



PROJECT No.: TCS/00408/08

DSD CONTRACT NO. DC/2007/17
DRAINAGE IMPROVEMENT WORKS IN
CHEUNG PO, MA ON KONG, YUEN KONG SAN TSUEN
AND TIN SAM TSUEN OF YUEN LONG DISTRICT AND
SEWERAGE AT TSENG TAU CHUNG TSUEN, TUEN MUN

MONTHLY EM&A REPORT FOR KT13
(OCTOBER 2011)

PREPARED FOR
CHINA ROAD & BRIDGE CORPORATION

Quality Index

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10 November 2011	TCS00408/08/600/R1678v1	 Nicola Hon Environmental Consultant	 T.W. Tam Environmental Team Leader

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14 November 2011

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Contract No. DC/2007/17 Drainage Improvement Works in Cheung Po, Ma On Kong, Yuen King San and Tin Sam Tsuen of Yuen Long District and Sewerage at Tseng Tau Chung Tsuen, Tuen Mun
Monthly EM&A Report for KT13 (October 2011) – Version 1

We refer to the captioned report (ref.: TCS00408/08/600/R1678v1) and advise that we have no comments on the captioned submission.

We hereby endorse the captioned report for your onward submission.

If you require any further information, please do not hesitate to contact the undersigned.

Yours sincerely



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Executive Summary

- ES01 Substantial completion of works for Channel KT13 had been certified by the Engineer's Representative on 30 May 2011. In view of the progress of the remaining works and the associated environmental monitoring and audit results, in particular sustainable non-existence of documented environmental complaints and works related exceedances of environmental quality criteria, letter of termination of EM&A programme has been submitted to EPD on 18 October 2011 and the monitoring work was ceased at the same day.
- ES02 This report serves as the last (37th) Monthly EM&A Report for the Channel KT13, covering the construction period from **26 September to 18 October 2011** (the Reporting Period).

Breaches of Action and Limit Levels

- ES03 Monitoring results of the Reporting Period demonstrated no exceedances of environmental quality criteria for air quality, construction noise and water quality.
- ES04 During the Reporting Period, there was no construction work conducted within 100m of the cultural heritage site at KT13. Therefore, no cultural heritage monitoring was required in accordance with the approved methodology.
- ES05 No Landscape and visual inspection and ecology monitoring were conducted in this Reporting Period since the monitoring work ceased on 18 October 2011.

Environmental Complaint, Notification of Summons and Prosecution

- ES06 No documented complaint, notification of summons or successful prosecution was received during the Reporting Period. Environmental audit of the Reporting Period indicated that the implemented mitigation measures for air quality, construction noise and ecology were effective. Minor deficiencies found in the weekly site inspection were in general rectified within the specified deadlines. The environmental performance of the Project was therefore considered satisfactory.

Reporting Changes

- ES07 There is no reporting change in this reporting month.

Future Key Issues

- ES08 This is the last monthly EM&A report for Channel KT13 following substantial completion of construction work. However, the Contractor should aware of environmental issues identified in the EM&A Manual and the mitigation measures recommended in the EIA and summarized in Mitigation Measure Implementation Schedule should be properly implemented during the maintenance period.

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1 ENVIRONMENTAL STATUS

This is the 37th Monthly EM&A Report for the Channel KT13, covering the construction period from 26 September to 18 October 2011.

1.1 PROJECT AREA AND CONSTRUCTION PROGRAMME

Drawings showing the project area, any environmental sensitive receivers and the locations of the monitoring and control stations are presented in **Appendix A**, and the construction program in **Appendix B**.

1.2 WORKS UNDERTAKEN DURING THE REPORTING PERIOD

Apart from general works of tree survey, structural survey and environmental monitoring & audit, works undertaken during the Reporting Period with fine tuning of construction activities showing the inter-relationship with environmental protection/mitigation measures for the month are summarized as follows:

- Remedial works

1.3 ENVIRONMENTAL MANAGEMENT ORGANIZATION

Management structure and key personnel contact names and telephone numbers of the environmental management organization are presented in Appendix C, where DSD is the Project Proponent; CRBC is the main Contractor; EPD and AFCD are the supervisory departments for environmental protection of the Project; BVHKL is the Engineer's Representative of DSD (the ER); ARUP is the Independent Environmental Checker (the IEC) and Action-United Environmental Services and Consulting (AUES) is the environmental team (the ET).

1.4 LICENSING STATUS

1.4.1 Air Pollution Control (Construction Dust) Regulation

Pursuant to the **Air Pollution Control (Construction Dust) Regulation**, CRBC has notified EPD, via submission of Form NA dated 14 February 2008, of the scope and nature of the works to be carried out under the Project, including construction activities such as stockpiling, loading and unloading, transfer of dusty material, use of vehicles and debris handling, etc. CRBC will continuously review the status of the environmental licenses and apply the required licenses/permits prior to the commencement of construction work.

1.4.2 Noise Control Ordinance

No **Construction Noise Permit (CNP)** is required for the Project pursuant to the Noise Control Ordinance (NCO) and the associated applicable subsidiary regulations of **Noise Control (General) Regulation, Noise Control (Hand-held Percussive Breaker) Regulation and Noise Control (Air Compressor) Regulation**, as the use of powered mechanical equipment, or conducting construction work in during restricted hours, i.e. 1900 to 0700 hours on normal weekdays and any time on general holidays including Sundays is not anticipated during the whole construction period. CRBC will continuously review the status of the environmental licenses under the NCO and apply the required licenses/permits prior to the commencement of construction work.

1.4.3 Waste Disposal (Charges for Disposal of Construction Waste) Regulation

CRBC has applied for a Billing Account (Construction Work Contract with Value of \$1million or above), under the **Waste Disposal (Charges for Disposal of Construction Waste) Regulation**. The account number 7006524 has been assigned on 9 Jan 2008.

1.4.4 Water Pollution Control Ordinance

CRBC has applied for a discharge license under Section 20 of the **Water Pollution Control Ordinance**, and the license No. 1U461/1 has been issued.

1.4.5 Waste Disposal (Chemical Waste) (General) Regulation

CRBC has registered as a Chemical Waste Producer with EPD under the Waste Disposal (Chemical Waste) (General) Regulation and the Waste Producer Number assigned is WPN: 5611-531-C3124-28 dated 2 May 08.

1.4.6 Dumping at Sea Permit

CRBC has been granted by the Environmental Protection Department a Permit Issued under the **Dumping at Sea Ordinance** (Permit no. EP/I4D/08-095, dated 18 September 2008, permit validity period of six months from 18 September 2008 to 17 March 2009) for disposal of 18,469 m³ sediment, requiring Type 1 – open sea disposal at East Sha Chau Contaminated Mud Disposal Site – Pit IV b, to be capped as directed by the Management Team of the Civil Engineering and Development Department. Note that this permit has expired. As there is no need for further sea disposal, no further permits will be required in the future.

1.5 ENVIRONMENTAL PROTECTION AND POLLUTION CONTROL MITIGATION MEASURES

CRBC has committed to implement environmental protection and pollution control and mitigation measures, as recommended in the EIA, EP, EM&A Manuals, and summarized in the Mitigation Measures Implementation Schedules. The implemented mitigation measures include

- (a) Watering of stockpiles of rip-rap at KT13;
- (b) Covering of the loose soil at KT13 to minimize water quality impacts;
- (c) Hard pavement of haul road leading to public roads at KT13;
- (d) Classification and disposal of illegally dumped construction and demolition materials at KT13;
- (e) Construction of noise barriers; and
- (f) Erection of dams with sand bags downstream the excavation site within the water course of KT13 to enhance sedimentation of turbidity and suspended solids (SS).

2 MONITORING METHODOLOGY

2.1 MONITORING PARAMETERS

According to the EM&A requirements set out in the EIA, Environmental Permit No. EP-263/2007/A (the EP) and the associated EM&A Manual, the required monitoring parameters are summarized as follows.

Table 2-1 Summary of Monitoring Parameters

Environmental Issue	Monitoring Parameters	
Air Quality	(a) 1-hour Total Suspended Particulate (1-hour TSP); and (b) 24-hour Total Suspended Particulate (24-hour TSP).	
Construction Noise	(a) A-weighted equivalent continuous sound pressure level (30min) (Leq(30min) during the normal working hours; and (b) A-weighted equivalent continuous sound pressure level (5min) (Leq(5min) for construction work during the Restricted Hours.	
Water Quality	(a) In Situ Measurement	temperature, dissolved oxygen (DO), pH & turbidity
	(b) Laboratory Analysis	suspended solids (SS), Ammonia Nitrogen (NH ₃ -N) and Zinc (Zn)
Ecology	Vegetation, all bird species of wetland, Ho Pui Egret, Ma On Hong Egret and Flight Line Survey	
Waste Management	Inspection and the document audit	
Cultural Heritage	Condition survey for a historical grave	
Landscape & Visual	To audit the implementation of the proposed construction phase mitigation measure stipulated in EIA.	

2.2 MONITORING LOCATIONS

Details of the monitoring locations are summarized in **Table 2-2** and shown in **Appendix A**. For ease of reference, monitoring locations denoted with “(a)” are relocated locations to differentiate them from the original ‘EM&A Manual’ locations.

Table 2-2 Summary of Monitoring Locations

Environmental Issues	Monitoring Location	Identified Address / Co-ordinates	Status of Monitoring Locations / Rationale for Recommended Replacement
Air	A1(a)	No.68 Ho Pui Village	The original location of EM&A Manuals A1 has permanently been abandoned. No access can be acquired in the vicinity of A1. Taken into consideration that Ho Pui Village is one of the most important sensitive receivers near KT-13 without monitoring, the most fronting house, No. 68 Ho Pui Village, is therefore recommended as the replacement location A1(a).
	A2	No.1 Ma On Kong Village	Original location of the EM&A Manual; access granted.
Noise	N1(a)	168-169 Kam Ho Road, Ma On Kong Village,	Original location of N1 identified in the EM&A Manual was relocated to proposed area as recommended by IEC.
	N2(a)	No. 68 Ho Pui Village,	The original location of EM&A Manuals N2 has permanently been abandoned. No access can be acquired in the vicinity of N2. Taken into consideration that Ho Pui Village is one of the most important sensitive receivers near KT-13 without monitoring, the most fronting house, No. 68 Ho Pui Village, is therefore recommended as the replacement location N2(a).
	N3	No.1 Ma On Kong Village	Original locations of the EM&A Manual; access granted.
Water	W1	E824539 / N830283	Original locations of the EM&A Manual; access resolved.

Environmental Issues	Monitoring Location	Identified Address / Co-ordinates	Status of Monitoring Locations / Rationale for Recommended Replacement
	W2	E824693 / N830258	Original locations of the EM&A Manual; access resolved.
	W3(a)	E824833 / N830374	The W3 is proposed to be relocated about 55 m down stream to W3(a) for safety reason as there is no any discharge point observed between W3 and the proposed W3(a).
	W4	E824936 / N830618	Original locations of the EM&A Manual; access resolved.
	W5	E825008 / N830812	Original locations of the EM&A Manual; access resolved.
	W6	E825100 / N830987	Original locations of the EM&A Manual; access resolved.
Ecology	Monthly monitoring along the boundary of the works area to confirm that there are no adverse impacts on habitats outside the site in particular the Conservation Area (CA) zone and Ho Pui Egretty. Photographic records at six-month intervals; Monthly monitoring of all bird numbers including wetland species and species identified as being of conservation importance; Monitoring of Ho Pui egretty during March to August. The Ma On Kong egretty is also surveyed to provide reference information on the breeding egrets nearby; and Flight line surveys twice per month during April to June.		
Waste Management	Whole construction site and document		
Cultural Heritage	Ma On Kong	Refer to EM&A Manual (KT13) Figure 7.1.	
Landscape & Visual	Refer to EIA Section 10		

2.3 MONITORING FREQUENCY, DURATION AND SCHEDULE

2.3.1 Monitoring Frequency and Duration

Environmental monitoring is conducted upon commencement of the construction activities and throughout the whole construction period to detect and minimize any adverse environmental impacts generated from the construction activities of the Project. The monitoring frequency and duration for air quality, construction noise, water quality, ecology and other parameters are summarized below.

Air Quality

Frequency: Once every 6 days for 24-hour TSP and three times every 6 days for 1-hour TSP, when the highest construction dust impacts are anticipated.

Duration: Throughout the construction period

Construction Noise

Frequency: Measurement of Leq(30min): Once a week during 0700-1900 hours on normal weekdays. If the construction work is undertake at restricted hours, the frequency of noise monitoring will be conducted in accordance with the requirements under the related Construction Noise Permit issued by EPD as follows:

- 3 consecutive Leq(5min) at restrict hour from 1700 – 2300 hours;
- 3 consecutive Leq(5min) for restrict hour from 2300 – 0700 hours next day;
- 3 consecutive Leq(5min) for Sunday or public holiday from 0700 – 1900 hours;

Duration: Throughout the construction period

Water Quality

Frequency: Three times a week with at least 36 hour intervals between any two consecutive monitoring events

Depths: As the water columns in the stream water within KT13 is generally less than 3m, measurement is performed at the mid-depths of the monitoring locations. In case the water columns are deeper than 6m, measurement shall be carried out at three water depths, namely, 1m below water surface, mid-depth, and 1m above river bed. If the water depths are between 3 to 6m, the mid-depth measurement is omitted.

Duration: Throughout the construction period.

Ecology

The Ecology Monitoring is required in accordance with the EM&A Manual.

Parameters: Vegetation, All bird species including wetland birds, Ho Pui and Ma On Hong Egrettries and Flight line survey

Frequency: Vegetation – Impact monitoring – monthly;
Photographic records/checks against baseline records– six monthly
Wetland Bird survey – Monthly of half-day survey;
Ma On Kong egrettry – Monthly between March to August; and
Ho Pui egrettry – Bi-weekly between March and August;
Flight line Survey – twice per Month during the period from April to June

Duration: Throughout the whole construction period

Waste Management Audit

Frequency: Once per month

Duration: Throughout the construction period.

Cultural Heritage

Scope: Condition survey and settlement monitoring of a Qing Dynasty Grave.

Frequency: Condition survey - Bi-monthly
Settlement monitoring - Bi-weekly

Duration: Throughout the construction phase period. (When construction work entered the 100m of the cultural heritage site)

Landscape & Visual

Frequency: Bi-weekly

Duration: Throughout the construction phase period.

2.3.2 Environmental Monitoring Schedule

The monitoring schedules for the Reporting Period and next month are presented in **Appendix D**.

2.4 MONITORING EQUIPMENT AND PROCEDURE

The monitoring equipment and procedures are summarized below. Calibration certificates of the equipment and the related laboratories are presented in **Appendix E**.

2.4.1 Weather Conditions during the Reporting Period

All meteorological information is extracted from the Hong Kong Observatory (Lau Fau Shan Station). The meteorological data include wind direction, wind speed, humidity, rainfall, air pressure and temperature etc., that are generally required for evaluating the environmental impact arising from the construction activities. The meteorological data are presented in **Appendix D**.

2.4.2 Air Quality

Monitoring Equipment

A list of air quality monitoring equipment is shown below.

Table 2-4-2 Air Quality Monitoring Equipment

Equipment	Model	Serial Number
24-hour TSP		
High Volume Air Sampler	Grasby Anderson GMWS 2310 HVS	-
Calibration Kit	TISCH Model TE-5025A	1941
1-hour TSP		
Portable Dust Meter	TSI DustTrak Model 8520	21060

Monitoring Procedure

1-hour TSP

The 1-hour TSP measurement follows manufacturer's Operation and Service Manual, using a 1-hour TSP monitor brand named TSI Dust Track Aerosol Monitor Model 8520 or Sibata LD-3 Laser Dust Meter, which is a portable, battery-operated laser photometer to record the real time 1-hour TSP based on 90° light scattering. The 1-hour TSP monitor consists of the following:

- (a) A pump to draw sample aerosol through the optic chamber where TSP is measured;
- (b) A sheath air system to isolate the aerosol in the chamber to keep the optics clean for maximum reliability; and
- (c) A built-in data logger compatible with Windows based program to facilitate data collection, analysis and reporting.

The 1-hour TSP meter to be used will be within the valid period, calibrated by the manufacturer prior to purchasing. Zero response of the instrument will be checked before and after each monitoring event.

24-hour TSP

The equipment used for 24-hour TSP measurement is the high volume air sampling system (hereinafter 'HVS') brand named Thermo Andersen, Model GS2310 TSP. The HVS complies with US EPA Code of Federal Regulation, Appendix B to Part 50. The HVS consists of the following:

- (a) An anodized aluminum shelter;
- (b) A 8"x10" stainless steel filter holder;
- (c) A blower motor assembly;
- (d) A continuous flow/pressure recorder;
- (e) A motor speed-voltage control/elapsed time indicator;
- (f) A 6-day mechanical timer, and
- (g) A power supply of 220v/50 Hz

The HVS is operated and calibrated on a regular basis following the manufacturer's instruction using the NIST-certified standard calibrator brand named TISCH Calibration Kit Model TE-5025A. Regular HVS operation and maintenance as well as filter paper

installation and collection is performed by the ET's competent technicians, whereas laboratory analyses are conducted in a local HOKLAS accredited laboratory, ALS Technichem (HK) Pty Ltd (herein after 'ALS'). The 24-hour TSP filters of the 24-hour TSP will be kept in ALS for six months prior to disposal.

All relevant data including temperature, pressure, weather conditions, elapsed-time meter reading for the start and stop of the sampler, identification and weight of the filter paper are recorded in details.

2.4.3 Construction Noise

Monitoring Equipment

A list of construction noise monitoring equipment is shown below.

Table 2-4-3 Construction Noise Monitoring Equipment

Equipment	Model	Serial Number
Integrating Sound Level Meter	Bruel & Kjaer 2238	2285721
Calibrator	Bruel & Kjaer 4231	2713428
Portable Wind Speed Indicator	Testo Anemometer	-

Monitoring Procedure

Sound level meters listed above comply with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications, as recommended in Technical Memorandum (TM) issued under the Noise Control Ordinance (NCO).

All noise measurements will be performed with the meter set to FAST response and on the A-weighted equivalent continuous sound pressure level (Leq). Leq(30 min) in six consecutive Leq(5 min) measurements will be used as the monitoring parameter for the time period between 0700-1900 hours on weekdays throughout the construction period. Leq(15min) in three consecutive Leq(5 min) measurements for other time periods (e.g. during restricted hours) will only be conducted for monitoring the construction noise during restricted hours as necessary.

