	Contractor	Vibration and ground monitoring along boundary of HKCG Depot and perimeter of the gas holder for the Aberdeen project	Construction Phase		√
14A.199 & 14A.204	• Limiting of the vibration levels associated with the blasting programme for the Tunnel P, shafts and other construction works	To prevent any structural damage to HKCG Aberdeen Depot and Ap Lei Chau Shell Depot	Contractor	Monitoring will be undertaken at ground level.	Construction Phase		√

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation Status
	(including demolition & reconstruction of seawall, excavation for seawater pump house at the Aberdeen PTW) at the PTW sites to a peak particle velocity of 5mm/s and subject to requirements from relevant authorities. Moving array of sensors will be used as the tunnel is advanced.	particularly the LPG compound.					
14A.201	• Limiting use of cranes in terms of locations, lifting height, swing angle and setting up safety zone.	To ensure allowable limits are not exceeded	Contractor	Exact location will be determined on site by the engineer	Construction Phase		√
14A.205	• Installation of gas leakage detector/alarm system in LPG compound at Ap Lei Chau Site.	To provide early warning of gas leakage in the LPG facilities	Contractor	Exact location will be determined on site by the contractor with the approval of SHELL.	Construction Phase		√
14A.206	• Establish emergency plan and procedures	To evacuate construction workers to a safe place during gas leakage in the gas facilities	Contractor	Construction sites for Aberdeen and Ap Lei Chau PTWs	Construction Phase		√

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation Status
14C.64	*Special Chemical Supply Contract Arrangement* • A separate supply contract will be awarded for each of the three chemicals (sodium hypochlorite, sodium bisulphite and ferric chloride solutions). Chemical supplier will be required to provide dedicated transport specifically used for delivering the chemical to be supplied, and the road tankers will need to be registered with SCISTW. In addition, the supply contract for sodium hypochlorite will specify that the delivery barge provided will be dedicated for delivering sodium hypochlorite directly and exclusively from the supplier's production plant to SCISTW during the contract period. The delivery barge will not be allowed to provide other services, such as carrying other chemical or carrying chemicals to other facilities other than SCISTW.	To minimize the risk due to chemicals-related operation To minimize the risk due to chemicals-related operation	DSD Chemical Supplier	SCISTW SCISTW	Operational phase Operational phase		√
14C.71-14C.72	*Dedicated Chemical Delivery Route and Road Signs* • Specific road tanker transport	To minimize the risk due to chemicals-related operation	DSD and chemical supplier	SCISTW	Operational phase		N/A

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation Status
	route will be assigned to each chemical. • Provide road signs on service road indicating the route to specific chemical storage area.						
14C.73	*Security of Chemical Loading Points* • Chemical delivery staff will need to register with SCISTW staff upon entering the site. Loading points for ferric chloride, sodium hypochlorite and sodium bisulphite will be secured by locks and the keys will be kept by SCISTW staff. The chemical unloading operation cannot start without presence of SCISTW staff to open the locks	To minimize the risk due to chemicals-related operation	DSD and chemical supplier	SCISTW	Operational phase		N/A
14C.77	*Clear Labelling of Chemicals-related Equipment* • Provide clear and sufficient signage / labels to indicate the identity (i.e. for which chemical) of each tank farm and associated equipment including pipelines, loading points and loading hoses.	To minimize the risk due to chemicals-related operation	Chemical Supplier	SCISTW	Operational phase		N/A
14.C78	*Ensuring Quality of Chemical Supplier* • Only appoint chemical suppliers with satisfactory quality system.	To minimize the risk due to chemicals-related operation	DSD / chemical supplier	N/A	Operational phase		N/A

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation Status
	• Request the chemical supplier to employ an independent checker to audit the quality and safety management system of the supplier • The chemical supplied to SCISTW can only be produced in designated chemical production plants and delivered directly from designated locations. This measure will be included in the chemical supply contract						
14C.79-14C.84	*Procedural Control of Chemical Unloading Operation* • Develop clear procedural controls for barge / road tanker filling and unloading operation	To minimize the risk due to chemicals-related operation	DSD	N/A	Operational phase		N/A
	• SCISTW staff will be present at the tank area to receive the barge / road tanker, check barge / road tanker labels, check the transport documents carried by the barge crew / road tanker driver, check type, size and colour of coupling and hose coupler, conduct chemical analysis to check the identity of delivered chemical and only then authorize the driver to unload the content.	To minimize the risk due to chemicals-related operation	DSD and Chemical Supplier	SCISTW	Operational phase		N/A
	• Chemical supplier needs to fax or electronically transmit copies of	To minimize the risk due to chemicals-related	Chemical Supplier	SCISTW	Operational phase		N/A

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation Status
	delivery bills-of-lading information and barge • crew / road tanker driver identification to SCISTW prior to delivery barge / road tanker arriving on-site. Such information will be in compliance with the supplier's independently accredited quality assurance system (to ISO:9000 or equivalent).	operation					
	• Conduct chemical analysis to confirm the right chemical is delivered. The analysis needs to be conducted by SCISTW staff or independent checker before the chemical is authorized to be unloaded to the tank farm	To minimize the risk due to chemicals-related operation	DSD or Independent Checker	SCISTW	Operational phase		N/A
	• If the coupling of hose connected to the barge / road tanker is found to be unmatched with the coupling of loading point of tank farm, chemical unloading operation must not proceed and the situation must be reported to the SCISTW management for follow-up actions	To minimize the risk due to chemicals-related operation	DSD and Chemical Supplier	SCISTW	Operational phase		N/A
	• Chain-of-custody documentation system will be used to ensure both the supplier (factory) and SCISTW staffs have checked the chemical identity and the consistency of the chemical analysis result	To minimize the risk due to chemicals-related operation	DSD and Chemical Supplier	Chemical Supply Factory and SCISTW	Operational phase		N/A

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation Status
14C.88	*Special Arrangement of SCISTW Public Event* Public evens might sometimes be held in SCISTW which allow access of public to the plant facilities. As a precautionary measure, chemical delivery operation will be suspended on days of SCISTW public event. Also, public members visiting the SCISTW will be guided by DSD staff and will not be allowed to visit the area near the chemical storage locations in SCISTW.	To minimize the risk due to chemicals-related operation	DSD	SCISTW	Operational phase		N/A
14C.167	• Increase the height to 3.0m of a (12m + 10m =) 22m long section of the bund wall around the northernmost storage tank (which is the tank closest to the hypochlorite pipeline to the west).	To prevent mixing of ferric chloride and hypochlorite in case of simultaneous failure of storage tank and pipelines	DSD	SCISTW	Design phase		√
14C.180	*Mitigation measures during construction protecting the sodium hypochlorite pipelines and ferric chloride tank farm.* *General:* • Employ vibration detectors and settlement markers • Develop action plan(s) for situations where vibration or settlement level is found to exceed the set limits	To minimize the risk of damaging the disinfection facilities	Contractor	Construction Site at SCISTW	Construction phase		√

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation Status
	• Designated delivery route and off-loading area for delivery trucks • Close supervision and monitoring by safety officers. If there is any construction work within 2m of the pipelines, an immediate inspection to the pipeline section and the impervious membrane wrapping should be conducted to ensure no damage to the integrity of the pipeline and the membrane Report any damage of the disinfection facilities to operators for remedial actions. • Provide indication / signs for sodium hypochlorite and ferric chloride pipelines • Regular checking of chemical delivery pipelines • Provide a physical barrier between the sodium hypochlorite tanks and the ferric chloride tanks during the construction stage before the new above ground structures for HATS Stage 2A are erected *Other construction activities:* • Excavation running close or parallel to sodium hypochlorite delivery pipelines and associated impervious membrane wrapping under road / pavement shall be avoided as far as possible						

