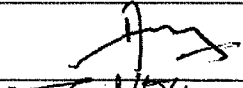



Carlyle International Limited

**Infrastructural Works for Cyberport
Development at Telegraph Bay
(EP No. EP-040/1999/E)**

**Final EM&A Report
(Rev. 4)**

March 2009

	Name	Signature
Prepared & Checked:	Anna Chung	
Reviewed & Approved:	Y. T. Tang	

Version:	Revision 4	Date: 2 March 2009
<p>The information contained in this report is, to the best of our knowledge, correct at the time of printing. The interpretation and recommendations in the report are based on our experience, using reasonable professional skill and judgment, and based upon the information that was available to us. These interpretations and recommendations are not necessarily relevant to any aspect outside the restricted requirements of our brief. This report has been prepared for the sole and specific use of our client and ENSR Asia (HK) Ltd. accepts no responsibility for its use by others.</p> <p>This report is copyright and may not be reproduced in whole or in part without prior written permission.</p>		

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Attn: Ms. Anna Chung

Dear Ms. Chung,

**Cyberport Residential Development at Telegraph Bay, Pok Fu Lam
Environmental Permit No. EP-040/1999/E Condition No. 6.5 – Final EM&A Report and
Termination of EM&A Programme**

We refer to your email of 30 January 2009 providing the Final EM&A Report, EPD's letter to Carlyle International Limited (ref. (58) in Ax(4) to EP2/H10/P/09 Pt 10) dated 21 January 2009 and your response to EPD's comments, and the subsequent revision contained in your emails on 17 February 2009, 25 February 2009, and 2 March 2009 including:

- Final EM&A Report (Rev. 04)
- Figures 1 to 5
- Appendix K – Statistical Analysis

Atkins China Ltd. verifies, in the capacity of Independent Environmental Checker (IEC), that the Final EM&A Report (Rev. 04), in principle, conforms the requirements under Section 8.3.4 of the Project EM&A Manual.

We also refer to your letter of 11 February 2009 (ref. 60016816(S10599)/c/aymc90211) regarding your proposal in termination of the EM&A programme. We have no comments on your proposal.

**Yours sincerely,
For Atkins China Ltd.**



**Susana Bezy
Divisional Director**

c.c. Mr. Victor Yeung, EPD
Mr Cannon Poon, CIL

2591 0558 (by fax only)
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EXECUTIVE SUMMARY

This is the final Environmental Monitoring and Audit (EM&A) Report prepared by ENSR Asia (HK) Ltd. (ENSR), formerly Maunsell Environmental Management Consultants Limited (MEMCL), for the “Infrastructural Works for Cyberport Development at Telegraph Bay (excluding advance works)” hereafter referred to as “the Project”. This final report summaries the EM&A work performed within the entire construction period between 23 December 1999 and 1 September 2003 and traffic noise measurement performed within one year after the issuance of Occupation Permit (OP) from Buildings Department for the last Phase of the Development.

Suspension of EM&A Programme submitted to Environmental Protection Department (EPD) on 18 August 2003 had been approved by EPD on 1 September 2003. All the EM&A works as required is the Environmental Permit EP-040/1999/E suspended from that day onwards.

Air Quality

Both of the 1-hour Total Suspended Particulates (TSP) and 24-hour TSP monitoring were conducted at four designated locations. During the entire construction period, four Action Level exceedances of 1-hour TSP were recorded. Only one exceedance was valid for the Contract. For 24-hour TSP, fifty-four Action Level exceedances and seven Limit Level exceedances were recorded. Only twenty-two Action Level and seven Limit Level exceedances were valid for the Contract during the entire construction period.

Construction Noise

Construction noise was monitored at three designated locations as specified in the EM&A Manual. Since the commencement of Stage 1 concrete batching plant, continuous noise monitoring was conducted at four monitoring stations since 21 April 2001. One hundred and eighty-four exceedances were recorded during the entire construction period.

Water

Total suspended solids in stream water were monitored at the three designated locations. As confirmed by the Engineer and IC(E) on 28 February 2002, construction work for Southern Access Road and stream realignment have been completed, thus stream water monitoring was stopped since March 2002. No exceedance was recorded during the entire construction period.

Marine water monitoring was conducted at the three designated locations between January 2001 and October 2001. One exceedance of turbidity was record during the entire construction period. The exceedance was concluded due to backfilling of the seabed near the submarine outfall location or muddy water discharged into the sea via the last storm drain manhole of Road D1.

The sewage outfall baseline monitoring report had been verified by Independent Checker (Environment) (IC(E)) on 23 January 2003 and was submitted to EPD on 28 January 2003.

Environmental Site Audit

Site inspections were carried out weekly by the Environmental Team to audit the site conditions against the conditions in the environmental permit, Environmental Impact Assessment, and environmental legislation.

In the whole construction period, environmental mitigation measures of dust, noise, water and waste were generally implemented. Recommendations were made to Contractors upon any observations.

Exceedance

In the event of monitoring parameter exceeded the Limit/Action Level, interim reports were issued to the relevant parties for information and action and after identification of exceedance, measurements were repeated by means of an ad-hoc monitoring to confirm the investigation findings Mitigation measures were recommended to the Contractor. Event/Action Plans for both Air Quality, Noise and water quality were followed when exceedances were recorded. Follow-up actions were executed.

Complaint / Non-compliance

A total of 15 complaints were received and closed within the entire construction period of the Project.

Summons / Prosecution

One prosecution of air quality related to the Environmental Permit (EP) was received and closed within the entire construction period of the Project.

Operational Traffic Noise

The operational noise monitoring as stipulated in the Condition No. 5.2 of the Environmental Permit were conducted at 2 designated monitoring locations on 10 September 2008 and 2 October 2008 in accordance with the Traffic Noise Monitoring Plan (October 2008) prepared under Condition 4.5 of the Environmental Permit EP-040/1999/E. The measurements obtained sound pressure levels (SPL), in $L_{10(1-hour)}$, as measured at the sensitive receivers during the morning traffic peak hour, afternoon traffic hour and evening traffic peak hour and compare with the Traffic Noise Impact Review's (March 2008)¹ predictions in year 2022.

Conclusion

The environmental monitoring work during the entire construction period was effective. The monitoring data generated results correlated to the construction activities undertaken on site. Data with the necessary statistically power to categorically identify or confirm the absence of impact attributable to the works were generated.

The operational traffic noise monitoring work demonstrated that the proposed traffic noise mitigation measures are effectiveness to alleviate traffic noise impact from Cyberport Road and the noise sensitive facades complied with the traffic noise criteria.

¹ Allied Environmental Consultants Limited. (March 2008), *Cyberport Residential Development at Telegraph Bay, Pok Fu Lam – Traffic Noise Impact Review*. The report was prepared to update the changes and review the noise mitigation measures required for the Cyberport residential development.

