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China Harbour – Zhen Hua Joint Venture

Contract No.: CV/2015/07
Handling of Surplus Public Fill
(2016-2018)

TUEN MUN AREA 38 FILL BANK

QUARTERLY EM&A SUMMARY REPORT NO.1

(FROM 12 MAY 2017 TO 31 JULY 2017)

Prepared by: _____
LAW, Sau Yee
Senior Environmental Officer

Checked by: _____
LAU, Chi Leung
Environmental Team Leader

Issue Date: 01 September 2017 *Report No.: ENA75178*

RAMBOLL ENVIRON

Ref.: CEDPFRSFEM02_0_0099L.17

6 September 2017

By Email and Fax No.: 2695 3944

ETS-Testconsult Limited
8/F, Block B, Veristrong Industrial Centre
34-36 Au Pui Wan Street
Fo Tan, Hong Kong

Attention: Mr. C.L. Lau

Dear Mr. Lau,

Re: Contract No. CV/2015/07
Handling of Surplus Public Fill (2016 – 2018)

Quarterly EM&A Summary Report No. 1 (from 12 May 2017 to 31 July 2017) for the Tuen Mun Area 38 Fill Bank

Reference is made to your submission of the draft Quarterly EM&A Summary Report No. 1 (12 May to 31 July 2017) for the TM Area 38 Fill Bank received by email on 1 September 2017 and the subsequent revision on 6 September 2017.

We are pleased to inform you that we have no further comment on the quarterly EM&A summary report.

Thank you for your attention. Please do not hesitate to contact our Jason Lai or the undersigned should you have any queries.

Yours sincerely,
For and on behalf of
Ramboll Environ Hong Kong Limited

F. C. Tsang
Independent Environmental Checker

c.c. CEDD Attn: Mr. Simon Leung Fax No.: 2714 0113
CHZHJV Attn: Mr. S W Sung By Email

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EXECUTIVE SUMMARY

This is Quarterly Environmental Monitoring and Audit (EM&A) Summary Report No.1 prepared by ETS-Testconsult Ltd (ET) for the "Contract No. CV/2015/07 Handling of Surplus Public Fill (2016-2018) – Tuen Mun (TM) Area 38 Fill Bank" (The Project).

This report documents the findings of EM&A Works conducted during the operation phase of Fill Bank at Tuen Mun Area 38 from 12 May 2017 to 31 July 2017.

Site Activities

As informed by the Contractor, the site activities in this reporting quarter were as below:

12 to 31 May 2017	*1.1. Operation of the TM38 Fill Bank.* *2.Transferring public fill to vessel and delivering to Taishan and other parties* *3.Construction of site office*
June 2017	*1. Operation of the TM38 Fill Bank* *2. Transferring public fill to vessel and delivering to Taishan and other parties* *3.Construction of site office*
July 2017	*1. Operation of the TM38 Fill Bank.* *2.Transferring public fill to vessel and delivering to Taishan and other parties* *3.Construction of site office*

Environmental Monitoring Works

Air Monitoring

No exceedance of Action and Limit levels was recorded for 1-hr and 24-hr TSP monitoring in this quarter.

Marine Water Quality Monitoring

According to the summary of marine water monitoring results, no exceedance of Action and Limit levels was recorded in this quarter.

Noise Monitoring

No exceedance of Action and Limit levels for noise monitoring was recorded in this quarter.

Environmental Complaints, Notification of summons and successful prosecutions

In this quarter, one complaint was received. Besides, no notification of summon and prosecution with respect to environmental issue was received in this quarter.

1.0 INTRODUCTION

China Harbour – Zhen Hua Joint Venture (CHZH-JV) appointed Environmental Team (ET) of ETS-Testconsult Limited (ETL) to undertake the Environmental Monitoring and Audit (EM&A) for the "Contract No: CV/2015/07 –Handling of Surplus Public Fill (2016-2018) – Tuen Mun (TM) Area 38 Fill Bank" (The Project).

In accordance with the Condition 5 of Part C of Environmental Permit (No.: EP-210/2005/B) (the EP), an EM&A programme as set out in the Project Profile should be implemented. The EM&A programme requires environmental monitoring for air quality, water quality and environmental site inspections for air quality, water quality, landscape and visual, and waste management.

Baseline monitoring was completed in May 2003 by Stanger Asia Ltd. Action and Limit Levels were established for air and water quality parameters based on the baseline monitoring results.

This quarterly report documented the findings of EM&A Works conducted during the operation phase of Fill Bank at Tuen Mun Area 38 from 12 May 2017 to 31 July 2017.

2.0 PROJECT INFORMATION

2.1 Work Programme in this Reporting Quarter

Details of work programme are shown in Appendix G.

2.2 Project Organization and Management Structure

The project organization chart is shown in Appendix A.

2.3 Contact Details of Key Personnel

The key personnel contact names and telephone numbers are shown in Table 2.1.

Table 2.1 Contact Details of Key Personnel

Organization	*Name of Key Staff*	*Project Role*	*Tel. No.*	*Fax No.*
CEDD	*Simon Leung, May Lau, James Sze, Phoebe Tang*	*Engineer's Representative*	*2762 5555*	*2714 0113*
IEC (Ramboll Environ)	*F C Tsang*	*IEC*	*3465 2888*	*3465 2899*
Contractor (CHZH-JV))	*Michael Cheung*	*Project Director*	*2887 8118*	*2512 0427*
ET (ETL)	*C. L. Lau*	*ET Leader*	*2946 7791*	*2695 3944*

3.0 SUMMARY OF EM&A REQUIREMENTS

3.1 EM&A Programme

The EM&A programme required environmental monitoring for air, marine water and environmental site inspections for air, marine water, landscape and visual, and waste management. The EM&A requirements for each parameter described in the following sections include:

- *All monitoring parameters;*
- *Monitoring schedules for the reporting month and forthcoming months;*
- *Action and Limit levels for all environmental parameters;*
- *Event/Action Plans;*
- *Environmental mitigation measures, as recommended in the Project EIA study final report; and*
- *Environmental requirements in contract documents.*

The advice on implementation status of environmental protection and pollution control/mitigation measures is summarized in Section 5 of the Report.

3.2 Monitoring Stations and Parameters

The EM&A Manual designates several locations to monitor environmental impacts in terms of air quality, noise and water quality due to the Project. The description and detailed locations of monitoring stations for air quality, noise and marine water quality are shown in Figures 1, 2 and 3 and relevant sections of this Report.

3.3 Monitoring Methodology and Calibration Details

All monitoring works were conducted and monitoring equipment was calibrated in according with the EM&A Manual.

3.4 Environmental Quality Performance Limits (Action/Limit Levels)

The environmental quality performance limits, i.e. Action/Limit Levels (AL Levels) were derived from the baseline monitoring results. If the measured environmental quality parameters exceed the AL Levels, the respective action plan will be implemented. The AL Levels for each monitoring parameter are given in Appendix E. The event action plan is given in Appendix F.

3.5 Environmental Mitigation Measures

Relevant mitigation measures were recommended in the EM&A Manual for the Contractor to implement. A list of mitigation measures is given in Appendix H.

4.0 MONITORING RESULTS

4.1 Air Quality

In accordance with the EM&A Manual, 1-hr and 24-hr TSP air quality monitoring are to be conducted three times and one time per six days correspondingly. In the reporting quarter, no exceedances of Action and Limit levels were recorded for 1-hr and 24-hr TSP monitoring. The monitoring trend of air quality during the reporting quarter are given in Appendix B.

Major dust sources in the Fill Bank were dump truck traffic and hauling activities.

Table 4.1 presents the number of exceedances recorded in each month of the reporting quarter. The number of monitoring event included regular monitoring events and additional ones.

Table 4.1 Summary of Number of Exceedances for 1-hr and 24-hr TSP Monitoring

Monitoring Parameter	*Level of Exceedance*	*12 to 31 May 2017*	*June 2017*	*July 2017*
24-hr TSP	*No of monitoring events*	*3*	*5*	*6*
	Action Level	*0*	*0*	*0*
	Limit Level	*0*	*0*	*0*
1-hr TSP	*No of monitoring events*	*10*	*15*	*15*
	Action Level	*0*	*0*	*0*
	Limit Level	*0*	*0*	*0*

4.2 Noise

Since Lands Dept did not approve to carry out noise monitoring at their own area where the noise monitoring stations TM-N1 and TM-N2 located due to the security, noise monitoring carried out at two noise monitoring stations TM-RN1 and TM-RN2 (refer to the figure attached) from 18 December 2007.

No exceedance was recorded in this reporting quarter.

4.3 Marine Water Quality

In accordance with the Project Profile, impact marine water quality monitoring was conducted at two control monitoring stations (TM-FC1 and TM-FC2) and two impact monitoring stations (TM-FM1and TM-FM2) in this quarter.

Impact marine water quality monitoring was conducted three days per week. Measurements were taken at both mid-ebb and mid-flood tides at three depths (i.e. 1m below surface, mid depth and 1m above seabed). The AL Levels are included in Appendix E.

According to the summary of marine water monitoring results, no exceedance of action and limit level was recorded in this quarter. Table 4.2 presents the total number of marine water quality exceedances in the reporting quarter. The trend of marine water quality in the past three months is depicted in Appendix D.

Table 4.2 Total Number of Marine Water Quality Exceedances in this quarter

Parameter	*Exceedance Level*	*12 to 31 May 2017*	*June 2017*	*July 2017*
Number of monitoring days		*7*	*13*	*12*
Dissolved Oxygen, DO (S&M)	*Action*	*0*	*0*	*0*
	Limit	*0*	*0*	*0*
Dissolved Oxygen, DO (B)	*Action*	*0*	*0*	*0*
	Limit	*0*	*0*	*0*
Turbidity	*Action*	*0*	*0*	*0*
	Limit	*0*	*0*	*0*
Suspended Solids, SS	*Action*	*0*	*0*	*0*
	Limit	*0*	*0*	*0*

A comparison between the quarterly mean/median of SS and the 1.3 times of the baseline mean was made for each tide at each station. The statistical analysis results are given in Appendix I. Monitoring stations with significant difference ($p<0.05$) is summarized in Table 4.3.

Table 4.3 Summary of Statistically Significant Results of SS

Monitoring Station		*Significant difference?*	
		Mid-flood	*Mid-ebb*
Designated Control Station	*FC1*	*X*	*X*
	FC2	*X*	*X*
Designated Monitoring Station	*FM1*	*X*	*X*
	FM2	*X*	*X*

5.0 INSPECTION RESULTS

5.1 Implementation Status of Environmental Mitigation Measures

ET conducted weekly site inspections to monitor the Contractor's implementation of environmental mitigation measures.

Air quality was the major environmental issue in the reporting quarter. The Contractor generally implemented most of the environmental mitigation measures in the reporting quarter. Dump truck traffic was the major dust source in the Fill Bank. Generally, the Contractor implemented adequate dust mitigation measures in the reporting quarter including dampening of haul roads, water spraying on the truckloads, during loading and unloading of material and for crushing plant, operation of automatic wheel washing facilities, dampening of fill material prior to handling or stockpiling, etc.

The major noise source was dump truck traffic in the Fill Bank. All site equipment and machinery were well maintained and no noise nuisance was observed during operating.

Drainage channels and wastewater treatment facilities were found maintained in good condition for merit function. The Contractor arranged site workers to clean up the silt and mud regularly.

Although there were a few observations regarding improper handling of oil drums and chemical containers, such as lack of drip tray and accumulated of stagnant water in the drip tray, the Contractor rectified most of these problems. Besides, the Contractor should provide tarpaulin sheets before repairing and maintenance works and also carry out proper cleaning activities immediately after such works.

Overall site area was found tidy and clean. The Contractor was reminded to collect and dispose of the general refuse and other C&D waste in a timely manner.

5.2 Status of Environmental Licensing and Permitting

The status of licences and permits is summarized in Table 5.1.

Table 5.1 Summary of environmental licensing and permit status

Description	*Permit No.*	*Valid Period*		*Section*
		From	*To*	
Environmental Permit	*EP-210/2005/B*	*08/04/13*	---	*Issued*
Marine Dumping Permit	*EP/MD/18-004*	*19/05/17*	*30/06/17*	*Approval for dumping 1,700,000 tons (approximately equal to 944,444 cu.m. bulked quantity) of Public Fill (Reclamation Materials) from Tseung Kwan O Area 137 Fill Bank and Tuen Mun Area 38 Fill Bank to designated dumping area at Guanghaiwan of Taishan*
Marine Dumping Permit	*EP/MD/18-021*	*08/07/17*	*30/09/17*	*Approval for dumping 3,000,000 tons (approximately equal to 1,666,667 cu.m. bulked quantity) of Public Fill (Reclamation Materials) from Tseung Kwan O Area 137 Fill Bank and Tuen Mun Area 38 Fill Bank to designated dumping area at Guanghaiwan of Taishan*
Chemical Waste Producer	*5296-421-C4184-01*	*20/04/17*	---	*Spent battery containing heavy metals and spent lubricating oil*
Billing Account for Waste Disposal	*7027643*	*22/05/17*	---	---
Notification Pursuant to Section 3(1) of the Air Pollution Control (Construction Dust)	*415661*	*12/04/17*	---	---
Discharge License	*Applied on 23 May 2017*			

5.3 Advice on Solids and Liquid Waste Management Status

Table 5.2 summarizes data on offsite waste disposal in the quarter.

Table 5.2 Estimated Offsite Waste Disposal in the Reporting Quarter

Waste Type	*12 to 31 May 2017*	*June 2017*	*July 2017*
Public Fill (m^3)	*0*	*0*	*0*
C&D Waste (general refuse) (kg)	*0*	*0*	*0*
Chemical Waste e.g. Waste oil (L) / Chemical Waste (kg)	*0*	*0*	*0*

6.0 NON-COMPLIANCE OF THE ENVIRONMENTAL QUALITY PERFORMANCE LIMITS

6.1 Summary of Non-compliance

According to the monitoring results, no action and limit level exceedance was recorded in this quarter.

6.2 Review of the Reasons for and the Implications of Non-compliance

Since no non-compliance was recorded in this quarter, no review was required.

6.3 Summary of Actions Taken

Since no exceedance was recorded in this quarter, no further action was required.

6.4 Summary of Environmental Complaint, Notification of Summon and Successful Prosecution Handling

In this quarter, one complaint was received. Besides, no notification of summon and prosecution with respect to environmental issue was received in this quarter.

