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**Development at Former Marine Police
Headquarters KIL 11161
Quarterly Environmental Monitoring & Audit
Report for March 2005 – May 2005**

(Ref No. 3.12/003/2004)

July 2005

Report Certified by the
Environmental Team
Leader:

Report Verified by the
Independent
Environmental
Checker:

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EXECUTIVE SUMMARY

This is the fourth Quarterly Environmental Monitoring & Audit Report prepared by Nature & Technologies (HK) Ltd. for the development of the former Marine Police Headquarter. This report documents the impact environmental monitoring and audit work in the period from March to May 2005. Site audit inspections were performed by Environmental Team at least once per week and by the Independent Environmental Checker at least once per month.

Piling and grouting work were the major construction activities carried out within the Project site for the reporting period.

Air and noise monitoring have been carried out in accordance with the EM&A Manual. Monument settlement measurement data and tree photographic survey are also provided in Appendices of the Monthly EM&A Reports for March to May 2005.

Ground-borne noise measurements were also conducted inside Hong Kong Cultural Centre and Hong Kong Space Museum in March, April and May 2005.

Bi-monthly water quality samplings were originally scheduled for February and April 2005. However, as there was no discharge in February, water sample collection was rescheduled to March and May 2005.

Due to the change in the Independent Environmental Checker and Site Agent, revised Environmental Monitoring & Audit Manual and Waste Management Plan were submitted on 11 May 2005.

Summary of non-compliance of reporting period is tabulated in Table I.

Table I Summary table for non-compliance recorded from March to May 2005

	No. of Exceedance(s)					
	Action Level			Limit Level		
	March	April	May	March	April	May
1-hr TSP	0	0	0	0	0	0
24-hr TSP	0	0	0	0	0	0
Noise	0	2	0	0	0	0
Water	0	0	0	0	0	0

The two Action Level exceedances for April 2005 are complaints against noise for two separate days. The complaints were resolved as the complainant was advised of no record and prohibition of construction work during restriction hours and the availability of a contact number for immediate action against possible future noise incidents.

Other than the two noise complaints, no Action/Limit level exceedance on air and water limits was found in the reporting period.

There were no notifications of summons, prosecutions or other non-compliance. The site was generally satisfactory and some improvement measures are recommended for further pursuit. These include the re-installation of noise mats, installation of wheel washing bay, avoidance of placing chemical containers on bare soil, improved monitoring on waste movements and dust suppression water sprays, more timely reporting of water sampling results, continual protection of the preserved monument structure, briefing of new project staffs on the EM&A and waste management requirements with proper record keeping.

1. Introduction

- 1.1 Konwall Construction and Engineering Co. Ltd. ["KCE"] is contracted to carry out the site formation work for the development of the Former Marine Police Headquarters ["FMPHA"]. KCE in turn has commissioned Nature & Technologies (HK) Ltd. ["N&T"] to conduct the environmental monitoring and audit ["EM&A"] work for the project.
- 1.2 Pursuant to Clauses 2.3 of the Environmental Permit ["EP"] EP-184/2004 of the project, the draft EM&A Manual was submitted on 29 April 2004 and the revised EM&A Manual was approved on 26 July 2004.
- 1.3 This report documents the quarterly EM&A work and summarizes its findings for the quarterly period from March to May 2005. This is the fourth quarterly report documenting the EM&A work since the commencement of the construction work.

2. Project Information and Progress

Environmental Status

- 2.1 The location, site layout, historic buildings and structures to be preserved of the Project are shown in Figure 2.1.
- 2.2 The project organization, management structure and general lines of communication with respect to environmental protection works are shown in Figure 2.2 and the key contacts are given in Table 2.1. Environmental Protection Department ["EPD"] is the control authority and may contact any party where necessary for their statutory duties.
- 2.3 There has been a change in the Site Agent with Mr Stephen K K Leung replacing Mr K W Chu since March 2005.

Table 2.1 Key Contacts of the Project Team

Party	Company	Contact Person	Phone
Permit Holder	Flying Snow Ltd.	Mr H S Chan	2112 2634
Project Architect	A + T Design Ltd.	Mr Daniel Lin	2858 4778
Contractor	Konwall Construction & Eng. Co., Ltd.	Mr Eric Kwok	2563 1233
Independent Environmental Checker	CH2M-IDC Hong Kong Ltd.	Mr Peter Lee	2872 2935
Environmental Team ["ET"] Leader	Nature & Technologies (HK) Ltd.	Ir Dr Gabriel C K Lam	2877 3122

Construction Programme, Works Undertaken & Status

- 2.4 The updated construction programme with milestones of environmental protection / mitigation activities annotated is given in Appendix A.
- 2.5 Piling and grouting were the main activities carried out within the project site in the reporting period.

Monitoring Locations

- 2.6 Designated air quality and noise monitoring locations were selected for impact monitoring based on the EM&A Manual Section 3.8. They are shown in Figure 2.3. Air quality monitoring locations are briefly described below:
- A1 is located on the rooftop of the Consumer Council office east of the construction site, estimated to be about 11m above ground.
 - A2 is at the Cultural Centre Studio Theatre podium level south of the construction site, estimated to be about 5m above ground. Monitoring at this location has not yet commenced at the time of preparation of this report as permission to carry out monitoring there has not been received.
 - A2a is at south boundary of the construction site facing the Cultural Centre Studio Theatre selected as an alternative location to A2 in consultation with the IEC, estimated to be about 6m above ground. This is needed since permission from the Cultural Centre for monitoring there is not yet received and in order to reduce the delay to the construction programme

by the permission.

- A3 is at the west site boundary of the construction site on top of the existing hoarding, estimated to be about 5m above ground. This position is slightly different to that originally proposed in the Project Profile due to the inability to obtain permission to gain access to the building at Star House or Marco Polo Hongkong Hotel for measurement and that the present revised position will provide a more conservative measurement for environmental protection
- A4 is at the site boundary north of the construction site on top of the existing hoarding, estimated to be about 13m above ground.

2.7 The noise monitoring locations, namely CN1a (on the roof of Po Yip Building) & CN2a (on the 4/F YMCA), were selected for the impact noise monitoring. These locations are made up for the locations at CN1 & CN2 (podium of Hankow Centre east of the construction site) carried out for the baseline noise monitoring as Hankow Centre no longer permit to enter the premises for noise measurement since 28 May 2004. These locations are also shown in Figure 2.3 and are located on the roof of Po Yip Building and 4/F YMCA facing the east of the site.

2.8 The other monitoring locations are indoor of Hong Kong Cultural Centre ["HKCC"] (4/F Studio Theatre End Stage, 1/F Concert Hall & 1/F Grand Theatre) and Hong Kong Space Museum ["HKSM"] (1/F Recording Studio & 1/F Sky Theatre) for ground-borne noise monitoring purpose.

Summary of EM&A Requirements

2.9 The environmental monitoring requirements given in this manual can be summarised as follows:

Table 2.2 Environmental Monitoring Summary Requirements

1.	Air monitoring for 24-hour Total Suspended Particulates ["TSP"] with high volume samplers at four locations <ul style="list-style-type: none"> • Baseline – continuously for 14 consecutive days • Impact – once every six-days
2.	Air monitoring for 1-hour TSP with portable equipment at four locations <ul style="list-style-type: none"> • Baseline – 3 times per day for 14 days • Impact – 3 times per day, one day for every six-days
3.	Noise measurement at two noise sensitive receiver locations (Leq,30 min, Leq,5 min, L10 and L90) <ul style="list-style-type: none"> • Baseline – daily between 0700-1900 for 2 weeks • Impact – weekly between 0700-1900 hours on a normal weekday
4.	Ground-borne noise measurement inside HKSM and HKCC (Leq,30 min / Leq,5 min) <ul style="list-style-type: none"> • Baseline – one time before commencement of piling works • Impact – once per month on a normal weekday
5.	Building Settlement Marker <ul style="list-style-type: none"> • Baseline – one time before commencement of piling works • Impact – once per two days on a normal weekday
6.	Ground Settlement Marker <ul style="list-style-type: none"> • Baseline – one time before commencement of piling works • Impact – once per two days on a normal weekday
7.	Crack Monitoring (Tell-Tale Device) <ul style="list-style-type: none"> • Baseline – one time before commencement of piling works • Impact – once per two days on a normal weekday

2.10 Site inspection by the ET should be carried out at least once per week and IEC at least once per month to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site. Report submissions should include Baseline Monitoring Report, Monthly, Quarterly and Final EM&A Reports. These reports should include photographic records for landscape and tree preservation, and monument structure monitoring records for heritage protection.

Environmental Quality Performance Limits

2.11 The calculation of the Action and Limit ["AL"] Levels for dust and noise were based on the baseline monitoring results. The AL levels for dust are set in Table 2.3.

Table 2.3 AL levels for 1-hour and 24-hr TSP

Location	1-hour TSP		24-hour TSP	
	Action	Limit	Action	Limit
A1	382	500	191	260
A2a	394	500	193	260
A3	389	500	182	260
A4	384	500	187	260

2.12 As per requirements of the EM&A Manual, the AL Levels for noise were established as in Table 2.4 AL levels.

Table 2.4 AL levels for impact noise monitoring locations

Time Period	Action	Limit
0700-1900 hrs on normal weekdays	When one documented complaint is received	75* dB(A)
0700-2300 hrs on holidays; and 1900-2300 hrs on all other days		65** dB(A)
2300-0700 hrs of next day		50** dB(A)

* reduce to 70 dB(A) for schools and 65 dB(A) during school examination periods.

** Based on Area Sensitivity Rating 'B'.

- 2.13 The corresponding AL levels for ground borne noise indoor of HKCC and HKSM are as per Table 2.5.

Table 2.5 AL levels for HKCC and HKSM

Location	Action	Limit
HKCC	When one documented complaint is received	60 dB(A)
HKSM Recording Studio (1/F)		60 dB(A)
HKSM Sky Theatre (1/F)		60 dB(A)
HKSM Lecture Room (G/F)		60 dB(A)

- 2.14 For monitoring of the monument structure during construction works, the AL levels given in Table 2.6 are adopted.

Table 2.6 AL levels of monument structural monitoring

Instrument	Unit	Alert	Alarm	Action
Ground Settlement Markers	mm	10	15	20
Building Settlement Markers	mm	5	8	10
Building tilting & settlement	-	1:2000	1:1500	1:1000
Tell-tales	mm	5	8	10

Implementation Status

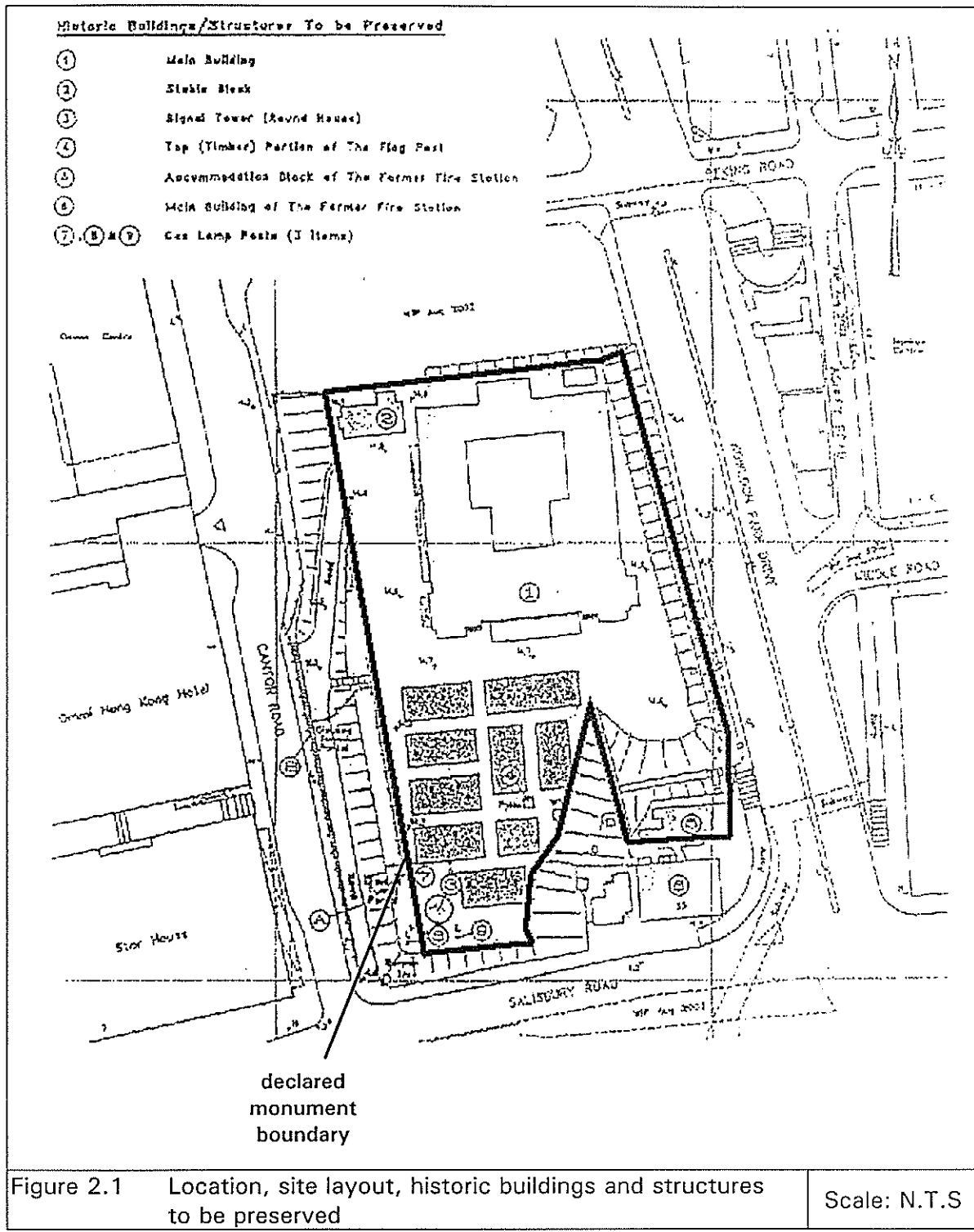
- 2.15 The construction and operational phase impacts of the project have been assessed and presented in the Project Profile submitted in November 2003. The Project Profile also specified the recommended environmental mitigation measures to minimise the potential adverse environmental impacts identified. An implementation schedule of the recommended environmental mitigation measures is prepared as part of the Project Profile is contained in Appendix B.
- 2.16 Site environmental audits were carried out by ET on a weekly basis and by IEC, at least once per month to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site. Site audit checklist reports and recommendations are given in Appendices of the Monthly EM&A Reports for March to May 2005.
- 2.17 The conditions of the site and the implementation of various environmental protection measures have been generally satisfactory. Piling and grouting work were the major construction activities in the reporting quarter. The followings are noted for March to May 2005:
- Noise mats have to be re-installed on the eastern boundary of the site to prevent noise leaking towards sensitive receivers for compliance with the Project Profile when full construction activities are carried out on site.

- Close attention should be given to avoid laying chemical containers on bare soil without trays.
- The site is yet to install wheel washing bay as per Project Profile recommendation. Wheel washing is now being carried out by manual water jets.
- Proper record keeping for environmental management have to be enforced. For instance, records for briefing of the new project team members of the requirements of the EM&A Manual and waste management plan, dust suppression water sprays, waste disposal records should be readily made available for close monitoring.
- The wastewater sampling and analysis activities should be improved by shortening the time needed to analyse water sample and by recording date when water sample is taken to laboratory.

2.18 The summary status of the submission under the EP is given in Table 2.7.

Table 2.7 Status of submission under EP up to 31 May 2005

Item No.	Description	Submission Date to EPD
1.	Method Statement detailing the protective measures on declared monument buildings	06/02/2004
2.	Landscape Mitigation and Tree Preservation Proposal	06/02/2004
3.	Draft EM&A Manual	29/4/2004
4.	Revised Landscape Mitigation and Tree Preservation Proposal	15/05/2004
5.	Draft Waste Management Plan	14/06/2004
6.	Final Method Statement detailing the protective measures on declared monument buildings which is approved	14/06/2004
7.	Final Landscape Mitigation and Tree Preservation Proposal	21/06/2004
8.	Baseline Monitoring Report	25/06/2004
9.	Monthly EM&A Report for June 2004	21/07/2004
10.	Revised EM&A Manual (Rev. 1) which is approved	26/07/2004
11.	Revised Landscape Mitigation and Tree Preservation Proposal which is approved	26/07/2004
12.	Revised Waste Management Plan which is approved	17/08/2004
13.	Monthly EM&A Report for July 2004	25/08/2004
14.	Revised EM&A Manual (Rev. 2) which is approved	06/09/2004
15.	Monthly EM&A Report for August 2004	21/09/2004
16.	Quarterly EM&A Report for June to August 2004	06/10/2004
17.	Monthly EM&A Report for September 2004	27/10/2004
18.	Monthly EM&A Report for October 2004	15/11/2004
19.	Monthly EM&A Report for November 2004	25/12/2004
20.	Quarterly EM&A Report for September to December 2004	20/01/2005
21.	Monthly EM&A Report for December 2004	28/01/2005
22.	Monthly EM&A Report for January 2005	18/03/2005
23.	Monthly EM&A Report for February 2005	04/04/2005
24.	Monthly EM&A Report for March 2005	10/04/2005
25.	Revised EM&A Manual (April 2005) which is approved	11/05/2005
26.	Revised Waste Management Plan (April 2005) which is approved	11/05/2005



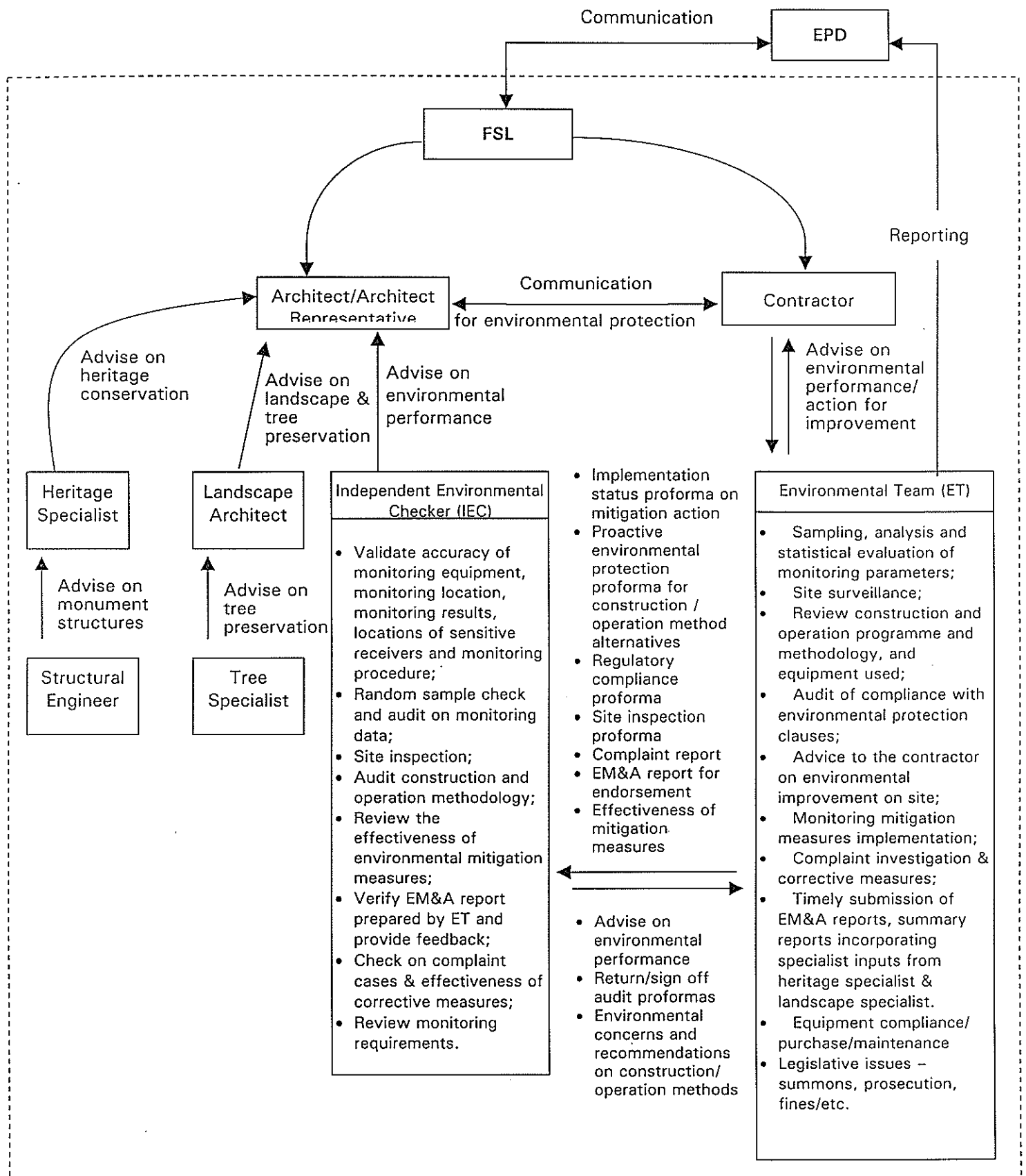


Figure 2.2 Project Organisation, Management & Lines of Communication

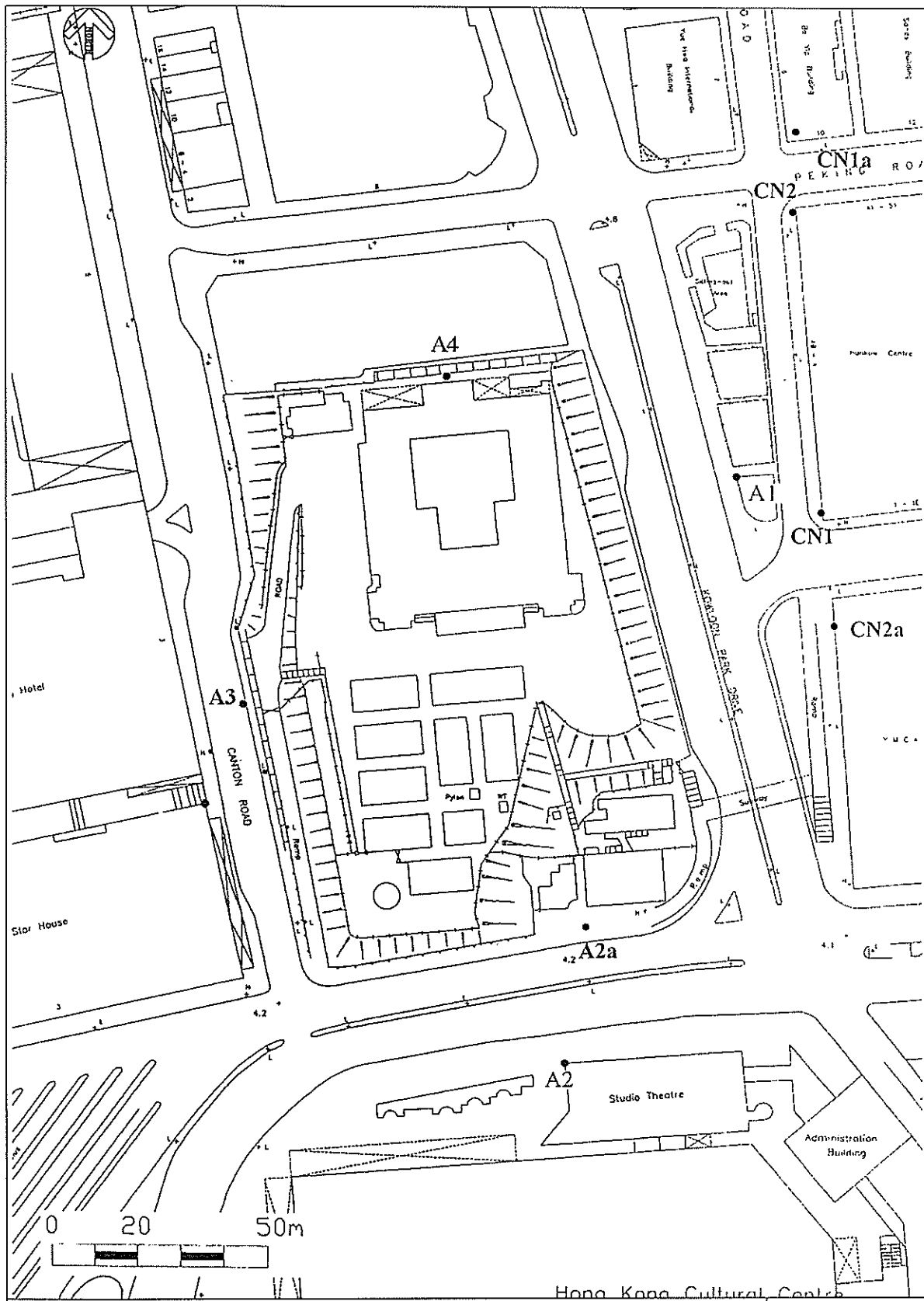


Figure 2.3 Dust monitoring locations (A1, A2a, A3 & A4), proposed noise monitoring locations (CN1 and CN2) and alternative noise monitoring locations (CN1a and CN2a).

Scale: N.T.S

3. Monitoring Results

Weather Condition

- 3.1 The weather during monitoring sessions varied from sunny to cloudy. The weather conditions for each individual monitoring session were presented in the field record sheets.

Air Quality

- 3.2 The monitoring data of 1-hour and 24-hour TSP levels are attached in Appendices of the Monthly EM&A Reports for March to May 2005. The graphical presentations of the monitoring results are shown in Appendix C.
- 3.3 The summary of the air quality exceedances is attached in Appendix D.
- 3.4 All 1-hour and 24-hour TSP monitoring were conducted as scheduled in this reporting period. No AL Levels exceedance for 1-hour and 24-hour TSP was recorded in this reporting period.

Noise

- 3.5 All noise monitoring for CN1a & CN2a were conducted as scheduled in this reporting period. Noise monitoring data are attached in Appendices of the Monthly EM&A Reports for March to May 2005. The graphical presentations of the monitoring results are shown in Appendix E.
- 3.6 The ET received advice on 9 May 2005 on the two complaints filed with EPD on 27 & 30 April 2005. The complainant advised that the noise incidents occurred during the restricted hours on the said dates affecting the neighbouring hotel. Record checking showed that there were no construction activities on site during restricted hours. Furthermore, workers have not been allowed to carry out any construction activities on site during restricted hours. The complainant has also confirmed that there were no further such noise incidents and satisfied with the current situation. He also appreciated our advice of contact number so that any such possible future noise incidents could be referred to us for immediate attention.
- 3.7 Ground-borne noise measurements were also conducted inside HKCC and HKSM in March, April and May 2005. For HKCC and HKSM, graphical presentations of the monitoring results are also shown in Appendix E. Detailed of measurement point in HKCC is shown in the Appendix of EM&A Report for the said months.
- 3.8 No exceedance of the ground-borne noise criteria found for the reporting period.
- 3.9 Summary of the noise exceedances is attached in Appendix D.

Water Quality

- 3.10 Wastewater was treated by on-site coagulation, flocculation and sedimentation system and discharged at the designated discharge point specified in the Licence. Bi-monthly water quality samplings were originally scheduled to be taken in February and April 2005 as required by the Wastewater Discharge

Licence. However, as there was no discharge in February 2005, water samples collection have then to be rescheduled on March and May 2005. Analysis shows that the concentrations of suspended solids were well below the licence limit 80mg/L. For better quality control, there is need to shorten the time needed to analyse water sample and to record date when water sample is taken to laboratory.

- 3.11 The summary of the water quality exceedances is attached in Appendix D.

Cultural Heritage and Landscape

- 3.12 The monitoring results of monument structure in the period between March to May 2005 are presented in Appendices of the Monthly EM&A Reports for the corresponding month. No adverse comments on the structural integrity of the protected monuments have been received from the Heritage Specialist.
- 3.13 Photographic surveys of trees have been taken for March to May 2005 and are presented in Appendices of the corresponding Monthly EM&A Reports. Regular inspections by the Landscape Architect were made and confirmed that the retained, felled and transplanted trees have been maintained in accordance with the recommendations made in the Phase 1 and Phase 2 Tree Preservation Proposal.

4. Waste Management

4.1 According to the Waste Management Plan, all Construction & Demolition materials were recorded in the period from March to May 2005.

4.2 Types, quantities and disposal location of all surplus excavated materials and wastes arising from the site are summarised in Table 4.1 based on information from the Contractor. There were only general refuse and excavated soil disposal in the reporting period.

Table 4.1 Summary of the wastes arising from the site from March to May 2005

Month	Quantity (tonnes)		Quantity (tonnes)	
	Soil	Disposal Location	General Refuse	Disposal Location
March 2005	476.0	SYP, TKO	0	N/A
April 2005	394.2	TKO	32.0	SENT
May 2005	90.7	TKO	13.0	SENT

Note: SENT – South East New Territories Landfill Site
SYP – Public filling barging point at Sai Ying Pun (Public Filling Facility)
TKO – Fill Bank at Tseung Kwan O Area 137 (Public Filling Facility)

4.3 There is need for the Contractor to obtain disposal records from the Authority as soon as the wastes are disposed at the Public Filling Facility and/or Landfill to check against the estimated quantities removed off site.

4.4 There was no timber consumption for the construction activities in this reporting period.

4.5 General refuse should also be cleared from site as far as practicable. Attention needs to be given to ensure proper enclosure for the general refuse storage at all times.

5. **Summary of Non-compliance, Complaints, Notification of Summons and Successful Prosecutions, Environmental Licensing and Permitting**

5.1 There was two complaints against noise in April 2005 and was resolved as the complainant was advised of no record and prohibition of construction work during restriction hours and the availability of a contact number for immediate action against possible future noise incidents.

5.2 Details of the complaint are shown in the log-book attached in the Appendix of the Monthly EM&A Report for April 2005.

5.3 No environmental prosecution was received in the reporting period.

5.4 Status of environmental licensing and permitting can be summarized as follows:

Description	Permit / Licence No.	Status	Permit Holder
Environmental Permit	EP-184/2004	Remain valid since 9 February 2004	Flying Snow Ltd.
WPCO Discharge Licence	EP482/211/0863/I	Application made on 18 May 2004 and licence was granted on 7 July 2004 and valid till 31 July 2009	Konwall Construction & Engineering Co., Ltd.

6. Conclusion

6.1 EM&A work for March to May 2005 has been successfully completed.

6.2 Two Action Level exceedances on noise was found for separate days due to a complaints against noise in April 2005. The complaints were subsequent resolved as the complainant was advised of no record and prohibition of construction work during restriction hours and the availability of a contact number for immediate action against possible future noise incidents.

6.3 No exceedance of the 1-hour, 24-hour TSP found.

6.4 Bi-monthly water quality samplings were scheduled to be taken in February and April 2005. However, as there was no discharge in February 2005, water samples have been collected in March and May 2005. Analyses showed that the results were within the stipulated limit.

6.5 There were no notification of summons and prosecutions.

6.6 Monitoring of the monument structure and trees was also made.

6.7 Site audits were carried out by ET on a weekly basis and by IEC, at least once per month. The conditions of the site were generally satisfactory. The following improvements are to be further pursued:

- Noise mats need to be re-installed on the eastern site boundary as far as practicable to prevent noise leaking towards sensitive receivers and for compliance with the recommendations of the Project Profile
- The site is yet to install wheel washing bay. Wheel washing is now being carried out by manual water jets.
- Close attention should be made to avoid placing chemical containers on bare soil without trays and to the proper keeping of records for staff training, dust suppression water sprays and waste disposal.
- The wastewater sampling and analysis activities should be improved by shortening the time needed to analyse water sample and by recording date when water sample is taken to laboratory.
- Continual protection of the preserved monuments and trees

Appendix A: The construction programme with milestones of environmental protection/mitigation activities

Phase	Description	Year 2004												Year 2005												Year 2006											
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
1	Site Formation																																				
1.1	Site Formation - Tree Retaining, Underpinning & Tree Column													█						█																	
1.2	Site Formation - Retaining wall for Main Building						█															█															
1.3	Site Formation - Open Cut Excavation																█																				
1.4	Site Formation - Remaining Excavation																									█											
2	Building Foundation	<i>To be carried out by others</i>																																			
3	Superstructure & Furnishing	<i>To be carried out by others</i>																																			

↑
All mitigation measures in place except wheel washing pond & barrier mat (7/6/2004)

↑
Sound barrier mat ready (25/6/2004)

↑
Wheel washing pond provided (9/7/2004)

← → ↑
Zero discharge from site Discharge Licence approval (9/7/2004)

Appendix B: Implementation schedule for recommended mitigation measures

Implementation Schedule
Redevelopment of Former Marine Police Headquarters, KIL11161

Project Profile Ref.:	Recommended Mitigation Measures	Location of the measure	Who to implement the measure	When to implement the measures	What requirements or standards for the measure to achieve*	Objectives of the Recommended Measure & Main Concern to address
	Fugitive Dust Impact on the Surrounding Sensitive Uses					
4.1.2.10	To erect site hoarding of at least 2.4m high along the boundaries of the Project Site (particularly along the northern boundary adjacent to No. 1, Peking Road) except at the site entrance/ exit	Site (site boundary)	Site Formation Contractor (for maintenance or improvement as the hoarding was already erected by the Hoarding Contractor earlier)	Construction Phase (prior to construction)	TM-EIA, APC(CD)R & AQO in APCO	To control fugitive dust emissions in accordance with the requirements of Air Pollution Control (Construction Dust) Regulation in principle; Provide shielding against dispersion of fugitive dust
	To control truck speed to within 8 km/hr and that dusty vehicle loads transported to and from the work location should be covered by tarpaulin sheets and should not be overloaded	Site	Site Formation Contractor	Construction Phase	TM-EIA, APC(CD)R & AQO in APCO	To control fugitive dust emissions in accordance with the requirements of Air Pollution Control (Construction Dust) Regulation in principle; Reduce fugitive emission wherever possible
	To provide vehicle wheel washing facilities including high pressure water jets at designated vehicle exit points	Site	Site Formation Contractor	Construction Phase	TM-EIA, APC(CD)R & AQO in APCO	To control fugitive dust emissions in accordance with the requirements of Air Pollution Control (Construction Dust) Regulation in principle; Reduce fugitive emission wherever possible
	To use impervious sheeting where practicable for side enclosure and covering of any aggregate or other dusty material storage piles, to place stockpiles in an area sheltered on the top and the three sides, and/or to spray with water	Site	Site Formation Contractor	Construction Phase	TM-EIA, APC(CD)R & AQO in APCO	To control fugitive dust emissions in accordance with the requirements of Air Pollution Control (Construction Dust) Regulation in principle; Reduce fugitive emission wherever possible

Project Profile Ref.:	Recommended Mitigation Measures	Location of the measure	Who to implement the measure	When to implement the measures	What requirements or standards for the measure to achieve*	Objectives of the Recommended Measure & Main Concern to address
	To cover the demolished items by impervious sheeting or to place in area sheltered on the top and the three sides within a day of demolition.	Site	Site Formation Contractor	Construction Phase	TM-EIA, APC(CD)R & AQO in APCO	To control fugitive dust emissions in accordance with the requirements of Air Pollution Control (Construction Dust) Regulation in principle; Reduce fugitive emission wherever possible
	To spray all dusty material with water prior to loading, unloading or transfer so as to maintain the C&D material wet	Site	Site Formation Contractor	Construction Phase	TM-EIA, APC(CD)R & AQO in APCO	To control fugitive dust emissions in accordance with the requirements of Air Pollution Control (Construction Dust) Regulation in principle; Reduce fugitive emission wherever possible
	To apply wet suppression at least four times per day at the worksites with active dusty operations and to water all dust emission sources when necessary. The frequency shall be increased when the weather is dry	Site	Site Formation Contractor	Construction Phase	TM-EIA, APC(CD)R & AQO in APCO	To control fugitive dust emissions in accordance with the requirements of Air Pollution Control (Construction Dust) Regulation in principle; Reduce fugitive emission wherever possible
	To control the drop height of excavated materials to a minimum to limit fugitive dust generation from unloading as far as practicable	Site	Site Formation Contractor	Construction Phase	TM-EIA, APC(CD)R & AQO in APCO	To control fugitive dust emissions in accordance with the requirements of Air Pollution Control (Construction Dust) Regulation in principle; Reduce fugitive emission wherever possible
5.2.1.3	To carry out EM&A programme	Site	Site Formation Contractor & Superstructure Contractor	Pre-Construction and Construction Phase	TM-EIA & AQO in APCO	To proactively monitor fugitive dust impact and take necessary action against any unacceptable impact

Project Profile Ref.:	Recommended Mitigation Measures	Location of the measure	Who to implement the measure	When to implement the measures	What requirements or standards for the measure to achieve*	Objectives of the Recommended Measure & Main Concern to address
	Construction Noise Impact on the Surrounding Sensitive Uses					
4.2.1.5	To restrict operation to within non-restricted hours only	Site	Site Formation Contractor & Superstructure Contractor	Construction Phase	NCO	To avoid generation of noise during restricted hours under NCO
4.2.1.11	To use quiet PME with lower sound power level	Site	Site Formation Contractor & Superstructure Contractor	Construction Phase	TM-EIA	To reduce noise generation and in turn the construction noise impact
	To provide site hoarding of 4m to 6m high along the eastern boundary with sufficient surface density (10 to 15 kg/m ²), use of noise curtain or other mitigation measures for noise abatement as soon as Action Level is exceeded and confirmed to be due to the construction works	Site	Site Formation Contractor & Superstructure Contractor	Construction Phase	TM-EIA	To provide noise shielding or equivalent measures to reduce construction noise impact as per @ or equivalent subject to IEC/ AR's agreement.
	To adopt noise enclosure and temporary noise barriers with sufficient surface density (10 to 15 kg/m ²) (vertical and cantilevered types)	Site	Site Formation Contractor & Superstructure Contractor	Construction Phase	TM-EIA	To provide noise shielding to reduce construction noise impact or equivalent measures subject to IEC/ AR's agreement.
	To make use of the topography by carrying out excavation from west to east so that the original platform can act as effective noise barrier	Site	Site Formation Contractor	Construction	TM-EIA	To provide noise shielding to reduce construction noise impact or equivalent measures subject to IEC/ AR's agreement.

Project Profile Ref.:	Recommended Mitigation Measures	Location of the measure	Who to implement the measure	When to implement the measures	What requirements or standards for the measure to achieve*	Objectives of the Recommended Measure & Main Concern to address
4.2.1.12	<p>To implement good site practice and noise management</p> <ul style="list-style-type: none"> ▪ To submit to the Engineer for approval the method of working, equipment and sound-reducing measures intended to be used at the site before the commencement of any work ▪ To allow only well-maintained plants to operate on-site; ▪ To service the plants regularly during the construction program; ▪ To shut down or throttle down machines that may be in intermittent use to a minimum between work periods; ▪ To utilize and maintain silencer and mufflers on construction equipment during the construction program; ▪ To schedule noisy activities to minimise exposure of nearby NSRs to high levels of construction noise. For example, noisy activities can be scheduled for midday or at times coinciding with periods of high background noise (such as during peak traffic hours); ▪ To site noisy equipment such as emergency generators as far away as possible from NSRs; ▪ To site mobile plants as far away from NSRs as possible; and ▪ To utilize material stockpiles and other structures as noise barrier, where practicable. 	Site	Site Formation Contractor & Superstructure Contractor	Construction Phase	NCO & TM-EIA	To reduce noise generation and its impact in accordance with NCO and its subsidiary regulations

Project Profile Ref.:	Recommended Mitigation Measures	Location of the measure	Who to implement the measure	When to implement the measures	What requirements or standards for the measure to achieve*	Objectives of the Recommended Measure & Main Concern to address
4.2.1.23	No percussive piling	Site	Site Formation Contractor	Construction Phase	TM-EIA & NCO	To eliminate possibility of generating any significant ground borne noise impact
4.2.1.81	To avoid concurrent pipe piles driving near the tree ring and the Main Building when the pipes near the Main Building is about to penetrate the bedrock	Site	Site Formation Contractor	Construction Phase	TM-EIA & NCO	To avoid adverse cumulative ground borne noise impact
	To conduct on-site noise measurement at the HKCC and the HKSM when the works at the FMPH commences to verify the level of transmitted ground-borne noise	Site	Site Formation Contractor	Construction Phase	TM-EIA & NCO	To avoid adverse cumulative ground borne noise impact
	To establish a communication channel with HKCC and HKSM to stagger, if necessary, the ground-borne noise causing construction activities to avoid clashing with hours of performance at both venues	Site	Site Formation Contractor	Construction Phase	TM-EIA & NCO	To avoid adverse cumulative ground borne noise impact
5.2.1.3	To carry out EM&A program	Site	Site Formation Contractor & Superstructure Contractor	Pre-Construction and Construction Phase	TM-EIA	To proactively monitor construction noise impact and take necessary action against any unacceptable impact

Project Profile Ref.:	Recommended Mitigation Measures	Location of the measure	Who to implement the measure	When to implement the measures	What requirements or standards for the measure to achieve*	Objectives of the Recommended Measure & Main Concern to address
	Construction Phase Water Quality Impact					
4.3.1.7	To carry out the Works in such a manner as to minimize adverse impacts on the water quality during execution of the works. In particular he shall arrange his method of working to minimize the effects on the water quality within and outside the Site, on the transport routes and at the loading, dredging and dumping areas.	Site	Site Formation Contractor & Superstructure Contractor	Construction Phase	WPCO	To comply with the Water Pollution Control Ordinance and its subsidiary regulation.
	To follow the practices, and be responsible for the design, construction, operation and maintenance of all the mitigation measures as specified in the Professional Persons Environmental Consultative Committee Practice Note (ProPECC PN) 1/94 "Construction Site Drainage" issued by the Director of Environmental Protection. The design of the mitigation measures shall be submitted by the Contractor to the Engineer for approval.	Site	Site Formation Contractor & Superstructure Contractor	Construction Phase	ProPECC PN1/94 & WPCO	To comply with the Water Pollution Control Ordinance and its subsidiary regulation.
	To contain within the Site all surface runoff generated from foundation works, dust control and vehicle washing, etc.	Site	Site Formation Contractor & Superstructure Contractor	Construction Phase	WPCO	To comply with the Water Pollution Control Ordinance and its subsidiary regulation.

Project Profile Ref.:	Recommended Mitigation Measures	Location of the measure	Who to implement the measure	When to implement the measures	What requirements or standards for the measure to achieve*	Objectives of the Recommended Measure & Main Concern to address
	To avoid discharge directly or indirectly or cause or permit or suffer to be discharged into any public sewer, stormwater drain, channel, stream-course or sea any trade effluent or foul or contaminated water or cooling or hot water without the prior written consent of the Engineer in consultation with the Director of Environmental Protection and Director of Water Supplies, who may as a condition of granting his consent require the Contractor to provide, operate and maintain at the Contractor's own expense to the satisfaction of the Engineer suitable works for the treatment and disposal of such trade effluent or foul or contaminated or cooling or hot water. [The design of such treatment works shall be submitted to the Engineer for approval not less than one month before the commencement of the relevant works.]	Site	Site Formation Contractor & Superstructure Contractor	Construction Phase	WPCO	To comply with the Water Pollution Control Ordinance and its subsidiary regulation.
	To direct foul water effluent to a foul sewer or to a sewage treatment and disposal facility either directly or indirectly by means of pumping or other means approved by the Engineer if any office, site canteen or toilet facilities is erected	Site	Site Formation Contractor & Superstructure Contractor	Construction Phase	WPCO	To comply with the Water Pollution Control Ordinance and its subsidiary regulation.

Project Profile Ref.:	Recommended Mitigation Measures	Location of the measure	Who to implement the measure	When to implement the measures	What requirements or standards for the measure to achieve*	Objectives of the Recommended Measure & Main Concern to address
	Operational Phase Water Quality Impact					
4.3.2.1	To discharge sewage/wastewater generated from the Project to the nearby public sewers	Site	Project Proponent/Operator	Design / Operational Phase	WPCO	To meet the requirement as stipulated in the Technical Memorandum on Water Pollution Control Ordinance
	Waste Management					
4.5.1.7	To minimize the production of construction waste through careful design, planning, good site management, and control of ordering procedures, segregation and reuse of materials; To arrange for private contractors to collect used formwork materials for reuse.	Site	Site Formation Contractor & Superstructure Contractor	Construction Phase	WDO	To follow relevant regulations (Waste Disposal Ordinance) in all circumstances.
4.5.1.8	To dispose of any chemical wastes such as lubricating oil or solvent in strict accordance with the Waste Disposal (Chemical Waste) (General) Regulation	Site	Site Formation Contractor & Superstructure Contractor	Construction Phase	WDO	To follow relevant regulations (Waste Disposal Ordinance) in all circumstances.
4.5.1.9	To assign a reliable waste collector to collect general refuse generated from the construction site on a daily basis to minimise the potential odour, pest and litter impacts.	Site	Site Formation Contractor & Superstructure Contractor	Construction Phase	WDO	To follow relevant regulations (Waste Disposal Ordinance) in all circumstances.
4.5.2.1	To identify requirements on proper waste management for implementation during the operation of the Project	Site	Operator	Operational Phase	WDO	To follow relevant regulations (Waste Disposal Ordinance) in all circumstances.

Project Profile Ref.:	Recommended Mitigation Measures	Location of the measure	Who to implement the measure	When to implement the measures	What requirements or standards for the measure to achieve*	Objectives of the Recommended Measure & Main Concern to address
	Construction Phase Landscape and Visual Impact					
4.6.2.2	To screen the works area during the construction phase through the use of decorative hoarding along the site boundary with unified edge treatment and interface	Site	Site Formation Contractor & Superstructure Contractor	Construction Phase	A&MO, TM-EIA, Project Profile ["PP"], Landscape Mitigation and Tree Preservation Proposal ["LMTPP"] & WBTC No. 14/2002	Interim measures designed to ensure acceptable landscape and visual impact on completion. Implementation of the LMTPP to the mature trees during the construction period.
4.6.2.11	Creation of precautionary area (Cordon Area) around trees to be retained equal to the spread of the trees canopy diameter. Precautionary area to be fenced. Following the completion of the piling the Cordon Area would be based on the retained rootball.	Site	Specialist Landscape Contractor	Construction Phase	A&MO, TM-EIA, PP, LMTPP & WBTC No. 14/2002	Interim measures designed to ensure acceptable landscape and visual impact on completion. Implementation of the LMTPP to the mature trees during the construction period.
	Prohibition of the storage of materials including fuel, the movement of construction vehicles, and the refuelling and washing of equipment including concrete mixers within the Cordon Area.	Site	Site Formation Contractor & Superstructure Contractor	Construction Phase	A&MO, TM-EIA, PP, LMTPP & WBTC No. 14/2002	Interim measures designed to ensure acceptable landscape and visual impact on completion. Implementation of the LMTPP to the mature trees during the construction period.

Project Profile Ref.:	Recommended Mitigation Measures	Location of the measure	Who to implement the measure	When to implement the measures	What requirements or standards for the measure to achieve*	Objectives of the Recommended Measure & Main Concern to address
	<p>Phased segmental root pruning for trees to be retained over a six-month period prior to or site formation works, which affect the existing rootball of trees identified for retention. The extent of the pruning shall be based on a minimum half canopy and has been determined on a tree by tree basis.</p> <p>Phased segmental root pruning over a three-month period prior to lifting the trees identified for transplantation.</p>	Site	Specialist Landscape Contractor	Construction Phase	A&MO, TM-EIA, PP, LMTTP & WBTC No. 14/2002	Interim measures designed to ensure acceptable landscape and visual impact on completion. Implementation of the LMTTP to the mature trees during the construction period.
	Pruning of the branches of existing trees identified for transplantation and retention to be based on the principle of crown thinning maintaining their form and amenity value	Site	Specialist Landscape Contractor	Construction Phase	A&MO, TM-EIA, PP, LMTTP & WBTC No. 14/2002	Interim measures designed to ensure acceptable landscape and visual impact on completion. Implementation of the LMTTP to the mature trees during the construction period.
	The watering of existing vegetation particularly during periods of excavation when the water table beneath the existing vegetation is lowered.	Site	Specialist Landscape Contractor	Construction Phase	A&MO, TM-EIA, PP, LMTTP & WBTC No. 14/2002	Interim measures designed to ensure acceptable landscape and visual impact on completion. Implementation of the LMTTP to the mature trees during the construction period.
	The rectification and repair of damaged vegetation following the construction phase to its original condition prior to the commencement of the works or replacement using specimens of the same species, size and form where appropriate to the design intention of the area affected	Site	Specialist Landscape Contractor	Construction Phase	A&MO, TM-EIA, PP, LMTTP & WBTC No. 14/2002	Interim measures designed to ensure acceptable landscape and visual impact on completion. Implementation of the LMTTP to the mature trees during the construction period.
	All works affecting the trees identified for retention and transplantation will be carefully monitored. This includes the key stages in the preparation of the trees, the implementation of protection measures and health monitoring through out the construction period	Site	Specialist Landscape Contractor	Construction Phase	A&MO, TM-EIA, PP, LMTTP & WBTC No. 14/2002	Interim measures designed to ensure acceptable landscape and visual impact on completion. Implementation of the LMTTP to the mature trees during the construction period.

Project Profile Ref.:	Recommended Mitigation Measures	Location of the measure	Who to implement the measure	When to implement the measures	What requirements or standards for the measure to achieve*	Objectives of the Recommended Measure & Main Concern to address
	The tree transplanting and planting works should be implemented by approved Landscape Contractors and inspected and approved on site by a qualified Landscape Architect. A tree protection / transplanting specification would be included within the contract documents. Tree preservation proposals and procedures for the protection and preservation of the existing trees to be reviewed by third party Tree Specialist including the provision of an additional level of monitoring during the construction phase.	Site	Specialist Landscape Contractor	Construction Phase	A&MO, TM-EIA, PP, LMTTP & WBTC No. 14/2002	Interim measures designed to ensure acceptable landscape and visual impact on completion. Implementation of the LMTTP to the mature trees during the construction period.
	Operational Phase Landscape and Visual Impact					
4.6.3.4	To retain trees that have historic value and contribute most to the landscape and visual amenity of the site and its immediate environs	Site	Project Proponent/ Operator	Design, Construction and Operational Phase	TPO, A&MO, TM-EIA, PP, LMTTP & WBTC No. 14/2002	Long term measures deigned to ensure creation of a high quality urban landscape
4.6.3.5	To restore the main buildings and to create landscaped gardens in order to beneficially affect the landscape character and quality of the area	Site	Project Proponent/ Operator	Design, Construction and Operational Phase	TPO, A&MO, TM-EIA, PP, LMTTP & WBTC No. 14/2002	Long term measures deigned to ensure creation of a high quality urban landscape
	To create the plaza to the south of the main colonial buildings to increase public access to the site and to open up views of the building façade	Site	Project Proponent/ Operator	Design, Construction and Operational Phase	TPO, A&MO, TM-EIA, PP, LMTTP & WBTC No. 14/2002	Long term measures deigned to ensure creation of a high quality urban landscape
	To provide where conditions allow new street planting along Canton Road, from No. 1 Peking Road to the intersection at Salisbury Road, and along the Salisbury Road frontage in order to create a boulevard type landscape to partially screen the development, and to enhance the green edge effect that is a dominant feature of both the site and its urban context.	Site	Project Proponent/ Operator	Design, Construction and Operational Phase	TPO, A&MO, TM-EIA, PP, LMTTP & WBTC No. 14/2002	Long term measures deigned to ensure creation of a high quality urban landscape

Project Profile Ref.:	Recommended Mitigation Measures	Location of the measure	Who to implement the measure	When to implement the measures	What requirements or standards for the measure to achieve*	Objectives of the Recommended Measure & Main Concern to address
	To conduct new paving works at the street level as a result of the development and the widening of Canton Road which will lead to a significant improvement in the landscape and visual amenity of the streetscape within the study area	Site	Project Proponent/ Operator	Design, Construction and Operational Phase	TPO, A&MO, TM-EIA, PP	Long term measures deigned to ensure creation of a high quality urban landscape
	Detailed landscape and tree preservation proposals will be submitted to the relevant government departments for approval under the lease conditions and in accordance with WBTC No. 14/2002.	Site	Project Proponent/ Operator	Design, Construction and Operational Phase	TPO, A&MO, TM-EIA, PP & WBTC No. 14/2002	Long term measures deigned to ensure creation of a high quality urban landscape
4.6.3.8	All landscape and visual mitigation works will be funded, implemented managed and maintained by the project proponent.	Site	Project Proponent/ Operator	Design, Construction and Operational Phase	TPO, A&MO, TM-EIA, PP & WBTC No. 14/2002	Long term measures deigned to ensure creation of a high quality urban landscape
	A qualified or registered landscape architect will be involved in the design, construction supervision and monitoring, and maintenance period to oversee the implementation of the recommended landscape and visual mitigation measures including the tree preservation and landscape works on site. Tree preservation proposals to be reviewed by third party Tree Specialist including monitoring during the establishment period.	Site	Project Proponent/ Operator	Design, Construction and Operational Phase	TPO, A&MO, TM-EIA, PP & WBTC No. 14/2002	Long term measures deigned to ensure creation of a high quality urban landscape

Project Profile Ref.:	Recommended Mitigation Measures	Location of the measure	Who to implement the measure	When to implement the measures	What requirements or standards for the measure to achieve*	Objectives of the Recommended Measure & Main Concern to address
	Cultural Heritage Impact					
4.7.1.1	All monuments within the site will be preserved to an extent given according to the in the tender requirement	Site	Project Proponent	Design, Construction and Operational Phase	Tender Document	To preserve the monument
4.7.4.1	To prepare and submit a detailed study report comprising the historic archives, measured drawings, photographic records and full bibliography in support of the historic evidence prepared by experts in cultural heritage for their approval under the Antiquities and Monuments Ordinance (Cap. 53)	Site	Project Proponent	Design Phase	A&MO	To observed principles in the Charter of Venice (ICOMOS) and the Burra Charter (ICOMOS Australia) and requirement of A&MO
4.7.4.2	To submit detailed descriptions, plans for building and mitigation works and implementation programme to AMO for their approval and monitoring before commencement of works.	Site	Project Proponent	Design Phase	A&MO	To observed principles in the Charter of Venice (ICOMOS) and the Burra Charter (ICOMOS Australia) and requirement of A&MO
4.7.4.3	To preserve the Historic Buildings to meet international standard. Relevant legislations, standards, Charters and planning guidelines will be observed.	Site	Project Proponent	Design, Construction & Operational Phase	A&MO	To observed principles in the Charter of Venice (ICOMOS) and the Burra Charter (ICOMOS Australia) and requirement of A&MO
4.7.4.4	To allow only alteration or addition works to the Historic Buildings, which are reversible except those, considered to be minor by AMO.	Site	Superstructure Contractor	Construction Phase	A&MO	To observed principles in the Charter of Venice (ICOMOS) and the Burra Charter (ICOMOS Australia) and requirement of A&MO
4.7.4.5	To take necessary precautions during construction and excavation work to prevent any damage to the Historic Buildings. Structural monitoring system will be designed and supervised by a Registered Structural Engineer during the whole of construction works on the site.	Site	Site Formation Contractor & Superstructure Contractor	Construction Phase	A&MO	To prevent any damage to the historic buildings and structures during the site formation.

Project Profile Ref.:	Recommended Mitigation Measures	Location of the measure	Who to implement the measure	When to implement the measures	What requirements or standards for the measure to achieve*	Objectives of the Recommended Measure & Main Concern to address
4.7.4.8	A comprehensive management plan including a heritage building maintenance guideline for the operation of FMPHQ would be prepared by conservation experts.	Site	Agent appointed by Project Proponent	Prior to Operational Phase	A&MO	To maintain the historic site and buildings in a proper manner
4.7.4.9	Periodic site inspection to heritage buildings on external areas, interior decoration and covered-up areas to ensure a constant monitoring of building condition is conducted.	Site	Agent appointed by Project Proponent	Operational Phase	A&MO	To maintain the historic site and buildings in a proper manner
4.7.4.10	The Permit on routine maintenance would be applied to AMO under the A & M Ordinance.	Site	Agent appointed by Project Proponent	Operational Phase	A&MO	To maintain the historic site and buildings in a proper manner

***Abbreviation**

TM-EIA – Technical Memorandum on Environmental Impact Assessment Process

AQO – Air Quality Objectives

APCO – Air Pollution Control Ordinance

APC(CD)R - Air Pollution Control (Construction Dust) Regulation

HKPSG – Hong Kong Planning Standards and Guidelines

TPO – Town Planning Ordinance

NCO – Noise Control Ordinance

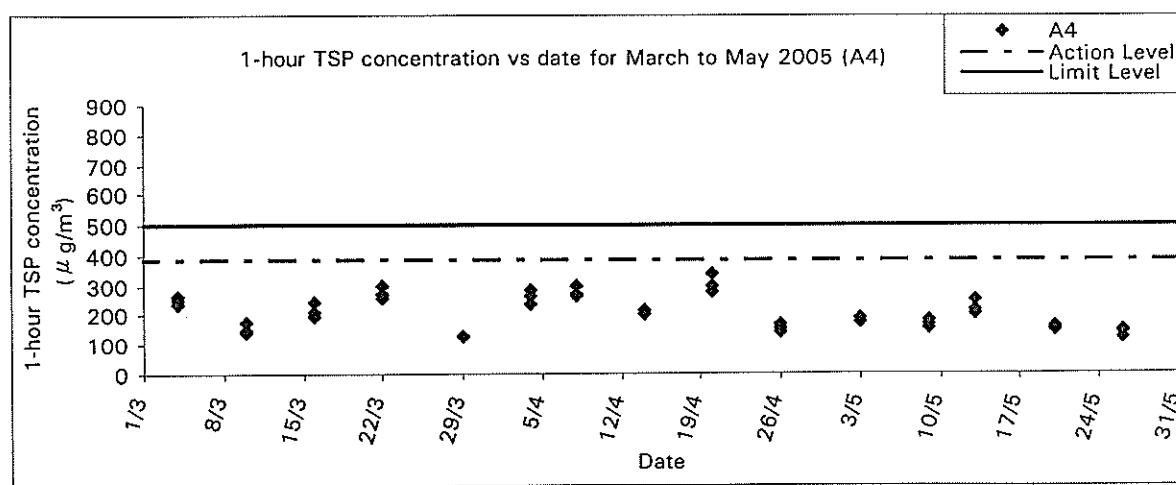
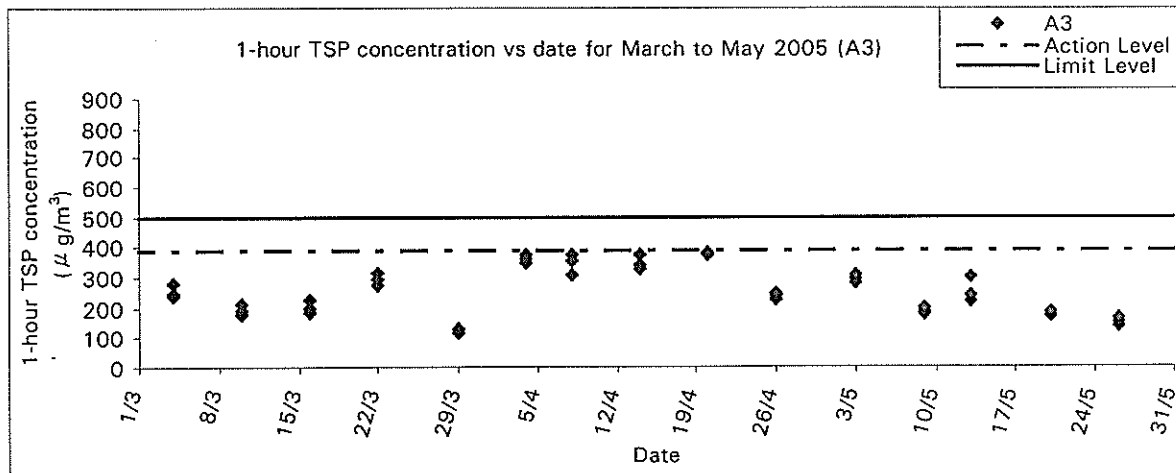
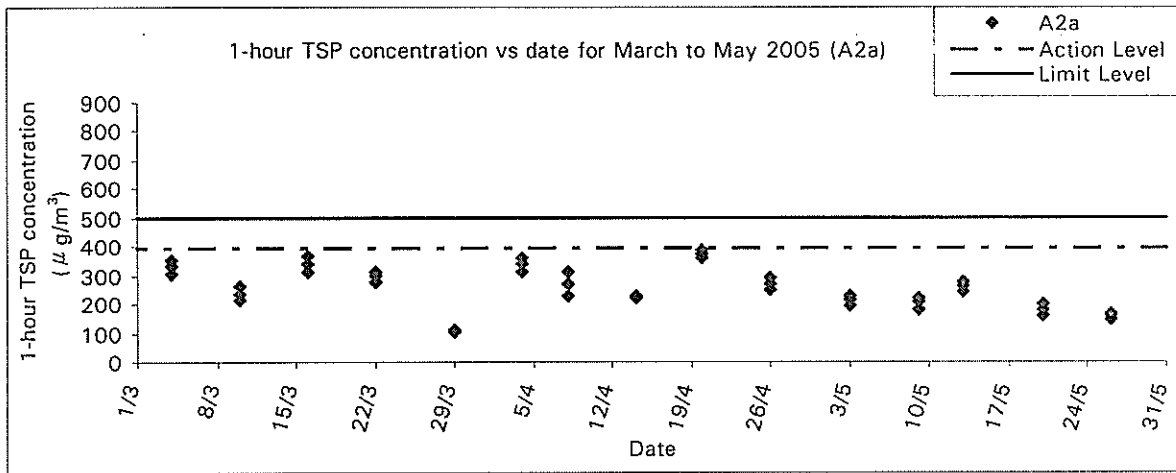
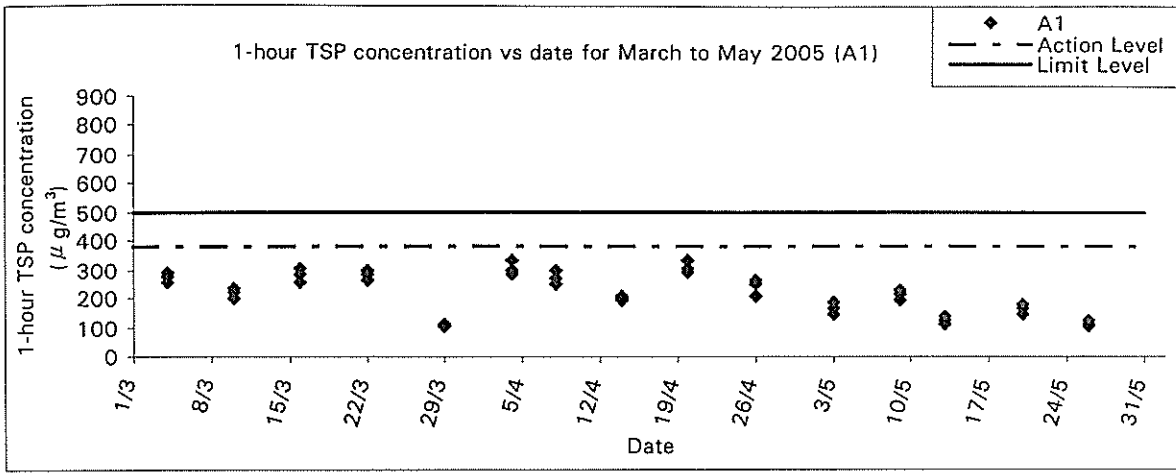
WPCO – Water Pollution Control Ordinance

PN1/94 - Professional Persons Environmental Consultative Committee Practice Note (ProPECC PN) 1/94 "Construction Site Drainage"

WDO – Waste Disposal Ordinance

A&MO - Antiquities and Monuments Ordinance

Appendix C: Graphical presentations of the air impact monitoring results



Appendix D: Summary of exceedances

Parameter	Location	Monitoring Period	No. of Exceedance(s)	
			Action Level	Limit Level
Air (1-hour TSP)	A1	01/03/2005 – 31/05/2005	0	0
	A2a	01/03/2005 – 31/05/2005	0	0
	A3	01/03/2005 – 31/05/2005	0	0
	A4	01/03/2005 – 31/05/2005	0	0
Air (24-hour TSP)	A1	01/03/2005 – 31/05/2005	0	0
	A2a	01/03/2005 – 31/05/2005	0	0
	A3	01/03/2005 – 31/05/2005	0	0
	A4	01/03/2005 – 31/05/2005	0	0
Noise	CN1a	01/03/2005 – 31/05/2005	2	0
	CN2a	01/03/2005 – 31/05/2005		0
	HKSM	01/03/2005 – 31/05/2005		0
	HKCC	01/03/2005 – 31/05/2005		0
Water	Outlet of filtration facility	01/03/2005 – 31/05/2005	0	0

Appendix E: Graphical presentations of the noise impact monitoring results