1. INTRODUCTION

Background

- 1.1 ENSR Asia (HK) Ltd. (ENSR), formerly Maunsell Environmental Management Consultants Limited (MEMCL), was appointed by Carlyle International Ltd. via Maunsell Consultants Asia Limited to undertake the Environmental Monitoring and Audit (EM&A) for Infrastructural works for Cyberport Development at Telegraph Bay (excluding advance works).
- 1.2 An amended Environmental Permit (EP) EP-040/1999/A was issued by Environmental Protection Department (EPD) on 19 February 2001 to include the mitigation measures for concrete batching plant in the environmental permit. A further application for variation of the Environmental Permit EP-040/1999/A was submitted on 29 August 2001 so as to vary conditions 2.5, 3.1, 3.13, 4.1, 4.2, 4.3, 4.6, 4.9 in Part C and Condition 4 under “Remarks” in Part C of EP-040/1999/A together with Figures 1, 2, 3 and 4 as well as Appendix 2. Condition 3.12 in Part C of EP-040/1999/A was deleted. The amended Environmental Permit EP-040/1999/B was issued by EPD on 27 September 2001.
- 1.3 In order to extend the operation of concrete batching plant at Cyberport until 31 December 2002 and allow stages 1 and 2 concrete batching plant operating simultaneously, a variation of Environmental Permit EP-040/1999/B was required. The new Environmental Permit EP-040/1999/C was issued by EPD on 8 January 2002 to supersede the previous one with a variation on Conditions 3.12, 3.14, 3.16 & 3.19 in Part C of the old one.
- 1.4 Under the requirements of Section 4 of Environmental Permit EP-040/1999/C, an EM&A programme as set out in the Environmental Monitoring and Audit Manual for Infrastructural Works for the Proposed Development at Telegraph Bay (EM&A Manual 032) and Proposed Ready Mixed Concrete (H.K.) Limited (RMC) Concrete Batching Plant at Telegraph Bay for Cyber-Port Development (Environmental Monitoring and Audit Manual, November 2000) (EM&A Manual 039) is required to be implemented.
- 1.5 As stipulated in “Proposed RMC Concrete Batching Plant at Telegraph Bay for Cyberport Development Environmental Monitoring and Audit Manual, November 2000 (hereinafter called “EM&A Manual 039”), continuous real time dust and noise monitoring have been in operation since the operation of the concrete batching plant. However, the concrete batching plant operation ceased on 24 July 2002 and was demolished in August 2002. The real time monitoring was stopped since 2 September 2002. The monitoring frequency and audit was then in accordance with the EM&A Manual 032. No monitoring data after 1 September 2002 was uploaded on the web site.
- 1.6 Since the responsibility for operation of Sewerage Treatment Work (STW) and a 300m long submarine outfall had been transferred to Drainage Service Department (DSD) and the residential development would be served by public sewerage by the time the flat is occupied, an application for surrender of the above scopes of designated projects of the EP-040/1999/C was submitted to EPD on 16 May 2003. The EPD’s acknowledgement letter was received on 17 July 2003.
- 1.7 As remaining scope of designated project, construction of Roads D1 & D2 under the EP have been completed except erection of noise barriers along Southern Access Road, which might not be conducted in short period of time, EPD and IEC approved suspension of EM&A works from 2 September 2003 onwards. The EM&A programme for Cyberport Development under the governance of EP will resume when erection of noise barriers commences. An application for

variation of Environmental Permit EP-040/1999/C to vary “Nature of Designated Project” and “Scale and Scope of Designated Project” in Part B of the EP as well as relevant conditions was submitted on 30 August 2003. EPD issued the new Environmental Permit EP-040-1999/D on 26 September 2003.

- 1.8 After issuance of the EP-040/1999/D in 2003, the development layout has been revised and the latest development layout under Section 16 of the Town Planning Ordinance was approved in January 2006. The traffic data of year 2022 was also updated. The report of “Cyberport Residential Development at Telegraph Bay, Pok Fu Lam – Traffic Noise Impact Review” was submitted to EPD on 28 March 2008 to update the changes and review the noise mitigation measures required for the Cyberport residential development. An application for variation of Figure 2 and Appendix 2 under Condition 4.2, Appendix 3 under Condition 4.4 and Condition 5.2 in Part C of EP-040/1999/D was submitted on 27 July 2008. The new Environmental Permit EP-040/1999/E was issued by EPD on 25 August 2008.
- 1.9 The foundation works for the noise barriers for RIII&IVA and RV have been completed before September 2002. The erection of noise barrier panels were completed and taken over by Highways Department on 17 May 07 and 23 Sep 08. The operational traffic monitoring programme commenced in September 2008.
- 1.10 This is the Final EM&A report prepared by ENSR for Infrastructural Works for Cyberport Development at Telegraph Bay. This report summarises the results of impact monitoring works for the EP-040/1999/E between 21 December 1999 and 1 September 2003 and operational traffic noise monitoring works conducted on 10 September and 2 October 2008.

2. PROJECT CHARACTERISTICS

Project Organisation and Contacts of Key Management

2.1 Different parties with different levels of involvement in the project organisation include:

- Information Technology Broadcasting Bureau (ITBB) (Project Proponent)
- EPD, Agriculture, Fisheries and Conservation Department (AFCD), Planning Department (Plan D), Antiquities and Monuments Office (AMO), DSD & Fire Services Department (FSD) (The Authorities)
- Engineer's Representative (ER) (Project Proponent's Representative)
- Contractor
- Environmental Team (ET)
- Independent Checker (Environment) (IC(E))

2.2 Appendix A1 presents the organization structure consisting of the Project Proponent, the Contractor, Engineer Representative (ER), Independent Checker (Environment) (IC(E)) and their lines of communication. The contact details are shown in Appendix A2.

Construction Programme and Synopsis of Work

2.3 The master construction programme is presented in Appendix B1. The construction site map is attached in Appendix B2. The site activities between 19 December 1999 and 1 September 2003 are listed below:

Contract of Road Works

- Excavation works and rock breaking
- Diversion of existing southern stream
- Demolition of Lower Kong Sin Wan Tsuen and sandfilling activities
- Cut slope and excavation works
- Construction of retaining wall and bridge and concreting
- Bored piling
- Construction of manholes and installation of drainage pipes on Road D1
- Dredging & laying geotextile and backfilling for sewage submarine outfall
- Foundation of noise barriers at Road D1 and Southern Access Road
- Road formation and pavement

Contract of Piling Works (C101)

- Establishment of site office
- Pre-drilling and Bored piling

Contract of Sewage Treatment Works

- Site office establishment
- Pre-drilling
- Site investigation
- Bored piling
- Hydraulic hammer (single acting) driving steel sheet piling
- Excavation works for Sewerage Treatment Plant (STP) and pumping station
- Base slab construction for STP

- Construction works for STP and pumping station
- Installation of Rotary Biological Contactor (RBC), cabling works and electrical installation for package sewage treatment plant
- Reinforcement work and concreting work for STP
- Electrical installation at package treatment plant
- Construction works for wet well and Primary Treatment Works (Chemical Enhanced) (PTWC)
- Manhole construction
- Laying of pipe works
- Finishing work and defects rectification for STP
- Site office removal
- Operation and maintenance of sewage treatment works by DSD.

Contract of Superstructure Works (C1) (Civil Works: Road L1 and Territory Development Department (TDD) entrusted works Road D1 & D2)

- Trench excavation
- Construction of manholes and installation of drainage pipes
- Road formation at Road D1, D2 and L1
- Excavation works along Roads D1 and D2
- Road formation and road pavement
- Slope stabilization
- Landscape softworks and hardworks
- Finishing works for superstructure
- Maintenance of landscape hardworks and softworks

Contract of Residential Development Phase 1 (R1, R1A & R1B)

- Site clearance
- Pre-drilling
- Bore Piling & sheet piling
- Pile-cap breaking
- Construction of walkway cover
- Excavation & concreting works
- Rock breaking
- Backfilling
- Utilities installation
- Site investigation
- Site office formation
- Superstructure construction

Concrete Batching Plant

- Construction and Operation of Stage 1 concrete batching plant
- Construction and Operation of Stage 2 concrete batching plant
- Demolition of plant

Contract of Residential Development Phase 3 (R3, R301 & R302)

- Rock breaking
- Hoarding construction & modification
- Excavation
- Construction of U-channel
- Site office set-up

- Slope trimming
- Packing and clearance of construction materials
- Pre-drilling
- Construction of wheel washing bay
- Cleaning of foundation pit

3. ENVIRONMENTAL MONITORING AND AUDIT REQUIREMENTS

Monitoring Requirements

Construction Phase

Monitoring Locations

- 3.1 The monitoring locations for air quality, construction noise and water quality were summarised in Table 3.1 according to the requirement stipulated in the EM&A Manual 032. The site map for sensitive receivers and monitoring locations are shown in Appendix C.
- 3.2 As stipulated in EM&A Manual 039, high volume samplers were adopted for sampling at two stations (A1 & A2) and another two stations (A3 & A4) were monitored by Tapered Element Oscillating Microbalance (TEOM).
- 3.3 For noise monitoring, three designated monitoring stations including Baguio Villa (Block 45-48), Upper Kong Sin Wan Tsuen and Pui Ying Secondary School. were selected. However, according to revised environmental permit (EP-040/1999/A) and EM&A Manual 039, four locations were selected for noise monitoring since 21 April 2001.
- 3.4 As stated in EM&A Manual 039, the selected locations include No. 60 Sassoon Road, Upper Kong Sin Wan Tsuen, Baguio Villa (Block 45 – 48) and Pui Ying Secondary School. As the owner of No. 60 Sassoon Road did not approve to install monitoring equipment, the monitoring location was changed to No. 47 Sassoon Road. In view of the security problem and no electricity supply for Kong Sin Wan Tsuen in June 2001, the location was change to President Tower, Baguio Villa (Block 16 – 18).
- 3.5 Stream water quality monitoring was conducted at three locations since January 2000. As confirmed by the Engineer and IC(E) on 28 February 2002, construction work for Southern Access Road and stream realignment have been completed, thus stream water monitoring was stopped since March 2002.
- 3.6 Marine water monitoring was conducted at the three designated locations since January 2001. As informed by the engineer, all marine section works had been completed, therefore, marine monitoring ceased after 15 October 2001.
- 3.7 As Upper Kong Sin Wan Village commenced demolition works on 17 December 2002, no monitoring data for 1-hr TSP monitoring after 17 December 2002. As access to the monitoring station A2 was not available after 4 December 2002, the high volume sampler was removed earlier and 24-hr TSP monitoring was ceased after 4 December 2002.

Monitoring for concrete batching plant operation

- 3.8 As the operation of concreting batching plant Stage I commenced on 18 May 2001, the continuous real time dust monitoring (24 hours) and noise monitoring from 7 a.m. to 7 p.m. daily were put into operation on 21 April 2001, according to the requirement stipulated in condition 3.18 of the permit EP-040/1999/C.
- 3.9 As the concrete batching plant had already been demolished in August 2002, the condition of 3.18 of the Environmental Permit EP-040/1999/C was not applied. The continuous real-time dust monitoring (24 hours) and noise monitoring were ceased on 1 September 2002 and monitoring data was not uploaded on the web site. The frequency of environmental monitoring and audit was in accordance with the approved "EM&A Manual for Infrastructural Works for the Proposed Development at Telegraph Bay (EM&A Manual 032)" since 2 September 2002.

Monitoring Parameters

- 3.10 The monitoring of the environmental impact was carried out by the Environmental Team (ET). The monitoring work during construction phase includes total suspended particulate (TSP), noise impacts at the sensitive receivers around the construction site and water impact at the nearby water bodies. The environmental impact monitoring programme during the entire construction period is summarised in Table 3.1.

Monitoring Methodology and Calibration Details

- 3.11 All monitoring works were conducted and monitoring equipment was regularly calibrated in accordance with the EM&A Manual.

Operation Phase

- 3.12 In order to assess the effectiveness of the proposed traffic noise mitigation measures on Southern Access Road, traffic noise monitoring is required to be carried out at the NSRs within one year after the issuance of Occupation Permit (OP) from Buildings Department for the last Phase of the Development. Occupation Permit (OP No.: HK20/2008(OP)) for the last Phase of the Development had been issued on 1 August 2008. The operational traffic noise monitoring were conducted on 10 September 2008 and 2 October 2008 (normal weekdays) during AM traffic peak hour period (around 08:30 - 09:30), during afternoon period (around 12:00 - 13:00) and during PM traffic peak hour period (around 17:30 - 18:30). The peak hour traffic noise measurement periods (i.e. AM traffic peak hour period, afternoon period and PM traffic peak hour period) was advised by the traffic consultant of the captioned project
- 3.13 The noise measurements were conducted to obtain three sets of A-weighted L10 (1 hour) sound pressure level during AM traffic peak hour period, afternoon period & PM traffic peak hour period over 1-hour period at each designated sensitive receiver. Details of the monitoring locations are stipulated in Table 3.6.
- 3.14 The sound level meters were calibrated using a Bruel and Kjaer Sound Level Calibrator Type 4231 for 94dB at 1kHz, prior to and after each set of measurements.

Action and Limit Levels

Construction Phase

- 3.15 Action and Limit Levels (A/L Levels) derived from the baseline monitoring results are presented in Tables 3.2, 3.3, 3.4 and 3.5.

Table 3.1 Environmental Impact Monitoring Programme (Construction Phase)

Type of Monitoring	Parameter	Frequency	Location	Measurement Conditions
Air Quality	1-hour TSP	3 times every 6 days (before 21/04/01) Real time monitoring (24 hrs) by TEOM since 21/04/01	<ul style="list-style-type: none"> • A1 (No. 60 Sassoon Road) (HVS) • A2 (Upper Kong Sin Wan Tsuen) (HVS) 	<ul style="list-style-type: none"> • A1 – At the corner on the podium overlooking the site • A2 – At the site boundary facing the site
	24-hour TSP	Once every 6 days (before 21/04/01) Real time monitoring by TEOM for A3 & A4 since 21/04/01	<ul style="list-style-type: none"> • A3 (Baguio Villa) (TEOM) • A4 (Pui Ying Secondary School) (TEOM) 	<ul style="list-style-type: none"> • A3 – At the ground level overlooking the site • A4 – On the roof overlooking the site
Noise	L _{eq} , L ₉₀ & L ₁₀ at 30 minute intervals during (0700 to 1900)	Once per week (before 21/04/01) Real time monitoring since 21/04/01	<ul style="list-style-type: none"> • NSR 1 (Baguio Villa) • NSR 2 (Pui Ying Secondary School) 	<ul style="list-style-type: none"> • NSR1 – 1m façade Measurement • NSR2 – Rooftop Façade Measurement
	L _{eq} , L ₉₀ & L ₁₀ at 5 minute intervals during (1900 to 0700 the next morning)	Once per week ⁽¹⁾	<ul style="list-style-type: none"> • NSR 3a Upper Kong Sin Wan Tsuen (until 20 April 2001) 	<ul style="list-style-type: none"> • NSR3a – Free Field Measurement
	L _{eq} , L ₉₀ & L ₁₀ at 5 minute intervals during (0700 to 1900 during holidays and Sunday)	Once per week ⁽¹⁾ Real time monitoring since 21/04/01	<ul style="list-style-type: none"> • NSR 3 (President Tower) (since 21 April 2001) • NSR4 (47 Sassoon Road) (since 21 April 2001) 	<ul style="list-style-type: none"> • NSR3 – 1m façade Measurement • NSR4 – 1m façade measurement
Stream water	SS (mg/L)	Once per week	<ul style="list-style-type: none"> • Cs (Stream upper course, close to the junction of Victoria Road & Pokfulam kennel) • S1 (Stream middle course) • S2 (Stream lower course, waterfall in Wah Fu Estate) 	<ul style="list-style-type: none"> • Sampling at mid-depth
Marine water	Temperature (°C), Salinity (ppt), DO (mg/L), DO Saturation (%), Turbidity (NTU), PH, SS (mg/L), Colour (PCU)	Three times per week (During the course of marine works)	<ul style="list-style-type: none"> • M7 (WSD Pumping Station Seawater Intake) • CM1 (Marine Control Station 1) • CM2 (Marine Control Station 2) 	<ul style="list-style-type: none"> • Samplings at three depths including surface, mid-depth and bottom. • Two samples at each location (1 mid-ebb & 1 mid-flood)

(1) – Conduct noise monitoring only when construction work is carried out.

Table 3.2 Action and Limit Levels for 1-hour TSP Monitoring

Location I.D.	Action Level (ug/m ³)	Limit Level (ug/m ³)
A1	390	500
A2	350	500
A3	350	500
A4	350	500

Table 3.3 Action and Limit Levels for 24-hour TSP Monitoring

Location I.D.	Action Level (ug/m ³)	Limit Level (ug/m ³)
A1	186	260
A2	159	260
A3	166	260
A4	162	260

Table 3.4 Action and Limit Levels for Construction Noise

Time Period	Action	Limit
0700-1900 hours on normal weekdays	When one documented complaint is received	75* dB(A)
0700-2300 hours on holidays; and 1900-2300 hours on all other days		60/65/70** dB(A)
2300-0700 hours of next day		45/50/55** dB(A)

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

** to be selected based on Area Sensitivity Rating.

Table 3.5 Action and Limit Levels for Water Quality

Monitoring Station		DO, mg/L		Turbidity, NTU		SS, mg/L	
		Action	Limit	Action	Limit	Action	Limit
M7	Surface	5.70	4.00	5.9 and 120% of upstream control station's turbidity at the same tide of the same day	6.3 and 130% of upstream control station's turbidity at the same tide of the same day	10.1 and 120% of upstream control station's SS at the same tide of the same day	11.1 and 130% of upstream control station's SS at the same tide of the same day
	Mid-depth	5.70	4.00				
	Bottom	5.60	2.00				
S1		N/A		N/A		10.5 and 120% of SS at station C _s on the same day	10.9 and 130% of SS at station C _s on the same day
S2		N/A		N/A		11.1 and 120% of SS at station C _s on the same day	15.0 and 130% of SS at station C _s on the same day

Operation Phase

3.16 Traffic noise measurements were conducted at two designated monitoring locations (with one low floor and one medium floor monitoring points at each monitoring location), M1 and M2, according to the Traffic Noise Monitoring Plan (October 2008) which were shown in Appendix C7. Table 3.6 describes these monitoring stations and the predicted noise levels in Year 2022 at the monitoring points.

Table 3.6 Noise Monitoring Locations (Sensitive Receivers) during Operational Phase

Noise Sensitive Receivers stated in the Report*	Monitoring Station	Location	Predicted Noise Level, L ₁₀ dB(A) in Year 2022 (Without Route 4 & With Mitigation Measures)	Noise Standard L ₁₀ (peak hour) (dB(A))
T7B	M1	8/F & 16/F Flat B of Tower T7 of Phase RIII & IVA high-rise residential building	65.1 (8/F)	70
			69.4 (16/F)	
T6A	M2	9/F & 15/F Flat A of Tower T6 of Phase RV high-rise residential building	69.9 (9/F)	
			70.4 (15/F)	

Environmental Mitigation Measures

3.17 The main conclusions and recommendations from the Proposed RMC Concrete Batching Plant at Telegraph Bay for Cyber-Port Development EIA Report for the Project, specifically for impacts on air & water quality, noise, and the corresponding mitigation measures are summarised in Table 3.7 and Table 3.8.

Table 3.7 Recommended Mitigation Measures for Impacts on Air, Noise and Water (Construction Phase)

Environmental Consideration	Potential Environmental Impact Media	Recommended Mitigation Measures
Noise	Rock breaking, concreting, superstructure construction and machinery noise	<ul style="list-style-type: none"> • Use of silenced equipment • No parallel activities • Use of portable noise barriers • Throttle down equipment when not in use • Close the air compressor doors when the equipment is in operation • Conduct activities in accordance with the specifications as listed in the construction noise permit
Air	Vehicular movement, Excavation, backfilling, stockpiling & rock breaking	<ul style="list-style-type: none"> • Cover the inactive exposed area with tarpaulin sheeting • Water Spraying on haul roads and dusty operations
Water	Pumping of groundwater	<ul style="list-style-type: none"> • Use of sedimentation facilities before discharging wastewater

Table 3.8 Recommended Mitigation Measures for Impacts on Noise (Operational Phase)

Phasing of Residential Development	Recommended Mitigation Measures
Phases RIII&RIVA – high-rise residential buildings	7m high vertical noise barrier of 166m long to be provided at the edge of the footpath along Cyberport Road.
Phase RV – high-rise residential buildings	3m high vertical noise barrier of 78m long to be provided at the edge of the footpath along Cyberport Road.

4. IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE (EMIS)

4.1 Site audits were carried out weekly to monitor the Contractor’s performance on the air quality, noise, water quality and waste management issues. The audit programme confirmed that the mitigation measures were properly implemented by the Contractor.

4.2 The implementation status of the EMIS as recommended in the Environmental Impact Assessment (EIA) Report during the entire construction period is summarised in Appendix D

5. STATUS OF ENVIRONMENTAL LICENSING AND PERMITTING

5.1 The Environmental Permit (No. EP-040/1999E) is for the Infrastructure for Cyberport Development at Telegraph Bay (excluding advance works) .

5.2 Details of all permits/licences obtained are summarised in Appendix J.

5.3 Since DSD had taken over the operation of STW and the 300m long submarine outfall and the residential development would be served by public sewerage by the time the flat is occupied, EPD approved the application for surrender of the above scopes of designated projects of the EP- 110/2003/D on 26 September 2003.

5.4 As the remaining scope of designated project, construction of roads D1 & D2 under the EP have been completed except erection of noise barriers along Southern Access Road and Road D1, which might not be conducted in short period of time, EPD and IEC approved suspension of EM&A works from 2 September 2003 onwards. The EM&A programme for Cyberport Development under the governance of EP will resume when erection of noise barriers commences.

5.5 As there is a change in the master layout plan of residential developments and the design of the proposed noise barriers, an application for variation of the EP was submitted. EPD approved the application for summaries of EP-040/1999/D on 25 August 2008. The latest version of EP is EP-040/1999/E.

5.6 The foundation works for the noise barriers for RIII&IVA and RV have been completed before September 2002. The erection of noise barrier panels were completed and taken over by Highways Department on 17 May 07 and 23 Sep 08. The operational traffic monitoring programme commenced in September 2008.

6. MONITORING RESULTS

Construction Phase

Air Quality

1-hour TSP and 24-hr TSP Measurements

- 6.1 The 1-hr TSP and 24-hr TSP measurement results of the four monitoring locations are presented graphically in Figures 1a to 2d. The results are summarised in Appendix E.
- 6.2 Table 6.1 and Table 6.2 present the baseline monitoring results and the impact air quality monitoring results of 1-hr TSP and 24-hr TSP throughout the construction period.

Table 6.1 Comparison of Baseline and Impact Monitoring Results of 1-hr TSP Concentration

ASR	Location	1-hour TSP	
		Range of Baseline TSP Levels, $\mu\text{g}/\text{m}^3$	Average Impact TSP Levels, $\mu\text{g}/\text{m}^3$ (range)
A1	No. 60 Sassoon Road	265-380	178 (13-364)
A2	Upper Kong Sin Wan Tsuen	205-343	175 (12-383)
A3	Baguio Villa	223-395	56.3 (1.1-383)
A4	Pui Ying Secondary School	203-343	62.1 (0.4-364)

Table 6.2 Comparison of Baseline and Impact Monitoring Results of 24-hr TSP Concentration

ASR	Location	24-hour TSP	
		Range of Baseline TSP Levels, $\mu\text{g}/\text{m}^3$	Average Impact TSP Levels, $\mu\text{g}/\text{m}^3$ (range)
A1	No. 60 Sassoon Road	46.2-143.1	84.6 (13.1-297.7)
A2	Upper Kong Sin Wan Tsuen	13.9-120.2	104.4 (23.7-385)
A3	Baguio Villa	31.2-147.9	58.4 (8.5-383.1)
A4	Pui Ying Secondary School	22.1-134.2	56.7 (9.9-298.7)

- 6.3 As shown in the figures and tables, the trend of TSP at A1, A2, A3 and A4 were comparable to the baseline range and showed no noticeable deterioration of air quality during the impact monitoring period. The averaged 1-hour and 24-hour TSP monitoring results were within the range of baseline levels.
- 6.4 Four 1-hr TSP Action Level exceedances were recorded. Only one exceedance was valid for the Contract of Road Works and the other three exceedances were caused by the construction activities from Advance works and road improvement works at Victoria Road.

- 6.5 For 24-hour TSP, fifty-four exceedances were recorded. Only twenty-two Action Level and seven Limit Level exceedances were valid for the Contract during the entire construction period. The major dust sources were caused from the construction activities such as demolition of Lower Kong Sin Wan Tsuen, movement of trucks, excavation activities, drilling works, wind erosion from unpaved haul roads, sandfilling, rock breaking. The other exceedances were caused by the construction activities from Advance works and road improvement works at Victoria Road and renovation works of Pui Ying Secondary School.

Construction Noise

- 6.6 Both daytime and restricted hours (19:00 – 23:00 on all weekdays) monitoring works were carried out for the four designated monitoring locations (NSR1, NSR2, NSR3 and NSR4) are presented graphically in Figure 3a to 3d. The results are summarised in Appendix F.
- 6.7 Table 6.3 presents the baseline monitoring results and the impact noise monitoring results throughout the construction period.

Table 6.3 Comparison of Baseline and Impact Monitoring Results of Noise Level

NSR	Location	Noise	
		Range of Baseline Noise Level, dB(A)	Average Impact Noise Levels, dB(A) (range)
N1	Baguio Villa	51.3 – 74.5	64.3 (46.0-78.1)
N2	Pui Ying Secondary School	54.8 – 68.9	59.9 (49.0-86.0)
N3a	Kong Sin Wan Tsuen (Upper) (until 20 April 2001)	54.3 – 76.1	67.2 (52.5-80.6)
N3	President Tower, Block 16-18 Baguio Villa (since 21 April 2001)		67.1 (46.0-87.0)
N4	No. 47 Sassoon Road (since 21 April 2001)	--	59.6 (48.0-76.0)

- 6.8 As shown in the figures and tables, the trend showed no noticeable noise impact from the Project during the impact monitoring period. The averaged noise monitoring results for all monitoring stations were within the range of baseline noise levels.
- 6.9 One hundred and eighty-three exceedances were recorded during the entire construction period. Some of exceedances were related to the construction activities of the said permit. Some of exceedances were mostly related to the construction activities carried out by commercial building contracts which were non-project related and were not under the governance of the said environmental permits. Construction noise from the demolition works at Lower Kong Sin Wan Tsuen, construction activities at Northern Access Road, operation of machinery such as excavators/backhoes, and trucks rock breaking and slope cutting works were the major noise source from the Project site. Besides, there were a few invalid exceedances recorded from other construction activities outside Cyberport Development such as road improvement works near Pui Ying Secondary School, the Hong Kong Electric Co. power substation, heavy rain as well as local traffic noise.

Stream Water

- 6.10 The total suspended solids (SS) measurement results at three locations are presented graphically in Figure 4a to 4c. As confirmed by the Engineer and IC(E) on 28 February 2002, construction work for Southern Access Road and stream realignment have been completed, thus stream water monitoring was stopped since March 2002. The results are summarised in Appendix G1.
- 6.11 Statistical analysis of monitored SS in stream water over the construction period (i.e. Comparison between the impact mean of SS and the 1.3 times of the baseline mean) was conducted and is summarised in Appendix K.
- 6.12 Table 6.4 presents the baseline monitoring results and the impact stream water quality monitoring results with statistically significant results throughout the construction period.

Table 6.4 Comparison of Baseline and Impact Monitoring Results of Stream Water Quality Monitoring with statistically significant results

Location	SS				
	Range of Baseline SS Concentration, mg/L	Average Impact SS Concentration, mg/L (range)	1.3 time Baseline Mean (Medium)	Impact Mean (Medium)	Statistically significant differences (p<0.001)
Cs	2.0 – 11.0	7.1 (1-65)	7.2	5.0	No
S1	2.0 – 16.0	6.8 (1-46)	3.3	4.0	No
S2	3.0 – 11.0	7.4 (<1 – 100)	5.2	4.0	No

- 6.13 As shown in the figures and table, the trend showed no noticeable water quality impact from the Project during the impact monitoring period. The averaged SS concentration results for all monitoring stations were within the baseline range. There were no significant differences shown at Cs, S1 and S2 when compared with the 130% baseline mean.
- 6.14 No exceedance was recorded during the entire construction period.

Marine Water

- 6.15 The dissolved oxygen, turbidity and total suspended solids measurement results at three locations during mid-ebb and mid-flood are presented graphically in Figure 5a to 5d, The results are summarised in Appendix G2.
- 6.16 Statistical analysis of monitored SS in marine water over the construction period (i.e. Comparison between the impact mean of SS and the 1.3 times of the baseline mean) was conducted and is summarised in Appendix K.
- 6.17 Table 6.5 presents the baseline monitoring results and the impact marine water quality monitoring results with statistically significant results throughout the construction period.

Table 6.5 Comparison of Baseline and Impact Monitoring Results of Marine Water Quality Monitoring with statistically significant results

Tide	Location	DO (mg/L)		Turbidity Average (NTU)		SS Average (mg/L)				
		Baseline	Impact	Baseline	Impact	Baseline	Impact	1.3 time Baseline Mean (Medium)	Impact Mean (Medium)	Statistically significant differences (p<0.001)
Mid-Ebb	CM1	4.8-7.0	6.5 (2.9-12.8)	1.3-5.4	7.1 (1.5-17.4)	3.0-12.0	7.4 (3.0-18.0)	8.2	6.8	Yes
	CM2	5.7-7.4	6.4 (2.5-12.2)	1.1-5.8	7.0 (1.9-17.2)	3.0-15.0	7.5 (2.0-25.7)	8.9	6.7	Yes
	M7	5.5-7.0	6.5 (3.0-12.0)	0.7-6.9	6.4 (1.6-15.6)	3.0-13.0	7.0 (2.3-15.0)	9.1	6.3	Yes
Mid-Flood	CM1	5.6-6.9	6.2 (2.1-13.5)	0.6-9.4	8.0 (2.1-21.7)	4.0-13.0	8.4 (3.0-34.0)	7.8	7.9	No
	CM2	5.7-7.4	6.8 (2.1-11.8)	1.0-7.5	8.1 (2.3-20.4)	4.0-23.0	8.3 (3.0-27.3)	9.8	7.3	Yes
	M7	5.6-7.2	6.2 (2.0-13.3)	0.4-7.0	7.7 (1.9-15.8)	4.0-12.0	7.6 (3.0-16.7)	9.1	7.0	Yes

6.18 As shown in the figures and tables, the trend showed no noticeable water quality impact from the Project during the impact monitoring period. The averaged water quality monitoring results for all monitoring stations were within the baseline range. Based on the statistical analysis results, there is significant difference between the impact mean of SS levels at CM1, CM2 and M7 during mid-ebb and mid-flood tides (except CM1 during mid-flood tide) and 1.3 times of the baseline mean, and the impact mean (medium) of SS levels were observed lower than 1.3 times of baseline mean. This indicates that the water quality within or near the project site had not been worse than the baseline condition. For CM1 during the mid-flood tide, there is no statistically significant difference comparing with the 1.3 times of the baseline mean. This indicates that the water quality at CM1 during the mid-flood tide was comparable to 1.3 times of the baseline condition.

6.19 Only one valid exceedance of turbidity was recorded due to backfilling of the seabed near the submarine outfall location or muddy water discharged into the sea via the last storm drain manhole of Road D1. However, the non-compliance was considered not related to the submarine outfall works as no relevant activities were undertaken at sea during sampling period.

6.20 The baseline sewage outfall monitoring for wet season was conducted on 6 – 8 June 2002 and 15 – 17 June 2002 respectively. The baseline report has been verified by IEC on 23 January 2003 and was submitted to EPD on 28 January 2003.

Solid and Liquid Waste Management Status

6.21 Chemical waste was all stored in the designated areas and collected by the licensed collector. Waste skips were provided to collect solids wastes and being removed by license waste hauliers.

6.22 The liquid waste generated during entire construction period was generated mainly from washrooms of site offices and chemical toilets. The current practice of the liquid waste removal from chemical toilets was carried out by a licensed waste collector. Others were being treated in septic tanks before disposal. The liquid waste was removed regularly.

Comparison of the EM&A Data with the EIA Predictions

Construction Phase

6.23 Despite occasional air quality, noise and water quality exceedances occurred during the entire construction period, the environmental monitoring data (i.e. air quality, noise and water quality) collected in the construction period were generally in line with the prediction of the EIA Report as the monitoring results were within the acceptable levels as stipulated in the EIA Report. The monitoring results compared with predicted EIA are summarised in Table 6.6, 6.7 and 6.8.

Table 6.6 Predicted EIA Dust Level and Impact 1-hour TSP Monitoring Results

ASR (EIA)	Location	1-hour TSP			
		Range of EIA Predicted TSP Concentrations during Main Construction Phase Works between Phase 1 and Phase 4 (*), $\mu\text{g}/\text{m}^3$	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$	Average Impact TSP Levels, $\mu\text{g}/\text{m}^3$ (range)
A1 (SR8)	No. 60 Sassoon Road	165.5 (119-212)	389	500	178 (13-364)
A2 (SR27)	Upper Kong Sin Wan Tsuen*	1258 (1159-1357)	350	500	175 (12-383)
A3 (SR19)	Baguio Villa	383 (310-456)	350	500	56.3 (1.1-383)
A4 (SR40)	Pui Ying Secondary School	316.5 (199-434)	350	500	62.1 (0.4-364)

* Predicted TSP Concentrations at ASRs was extracted from Table 4.13 of the EIA Report

Table 6.7 Predicted EIA Dust Level and Impact 24-hour TSP Monitoring Results

ASR (EIA)	Location	24-hour TSP			
		Range of EIA Predicted TSP Concentrations during Main Construction Phase Works between Phase 1 and Phase 4 (*), $\mu\text{g}/\text{m}^3$	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$	Average Impact TSP Levels, $\mu\text{g}/\text{m}^3$ (range)
A1 (SR8)	No. 60 Sassoon Road	123 (102-144)	186	260	84.6 (13.1-297.7)
A2 (SR27)	Upper Kong Sin Wan Tsuen*	625.5 (580-671)	159	260	104.4 (23.7-385)
A3 (SR19)	Baguio Villa	223.5 (190-257)	166	260	58.4 (8.5-383.1)
A4 (SR40)	Pui Ying Secondary School	192.5 (138-247)	162	260	56.7 (9.9-298.7)

* Predicted TSP Concentrations at ASRs was extracted from Table 4.13 of the EIA Report

Table 6.8 Predicted EIA Noise Level and Impact Noise Monitoring Results

NSR (EIA)	Location	Noise		
		Range of EIA Predicted Noise Level during Main Construction Phase Works between Phase 1 and Phase 4 (*), dB(A)	Limit Level, dB(A)	Average Impact Noise Levels, dB(A) (range)
N1 (SR19a)	Baguio Villa	71.6-76.5	75	64.3 (46.0-78.1)
N2 (SR40)	Pui Ying Secondary School	58.3-73.3	70	59.9 (49.0-86.0)
N3a (SR27)	Kong Sin Wan Tsuen (Upper) (until 20 April 2001)	70.3-79.5	75	67.2 (52.5-80.6)
N3 (SR19)	President Tower, Block 16-18 Baguio Villa (since 21 April 2001)	73.9-75.5	75	67.1 (46.0-87.0)
N4 (SR8)	at No. 47 Sassoon Road (since 21 April 2001)	54.4-74.6	75	59.6 (48.0-76.0)

* Predicted Noise Level at NSRs was extracted from Table 5.7 of the EIA Report

Weather and other Influencing Factors During the Monitoring Period

6.24 Detail of the weather during the monitoring period is summarised in Figures 1a to 4c along with the graphical presentations of air quality, noise and stream water monitoring graphs.

Operation Phase

6.25 The operational traffic monitoring was conducted on 10 September and 2 October 2008. The traffic noise monitoring report has been verified by IEC on 31 October 2008 and then submitted to EPD. The monitoring results are summarized in Table 6.9. The projected noise levels after correction are presented in Table 6.10.

Table 6.9 Operational Traffic Noise Measurement Results

Monitoring Date	Weather Condition	Monitoring Station	Monitoring Period	Noise Level, $L_{10}(1 \text{ hour})$, dB(A)
02 October 2008	Sunny	8/F Flat B of Tower T7 of Phase RIII & IVA high-rise residential building (M1)	AM Peak	63.6
			Afternoon	63.1
			PM Peak	61.9
		16/F Flat B of Tower T7 of Phase RIII & IVA high-rise residential building (M1)	AM Peak	65.8
			Afternoon	65.1
			PM Peak	64.8
10 September 2008	Sunny	9/F Flat A of Tower T6 of Phase RV high-rise residential building (M2)	AM Peak	69.7
			Afternoon	69.0
			PM Peak	68.8
		15/F Flat A of Tower T6 of Phase RV high-rise residential building (M2)	AM Peak	68.9
			Afternoon	68.7
			PM Peak	68.8

Table 6.10 Projected and Traffic Noise Impact Review (March 2008) Predicted Noise Level

Monitoring Station	Monitoring Period	Noise Level, L ₁₀ (1 hour) dB(A)	
		Projected Noise Level	Traffic Noise Impact Review Predicted Noise Level [#]
8/F at M1	AM Peak	61.8	65.1
	Afternoon	62.0	
	PM Peak	61.8	
16/F at M1	AM Peak	64.0	69.4
	Afternoon	64.0	
	PM Peak	64.7	
9/F at M2	AM Peak	69.9	69.9
	Afternoon	68.9	
	PM Peak	70.2	
15/F at M2	AM Peak	69.1	70.4
	Afternoon	68.6	
	PM Peak	70.2	

Note [#] Year 2022 Two-way AM Peak Hour Flow (without Route 4 and with mitigated measures implemented) was adopted for comparison of other time periods, since it is the worst scenario as stated in the Traffic Noise Impact Review (March 2008) ^[2].

6.26 Comparison of the projected noise level was made against the Traffic Noise Impact Review's (March 2008) prediction for year 2022. The projected noise level for the year 2022 was generally lower than or equal to the predicted year 2022 noise level in the Traffic Noise Impact Review (March 2008).

6.27 Although the projected noise level was generally lower than or equal to the Traffic Noise Impact Review's (March 2008) predictions, the projected noise level for 2022 was still below the noise standard of 70 dB(A).

7. AUDIT RESULTS

Implementation Status of Environmental Protection and Pollution Control/Mitigation Measures

7.1 Site inspections were carried out weekly by the Environmental Team to audit the site conditions against the conditions in the environmental permit, Environmental Impact Assessment, and environmental legislation.

7.2 In the entire construction period, environmental mitigation measures of dust, noise, water and waste were generally implemented. Recommendations were made to Contractors upon any observations.

Summary of Non-compliance (exceedances) of the Environmental Quality Performance Limits (Action and Limit Levels)

7.3 Table 7.1 summarises all the valid exceedances for 1-hour TSP, 24-hour TSP, noise, stream water and marine water during the entire construction period.

Table 7.1 Summary of Environmental Exceedance for EP-040/1999

Monitoring Period		No. of Valid Exceedance								
		1-hour TSP		24-hour TSP		Noise ^{*(4)}	Stream Water		Marine Water [#]	
		Action	Limit	Action	Limit	Limit	Action	Limit	Action	Limit
21/12/99 to 20/01/00	R ⁽²⁾	0/40	0/40	0/22	0/22	2/15	0/6	0/6	-	-
	A ⁽³⁾	0/8	0/8	0/4	0/4	0/0	0/0	0/0	-	-
21/01/00 to 20/02/00	R ⁽²⁾	0/48	0/48	1/20	0/20	0/12	0/12	0/12	-	-
	A ⁽³⁾	0/0	0/0	0/4	0/4	0/1	0/0	0/0	-	-
21/02/00 to 20/03/00	R ⁽²⁾	0/32	0/32	2/20	2/20	1/12	0/12	0/12	-	-
	A ⁽³⁾	0/0	0/0	0/2	0/2	0/1	0/0	0/0	-	-
21/03/00 to 20/04/00	R ⁽²⁾	0/56	0/56	0/16	1/16	1/15	0/15	0/15	-	-
	A ⁽³⁾	0/0	0/0	0/14	2/14	0/1	0/3	0/3	-	-
21/04/00 to 20/05/00	R ⁽²⁾	0/40	0/40	0/20	0/20	1/13 ⁽⁴⁾	0/16	0/16	-	-
	A ⁽³⁾	0/0	0/0	0/0	0/0	0/1	0/0	0/0	-	-
21/05/00 to 20/06/00	R ⁽²⁾	0/48	0/48	0/20	0/20	0/20	0/15	0/15	-	-
	A ⁽³⁾	0/0	0/0	0/0	0/0	0/0	0/0	0/0	-	-
21/09/00 to 20/10/00	R ⁽²⁾	0/47	0/47	0/18	0/18	1/15	0/12	0/12	-	-
	A ⁽³⁾	0/0	0/0	0/0	0/0	1/4	0/0	0/0	-	-
21/10/00 to 20/11/00	R ⁽²⁾	0/48	0/48	1/20	1/20	1/18	0/15	0/15	-	-
	A ⁽³⁾	0/0	0/0	0/1	0/1	0/1	0/0	0/0	-	-
21/11/00 to 20/12/00	R ⁽²⁾	1/56	0/56	0/20	0/20	0/12	0/12	0/12	-	-
	A ⁽³⁾	0/0	0/0	0/0	0/0	0/0	0/0	0/0	-	-
21/12/00 to 20/01/01	R ⁽²⁾	0/56	0/56	6/20	0/20	0/16	0/16	0/16	0/72	0/72
	A ⁽³⁾	0/0	0/0	3/9	0/9	0/0	0/0	0/0	0/0	0/0
21/01/01 to 20/02/01	R ⁽²⁾	0/44	0/44	3/15	0/15	0/12	0/12	0/12	0/60	0/60
	A ⁽³⁾	0/0	0/0	0/4	0/4	0/0	0/0	0/0	0/0	0/0
21/02/01 to 20/03/01	R ⁽²⁾	0/44	0/44	0/19	0/19	0/12	0/12	0/12	0/66	0/66
	A ⁽³⁾	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
21/06/01 to 20/07/01	R ⁽²⁾	0/991	0/991	0/54	0/54	5/2938	0/9	0/9	0/48	0/48
	A ⁽³⁾	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
21/07/01 to 20/08/01	R ⁽²⁾	0/828	0/828	0/75	0/75	32/4816	0/12	0/12	1/66	0/66
	A ⁽³⁾	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
21/08/01 to 20/09/01	R ⁽²⁾	0/800	0/800	0/68	0/68	6/4042	0/15	0/15	0/84	0/84
	A ⁽³⁾	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
21/09/01 to 20/10/01	R ⁽²⁾	0/790	0/790	1/68	0/68	5/5663	0/12	0/12	0/63	0/63
	A ⁽³⁾	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
21/10/01 to 20/11/01	R ⁽²⁾	0/816	0/816	1/77	0/77	22/5673	0/12	0/12	-	-
	A ⁽³⁾	0/0	0/0	0/0	0/0	0/0	0/0	0/0	-	-

Monitoring Period		No. of Valid Exceedance								
		1-hour TSP		24-hour TSP		Noise ^{*(4)}	Stream Water		Marine Water [#]	
		Action	Limit	Action	Limit	Limit	Action	Limit	Action	Limit
21/11/01 to 20/12/01	R ⁽²⁾	0/793	0/793	1/68	0/68	38/4697	0/15	0/15	-	-
	A ⁽³⁾	0/0	0/0	0/0	0/0	0/0	0/0	0/0	-	-
21/12/01 to 20/01/02	R ⁽²⁾	0/824	0/824	0/70	0/70	55/6767	0/12	0/12	-	-
	A ⁽³⁾	0/0	0/0	0/0	0/0	0/0	0/0	0/0	-	-
21/01/02 to 20/02/02	R ⁽²⁾	0/812	0/812	1/72	1/72	8/4875	0/15	0/15	-	-
	A ⁽³⁾	0/0	0/0	0/0	0/0	0/0	0/0	0/0	-	-
21/02/02 to 20/03/02	R ⁽²⁾	0/744	0/744	2/66	0/66	0/4261	0/1	0/1	-	-
	A ⁽³⁾	0/0	0/0	0/2	0/2	0/0	0/0	0/0	-	-
21/03/02 to 20/04/02	R ⁽²⁾	0/814	0/814	0/88	0/88	0/4391	-	-	-	-
	A ⁽³⁾	0/0	0/0	0/0	0/0	0/0	-	-	-	-
21/04/02 to 20/05/02	R ⁽²⁾	0/796	0/796	0/72	0/72	0/5835	-	-	-	-
	A ⁽³⁾	0/0	0/0	0/0	0/0	0/0	-	-	-	-
21/05/02 to 20/06/02	R ⁽²⁾	0/826	0/826	0/74	0/74	5/5232	-	-	-	-
	A ⁽³⁾	0/0	0/0	0/0	0/0	0/0	-	-	-	-
21/06/02 to 20/07/02	R ⁽²⁾	0/788	0/788	0/70	0/70	0/5129	-	-	-	-
	A ⁽³⁾	0/0	0/0	0/0	0/0	0/0	-	-	-	-
21/07/02 to 20/08/02	R ⁽²⁾	0/825	0/825	0/72	0/72	0/5101	-	-	-	-
	A ⁽³⁾	0/0	0/0	0/0	0/0	0/0	-	-	-	-
21/08/02 to 20/09/02	R ⁽²⁾	0/335	0/335	0/44	0/44	0/2303	-	-	-	-
	A ⁽³⁾	0/0	0/0	0/0	0/0	0/0	-	-	-	-
21/09/02 to 20/10/02	R ⁽²⁾	0/48	0/48	0/20	0/20	0/16	-	-	-	-
	A ⁽³⁾	0/0	0/0	0/0	0/0	0/0	-	-	-	-
21/10/02 to 20/11/02	R ⁽²⁾	0/56	0/56	0/20	0/20	0/12	-	-	-	-
	A ⁽³⁾	0/0	0/0	0/0	0/0	0/0	-	-	-	-
21/11/02 to 20/12/02	R ⁽²⁾	0/52	0/52	0/20	0/20	0/19	-	-	-	-
	A ⁽³⁾	0/0	0/0	0/0	0/0	0/0	-	-	-	-
21/12/02 to 20/01/03	R ⁽²⁾	0/39	0/39	0/18	0/18	0/16	-	-	-	-
	A ⁽³⁾	0/0	0/0	0/0	0/0	0/0	-	-	-	-
21/01/03 to 20/02/03	R ⁽²⁾	0/39	0/39	0/15	0/15	0/20	-	-	-	-
	A ⁽³⁾	0/0	0/0	0/0	0/0	0/0	-	-	-	-
21/02/03 to 20/01/03	R ⁽²⁾	0/39	0/39	0/15	0/15	0/64	-	-	-	-
	A ⁽³⁾	0/0	0/0	0/0	0/0	0/0	-	-	-	-
21/03/03 to 20/04/03	R ⁽²⁾	0/33	0/33	0/15	0/15	0/64	-	-	-	-
	R ⁽²⁾	0/0	0/0	0/0	0/0	0/0	-	-	-	-
21/04/03 to 20/05/03	A ⁽³⁾	0/39	0/39	0/15	0/15	0/64	-	-	-	-
	R ⁽²⁾	0/0	0/0	0/0	0/0	0/0	-	-	-	-

Monitoring Period	No. of Valid Exceedance									
	1-hour TSP		24-hour TSP		Noise ^{*(4)}	Stream Water		Marine Water [#]		
	Action	Limit	Action	Limit	Limit	Action	Limit	Action	Limit	
21/05/03 to 20/06/03	A ⁽³⁾	0/42	0/42	0/18	0/18	0/80	-	-	-	-
	R ⁽²⁾	0/0	0/0	0/0	0/0	0/0	-	-	-	-
21/06/03 to 20/07/03	A ⁽³⁾	0/36	0/36	0/15	0/15	0/64	-	-	-	-
	R ⁽²⁾	0/0	0/0	0/0	0/0	0/0	-	-	-	-
21/07/03 to 20/08/03	R ⁽²⁾	0/42	0/42	0/15	0/15	0/64	-	-	-	-
	A ⁽³⁾	0/0	0/0	0/0	0/0	0/0	-	-	-	-
21/08/03 to 01/09/03	R ⁽²⁾	0/15	0/15	0/6	0/6	0/32	-	-	-	-
	A ⁽³⁾	0/0	0/0	0/0	0/0	0/0	-	-	-	-
Total Valid Exceedance during entire construction period⁽¹⁾ (%)	R ⁽²⁾	1/12704 (0.01%)	0/12704 (0%)	19/1412 (1.55%)	5/1412 (0.35%)	183/72180 (0.25%)	0/258 (0%)	0/258 (0%)	1/459 (0%)	0/459 (0%)
	A ⁽³⁾	0/125 (0%)	0/125 (0%)	3/88 (3.41%)	2/88 (2.27%)	1/217 (0.46%)	0/3 (0%)	0/3 (0%)	0/0 (0%)	0/0 (0%)

⁽¹⁾Total exceedances from the Contracts under EP-040/1999/A, B & C / Total Monitoring Events from 21/12/99 to 01/09/03.

⁽²⁾Routine Monitoring Exceedance due to the contracts under EP-040/1999/A, B & C / Total Monitoring Events.

⁽³⁾Ad hoc Monitoring Exceedance due to the contracts under EP-040/1999/A, B & C / Total Ad hoc Monitoring Events for EP-040/1999/A, B & C.

⁽⁴⁾No ad hoc noise monitoring as monitoring was conducted on every day since 21 April 2001.

Marine monitoring includes mid-ebb and mid-flood monitoring.

* The exceedances related to the commercial building construction activities are also considered.

Review of the Reasons for and the Implications of Non-compliance (Exceedance)

- 7.4 The exceedances of 24-hr TSP during the entire construction period were primarily caused from the construction activities such as demolition of Lower Kong Sin Wan Tsuen, movement of trucks, excavation activities, drilling works, wind erosion from unpaved haul roads, sandfilling, rock breaking. Mitigation measures such as covering of sandfill area on site, regularly watering on exposed sandfill area and unpaved haul roads, damping the sandfill materials before transportation and limit the height from which materials are dropped from plant during loading/unloading were implemented by the Contractor.
- 7.5 The exceedances of noise during the entire construction period were caused from the demolition works at Lower Kong Sin Wan Tsuen, construction activities at Northern Access Road, operation of machinery such as excavators/backhoes, and trucks rock breaking and slope cutting works. The Contractor were advised to implement the noise mitigation measures such as movable noise barriers properly to alleviate for construction noise impacts and implement appropriate mitigation measures such as preventing noise activities near the sensitive receivers as possible, avoiding parallel working of noise equipment and adopting quiet equipment.
- 7.6 One exceedance of turbidity was recorded which might be caused by backfilling of the seabed near the submarine outfall location or muddy water discharged into the sea via the last storm drain manhole of Road D1. The Contractor was advised to install silt curtain and maintain the drainage system well.

8 COMPLAINTS AND SUMMARY DESCRIPTION OF THE ACTIONS TAKEN IN THE EVENT OF NON-COMPLIANCE

Complaints

- 8.1 A total of fifteen complaints were received since the commencement of the Project in December 1999. All the cases were closed. The summary of the complaints and cumulative statistics are provided in Appendices H1 and H2.

Summary Description of the Actions Taken in the Event of Non-compliance

- 8.2 In the event of air quality, noise and marine water quality exceedance, interim reports were sent to the relevant parties including the Contractor, IEC, Engineer Representatives and EPD. The interim notifications can be referred to the monthly EM&A report. Recommendations of mitigation measures to the Engineer/Contractor were provided subsequently. The effectiveness of these mitigation measures was then checked during monthly site audits conducted by the ET and Engineer Representatives.

Review of the Practicality and Effectiveness of the EIA Process and EM&A Programme

- 8.3 Monitoring and audit of air quality, noise and water quality levels have ensured that any deterioration were readily detected and timely actions taken to rectify any non-compliance. Assessment and analysis of air quality noise and water quality results collected throughout the baseline and impact monitoring periods also demonstrated the environmental acceptability of the Project.
- 8.4 Weekly site inspections had ensured that the EIA recommended mitigation measures for air quality, noise and water quality were effectively implemented. The EM&A programme and the effectiveness and efficiency of the mitigation measures were successful during the construction period. It is however, recommended that after identification of exceedance, measurements were repeated by means of an ad-hoc monitoring to confirm the investigation findings

9. NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

Notification of Summons and Prosecutions

- 9.1 A total of one prosecution was recorded on 26 September 2001 for Contract of Road Works. The Contractor committed an offence regarding Air Pollution Control (Construction Dust) Regulation due to dust nuisance from drilling in November 2000 and the case was closed. The summary of the prosecution is provided in Appendix I.

10. COMMENTS, CONCLUSIONS AND RECOMMENDATIONS.

- 10.1 All the environmental monitoring data complied with the Action and Limit Level except one 1-hour TSP action level exceedance, twenty-two 24-hour TSP action level exceedance, seven 24-hour TSP limit level exceedances, one hundred and eighty-four noise exceedances and one turbidity exceedance for marine water were reported for this Contract. All the contractors involved were being notified upon exceedances and recommendations were suggested to them for improvements. Contractors usually implemented all the necessary environmental mitigation measures.

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- 10.2 Site audits were carried out weekly to monitor the Contractor's performance on the air quality, noise, water quality and waste management issues. The audit programme confirmed that the mitigation measures were properly implemented by the Contractor.
- 10.3 During the entire construction period, fifteen environmental complaints were received and one successful prosecution regarding dust impact was received since the commencement of the Contract.
- 10.4 Environmental mitigation measures in relation to the construction activities such as watering of sandfill area and hydroseeding of the inactive sandfill area / exposed slope has been carried out by the Contractor. Provision of noise barriers and use of quiet plant have been carried out by the Contractors.
- 10.5 The EM&A works during the entire construction period were effective in monitoring the impacts from the construction activities. The impact monitoring results correlated with the construction activities on site as well as other influencing factors including offsite activities and weather conditions. The monitoring data are considered to have the necessary statistical power to categorically identify impact attributable to the works.
- 10.6 Even though exceedances of air quality, noise and water quality results were recorded, the environmental monitoring results indicated that the construction activities in general complied with the relevant environmental requirements. From the monitoring results, it is concluded that the overall environmental acceptability of the project is satisfactory.
- 10.7 ET regularly reviewed the monitoring methodology as recommended in the EM&A Manual. There was no amendment on the monitoring methodology during the construction phase of the Project. The EM&A monitoring works during the entire construction period were generally efficient and cost effectiveness.
- 10.8 There was no significant difference between the impact mean of suspended solids in stream water over the construction period and 1.3 times of the baseline mean. Thus the water quality during the construction period was comparable with the baseline condition. The impact mean of SS in marine water over the construction period is significantly different from the 1.3 times of the baseline mean, and the impact means (medium) of SS were in general lower than (and comparable for CM1 during the mid-flood tide) 1.3 times of baseline mean. Upon completion of the project, environmental qualities returned to the ambient levels. No significant impact to the adjacent environment was noted, which concurs with the EIA Report findings.
- 10.9 The operational traffic noise monitoring work demonstrate the proposed noise mitigation measures (noise barrier) are effective to alleviates the traffic noise impact for Cyberport Road and the noise sensitive facades also comply with the traffic noise criteria.