A summary of environmental complaints and prosecutions was given in Table 6.1.

Table 6.1 Summary of Environmental Complaints and Prosecutions

Period	*Complaints logged*	*Summon served*	*Successful Prosecution*
12 to 31 May 2017	*1*	*0*	*0*
June 2017	*0*	*0*	*0*
July 2017	*0*	*0*	*0*
Cumulative	*1*	*0*	*0*

7.0 COMMENTS, CONCLUSIONS AND RECOMMENDATION

Major activity in the Fill Bank was the import and dumping of fill materials in this quarter. Air quality was the major environmental issue in the Fill Bank. Generally, the Contractor implemented most of the mitigation measures to minimize the dust impact.

No exceedance of action and limit levels was recorded for 1-hr and 24-hr TSP monitoring in the reporting quarter.

According to the marine water monitoring results in this quarter, no exceedance of action and limit level was recorded.

The noise level measured at the monitoring station complied with the Limit Level of 65dB(A). No complaint was received regarding noise issue in this reporting month.

In this quarter, one complaint was received. Besides, no notification of summon and prosecution with respect to environmental issue was received in this quarter.

According to the ET weekly site inspection and IEC site audits carried out in this quarter, it was indicated that site practices of the Contractor were generally undertaken in an environmentally acceptable manner and the overall site environmental performance was up to standard.

According to the environmental site inspections performed in the reporting quarter, the following recommendations were provided:

Air Quality

- Ensure the frequency of water spraying on haul roads, unloading areas and stockpiles to be sufficient to suppress the dust sources;
- Provide proper maintenance for the powered mechanical equipment and barges to avoid emission of dark smoke;
- Provide water spraying onto the truckloads during inspection of fill material;

- Conduct road sweeping on all paved haul roads and public roads especially outside and near the site egress by the road sweeper. Undertake water spraying on stockpiling area by water bowser;
- Erect adequate speed limit signs to advise the truck drivers of the speed limit;
- Operate mist spraying systems and automatic water sprinklers in the Fill Bank;
- Implement the dust mitigation measures for the construction activities;
- Designate proper haul roads to ensure effective water spraying; and
- Ensure all vehicles to be washed before leaving the site egress by provision, operation and maintenance of automatic wheel washing facilities.

Noise

- Conduct noisy activities at a farther location from the NSRs.

Water Quality

- Maintain the drainage system, including the trapezoidal channels and permanent desilting chambers regularly; and
- Remove the stagnant water or provide approved pesticides for the stagnant water in the permanent desilting chambers, if any.

Chemical and Waste Management

- Remove waste materials from the site to avoid accumulation regularly;
- Handle and store chemical wastes properly;
- Remove unwanted material in the existing stockpiles and avoid further dumping of such material;
- Provide and maintain sufficient drip trays for diesel drums, chemical containers, chemical waste storage drums and diesel operated generator set;
- Maintain good housekeeping at the workshop area;
- Ensure sufficient tarpaulin sheets are provided to cover drip trays; and
- Avoid soil being polluted during oil filling and equipment maintenance; hence, properly remove and store the contaminated soil, if any.

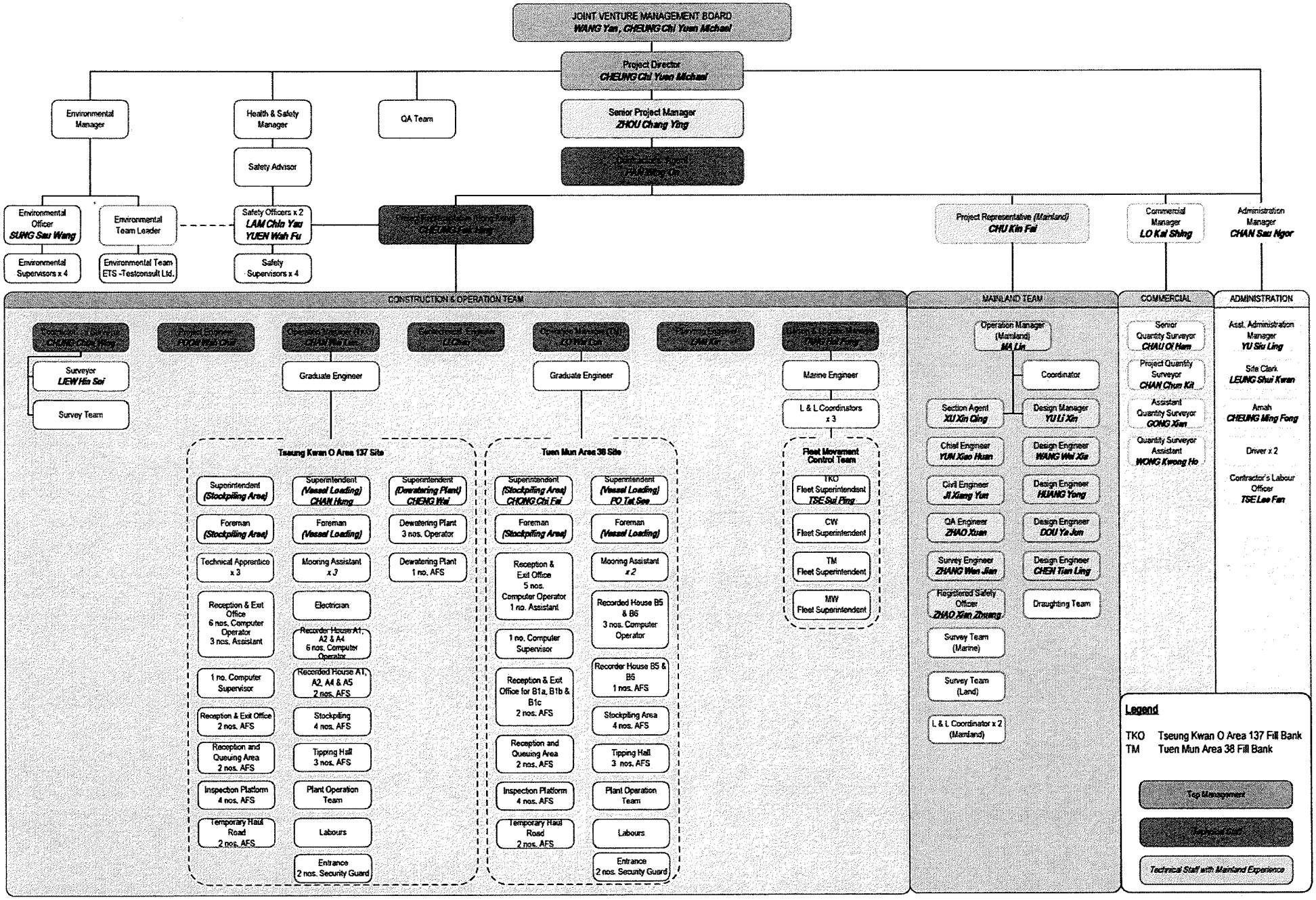
Landscape and Visual

- Provide hydroseeding on the exposed slopes, on which the final profile has been formed;
- Erect all the site hoarding/chaining fences in accordance with agreed design at proper location; and
- Maintain the hydroseeding slopes in accordance with the Landscape Plan.

- END OF REPORT -

Appendix A

Organization Chart



CEDD Civil Engineering and Development Department

Contract No. CV/2015/07
Handling of Surplus Public Fill (2016-2018)