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation Status
	• Use bore piles instead of percussion piles in order to keep vibration to a minimum • Maximise the distance between piling and delivery pipelines, as well as the associated impervious membrane wrapping. Monitor vibration resulted from construction works to ensure the velocity and amplitude of vibration limit will not be exceeded • Conduct hazard assessment for E&M installation and obtain Hot Work Permit before starting welding / hot works • Check and certify the stability of the construction equipment • Location of any large-scale or high-elevated equipment should be agreed with SCISTW operator before delivery • Confine hot works in designated areas. • Area within the boundaries of chemical storage facilities are subject to hazardous area control • Maximise the distance between the tunnel shaft and delivery pipelines						
K Cultural Heritage							
Tables 15.8 - 15.11	• The construction vibration control limit (ppv of 25mm/s) shall be strictly followed	To minimize vibration impacts on the identified vibration sensitive	Project Proponent	Identified historical Buildings	During blasting for tunnel, shafts, effluent		√

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation Status
		historical buildings.		/structures as mentioned in Tables 15.8, 15.9, 15.10 and 15.11	conveyance system and disinfection facilities in the vicinity of the buildings/ structures		
15.70	• Monitoring of vibration limits shall be conducted and reported as a requirement of EM&A programme	To ensure that acceptable vibration limits for historical buildings are not exceeded	Project Proponent	Identified historical buildings/structures as mentioned in Tables 15.8, 15.9, 15.10 and 15.11	During blasting for tunnel, shafts, effluent conveyance system and disinfection facilities in the vicinity of the buildings/ structures		√

Remarks

√ Compliance of mitigation measure;
X Non-compliance of mitigation measure;
N/A Not Applicable

APPENDIX B
ACTION AND LIMIT LEVELS

Action and Limit Levels

Table B-1 Action and Limit Levels for Construction Noise

Time Period	Action Level	Limit Level
0700-1900 hrs on normal weekdays	When one documented complaint is received	75 dB(A) *

Notes: If works are to be carried out during restricted hours, the conditions stipulated in the Construction Noise Permit (CNP) issued by the Noise Control Authority have to be followed.

* 70 dB (A) and 65 dB (A) for schools during normal teaching periods and school examination periods, respectively.

APPENDIX C
COPIES OF CALIBRATION CERTIFICATES

WELLAB LIMITED
Rms 816, 1516 & 1701, Technology Park,
18 On Lai Street, Shatin, N.T, Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

APPLICANT:	**Cinotech Consultants Limited** **Room 1710, Technology Park,** **18 On Lai Street,** **Shatin, NT, Hong Kong**	Test Report No.:	C/N/100902/1
		Date of Issue:	2011-09-03
		Date Received:	2011-09-02
		Date Tested:	2011-09-02
		Date Completed:	2011-09-03
		Next Due Date:	2012-09-02
ATTN:	**Mr. Henry Leung**	Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 955
Serial No.	: 21139
Microphone No.	: 43690
Equipment No.	: N-08-06

Test conditions:

Room Temperatre	: 21 degree Celsius
Relative Humidity	: 62%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

Patrick Tse

PATRICK TSE
Laboratory Manager

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WELLAB 匯力 Testing & Research

WELLAB LIMITED
Rms 816, 1516 & 1701, Technology Park,
18 On Lai Street, Shatin, N.T, Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

APPLICANT:	**Cinotech Consultants Limited** **Room 1710, Technology Park,** **18 On Lai Street,** **Shatin, NT, Hong Kong**	Test Report No.: Date of Issue: Date Received: Date Tested: Date Completed: Next Due Date:	C/N/110906/1 2011-09-07 2011-09-06 2011-09-06 2011-09-07 2012-09-06
ATTN:	**Mr. Henry Leung**	Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 957
Serial No.	: 21455
Microphone No.	: 43730
Equipment No.	: N-08-07

Test conditions:

Room Temperatre	: 22 degree Celsius
Relative Humidity	: 66%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

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WELLAB LIMITED
Rms 816, 1516 & 1701, Technology Park,
18 On Lai Street, Shatin, N.T, Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	C/N/111008/1
Date of Issue:	2011-10-10
Date Received:	2011-10-08
Date Tested:	2011-10-08
Date Completed:	2011-10-10
Next Due Date:	2012-10-09

ATTN: **Mr. Henry Leung** Page: 1 of 1

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 24803
Equipment No.	: N-09-03

Test conditions:

Room Temperatre	: 22 degree Celsius
Relative Humidity	: 62%

Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

Patrick Tse

PATRICK TSE
Laboratory Manager

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18 On Lai Street, Shatin, N.T, Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

ATTN: **Mr. Henry Leung**

Test Report No.:	C/N/111111/1
Date of Issue:	2011-11-14
Date Received:	2011-11-11
Date Tested:	2011-11-11
Date Completed:	2011-11-14
Next Due Date:	2012-11-13
Page:	1 of 1

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: Brüel & Kjær
Model No.	: 4231
Serial No.	: 2326353
Project No.	: C13
Equipment No.	: N-02-01

Test conditions:

Room Temperatre	: 21 degree Celsius
Relative Humidity	: 65 %

Methodology:

The sound calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

Patrick Tse

PATRICK TSE
Laboratory Manager

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APPENDIX D
ENVIRONMENTAL MONITORING SCHEDULE

Contract No. DC/2008/09 Harbour Treatment Scheme Stage 2A
Contruction of Sewage Conveyance System from Ap Lei Chau to Aberdeen
Impact Noise Monitoring Schedule for February 2012

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1-Feb	2-Feb	3-Feb	4-Feb
				24-hr TSP Noise Daytime at M8 & M9		
5-Feb	6-Feb	7-Feb	8-Feb	9-Feb	10-Feb	11-Feb
	1-hr TSP Noise Daytime at M8 & M9, Evening time at M8 & M9		24-hr TSP		1-hr TSP	
12-Feb	13-Feb	14-Feb	15-Feb	16-Feb	17-Feb	18-Feb
		24-hr TSP Noise Daytime at M8 & M9, Evening time at M8 & M9		1-hr TSP		
19-Feb	20-Feb	21-Feb	22-Feb	23-Feb	24-Feb	25-Feb
	24-hr TSP		1-hr TSP		24-hr TSP Noise Daytime at M8 & M9, Evening time at M8 & M9	
26-Feb	27-Feb	28-Feb	29-Feb			
	Noise Daytime at M8 & M9, Evening time at M8 & M9	1-hr TSP				

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)

Noise Monitoring Station:
M8 (Aberdeen PTW) - The roof of Wah Lai House
M9 (Ap Lei Chau PTW) - The Podium of Mei Chun Court, South Horizons
Air Monitoring Station:
CM_AB1, The Hong Kong Ice and Cold Storage
Remark: Monitoring for Aberdeen section (M8 and CM_AB1) is provided by DC/2007/24

Contract No. DC/2008/09 Harbour Treatment Scheme Stage 2A
Contruction of Sewage Conveyance System from Ap Lei Chau to Aberdeen
Tentative Impact Noise Monitoring Schedule for March 2012

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1-Mar	2-Mar	3-Mar
				24-hr TSP		
4-Mar	5-Mar	6-Mar	7-Mar	8-Mar	9-Mar	10-Mar
	1-hr TSP		24-hr TSP	Noise Daytime at M8 & M9, Evening time at M8 & M9	1-hr TSP	
11-Mar	12-Mar	13-Mar	14-Mar	15-Mar	16-Mar	17-Mar
		24-hr TSP Noise Daytime at M8 & M9, Evening time at M8 & M9		1-hr TSP		
18-Mar	19-Mar	20-Mar	21-Mar	22-Mar	23-Mar	24-Mar
	24-hr TSP	Noise Daytime at M8 & M9, Evening time at M8 & M9	1-hr TSP		24-hr TSP	
25-Mar	26-Mar	27-Mar	28-Mar	29-Mar	30-Mar	31-Mar
		1-hr TSP Noise Daytime at M8 & M9, Evening time at M8 & M9		24-hr TSP		

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)