The sound level meter is mounted on a tripod at a height of 1.2 m and placed at the assessment point and oriented such that the microphone is pointed to the site with the microphone facing perpendicular to the line of sight. The windshield is fitted for all measurements. Where a measurement is to be carried out at a building, the assessment point is normally at a position 1 m from the exterior of the building façade. Where a measurement is to be made for noise being received at a place other than a building, the assessment point is at a position 1.2 m above the ground in a free-field situation, i.e. at least 3.5 m away from reflective surfaces such as adjacent buildings or walls.

Immediately prior to and following each noise measurement the accuracy of the sound level meter is checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements will be accepted as valid only if the calibration levels from before and after the noise measurement agree to within 1.0dB. No noise measurement will be made in the present of significant fog, rain, wind with a steady speed exceeding 5m/s or wind with gusts exceeding 10m/s. The wind speed is checked with a portable wind speed meter capable of measuring the wind speed in m/s.

2.4.4 Water Quality

Monitoring Equipment

Monitoring Equipment for water quality is listed below.

Table 2-4-4 Water Quality Monitoring Equipment

Equipment	Model	Serial Number
Water Depth Detector	Eagle Sonar	-
Water Sampler	Teflon bailer / bucket	-
Thermometer & DO meter	YSI 550A	05F2063AZ
pH meter	Extech pH Meter EC500	Work Order: HK1109433
Turbidimeter	Hach 2100p	950900008735
Hand Refractometer	ATAGO	289468
Sample Container	High density polythene bottles (provided by laboratory)	-
Storage Container	'Willow' 33-litter plastic cool box	-

Monitoring Procedure

Water Depth

As the water columns in the stream water within KT13 is generally less than 3 m, measurement is performed at the mid-depths of the monitoring locations. In case the water columns are deeper than 6 m, measurement shall be carried out at three water depths, namely, 1 m below water surface, mid-depth, and 1 m above river bed. If the water depths are between 3 to 6 m, the mid-depth measurement is omitted.

Water depths are determined prior to measurement and sampling, using a portable battery operated depth detector, brand named 'Eagle Sonar', if the depths exceed 1.5 meter. For the depths well below 1 meter, the depths of water columns are measured with a steel ruler with appropriate weight.

Dissolved Oxygen (DO)

A portable YSI 550A DO Meter will be used for in-situ DO measurement. The DO meter is capable of measuring DO in the range of 0 - 20 mg/L and 0 - 200 % saturation and checked against water saturated ambient air on each monitoring day prior to monitoring. Although the DO Meter automatically compensates ambient water temperature to a standard temperature of 20°C for ease of comparison of the data under the changing reality, the temperature readings of the DO Meter will be recorded in the field data sheets. Calibration of the equipment will be performed by ALS on quarterly basis.

pH

A portable Extech pH Meter will be used for in-situ pH measurement. The pH meter is capable of measuring pH in the range of 0 – 14 and readable to 0.1. Standard buffer solutions of pH 7 and pH 10 are used for calibration of the instrument before and after measurement. Quarterly calibration of the equipment will be performed by ALS.

Turbidity

A portable Hach 2100p turbidity Meter will be used for in-situ turbidity measurement. The turbidity meter is capable of measuring turbidity in the range of 0 – 1000 NTU. Calibration of the equipment will be performed by ALS on quarterly basis.

Salinity

A portable hand Refractometer AGATO will be used for in-situ salinity measurement. The refractometer is capable of measuring salinity in the range of 0-70ppt with accuracy ±1% reading. Calibration of the equipment will be performed by ALS on quarterly basis.

Suspended Solids (SS)

SS will be determined by ALS upon receipt of the water samples using the HOKLAS accredited analytical method - ALS Method EA-025.

Ammonia Nitrogen(NH₃-N)

NH₃-N will be examined by ALS upon receipt of the water samples using the HOKLAS accredited analytical methods - ALS Method EK-055A.

Zinc(Zn)

Zn will be analyzed by ALS upon receipt of the water samples using the HOKLAS accredited analytical methods - ALS Method EG-020.

Water Sampler

Water samples will be collected using a plastic sampler to prevent metal contamination. As the water depths in the stream water within KT13 are generally less than 0.5 m, a plastic bucket with a rope of appropriate length is used for water sampling. The sampler is rinsed before collection with the sample to be taken. For water depths deeper than 0.5 meter, a cleaned plastic bailer bucket will be used for sample collection.

1000 mL water sample is collected from each depth for SS determination. The samples collected are stored in a cool box maintained at 4°C and delivered to ALS upon completion of the sampling by end of each sampling day.

Sample Container

Water samples are contained in screw-cap PE (Poly-Ethylene) bottles, which are provided and pretreated according to corresponding HOKLAS and ALS analytical requirements. Where appropriate, the sampling bottles are rinsed with the water to be contained. Water samples are then transferred from the water sampler to the sampling bottles to 95% bottle capacity to allow possible volume expansion during delivery and storage.

Sample Storage

A 'Willow' 33-litter plastic cool box packed with ice will be used to preserve the collected water samples prior to arrival at ALS. The water temperature of the cool box will be maintained at a temperature as close to 4°C as possible without being frozen. Samples collected will be delivered to the laboratory upon collection within the maximum storage time required under the HOKLAS and ALS analytical requirements

2.4.5 Ecology

Monthly walk through survey will be conducted along the boundary of work area for KT13. Bird monitoring will be conducted in the study areas monthly for KT13. Monitoring on the Ho Pui egretty and Ma On Kong egretty will be conducted between March to August. Flight line surveys to record the feeding areas and the habitat use of breeding egrets will be conducted between April to June. Photographic record should be made at six month intervals.

Monitoring Equipment

The following equipment will be used for monitoring:-

Standard portable field survey equipment was used for ecological monitoring, including

- (a) Binoculars of 10 x 40 magnifications;
- (b) Digital camera; and
- (c) Notebook.

Study Area

The areas for the ecological monitoring programme would cover 60 m on either side of the existing channel as well as the proposed bypass culvert, as shown in Figure 6.1 of the EM&A Manual. Within these, emphasis will be given to the area around the Ho Pui and Ma On Kong egrettries and habitats of at least moderate ecological value. In addition, monitoring would also be undertaken at the Ho Pui egretty and Ma On Kong egretty (The Ma On Kong egretty is outside the demarcated monitoring area but is also monitored to identify any adverse effects on the breeding egrets).

Survey Method

Monthly monitoring will be conducted by means of walk through survey, along the boundary of work area for KT13. Any adverse impacts to the habitats outside the site,

in particular the Conservation Area (CA) zone and Ho Pui Egret, will be checked and reported.

Photographic records will be made every six months on the fixed photo record points selected during the baseline survey. The photos from the construction phase ecological monitoring will be compared with those taken during the baseline, which are used as the baseline conditions.

Bird monitoring will be conducted in the study areas monthly for KT13. Attention should be paid on wetland species and species identified as being of conservation importance, and the habitats utilized should also be recorded. Bird surveys should commence no later than 2 hours after dawn.

Monitoring on the Ho Pui egret and Ma On Kong egret will be conducted between March to August. The frequency would be twice per month during March to May. Depending upon the nesting conditions at Ho Pui egret, the frequency could be reduced to monthly between June and August if no egret nest found by the end of May, or maintained at twice per month till the end of August if there are egret nests. Number of active nests, species and number of birds present and breeding stage should be recorded.

Flight line surveys to record the feeding areas and the habitat use of breeding egrets will be conducted twice per month between April to June. The number and species of flying egrets, and their landing habitats and locations should be recorded.

2.4.6 Waste Management, Cultural Heritage and Landscape & Visual

Waste Management, Cultural Heritage and Landscape & Visual monitoring is required for KT13 as stipulated in the EM&A manual [382047/E/EMA/Issue 5] **Section 5**, **Section 7** and **Section 8** accordingly.

Waste Management

During the monthly audit, ETL will pay attention to the issues relating to waste management, and check whether the Contractor has followed the relevant contract Specifications and the procedures specified under the law of HKSAR.

Cultural Heritage

Condition survey by a qualified archaeologist is required for the historical grave near Ma On Kong before and during the construction phase. The method statement of condition survey of Ma On Kong Historic Grave (KT13-02-02) was issued to EPD and endorsed on 27 July 2008, the frequency of the condition survey during the construction phase and given the open cut method would be adopted for the construction of the proposed bypass box culvert under KT13 project, subject to the result of the condition survey carried out before the construction stage, it is recommended that bi-monthly condition survey be undertaken during the construction work within 100m area from the grave.

Landscape and Visual

In accordance with the EM&A manual [382047/E/EMA/Issue5] **Section 8** landscape and visual mitigation measures are required during construction and operation phase. Site inspection will be undertaken at least once every two weeks throughout the construction period to ensure compliance with the intended aims of the proposed mitigation measures.

2.5 QUALITY ASSURANCE PROCEDURES AND DATA MANAGEMENT

2.5.1 Documentation of the Environmental Monitoring

Field data including in-situ monitoring results, weather conditions and water sampling information and observation will be recorded in corresponding Field Data Sheets, which will be signed and dated by the respective environmental technician prior to submission to the ETL for validation and endorsement at the end of the monitoring day.

2.5.2 Data Management and Analysis

All impact monitoring data will be processed by the AUES data recording and management system, which complies with in-house Quality (*ISO 9001:2000*) Management System. Monitoring results recorded in the monitoring equipment e.g. 1-hour TSP Meters and Noise Meters will be downloaded directly from the equipment at the end of the monitoring period and input into a computerized database maintained by the ET. Laboratory results will be input directly into the computerized database and checked by personnel other than those who input the data.

2.5.3 Quality Assurance Procedures

Appropriate and standard QA/QC measures will be adopted for the environmental monitoring to ensure the scientific integrity of the data produced. Sources of error in the impact monitoring will be properly controlled with the following QA/QC procedures:

- (a) Appropriate field monitoring and sampling techniques, including monitoring equipment, storage and delivery of samples;
- (b) Well organized systematic field-data system e.g. all baseline monitoring information, field observation, results, weather conditions and water sampling information, etc. will be recorded in the field monitoring record sheets. The laboratory analysis records will be maintained by the HOKLAS following HOKLAS requirements;
- (c) HOKLAS requirements for QA/QC of all laboratory testing to ensure acceptable accuracy and reproducibility of the laboratory analysis indicated by consistent agreement between duplicate samples, validity of the analytical results by compliance with the required blanks and recovery of standard addition.

2.5.4 Records

All impact monitoring data will be clearly and systematically documented in both hardware and software format and the software copy will be available for inspection upon request. All the document and data will be kept for at least one year after completion of the Project. Field Data Sheets used to record the impact monitoring information, field observation, results, weather conditions and water sampling information, etc., will be properly maintained and kept by the ET. The copies of laboratory analysis records from ALS will be kept by the ET throughout the at least one year after completion of the EM&A program of the Project.

2.6 REPORTING

2.6.1 General Requirements for Report Submission

General requirements for Monthly EM&A report submission as stipulated in the EIA, EP and EM&A Manual are summarized below.

Table 2-6 Requirements for Report Submission

Report	Submission
Monthly EM&A Report	<ul style="list-style-type: none"> • Within 10 working days of the end of each reporting month.
Quarterly EM&A Summary Report	<ul style="list-style-type: none"> • No specific requirement, proposed three weeks after endorsement of the 3rd monthly EM&A report within a particular quarter.
Final EM&A Summary Report	<ul style="list-style-type: none"> • No specific requirement, proposed one month upon completion of entire EM&A program

2.6.2 Cut-Off Day of the Reporting Month

It was agreed among the ER, IEC, CRBC, ET and EPD that, in order to streamline the EM&A report submission and to cater for the occasional delay in obtaining laboratory analysis results, the cutoff day for each month is the 25th i.e. the first day of each report is the 26th of the last month and the end day, the 25th of that month.

3 MONITORING RESULTS

The environmental monitoring results will be compared against the Action and Limit Levels established based on the baseline monitoring results and statutory criteria. In case the measured data exceed the environmental quality criteria, remedial actions will be triggered according to the Event and Action Plan enclosed in **Appendix F**. The environmental monitoring results are tabulated below and the details of 24-hour TSP data and graphical plots of trends of monitored parameters at key stations over the past four Reporting Periods are presented in **Appendices G** and **H**.

3.1 AIR QUALITY

3.1.1 Action and Limit Levels

According to the Baseline Monitoring Report for KT13, the Action and Limit Levels for 24-hour and 1-hour TSP are established as follows:

Table 3-1-1 Air Quality Action and Limit Levels

Monitoring Station	Action Level ($\mu\text{g}/\text{m}^3$)		Limit Level ($\mu\text{g}/\text{m}^3$)	
	1-hour TSP	24-hour TSP	1-hour TSP	24-hour TSP
KT13(A1(a))	309	144	500	260
KT13(A2)	307	141	500	260

3.1.2 Results

Results of air quality monitoring at the identified locations during the Reporting Period are summarized in **Tables 3-1-2-1** and **3-1-2-2** below.

Table 3-1-2-1 Summary of Air Quality Monitoring Results at KT13-A1(a)

1-hour TSP ($\mu\text{g}/\text{m}^3$)						24-hour TSP ($\mu\text{g}/\text{m}^3$)	
Date	Start Time	1 st hour	2 nd hour	3 rd hour	Average	Date	Results
26-Sep-11	14:15	74	81	78	78	29-Sep-11	14
3-Oct-11	15:00	51	57	52	53	4-Oct-11	49
8-Oct-11	13:00	206	224	218	216	10-Oct-11	57
14-Oct-11	13:30	61	66	67	65	15-Oct-11	60
Average (range)		103 (51 - 224)				Average (range) 45 (14-60)	

Table 3-1-2-2 Summary of Air Quality Monitoring Results at KT13-A2

1-hour TSP ($\mu\text{g}/\text{m}^3$)						24-hour TSP ($\mu\text{g}/\text{m}^3$)	
Date	Start Time	1 st hour	2 nd hour	3 rd hour	Average	Date	Results
26-Sep-11	14:28	68	72	76	72	29-Sep-11	20
3-Oct-11	15:15	41	41	45	42	4-Oct-11	59
8-Oct-11	13:21	230	249	270	250	10-Oct-11	37
14-Oct-11	13:48	57	57	52	55	15-Oct-11	48
Average (range)		105 (41 - 270)				Average (range) 41 (20-59)	

3.1.3 Discussion

As shown in **Tables 3-1-2-1** and **3-1-2-2**, 1-hour TSP and 24-hour TSP results fluctuated well below the Action Level. No exceedance of Action or Limit Levels was recorded during the Reporting Period. Neither Notification of Exceedance (hereinafter 'NOE') of air quality criteria or corrective action was required.

3.2 CONSTRUCTION NOISE

3.2.1 Action and Limit Levels

The Action and Limit Levels for construction noise are illustrated in **Table 3-2-1**.

Table 3-2-1 Construction Noise Action and Limit Levels

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

Note: * Reduces to 70dB(A) for schools and 65dB(A) during the school examination periods.

3.2.2 Results

Results of construction noise monitoring at the identified locations N1(a), N2(a) and N3 during the Reporting Period are summarized in **Tables 3-2-2-1 to 3-2-2-3**.

The baseline monitoring for N1(a) and N2(a) was performed on the 1st floor of the bedroom of 168-169 Kam Ho Road, Ma On Kong Village and No. 68 Ho Pui Village respectively. The impact noise monitoring, however, was performed on the ground floor of the same house due to denial of access to the 1st floor. The change of noise monitoring from 1st floor to ground floor will negate the need for a 3dB(A) façade correction but will not introduce any significant difference in detection and minimization of the of construction noise impacts, or alteration of the established A/L Levels. The ET has obtained the approval from EPD with consultation with the ER and IEC.

Table 3-2-2-1 Summary of Construction Noise Monitoring Results – N1(a)

Date	Start Time	1 st set Leq5	2 nd set Leq5	3 rd set Leq5	4 th set Leq5	5 th set Leq5	6 th set Leq5	Leq30
26-Sep-11	16:01	52.4	56.7	56.2	54.8	56.2	56.7	55.7
3-Oct-11	14:30	51.2	53.4	59.3	57.3	55.9	58.9	56.8
8-Oct-11	13:07	53.9	53.8	54.8	58.8	59.0	56.3	56.6
14-Oct-11	15:00	52.9	52.8	53.8	53.8	52.3	50.1	52.8
Limit Level								75

Table 3-2-2-2 Summary of Construction Noise Monitoring Results – N2(a)

Date	Start Time	1 st set Leq5	2 nd set Leq5	3 rd set Leq5	4 th set Leq5	5 th set Leq5	6 th set Leq5	Leq30
26-Sep-11	17:15	60.7	62.4	61.2	60.5	59.8	61.3	61.1
3-Oct-11	16:10	50.4	52.7	51.4	52.7	56.7	57.9	54.5
8-Oct-11	14:34	56.3	58.3	71.3	60.2	61.0	60.9	64.8
14-Oct-11	16:24	54.3	57.2	54.9	50.2	51.0	50.9	53.9
Limit Level								75

Table 3-2-2-3 Summary of Construction Noise Monitoring Results – N3

Date	Start Time	1 st set Leq5	2 nd set Leq5	3 rd set Leq5	4 th set Leq5	5 th set Leq5	6 th set Leq5	Leq30
26-Sep-11	16:40	59.7	61.2	60.3	58.7	59.4	60.7	60.1
3-Oct-11	15:17	53.5	52.4	55.2	52.6	57	58.4	55.4
8-Oct-11	13:53	53.8	53.6	61.4	55.3	59.7	58.7	58.1
14-Oct-11	15:46	54.8	54.6	57.3	58.7	58.7	53.8	56.8
Limit Level								75

3.2.3 Discussion

It is confirmed that no raining during the course of noise monitoring as fulfill EM&A manual requirements. As shown in **Tables 3-2-2-1**, **Table 3-2-2-2** and **Table 3-2-2-3**, all the construction noise results fluctuated well below the Limit Level. No exceedance of Limit Level or documented construction complaint was recorded during the Reporting Period. No NOE or corrective action was therefore required.

3.3 WATER QUALITY

3.3.1 Action and Limit Levels

The Action and Limit Levels for water quality are illustrated in **Table 3-3-1**.