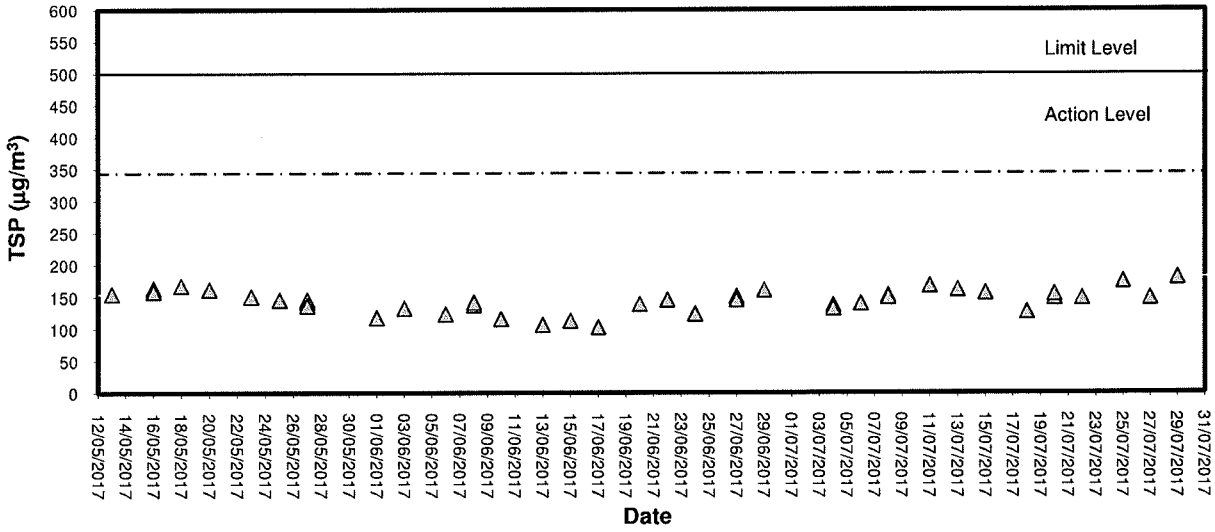
China Harbour – Zhen Hua Joint Venture

Organization Chart
Rev. 2

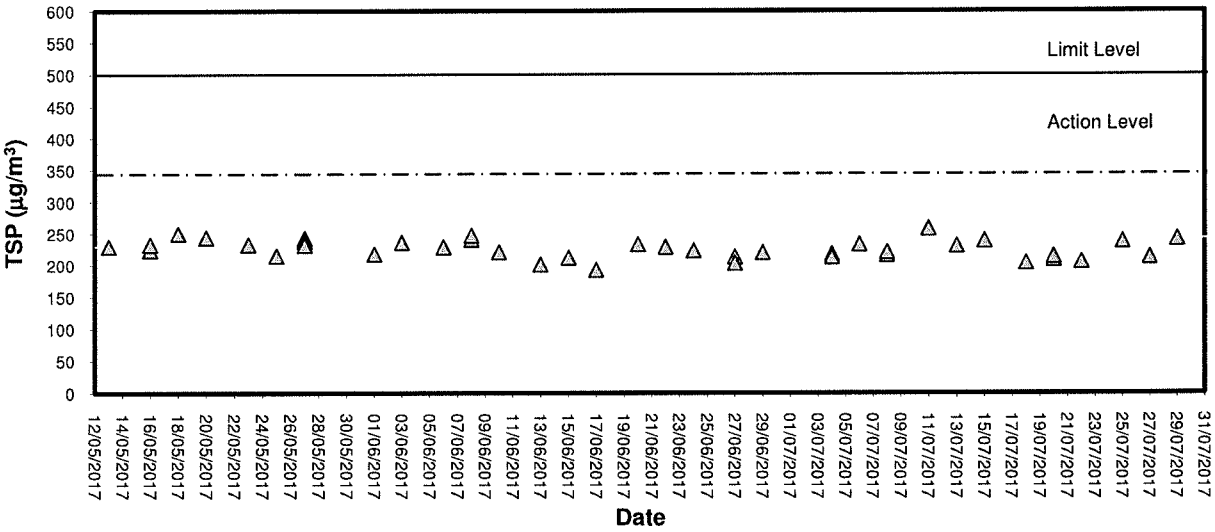
Appendix B

Graphical Plots of Air Quality Monitoring Data

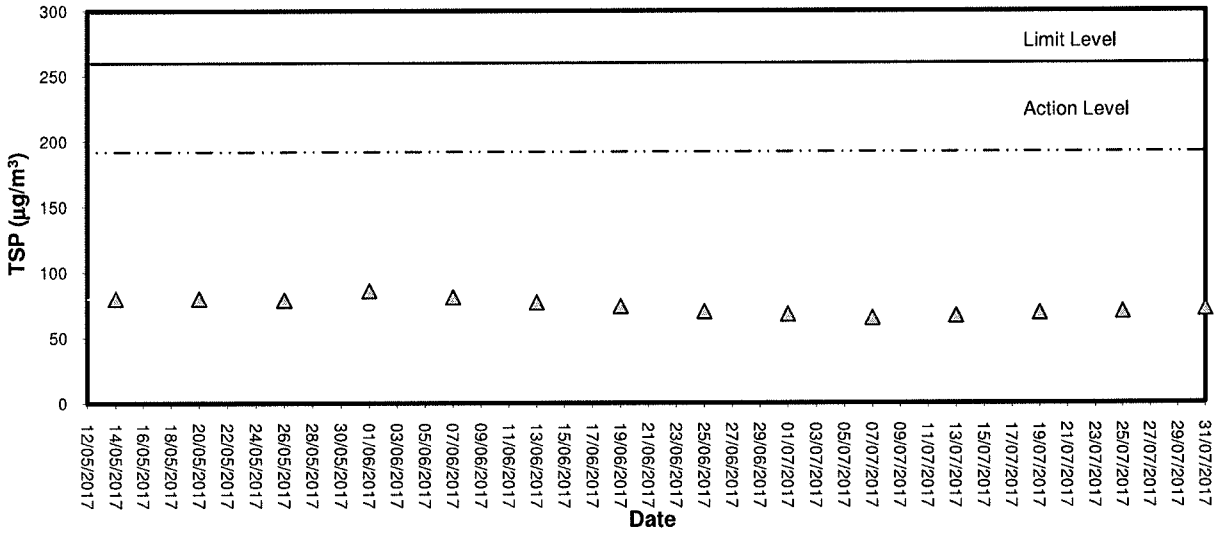
1-hour TSP level at TM-A1



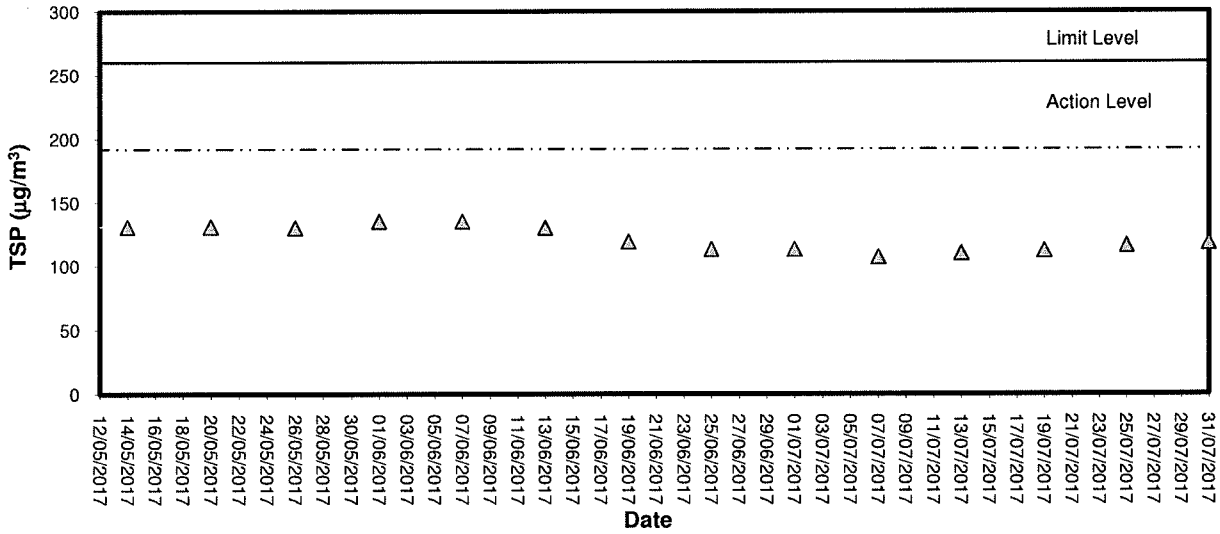
1-hour TSP level at TM-RA2



24-hour TSP level at TM-A1



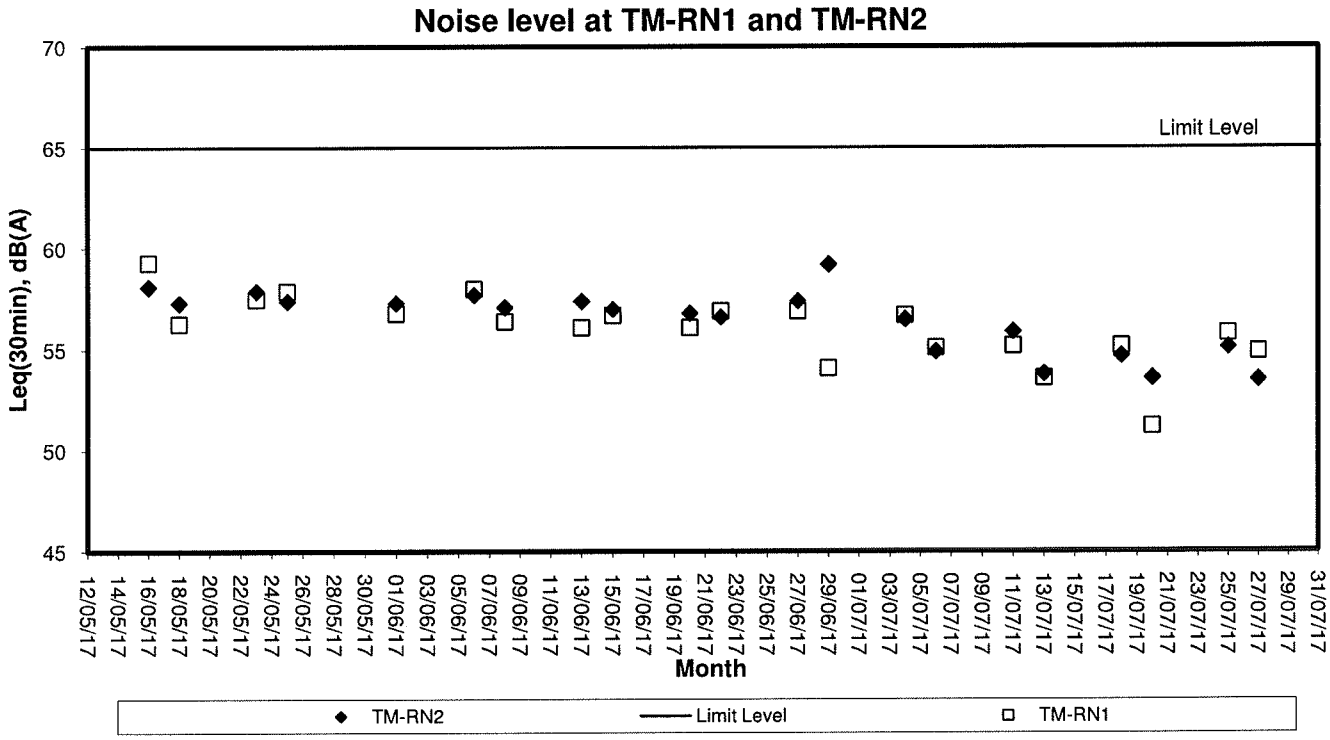
24-hour TSP level at TM-RA2



Appendix C

Graphical Plots of Impact Noise Monitoring Data

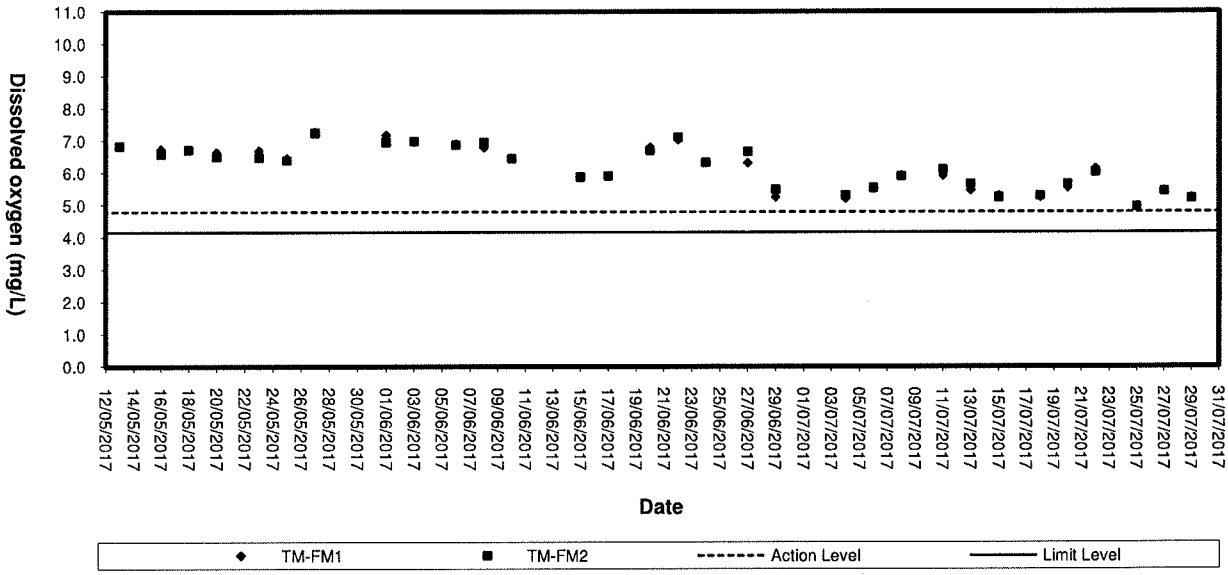
Noise Monitoring (Day-time)



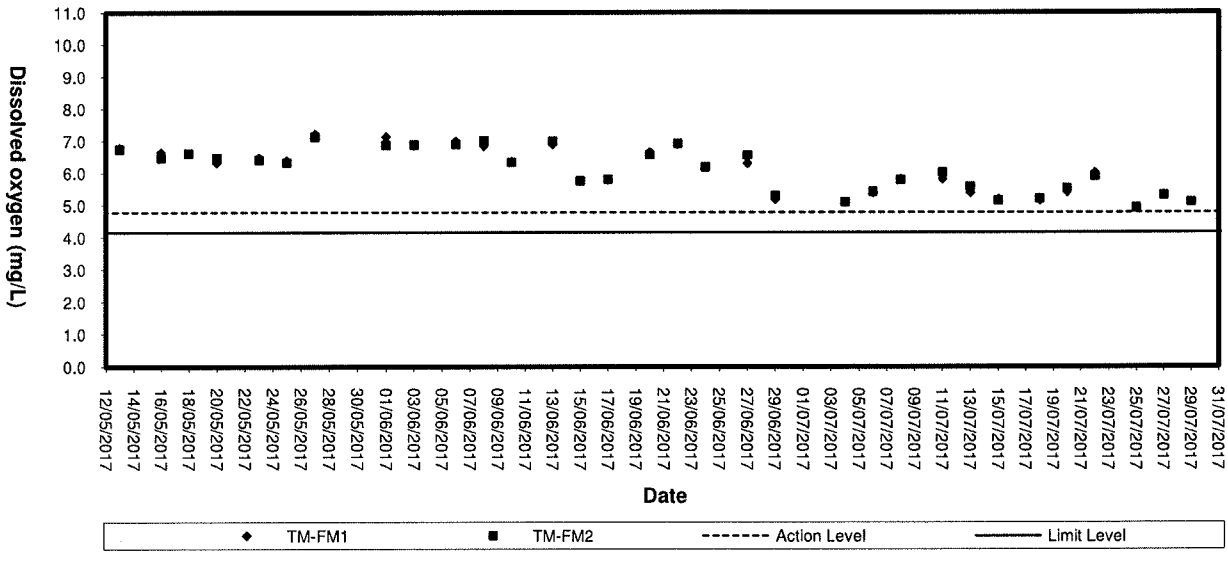
Appendix D

Graphical Plots of Impact Marine Water Quality Monitoring Data

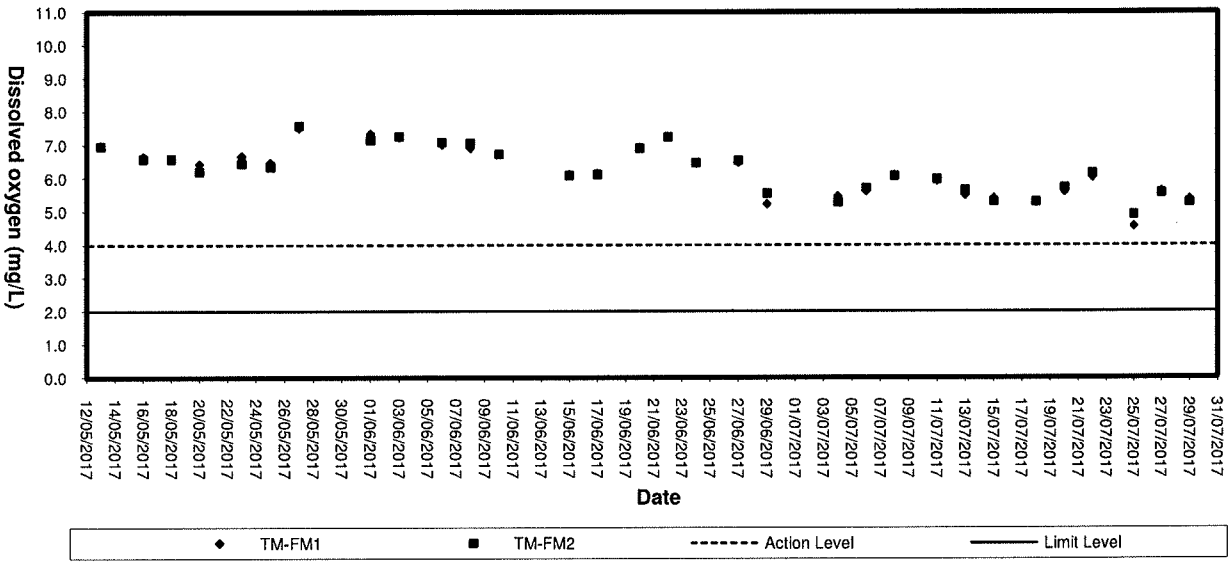
Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide



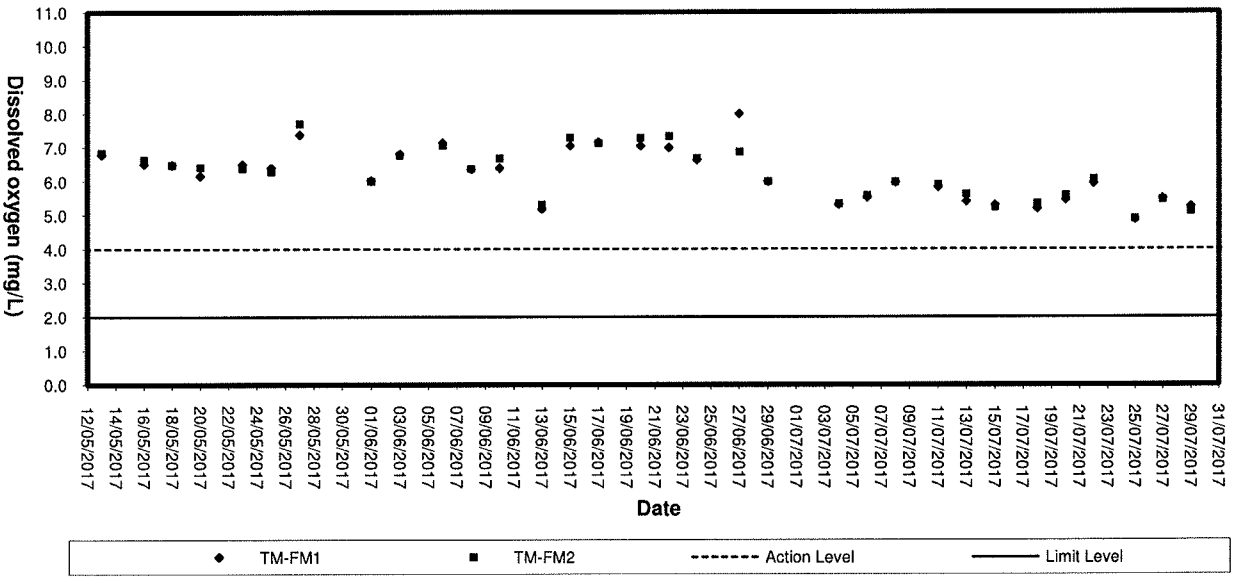
Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide



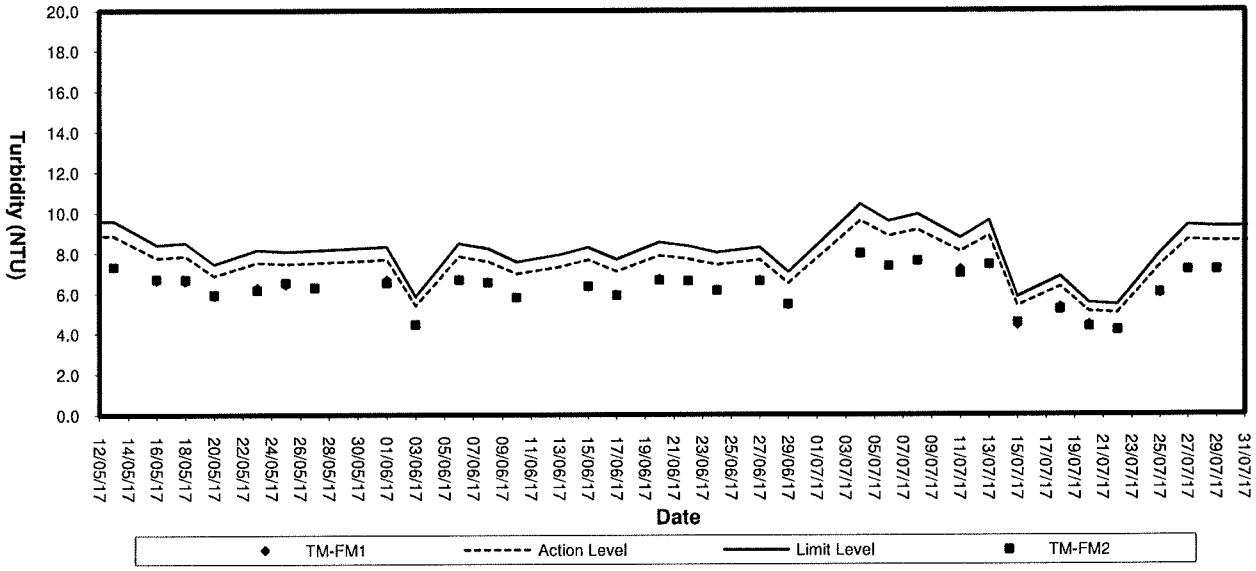
Dissolved Oxygen (Bottom) at Mid-Flood Tide



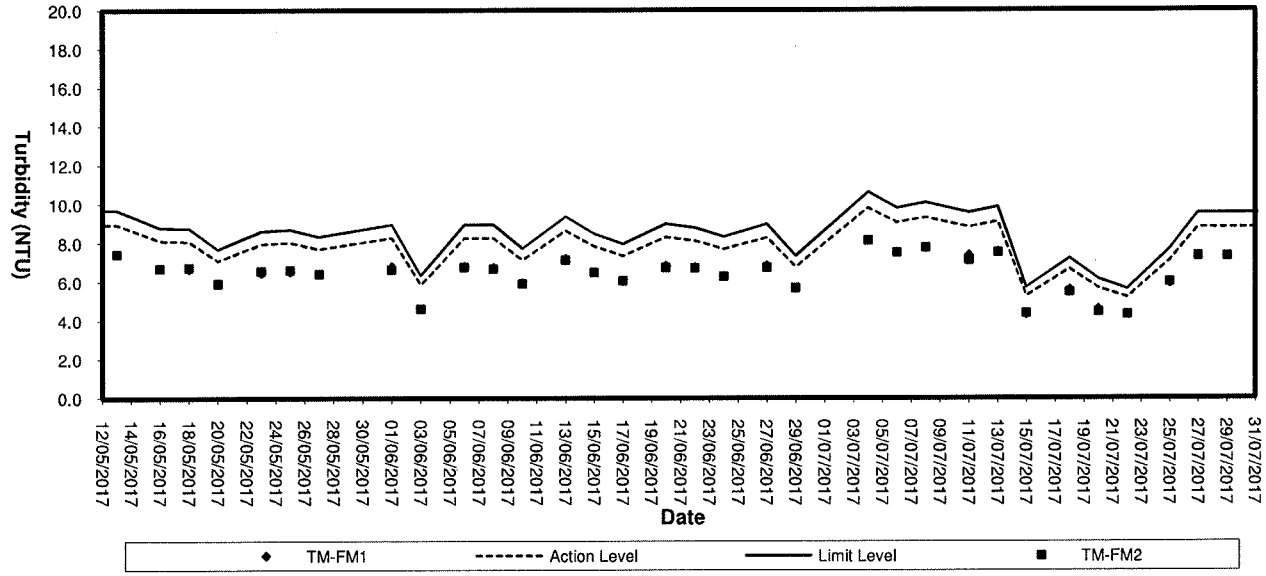
Dissolved Oxygen (Bottom) at Mid-Ebb Tide



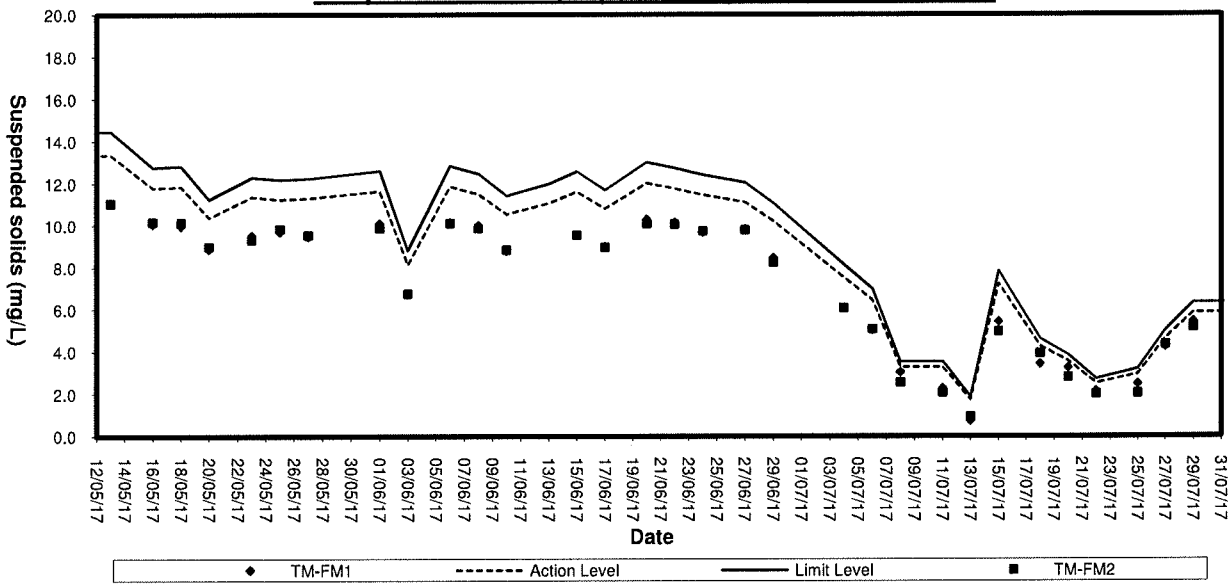
Turbidity (Depth-average) at Mid-Flood Tide



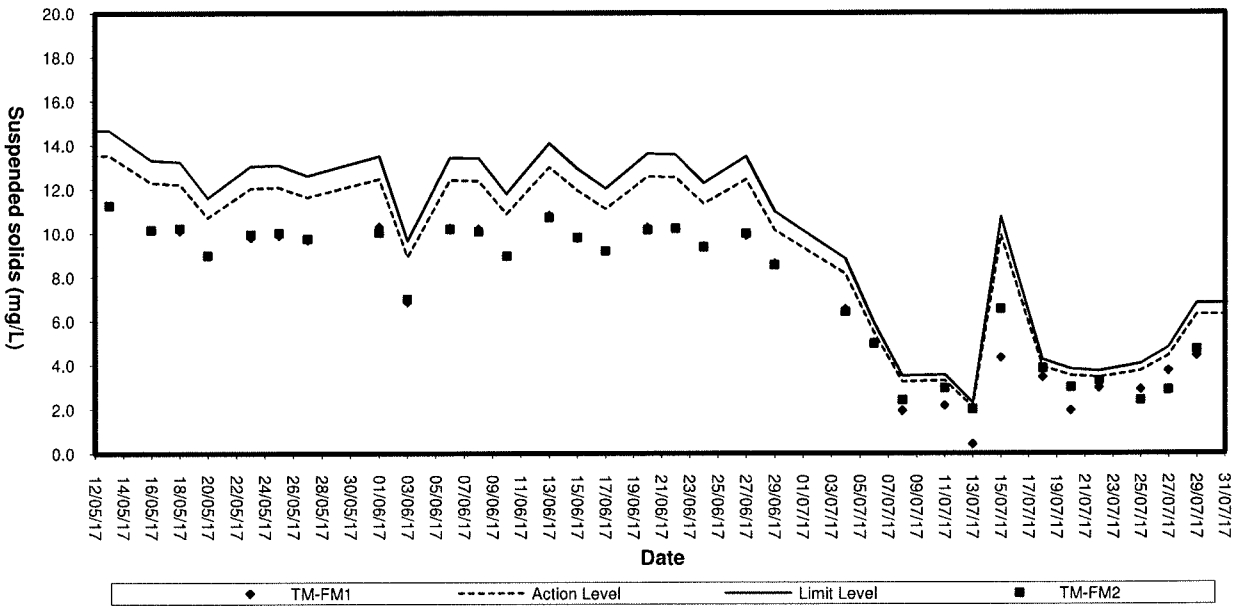
Turbidity (Depth-average) at Mid-Ebb Tide



Suspended solids (Depth-average) at Mid-Flood Tide



Suspended Solids (Depth-average) at Mid-Ebb Tide



Appendix E

Environmental Quality Performance (Action / Limit Levels)

Action and Limit Levels for 1-hour TSP and 24-hour TSP Monitoring

Monitoring Location	24-hr TSP ($\mu g/m^3$)		1-hr TSP ($\mu g/m^3$)	
	Action Level	Limit Level	Action Level	Limit Level
TM-A1	192	260	344	500
TM-A2	192	260	344	500

Action and Limit Levels for Marine Water Quality Monitoring

Parameter	Action Level	Limit Level
DO (mg/L)	Surface & Middle <4.78 mg/L (5%-ile of baseline data) Bottom <4.16 mg/L (5%-ile of baseline data)	Surface & Middle <4.00 mg/L (1%-ile of baseline data) Bottom <2.00 mg/L
SS (mg/L) (Depth-averaged)	>120% of the upstream control station's SS at the same tide on the same day	>130% of the upstream control station's SS at the same tide on the same day
Turbidity (NTU) (Depth-averaged)	>120% of the upstream control station's turbidity at the same tide on the same day	>130% of the upstream control station's turbidity at the same tide on the same day

Action and Limit Levels for Noise Monitoring

Time Period	Action *	Limit *
0700-1900 hrs on normal weekdays	When one documented complaint is received	65 dB(A)

Appendix F

Event-Action Plans

EVENT/ACTION PLAN FOR AIR QUALITY EXCEEDANCE

EVENT	ACTION			
	ET Leader	IC(E)	ER	Contractor
ACTION LEVEL				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures 2. Inform ER, IC(E) and Contractor 3. Repeat measurement to confirm finding 4. Increase monitoring frequency to daily	1. Check monitoring data submitted by the ET 2. Check contractor's working method	1. Notify Contractor	1. Rectify any unacceptable practise 2. Amend working methods if appropriate
2. Exceedance for two or more consecutive samples	1. Identify source, investigate the causes of exceedance and propose remedial measures 2. Inform IC(E) and Contractor 3. Repeat measurements to confirm finding 4. Increase monitoring frequency to daily 5. Discuss with IC(E) and Contractor on remedial actions 6. If exceedance continues, arrange meeting with IC(E) and ER. 7. If exceedance stops, cease additional monitoring	1. Check monitoring data submitted by the ET Leader 2. Check the Contractor's working method 3. Discuss with ET and Contractor on possible remedial measures 4. Advise the ER on the effectiveness of the proposed remedial measures 5. Supervise implementation of remedial measures	1. Confirm receipt of notification of failure in writing 2. Notify the Contractor 3. Ensure remedial measures properly implemented	1. Submit proposals for remedial actions to IC(E) within 3 working days of notification 2. Implement the agreed proposals 3. Amend proposal if appropriate
LIMIT LEVEL				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures 2. Inform ER, Contractor and EPD 3. Repeat measurement to confirm finding 4. Increase monitoring frequency to daily 5. Assess the effectiveness of Contractor's remedial actions and keep IC(E), EPD and ER informed of the results	1. Check monitoring data submitted by the ET Leader 2. Check Contractor's working method 3. Discuss with ET and Contractor on possible remedial measures 4. Advise the ER on the effectiveness of the proposed remedial measures 5. Supervise implementation of remedial measures	1. Confirm receipt of notification of failure in writing 2. Notify the Contractor 3. Ensure remedial measures properly implemented	1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to IC(E) within 3 working days of notification 3. Implement the agreed proposals 4. Amend proposal if appropriate.