Noise Monitoring Station:
M8 (Aberdeen PTW) - The roof of Wah Lai House
M9 (Ap Lei Chau PTW) - The Podium of Mei Chun Court, South Horizons
Air Monitoring Station:
CM_AB1, The Hong Kong Ice and Cold Storage
Remark: Monitoring for Aberdeen section (M8 and CM_AB1) is provided by DC/2007/24

APPENDIX E
NOISE MONITORING RESULTS AND GRAPHICAL PRESENTATIONS

Appendix E - Noise Monitoring Results

(Daytime Noise - 0700 to 1900 hrs on normal weekdays)

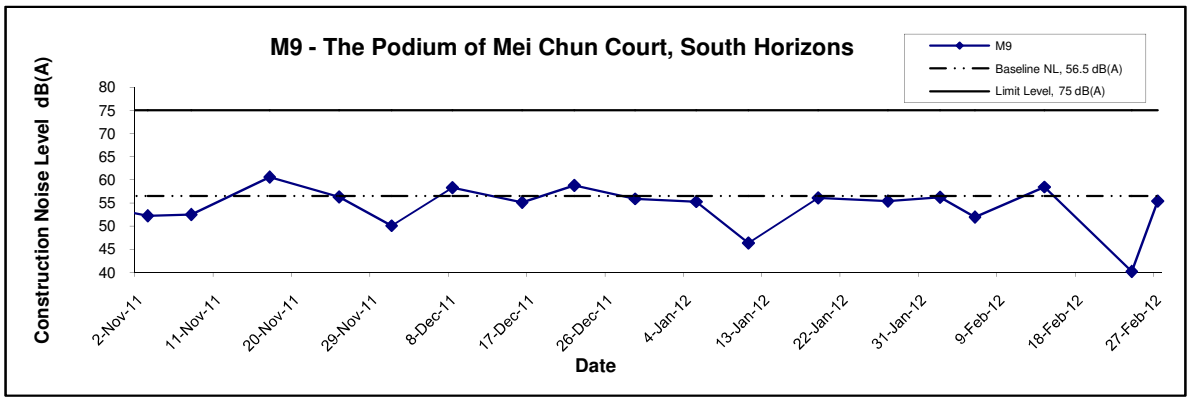
Location M9 - The Podium of Mei Chun Court, South Horizons							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
2-Feb-12	16:20	Cloudy	56.2	58.7	51.2	56.5	56.2 Measured ≦ Baseline
6-Feb-12	17:10	Cloudy	57.8	59.2	52.5		51.9
14-Feb-12	14:50	Cloudy	60.6	63.9	52.6		58.5
24-Feb-12	17:25	Cloudy	56.6	59.7	49.2		40.2
27-Feb-12	17:10	Cloudy	55.4	57.9	50.2		55.4 Measured ≦ Baseline

(Evening-time - 19:00 to 23:00 on normal weekdays)

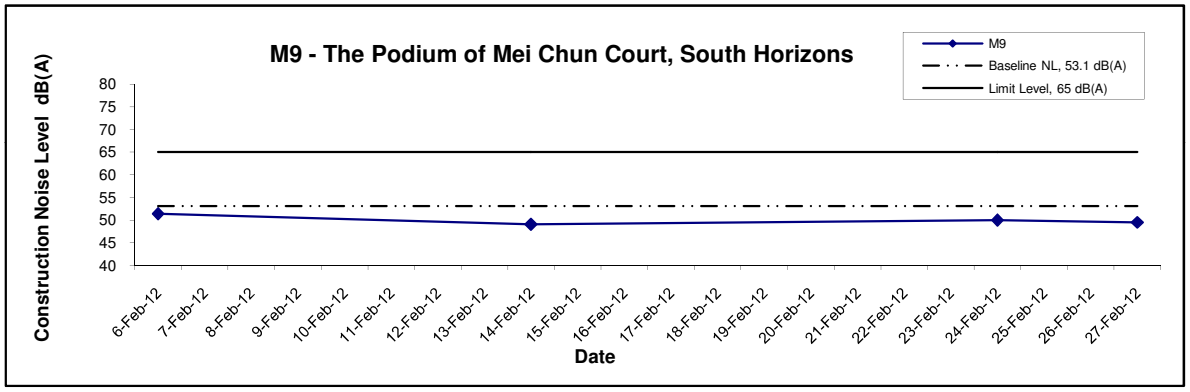
Location M9 - The Podium of Mei Chun Court, South Horizons								
Date	Time	Weather	dB (A) (5-min)				Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	Average L_{eq}	L_{eq}	L_{eq}
6-Feb-12	20:00	Cloudy	53.9	55.5	51.3	51.4	53.1	51.4 Measured ≦ Baseline
	20:05		48.5	50.4	46.0			
	20:10		49.7	51.9	46.6			
14-Feb-12	20:28	Cloudy	50.8	51.8	45.8	49.1		49.1 Measured ≦ Baseline
	20:33		48.6	50.1	45.0			
	20:38		47.8	49.9	45.0			
24-Feb-12	20:50	Cloudy	48.7	51.0	45.1	50.0		50.0 Measured ≦ Baseline
	20:55		48.5	51.1	45.2			
	21:00		52.7	55.6	47.7			
27-Feb-12	20:40	Cloudy	53.6	56.5	47.0	49.5		49.5 Measured ≦ Baseline
	20:45		46.3	48.5	43.2			
	20:50		48.6	51.1	45.6			

Noise Levels

(Daytime Noise - 0700 to 1900 hrs on normal weekdays)



(Evening-time - 19:00 to 23:00 on normal weekdays)



Title: Contract No. DC/2008/09 Harbour Area Treatment Scheme Stage 2A – Construction of Sewage Conveyance System from Ap Lei Chau to Aberdeen Graphical Presentation of Construction Noise Monitoring Results	Scale: N.T.S Date: Feb 12	Project No.: MA9042 Appendix: E	CINOTECH

APPENDIX F
SITE AUDIT SUMMARY

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	120207
Date	7 February 2012 (Tuesday)
Time	9:30 – 11:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	A. Water Quality	
120207-R01	• The Contractor was reminded to provide mitigation measures to avoid bentonite water leaving the site at ALC-i.	A9
	B. Landscape and Visual	
	• No major environmental deficiency was identified during site inspection.	
	C. Air Quality	
	• No major environmental deficiency was identified during site inspection.	
	D. Noise	
	• No major environmental deficiency was identified during site inspection.	
	E. Waste/Chemical Management	
	• No major environmental deficiency was identified during site inspection.	
	F. Permits/Licenses	
	• No major environmental deficiency was identified during site inspection.	
	G. Others	
	Follow-up on previous audit sections (Ref. No.:120131): • All environmental deficiencies were improved/ rectified by the Contractor.	

	Name	Signature	Date
Recorded by	Felix Kwan	Felix	7 February 2012
Checked by	Dr. Priscilla Choy		7 February 2012

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	120214
Date	14 February 2012 (Tuesday)
Time	9:30 – 11:20

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	A. Water Quality	
	• No major environmental deficiency was identified during site inspection.	
	B. Landscape and Visual	
	• No major environmental deficiency was identified during site inspection.	
	C. Air Quality	
	• No major environmental deficiency was identified during site inspection.	
	D. Noise	
	• No major environmental deficiency was identified during site inspection.	
	E. Waste/Chemical Management	
	• No major environmental deficiency was identified during site inspection.	
	F. Permits/Licenses	
	• No major environmental deficiency was identified during site inspection.	
	G. Others	
	Follow-up on previous audit sections (Ref. No.:120207): • All environmental deficiencies were improved/ rectified by the Contractor.	