Table 3-3-1 Action and Limit Levels for Water Quality Monitoring

Monitoring Location	DO (mg/L)		Turbidity (NTU)		pH		SS (mg/L)		Ammonia (µg/L)		Zinc (µg/L)	
	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level
W1 (Upstream) Control Station	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W2 (Downstream) Impact Station	1.04	1.00	36.81	37.16	8.65	8.69	79.0	86.2	16.85	16.89	234.95	266.19
W3(a) (Upstream) Control Station	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W4 (Upstream) Control Station	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W5 (Upstream) Control Station	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W6 (Downstream) Impact Station	0.93	0.91	27.88	30.02	8.7	8.7	73.40	78.68	51.62	54.56	191.90	201.58

3.3.2 Results

Water quality monitoring results measured at W1, W2, W3(a), W4, W5 and W6 during the Reporting Period are presented in tabulation and graphical plots in **Appendix G**.

3.3.2 Discussion

No exceedances of Action and Limit Levels were recorded during the Reporting Period. No Notifications of Environmental Quality Limit Exceedances (NOE) or corrective actions were therefore required for all parameters.

3.4 ECOLOGY

3.4.1 Action and Limit Levels

The Action and Limit Levels for Construction Ecology Monitoring are shown in **Table 3-4-1** to according with the EM&A manual.

Table 3-4-1 Ecological Action and Limit Levels

Parameters	Action Level	Limit Level
Decrease in number of breeding egrets since previous year	>20%	> 40%

3.4.2 Results

It is stated in the EP for Channel KT13 that the monitoring of the Ho Pui egretty shall be carried out during the period from 1st March to 31st August as specified in the EM&A Manual. If no egret nest is found at the egretty during the period from 1st March to 31st May, the Permit Holder can start the construction works within 100m of the ecological buffer area upon obtaining the Director's approval until February in the next year. If egret nests are found during the period from 1st March to 31st August, no construction shall take place within 100m of the ecological buffer area before 1st October.

Previously the monitoring during March to May 2011 did not record any nest in Ho Pui Egretty, and thus the construction works could be conducted within 100m of the ecological buffer area until February 2012. And the egretty monitoring frequency from

June to August this year can be downgraded to monthly. No nest was found at the Ho Pui egretty during these surveys. Even though, as there had been no nest recorded at Ho Pui egretty in 2009, 2010 and 2011, the action/limit level for ecology is complied. Egretty survey and flight line survey are not required in the monitoring survey.

No walk through survey was carried in the Reporting Period since the EM&A Programme ceased on 18 October 2011.

3.5 WASTE MANAGEMENT, CULTURAL HERITAGE AND LANDSCAPE & VISUAL

3.5.1 Waste Management

In order to comply with the waste management requirements, CRBC has been:

- (a) Assigned, since 9 Jan 2008, a Billing Account (account number 7006524) under the **Waste Disposal (Charges for Disposal of Construction Waste) Regulation**;
- (b) Issued a Discharge License No. 1U461/1 under Section 20 of the **Water Pollution Control Ordinance**;
- (c) Registered as a Chemical Waste Producer under the **Waste Disposal (Chemical Waste) (General) Regulation** (the Waste Producer Number assigned is WPN: 5611-531-C3124-28 dated 2 May 08); and
- (d) Granted by the Environmental Protection Department a Permit Issued under the **Dumping at Sea Ordinance** (Permit no. EP/I4D/08-095, dated 18 September 2008, permit validity period of six months from 18 September 2008 to 17 March 2009) for 18, 469 m³ sediment requiring Type 1 – open sea disposal at East Sha Chau Contaminated Mud Disposal Site – Pit IV b to be capped as directed by the management Team of the CEDD.

3.5.2 Cultural Heritage

The Action and Limit Levels for Cultural Heritage are shown in **Table 3-5-2** according to the EM&A Manual.

Table 3-5-2 Cultural Heritage Resources Action and Limit Levels

Action Level	Limit Level
When damage or structural instability is first detected	Signs of deterioration and structural instability continues on subsequent visits after Action Level is triggered

During the Reporting Period, there was no construction work conducted within 100m area from the cultural heritage site within KT13, and therefore no cultural heritage monitoring was required in accordance with the approved methodology.

3.5.3 Landscape and Visual

No Landscape and visual inspections were conducted in this Reporting Period.

4 NON-COMPLIANCE, COMPLAINT, NOTIFICATION OF SUMMONS, SUCCESSFUL PROSECUTION AND OTHERS

4.1 NON-COMPLIANCE

No non-compliance or deficiency was identified during regular site inspection and environmental audit. No associated remedial action was necessary.

4.2 ENVIRONMENTAL COMPLAINT

No written or verbal complaint was received for each environmental issue during the Reporting Period. No associated remedial action was necessary.

4.3 NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTION

No notifications of summons and successful prosecutions were recorded during the Reporting Period. No associated remedial action was necessary.

4.4 OTHERS

4.4.1 Waste Management Status

All types of waste arising from the construction work are classified into the following:

- Construction & Demolition (C&D) Material;
- Chemical Waste;
- General Refuse; and
- Excavated Soil and sediment

Waste generated, re-used, recycled and disposed of during the Reporting Period is shown in **Appendix H: Monthly Summary Waste Flow Table**. No Type I or Type II excavated soil were recorded in this Reporting Period.

4.4.2 Site Inspection and Environmental Audit

In this Reporting Period, **three** occasions of weekly environmental site inspection and audit were conducted during the Reporting Period jointly by the ER, EO and ET. No adverse environmental impacts were registered, indicating that the mitigation measures implemented were effective and sufficient for the construction activities undertaken. Minor deficiencies found in the site inspection and audit were in general rectified within the specified deadlines. Findings of the site inspection and environmental audit are summarized below.

Table 4-4-1 Summary of Findings of Site Inspection and Environmental Audit

Date	Findings / Deficiencies	Follow-Up Status
28 September 2011	No adverse environmental impact was observed during site inspection.	N.A.
6 October 2011	No adverse environmental impact was observed during site inspection.	N.A.
13 October 2011	No adverse environmental impact was observed during site inspection.	N.A.

4.4.3 Works to be Undertaken Next Month

Substantial completion of works for Channel KT13 had been certified by the Engineer's Representative on 30 May 2011 and the remaining work is completed.

4.4.4 Future Key Issues and Mitigation Measures for the Forth-Coming Month

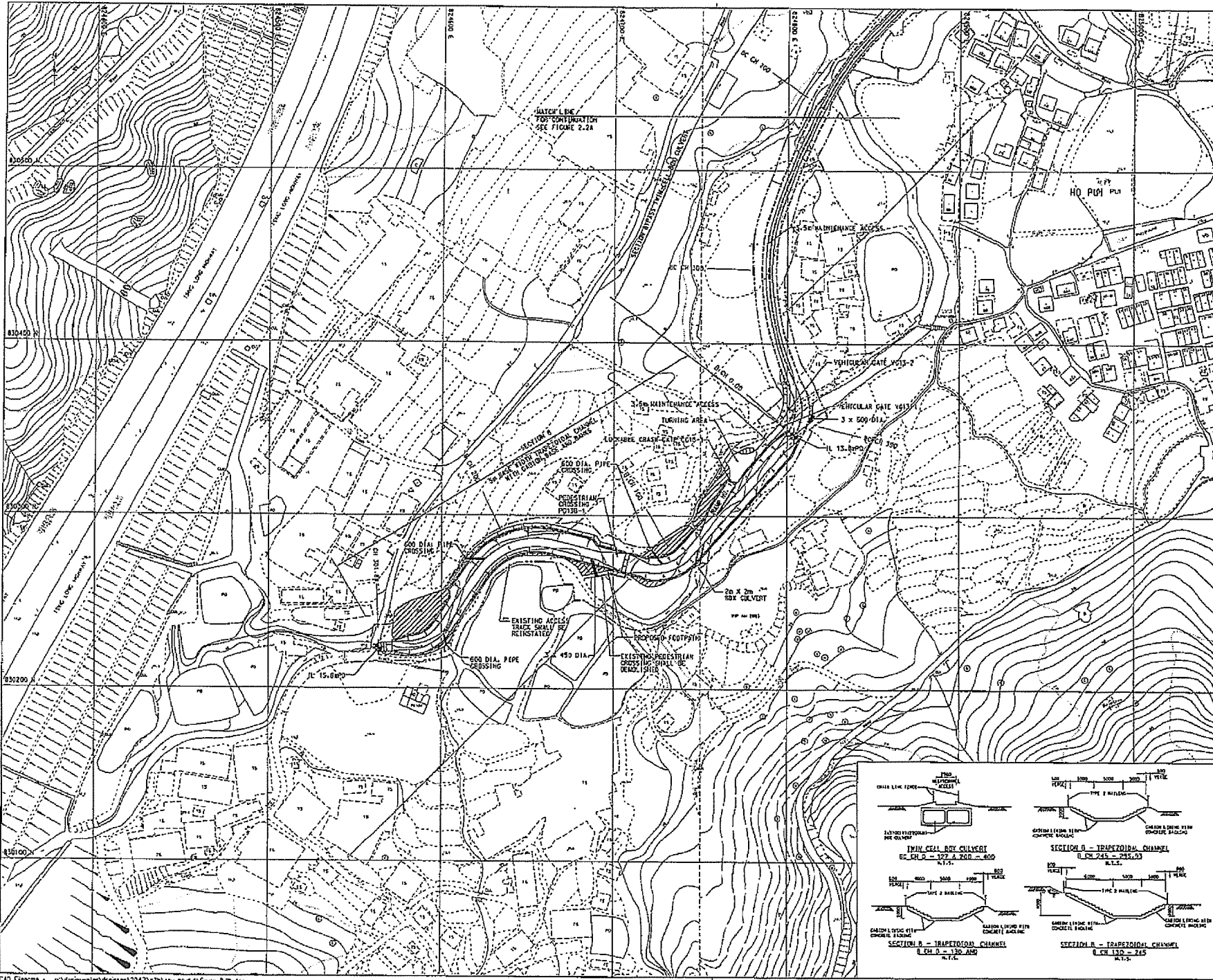
The Contractor should aware of environmental issues identified in the EM&A Manual and the mitigation measures recommended in the EIA and summarized in Mitigation Measure Implementation Schedule should be properly implemented during the maintenance period.

5 CONCLUSIONS AND RECOMMENDATIONS

- i) Substantial completion of works for Channel KT13 had been certified by the Engineer's Representative on 30 May 2011. In view of the progress of the remaining works and the associated environmental monitoring and audit results, in particular sustainable non-existence of documented environmental complaints and works related exceedances of environmental quality criteria, letter of termination of EM&A programme has been submitted to EPD on 18 October 2011 and the monitoring work was ceased at the same day.
- ii) This is the 37th Monthly EM&A Report for the Channel KT13, covering the construction period from 26 September to 18 October 2011.
- iii) Monitoring results of the Reporting Period demonstrated no exceedances of environmental quality criteria for air quality, construction noise and water quality.
- iv) During the Reporting Period, there was no construction work conducted within 100m of the cultural heritage site at KT13. Therefore, no cultural heritage monitoring was required in accordance with the approved methodology.
- v) No Landscape inspections and ecology monitoring were conducted on in this Reporting Period
- vi) To control the site performance on waste management, the Contractor shall ensure that all solid and liquid waste management works are fully in compliance with the relevant license/permit requirements, such as the effluent discharge licence and the chemical waste producer registration. CRBC is also reminded to implement the recommended environmental mitigation measures according to the Project Environmental Monitoring and Audit Manual.
- vii) No documented complaints, notifications of summons or successful prosecutions were received during the Reporting Period. No adverse environmental impacts were observed during the weekly site inspection and environmental audit of the Reporting Period, which suggested that the implemented mitigation measures for air quality, construction noise and ecology were effective. Minor deficiencies found in the weekly site inspection were in general rectified within the specified deadlines. The environmental performance of the Project was therefore considered satisfactory.
- viii) The Contractor should aware of environmental issues identified in the EM&A Manual and the mitigation measures recommended in the EIA and summarized in Mitigation Measure Implementation Schedule should be properly implemented during the maintenance period.

END OF TEXT

Appendix A
Location Plan and
Environmental Monitoring Locations
Under the Project



- © Copyright by Black & Veatch Hong Kong Limited and Government of HONG KONG
- NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
 2. GRID LINES ARE HONG KONG METRIC GRID 1580.
 3. TYPE 2 RAILING WITH CORRUGATED TRAP BAR AND GENERAL WEAR PILES SHALL BE PROVIDED AT BOTH SIDES OF THE CHANNEL BANKS.

- LEGEND:
- SITE BOUNDARY
 - PROPOSED CHANNEL
 - PROPOSED SLOPE
 - ▨ AREA TO BE FILLED TO ADJACENT GROUND LEVEL
 - I.L. THWART LEVEL
 - PROPOSED RETAINING WALL

C	05/06	AMENDMENT TO	BY-PASS CULVERT	K.I.L.
B	10/05	MINOR AMENDMENT TO	CHANNEL LAYOUT	K.I.L.
A	05/05	MINOR AMENDMENTS TO	SITE BOUNDARY	K.I.L.

REVISION	DATE	DESCRIPTION	BY	CHECKED	DATE
1	04/04		AK	AK	04/04
2	04/04		AK	AK	04/04

AGREEMENT NO. CE 62/93

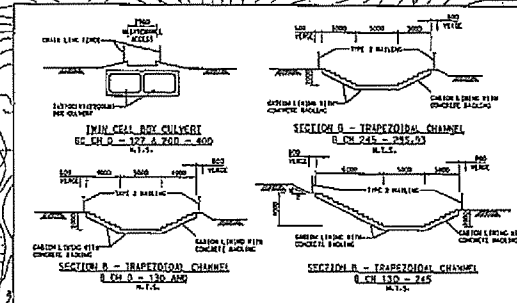
Contract Title:

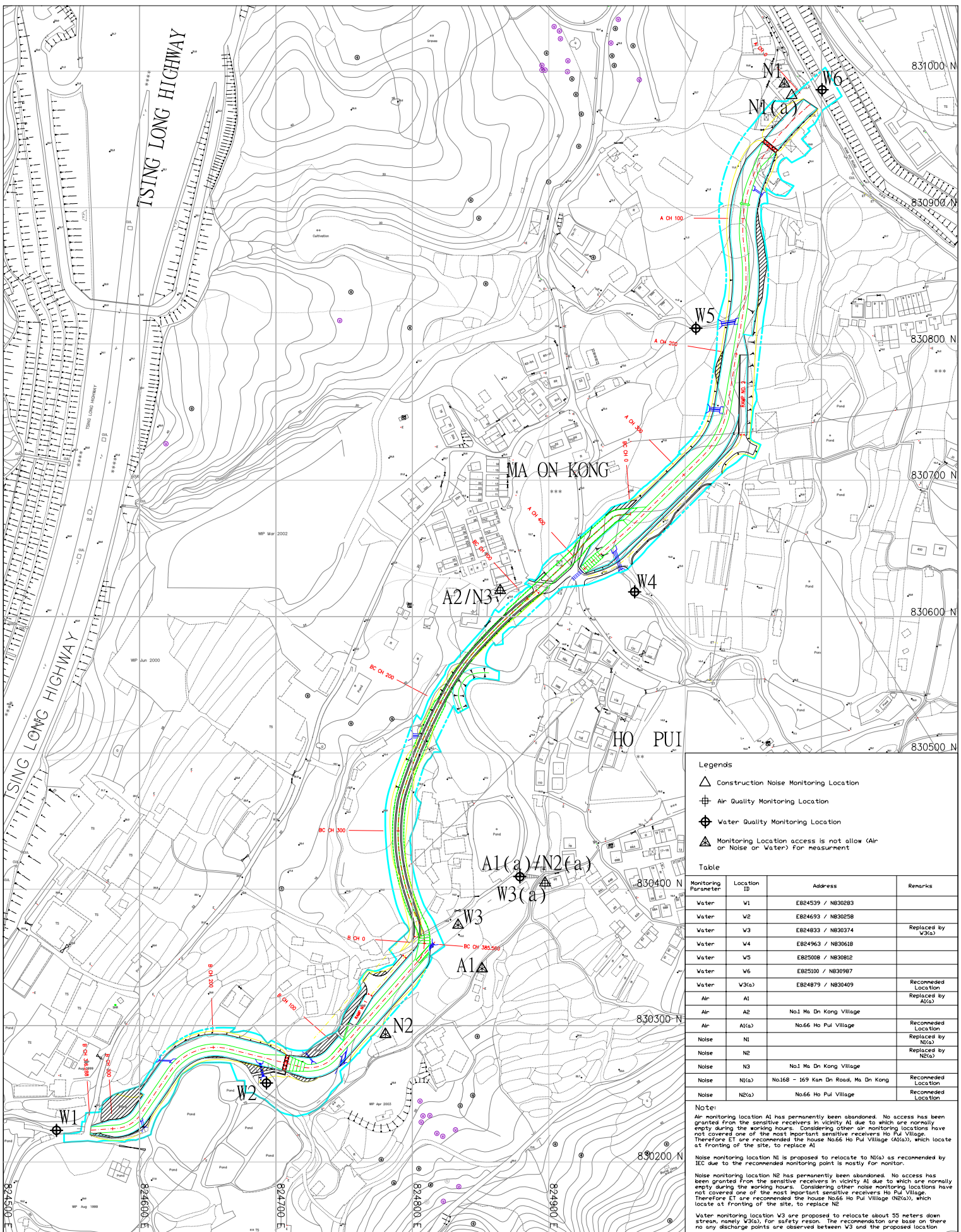
YUEN LONG, KAM TIN, NGAU TAM MEI AND TIN SHUI WAI DRAINAGE IMPROVEMENT, STAGE 1, PHASE 2B - KAM TIN

MA ON KONG CHANNEL KT13 PROPOSED LAYOUT PLAN (SHEET 2 OF 2)

FIGURE 1.3b

Scale: 1:2000 A1, 1:2000 A3





- Legends**
- △ Construction Noise Monitoring Location
 - Air Quality Monitoring Location
 - Water Quality Monitoring Location
 - △ Monitoring Location access is not allow (Air or Noise or Water) for measurement

Table

Monitoring Parameter	Location ID	Address	Remarks
Water	W1	E824539 / N830283	
Water	W2	E824693 / N830258	
Water	W3	E824833 / N830374	Replaced by W3(a)
Water	W4	E824963 / N830618	
Water	W5	E825008 / N830812	
Water	W6	E825100 / N830987	
Water	W3(a)	E824879 / N830409	Recommended Location
Air	A1		Replaced by A1(a)
Air	A2	No.1 Ma On Kong Village	
Air	A1(a)	No.66 Ho Pul Village	Recommended Location
Noise	N1		Replaced by N1(a)
Noise	N2		Replaced by N2(a)
Noise	N3	No.1 Ma On Kong Village	
Noise	N1(a)	No.168 - 169 Kan Dn Road, Ma On Kong	Recommended Location
Noise	N2(a)	No.66 Ho Pul Village	Recommended Location

Note:

Air monitoring location A1 has permanently been abandoned. No access has been granted from the sensitive receivers in vicinity A1 due to which are normally empty during the working hours. Considering other air monitoring locations have not covered one of the most important sensitive receivers Ho Pul Village. Therefore ET are recommended the house No.66 Ho Pul Village (A1(a)), which locate at fronting of the site, to replace A1

Noise monitoring location N1 is proposed to relocate to N1(a) as recommended by IEC due to the recommended monitoring point is mostly for monitor.