EVENT/ACTION PLAN FOR AIR QUALITY EXCEEDANCE

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

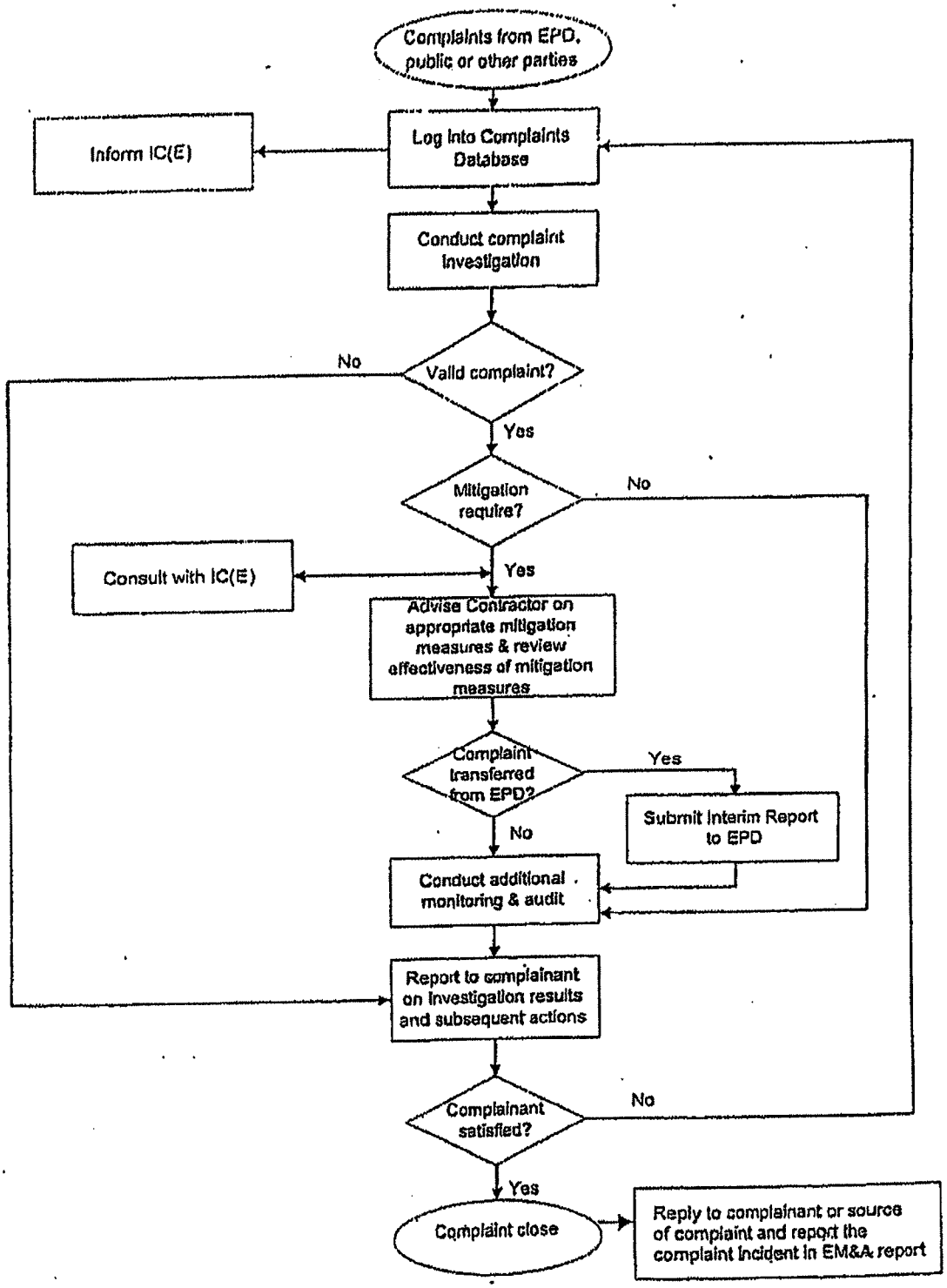
EVENT	EVENT/ACTION PLAN FOR NOISE EXCEEDANCE			
	ACTION			
	ET Leader	IC(E)	ER	Contractor
Action Level	1. Notify the IC(E) and the Contractor. 2. Carry out investigation. 3. Report the results of investigation to the IC(E) and the Contractor. 4. Discuss with the Contractor and formulate remedial measures. 5. Increase monitoring frequency to check mitigation effectiveness	1. Review the analysed results submitted by the ET. 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly. 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing. 2. Notify the Contractor. 3. Require the Contractor to propose remedial measures for the analysed noise problem. 4. Ensure remedial measures are properly implemented.	1. Submit noise mitigation proposals to IC(E). 2. Implement noise mitigation proposals.
Limit Level	1. Notify the IC(E), the ER, the EPD and the 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 the IC(E), the ER and the EPD the causes & actions taken for the exceedances. 7. Assess effectiveness of Contractor's remedial actions and keep the IC(E), the EPD and the ER informed of the results 8. If exceedance due to the construction works stops, cease additional monitoring	1. Discuss amongst the ER, the ET Leader and the Contractor on the potential remedial actions. 2. Review the Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly. 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing. 2. Notify the Contractor. 3. Require the Contractor to propose remedial measures for the analysed noise problem. 4. Ensure remedial measures are properly implemented. 5. If exceedances continue, consider what activity of the work is responsible and instruct the Contractor to stop that activity of work until the exceedances is abated.	1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to IC(E) within 3 working days of notification. 3. Implement the agreed proposals. 4. Resubmit proposals if problem still not under control. 5. Stop the relevant activity of works as determined by the ER until the exceedances is abated.

Event	EVENT AND ACTION PLAN FOR WATER QUALITY EXCEEDANCE			
	ACTION			
	ET Leader	Contractor	ER	IEC
Action level being exceeded by one sampling day	1. Identify source(s) of impact; 2. Repeat in-situ measurement to confirm findings; 3. Notify Contractor in writing within 24 hours of identification of the exceedance 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Carry out investigation 6. Report the results of investigation to the Contractor within 3 working days of identification of exceedance and advise contractor if exceedance is due to contractor's construction works 7. Discuss mitigation measures with Contractor if exceedance is due to the construction works within 4 working days 8. Repeat measurement on next day of exceedance if exceedance is due to the construction works	1. Notify the ER and IEC in writing within 24 hours of identification of exceedance 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Submit investigation report to IEC and ER within 3 working days of the identification of an exceedance 5. Consider changes of working method if exceedance is due to the construction works 6. Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER if exceedance is due to the construction works within 4 working days of identification of an exceedance 7. Implement the agreed mitigation measures within reasonable time scale	1. Notify EPD and other relevant governmental agencies in writing within 24 hours of the identification of the exceedance 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 3. Require contractor to propose remedial measures for the analysed problem if related to the construction works 4. Ensure remedial measures are properly implemented 5. Assess the effectiveness of the mitigation measure	1. Check monitoring data submitted by ET 2. Confirm ET assessment if exceedance is due / not due to the works 3. Discuss with ET, ER and Contractor on the mitigation measures 4. Review contractor's mitigation measures whenever necessary to ensure their effectiveness and advise the ER accordingly 5. Supervise the implementation of mitigation measures

Event	EVENT AND ACTION PLAN FOR WATER QUALITY			
	ACTION			
	ET Leader	Contractor	ER	IEC
Action level being exceeded by more than one consecutive sampling days	1. Identify source(s) of impact; 2. Repeat in-situ measurement to confirm findings 3. Notify Contractor in writing within 24 hours of identification 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Carry out investigation 6. Report the results of investigation to the Contractor within 3 working days of identification of exceedance and advise contractor if exceedance is due to contractor's construction works 7. Discuss mitigation measures with IEC and Contractor within 4 working of identification of an exceedance 8. Ensure mitigation measures are implemented; 9. Prepare to increase the monitoring frequency to daily; 10. Repeat measurement on next day of exceedance.	1. Notify IEC and ER in writing within 24 hours of identification of exceedance 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Submit the results of the investigation to IEC and ER within 3 working days of the identification of an exceedance 6. Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 4 working days of identification of an exceedance 7. Implement the agreed mitigation measures within reasonable time scale	1. Notify EPD and other relevant governmental agencies in writing within 24 hours of the identification of the exceedance 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 3. Require contractor to propose remedial measures for the analysed problem if related to the construction works 4. Ensure remedial measures are properly implemented 5. Assess the effectiveness of the mitigation measure	1. Check monitoring data submitted by ET 2. Confirm ET assessment if exceedance is due / not due to the works 3. Discuss with ET, ER and Contractor on the mitigation measures. 4. Review contractor's mitigation measures whenever necessary to ensure their effectiveness and advise the ER accordingly 5. Assess the effectiveness of the implemented mitigation measures.

Event	EVENT AND ACTION PLAN FOR WATER QUALITY EXCEEDANCE			
	ACTION			
	ET Leader	Contractor	ER	IEC
Limit level being exceeded by one sampling day	1. Repeat in-situ measurement to confirm findings; 2. Identify source(s) of impact; 3. Notify Contractor in writing within 24 hours of identification of the exceedance 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Carry out investigation 6. Report the results of investigation to the Contractor within 3 working days of identification of exceedance and advise contractor if exceedance is due to contractor's construction works 7. Discuss mitigation measures with IEC, ER and Contractor within 4 working of identification of an exceedance 8. Ensure mitigation measures are implemented; 9. Increase the monitoring frequency to daily until no exceedance of Limit Level.	1. Notify IEC and ER in writing; within 24 hours of the identification of the exceedance 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Submit the results of the investigation to IEC and ER within 3 working days of the identification of an exceedance 6. Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 4 working days of the identification of an exceedance 7. Implement the agreed mitigation measures within reasonable time scale	1. Notify EPD and other relevant governmental agencies in writing within 24 hours of identification of exceedance 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 3. Request Contractor to critically review the working methods; 4. Ensure remedial measures are properly implemented 5. Assess the effectiveness of the implemented mitigation measures.	1. Check monitoring data submitted by ET 2. Confirm ET assessment if exceedance is due / not due to the works 3. Discuss with ET, ER and Contractor on the mitigation measures. 4. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly. 5. Assess the effectiveness of the implemented mitigation measures

Event	EVENT AND ACTION PLAN FOR WATER QUALITY EXCEEDANCE			
	ACTION			
	ET Leader	Contractor	ER	IEC
Limit Level being exceeded by more than one consecutive sampling days	1. Repeat in-situ measurement to confirm findings; 2. Identify source(s) of impact; 3. Notify Contractor in writing within 24 hours of identification of the exceedance 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Carry out investigation 6. Report the results of investigation to the Contractor within 3 working days of identification of exceedance and advise contractor if exceedance is due to contractor's construction works 7. Discuss mitigation measures with IEC, ER and Contractor; 8. Ensure mitigation measures are implemented; 9. Increase the monitoring frequency to daily until no exceedance of Limit Level for two consecutive days.	1. Notify ER and IEC in writing within 24 hours of the identification of the exceedance and 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 8. Submit the results of the investigation to IEC and ER within 3 working days of the identification of an exceedance 5. Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 4 working days; 6. Implement the agreed mitigation measures within reasonable time scale 7. As directed by the Engineer, to slow down or to stop all or part of the marine work or construction actives.	1. Notify EPD and other relevant governmental agencies in writing within 24 hours of identification of exceedance 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 3. Request Contractor to critically review the working methods; 6. Ensure remedial measures are properly implemented 4. Assess the effectiveness of the implemented mitigation measures; 5. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the marine work until no exceedance of Limit Level.	1. Check monitoring data submitted by ET 2. Confirm ET assessment if exceedance is due / not due to the works 3. Discuss with ER, ET and Contractor on the mitigation measures. 4. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly. 5. Assess the effectiveness of the implemented mitigation measures.



Contract No. CV/2013/06
Handling of Surplus Public Fill (2014-2016)

Figure 4
Environmental Complaint Handling Procedure –
Tuen Mun Area 38 Fill Bank

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

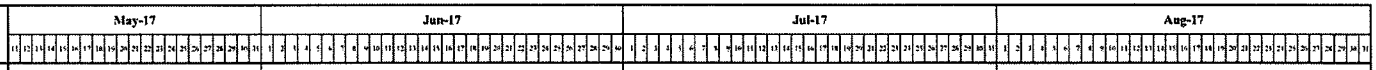
Appendix G

Work Programme

China Harbour - Zhen Hua Joint Venture
Contract No. CV/2015/07
Handling of Surplus Public Fill (2016 -2018)

Three Months Rolling Programme (11-May-2017 to 31-August-2017)

Item	Description	From	To
1	**Section 1**	11-May-17	31-Aug-17
1.1	Take over existing site facilities	11-May-17	11-May-17
1.2	Operation of Fill Bank, surveillance system and tipping halls	11-May-17	31-Aug-17
1.3	Design, provision and operation of crushing plant	22-May-17	31-Aug-17
1.4	Design and refurbishment of 2 nos. of tipping halls	8-Jun-17	31-Aug-17
1.5	Collection and delivery of Public Fill from CWPFBP and MWPFRF to TKOFB	12-May-17	31-Aug-17
1.6	Design, provision and operation of the expanded de-watering plant	19-May-17	31-Aug-17
1.7	Planning and removal of Public Fill at Portion A6	22-May-17	31-Aug-17
2	**Section 2**	11-May-17	31-Aug-17
2.1	Take over existing site facilities	11-May-17	11-May-17
2.2	Operation of Fill Bank, surveillance system and tipping halls	11-May-17	31-Aug-17
2.3	Design and construction of 750mm U-channel and catchpits	22-May-17	31-Aug-17
2.4	Design, construction and operation of New Secondary Site Office for the Engineer	17-May-17	31-Aug-17
2.5	Planning and replacement of 5 nos. of weighbridges at CREO	1-Jun-17	31-Aug-17
2.6	Design and refurbishment of 2 nos. of tipping halls	22-May-17	31-Aug-17
3	**Section 3**	11-May-17	31-Aug-17
3.1	Design and construction of of seawalls at Zone B (approx. 900m) and at Zone C (approx. 2000m)	11-May-17	31-Aug-17
4	**Section 3A**	11-May-17	31-Aug-17
4.1	Design, construction and operation of new berthing facilities at Zone B	11-May-17	31-Aug-17
4.2	Design, construction and operation of new navigation chaneel and turning basin inassociated with the berthing facilities at Zone B	11-May-17	31-Aug-17
4.3	Design and construction of seawalls at Zone B (approx. 1500m)	11-May-17	31-Aug-17
5	**Section 4**	11-May-17	31-Aug-17
5.1	Collection and delivery of Public Fill to the Designated Reclamation Sites in the Ma	12-May-17	31-Aug-17



Appendix H

Implementation Schedule of Environmental Mitigation Measures (EMIS)