	Name	Signature	Date
Recorded by	Felix Kwan		14 February 2012
Checked by	Dr. Priscilla Choy		14 February 2012

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	120224
Date	24 February 2012 (Friday)
Time	10:15 – 11:15

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	A. Water Quality	
120224-R01	• Wastewater should be discharged properly to the discharge point according to wastewater discharge license at AbdPtw.	A1
	B. Landscape and Visual	
	• No major environmental deficiency was identified during site inspection.	
	C. Air Quality	
	• No major environmental deficiency was identified during site inspection.	
	D. Noise	
	• No major environmental deficiency was identified during site inspection.	
	E. Waste/Chemical Management	
	• No major environmental deficiency was identified during site inspection.	
	F. Permits/Licenses	
	• No major environmental deficiency was identified during site inspection.	
	G. Others	
	Follow-up on previous audit sections (Ref. No.:120214): • All environmental deficiencies were improved/ rectified by the Contractor.	

	Name	Signature	Date
Recorded by	Charles Ma		24 February 2012
Checked by	Dr. Priscilla Choy		24 February 2012

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	120228
Date	28 February 2012 (Tuesday)
Time	9:35 – 11:20

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	A. Water Quality	
	• No major environmental deficiency was identified during site inspection.	
	B. Landscape and Visual	
	• No major environmental deficiency was identified during site inspection.	
	C. Air Quality	
120228-R01	• Emission from mud pump should be controlled.	C16
120228-R02	• Broken bentonite bag should be covered.	C6
	D. Noise	
	• No major environmental deficiency was identified during site inspection.	
	E. Waste/Chemical Management	
	• No major environmental deficiency was identified during site inspection.	
	F. Permits/Licenses	
	• No major environmental deficiency was identified during site inspection.	
	G. Others	
	Follow-up on previous audit sections (Ref. No.:120224): • All environmental deficiencies were improved/ rectified by the Contractor.	

	Name	Signature	Date
Recorded by	Charles Ma	Charles	28 February 2012
Checked by	Dr. Priscilla Choy		28 February 2012

APPENDIX G
SUMMARY OF WASTE GENERATION IN THE REPORTING MONTH

Appendix G Waste Flow Table

Contract No.: DC/2008/09

Actual / Estimated Volume of Monthly Waste Flow Table from 2009 to 2012

Year	Month	Estimated Quantities of Inert C&D Materials Generated Monthly					Estimated Quantities of C&D Wastes Generated Monthly				
		(a)=(b)+(c)+(d)+(e) Total Quantity Generated	(b) Broken Concrete	(c) Reused in the Contract	(d) Reused in other Projects	(e) Disposed in Public Fill	(f) Metals	(g) Paper/cardboard packaging	(h) Plastics	(i) Chemical Waste	(j) Others, e.g. general refuse disposed at Landfill
		ton	ton	ton	ton	ton	ton	ton	ton	ton	ton
2009	Jul-09	0	0	0	0	0	0	0	0	0	0
	Aug-09	0	0	0	0	0	0	0	0	0	0
	Sep-09	0	0	0	0	0	0	0	0	0	0
	Oct-09	0	0	0	0	0	0	0	0	0	0
	Nov-09	0	0	0	0	0	0	0	0	0	2
	Dec-09	193	0	0	0	193	0	0	0	0	2
	Sub-total	193	0	0	0	193	0	0	0	0	4
2010	Jan-10	50	0	0	0	50	0	0	0	0	2
	Feb-10	457	0	0	0	457	0	0	0	0	2
	Mar-10	16	0	0	0	16	0	0	0	0	2
	Apr-10	5	0	0	0	5	0	0	0	0	2
	May-10	0	0	0	0	0	0	0	0	0	2
	Jun-10	54	0	0	0	54	0	0	0	0	2
	Jul-10	110	0	0	0	110	0	0	0	0	2
	Aug-10	302	0	0	0	302	0	0	0	0	2
	Sep-10	182	0	0	0	182	0	0	0	0	2
	Oct-10	221	0	0	0	221	0	0	0	0.85	6
	Nov-10	223	0	0	0	223	0	0	0	0.51	2
	Dec-10	1195	0	0	0	1195	0	0	0	0	4
	Sub-total	2815	0	0	0	2815	0	0	0	1.36	31
2011	Jan-11	1003	0	0	0	1003	0	0	0	0	2
	Feb-11	289	0	0	0	289	0	0	0	0	2
	Mar-11	507	0	0	0	507	0	0	0	0	2
	Apr-11	411	0	0	0	411	0	0	0	0	4
	May-11	465	0	0	0	465	0	0	0	0	2
	Jun-11	772	0	0	0	772	0	0	0	0	2
	Jul-11	612	0	0	0	612	0	0	0	0.85	2
	Aug-11	383	0	0	0	383	0	0	0	0	2
	Sep-11	296	0	0	0	296	0	0	0	0	3
	Oct-11	1059	0	0	0	1059	0	0	0	0	3
	Nov-11	866	0	0	0	866	0	0	0	0	2
	Dec-11	436	0	0	0	436	0	0	0	0	2
	Sub-total	7099	0	0	0	7099	0	0	0	0.85	28
2012	Jan-12	533	0	0	0	533	0	0	0	0	2
	Feb-12	759	0	0	0	759	0	0	0	0.36	2
	Mar-12	142	0	0	0	142	0	0	0	0	2
	Apr-12	242	0	0	0	242	0	0	0	0	2
	May-12	82	0	0	0	82	0	0	0	0	2
	Jun-12	106	0	0	0	106	0	0	0	0	2
	Jul-12	504	0	0	0	504	0	0	0	1	2
	Sub-total	2368	0	0	0	2368	0	0	0	1.36	14
	Total	12475	0	0	0	12475	0	0	0	3.57	76

Remark:

Actual Qualities of C&D Material Generation are presented from July 2009 to January 2012 in the table

Estimated Qualities of C&D Material Generation are presented from February 2012 to July 2012 in the table

APPENDIX H
EVENT/ACTION PLANS

APPENDIX H – Event / Action Plans

Table H-1 Event / Action Plan For Air Quality

EVENT	ACTION			
	ET	**IEC**	**ER**	**CONTRACTOR**
ACTION LEVEL				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC and ER; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
2. Exceedance for two or more consecutive samples	1. Identify source; 2. Inform IEC and ER; 3. Advise the ER on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and Contractor on remedial	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ET on the effectiveness of the proposed remedial measures; 5. Supervise Implementation of remedial measures.	1. Confirm receipt of notification of failurein writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented	1. Submit proposals for remedial to ER within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate

EVENT	ACTION			
	ET	**IEC**	**ER**	**CONTRACTOR**
	actions required; 7. If exceedance continues, arrange meeting with IEC and ER; 8. If exceedance stops, cease additional monitoring			
LIMIT LEVEL				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform ER, Contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate

EVENT	ACTION			
	ET	**IEC**	**ER**	**CONTRACTOR**
2. Exceedance for two or more consecutive samples	1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 4. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 5. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated

Table H-2 Event / Action Plan For Construction Noise

EVENT	ACTION			
	ET	**IEC**	**ER**	**CONTRACTOR**
Action Level being exceeded	1. Notify ER, IEC and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the IEC and Contractor on remedial measures required; 5. Increase monitoring frequency to check mitigation effectiveness	1. Review the investigation results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Advise the ER on the effectiveness of the proposed remedial measures	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise the implementation of remedial measures	1. Submit noise mitigation proposals to IEC and ER; 2. Implement noise mitigation proposals
Limit Level being exceeded	1. Inform IEC, ER, Contractor and EPD; 2. Repeat measurements to confirm findings; 3. Increase monitoring frequency; 4. Identify source and investigate the cause of exceedance; 5. Carry out analysis of Contractor's working procedures; 6. Discuss with the IEC, Contractor and ER on remedial measures required; 7. Assess effectiveness of	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise the implementation of remedial measures; 5. If exceedance continues, consider stopping the Contractor to continue working on that portion of work which causes the exceedance	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC and ER within 3 working days of notification; 3. Implement the agreed proposals; 4. Submit further proposal if problem still not under control; 5. Stop the relevant portion of works as instructed by

EVENT	ACTION			
	ET	**IEC**	**ER**	**CONTRACTOR**
	Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring		until the exceedance is abated	the ER until the exceedance is abated

APPENDIX I
COMPLAINT LOG

APPENDIX I – COMPLAINT LOG

Reporting Month: February, 2012

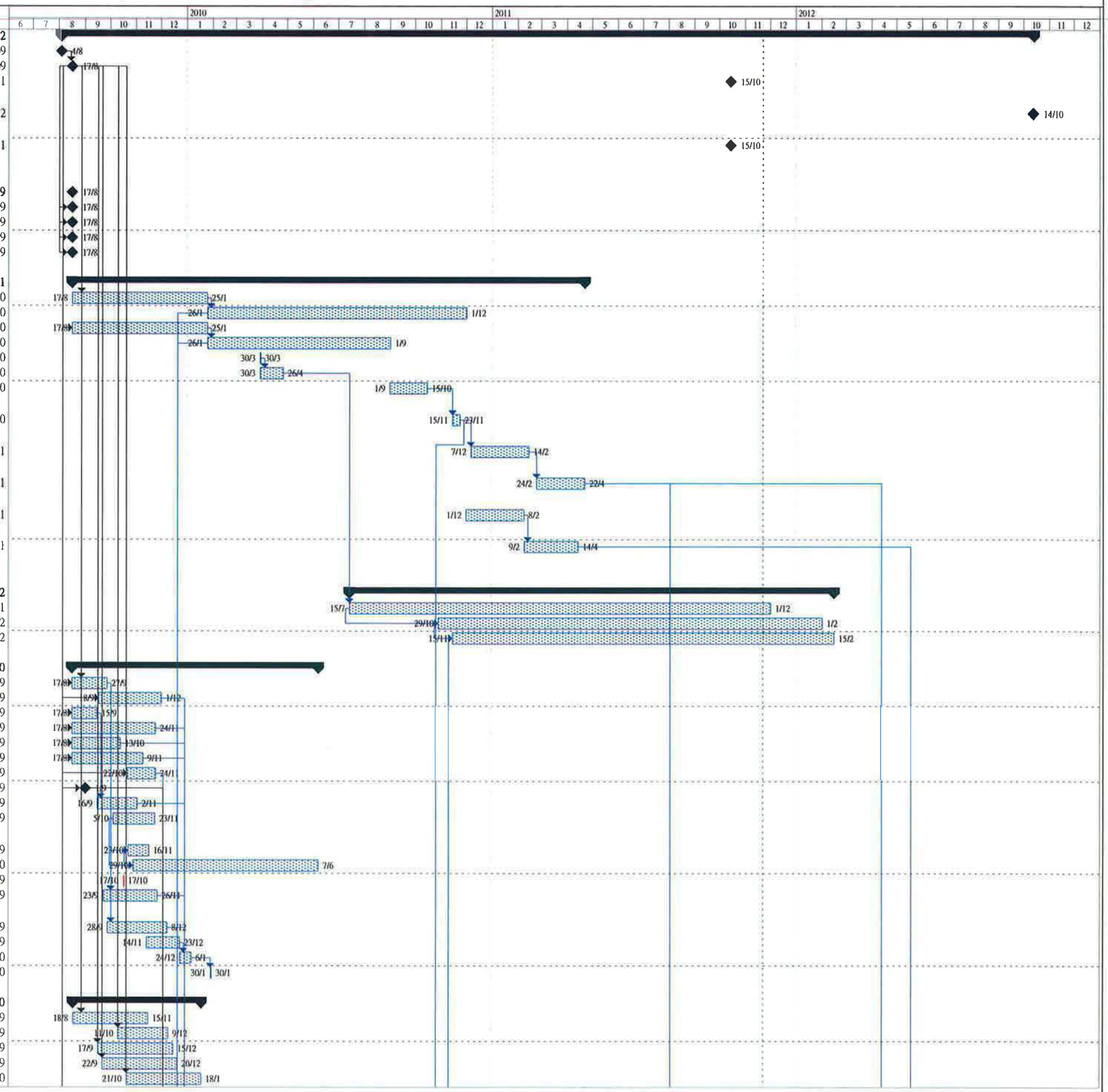
Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
N/A	N/A	N/A	N/A	N/A	N/A

Remarks: No environmental complaint was received in February 2012.

APPENDIX J
CONSTRUCTION PROGRAMME

Contract No. DC/2008/09
Habour Area Treatment Scheme Stage 2A
Construction of Sewage Conveyance System from Ap Lei Chau to Aberdeen
Proposed Works Programme WP04A - Mitigation Programme

ID	Task Name	Duration	Start	Finish
1	**Key Dates**	**1167 days**	**Tue 4/8/09**	**Sun 14/10/12**
2	Letter of Acceptance	0 days	Tue 4/8/09	Tue 4/8/09
3	Contract Commencement	0 days	Mon 17/8/09	Mon 17/8/09
4	Section I Extended Completion (comprises all Works not included in other Sections	0 days	Sat 15/10/11	Sat 15/10/11
5	Section II Extended Completion (comprises Landscape Works)	0 days	Sun 14/10/12	Sun 14/10/12
6	Section III Extended Completion (comprises preservation and protection of existing trees in all Portions of the Site	0 days	Sat 15/10/11	Sat 15/10/11
7				
8	**Site Possession**	**0 days**	**Mon 17/8/09**	**Mon 17/8/09**
9	Site Portion Abd-i	0 days	Mon 17/8/09	Mon 17/8/09
10	Site Portion AbdPTW-iii	0 days	Mon 17/8/09	Mon 17/8/09
11	Site Portion ALC-i	0 days	Mon 17/8/09	Mon 17/8/09
12	Site Portion THK1853	0 days	Mon 17/8/09	Mon 17/8/09
13				
14	**Submission**	**614 days**	**Mon 17/8/09**	**Fri 22/4/11**
15	Submission of HDD Method Statement	162 days	Mon 17/8/09	Mon 25/1/10
16	Approval of HDD Method Statement	310 days	Tue 26/1/10	Wed 1/12/10
17	Submission of HDD Profile	162 days	Mon 17/8/09	Mon 25/1/10
18	Approval of HDD Profile	219 days	Tue 26/1/10	Wed 1/9/10
19	Material Submission of HDPE Pipe	1 day	Tue 30/3/10	Tue 30/3/10
20	Approval of HDPE Pipe	28 days	Tue 30/3/10	Mon 26/4/10
21	Submission of Method Statement of Construction of Seawater Intake Pipe	45 days	Wed 1/9/10	Fri 15/10/10
22	Approval of Method Statement of Construction of Seawater Intake Pipe	9 days	Mon 15/11/10	Tue 23/11/10
23	Submission of method statement for construction of access shaft	70 days	Tue 7/12/10	Mon 14/2/11
24	Approval of method statement for construction of access shaft	58 days	Thu 24/2/11	Fri 22/4/11
25	Submission of Design for Construction of Trust Block for Bent Pipe at AbdPTW-iii	70 days	Wed 1/12/10	Tue 8/2/11
26	Approval of Design for Construction of Trust Block for Bent Pipe at AbdPTW-iii	65 days	Wed 9/2/11	Thu 14/4/11
27				
28	**Procurement**	**581 days**	**Thu 15/7/10**	**Wed 15/2/12**
29	Order Placement of HDPE Pipe for Q1 and Q2	505 days	Thu 15/7/10	Thu 1/12/11
30	Manufacturing of HDPE Pipe	461 days	Fri 29/10/10	Wed 1/2/12
31	Delivery of HDPE Pipe	458 days	Mon 15/11/10	Wed 15/2/12
32				
33	**Preliminary Works**	**295 days**	**Mon 17/8/09**	**Mon 7/6/10**
34	Site Clearance	42 days	Mon 17/8/09	Sun 27/9/09
35	Erection of Hoarding and Fencing	75 days	Fri 18/9/09	Tue 1/12/09
36	Set-up Contractor's Office	30 days	Mon 17/8/09	Tue 15/9/09
37	Set-up Engineer's Office	100 days	Mon 17/8/09	Tue 24/11/09
38	Initial Survey	58 days	Mon 17/8/09	Tue 13/10/09
39	Photographic Survey	85 days	Mon 17/8/09	Mon 9/11/09
40	Tree Survey	34 days	Thu 22/10/09	Tue 24/11/09
41	Obtaining Tree Felling Permit	0 days	Tue 1/9/09	Tue 1/9/09
42	Identification of Utilities and Protection	48 days	Wed 16/9/09	Mon 2/11/09
43	Excavation Permit Application for Instrumentation Installation	50 days	Mon 5/10/09	Mon 23/11/09
44	TTM for Instrumentation Installation	25 days	Fri 23/10/09	Mon 16/11/09
45	Installation of Monitoring Instrumentation	222 days	Thu 29/10/09	Mon 7/6/10
46	Taking over Existing Monitoring Points	1 day	Sat 17/10/09	Sat 17/10/09
47	Demolition and Reprovision of Existing Structure	65 days	Wed 23/9/09	Thu 26/11/09
48	Ground Investigation	72 days	Mon 28/9/09	Tue 8/12/09
49	Coral Survey	40 days	Sat 14/11/09	Wed 23/12/09
50	Submission of Coral Survey Report to EPD	14 days	Thu 24/12/09	Wed 6/1/10
51	Coral Transplantation	1 day	Sat 30/1/10	Sat 30/1/10
52				
53	**Liaison with Concerned Parties**	**154 days**	**Tue 18/8/09**	**Mon 18/1/10**
54	Liaison with Aberdeen PTW	90 days	Tue 18/8/09	Sun 15/11/09
55	Liaison with Ap Lei Chau PTW	60 days	Sun 11/10/09	Wed 9/12/09
56	Liaison with Town Gas Depot at Aberdeen	90 days	Thu 17/9/09	Tue 15/12/09
57	Liaison with Shell Depot at Ap Lei Chau	90 days	Tue 22/9/09	Sun 20/12/09
58	Liaison with HEC	90 days	Wed 21/10/09	Mon 18/1/10

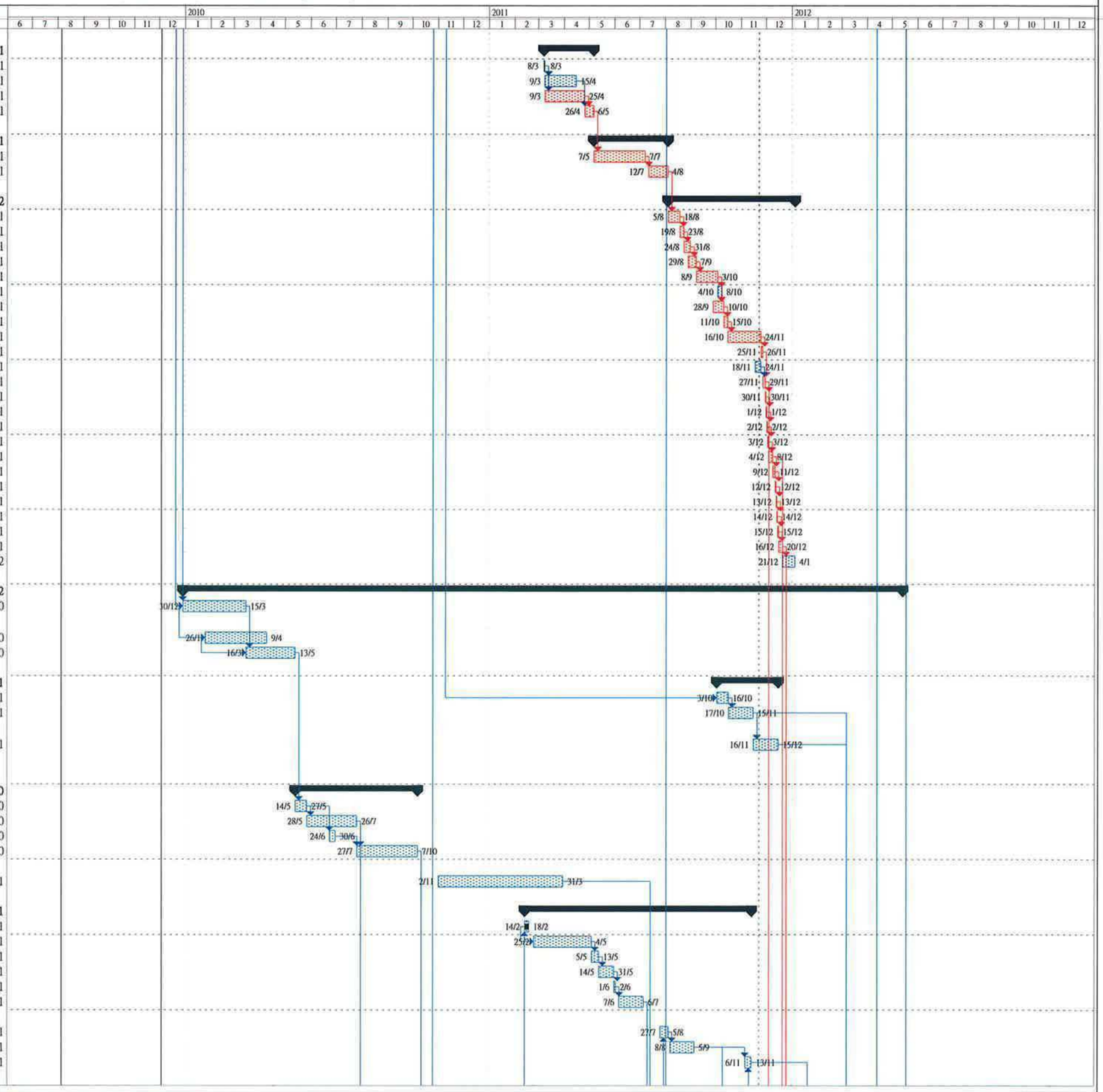


Project: DC/2008/09
Date: 21 November 2011

Task | Progress | Summary | Rolled Up Critical Task | Rolled Up Progress | External Tasks | Group By Summary
Critical Task | Milestone | Rolled Up Task | Rolled Up Milestone | Split | Project Summary | Deadline

Contract No. DC/2008/09
Habour Area Treatment Scheme Stage 2A
Construction of Sewage Conveyance System from Ap Lei Chau to Aberdeen
Proposed Works Programme WP04A - Mitigation Programme

ID	Task Name	Duration	Start	Finish
59				
60	**Demolition of Existing Building inside ALC-PTW**	**60 days**	**Tue 8/3/11**	**Fri 6/5/11**
61	Issue of VO	1 day	Tue 8/3/11	Tue 8/3/11
62	Temporary Structures and Cable Trench Excavation	38 days	Wed 9/3/11	Fri 15/4/11
63	Relocate Power Supply and Utility Diversion	48 days	Wed 9/3/11	Mon 25/4/11
64	Demolition of the Buildding	11 days	Tue 26/4/11	Fri 6/5/11
65				
66	**DTH Works and Jet Grouting**	**90 days**	**Sat 7/5/11**	**Thu 4/8/11**
67	DTH Works - 610mm pipe	62 days	Sat 7/5/11	Thu 7/7/11
68	Jet Grouting (Trial Grouting)	24 days	Tue 12/7/11	Thu 4/8/11
69				
70	**Open Cut with Pipe Pile Shoring at ALC - PTW**	**153 days**	**Fri 5/8/11**	**Wed 4/1/12**
71	Design for Open Cut with Pipe Pile Shoring	14 days	Fri 5/8/11	Thu 18/8/11
72	ICE Certify the Design	5 days	Fri 19/8/11	Tue 23/8/11
73	Procurement and delivery of pipe piles	8 days	Wed 24/8/11	Wed 31/8/11
74	Plant Mobilization for Pipe Pile Works	10 days	Mon 29/8/11	Wed 7/9/11
75	Pipe Pile Works - 610mm pipe	26 days	Thu 8/9/11	Mon 3/10/11
76	Demobilization of Piling Rig	5 days	Tue 4/10/11	Sat 8/10/11
77	Procurement and Deliver of Waling and Struts	13 days	Wed 28/9/11	Mon 10/10/11
78	Plant Mobilization for Shoring and Excavation	5 days	Tue 11/10/11	Sat 15/10/11
79	Shoring and Excavation	40 days	Sun 16/10/11	Thu 24/11/11
80	Concreting the Open Pit for Reaming	2 days	Fri 25/11/11	Sat 26/11/11
81	Set Up Platforms for 44" Casings Installation and Reaming	7 days	Fri 18/11/11	Thu 24/11/11
82	Punch out for Q1	3 days	Sun 27/11/11	Tue 29/11/11
83	20" Backward Reaming to Bedrock Level	1 day	Wed 30/11/11	Wed 30/11/11
84	26" Backward Reaming to Bedrock Level	1 day	Thu 1/12/11	Thu 1/12/11
85	36" Backward Reaming to Bedrock Level	1 day	Fri 2/12/11	Fri 2/12/11
86	46" Backward Reaming to Bedrock Level	1 day	Sat 3/12/11	Sat 3/12/11
87	Installation of 44 Steel Casings for Q1	5 days	Sun 4/12/11	Thu 8/12/11
88	Punch out for Q2	3 days	Fri 9/12/11	Sun 11/12/11
89	20" Backward Reaming to Bedrock Level	1 day	Mon 12/12/11	Mon 12/12/11
90	26" Backward Reaming to Bedrock Level	1 day	Tue 13/12/11	Tue 13/12/11
91	36" Backward Reaming to Bedrock Level	1 day	Wed 14/12/11	Wed 14/12/11
92	46" Backward Reaming to Bedrock Level	1 day	Thu 15/12/11	Thu 15/12/11
93	Installation of 44 Steel Casings for Q2	5 days	Fri 16/12/11	Tue 20/12/11
94	Backfilling	15 days	Wed 21/12/11	Wed 4/1/12
95				
96	**Horizontal Directional Drilling Works**	**866 days**	**Wed 30/12/09**	**Sun 13/5/12**
97	Excavation of Rig Footing & Setting Concrete Dead Man	76 days	Wed 30/12/09	Mon 15/3/10
98	Mobilization	74 days	Tue 26/1/10	Fri 9/4/10
99	Drill site preparation works	59 days	Tue 16/3/10	Thu 13/5/10
100				
101	**HDPE Pipe Preparation Works**	**74 days**	**Mon 3/10/11**	**Thu 15/12/11**
102	Pre-installation test for HDPE pipe	14 days	Mon 3/10/11	Sun 16/10/11
103	D600mm(ID) HDPE Pipe Preparations for Q1	30 days	Mon 17/10/11	Tue 15/11/11
104	D600mm(ID) HDPE Pipe Preparations for Q2	30 days	Wed 16/11/11	Thu 15/12/11
105				
106	**Casing Installation at Entry Pit at Aberdeen**	**147 days**	**Fri 14/5/10**	**Thu 7/10/10**
107	55" casing installation for Q1	14 days	Fri 14/5/10	Thu 27/5/10
108	48" casing installation for Q1	60 days	Fri 28/5/10	Mon 26/7/10
109	55" casing installation for Q2	7 days	Thu 24/6/10	Wed 30/6/10
110	48" casing installation for Q2	73 days	Tue 27/7/10	Thu 7/10/10
111				
112	Construction of Exit Pit at Ap Lei Chau	150 days	Tue 2/11/10	Thu 31/3/11
113				
114	**Forward Reaming for Q1 and Q2 (No Tail String)**	**273 days**	**Mon 14/2/11**	**Sun 13/11/11**
115	24" casing with Centralizer installation	5 days	Mon 14/2/11	Fri 18/2/11
116	20" Forward Reaming for Q1(1253m)	69 days	Fri 25/2/11	Wed 4/5/11
117	30" casing with Centralizer installation for Q1	9 days	Thu 5/5/11	Fri 13/5/11
118	26" Forward Reaming for Q1(620m)	18 days	Sat 14/5/11	Tue 31/5/11
119	HDD Drill Rig shift from Q1 to Q2	2 days	Wed 1/6/11	Thu 2/6/11
120	20" Forward Reaming for Q2 (1253m)	30 days	Tue 7/6/11	Wed 6/7/11
121				
122	30" casing with Centralizer installation for Q2 (using 2nd HDD Rig)	10 days	Wed 27/7/11	Fri 5/8/11
123	26" Forward Reaming for Q2 (960m) (using 2nd HDD Rig)	29 days	Mon 8/8/11	Mon 5/9/11
124	40" casing with Centralizer installation for Q2 (using 2nd HDD Rig)	8 days	Sun 6/11/11	Sun 13/11/11
125				