Noise monitoring location N2 has permanently been abandoned. No access has been granted from the sensitive receivers in vicinity N2 due to which are normally empty during the working hours. Considering other noise monitoring locations have not covered one of the most important sensitive receivers Ho Pul Village. Therefore ET are recommended the house No.66 Ho Pul Village (N2(a)), which locate at fronting of the site, to replace N2

Water monitoring location W3 are proposed to relocate about 55 meters down stream, namely W3(a), for safety reason. The recommendation are base on there no any discharge points are observed between W3 and the proposed location

Drawing:
Air, Noise and Stream Water Monitoring Location at KT-13








Contract No. IC/2007/17-
 Drainage Improvement Works in Cheung Po
 Koi, San Tin, Ma On Kong, Tai Tam and San
 Tin, Tuen of Tuen Long District and Sewerage
 at Tseung Tsuen Tsuen, Tuen Mun



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NOTES:
1. GRID LINES ARE HONG KONG METRIC GRID 1980.

- LEGEND:
-  MA ON KONG AND HO PUT ECRETIES
 -  PROPOSED COMPENSATORY TREE PLANTING
 -  CONSERVATION AREA DENOED ON OUTLINE ZONING PLAN
 -  WDRAS BOLDARY OF CHANNEL X13
 -  ECOLOGY MONITORING AREAS

Revision	Date	Description			Initial
		Designed	Checked	Drawn	
Initial		MC	KIL	YLL	KIL
Date	09/05	09/05	09/05	09/05	09/05

Approved

AGREEMENT NO. CE 67/98

Contract title
YUEN LONG, KAM TIN,
NGAU TAM MEI AND TIN SHUI WAI
DRAINAGE IMPROVEMENT, STAGE 1,
PHASE 2B - KAM TIN

Drawing title
ECOLOGY MONITORING AREAS
RECOMMENDED FOR
CONSTRUCTION PHASE AND
OPERATION PHASE

Drawing no.	Scale
Figure 6.1	1:2000 A1 1:4000 A3

 香港特別行政區政府渠務署
THE GOVERNMENT OF THE
HONG KONG
SPECIAL ADMINISTRATIVE REGION
DRAINAGE SERVICES DEPARTMENT

 BLACK & VEATCH HONG KONG LIMITED
黑域工程顧問有限公司

Plot Date: 25 APR 2006
CAD Filename: p:\dbs\water\10\mapp\1047\1029\env\1047\1019-1.dwg

Appendix B

Construction Program

Monthly Rolling Programme - October 2011

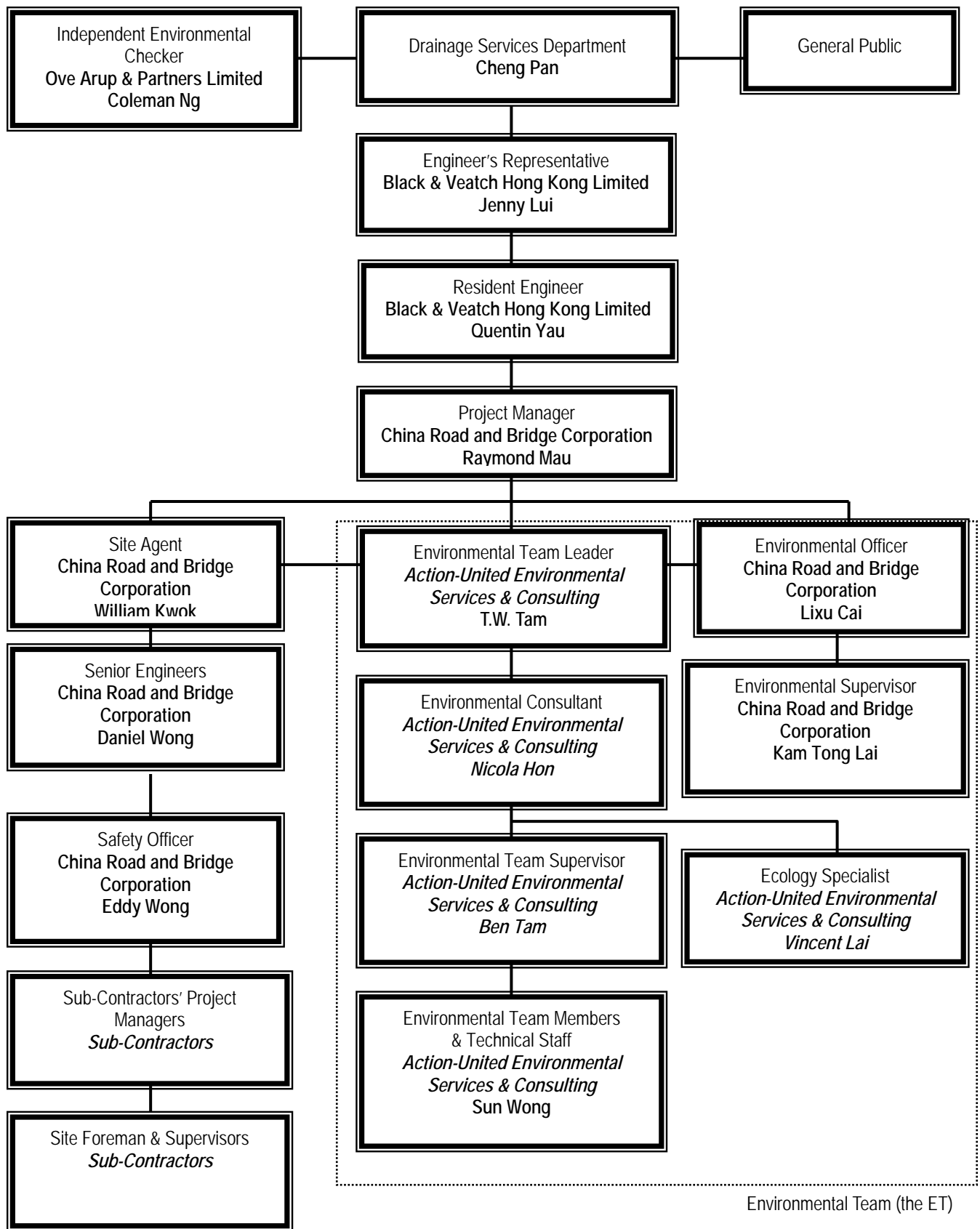
ID	Task Name	Duration	Start	Finish	October					
					25/9	2/10	9/10	16/10	23/10	30/10
1	Section II (Channel KT13)	26 days	Sat 1/10/11	Mon 31/10/11						
2	Regular Environmental Impact Monitoring	26 days	Sat 1/10/11	Mon 31/10/11						
3	Regular Tree Survey & Protection	26 days	Sat 1/10/11	Mon 31/10/11						
4	Section A	26 days	Sat 1/10/11	Mon 31/10/11						
5	Remedial Works	26 days	Sat 1/10/11	Mon 31/10/11						
6	Section of Box Culvert	26 days	Sat 1/10/11	Mon 31/10/11						
7	Remedial Works	26 days	Sat 1/10/11	Mon 31/10/11						
8	Section B	26 days	Sat 1/10/11	Mon 31/10/11						
9	Remedial Works	26 days	Sat 1/10/11	Mon 31/10/11						
10										
11	Section V	26 days	Sat 1/10/11	Mon 31/10/11						
12	Preservation and Protection of Tree for Section II	26 days	Sat 1/10/11	Mon 31/10/11						
13										
14	Section VI	26 days	Sat 1/10/11	Mon 31/10/11						
15	Replacement & Rehabilitation Works for Existing Sewerage at Leung Tin Tsuen	26 days	Sat 1/10/11	Mon 31/10/11						
16	Installation of uPVC Caps at Tapping Sewers at Tseng Tau Chung Tsuen	26 days	Sat 1/10/11	Mon 31/10/11						

Task Split Progress Milestone Summary

Appendix C

Environmental Management Organization and

Contacts of Key Personnel



Environmental Management Organization

Contact Details of Key Personnel

Organization	Project Role	Name of Key Staff	Tel No.	Fax No.
DSD	Employer	Mr. Cheng Pan	2594-7264	2827-8526
B&V	Engineer's Representative	Ms. Jenny Lui	2478-9161	2478-9369
B&V	Resident Engineer	Mr. Quentin Yau	2478-9161	2478-9369
OAP	Independent Environmental Checker	Mr. Coleman Ng	2268-3097	2268-3950
CRBC	Project Director	Mr. Wang Yanhua	2283-1688	2283-1689
CRBC	Project Manager	Mr. Raymond Mau	9048-3669	2283-1689
CRBC	Site Agent	Mr. William Kwok	2478-9618	2478-9612
CRBC	Senior Engineer (Tuen Mun Site)	Mr. Daniel Wong	9858-3176	2478-9612
CRBC	Environmental Officer	Mr. Lixu Cai	6474-6975	2478-9612
CRBC	Environmental / Construction Supervisor	Mr. Kam Tong Lai	2478-9618	2478-9612
CRBC	Safety Officer	Mr. Eddy Wong	2478-9618	2478-9612
AUES	Environmental Team Leader	Mr. T.W. Tam	2959-6059	2959-6079
AUES	Environmental Consultant	Miss Nicola Hon	2959-6059	2959-6079
AUES	Environmental Site Inspector	Mr. Ben Tam	2959-6059	2959-6079
AUES	Ecologist	Mr. Vincent Lai	2959-6059	2959-6079

Legend:

DSD (Employer) – Drainage Services Department

B&V (Engineer) – Black & Veatch Hong Kong Limited

CRBC (Main Contractor) – China Road and Bridge Corporation

OAP (IEC) – Ove Arup & Partners Ltd

AUES (ET) – Action-United Environmental Services & Consulting

Appendix D

(a) Monitoring Schedules

(b) Meteorological Data

Monitoring Schedule for KT 13 for Reporting Period – October 2011

Date		Air Quality		Noise Leq 30min	Water Quality	Ecology Surveys
		1-hour TSP	24-hour TSP			
Mon	26-Sep-11	A1(a), A2		N1(a), N2(a) & N3	W1, W2, W3(a), W4, W5 & W6	
Tue	27-Sep-11					
Wed	28-Sep-11				W1, W2, W3(a), W4, W5 & W6	
Thu	29-Sep-11		A1(a), A2			
Fri	30-Sep-11				W1, W2, W3(a), W4, W5 & W6	
Sat	1-Oct-11					
Sun	2-Oct-11					
Mon	3-Oct-11	A1(a), A2		N1(a), N2(a) & N3	W1, W2, W3(a), W4, W5 & W6	
Tue	4-Oct-11		A1(a), A2			
Wed	5-Oct-11					
Thu	6-Oct-11				W1, W2, W3(a), W4, W5 & W6	
Fri	7-Oct-11					
Sat	8-Oct-11	A1(a), A2		N1(a), N2(a) & N3	W1, W2, W3(a), W4, W5 & W6	
Sun	9-Oct-11					
Mon	10-Oct-11		A1(a), A2		W1, W2, W3(a), W4, W5 & W6	
Tue	11-Oct-11					
Wed	12-Oct-11				W1, W2, W3(a), W4, W5 & W6	
Thu	13-Oct-11					
Fri	14-Oct-11	A1(a), A2		N1(a), N2(a) & N3	W1, W2, W3(a), W4, W5 & W6	
Sat	15-Oct-11		A1(a), A2			
Sun	16-Oct-11					
Mon	17-Oct-11					
Tue	18-Oct-11				W1, W2, W3(a), W4, W5 & W6	

Cultural Heritage

Frequency: Condition survey – Bi-monthly
Settlement monitoring – Bi-weekly

Landscape & Visual

Frequency: Bi-weekly

	Monitoring Day
	Sunday or Public Holiday

Meteorological Data Extracted from HKO during the Reporting Period

Date		Weather	Lau Fau Shan Weather Station				
			Total Rainfall (mm)	Mean Air Temp. (°C)	Wind Speed (km/h)	Mean Relative Humidity (%)	Wind Direction
26-Sep-11	Mon	Mainly cloudy with occasional showers.	0.2	27.7	11	71	E
27-Sep-11	Tue	Moderate to fresh east to northeasterly winds	Trace	28.9	10.6	72.5	E/NE
28-Sep-11	Wed	A few squally showers	2.5	28.7	14.6	71	NE
29-Sep-11	Thu	NO. 8 SOUTHWEST GALE OR STORM SIGNAL	30.8	26.3	26	85	SE
30-Sep-11	Fri	Mainly cloudy with occasional showers.	2.7	28.6	14.2	77	E/SE
1-Oct-11	Sat	holiday					
2-Oct-11	Sun	STANDBY SIGNAL NO. 1	3.3	25.7	21.5	80.5	NE
3-Oct-11	Mon	The Strong Wind Signal, No. 3	1.6	22.2	28.2	77.5	NE
4-Oct-11	Tue	Fresh northeasterly winds	Trace	22.3	15.7	79.5	NE
5-Oct-11	Wed	Moderate northeasterly winds	0.1	23.5	12.1	75	NE
6-Oct-11	Thu	Mainly cloudy with one or two light rain patches.	0.1	24.5	11.3	75.5	E/NE
7-Oct-11	Fri	Mainly cloudy.	Trace	26	8	76.5	E/NE
8-Oct-11	Sat	Mainly cloudy	Trace	26.3	7.1	74	E/NE
9-Oct-11	Sun	Mainly cloudy	0	27.4	10.5	67.5	N/NE
10-Oct-11	Mon	Moderate to fresh east to northeasterly winds.	5.3	27.3	11.4	78.5	E
11-Oct-11	Tue	Mainly fine and dry.	6.9	24.8	15.7	92	E
12-Oct-11	Wed	Light to moderate easterly winds.	105.8	24.5	12.5	94	E
13-Oct-11	Thu	rainy	30.7	27.2	11.2	82.2	E
14-Oct-11	Fri	Moderate east to northeasterly winds	3.8	25.9	10	84	E
15-Oct-11	Sat	mainly fine	0	25.2	11.5	63	E/NE
16-Oct-11	Sun	Mainly fine and dry.	0	24.6	8	71	E
17-Oct-11	Mon	mainly fine	0	25.2	10.1	61.2	E/NE
18-Oct-11	Tue	Mainly fine and dry.	0	24.3	9	65.5	E/NE

Appendix E

Calibration Certificates and

HOKLAS-Accreditation Certificate

Equipment Calibration List for Drainage Improvement Works in Cheung Po, Ma On Kong, Yuen Kong San Tsuen and Tin Sam Tsuen of Yuen Long District and Sewerage at Tseng Tau Chung Tsuen, Tuen Mun

Item	Issue	Description of Equipment	Date of Calibration	Date of Next Calibration
1 ⁽³⁾	Air	Tisch Calibration Kit Model TE-5025A (Serial No. 1941)	2 Jun 11	2 Jun 12
2 ⁽⁴⁾		TSP Sampler Calibration Spreadsheet for KT13-A1a	1 Aug 11	1 Oct 11
2a ^(*)		TSP Sampler Calibration Spreadsheet for KT13-A1a	3 Oct 11	3 Dec 11
3 ⁽⁴⁾		TSP Sampler Calibration Spreadsheet for KT13-A2	1 Aug 11	1 Oct 11
3a ^(*)		TSP Sampler Calibration Spreadsheet for KT13-A2	3 Oct 11	3 Dec 11
4 ⁽²⁾		TSI DustTrak Model 8520 (Serial No. 21060)	27 Jan 11	27 Jan 12
5 ⁽²⁾	Noise	Bruel & Kjaer Integrating Sound Level Meter 2238 (Serial No. 2285721)	19 Apr 11	19 Apr 12
6 ⁽²⁾		Bruel & Kjaer Acoustical Calibrator 4231 (Serial No. 2713428)	19 Apr 11	19 Apr 12
7 ⁽¹⁾		YSI 550A (Serial No. 97F0837AM)	18 Jul 11	18 Oct 11
8 ⁽¹⁾		Extech pH Meter EC500 (Work Order: HK1116556)	18 Jul 11	18 Oct 11
9 ⁽⁵⁾		Turbidimeter HACH 2100q (Serial No.950900008735)	6 Sep 11	6 Dec 11
10 ⁽¹⁾		Hand Refractometer ATAGO EQ114 (Serial No. 289468)	18 Jul 11	18 Oct 11

Note: * Calibration certificates will only provide when monitoring equipment is re-calibrate or new.

- ⁽¹⁾ The calibration certificates could be referred to the previous EM&A monthly report – July 2011
- ⁽²⁾ The calibration certificates could be referred to the previous EM&A monthly report – May 2011
- ⁽³⁾ The calibration certificates could be referred to the previous EM&A monthly report – June 2011
- ⁽⁴⁾ The calibration certificates could be referred to the previous EM&A monthly report – August 2011
- ⁽⁵⁾ The calibration certificates could be referred to the previous EM&A monthly report – September 2011

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	No.1 Ma On Kong Village	Date of Calibration: 3-Oct-11
Location ID :	ASR15 (A2)	Next Calibration Date: 3-Nov-11
Technician: Mr. Ben Tam		

CONDITIONS

Sea Level Pressure (hPa)	1009.1	Corrected Pressure (mm Hg)	756.825
Temperature (°C)	22.6	Temperature (K)	296

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.00279
Model->	5025A	Qstd Intercept ->	-0.00494
Serial # ->	1483		

CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.2	5.2	10.4	1.616	48	48.29	Slope = 35.1743 Intercept = -8.4894 Corr. coeff. = 0.9999
13	4.3	4.3	8.6	1.470	43	43.26	
10	3.2	3.2	6.4	1.268	36	36.22	
7	2.3	2.3	4.6	1.075	29	29.17	
5	1.6	1.6	3.2	0.897	23	23.14	

Calculations :

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg]

Pstd = actual pressure during calibration (mm Hg

For subsequent calculation of sampler flow:

$$1/m((I)[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

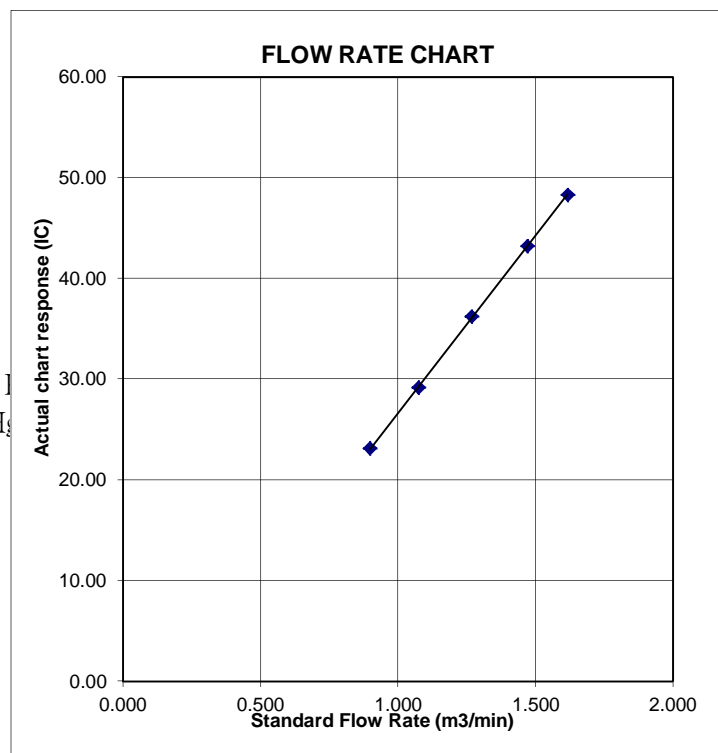
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	No.68 Ho Pui Village	Date of Calibration: 3-Oct-11
Location ID :	ASR14 (A1(a))	Next Calibration Date: 3-Dec-11
Technician: Mr. Ben Tam		

CONDITIONS

Sea Level Pressure (hPa)	1009.1	Corrected Pressure (mm Hg)	756.825
Temperature (°C)	22.6	Temperature (K)	296

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.00279
Model->	5025A	Qstd Intercept ->	-0.00494
Serial # ->	1483		

CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.3	5.3	10.6	1.631	48	48.29	Slope = 36.9691 Intercept = -12.2356 Corr. coeff. = 0.9998
13	4.5	4.5	9.0	1.503	43	43.26	
10	3.3	3.3	6.6	1.288	35	35.21	
7	2.4	2.4	4.8	1.099	28	28.17	
5	1.5	1.5	3	0.869	20	20.12	

Calculations :

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K

Pstd = actual pressure during calibration (mm Hg

For subsequent calculation of sampler flow:

$$1/m((I)[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

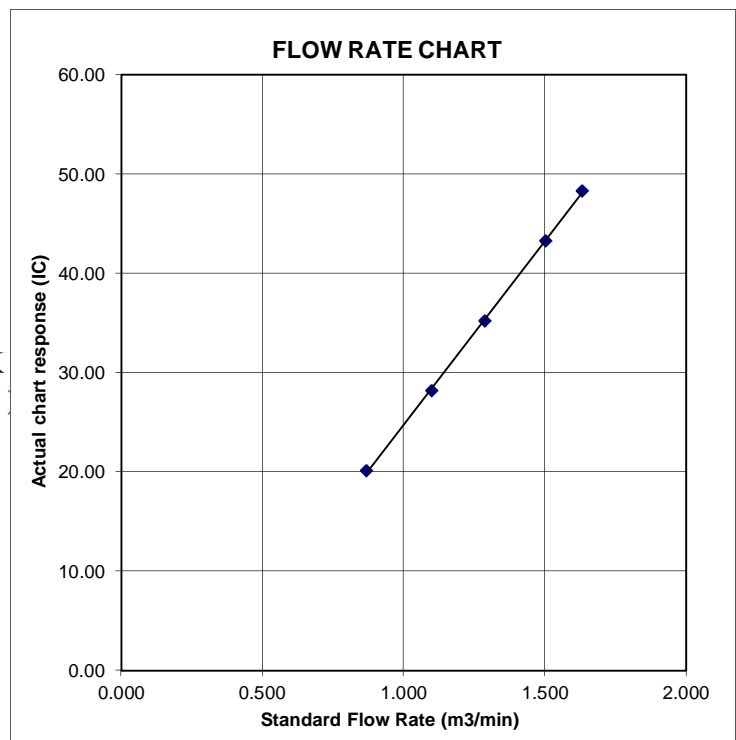
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



Appendix F

Event and Action Plan

Event/Action Plan for Air Quality

EVENT	ACTION			
	Contractor's ET leader	IEC	ER	Contractor
<p>1. Exceedance for one sample</p> <p>2. Exceedance for two or more consecutive samples</p>	<ol style="list-style-type: none"> Identify source Inform IEC, ER and Contractor Repeat measurement to confirm findings Increase monitoring frequency to daily 	<ol style="list-style-type: none"> Check monitoring data submitted by Contractor's ET leader Check Contractor's working method 	<ol style="list-style-type: none"> Notify Contractor 	<ol style="list-style-type: none"> Rectify any unacceptable practice Amend working methods if appropriate
<p>1. Exceedance for one sample</p> <p>2. Exceedance for two or more consecutive samples</p>	<ol style="list-style-type: none"> Identify source Inform IEC, ER and Contractor Repeat measurement to confirm findings Increase monitoring frequency to daily Discuss with IEC, Contractor and ER on remedial actions required If exceedance continue, arrange meeting with IEC, ER and Contractor If exceedance stops, cease additional monitoring 	<ol style="list-style-type: none"> Checking monitoring data submitted by Contractor's ET leader. Check Contractor's working method Discuss with Contractor's ET leader and Contractor on possible remedial measures Advise the ER on the effectiveness of the proposed remedial measures Supervise implementation of remedial measures 	<ol style="list-style-type: none"> Confirm receipt of notification of failure in writing Notify Contractor Ensure remedial measures properly implemented 	<ol style="list-style-type: none"> Submit proposals for remedial actions to IEC and ER within 3 working days of notification Implement the agreed proposals Amend proposal if appropriate
<p>LIMIT LEVEL</p> <p>1. Exceedance for one sample</p> <p>2. Exceedance for two or more consecutive samples</p>	<ol style="list-style-type: none"> Identify source Inform IEC, ER, EPD and Contractor Repeat measurement to confirm findings Increase monitoring frequency to daily Assess effectiveness of Contractor's remedial actions and kept IEC, EPD and ER informed of the results 	<ol style="list-style-type: none"> Check monitoring data submitted by Contractor's ET leader Check Contractor's working method Discuss with Contractor's ET leader and Contractor on possible remedial measures Advise the ER on the effectiveness of the proposed remedial measures Audit implementation of remedial measures 	<ol style="list-style-type: none"> Confirm receipt of notification of failure in writing Notify Contractor Ensure remedial measures properly implemented 	<ol style="list-style-type: none"> Take immediate action to avoid for the exceedance Submit proposals for remedial actions to IEC and ER within 3 working days of notification Implement the agreed proposals Amend proposal if appropriate
<p>2. Exceedance for two or more consecutive samples</p>	<ol style="list-style-type: none"> Notify IEC, ER, Contractor and EPD Identify source Repeat measurement to confirm findings Increase monitoring frequency to daily Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented Arrange meeting with IEC, Contractor and ER to discuss the remedial actions to be taken Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results If exceedance stops, cease additional monitoring 	<ol style="list-style-type: none"> Discuss amongst ER, Contractor's ET leader and Contractor on the potential remedial actions Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly Audit the implementation of remedial measures 	<ol style="list-style-type: none"> Confirm receipt of notification of failure in writing Notify Contractor In consultation with IEC, agree with the Contractor on the remedial measures to be implemented Ensure remedial measures properly implemented 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. 	<ol style="list-style-type: none"> Take immediate action to avoid for the exceedance Submit proposals for remedial actions to IEC and ER within 3 working days of notification Implement the agreed proposals Resubmit proposals if problem still not under control Stop the relevant portion of works as determined by the ER until the exceedance is abate.

Event and Action Plan for Water Quality

Event	ET Leader	IEC	ER	Contractor
Action level being exceeded by one sampling day	Repeat in-situ measurement to confirm findings: Identify Source(s) of impact; Inform IEC an Contractor; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IEC and Contractor; Repeat measurement on next day of exceedance	Discuss with ET and Contractor on the mitigation measures Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly Assess the effectiveness of the implemented mitigation measures.	Discuss with IEC on the proposed mitigation measures; Make agreement on the mitigation measures to be implemented;	Inform the ER and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Check all plant and equipment; Consider changes of working methods; Discuss with ET and IEC and propose mitigation measures to IEC and ER; Implement the agreed mitigation measures.
Action level being exceeded by more than one consecutive sampling days	Repeat in-situ measurement to confirm findings: Identify source(s) of impact; Inform IEC and Contractor; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IEC and Contractor; Ensure mitigation measures are implemented; Prepare to increase the monitoring frequency to daily; Repeat measurement on next day of exceedance.	Discuss with ET and Contractor on the mitigation measures Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly Assess the effectiveness of the implemented mitigation measures.	Discuss with IEC, ET and Contractor on the proposed mitigation measures; Made agreement on the mitigation measures to be implemented; Assess the effectiveness of the implemented mitigation measures.	Inform the Engineer and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Check all plant and equipment; Consider changes of working methods; Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 3 working days; Implement the agreed mitigation measures.
Limit level being exceeded by one sampling day	Repeat in-situ measurement to confirm findings: Identify source(s) of impact; Inform IEC, contractor and EPD; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IEC, ER and Contractor; Ensure mitigation measures are implemented; Increase the monitoring frequency to daily until no exceedance of Limit level.	Discuss with ET and Contractor on the mitigation measures Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly Assess the effectiveness of the implemented mitigation measures.	Discuss with IEC, ET and Contractor on the proposed mitigation measures; Request Contractor to critically review the working methods; Make agreement on the mitigation measures to be implemented; Assess the effectiveness of the implemented mitigation measures;	Inform the ER and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Check all plant and equipment; Consider changes of working methods; Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 3 working days; Implement the agreed mitigation measures/ As directed by the Engineer, to slow down or to stop all or part of the marine work or construction activities.
Limit level being exceeded by more than one consecutive sampling days	Repeat in-situ measurement to confirm findings: Identify source(s) of impact; Inform IEC, contractor and EPD; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IEC, ER and Contractor; Ensure mitigation measures are implemented; Increase the Monitoring frequency to daily until no exceedance of Limit level for two consecutive days.	Discuss with ET and Contractor on the mitigation measures Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly Assess the effectiveness of the implemented mitigation measures.	Discuss with IEC, ET and Contractor on the proposed mitigation measures; Request Contractor to critically review the working methods; Make agreement on the mitigation measures to be implemented; Assess the effectiveness of the implemented mitigation measures;	Inform the ER and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Check all plant and equipment; Consider changes of working methods; Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 3 working days; Implement the agreed mitigation measures; As directed by the Engineer, to slow down or to stop all or part of the marine work or construction activities.

Event/Action Plan for Construction Noise Monitoring

EVENT	ACTION			
	CONTRACTOR'S ET LEADER	IEC	ER	Contractor
Action Level	<ol style="list-style-type: none"> 1. Notify IEC, Contractor and ER 2. Carry out investigation 3. Report the results of investigation to the IEC, Contractor and ER 4. Discuss with the Contractor and formulate remedial measures 5. Double monitoring frequency 6. Check compliance to Action/Limit Levels after application of mitigation measures 	<ol style="list-style-type: none"> 1. Review the analysed results submitted by the Contract's ET leader 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly 3. Review the implementation of remedial measures 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of complaint in writing 2. Notify Contractor 3. Require Contractor to propose remedial measures for the analysed noise problem 4. Ensure remedial measures are properly implemented 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to ER and IEC 2. Implement noise mitigation proposals
Limit Level	<ol style="list-style-type: none"> 1. Notify IEC, ER, EPD and Contractor 2. Identify Source 3. Repeat measurement to confirm findings 4. Increase monitoring frequency 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented 6. Inform IEC, ER and EPD the causes & actions taken for the exceedances 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 	<ol style="list-style-type: none"> 1. Discuss amongst ER, Contractor's ET leader and Contractor on the potential remedial actions 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly 3. Audit the implementation of remedial measures 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Require Contractor to propose remedial measures for the analysed noise problem 4. Ensure remedial measures are 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 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to 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

Event/Action Plan for Ecology

EVENT	ACTION			
	ET Leader	IEC	Engineer	Contractor
ACTION REACHED LEVEL	<ol style="list-style-type: none"> 1. Carry out investigation 2. Review results and assess whether amendment to action level is appropriate 3. Report the results of investigation to the IEC 4. Notify Contractor and Engineer 5. Discuss with the Contractor and formulate remedial measures 6. Repeat survey to confirm results 	<ol style="list-style-type: none"> 1. Review the analysed results submitted by ET 2. Review the proposed remedial measures by the Contractor and advice the Engineer accordingly 3. Supervise implementation of remedial measures 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Require Contractor to propose remedial measures for the analysed problem 4. Ensure remedial measures properly implemented 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further problem 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
LIMIT REACHED LEVEL	<ol style="list-style-type: none"> 1. Carry out investigation 2. Review results and assess whether amendment to limit level is appropriate 3. Report the results of investigation to the IEC 4. Notify Contractor and Engineer 5. Discuss with the Contractor and formulate remedial measures 6. Repeat survey to confirm results 	<ol style="list-style-type: none"> 1. Review the analysed results submitted by ET 2. Review the proposed remedial measures by the Contractor and advice the Engineer accordingly 3. Supervise implementation of remedial measures 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Require Contractor to propose remedial measures for the analysed problem 4. Ensure remedial measures properly implemented 5. Issue instruction to stop the relevant portion of the works until the problem is abated (construction period only). 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further problem 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 Engineer until the problem is abated (construction period only)

Event and Action Plan for Cultural Heritage

EVENT	ACTION			
	ET Leader	IEC	ER	Contractor
Action Level	<p>Notify IEC and Contractor to carry out investigation</p> <p>Report reasons of structural damage or instability to the IEC and Contractor Discuss with the Contractor and formulate remedial measures</p> <p>Increase monitoring frequency to once per week to check mitigation effectiveness</p>	<p>Review report of structural damage or instability by the ET.</p> <p>Review proposed remedial measures by the Contractor and advise the ER and Antiquities and Monuments Office (AMO) accordingly</p> <p>Supervise the implementation of remedial measures, with approval from AMO.</p>	<p>Confirm receipt of notification of failure in writing</p> <p>Notify Contractor</p> <p>Require Contractor to propose remedial measures and to notify and seek approval from AMO.</p> <p>Ensure remedial measures are properly implemented.</p>	<p>Notify AMO concerning the damage or structural instability of the cultural heritage resources</p> <p>Submit proposals for repair of damage to cultural heritage resources to AMO for approval and to implement approved measures.</p>
Limit Level	<p>Notify IEC and Contractor to carry out investigation and to stop construction work within 100m of cultural heritage resource to avoid further impact until AMO are satisfied that the relevant structure has been repaired or stabilized to an acceptable level.</p> <p>Report reasons of continued structural damage or instability to the IEC and Contractor Discuss with the Contractor and formulate remedial measures</p> <p>Increase monitoring frequency to daily to check mitigation effectiveness</p>	<p>Review report of structural damage or instability by the ET.</p> <p>Review proposed remedial measures by the Contractor and advise the ER and Antiquities and Monuments Office (AMO) accordingly.</p> <p>Supervise the implementation of remedial measures, with approval from AMO.</p>	<p>Confirm receipt of notification of failure in writing</p> <p>Notify Contractor</p> <p>Require Contractor to propose remedial measures and to notify and seek approval from AMO.</p> <p>Ensure remedial measures are properly implemented.</p>	<p>To carry out investigation and to stop construction work within 100m of cultural heritage resource to avoid further impact until AMO are satisfied that the relevant structure has been repaired or stabilized to an acceptable level.</p> <p>Propose remedial measures for the repair and stabilization of cultural heritage resources, up to liaison of moving and rebuilding the relevant structure with the approval of owner (usually the clan members) and AMO.</p>

Event and Action Plan for Landscape and Visual Impact - Construction Phase

Action Level	Environmental Team Leader (ETL)	Independent Environmental Checker (IEC)	Engineer's Representative (ER)	Contractor
Non-conformity on one occasion	<ol style="list-style-type: none"> 1. Identify source 2. Inform the IEC and the ER 3. Discuss remedial actions with the IEC, the ER and the Contractor 4. Monitor remedial actions until rectification has been completed 	<ol style="list-style-type: none"> 1. Check report 2. Check the Contractor's working method 3. Discuss with the ER and the Contractor on possible remedial measures 4. Advise the ER on effectiveness of proposed remedial measures 	<ol style="list-style-type: none"> 1. Notify the Contractor 2. Ensure remedial measures are properly implemented 	<ol style="list-style-type: none"> 1. Amend working methods 2. Rectify damage and undertake remedial measures or any necessary replacement
Repeated Non-conformity	<ol style="list-style-type: none"> 1. Identify source 2. Inform the IEC and the ER 3. Increase monitoring (site audit) frequency 4. Discuss remedial actions with the IEC, the ER and the Contractor 5. Monitor remedial actions until rectification has been completed 6. If exceedance stops, cease additional monitoring (site audit) 	<ol style="list-style-type: none"> 1. Check report 2. Check the Contractor's working method 3. Discuss with the ER and the Contractor on possible remedial measures 4. Advise the ER on effectiveness of proposed remedial measures 5. Supervise implementation of remedial measures 	<ol style="list-style-type: none"> 1. Notify the Contractor 2. Ensure remedial measures are properly implemented 	<ol style="list-style-type: none"> 1. Amend working methods 2. Rectify damage and undertake remedial measures or any necessary replacement

Appendix G

(a) Impact Environmental Monitoring Data

(b) Graphic Plot of Monitoring

- 1. Construction Noise**
- 2. Air Quality**
- 3. Water Quality**

Summary of Water Quality Monitoring Results - KT13

Date 26-Sep-11																		
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DOS (%)		Turbidity (NTU)		pH		SS		Ammonia N		Zinc	
W1	14:13	0.10	27.1	26.9	3.27	3.7	49.8	50.5	4.6	4.6	7.8	7.8	3	3.0	1.05	1.05	11	11.0
			26.7		4.16		55.1		4.5		7.7		3		1.05			
W2	14:21	0.10	26.8	26.8	3.84	4.3	51.7	56.5	3.2	3.3	7.8	7.8	5	5.0	0.1	0.10	12	12.0
			26.8		4.81		61.2		3.4		7.7		5		0.1			
W3	14:27	0.10	26.9	27.1	4.03	4.1	53.5	54.5	3.3	2.9	7.8	7.8	14	14.0	1.22	1.22	11	11.0
			27.2		4.22		55.4		2.6		7.7		14		1.22			
W4	14:43	0.10	26.7	26.8	5.41	5.0	67.2	63.2	3.5	4.3	7.7	7.6	5	5.0	0.94	0.94	12	12.0
			26.9		4.63		59.1		5.0		7.5		5		0.94			
W5	15:02	0.10	27.4	27.3	5.81	4.9	61.3	57.6	7.0	8.6	7.9	7.9	44	44.0	20.1	20.10	133	133.0
			27.1		4.07		53.8		10.3		7.8		44		20.1			
W6	15:17	0.10	27.2	27.3	4.32	4.3	56.1	55.7	9.4	8.8	7.7	7.6	58	58.0	23.9	23.90	160	160.0
			27.3		4.18		55.2		8.1		7.5		58		23.9			

Date 28-Sep-11																		
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DOS (%)		Turbidity (NTU)		pH		SS		Ammonia N		Zinc	
W1	13:09	0.15	26.5	26.5	3.06	3.1	49.8	27.7	26.4	25.9	7.45	7.4	4	4.0	2.19	2.19	74	74.0
			26.5		3.11		5.6		25.3		7.36		4		2.19			
W2	13:16	0.20	26.2	26.2	3.16	3.2	50.9	51.3	21.2	21.0	7.46	7.2	3	3.0	1.82	1.82	66	66.0
			26.2		3.28		51.6		20.8		7.38		3		1.82			
W3	13:28	0.15	26.3	26.3	5.12	5.1	61.2	61.1	39.4	38.8	7.42	7.4	13	13.0	4.61	4.61	78	78.0
			26.3		5.08		60.9		38.2		7.36		13		4.61			
W4	13:36	0.20	26.3	26.3	2.98	2.9	47.9	47.6	19.8	19.6	7.35	7.3	3	3.0	1.74	1.74	71	71.0
			26.3		2.84		47.3		19.4		7.31		3		1.74			
W5	13:43	0.20	26.3	26.3	5.3	5.3	62.0	62.5	27.6	27.5	7.28	7.2	19	19.0	4.83	4.83	76	76.0
			26.3		5.36		62.9		27.4		7.19		19		4.83			
W6	13:58	0.15	26.3	26.3	4.69	4.6	55.9	56.4	24.9	24.8	7.32	7.3	28	28.0	9.63	9.63	139	139.0
			26.3		4.58		56.8		24.6		7.29		28		9.63			

Date 30-Sep-11																		
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DOS (%)		Turbidity (NTU)		pH		SS		Ammonia N		Zinc	
W1	10:54	0.15	26.4	26.4	3.08	3.0	49.2	48.8	19.7	19.2	7.42	7.4	<2	2.0	0.69	0.69	60	60.0
			26.4		3.01		48.4		18.6		7.38		<2		0.69			
W2	10:59	0.20	26.4	26.4	3.44	3.4	51.3	50.8	19.3	18.8	7.26	7.2	3	3.0	1.61	1.61	85	85.0
			26.4		3.3		50.2		18.2		7.19		3		1.61			
W3	11:09	0.15	26.4	26.4	4.17	4.2	53.2	53.6	21.4	21.3	7.17	7.1	19	19.0	7.04	7.04	83	83.0
			26.4		4.29		53.9		21.1		7.04		19		7.04			
W4	11:12	0.20	26.4	26.4	4.69	4.6	53.2	55.0	19.3	18.5	7.49	7.4	6	6.0	2.53	2.53	72	72.0
			26.4		4.58		56.8		17.6		7.38		6		2.53			
W5	11:23	0.15	26.4	26.4	5.31	5.3	62.1	62.5	28.8	28.0	7.52	7.5	22	22.0	8.18	8.18	116	116.0
			26.4		5.37		62.9		27.2		7.38		22		8.18			
W6	11:31	0.20	26.4	26.4	5.16	5.1	61.7	61.5	25.6	26.2	7.19	7.1	19	19.0	6.34	6.34	98	98.0
			26.4		5.11		61.3		26.8		7.06		19		6.34			

Date 3-Oct-11																		
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DOS (%)		Turbidity (NTU)		pH		SS		Ammonia N		Zinc	
W1	16:09	0.10	26.3	26.3	3.03	3.1	47.8	49.3	17.7	10.0	7.4	7.5	36	36.0	1.4	1.40	37	37.0
			26.3		3.09		50.7		9.2		7.5		36		1.4			
W2	16:18	0.15	26.5	26.5	2.98	2.9	47.9	47.6	12.3	12.0	7.4	7.5	13	13.0	1.74	1.74	19	19.0
			26.5		2.84		47.3		11.6		7.5		13		1.74			
W3	16:26	0.20	26.5	26.5	5.3	5.3	62.0	62.5	13.6	13.1	7.3	7.3	25	25.0	1.5	1.50	25	25.0
			26.5		5.36		62.9		12.5		7.3		25		1.5			
W4	16:33	0.20	26.5	26.5	4.19	4.5	56.9	57.1	10.7	10.2	7.3	7.3	7	7.0	1.91	1.91	13	13.0
			26.5		4.76		57.3		9.6		7.2		7		1.91			
W5	16:42	0.15	26.5	26.5	4.17	4.2	53.2	55.0	18.2	17.8	7.3	7.3	7	7.0	1.76	1.76	13	13.0
			26.5		4.29		56.8		17.3		7.2		7		1.76			
W6	16:59	0.20	26.5	26.5	4.69	4.6	55.9	56.4	20.6	20.5	7.3	7.3	7	7.0	1.84	1.84	14	14.0
			26.5		4.58		56.8		20.4		7.2		7		1.84			

Date 6-Oct-11																		
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DOS (%)		Turbidity (NTU)		pH		SS		Ammonia N		Zinc	
W1	15:11	0.25	27.0	26.8	3.91	3.8	46.1	45.5	16.8	16.5	7.7	7.7	10	10.0	1.56	1.56	16	16.0
			26.5		3.77		44.8		16.2		7.6		10		1.56			
W2	15:07	0.20	27.1	27.1	3.79	3.7	45.3	45.1	14.6	14.4	7.3	7.3	6	6.0	1.73	1.73	13	13.0
			27.1		3.68		44.9		14.1		7.2		6		1.73			
W3	15:00	0.15	27.4	27.2	3.71	3.7	44.6	44.2	32.6	32.0	7.3	7.3	72	72.0	0.03	0.03	58	58.0
			27.0		3.68		43.8		31.4		7.3		72		0.03			
W4	14:55	0.15	27.5	27.0	4.3	4.3	49.8	49.3	30.9	30.3	8.9	8.9	123	123.0	<0.01	0.01	95	95.0
			26.5		4.24		48.7		29.7		8.8		123		<0.01			
W5	14:45	0.10	27.3	27.3	4.33	4.3	50.9	50.5	8.6	9.0	7.2	7.2	32	32.0	2.24	2.24	22	22.0
			27.3		4.25		50.1		9.3		7.2		32		2.24			
W6	14:30	0.30	27.5	27.3	4.06	4.0	48.3	47.9	11.7	12.1	7.4	7.4	21	21.0	1.88	1.88	14	14.0
			27.0		4.01		47.5		12.4		7.3		21		1.88			

Date 8-Oct-11																		
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DOS (%)		Turbidity (NTU)		pH		SS		Ammonia N		Zinc	
W1	10:46	0.15	26.4	26.4	3.13	3.1	54.8	53.2	12.8	12.6	7.2	7.2	8	8.0	<0.01	0.01	10	10.0
			26.4		3.12		51.6		12.4		7.1		8		<0.01			
W2	10:58	0.20	26.3	26.3	3.16	3.2	55.9	54.2	11.9	11.3	7.4	7.5	78	78.0	<0.01	0.01	52	52.0
			26.3		3.28		52.4		10.6		7.5		78		<0.01			
W3	11:09	0.10	26.3	26.3	5.12	5.1	61.2	61.0	21.7	21.2	7.5	7.5	15	15.0	<0.01	0.01	14	14.0
			26.3		5.08		60.8		20.6		7.5		15		<0.01			
W4	11:18	0.15	26.3	26.3	2.88	2.8	46.2	46.9	10.9	10.6	7.7	7.6	41	41.0	<0.01	0.01	36	36.0
			26.3		2.81		47.6		10.3		7.4		41		<0.01			
W5	11:31	0.20	26.3	26.3	3.44	3.4	51.3	50.8	25.6	25.5	7.3	7.3	6	6.0	<0.01	0.01	<10	10.0
			26.3		3.31		50.2		25.4		7.3		6		<0.01			
W6	11:49	0.15	26.3	26.3	3.86	3.8	68.6	66.4	24.1	24.2	7.2	7.2	17	17.0	2.47	2.47	47	47.0
			26.3		3.72		64.2		24.2		7.1		17		2.47			

Date 10-Oct-11																		
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DOS (%)		Turbidity (NTU)		pH		SS		Ammonia N		Zinc	
W1	16:52	0.15	25.4	25.4	3.48	3.4	53.3											

Summary of Water Quality Monitoring Results - KT13

Date 12-Oct-11																		
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DOS (%)		Turbidity (NTU)		pH		SS		Ammonia N		Zinc	
W1	17:01	0.15	26.3	26.3	3.57	3.6	43.2	43.7	11.6	11.7	7.5	7.5	8	8.0	0.84	0.84	18	18.0
			26.3		3.6		44.1		11.7		7.5		8		0.84		18	
W2	17:09	0.20	26.2	26.2	3.38	3.3	42.6	42.2	11.1	11.0	7.4	7.4	9	9.0	0.88	0.88	20	20.0
			26.2		3.26		41.7		10.9		7.3		9		0.88		20	
W3	17:18	0.15	26.2	26.2	3.91	3.9	56.5	56.8	25.4	24.8	7.5	7.5	8	8.0	0.86	0.86	22	22.0
			26.2		3.98		57.1		24.2		7.4		8		0.86		22	
W4	17:26	0.20	26.2	26.2	2.98	2.9	39.3	39.3	18.6	18.1	7.3	7.3	9	9.0	0.88	0.88	21	21.0
			26.2		2.87		39.2		17.6		7.2		9		0.88		21	
W5	17:35	0.15	26.1	26.1	4.68	4.7	81.8	79.4	25.3	25.1	7.1	7.2	10	10.0	0.89	0.89	20	20.0
			26.1		4.63		76.9		24.8		7.2		10		0.89		20	
W6	17:51	0.20	26.1	26.1	5.01	5.0	86.6	83.6	25.8	26.0	7.6	7.6	9	9.0	0.89	0.89	18	18.0
			26.1		4.98		80.5		26.1		7.5		9		0.89		18	

Date 14-Oct-11																		
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DOS (%)		Turbidity (NTU)		pH		SS		Ammonia N		Zinc	
W1	10:48	0.15	29.8	29.8	3.6	3.6	44.1	43.7	13.6	13.9	7.8	7.8	2	2.0	0.77	0.77	16	16.0
			29.8		3.57		43.2		14.1		7.7		2		0.77		16	
W2	10:56	0.20	28.3	28.3	3.69	3.7	45.6	45.2	12.8	12.6	7.5	7.5	2	2.0	0.64	0.64	12	12.0
			28.3		3.61		44.8		12.4		7.5		2		0.64		12	
W3	11:08	0.15	28.3	28.3	4.65	4.6	77.1	77.0	19.6	19.5	7.4	7.4	7	7.0	0.48	0.48	44	44.0
			28.3		4.61		76.8		19.4		7.4		7		0.48		44	
W4	11:19	0.20	28.3	28.3	3.45	3.4	42.2	42.0	11.9	11.3	7.4	7.4	2	2.0	0.77	0.77	12	12.0
			28.3		3.38		41.7		10.6		7.3		2		0.77		12	
W5	11:31	0.15	28.3	28.3	4.18	4.1	75.2	75.0	26.2	26.2	7.6	7.6	8	8.0	0.72	0.72	16	16.0
			28.3		4.06		74.8		26.1		7.5		8		0.72		16	
W6	11:45	0.20	28.3	28.3	4.09	4.1	73.6	73.2	25.3	25.1	7.6	7.6	5	5.0	0.4	0.40	15	15.0
			28.3		4.01		72.7		24.8		7.6		5		0.4		15	

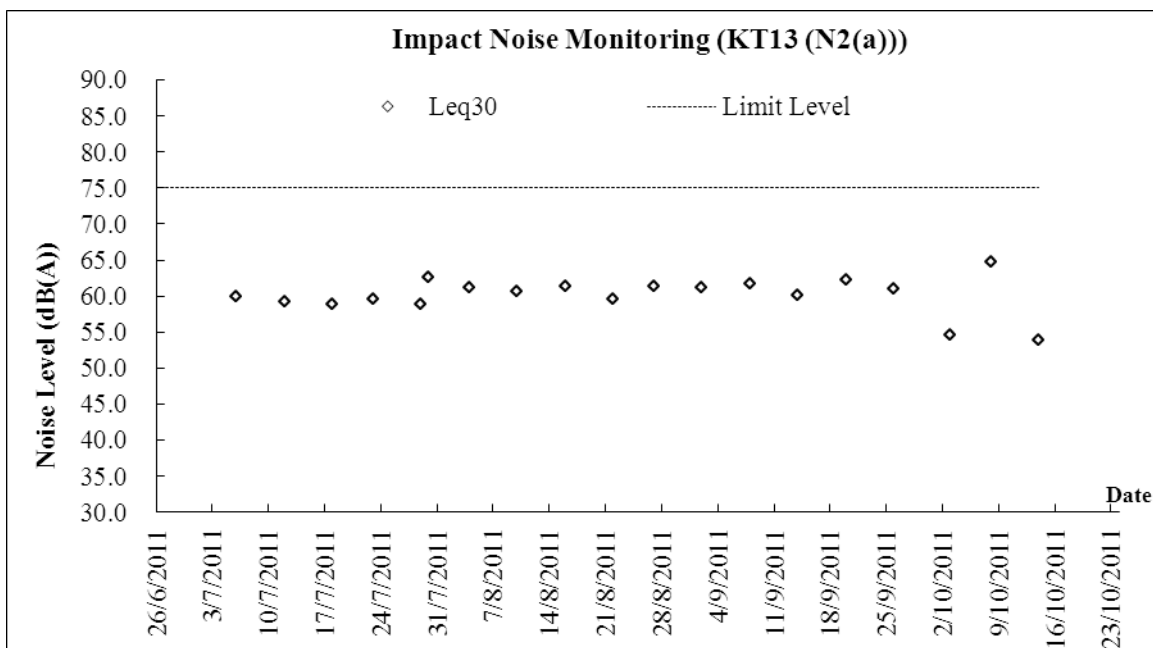
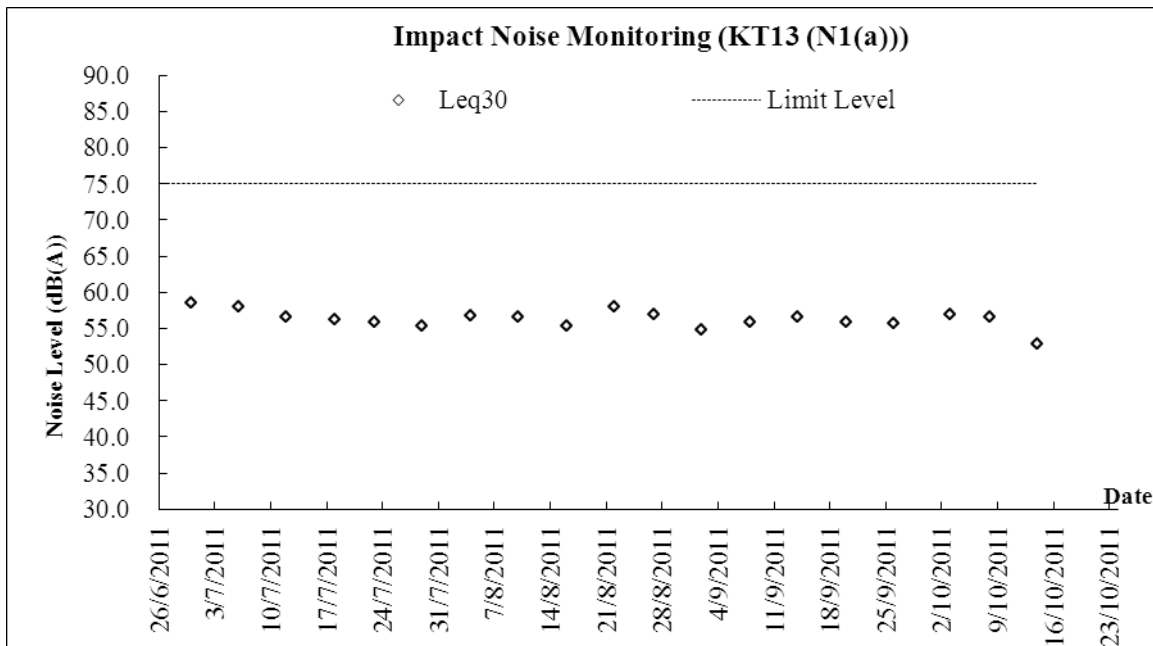
Date 18-Oct-11																		
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DOS (%)		Turbidity (NTU)		pH		SS		Ammonia N		Zinc	
W1	9:30	0.20	29.4	29.5	3.96	4.0	49.8	50.1	7.1	7.2	7.5	7.5	10	10.0	3.79	3.79	36	36.0
			29.6		3.98		50.4		7.2		7.4		10		3.79		36	
W2	9:38	0.20	29.5	29.6	4.07	4.1	52.7	53.3	7.2	7.2	7.5	7.5	20	20.0	8.68	8.68	47	47.0
			29.6		4.14		53.8		7.2		7.5		20		8.68		47	
W3	9:50	0.15	29.3	29.3	4.12	4.1	53.4	53.2	7.5	7.6	7.3	7.3	41	41.0	14.6	14.60	102	102.0
			29.3		4.08		52.9		7.7		7.2		41		14.6		102	
W4	10:01	0.20	29.1	29.2	4.41	4.3	56.1	55.4	7.4	7.4	7.2	7.2	30	30.0	12	12.00	71	71.0
			29.2		4.27		54.7		7.4		7.1		30		12		71	
W5	10:22	0.10	28.1	28.2	3.06	3.1	42.1	42.5	5.3	5.2	7.9	7.9	10	10.0	2.17	2.17	44	44.0
			28.2		3.08		42.9		5.2		7.9		10		2.17		44	
W6	10:30	0.30	30.1	30.1	5.7	5.6	69.2	69.2	7.6	7.6	7.1	7.1	68	68.0	22	22.00	135	135.0
			30.0		5.41		69.1		7.6		7		68		22		135	

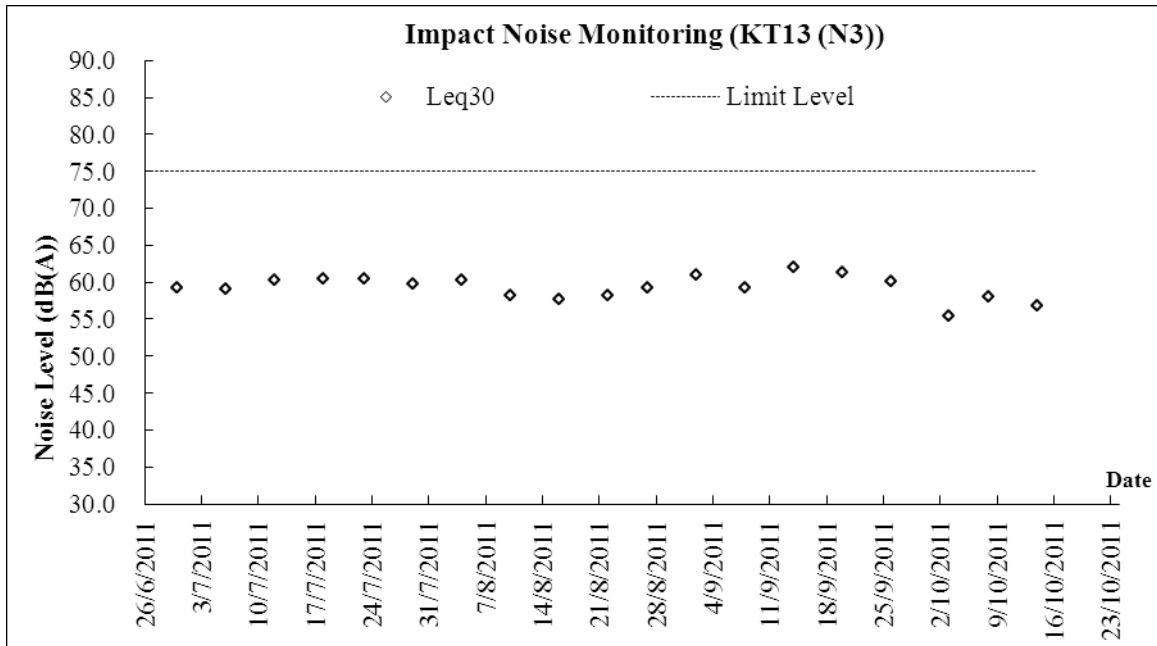
DSD CONTRACT NO. DC/2007/17
 Drainage Improvement Works in Cheung Po, Ma On Kong, Yuen Kong San Tsuen and Tin Sam Tsuen of
 Yuen Long District and Sewerage at Tseng Tau Chung Tsuen, Tuen Mun

24-Hour TSP Monitoring Results

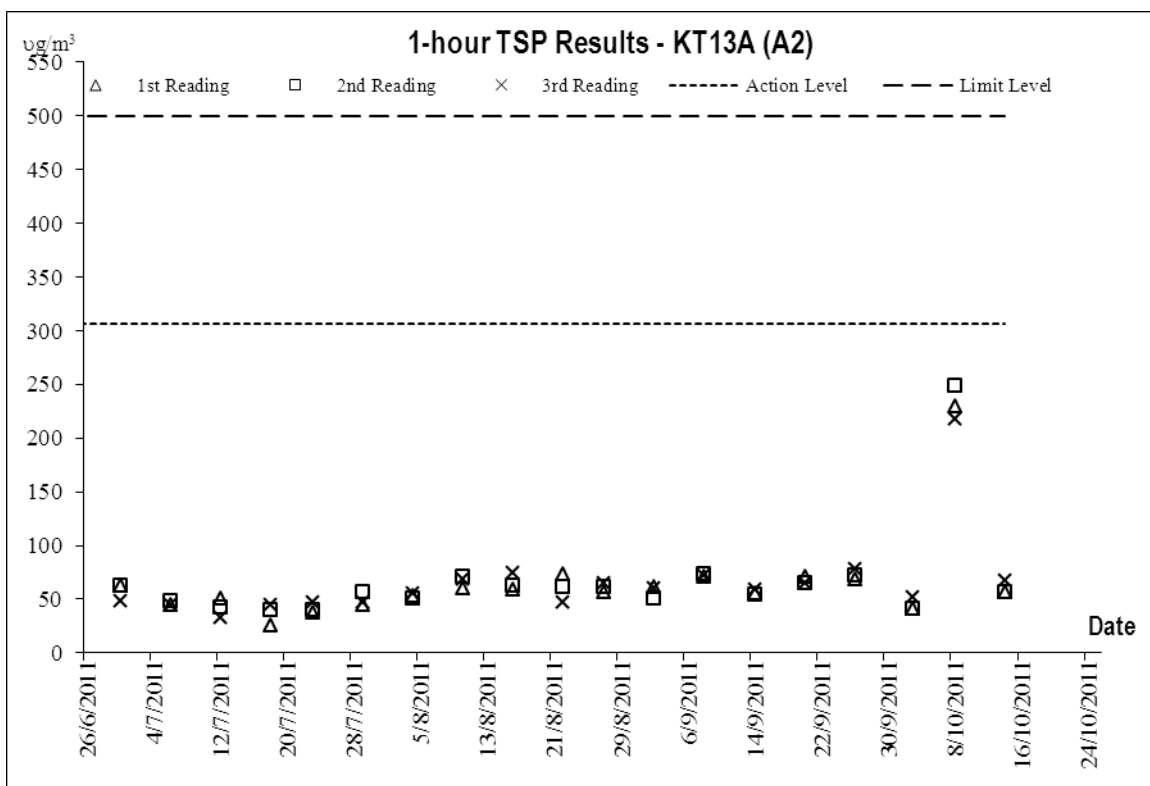
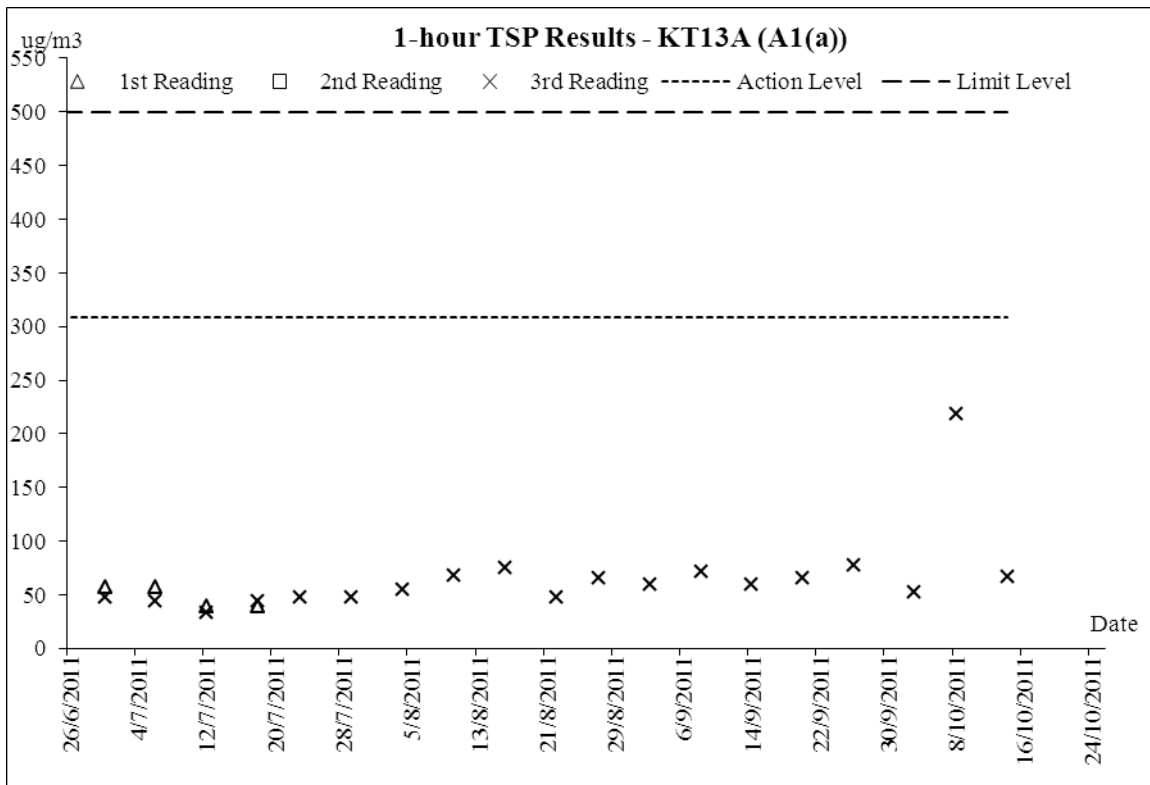
DATE	SAMPLE NUMBER	STANDARD											BLANK			SAMPLE OF FILTER PAPER			Dust 24-Hr TSP in Air ($\mu\text{g}/\text{m}^3$)	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
		ELAPSED TIME			CHART READING		AVERAGE			FLOW	AIR	SAMPLE NUMBER	WEIGHT (g)		WEIGHT (g)						
		INITIAL	FINAL	(min)	MIN	MAX	CHART READING	TEMP ($^{\circ}\text{C}$)	PRESS (hPa)	RATE (m^3/min)	VOLUME (std m^3)		INITIAL	FINAL	DIFF	INITIAL	FINAL	DUST COLLECTION			
KT13(A1(a))																					
29-Sep-11	24265	4511.21	4535.32	1446.60	32	38	35.0	27.2	1002.9	1.26	1817	NA	3.5632	3.5635	0.0003	2.7441	2.7700	0.0259	14	144	260
4-Oct-11	24210	4535.32	4560.18	1491.60	36	38	37.0	26.4	1012.9	1.33	1983	NA	3.5615	3.5609	-0.0006	2.7597	2.8567	0.0970	49	144	260
10-Oct-11	24231	4560.18	4585.14	1497.60	35	37	36.0	26.4	1011.8	1.30	1949	NA	3.5604	3.5602	-0.0002	2.7802	2.8906	0.1104	57	144	260
15-Oct-11	24296	4585.04	4609.40	1461.60	37	38	37.5	25.6	1013.4	1.34	1965	NA	3.5624	3.5615	-0.0009	2.7376	2.8544	0.1168	60	144	260
KT13(A2)																					
29-Sep-11	24266	4427.25	4451.43	1450.80	32	38	35.0	27.2	1002.9	1.23	1781	NA	3.5632	3.5635	0.0003	2.7509	2.7861	0.0352	20	141	260
4-Oct-11	24261	4451.43	4475.58	1449.00	36	38	37.0	26.4	1012.9	1.29	1870	NA	3.5615	3.5609	-0.0006	2.7367	2.8460	0.1093	59	141	260
10-Oct-11	24158	4475.58	4499.73	1449.00	35	37	36.0	26.4	1011.8	1.26	1828	NA	3.5604	3.5602	-0.0002	2.914	2.9813	0.0673	37	141	260
15-Oct-11	24297	4499.73	4523.88	1449.00	37	39	38.0	25.6	1013.4	1.32	1914	NA	3.5624	3.5615	-0.0009	2.7257	2.8166	0.0909	48	141	260

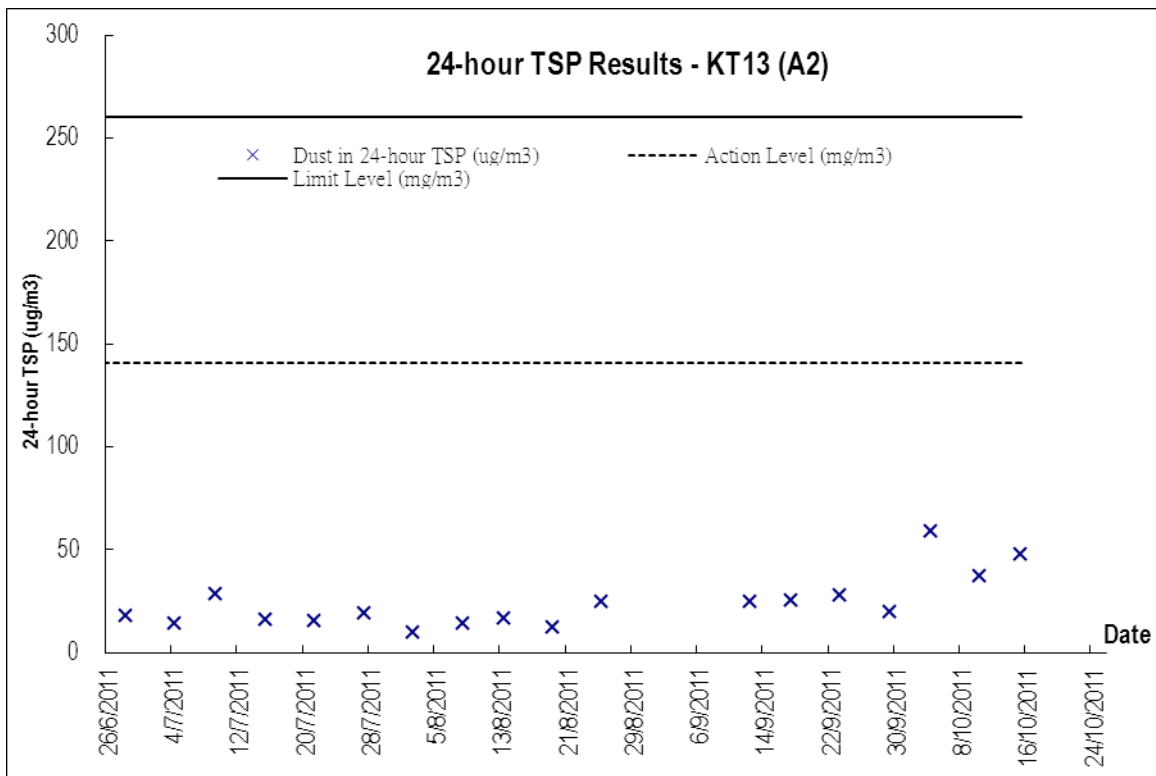
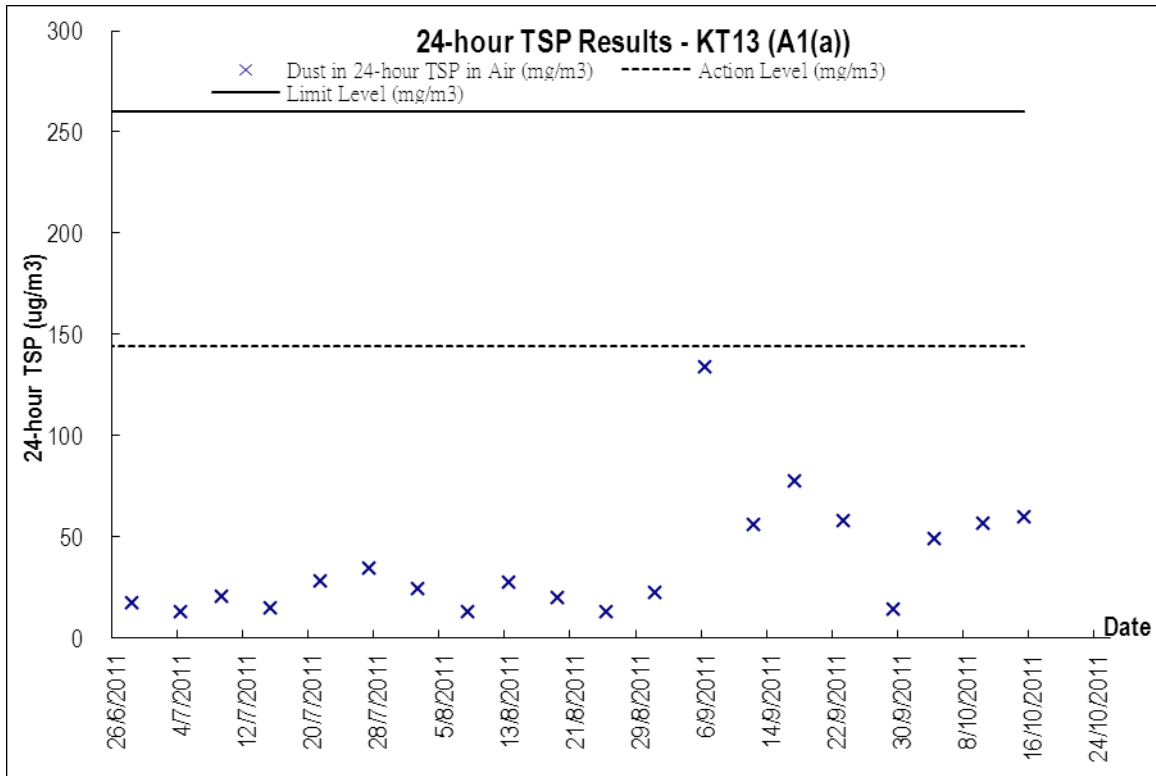
Graphic Plot of Monitoring - Construction Noise



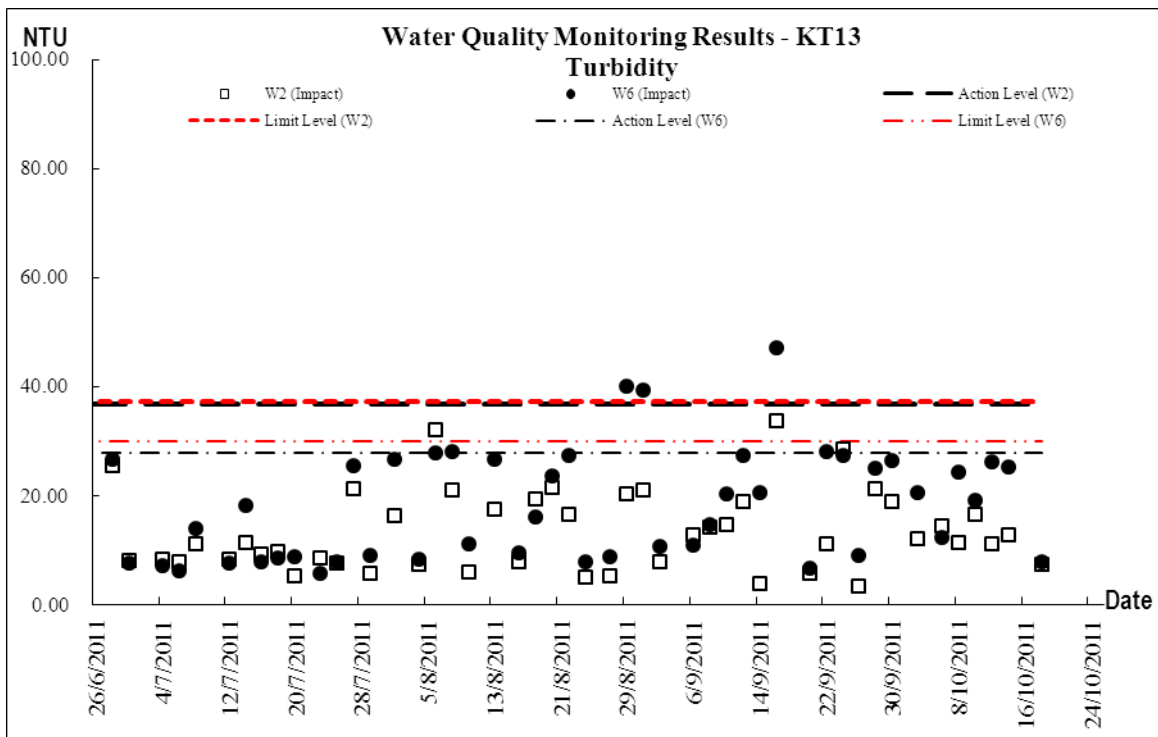
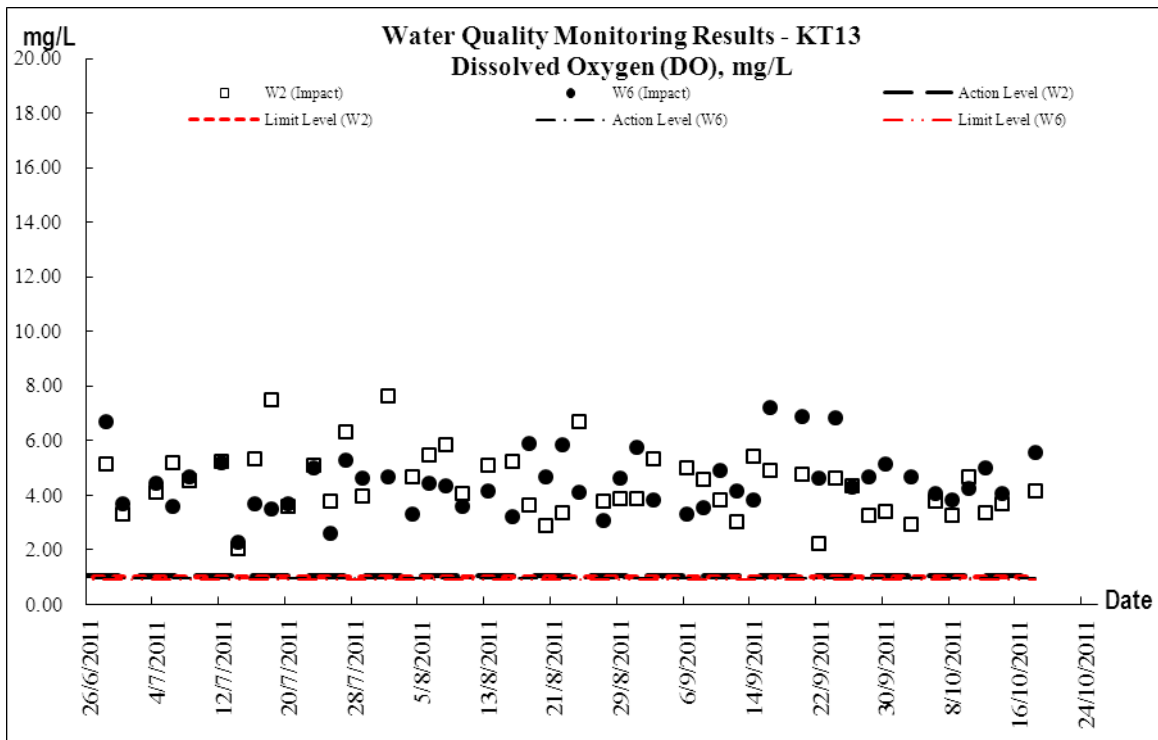


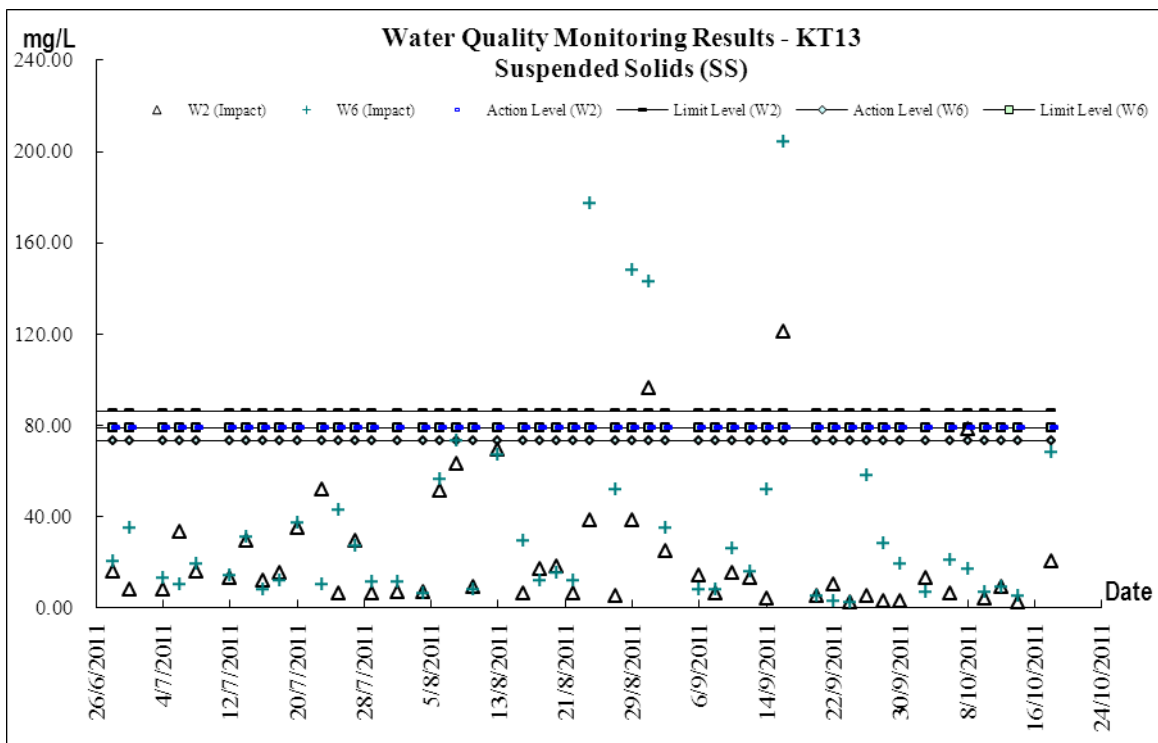
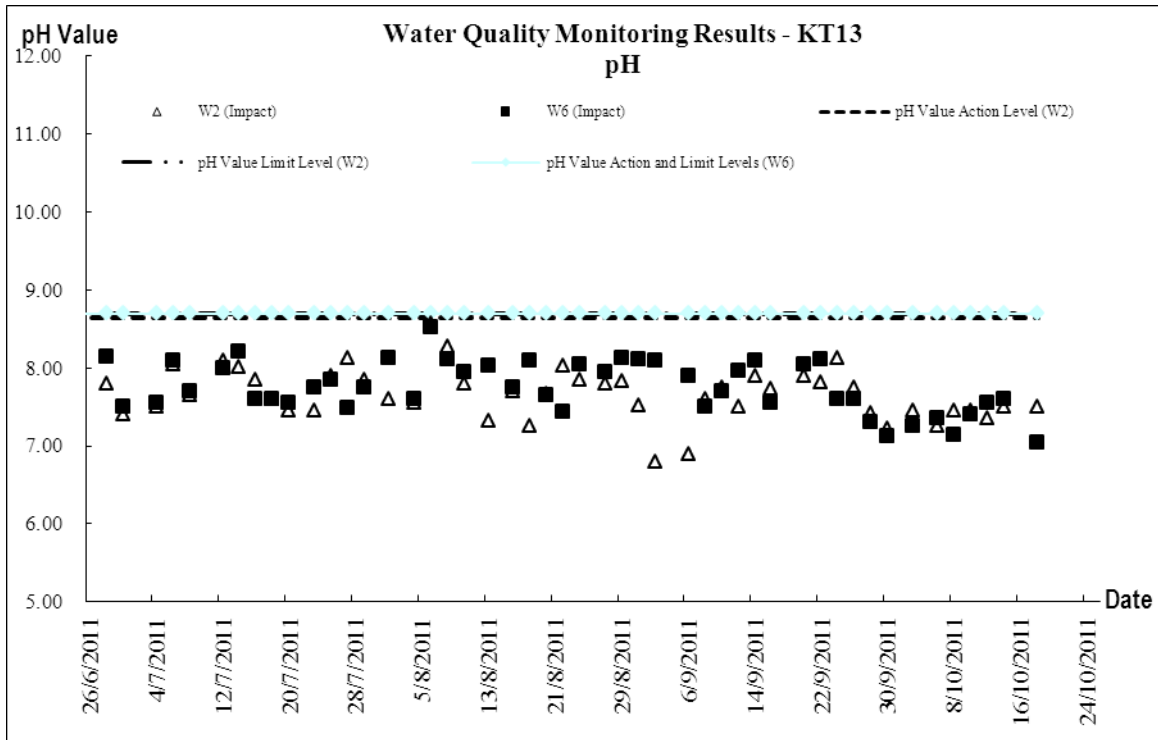
Graphic Plot of Monitoring – Air Quality

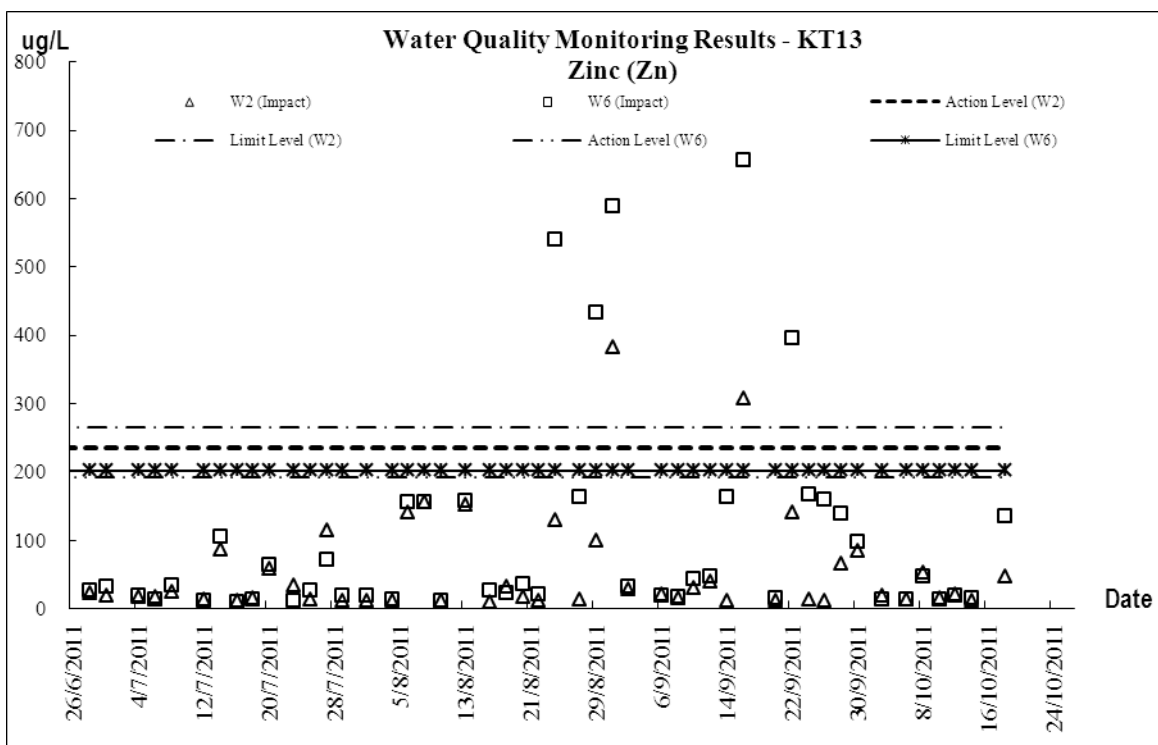
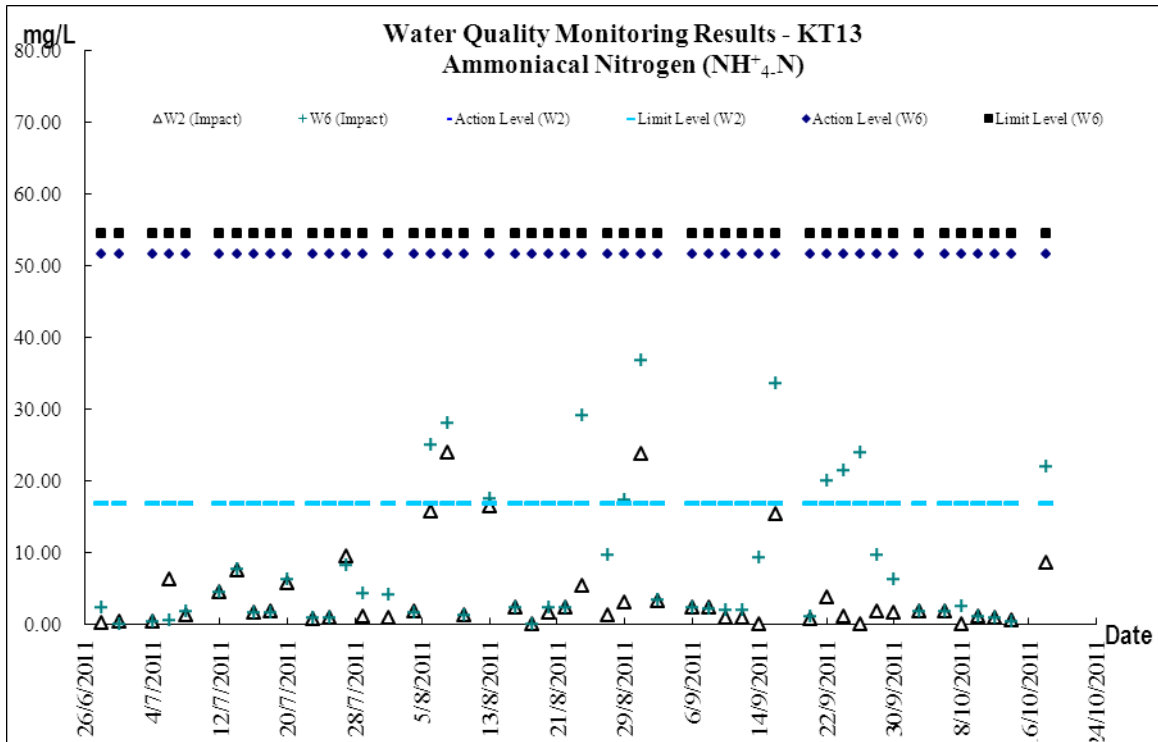




Graphic Plot of Monitoring –Water Quality







Appendix H

Monthly Summary Waste Flow Table

Monthly Summary Waste Flow Table

Date: 18-Oct-11
Year/Month: Oct-11

Monthly Summary Waste Flow Table for October 2011										
Year	Actual Quantities of Inert C & D Materials Generated Monthly					Estimated Annual Quantities of C & D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete (see note 4)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Metals	Paper/ Cardboard packaging	Plastics (see note 3)	Chemical Waste	Others, e.g. General refuse
	(in '000M ³)	(in '000M ³)	(in '000M ³)	(in '000M ³)	(in '000M ³)	(in '000KG)	(in '000KG)	(in '000KG)	(in '000KG)	(in '000M ³)
Jan	2.452	0.001	2.5355	-0.085	0	0	0	0	0	0
Feb	4.167	0.001	1.7215	2.444	0	0	0	0	0	0
Mar	1.894	0.002	2.332	-0.44	0	0	0	0	0	0
Apr	1.123	0.001	1.551	-0.429	0	0	0	0	0	0
May	0.567	0.000	0.5665	0.000	0	0	0	0	0	0
Jun	0.115	0.000	0.297	-0.182	0	0	0	0	0	0
Sub-Total	10.32	0.005	9.004	1.308	0	0	0	0	0	0
Jul	-0.138	0.000	0.2145	-0.352	0	0	0	0	0	0
Aug	0.099	0.000	0.099	0.000	0	0	0	0	0	0
Sep	0.000	0.000	0.000	0.000	0	0	0	0	0	0
Oct	0.000	0.000	0.000	0.000	0	0	0	0	0	0
Nov	0.000				0	0	0	0	0	0
Dec	0.000				0	0	0	0	0	0
Total	10.278	0.005	9.317	0.956	0.000	0.000	0.000	0.000	0.000	0.000

- Notes:
- (1) The performance targets are given in PS Clause 28.10(14)
 - (2) The waste flow table shall include C&D materials that are specified in the Contract to be imported for use at the Site.
 - (3) Plastics refer to plastic bottles/ containers, plastic sheets/ foam form packaging material
 - (4) Broken concrete for recycling into aggregates
 - (5) Negative numbers in "Reused in other Projects" indicate import of materials from other projects.