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

Environmental Mitigation Implementation Schedule

Environmental Protection Measures	Location	Implementation Status			
		Implemented	Partially implemented	Not implemented	Not Applicable
Air Quality					
▪ Dust control / mitigation measures shall be provided to prevent dust nuisance.	All areas	√			
▪ Water sprays shall be provided and used to dampen materials.	All areas	√			
▪ All stockpile of aggregate or spoil should be enclosed or covered and water applied in dry or windy condition.	All areas	√			
▪ Any vehicle with open load carrying area used for moving materials which has the potential to create dust shall have properly fitting side and tail boards. Material having the potential to create dust shall not be loaded to a level higher than the side and tail boards, and shall be covered by a clean tarpaulin.	All areas	√			
▪ Unpaved areas should be watered regularly to avoid dust generation.	Site Egress	√			
▪ The designated site main haul road shall be paved or regular watering.	All haul roads	√			
▪ The public road around the site entrance should be kept clean and free from dust.	All areas		√		
▪ Wheel washing facilities including high-pressure water jet shall be provided at the entrance of work site.	Site Egress		√		
▪ Every vehicle shall be washed to remove any dusty materials from its body and wheels before leaving the fill bank.	Site Egress	√			
▪ The temporary slope surfaces shall be covered with impermeable sheet or sprayed with water.	All areas	√			
▪ Vehicle and equipment should be switched off while not in use.	All areas	√			
▪ All plant and equipment should be well maintained e.g. without black smoke emission.	All areas	√			
▪ Open burning should be prohibited.	All areas	√			
▪ Approval or exemption Non-road Mobile Machinery (NRMM) labels should be painted or securely fixed on regulated machines and non-road vehicles at a conspicuous position according to the Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation (APCO Cap.311).	All areas	√			
Noise Impact					
▪ The approved method of working, equipment and sound-reducing measures (e.g. use of silenced type of equipment, etc.) shall be adapted.	All areas	√			
▪ Only well maintained plant should be operated on-site and plant should be serviced regularly during the site works.	All areas	√			
▪ Powered mechanical equipment (PME) should be covered or shielded by appropriate acoustic materials.	All areas	√			
▪ Air compressors and hand held breakers should have noise labels.	All areas	√			
▪ Machines and plants that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum.	All areas	√			
▪ Noisy equipment and mobile plant shall always be site away from NSRs.	All areas	√			

Remark: √ = Implemented, ∇ = Partially Implemented X = Not Implemented N/A = Not Applicable

Environmental Protection Measures	Location	Implementation Status			
		Implemented	Partially implemented	Not implemented	Not Applicable
Water Quality					
▪ The existing / realigned intercepting channels and the sand / silt removal facilities shall be used and maintained.	All areas		√		
▪ Temporary intercepting drains should be used at the stockpiling area to divert polluted stormwater to the intercepting channels. Earth bunds and sand bay barriers shall be used to assist the diversion of polluted stormwater to the intercepting channels.	All areas	√			
▪ The stormwater intercepting system shall be effective to collect of runoff and remove suspended solids before discharge.	All areas		√		
▪ The material shall be properly covered to prevent washed away especially before rainstorm.	All areas	√			
▪ Unnecessary water retained in receptacles and standing water should be avoided to prevent mosquito breeding.	All areas	√			
▪ The temporary slope surfaces shall be covered with impermeable sheet or sprayed with water.	Temporary Slopes	√			
▪ Existing and newly constructed Catchpits, sand and silt removal facilities and intercepting channels shall be maintained, and the deposited silt and grit shall be removed weekly and on a need basis especially at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times.	All areas	√			
▪ A wheel washing bay shall be provided at the site exit and wash-water shall have sand and silt settled out or removed before being discharged into storm drains.	Wheel Washing facility		√		
▪ The section of construction road between wheel washing bay and the public road shall be paved with concrete, bituminous materials or hardcores to reduce vehicle tracking of soil and to prevent site run-off from entering public road drains.	Site Egress	√			
▪ Sewage from toilets shall be discharged in to a foul sewer, or chemical toilets shall be provided.	Site Office	√			
▪ The chemical toilets (if use) shall be provided by a licensed contractor, who will be responsible for disposal and maintenance of these facilities.	All areas	√			
▪ Tipping halls enclosed with top and 3-side to prevent spillage of material into marine water.	All areas	√			
▪ Adequate environmental control measures shall be provided to prevent / avoid dropping of fill material into the sea during the transfer.	Along the seafront	√			
▪ A waste collection vessel shall be deployed to remove floating debris.	Along the seafront	√			
Landscape and Visual					
• The maximum stockpiling height at the fill bank shall be limited to a maximum of +40mPD.	All areas	√			
• Surface of outer slopes of the Fill Bank shall preferably be hydroseeded.	Completed slopes	√			
• Stockpile of public fill shall be removed in a sequence to allow the outer hydrseeded to be removed later than other portions as far as practicable.	Completed slopes	√			
• Casuarina equisetifolia were planted as buffer tree along the northern perimeter of the Site. The height of Casuarina equisetifolia was maintained at least 3m above soil level.	Site boundary	√			
• Lighting shall be set to minimise night-time glare.	All areas	√			
Waste Management					
Construction Waste Management					
• Relevant licence / permits for disposal of construction waste or excavated materials available for inspection.	All areas	√			

Remark: √ = Implemented, ∇ = Partially Implemented X = Not Implemented N/A = Not Applicable

Environmental Protection Measures	Location	Implementation Status			
		Implemented	Partially implemented	Not implemented	Not Applicable
• Excavated material to be generated from construction works to be re-used on-site as far as practicable to reduce off-site disposal.	All areas	√			
• Mud and debris should be removed from waterworks access roads and associated drainage systems.	All areas	√			
• Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal.	All areas	√			
• Prior to disposal of C&D waste, recyclable materials should be salvaged for reuse (such as wood and metal) and inert waste utilised as public fill to minimise the quantity of waste to be disposed of to landfill.	All areas	√			
• In order to monitor the disposal of C&D material and solid wastes at public filling areas and landfills, and to control fly-tipping, a trip-ticket system should be included as one of the contractual requirements.	All areas	√			
▪ Any soil contaminated with chemicals/oils shall be removed from site and the void created shall be filled with suitable materials.	All areas	√			
Chemical Waste Management					
• It is required to register as a chemical waste producer if chemical wastes would be produced from the site activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	Waste Storage Area	√			
• After use, chemical wastes (e.g. cleaning fluids, solvents, lubrication oil and fuel) should be handled according to the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.	Waste Storage Area	√			
• Spent chemicals should be stored and collected by an approved operator for disposal at the Chemical Waste Treatment Facility or other licensed facility in accordance with the Chemical Waste (General) Regulation.	Waste Storage Area	√			
• Chemical wastes should be separated for special handling and appropriate treatment at the Chemical Waste Treatment Facility.	Waste Storage Area	√			
• Chemical wastes including waste oil should be stored properly in designated areas, e.g. chemical waste storage area.	Waste Storage Area	√			
• The designated chemical waste storage area should only be used for storing chemical wastes.	Waste Storage Area	√			
The set-up of chemical waste storage area should					
• Be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition.	Waste Storage Area	√			
• Be enclosed on at least 3 sides and securely closed.	Waste Storage Area	√			
• Have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is the greatest.	Waste Storage Area	√			
• Have adequate ventilation.	Waste Storage Area	√			
• Be covered to prevent rainfall entering (water collected within the bund must be tested and disposal as chemical waste if necessary).	Waste Storage Area	√			
• Be arranged so that incompatible materials are adequately separated.	Waste Storage Area	√			
• Warning panels should be displayed at the waste storage area.	Waste Storage Area	√			

Remark: √ = Implemented, ∇ = Partially Implemented X = Not Implemented N/A = Not Applicable

Environmental Protection Measures	Location	Implementation Status			
		Implemented	Partially implemented	Not implemented	Not Applicable
• Waste storage area should be cleaned and maintained regularly.	Waste Storage Area	√			
• Chemical waste should be transported by a registered chemical waste collector to a facility licensed to receive chemical waste.	All areas	√			
• All generators, fuel and oil storage should be within bundle areas.	All areas	√			
• Oil leakage from machinery, vehicle and plant should be prevented.	All areas	√			
• In the event of chemical waste / dangerous goods / chemicals spillage or leakage, the procedures as outlined in the Spillage Response Plan should be followed.	All areas	√			
• The dangerous goods / chemical spillage or leakage procedures (including equipments) should be in place.	All areas	√			
Good Site Practices					
2.2 Nomination of approved personnel, such as site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site.	All areas	√			
2.3 Training of site personnel in proper waste management and chemical handling procedures should be provided.	All areas	√			
2.4 Good site practices should be adopted to clean the rubbish and litter on a regular basis so as to prevent the rubbish and litter from dropping into the nearby environment.	All areas	√			
2.5 Proper storage and site practices to minimise the potential for damage or contamination of construction materials.	All areas	√			
2.6 The Environmental Permit should be displaced conspicuously on site.	Site Entrance	√			
2.7 Construction noise permits should be posted at site entrance or available for site inspection.	Site Entrance				√
2.8 Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.	All areas	√			
2.9 Chemical storage area provided with lock and located on sealed areas.	Chemical Storage Area	√			
2.10 All chemicals should be placed at the banded area with adequate band capacity (>110% of largest tank).	Chemical Storage Area	√			
2.11 Any unused chemicals or those with remaining functional capacity should be recycled.	All areas	√			
2.12 Regular cleaning and maintenance programme for waste storage area, drainage systems, silt traps, sumps and oil interceptors.	All areas	√			
• To encourage collection of aluminium cans by individual collectors, separate labelled bins should be provided to segregate this waste from other general refuse generated by the workforce.	All areas	√			
• A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be used, e.g. trip ticket system for chemical waste disposal. Quantities could be determined by weighing each load or other suitable methods.	All areas	√			
• A collection area should be provided where waste can be stored and loaded prior to removal from site. An enclosed and covered area is preferred to reduce the occurrence of 'wind blown' light material. If an open area is unavoidable for the storage or loading/unloading of wastes, then the area should be bunded and all the polluted surface run-off collected within this area should be diverted into wastewater treatment system.	All areas	√			
• Remove wastes in a timely manner.	All areas	√			

Remark: √ = Implemented, ∇ = Partially Implemented X = Not Implemented N/A = Not Applicable

Appendix I

Statistical Analysis of the Trend of Suspended Solids in the Quarter

Statistical Analysis of the Trend of Suspended Solids

For Mid-Flood Tide

Station: TM-FM1

t-test

Group Name	N	Missing	Mean	Std Dev	SE
130% Baseline Mean	12	0	5.9733	1.3518	0.3902
Quarterly Mean	31	0	7.2576	3.1824	0.5716

Result:

Probability that two variances are equal (f-test) = 0.00234

Difference between means = 1.2843 (Std Dev = 4.4039 and SE = 1.2843)
(95% CI : -0.0722 < Diff < 2.6408)

t-value of difference = 1.856 (40 degrees of freedom)
P = 0.96373 (>0.05)

Conclusion:

There is no statistically significant difference between the groups.

Station: TM-FM2

t-test

Group Name	N	Missing	Mean	Std Dev	SE
130% Baseline Mean	12	0	6.0267	1.1748	0.3391
Quarterly Mean	31	0	7.1894	3.2307	0.5716

Result:

Probability that two variances are equal (f-test) = 0.00065

Difference between means = 1.1625 (Std Dev = 4.2549 and SE = 0.6646)
(95% CI : -0.1399 < Diff < 2.4653)

t-value of difference = 1.749 (40.5 degrees of freedom)
P = 0.95618 (>0.05)

Conclusion:

There is no statistically significant difference between the groups.

Statistical Analysis of the Trend of Suspended Solids

For Mid-Flood Tide

Station: TM-FC1

t-test

Group Name	N	Missing	Mean	Std Dev	SE
130% Baseline Mean	12	0	6.6942	1.8839	0.5438
Quarterly Mean	31	0	7.3013	3.2866	0.5903

Result:

Probability that two variances are equal (f-test) = 0.02734

Difference between means = 0.6071 (Std Dev = 4.7202 and SE = 0.8026)
(95% CI : -0.966 < Diff < 2.1802)

t-value of difference = 0.756 (34.1 degrees of freedom)
P = 0.77078 (>0.05)

Conclusion:

There is no statistically significant difference between the groups.

Station: TM-FC2

t-test

Group Name	N	Missing	Mean	Std Dev	SE
130% Baseline Mean	12	0	6.3067	1.8674	0.5391
Quarterly Mean	31	0	7.1799	3.0509	0.5480

Result:

Probability that two variances are equal (f-test) = 0.04388

Difference between means = 0.8732 (Std Dev = 4.3943 and SE = 0.7687)
(95% CI : -0.6334 < Diff < 2.3798)

t-value of difference = 1.136 (32.2 degrees of freedom)
P = 0.86533 (>0.05)

Conclusion:

There is no statistically significant difference between the groups.

Statistical Analysis of the Trend of Suspended Solids

For Mid-Ebb Tide

Station: TM-FM1

t-test

Group Name	N	Missing	Mean	Std Dev	SE
130% Baseline Mean	12	0	7.0008	1.6394	0.4733
Quarterly Mean	32	0	7.3319	3.3820	0.5979

Result:

Probability that two variances are equal (f-test) = 0.00721

Difference between means = 0.3311 (Std Dev = 4.758 and SE = 0.7625)
(95% CI : -1.1634 < Diff < 1.8256)

t-value of difference = 0.434 (38.4 degrees of freedom)
P = 0.66687 (>0.05)

Conclusion:

There is no statistically significant difference between the groups.

Station: TM-FM2

t-test

Group Name	N	Missing	Mean	Std Dev	SE
130% Baseline Mean	12	0	7.2758	1.5293	0.4415
Quarterly Mean	32	0	7.5067	3.1446	0.5559

Result:

Probability that two variances are equal (f-test) = 0.00741

Difference between means = 0.2309 (Std Dev = 4.4255 and SE = 0.7099)
(95% CI : -1.1604 < Diff < 1.6222)

t-value of difference = 0.325 (38.4 degrees of freedom)
P = 0.62685 (>0.05)

Conclusion:

There is no statistically significant difference between the groups.

Statistical Analysis of the Trend of Suspended Solids

For Mid-Ebb Tide

Station: TM-FC1

t-test

Group Name	N	Missing	Mean	Std Dev	SE
130% Baseline Mean	12	0	7.0008	1.6394	0.4733
Quarterly Mean	32	0	7.6602	3.1781	0.5618

Result:

Probability that two variances are equal (f-test) = 0.01199

Difference between means = 0.6594 (Std Dev = 4.4957 and SE = 0.7346)
(95% CI : -0.7803 < Diff < 2.0591)

t-value of difference = 0.898 (37 degrees of freedom)
P = 0.8142 (>0.05)

Conclusion:

There is no statistically significant difference between the groups.