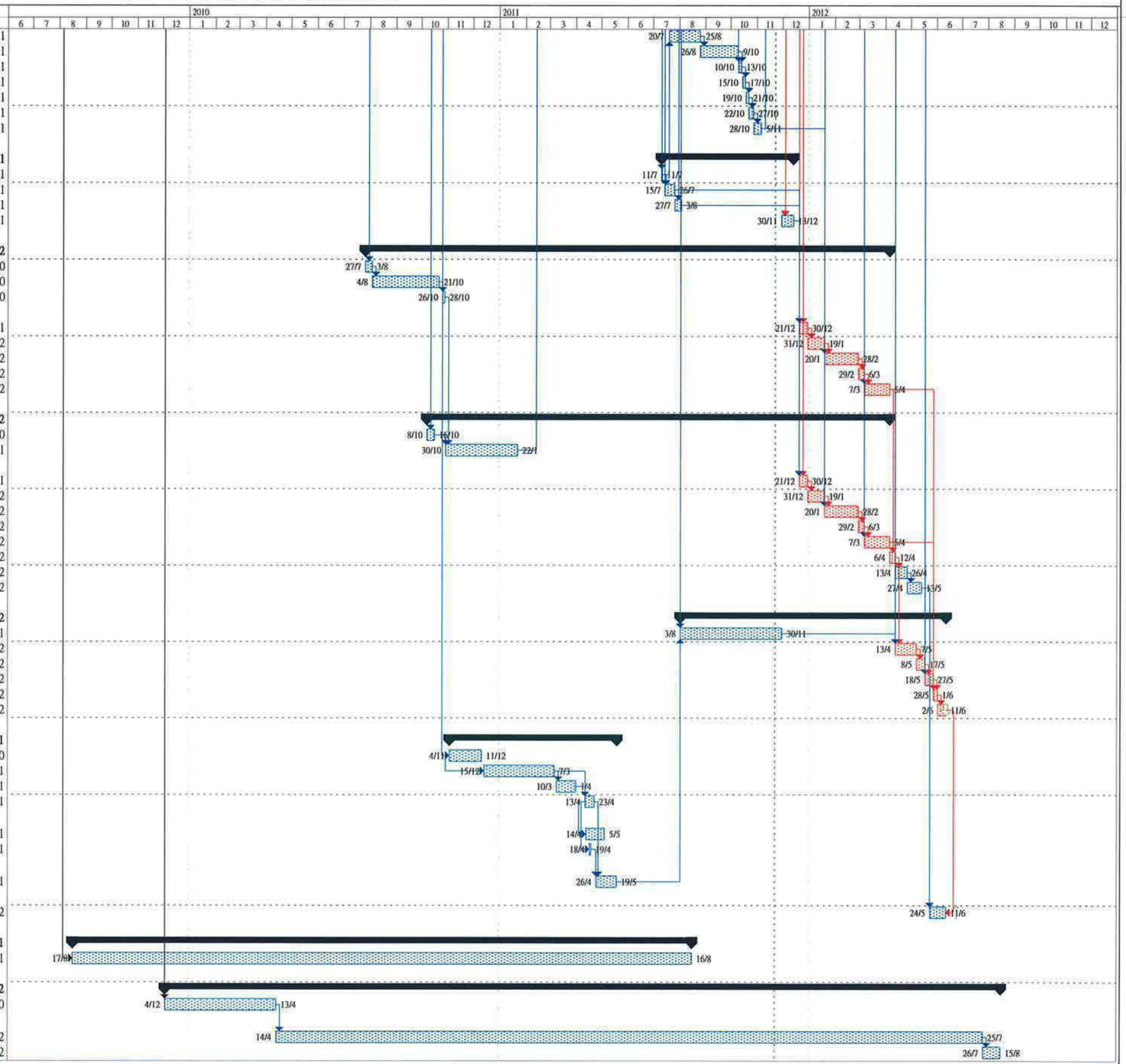


Project: DC/2008/09
Date: 21 November 2011

Task | Progress | Summary | Rolled Up Critical Task | Rolled Up Progress | External Tasks | Group By Summary
Critical Task | Milestone | Rolled Up Task | Rolled Up Milestone | Split | Project Summary | Deadline

Contract No. DC/2008/09
Habour Area Treatment Scheme Stage 2A
Construction of Sewage Conveyance System from Ap Lei Chau to Aberdeen
Proposed Works Programme WP04A - Mitigation Programme

ID	Task Name	Duration	Start	Finish
126	Retrieval Works for Centralizer Ring and Broken Bull-Noses in Q1	37 days	Wed 20/7/11	Thu 25/8/11
127	Junk Retrieval Works along 26" and 20" reamed hole in Q1	45 days	Fri 26/8/11	Sun 9/10/11
128	26" Forward Reaming for Q1(from 620m to 670m)	4 days	Mon 10/10/11	Thu 13/10/11
129	Retrieval Works for 26" Reamer	3 days	Sat 15/10/11	Mon 17/10/11
130	Cleaning the 20" portion of Q1 tunnel with 18" Junk Basket	3 days	Wed 19/10/11	Fri 21/10/11
131	Retrieval Works for Centralizer ring and Broken Bull-Noses in Q1	6 days	Sat 22/10/11	Thu 27/10/11
132	40" casing with Centralizer installation for Q1	9 days	Fri 28/10/11	Sat 5/11/11
133				
134	**Mobilization of 2nd Drill Rig and Pulling Rig Set Up**	**156 days**	**Mon 11/7/11**	**Tue 13/12/11**
135	HDD Drill Rig shift from Q2 to Q1	1 day	Mon 11/7/11	Mon 11/7/11
136	2nd Drill Rig Set Up at Entry Side Q2 Position	12 days	Fri 15/7/11	Tue 26/7/11
137	Anchor Pit Construction	8 days	Wed 27/7/11	Wed 3/8/11
138	Pulling Rig Set Up at ALC	14 days	Wed 30/11/11	Tue 13/12/11
139				
140	**HDD Operations for Q1**	**619 days**	**Tue 27/7/10**	**Thu 5/4/12**
141	Installation of 13" centralizer casing for Q1	8 days	Tue 27/7/10	Tue 3/8/10
142	Pilot Hole Drilling for Q1	79 days	Wed 4/8/10	Thu 21/10/10
143	Rig Down from Alignment Q1 to Q2	3 days	Tue 26/10/10	Thu 28/10/10
144				
145	20" hole opener - remained (with tail string)	10 days	Wed 21/12/11	Fri 30/12/11
146	26" hole opener - remained (with tail string)	20 days	Sat 31/12/11	Thu 19/1/12
147	36" hole opener (with tail string)	40 days	Fri 20/1/12	Tue 28/2/12
148	Swabbing of reamed hole for Q1	7 days	Wed 29/2/12	Tue 6/3/12
149	D600mm(ID) HDPE Pullback Operations	30 days	Wed 7/3/12	Thu 5/4/12
150				
151	**HDD Operations for Q2**	**546 days**	**Fri 8/10/10**	**Thu 5/4/12**
152	Installation of 13" centralizer casing for Q2	9 days	Fri 8/10/10	Sat 16/10/10
153	Pilot Hole Drilling for Q2	85 days	Sat 30/10/10	Sat 22/1/11
154				
155	20" hole opener - remained (Backward Reaming)	10 days	Wed 21/12/11	Fri 30/12/11
156	26" hole opener - remained (Backward Reaming)	20 days	Sat 31/12/11	Thu 19/1/12
157	36" hole opener (Backward Reaming)	40 days	Fri 20/1/12	Tue 28/2/12
158	Swabbing of reamed hole for Q2	7 days	Wed 29/2/12	Tue 6/3/12
159	D600mm(ID) HDPE Pullback Operations	30 days	Wed 7/3/12	Thu 5/4/12
160	Post Installation Test for HDPE pipe (Substantial Completion)	7 days	Fri 6/4/12	Thu 12/4/12
161	Equipment cleaning and demobilization	14 days	Fri 13/4/12	Thu 26/4/12
162	Backfill for entry and exit pit	17 days	Fri 27/4/12	Sun 13/5/12
163				
164	**Construction of Thrust Block for Bent Pipe at AbdPTW-iii**	**314 days**	**Wed 3/8/11**	**Mon 11/6/12**
165	Construction of vertical pit	120 days	Wed 3/8/11	Wed 30/11/11
166	Further Excavation down to HDPE Pipes	25 days	Fri 13/4/12	Mon 7/5/12
167	Installation of HDPE bent pipes	10 days	Tue 8/5/12	Thu 17/5/12
168	Construction of thrust blocks	10 days	Fri 18/5/12	Sun 27/5/12
169	Post installation pressure test (for Vertical part of Pipes)	5 days	Mon 28/5/12	Fri 1/6/12
170	Backfill for vertical access shaft and removal of shoring	10 days	Sat 2/6/12	Mon 11/6/12
171				
172	**Construction of Seawater Intake Pipe**	**197 days**	**Thu 4/11/10**	**Thu 19/5/11**
173	Sheet piling for trench for intake pipe	38 days	Thu 4/11/10	Sat 11/12/10
174	Removal of seawall block and trench excavation	83 days	Wed 15/12/10	Mon 7/3/11
175	Chipping of Existing Seawall Concrete suiting required level	23 days	Thu 10/3/11	Fri 1/4/11
176	Installation of seawater intake pipe at seawall section	11 days	Wed 13/4/11	Sat 23/4/11
177	Reinstatement of seawall	22 days	Thu 14/4/11	Thu 5/5/11
178	Installation of Seawater Intake Pipe at Remaining Section	2 days	Mon 18/4/11	Tue 19/4/11
179	Backfill for intake pipe with water testing	24 days	Tue 26/4/11	Thu 19/5/11
180				
181	Site Clearance	19 days	Thu 24/5/12	Mon 11/6/12
182				
183	**Preservation and Protection of Existing Trees**	**730 days**	**Mon 17/8/09**	**Tue 16/8/11**
184	Preservation and Protection to Preserved Trees	730 days	Mon 17/8/09	Tue 16/8/11
185				
186	**Landscape Works**	**986 days**	**Fri 4/12/09**	**Wed 15/8/12**
187	Removal of Trees and Transplant of Trees to Holding Nursery or Designated Holding Site	131 days	Fri 4/12/09	Tue 13/4/10
188	Remaining Landscape Works	834 days	Wed 14/4/10	Wed 25/7/12
189	General Site Clearance	21 days	Thu 26/7/12	Wed 15/8/12



Project: DC/2008/09
Date: 21 November 2011

Task | Progress | Summary | Rolled Up Critical Task | Rolled Up Progress | External Tasks | Group By Summary
Critical Task | Milestone | Rolled Up Task | Rolled Up Milestone | Split | Project Summary | Deadline