Station: TM-FC2

t-test

Group Name	N	Missing	Mean	Std Dev	SE
130% Baseline Mean	12	0	7.2758	1.5293	0.4415
Quarterly Mean	32	0	7.3201	3.1500	0.5568

Result:

Probability that two variances are equal (f-test) = 0.0073

Difference between means = 0.0443 (Std Dev = 4.4323 and SE = 0.7108)
(95% CI : -1.3485 < Diff < 1.4271)

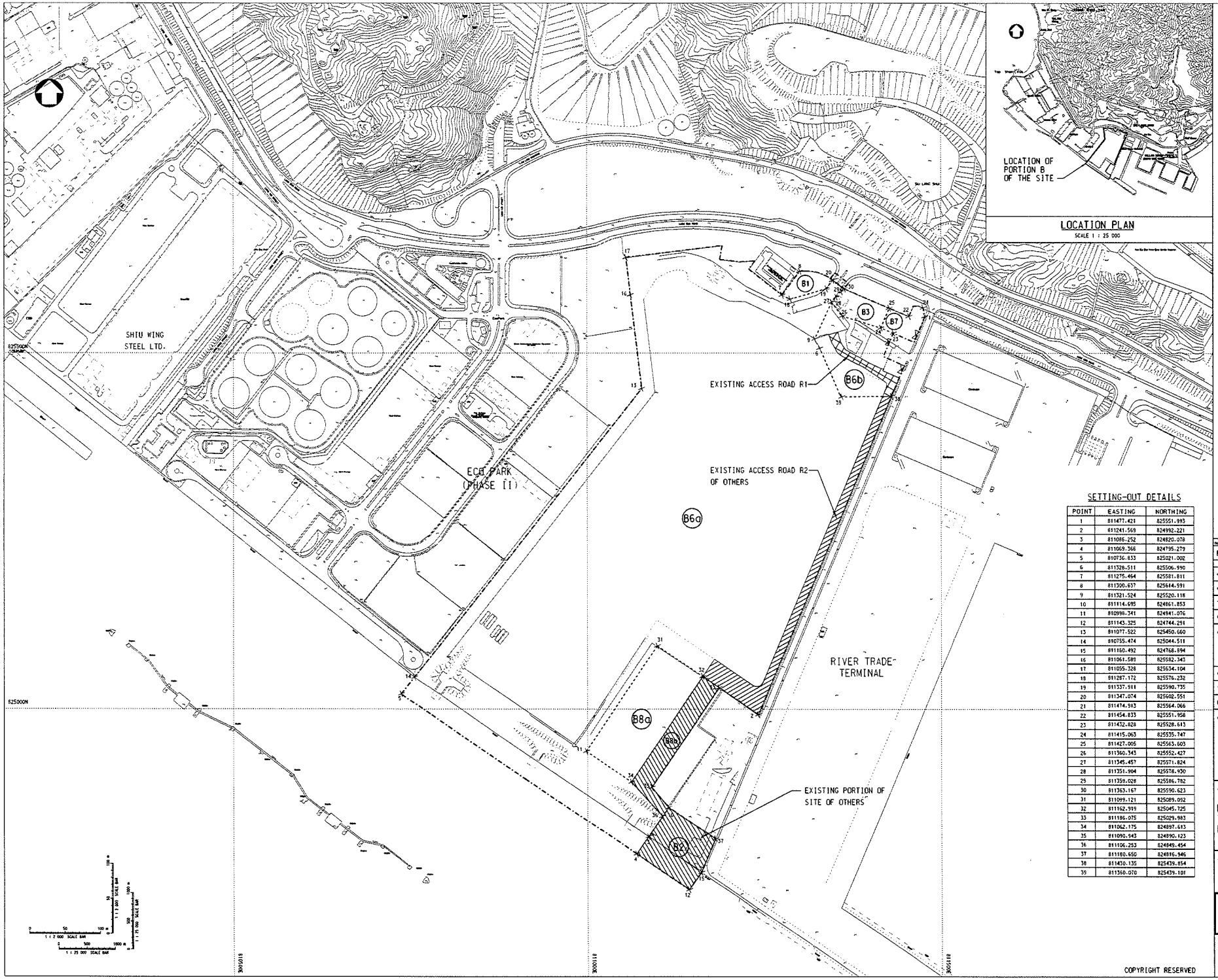
t-value of difference = 0.062 (38.4 degrees of freedom)
P = 0.52473 (>0.05)

Conclusion:

There is no statistically significant difference between the groups.

Appendix J

Site General Layout plan



LOCATION PLAN
SCALE 1 : 25 000

NOTES:

1. ALL CO-ORDINATES REFER TO HONG KONG GEODETIC DATUM 1980 AND IN METRES.
2. ALL LEVELS REFER TO HONG KONG PRINCIPAL DATUM (P.D.) AND IN METRES.
3. PORTIONS B4 & B5 ARE NOT USED.

LEGEND :

- SITE BOUNDARY
- PORTION BOUNDARY (INDICATIVE ONLY)
- EXISTING GATE
- (B1) PORTION B1 OF THE PORTION B
- EXISTING ACCESS ROAD R1
- EXISTING ACCESS ROAD R2 (BEING POSSESSED BY OTHERS)
- EXISTING PORTION OF SITE (BEING POSSESSED BY OTHERS)

SETTING-OUT DETAILS

POINT	EASTING	NORTHING
1	811477.421	825551.993
2	811241.569	824992.221
3	811086.252	824820.078
4	811069.366	824795.279
5	810736.833	825021.002
6	811328.511	825506.990
7	811275.464	825581.811
8	811300.657	825614.591
9	811321.524	825520.118
10	811114.695	824861.853
11	810998.341	824941.076
12	811143.325	824744.291
13	811077.522	825450.660
14	810755.474	825044.511
15	811160.492	824768.894
16	811061.589	825582.343
17	811055.328	825634.104
18	811287.172	825576.232
19	811337.911	825590.735
20	811347.074	825602.551
21	811474.943	825564.066
22	811454.833	825551.958
23	811432.828	825528.613
24	811415.063	825535.747
25	811427.005	825563.603
26	811360.343	825552.427
27	811345.457	825571.824
28	811351.904	825576.930
29	811359.028	825586.782
30	811363.167	825590.623
31	811099.121	825089.092
32	811162.919	825045.725
33	811186.075	825029.983
34	811062.175	824897.613
35	811090.543	824890.123
36	811106.253	824849.454
37	811160.650	824896.946
38	811430.135	825439.854
39	811360.070	825439.101

no.	date	description	checked	approved
REVISION				

	name	initial	date
designed	K.W.YAU	SIGNED	26.4.2016
drawn	K.Y.TAM	SIGNED	26.4.2016
traced			
checked	L.NG	SIGNED	13.5.2016

approved
SIGNED
(Peter P. C. WOK)
Chief Engineer
Date 16.5.2016

contract no. CV/2015/07

file no.

project no.

contract
HANDLING OF SURPLUS PUBLIC FILL (2016-2018)

drawing title
PORTION B - TUEN MUN AREA 38 FILL BANK

drawing no. FM10077-3

scale 1 : 2000 OR AS SHOWN

office
FILL MANAGEMENT DIVISION
CIVIL ENGINEERING OFFICE

CEDD CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

A1 1000 x 707

Appendix K

Weather Condition

Daily Extract of Meteorological Observations, May 2017 – Tuen Mun

Day	Mean Pressure (hPa)	Air Temperature			Mean Dew Point (deg. C)	Mean Relative Humidity (%)	Total Rainfall (mm)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)
		Absolute Daily Max (deg. C)	Mean (deg. C)	Absolute Daily Min (deg. C)					
01	***	28.6	24.8	22.0	20.8	79	0.0	***	***
02	***	29.5#	26.2	23.6#	23.0	83	0.0	***	***
03	***	29.7	27.0	25.5	24.4	86	0.0	***	***
04	***	26.4#	24.1	22.3#	23.3	96	40.5	***	***
05	***	29.8	25.8	22.3	22.7	84	0.0	***	***
06	***	31.6	27.4	24.1	23.4	80	0.0	***	***
07	***	28.9	26.4	25.1	22.7	81	0.0	***	***
08	***	29.9	25.8	21.8	22.6	83	8.0	***	***
09	***	30.2#	25.9	21.8#	22.7	84	12.5	***	***
10	***	30.7	27.0	24.2	23.7	83	0.0	***	***
11	***	31.9#	27.3	24.6#	23.3	80	0.0	***	***
12	***	31.8	27.7	25.0	22.9	76	0.0	***	***
13	***	26.7	25.1	23.4	22.8	88	5.0	***	***
14	***	30.7#	26.4	23.1#	23.7	86	0.0	***	***
15	***	26.7#	25.5	24.8#	24.7	95	37.0	***	***
16	***	28.5	25.0	22.5	21.3	81	4.5	***	***
17	***	30.1	25.9	22.3	20.9	75	0.0	***	***
18	***	29.4#	25.7	23.2#	20.2	72	0.5	***	***
19	***	26.9#	24.7	23.1#	20.4	77	0.0	***	***
20	***	25.7#	24.3	22.4#	21.7	85	0.5	***	***
21	***	27.2	25.2	24.0	21.8	82	0.0	***	***
22	***	27.4	25.8	24.9	22.7	83	0.0	***	***
23	***	30.9	27.2	24.7	25.0	88	1.5	***	***
24	***	26.6	25.2	24.0	24.6	96	155.0	***	***
25	***	30.1	25.9	23.6	21.4	77	0.0	***	***
26	***	27.2	25.0	23.0	19.8	73	0.0	***	***
27	***	31.1	26.3	22.4	18.2	64	0.0	***	***
28	***	32.1	27.2	23.7	19.6	64	0.0	***	***
29	***	31.7	27.0	24.3	20.6	69	0.0	***	***
30	***	31.1	27.0	24.6	23.2	80	0.0	***	***
31	***	33.0	28.6	24.4	24.6	80	0.0	***	***

** unavailable
# data incomplete
Rainfall measured in increment of 0.5 mm. Amount of < 0.5 mm cannot be detected

Daily Extract of Meteorological Observations, June 2017 – Tuen Mun

Day	Mean Pressure (hPa)	Air Temperature			Mean Dew Point (deg. C)	Mean Relative Humidity (%)	Total Rainfall (mm)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)
		Absolute Daily Max (deg. C)	Mean (deg. C)	Absolute Daily Min (deg. C)					
01	***	31.9	29.1	27.0	26.6	87	3.5	***	***
02	***	32.0	29.7	28.6	27.0	85	0.0	***	***
03	***	34.3	30.6	28.5	27.0	82	0.0	***	***
04	***	32.5	29.8	28.4	26.8	85	0.0	***	***
05	***	33.7	30.0	28.7	26.9	84	0.0	***	***
06	***	33.8	30.2	28.5	26.4	81	0.0	***	***
07	***	33.7	29.7	25.8	26.2	83	25.0	***	***
08	***	33.2	29.8	27.0	25.6	78	0.0	***	***
09	***	31.7	29.6	27.5	25.3	78	0.0	***	***
10	***	34.2	30.1	28.3	26.0	79	0.0	***	***
11	***	34.8	30.3	27.4	25.7	78	0.0	***	***
12	***	32.0	28.1	25.4	25.1	84	29.5	***	***
13	***	28.3	26.3	24.4	25.6	96	128.0	***	***
14	***	29.2	28.0	26.4	26.3	91	1.0	***	***
15	***	32.1	29.4	27.3	26.2	83	0.5	***	***
16	***	29.7	28.7	25.7	26.8	89	8.5	***	***
17	***	26.2	25.3	24.5	25.0	98	96.0	***	***
18	***	27.2	25.9	24.6	25.3	97	19.5	***	***
19	***	29.4	26.2	25.0	25.3	95	17.0	***	***
20	***	27.1	25.8	24.9	25.3	97	46.0	***	***
21	***	30.9	27.2	25.3	26.1	93	6.0	***	***
22	***	32.3	29.3	27.6	26.2	84	0.0	***	***
23	***	32.5	29.2	27.5	26.2	84	2.0	***	***
24	***	31.8	28.5	25.8	26.0	87	12.5	***	***
25	***	32.0	29.3	26.1	25.7	81	1.0	***	***
26	***	32.4	29.9	28.2	25.9	80	0.0	***	***
27	***	32.6	29.5	28.0	26.0	82	0.0	***	***
28	***	32.6	29.7	27.2	25.2	78	0.0	***	***
29	***	33.1	29.5	26.5	25.5	80	0.0	***	***
30	***	32.6	29.5	26.8	24.9	77	0.0	***	***

** unavailable
# data incomplete
Rainfall measured in increment of 0.5 mm. Amount of < 0.5 mm cannot be detected

Daily Extract of Meteorological Observations, July 2017 – Tuen Mun

Day	Mean Pressure (hPa)	Air Temperature			Mean Dew Point (deg. C)	Mean Relative Humidity (%)	Total Rainfall (mm)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)
		Absolute Daily Max (deg. C)	Mean (deg. C)	Absolute Daily Min (deg. C)					
01	***	33.1	29.1	25.7	25.0	79	8.5	***	***
02	***	31.0	27.6	25.0	26.3	93	34.0	***	***
03	***	29.1	27.5	25.5	25.6	90	44.0	***	***
04	***	29.4	26.6	25.1	25.3	93	30.0	***	***
05	***	32.4	28.2	26.0	25.4	86	9.5	***	***
06	***	30.1	26.9	26.0	25.8	94	13.0	***	***
07	***	31.1	27.0	25.0	25.1	90	37.5	***	***
08	***	28.5	26.9	25.4	26.0	95	16.0	***	***
09	***	32.4	29.1	26.4	26.1	85	3.0	***	***
10	***	32.4	28.7	26.0	25.8	85	0.5	***	***
11	***	33.1	29.3	27.1	25.5	81	0.0	***	***
12	***	32.3	29.1	26.5	25.3	80	0.0	***	***
13	***	33.3	29.7	26.5	25.3	78	0.0	***	***
14	***	32.0	29.3	26.9	25.2	79	1.0	***	***
15	***	32.8	29.2	26.4	25.1	79	5.5	***	***
16	***	30.9	27.4	25.4	25.3	88	25.5	***	***
17	***	29.8#	26.2	24.4#	25.2	95	88.5	***	***
18	***	27.9	25.4	24.2	24.9	97	94.0	***	***
19	***	31.5	27.6	24.4	25.3	88	5.5	***	***
20	***	31.9	28.6	26.2	25.3	83	0.0	***	***
21	***	33.6	29.7	26.6	25.1	77	0.0	***	***
22	***	33.1	29.3	26.4	25.0	79	1.0	***	***
23	***	29.0	27.1	25.3	25.2	89	43.5	***	***
24	***	30.7	27.7	25.4	25.6	89	9.5	***	***
25	***	32.1	29.0	26.6	25.4	82	0.0	***	***
26	***	32.8	29.1	26.2	25.0	79	0.0	***	***
27	***	32.6	29.3	26.6	24.7	77	0.0	***	***
28	***	34.7	30.5	27.0	24.8	73	0.0	***	***
29	***	35.1	30.8	27.5	25.8	75	0.0	***	***
30	***	36.0	32.7	29.8	26.8	72	0.0	***	***
31	***	32.5	30.7	29.6	27.6	84	0.0	***	***

** unavailable
# data incomplete
Rainfall measured in increment of 0.5 mm. Amount of < 0.5 mm cannot be detected

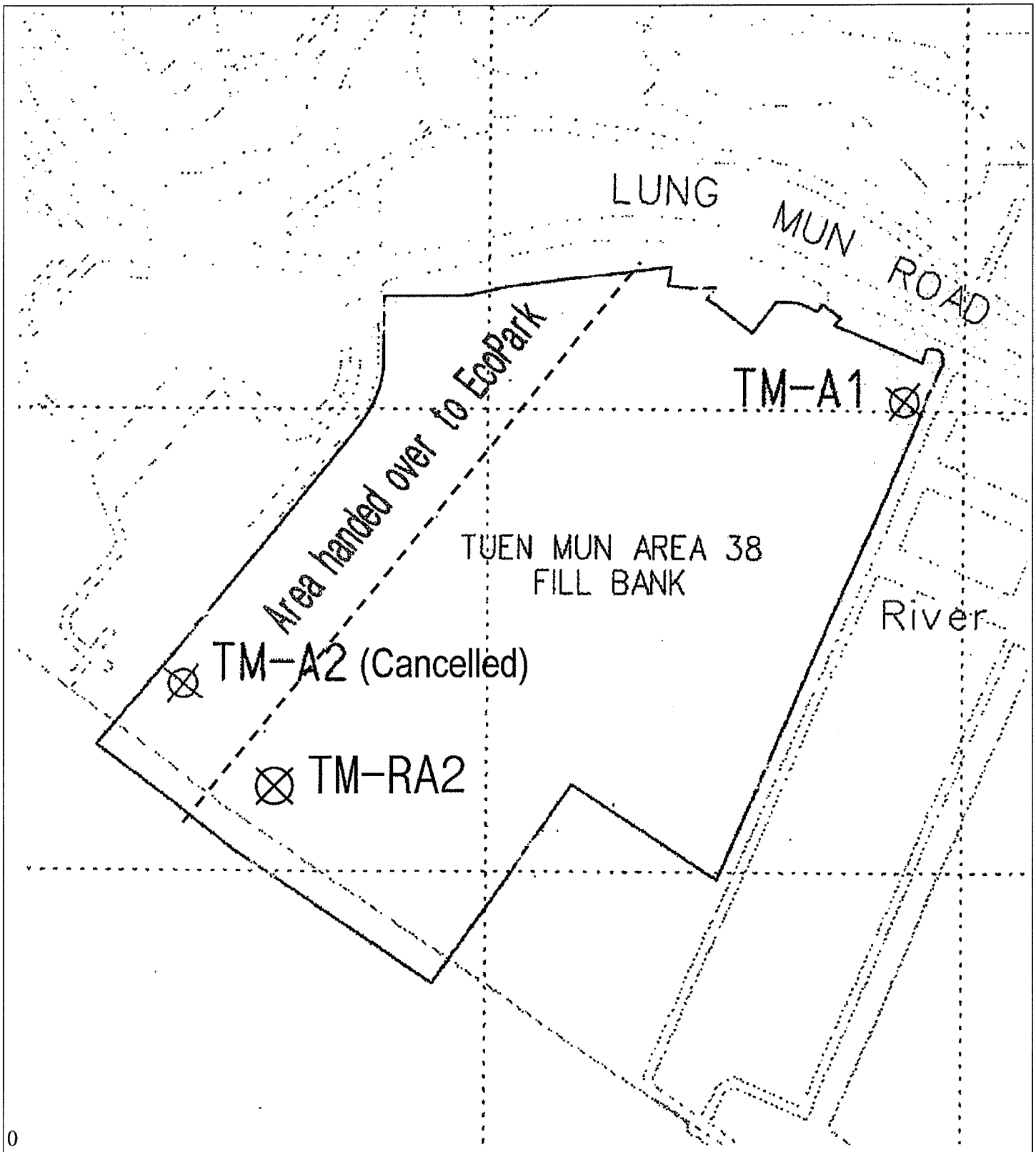
Appendix L

Complaint Log

Complaint Log

Log Ref.	Location	Received Date	Details of Complaint	Investigation / Mitigation Action	Status
001	Lung Mun Road near Tuen Mun Area 38 Fill Bank	24 May 2017	One complaint received on 24 May 2017, which was forwarded to ET on 03 June 2017, from public against the rocks and debris deposited on the road surface along Lung Mun Road near Tuen Mun Area 38 Fill Bank. The complainant complained that waste generated caused an environmental nuisance.	Refer to the ET site investigation on 06 June 2017, the condition of Lung Mun Road near Tuen Mun Area 38 Fill Bank was found satisfactory. Details of Action(s) Taken by the Contactor: 1. Regular water spraying by water lorries is provided for road cleaning at Lung Mun Road; 2. Regular cleaning on Lung Mun Road and the access road at the site exit by road sweeper to remove mud and gravel is arranged four times on each working day; 3. Site vehicles are washed to remove any dusty materials from their bodies and wheels by using high pressure water jet manually at the entrance of work site before leaving; 4. Site vehicle for transporting materials are covered properly by using clean tarpaulin sheets; 5. Regular cleaning at the site haul road is provided to minimize the fugitive dust emission.	Closed

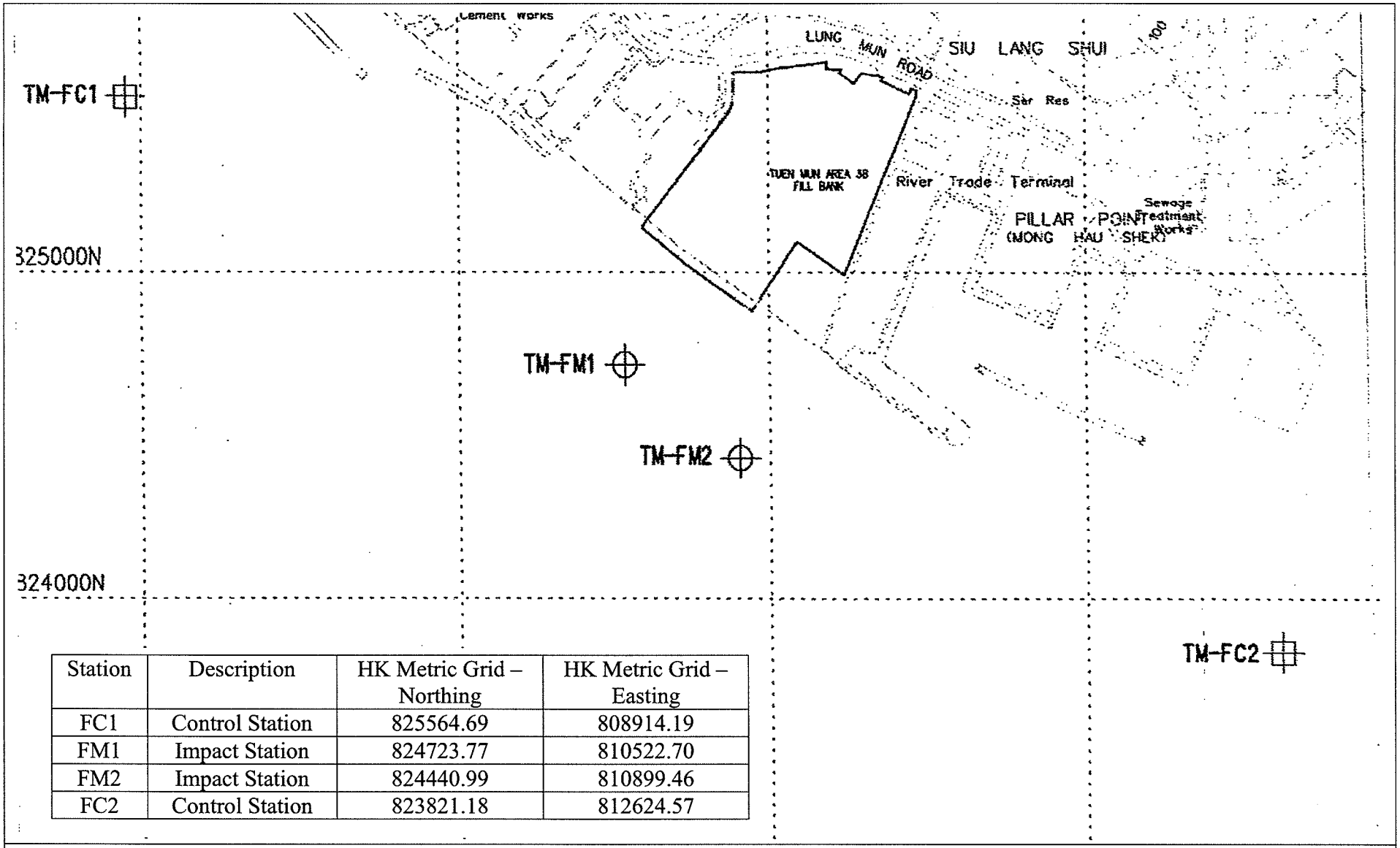
Figures



Contract No. CV/2015/07
Handling of Surplus Public Fill (2016-2018)

Figure 1
Locations of Air Quality Monitoring Stations –
Tuen Mun Area 38 Fill Bank

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

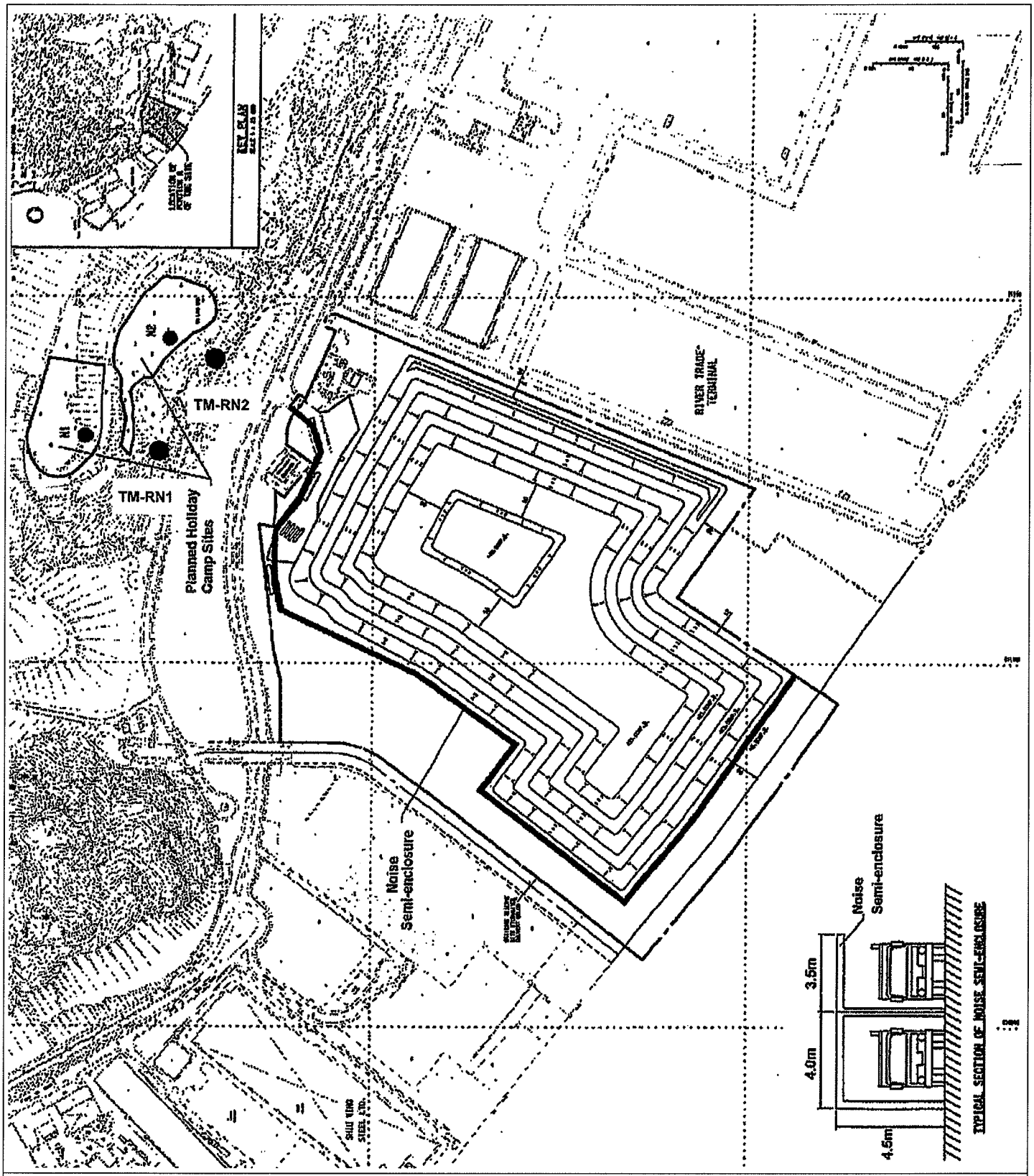


Station	Description	HK Metric Grid – Northing	HK Metric Grid – Easting
FC1	Control Station	825564.69	808914.19
FM1	Impact Station	824723.77	810522.70
FM2	Impact Station	824440.99	810899.46
FC2	Control Station	823821.18	812624.57

Contract No. CV/2015/07
Handling of Surplus Public Fill (2016-2018)

Figure 2
Locations of Water Quality Monitoring Station –
Tuen Mun Area 38 Fill Bank

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED



Contract No. CV/2015/07
Handling of Surplus Public Fill (2016-2018)

Figure 3
Locations of Noise Quality Monitoring Stations –
Tuen Mun Area 38 Fill Bank

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED