Highways Department

Route 8 (previously known as Route 9) between Cheung Sha Wan & Sha Tin

Contract No. HY/2003/10 - Environmental Team for Lai Chi Kok Viaduct and Eagle's Nest Tunnel

Monthly EM&A Report
Part II – Eagle's Nest Tunnel & Associated Works
(Version 1.0)

July 2007

Approved By _____
(Environmental Team Leader)

REMARKS:

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

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ABBREVIATION AND ACRONYM

AL Levels	Action and Limit Levels
E / ER	Engineer/Engineer's Representative
EIA	Environmental Impact Assessment
EM&A	Environmental Monitoring and Audit
EMIS	Environmental Mitigation Implementation Schedule
EP	Environmental Permit
EPD	Environmental Protection Department
ET	Environmental Team
HVS	High Volume Sampler
IEC	Independent Environmental Checker
RE	Resident Engineer
RH	Relative Humidity
TSP	Total Suspended Particulates
TDD	Territory Development Department
QA/QC	Quality Assurance / Quality Control
SLM	Sound Level Meter
WMP	Waste Management Plan

EXECUTIVE SUMMARY

Introduction

- This is the 44th monthly Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Limited for the "Route 8 (previously known as Route 9) between Cheung Sha Wan & Sha Tin, Lai Chi Kok Viaduct & Eagle's Nest Tunnel". This report documents the findings of EM&A Works conducted in July 2007 for Contract No. HY/2003/02, Eagle's Nest Tunnel and Associated Works (the Project).

- The major site activities for civil works undertaken in the reporting month included:
  - Door & Hand Rail Installation;
  - Tunnel Ventilation System;
  - T&C for Tunnel Ventilation System;
  - Plumbing & Drainage;
  - Slope Stabilization;
  - Construction of Car Park Shelter no. 2-4;
  - Mechanical Ventilation Air Conditioning;
  - Drainage Works & Road works
  - Utility; and
  - Earth works.

- The major site activities for Traffic Control and Surveillance System (TCSS) works undertaken in the reporting month included:
  - Cable Laying;
  - Field Equipment Installation;
  - Control Containment Installation;
  - Antenna Installation; and
  - Equipment Cabinet Installation

Environmental Monitoring and Audit Works

- Environmental monitoring and audit works for the Project was performed regularly as stipulated in the EM&A Manual and the results were checked and reviewed. Site audits were conducted once per week. The implementation of the environmental mitigation measures, Event Action Plans and environmental complaint handling procedures were also checked.

- Summary of events and actions taken in the reporting month is tabulated in **Table I**.

Table I Summary of Events Recorded in the Reporting Month

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

Environmental Licenses and Permits

- Licenses/Permits granted to the Project include the Environmental Permit (EP) for the Project, Registration of Chemical Waste Producer (RCWP), Construction Noise Permits (CNPs) and Water Discharge Licenses (WDLs). 1 new CNP was issued to the Project by EPD in the reporting month.

Key Information in the Reporting Month

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

Table II Summary Table for Key Information in the Reporting Month

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

Future Key Issues:

Major site activities for civil works in the coming months include:
- Door & Hand Rail Installation;
- Tunnel Ventilation System;
- T&C for Tunnel Ventilation System;
- Plumbing & Drainage;
- Slope Stabilization;
- Construction of Car Park Shelter no. 2-4;
- Mechanical Ventilation Air Conditioning;
- Road works; and
- DN200 watermain diversion.

Major site activities for TCSS works in the coming months include:
- Cable Laying;
- Field Equipment Installation;
- System Equipment Installation;
- Antenna Installation; and
- SCT and SAT.

The anticipated environmental issues will be mainly on surface runoff during rainy season, dust impact from drainage and road works.

1. INTRODUCTION

Background

1.1 Route 9 (Kowloon Section) (R9K) (hereinafter call the R9K-Project) forms part of the Route 9 between Cheung Sha Wan and Sha Tin (R9-CSWST) project, which will be a new expressway connecting West Kowloon and Sha Tin. It will be the fourth external link between Sha Tin and Kowloon and will form an important link between the northeast New Territories and the west Kowloon, Lantau Island and the western New Territories. R9K is being managed and implemented by the Highways Department (HyD).

1.2 The engineering design of R9K is covered under Agreement No. CE 50/98 "Route 9 between Cheung Sha Wan and Sha Tin – Design Construction Assignment". The main consultant engaged under Agreement No. CE 50/98 is Maunsell Hyder Joint Venture (MHJV), who acts as the Engineer for the construction contracts. The works of R9K mainly comprise a 1.4km dual 3-lane Lai Chi Kok Viaduct from Lai Wan Interchange to Butterfly Valley; 0.5 km of dual 3-lane at-grade carriageway linking to the 2.1 km dual 3-lane twin-bore Eagle's Nest Tunnel with associated portal buildings; a toll plaza with an administration building located with the Sha Tin valley woodland; a ventilation building and an adit; associated noise barriers, noise enclosures, drainage, slope and landscape works; and electrical and mechanical works for the whole R9-CSWST. The remainder of the R9-CSWST forms the Sha Tin Section (R9S) of the project and is being managed and implemented separately by the Civil Engineering and Development Department (CEDD).

1.3 The R9-CSWST project is a Designated Project under the Environmental Impact Assessment Ordinance (Cap. 499) (EIAO). An environmental impact assessment (EIA) report has been prepared in 1998 for the R9-CSWST project (1998 R9 EIA) to consider the key issues of noise, air quality, water quality, ecological, construction waste, landscape and visual, land use and cultural impacts, and identify possible mitigation measures.

1.4 An Updated Final EIA report was subsequently completed in August 1999 for the R9-CSWST project (1999 R9 EIA), to cater for some changes in R9K portion as mentioned in paragraph 1 of the report. The 1999 R9 EIA was endorsed by Environmental Protection Department (EPD) in November 1999. The 1998 R9 EIA and the 1999 R9 EIA (R9 EIA Reports) were included in the EIA register under the EIAO as report no. EIA-135/BC and AEIAR-022/1999 respectively. An Environmental Monitoring and Audit (EM&A) Manuals for each of the R9 EIA Reports (EM&A Manuals) were also included as part of the EIA reports in the register.

1.5 Subsequent to the endorsement of the R9 EIA Reports by EPD in November 1999, the project programme was deferred to start in 2002/2003 for completion by 2006/07. The implementation of the project was then separated into the R9S and R9K portion. An Environmental Permit (EP) No. EP-103/2001 was issued on 17 September 2001 for R9K to the HyD as Permit Holder and a varied EP No. EP-103/2001/A was subsequently issued on 20 May 2003 for R9K (R9K EP) to HyD as Permit Holder. A varied EP-103/2001/C was recently issued on 22 July 2005.

1.6 The major construction activities of two civil contracts of the R9K project, Contract No. HY/2003/01 entitled "Route 9 – Lai Chi Kok Viaduct" and Contract No. HY/2003/02 entitled "Route 9 – Eagle's Nest Tunnel and Associated Works", were commenced on 15th December 2003 for completion in April 2007.

1.7 "Route 9" was recently re-tiled as "Route 8 (previously known as Route 9)". Cinotech Consultants Limited (Cinotech) was commissioned by HyD to undertake the Environmental Monitoring and Audit works for "Route 8 (previously known as Route 9) between Cheung Sha Wan and Sha Tin - Environmental Team (ET) for Lai Chi Kok Viaduct and Eagle's Nest Tunnel (Contract No. HY/2003/10)". Dr. Priscilla CHOY of Cinotech Consultants Ltd. was appointed as the ET Leader under Condition 2.2 of the EP. Mr. Kenneth LUK of CH2M HILL Hong Kong Ltd. was appointed as the IEC under Condition 2.1 of the EP. This is the 44th monthly EM&A report summarizing the EM&A works for the Project in July 2007.

Project Organizations

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

- Project Proponent – Major Works Project Management Office (MWPMO) of Highways Department (HyD)
- Engineer / Engineer's Representative (E/ER) – Maunsell-Hyder Joint Venture (MHJV)
- Environmental Team (ET) – Cinotech Consultants Limited
- Independent Environmental Checker (IEC) – CH2M HILL Hong Kong Ltd.
- Contractor – Leighton-Kumagai Joint Venture (LKJV)
- Engineer's Representative for TCSS works – Ove Arup & Partners Hong Kong Limited
- Contractor for TCSS works – Delcan-Imtech-Gtech Joint Venture

1.9 The responsibilities of respective parties are detailed in Section 1.8.3 of the EM&A Manual (1999) of the Project.

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

Construction Programme

The major site activities for civil works undertaken in the reporting month included Door & Hand Rail Installation, Tunnel Ventilation System, T&C for Tunnel Ventilation System, Fire Services, Mechanical Ventilation Air Conditioning and Road works.

1.11 The major site activities for TCSS works undertaken in the reporting month included:

- Cable Laying;
- Field Equipment Installation;
- Control Containment Installation;
- Antenna Installation; and
- Equipment Cabinet Installation

Table 1.1 Key Project Contacts

Party	Role	Name	Position	Phone No.	Fax No.
HyD	Permit Holder	Mr. Kroc Leung	SE2/R8K	2762 3662	2714 5198
		Mr. George Law	E4/R8K	2762 3675	
MHJV	Engineer	Mr. Conrad Ng	Project Manager	2605 6262	2691 2649
	Engineer's Representative	Mr. Peter Poon	CRE	3552 2500	2743 9200
		Mr. Eric Wong	RE (S & EP)	3552 2551	
		Ms. Sammie Chan	TO (EN)	3552 2605	
Cinotech	Environmental Team	Dr. Priscilla Choy	ET Leader	2151 2089	3107 1388
		Mr. Jesse Yuen	Project Manager	2151 2091	
		Mr. Edmond Wu	Audit Team Leader	2151 2092	
		Mr. Henry Leung	Monitoring Team Leader	2151 2087	
CH2M	Independent Environmental Checker	Mr. Kenneth Luk	Independent Environmental Checker	2507 2209	2507 2293
		Mr. Billy Yu	Deputy Independent Environmental Checker	2872 2949	
LKJV	Contractor	Mr. Ray Brewster	Project Director	9092 6128	2743 1600
		Mr. Danny Cheng	QA/E Manager	3552 2113	
ARUP	Engineer's Representative (TCSS)	Mr. Donald Leung	RE	2436 7489	2436 1803
		Mr. Daniel So	ARE	2436 7435	
DIGJV	Contractor (TCSS)	Ms. Joyce Chan	Quality Manager	2123 0845	2123 0889
Enquiries Hotline				3552 2226	-
Complaint Hotline				3552 2380	-

Summary of EM&A Requirements

1.12 The EM&A programme requires construction phase monitoring for air quality and construction noise, and environmental site audit. The EM&A requirements for each parameter are described in the following sections, including:

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

1.13 The advice on the implementation status of environmental protection and pollution control/mitigation measures is summarized in Section 4 of this report.

1.14 This report presents the monitoring results, observations, locations, equipment, period, methodology and QA/QC procedures of the required monitoring parameters, namely dust and noise levels and audit works for the Project in the reporting month.

2. AIR QUALITY

Monitoring Requirements

2.1 Monitoring of 1-hour and 24-hour TSP was conducted to monitor the air quality. The established Action/Limit Levels for the environmental monitoring works were shown in **Appendix A**.

Monitoring Locations

2.2 Three designated monitoring stations, AM1, AM3 and AM4 was selected for impact dust monitoring for the Project. **Table 2.1** describes the air quality monitoring locations, which are also depicted in **Figure 1a** and **1b**.

Table 2.1 Locations for Air Quality Monitoring

Station	Description	Location
AM1[(1)]	Yew Chung International School / PLK Choi Kai Yau School	Rooftop
AM3	Slope no. 07SW-D/FR4 near Garden Villa	On Ground
AM4	Government Quarters	Ground Floor[(2)]

Note: [(1)] Yew Chung International School / PLK Choi Kai Yau School had ceased operated and been demolished since February 2007. The air monitoring at AM1 has been suspended since February 2007, as approved by EPD on 26th April 2007.
[(2)] The HVS was installed on the ground floor, which is close to the refuse collection station of the Government Quarters.

Monitoring Equipment

2.3 **Table 2.2** summarizes the equipment used in the impact air monitoring programme. Copies of calibration certificates are attached in **Appendix B**.

Table 2.2 Air Quality Monitoring Equipment

Equipment	Model and Make	Quantity
Calibrator	GMW25; S/N: 1536	1
HVS Sampler	Graseby GMW Model GS2310 High Volume TSP Sampler and associated equipment and shelter	3

Monitoring Parameters, Frequency and Duration

2.4 **Table 2.3** summarizes the monitoring parameters and frequencies of impact dust monitoring for the whole construction period. The air quality monitoring schedule for the reporting period is shown in **Appendix C**.

Table 2.3 Impact Dust Monitoring Parameters, Frequency and Duration

Parameters	Frequency
1-hr TSP	Three times / 6 days
24-hr TSP	Once / 6 days

Monitoring Methodology and QA/QC Procedure

Instrumentation

2.5 Graseby GMW Model GS2310 TSP High Volume Sampler (HVS) was employed for 1-hour & 24-hour TSP monitoring. The sampler was composed of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complied with that required by USEPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50). Moreover, the HVS also met all the requirements in Sections 2.2 – 2.4 of the Updated EM&A Manual (1999).

Operating/Analytical Procedures

2.6 Operating/analytical procedures for the operation of HVS were as follows:

- A horizontal platform was provided with appropriate support to secure the samplers against gusty wind.
- No two samplers were placed less than 2 meters apart.
- The distance between the sampler and an obstacle, such as buildings, was at least twice the height that the obstacle protrudes above the sampler.
- A minimum of 2 meters of separation from walls, parapets and penthouses was required for rooftop samples.
- A minimum of 2 meters separation from any supporting structure, measured horizontally was required.
- No furnaces or incineration flues were nearby.
- Airflow around the sampler was unrestricted.
- The sampler was more than 20 meters from the drip line.
- Any wire fence and gate, to protect the sampler, should not cause any obstruction during monitoring.

2.7 Prior to the commencement of the dust sampling, the flow rate of the high volume sampler was properly set (between 1.1 m^3/min. and 1.4 m^3/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard Title 40, CFR Part 50. For TSP sampling, fiberglass filters (G810) were used.

2.8 The power supply was checked to ensure the sampler worked properly. On sampling, the sampler was operated for 5 minutes to establish thermal equilibrium before placing any filter media at the designated air monitoring station.

2.9 The filter holding frame was then removed by loosening the four nuts and a weighted and conditioned filter was carefully centered with the stamped number upwards, on a supporting screen.

2.10 The filter was aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter. Then the filter holding frame was tightened to the filter holder with swing bolts. The applied pressure should be sufficient to avoid air leakage at the edges.

2.11 The shelter lid was closed and secured with the aluminum strip. The timer was then programmed. Information was recorded on the record sheet, which included the starting time, the weather condition and the filter number (the initial weight of the filter paper can be found out by using the filter number). After sampling, the filter was removed and sent to the laboratory for weighing. The elapsed time was also recorded.

2.12 Before weighing, all filters were equilibrated in a conditioning environment for 24 hours. The conditioning environment temperature should be between 25°C and 30°C and not vary by more than ±3°C; the relative humidity (RH) should be < 50% and not vary by more than ±5%. A convenient working RH is 40%.

Maintenance/Calibration

2.13 The following maintenance/calibration was required for the HVS:

- The high volume motors and their accessories were properly maintained. Appropriate maintenance such as routine motor brushes replacement and electrical wiring checking were made to ensure that the equipment and necessary power supply are in good working condition.
- High volume samplers were calibrated at bi-monthly intervals using GMW-25 Calibration Kit throughout all stages of the air quality monitoring.

Results and Observations

2.14 All TSP monitoring was conducted as scheduled the reporting month.

2.15 No Action/Limit Level exceedance for both 1-hour TSP and 24-hour TSP was recorded in the reporting month.

2.16 Wind data monitoring equipment has been installed in Shatin Heights for logging wind speed and wind direction. These wind data is summarized in Appendix D.

2.17 The monitoring data and graphical presentations of 1-hour and 24-hour TSP monitoring results are shown in Appendices E and F, respectively.

3. NOISE

Monitoring Requirements

3.1 Monitoring and audit of construction noise levels is required to be conducted, in accordance with the EM&A Manual, to ensure that any unacceptable noise impacts could be readily detected and timely and appropriate action be undertaken to rectify the situation.

3.2 The construction noise levels shall be measured in terms of the A-weighted equivalent continuous sound pressure level (L_{eq}). L_{eq} (30min) shall be used as the monitoring parameter for the time period between 0700-1900 hours on normal weekdays. For all other time periods, L_{eq} (5min) shall be employed for comparison with the Noise Control Ordinance (NCO) criteria. As supplementary information for data auditing, statistical results such as L_{10} and L_{90} shall also be obtained for reference.

3.3 Three designated noise monitoring stations, namely NM1, NM5 & NM6 were selected for impact monitoring in accordance to the EM&A manual (1999) and the subsequent EPD approval of the relocations.

3.4 Noise monitoring is also required to be conducted at station NM7 in accordance with the EM&A Manual (1998). The noise monitoring at the station is required to be conducted under CEDD's construction Contract No. ST 89/02 "Sha Tin Heights Tunnel and Approaches" in accordance with the requirement of Environmental Permit No. EP104/2001/A. The impact noise monitoring results at station NM7 are also presented in this report.

3.5 **Appendix A** shows the established Action and Limit Levels for the environmental monitoring works.

Monitoring Locations

3.6 Noise monitoring was conducted at three designated monitoring stations as summarized in Table 3.1. Figures 1a & 1b show the locations of these stations.

Table 3.1 Noise Monitoring Stations

Monitoring Station	Description	Location
NM1[(1)]	Yew Chung International School / PKL Choi Kai Yau School	Rooftop
NM5	Villa Carlton	Ground Floor[(2)]
NM6	Government Quarters	Rooftop of Refuse Collection Station
NM7	Garden Villa	Rooftop

Note: [(1)] Yew Chung International School / PLK Choi Kai Yau School had ceased operated and been demolished since February 2007. The noise monitoring at NM1 has been suspended since February 2007, as approved by EPD on 26th April 2007.

[(2)] The noise measurement was taken at 2.3m above the ground floor of Villa Carlton, where has a line of sight of the construction site in the opposite.

Monitoring Equipment

3.7 Table 3.2 summarizes the noise monitoring equipment model being used. Copies of calibration certificates are attached in **Appendix B**.

Table 3.2 Noise Monitoring Equipment

Equipment	Model and Make	Qty.
Integrating Sound Level Meter	B&K Model 2238	5
Calibrator	B&K 4231	2
Wind Speed Anemometer	RS232 Integral Vane Digital Anemometer	1

Monitoring Parameters, Frequency and Duration

3.8 Table 3.3 summarizes the monitoring parameters, frequency and total duration of monitoring. The noise monitoring schedule is shown in **Appendix C**.

Table 3.3 Noise Monitoring Parameters, Frequency and Duration

Station	Parameter	Period[1]	Frequency	Measurement
NM1	L_{10}(30 min.)dB(A) L_{90}(30 min.)dB(A) L_{eq}(30 min.)dB(A)	(a) 0700-1900 hrs. on weekdays (b) 1900-2300 hrs. on weekdays (c) 0700-2300 hrs. on holidays (d) 2300-0700 hrs on any days	Once per week	Façade
NM5				Façade
NM6				Free Field
NM7				Façade

Note: [1](b), (c) and (d) will only be conducted if construction works are undertaken during these periods.

Monitoring Methodology and QA/QC Procedures

- The Sound Level Meter was generally set on a tripod at a height of 1.2 m above the ground, depending to the actual monitoring condition.
- For free field measurement (if any), the meter was positioned away from any nearby reflective surfaces. All records for free field noise levels were adjusted with a correction of +3 dB(A).
- The battery condition was checked to ensure the correct functioning of the meter.
- Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
  - frequency weighting : A
  - time weighting : Fast
  - time measurement : 30 minutes / 5 minutes
- Prior to and after each noise measurement, the meter was calibrated using a Calibrator for 94.0 dB at 1000 Hz. If the difference in the calibration level before and after measurement was more than 1.0 dB, the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.

- The wind speed was frequently checked with the portable wind meter.
- At the end of the monitoring period, the L_{eq}, L_{90} and L_{10} were recorded. In addition,

site conditions and noise sources were recorded on a standard record sheet.

- Noise measurement was paused during periods of high intrusive noise if possible and observation was recorded when intrusive noise was not avoided.
- Noise monitoring was cancelled in the presence of fog, rain, and wind with a steady speed exceeding 5 m/s, or wind with gusts exceeding 10 m/s.

Maintenance and Calibration

3.9 The microphone head of the sound level meter and calibrator was cleaned with soft cloth regularly. The meters were sent to the supplier to check and calibrate on a yearly interval.

Results and Observations

3.10 Noise monitoring was performed at the three designated locations as scheduled for the daytime period (0700-1900 hours) in this reporting month. Restricted-hour monitoring was also conducted at NM5, NM6 and NM7.

3.11 All the Construction Noise Levels (CNLs), except the monitoring (0700-1900 on weekdays) at NM6, reported in this report were adjusted with the corresponding baseline level (i.e. Measured Leq – Baseline Leq = Measured CNL), in order to facilitate the interpretation of the noise exceedance.

3.12 Noise monitoring results and graphical presentations are shown in **Appendix G**.

3.13 No Action/Limit Level exceedance for noise monitoring was recorded in the reporting month.

4. ENVIRONMENTAL AUDIT

Site Audits

4.1 Site audits were carried out on a weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site. The summaries of site audits are provided in **Appendix I**.

4.2 Site audits for Civil contract were conducted on 3rd, 11th, 18th and 25th July 2007 by ET. A joint site audit for Civil works and TCSS works was conducted on 3rd July 2007 with representatives from HyD, IEC, ER, the Contractor and ET. No environmental deficiency was recorded for TCSS contract during site inspections.

Review of Environmental Monitoring Procedures

4.3 The monitoring works conducted by the monitoring team were inspected regularly. The following observations have been recorded for the monitoring works:

Air Quality Monitoring

- The monitoring team recorded all observations around the monitoring stations within and outside the construction site.
- The monitoring team recorded the temperature and weather conditions on the monitoring days.

Noise Monitoring

- The monitoring team recorded all observations around the monitoring stations, which might affect the monitoring result.
- Major noise sources were identified and recorded. Other intrusive noise attributing to the result was trimmed off by pausing the monitoring temporarily.

Status of Environmental Licensing and Permitting

4.4 All valid permits/licenses obtained for the Project are summarized in **Table 4.1**. 1 new CNP was issued to the Project by EPD in the reporting month.

Implementation Status of Environmental Mitigation Measures

4.5 According to the Environmental Permit and the EM&A Manuals, the mitigation measures detailed in the documents are required to be implemented. An updated summary of the EMIS is provided in **Appendix K**.

Table 4.1 Summary of Environmental Licensing and Permit Status

Permit No.	Valid Period		Details	Status
	From	To		
Environmental Permit (EP)				
EP-103/2001/C	22/07/05	N/A	Construction and operation of (a) All civil works (including highways, traffic, geotechnical, drainage, structural, architectural and landscaping works) for the Lai Chi Kok Viaduct, the interchange with Ching Cheung Road, the main road within Butterfly Valley and the Eagle's Nest Tunnel; (b) All E&M works (including ventilation, Traffic Control & Surveillance System (TCSS), toll collection system and lighting) for the whole Route 9 between Cheung Sha Wan and Sha Tin; I The permanent slope works above the northern portal of the Eagle's Nest Tunnel; (d) The architectural works (including fitting out and furnishings) of the portal buildings of the Sha Tin Heights Tunnel.	Valid
Registration of Chemical Waste Producer				
WPN 5213-761-L2595-01	26/01/04	N/A	Regulation for disposal of spent oil and waste batteries arising from construction activities in all project areas.	Valid
Water Discharge Licence				
EP482/261/0327/I	03/05/04	31/05/09	Discharge of industrial trade effluent and effluent arising from construction activities at the construction site at Ventilation Adit on Tai Po Road (behind Shell Filling Station) opposite Pinehill Development Highways.	Valid
EP482/261/0326/I	01/04/04	30/04/09	Discharge of industrial trade effluent and effluent arising from construction activities at the construction site at Mui Kong Tsuen, Butterfly Valley, Lai Chi Kok, Kowloon.	Valid
No. 3156	23/02/04	22/02/09	Discharge of industrial trade effluent and all other wastewater arising from the works areas at North Portal of Route 9 – Eagle's Nest Tunnel and Associated Works (Contract HY/2003/02).	Valid
Construction Noise Permit (CNP)				
GW-RW0016-07	4/2/07	3/8/07	*Location:* Butterfly Valley *Time Period:* 0700-2300 (general holiday including Sundays) and 1900-2300 (any day not being a general holiday).	Valid
GW-RW0017-07	6/2/07	5/8/07	*Location:* Construction site adjacent to Tai Po Road Shell Petrol Filling Station and opposite to Villa Carlton *Time Period:* 0700-2300 (general holiday including Sundays) and 1900-2300 (any day not being a general holiday).	Valid

Permit No.	Valid Period		Details	Status
	From	To		
GW-RW0082-07	20/3/07	19/9/07	*Location:* Mui Kong Tsuen *Time Period:* 0700-2400 (general holiday including Sundays) and 1900-2400 (any day not being a general holiday).	Valid
GW-RW0089-07	25/3/07	24/9/07	*Location:* SHT-North Portal *Time Period:* 0700-2300 (general holiday including Sundays) and 1900-2300 (any day not being a general holiday).	Valid
GW-RN0102-07	9/4/07	8/10/07	*Location:* SHT-North Portal near Garden Villa *Time Period:* Any day between 2300-0700 on next day	Valid
GW-RN0104-07	9/4/07	8/10/07	*Location:* ENT-South Portal at Butterfly Valley *Time Period:* Anyday between 2300-0700 on next day	Valid
GW-RN0103-07	10/4/07	9/10/07	*Location:* ENT-South Portal at Butterfly Valley *Time Period:* 0700-2300 (general holiday including Sundays) and 1900-2300 (any day not being a general holiday)	Valid
GW-RN0105-07	10/4/07	9/10/07	*Location:* SHT-North Portal near Garden Villa *Time Period:* 0700-2300 (general holiday including Sundays) and 1900-2300 (any day not being a general holiday)	Valid
GW-RN0185-07	11/5/07	10/11/07	*Location:* Tunnel North Portal site near Garden Villa *Time Period:* 0700-2300 (general holiday including Sundays) and 1900-2300 (any day not being a general holiday).	Valid
GW-RN0230-07	06/06/07	05/12/07	*Location:* SHT-South Portal near Garden Villa *Time Period:* Any day between 2300-0700 on next day	Valid
GW-RN0231-07	06/06/07	05/12/07	*Location:* SHT-North Portal near Tai Po Road and Keng Hau Road *Time Period:* Any day between 2300-0700 on next day	Valid
GW-RN0252-07	18/06/07	17/12/07	*Location:* SHT-South Portal near Garden Villa *Time Period:* 0700-2300 (general holiday including Sundays) and 1900-2300 (any day not being a general holiday).	Valid
GW-RN0380-07	27/07/07	26/01/08	*Location:* Butterfly Valley, Lai Chi Kok *Time Period:* 0700-2300 (general holiday including Sundays) and 1900-2300 (any day not being a general holiday).	Valid

4.6 Spot checks on truck overloading were also conducted during the site inspections since June 2006. No overloading incident was observed during the site inspections in the reporting month.

4.7 No non-conformance was identified during the site inspections in the reporting month. The observations and recommendations are summarized in **Table 4.2**.

Table 4.2 Observations and Recommendations of Site Audit for Civil Works

Parameters	Date	Observations / Recommendations	Remedial Actions / Remarks
Water Quality	03/07/07	*Observation* - Breeding mosquito was observed near Ventilation Building. The Contractor was recommended to remove the standing water.	Rectification / improvement was observed during the follow-up site inspection.
	18/07/07	*Reminder* - Standing water was observed near Mui Kong Tsuen . The Contractor was recommended to clear it.	Rectification / improvement was observed during the follow-up site inspection.
	25/07/07	*Observation* - Silt was observed along the side of ENT service road at Mui Kong Tsuen. The Contractor was advised to clear it.	This item will be followed up on the next site audit.
Air Quality	03/07/07	*Reminder* - Stockpile without covering was observed near Admin Building. The Contractor was recommended to cover it with tarpaulin sheet when it is not being used.	Rectification / improvement was observed during the follow-up site inspection.
Waste/Chemical Management	18/07/07	*Reminder* - General refuse was observed in the catchpit next to ENT-North Portal Building. The Contractor was reminded to remove it.	Rectification / improvement was observed during the follow-up site inspection.
Permit / Licenses	25/07/07	*Reminder* - Contraction Noise Permit was observed not posting at the entrance near the ENT-South Portal Building. The Contractor was reminded to post it at the site entrance.	This item will be followed up on the next site audit.

4.8 The observations and recommendations arising from pervious month and followed up in the reporting month are summarized in **Table 4.3**.

Table 4.3 Observations and Recommendations of Site Audits Followed up for Pervious Month for Civil Works

Parameters	Date	Observations / Recommendations	Remedial Actions
Waste / Chemical Management	27/06/07	*Reminder* - General refuses were scattered on the ground near North Portal Building. The Contractor was reminded to clean up the refuses and keep site area tidiness.	Rectification / improvement was observed during the follow-up site inspection.
	27/06/07	Oil container was observed without drip tray near North Portal Building. The Contractor was reminded to provide the drip tray or provide a proper storage facility for oil / fuel on site.	Rectification / improvement was observed during the follow-up site inspection.

Summary of Exceedances

1-hr and 24-hr TSP Monitoring

4.9 No Action/Limit Level exceedance for both 1-hour TSP and 24-hour TSP was recorded in the reporting month.

Construction noise

4.10 No Action/Limit Level exceedance for noise monitoring was recorded in the reporting month.

Implementation Status of Event Action Plans

4.11 The Event Action Plans for air quality and noise are presented in **Appendix J**.

Summary of Complaints and Prosecutions

4.12 No environmental related complaint or prosecution was received in the reporting month.

4.13 There were 22 environmental complaints and no prosecution received since the commencement of the Project. The updated Complaint Log is shown in **Appendix M**.

5. FUTURE KEY ISSUES

Key Issues for the Coming Month

5.1 Key issues to be considered in the coming months include:

- Surface runoff at works area during rainy season;
- Accumulation of standing water after heavy rainfall.
- Potential dust emission from drainage and road works.

Monitoring Schedule for the Next Month

5.2 The tentative environmental monitoring schedule for next month is shown in **Appendix C**.

Construction Program for the Next Month

5.3 The tentative construction program for civil works is provided in **Appendix L**. The major construction activities for civil works in the coming months include:

ENT Tunnel
- VE panel, Road Work for N/B Tunnel, T&C for Tunnel ventilation system, fire services, and T&C for equipment.

Butterfly Valley
- Haul road diversion, road works, diverted DN200, recreated stream, slope stabilization (e.g. hydro mulching stone pitching), u-channel and irrigation pipe & system

South Portal Building
- Aluminum cladding installation, Tunnel Ventilation System, mechanical ventilation air condition, T&C for equipment, and plumbing & drainage

North Portal Building
- Hand Rail installation, Plumbing & Drainage, Tunnel Ventilation System, mechanical ventilation air condition, fire services, and T&C for equipment.

Toll Plaza's Structures and Administration Building
- Road works (including EVA Road & Loop Road No.2), Footbridge (metal cladding), tiles (external wall & internal floor), false ceiling, mechanical ventilation air condition, plumbing & drainage, T&C for equipment, lift installation, fire services, skirting and rubber & vinyl flooring and installation of toll collection system.

Ventilation Building & Tai Po Road
- mechanical ventilation air condition, Tunnel Ventilation System, T&C for equipment and plumbing & drainage.

SHT – South Portal Building

- Mechanical ventilation air conditioning, tunnel ventilation system, T&C for equipment and plumbing & drainage

SHT – North Portal Building

- Mechanical ventilation air conditioning, tunnel ventilation system, T&C for equipment and plumbing & drainage

SHT Tunnel & Remaining SHT/T3 Area

- Lighting installation, fire services and tunnel ventilation system

5.4 The tentative construction program for TCSS works is provided in **Appendix L**. The major site activities for TCSS works in the coming months include:

- Cable laying, field equipment installation and SCT and SAT at Tunnel
- Cable laying, field equipment installation and SCT and SAT at Butterfly Valley
- Cable laying, system equipment installation and SCT and SAT at Kiosk K3, K4
- Cable laying, system equipment installation and SCT and SAT at South Portal Building
- Cable laying, system equipment installation and SCT and SAT at North Portal Building
- Cable laying, field equipment installation and SCT and SAT Toll Plaza
- Cable laying, field equipment installation and SCT and SAT Administration Building
- Equipment cabinet installation, Antenna Installation and SCT and SAT at Ventilation Building

6. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

6.1 Environmental monitoring works were performed in the reporting month and all monitoring results were checked and reviewed.

6.2 No Action/Limit Level exceedance for 1-hour TSP and 24-hours TSP was recorded in the reporting month.

6.3 No Action/Limit Level exceedance for noise monitoring was recorded in the reporting month.

6.4 No environmental complaint or prosecution was received in the reporting month.

Recommendations

6.5 According to the environmental audit performed in the reporting month, the following recommendations were made:

Water Impact

- To closely monitor the capacity of existing de-silting facility on site, especially for the discharge at the site in Butterfly Valley and Toll Plaza.
- To keep the sedimentation facilities well maintained and perform de-silting regularly.
- To avoid accumulation of stagnant water on site.

Dust Impact

- To ensure that adequate water spray or other dust suppression measures are applied for slope cutting and the haul roads and stockpile on site.
- To cover idle soil slope surface and stockpile of dusty materials to prevent wind erosion.
- To ensure that all vehicles carrying dusty materials are properly covered before leaving the site.

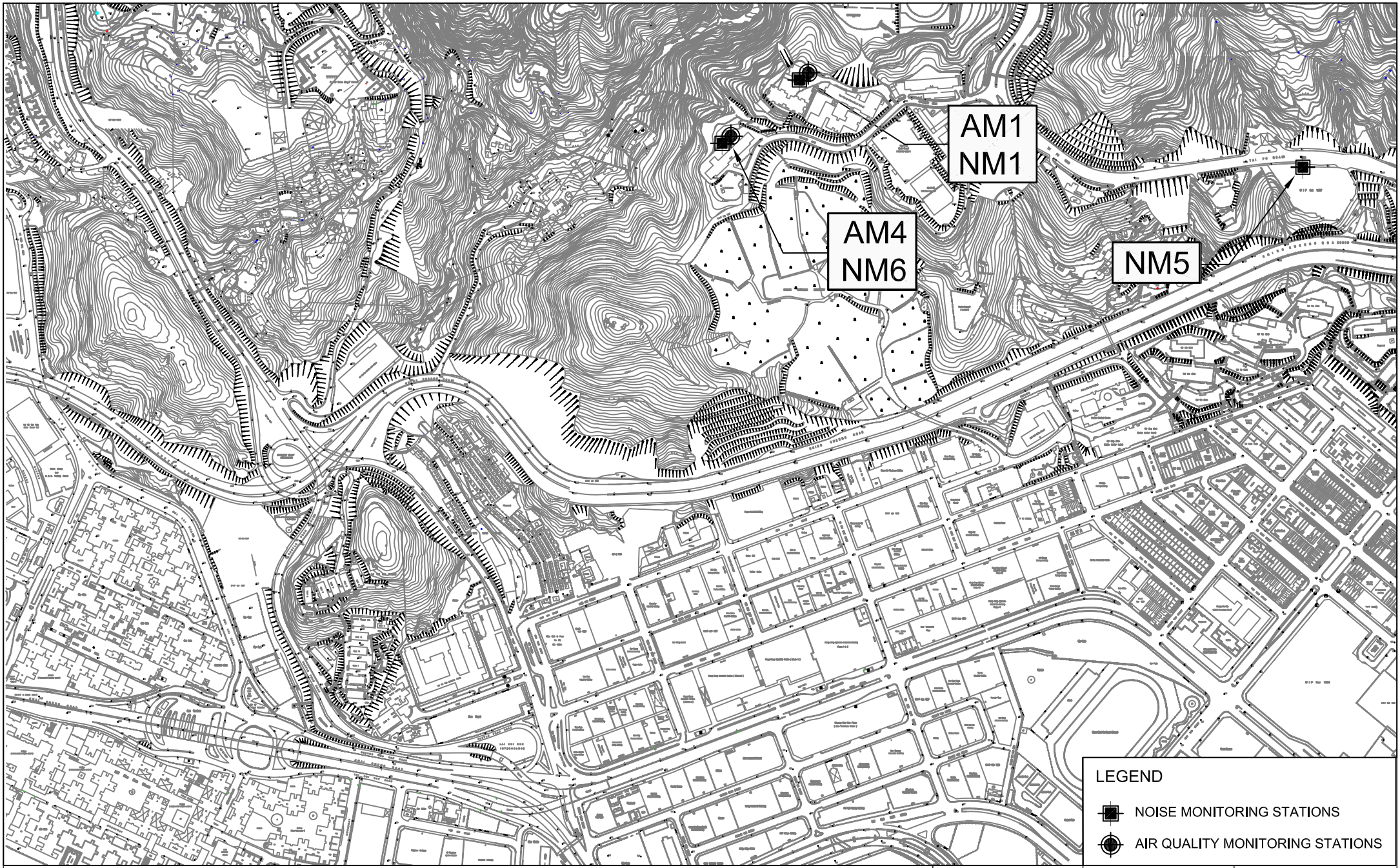
Noise Impact

- To provide temporary noise barriers for noisy activities (such as breaking works).
- To reduce the number of noisy equipment in concurrent operation.

Waste/Chemical Management

- To ensure proper storage of chemical and chemical waste on site.
- To check for any accumulation of waste materials or rubbish on site.
- To avoid any discharge or accidental spillage of chemical waste or oil directly.

FIGURES



Title

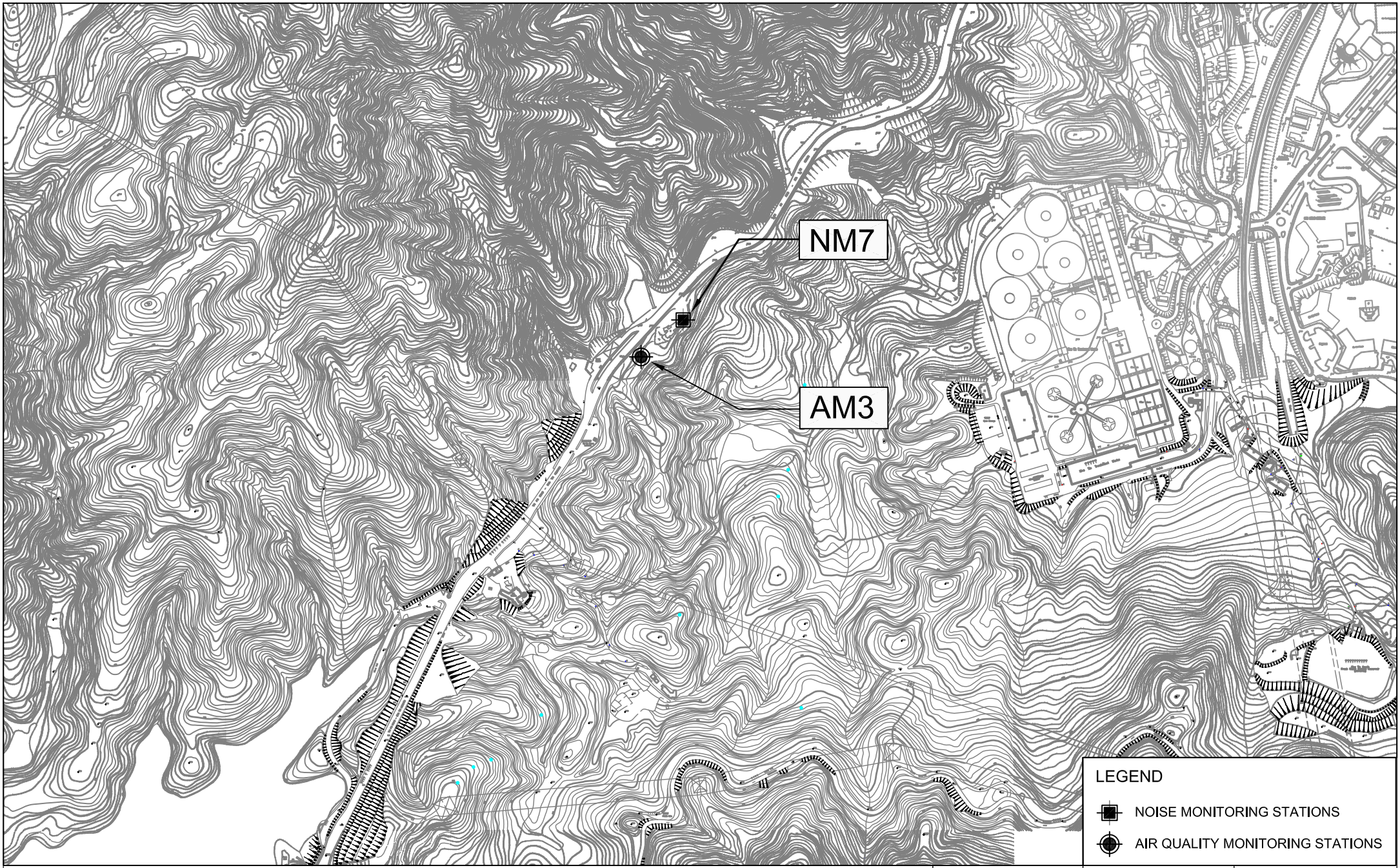
ROUTE 8 (PREVIOUSLY KNOWN AS ROUTE 9) BETWEEN CHEUNG SHA WAN AND SHA TIN
CONTRACT NO. HY/2003/02 - EAGLE'S NEST TUNNEL AND ASSOCIATED WORKS

LOCATIONS OF MONITORING STATIONS

Scale	Project No.
1 : 6500 (A4)	MA3024
Date	Figure No.
2006	1a

CINOTECH consultants limited

F:\PEOJECTS\MA3024\DRAWING\IMPACT\ENT\FIGURE 1a.DWG



Title

ROUTE 8 (PREVIOUSLY KNOWN AS ROUTE 9) BETWEEN CHEUNG SHA WAN AND SHA TIN
CONTRACT NO. HY/2003/02 - EAGLE'S NEST TUNNEL AND ASSOCIATED WORKS

LOCATIONS OF MONITORING STATIONS

Scale	Project No.
1 : 6500 (A4)	MA3024
Date	Figure No.
2006	1b

CINOTECH consultants limited

F:\PEOJECTS\MA3024\DRAWING\IMPACT\ENT\FIGURE 1b.DWG

APPENDIX A
ACTION AND LIMIT LEVELS

Appendix A - Action and Limit Levels (ENT)

1-Hour TSP

Location	Action Level, µg/m^3	Limit Level, µg/m^3
AM1	296	500
AM3	350	
AM4	294	

24-Hour TSP

Location	Action Level, µg/m^3	Limit Level, µg/m^3
AM1	168	260
AM3	200	
AM4	170	

Construction Noise

Period	Action Level	Limit Level, dB(A)			
	for all stations	NM1	NM5	NM6	NM7
0700-1900 hrs on normal weekdays	When one documented complaint is received	70/65*	75	75	75
0700-2300 hrs on holidays & 1900-2300 hrs on all other days		-	70	65	60
2300-0700 hrs of next day		-	55	50	45

(*) Since NM1 is an educational institution, the noise Limit Level (0700-1900 hrs on normal days) is taken as 70 dB(A). The Limit Level will be reduced to 65 dB(A) during school examination periods.

APPENDIX B
COPIES OF CALIBRATION CERTIFCATES

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA2027/A14/0023

Station: Garden Vilia
Date: 29-May-07
Equipment No.: A-01-14

Operator: WK
Next Due Date: 28-Jul-07
Serial No. 1354

Ambient Condition			
Temperature, Ta (K)	303.4	Pressure, Pa (mmHg)	759.8

Orifice Transfer Standard Information					
Equipment No.:	A-04-05	Slope, mc	0.0575	Intercept, bc	0.0395
Last Calibration Date:	12-Mar-07	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	11-Mar-08	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of oil	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	12.4	3.49	60.00	9.5	3.05
2	10.3	3.18	54.62	8.3	2.85
3	6.9	2.60	44.58	5.1	2.24
4	4.3	2.05	35.05	3.2	1.77
5	3.2	1.77	30.14	2.0	1.40

By Linear Regression of Y on X

Slope , mw = 0.0553 **Intercept, bw :** -0.2180

Correlation coefficient* = 0.9975

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.75**

Remarks:

Conducted by: W.K Tang Signature: Date: 29/5/07
Checked by: Signature: Date: 29 May 07

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA2027/A14/0024

Station: Garden Vilia
Operator: WK
Date: 30-Jul-07
Next Due Date: 29-Sep-07
Equipment No.: A-01-14
Serial No. 1354

Ambient Condition			
Temperature, Ta (K)	304.1	Pressure, Pa (mmHg)	760

Orifice Transfer Standard Information					
Equipment No.:	A-04-05	Slope, mc	0.0575	Intercept, bc	0.0395
Last Calibration Date:	12-Mar-07	**mc x Qstd + bc = $[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$**			
Next Calibration Date:	11-Mar-08	**Qstd = $\{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$**			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of oil	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.5	3.36	57.70	7.1	2.64
2	9.4	3.04	52.10	6.0	2.42
3	6.9	2.60	44.54	4.6	2.12
4	4.1	2.00	34.17	2.8	1.66
5	3.0	1.71	29.13	1.9	1.36

By Linear Regression of Y on X

Slope , mw = 0.0442 **Intercept, bw = 0.1196**

Correlation coefficient* = 0.9979

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.16**

Remarks:

Conducted by: W K Tang Signature: Date: 30 Jul 07

Checked by: Signature: Date: 30 July 2007

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA3024/17/0025

Station: Government Quarter
Operator: WK
Date: 15-May-07
Next Due Date: 14-Jul-07
Equipment No.: A-01-17
Serial No. 3460

Ambient Condition			
Temperature, Ta (K)	302.5	Pressure, Pa (mmHg)	761

Orifice Transfer Standard Information					
Equipment No.:	A-04-05	Slope, mc	0.0575	Intercept, bc	0.0395
Last Calibration Date:	12-Mar-07	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	11-Mar-08	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of oil	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	12.6	3.53	60.63	9.8	3.11
2	10.7	3.25	55.81	7.7	2.76
3	8.4	2.88	49.37	5.9	2.41
4	5.4	2.31	39.45	3.9	1.96
5	3.6	1.88	32.09	2.1	1.44

By Linear Regression of Y on X

Slope, mw = 0.0560 **Intercept, bw =** -0.3203

Correlation coefficient* = 0.9967

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.41**

Remarks:

Conducted by: W K Tang Signature: Date: 15/5/07
Checked by: Signature: Date: 15 May 2007

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High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA3024/17/0026

Station: Government Quarter — Operator: WK
Date: 13-Jul-07 — Next Due Date: 12-Sep-07
Equipment No.: A-01-17 — Serial No. 3460

Ambient Condition			
Temperature, Ta (K)	303.8	Pressure, Pa (mmHg)	753

Orifice Transfer Standard Information					
Equipment No.:	A-04-05	Slope, mc	0.0575	Intercept, bc	0.0395
Last Calibration Date:	12-Mar-07	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	11-Mar-08	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of oil	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	10.4	3.18	54.60	7.2	2.65
2	8.6	2.89	49.59	5.5	2.31
3	5.9	2.39	40.96	4.1	2.00
4	4.4	2.07	35.28	2.8	1.65
5	3.1	1.74	29.50	1.9	1.36

By Linear Regression of Y on X

Slope , mw = 0.0498 — **Intercept, bw =** -0.0992

Correlation coefficient* = 0.9965

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.29**

Remarks:

Conducted by: W.K Tang Signature: Date: 13/7/07
Checked by: Signature: Date: 13 July 2007

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WELLAB LTD.

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13-15 Yuen Shun Circuit,
Shatin, Hong Kong.
Tel: (852) 2898 7388
Fax: (852) 2898 7076

TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
1602-1610 Delta House,
3 On Yiu Street,
Shatin, N.T.

ATTN: **Mr. Henry Leung**

Test Report No.:	C/07/70502
Date of Issue:	2007-05-02
Date Received:	2007-05-01
Date Tested:	2007-05-01
Date Completed:	2007-05-02
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: RS232 Integral Vane Digital Anemometer
Manufacturer	: AZ Instrument
Model No.	: 451104
Serial No.	: 9020746
Equipment No.	: A-03-01

Test conditions:

Room Temperature	: 21 degree Celsius
Relative Humidity	: 65%
Pressure	: 101.3 kPa

Methodology:

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

Results:

	Reference Set Point	Instrument Readings
Measuring Air Velocity, m/s	2.00	2.00
Temperature, °C	21.0	21.0

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

Patrick Tse

PATRICK TSE
Senior Chemist

TISCH ENVIROMENTAL, INC.
145 SOUTH MIAMI AVE.
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513.467.9009 FAX
WWW.TISCH-ENV.COM

AIR POLLUTION MONITORING EQUIPMENT

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mar 12, 2007 Rootsmeter S/N 9833640 Ta (K) - 294
Operator Tisch Orifice I.D. - 0999 Pa (mm) - 746.76

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.3890	3.2	2.00
2	NA	NA	1.00	0.9850	6.3	4.00
3	NA	NA	1.00	0.8810	7.8	5.00
4	NA	NA	1.00	0.8410	8.6	5.50
5	NA	NA	1.00	0.6950	12.5	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
0.9917	0.7139	1.4113		0.9957	0.7168	0.8874
0.9876	1.0026	1.9959		0.9916	1.0067	1.2549
0.9854	1.1185	2.2315		0.9894	1.1231	1.4030
0.9844	1.1706	2.3405		0.9884	1.1753	1.4715
0.9792	1.4090	2.8227		0.9832	1.4147	1.7747
Qstd slope (m) =		2.03154		Qa slope (m) =		1.27212
intercept (b) =		-0.03970		intercept (b) =		-0.02496
coefficient (r) =		0.99999		coefficient (r) =		0.99999
y axis = SQRT[H2O(Pa/760)(298/Ta)]				y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

Vstd = Diff. Vol[(Pa-Diff. Hg)/760](298/Ta)
Qstd = Vstd/Time

Va = Diff Vol [(Pa-Diff Hg)/Pa]
Qa = Va/Time

For subsequent flow rate calculations:

Qstd = 1/m{[SQRT(H2O(Pa/760)(298/Ta))]- b}
Qa = 1/m{[SQRT H2O(Ta/Pa)]- b}

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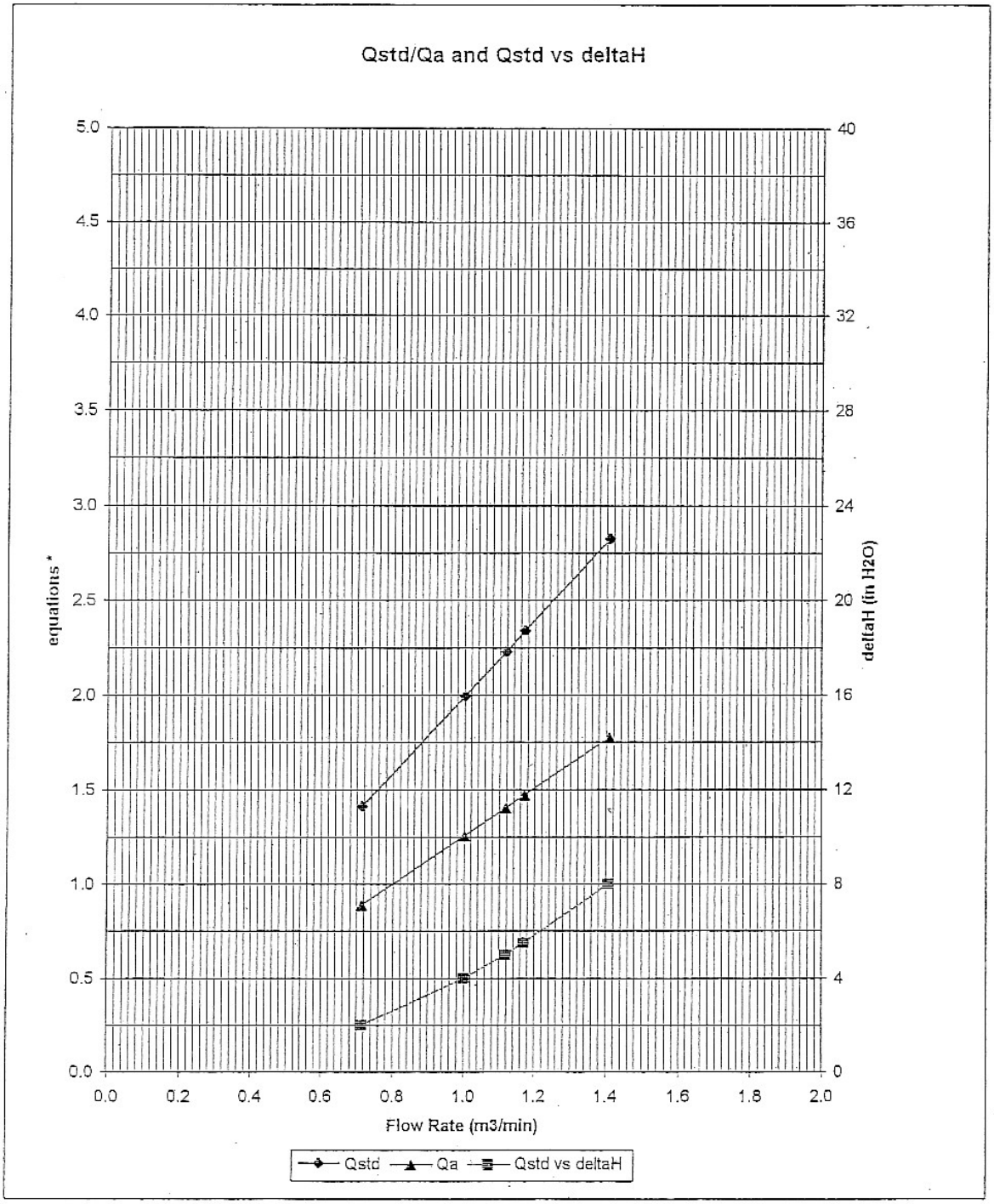
AIR POLLUTION MONITORING EQUIPMENT



* y-axis equations:

Qstd series: $\sqrt{\Delta H \left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}$

Qa series: $\sqrt{(\Delta H\ (Ta\ /\ Pa))}$

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
1602-1610 Delta House,
3 On Yiu Street,
Shatin, N.T.

ATTN: **Mr. Henry Leung**

Test Report No.:	C/N/61215/1
Date of Issue:	2006-12-15
Date Received:	2006-12-14
Date Tested:	2006-12-15
Date Completed:	2006-12-15
Next Due Date:	2007-12-14
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: Integrating Sound Level Meter
Manufacturer	: Brüel & Kjær
Model No.	: B&K 2238
Serial No.	: 2337665
Microphone No.	: 2289749
Equipment No.	: N-01-01

Test conditions:

Room Temperatre	: 20 degree Celsius
Relative Humidity	: 60%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

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

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

Patrick

PATRICK TSE
Operation Manager

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Unit C, 1/F, Goldlion Holdings Center
13-15 Yuen Shun Circuit,
Shatin, Hong Kong.
Tel: (852) 2898 7388
Fax: (852) 2898 7076

TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
1602-1610 Delta House,
3 On Yiu Street,
Shatin, N.T.

ATTN: **Mr. Henry Leung**

Test Report No.:	C/N/61116/1
Date of Issue:	2006-11-16
Date Received:	2006-11-15
Date Tested:	2006-11-15
Date Completed:	2006-11-16
Next Due Date:	2007-11-15
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: Integrating Sound Level Meter
Manufacturer	: Brüel & Kjær
Model No.	: B&K 2238
Serial No.	: 2337666
Microphone No.	: 2289750
Equipment No.	: N-01-02

Test conditions:

Room Temperatre	: 20 degree Celsius
Relative Humidity	: 59%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

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

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

Patrick.

PATRICK TSE
Operation Manager

WELLAB LTD.

Unit C, 1/F, Goldlion Holdings Center
13-15 Yuen Shun Circuit,
Shatin, Hong Kong.
Tel: (852) 2898 7388
Fax: (852) 2898 7076

TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
1601-1610 Delta House,
3 On Yiu Street,
Shatin, N.T.

ATTN: **Mr. Henry Leung**

Test Report No.:	C/N/60904-1
Date of Issue:	2006-09-04
Date Received:	2006-09-02
Date Tested:	2006-09-02
Date Completed:	2006-09-04
Next Due Date:	2007-09-03
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: Integrating Sound Level Meter
Manufacturer	: Brüel & Kjær
Model No.	: B&K 2238
Serial No.	: 2359311
Microphone No.	: 2346382
Equipment No.	: N-01-03

Test conditions:

Room Temperatre	: 23 degree Celsius
Relative Humidity	: 64%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

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

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

Patrick.

PATRICK TSE
Laborary Manager

WELLAB LTD.

Unit C, 1/F, Goldlion Holdings Center
13-15 Yuen Shun Circuit,
Shatin, Hong Kong.
Tel: (852) 2898 7388
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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
1602-1610 Delta House,
3 On Yiu Street,
Shatin, N.T.

ATTN: **Mr. Henry Leung**

Test Report No.:	C/N/60904-2
Date of Issue:	2006-09-04
Date Received:	2006-09-02
Date Tested:	2006-09-02
Date Completed:	2006-09-04
Next Due Date:	2007-09-03
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: Integrating Sound Level Meter
Manufacturer	: Brüel & Kjær
Model No.	: B&K 2238
Serial No.	: 2359303
Equipment No.	: N-01-04

Test conditions:

Room Temperatre	: 23 degree Celsius
Relative Humidity	: 63%
Pressure	: 1006.5hPa

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

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

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

Patrick.

PATRICK TSE
Operation Manager

WELLAB LTD.

Unit C, 1/F, Goldlion Holdings Center
13-15 Yuen Shun Circuit,
Shatin, Hong Kong.
Tel: (852) 2898 7388
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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
1602-1610 Delta House,
3 On Yiu Street,
Shatin, N.T.

ATTN: **Mr. Henry Leung**

Test Report No.:	C/N/61014/1
Date of Issue:	2006-10-14
Date Received:	2006-10-13
Date Tested:	2006-10-14
Date Completed:	2006-10-14
Next Due Date:	2007-10-13
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: Integrating Sound Level Meter
Manufacturer	: Brüel & Kjær
Model No.	: B&K 2238
Serial No.	: 2394976
Microphone No.	: 2407349
Equipment No.	: N-01-05

Test conditions:

Room Temperatre	: 21 degree Celsius
Relative Humidity	: 60%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

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

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

Patrick .

PATRICK TSE
Operation Manager

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Unit C, 1/F, Goldlion Holdings Center
13-15 Yuen Shun Circuit,
Shatin, Hong Kong.
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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
1602-1610 Delta House,
3 On Yiu Street,
Shatin, N.T.

Test Report No.:	C/N/61116/2
Date of Issue:	2006-11-16
Date Received:	2006-11-15
Date Tested:	2006-11-15
Date Completed:	2006-11-16
Next Due Date:	2007-11-15

ATTN: **Mr. Henry Leung**

Page: 1 of 1

Item for calibration:

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

Test conditions:

Room Temperatre	: 20 degree Celsius
Relative Humidity	: 59%
Pressure	: 1015.2 hPa

Methodology:

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

Results:

Sound Pressure Level	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB

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

Patrick.

PATRICK TSE
Operation Manager

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Shatin, Hong Kong.
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Fax: (852) 2898 7076

TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
1602-1610 Delta House,
3 On Yiu Street,
Shatin, N.T.

Test Report No.:	C/06/70305
Date of Issue:	2007-03-05
Date Received:	2007-03-03
Date Tested:	2007-03-03
Date Completed:	2007-03-05
Next Due Date:	2008-03-04
Page:	1 of 1

ATTN: **Mr. Henry Leung**

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: Brüel & Kjær
Model No.	: 4231
Serial No.	: 2343007
Project No.	: C13
Equipment No.	: N-02-02

Test conditions:

Room Temperatre	: 20 degree Celsius
Relative Humidity	: 65%
Pressure	: 1020.1hPa

Methodology:

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

Results:

Sound Pressure Level	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.2 dB

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

Patrick .

PATRICK TSE
Operation Manager

WELLAB LTD.

606 - 608 Cornell Centre,
50 Wing Tai Road,
Chai Wan, Hong Kong.
Tel: (852) 2898 7388
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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
1601-1610 Delta House,
3 On Yiu Street,
Shatin, N.T.

ATTN: **Mr. Henry Leung**

Test Report No.:	C/N/60904-3
Date of Issue:	2006-09-04
Date Received:	2006-09-02
Date Tested:	2006-09-02
Date Completed:	2006-09-04
Next Due Date:	2007-09-03
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Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: Brüel & Kjær
Model No.	: 4231
Serial No.	: 2412367
Equipment No.	: N-02-03

Test conditions:

Room Temperatre	: 23 degree Celsius
Relative Humidity	: 63%
Pressure	: 1020.1hPa

Methodology:

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

Results:

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

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

Patrick.

PATRICK TSE
Operation Manager

APPENDIX C
ENVIRONMENTAL MONITORING AND AUDIT SCHEDULE

Environmental Monitoring for Eagle's Nest Tunnel
Tentative Air Quality and Noise Monitoring Schedule for July 2007

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1-Jul	**2-Jul**	3-Jul	4-Jul	5-Jul	6-Jul	7-Jul
		1 hr TSP	24 hr TSP	1 hr TSP	1 hr TSP Noise	
8-Jul	9-Jul	10-Jul	11-Jul	12-Jul	13-Jul	14-Jul
		1 hr TSP 24 hr TSP	1 hr TSP	1 hr TSP Noise		
15-Jul	16-Jul	17-Jul	18-Jul	19-Jul	20-Jul	21-Jul
	24 hr TSP	1 hr TSP	1 hr TSP	1 hr TSP Noise		24 hr TSP
22-Jul	23-Jul	24-Jul	25-Jul	26-Jul	27-Jul	28-Jul
	1 hr TSP	1 hr TSP		1 hr TSP Noise	24 hr TSP	
29-Jul	30-Jul	31-Jul	1-Aug	2-Aug	3-Aug	4-Aug
	1 hr TSP	1 hr TSP		24 hr TSP	1 hr TSP Noise	

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

AM3	Garden Villa
AM4	Government Quarters

NM5	Villa Carlton
NM6	Government Quarters
NM7	Garden Villa

Environmental Monitoring for Eagle's Nest Tunnel
Tentative Air Quality and Noise Monitoring Schedule for August 2007

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
29-Jul	30-Jul	31-Jul	1-Aug	2-Aug	3-Aug	4-Aug
	1 hr TSP	1 hr TSP		24 hr TSP	1 hr TSP Noise	
5-Aug	6-Aug	7-Aug	8-Aug	9-Aug	10-Aug	11-Aug
		1 hr TSP	1 hr TSP 24 hr TSP	1 hr TSP Noise		
12-Aug	13-Aug	14-Aug	15-Aug	16-Aug	17-Aug	18-Aug
		1 hr TSP 24 hr TSP	1 hr TSP	1 hr TSP Noise		
19-Aug	20-Aug	21-Aug	22-Aug	23-Aug	24-Aug	25-Aug
	24 hr TSP	1 hr TSP		1 hr TSP	1 hr TSP Noise	24 hr TSP
26-Aug	27-Aug	28-Aug	29-Aug	30-Aug	31-Aug	1-Sep
	1 hr TSP	1 hr TSP		1 hr TSP Noise	24 hr TSP	

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

AM3	Garden Villa
AM4	Government Quarters

NM5	Villa Carlton
NM6	Government Quarters
NM7	Garden Villa

APPENDIX D
WIND DATA

Appendix D - Wind Data

Date	Time	Wind Speed m/s	Direction
1-Jul-2007	00:00	2.7	N
1-Jul-2007	01:00	0.9	E
1-Jul-2007	02:00	0.4	ENE
1-Jul-2007	03:00	1.3	E
1-Jul-2007	04:00	0.9	N
1-Jul-2007	05:00	0.9	NE
1-Jul-2007	06:00	1.3	SSW
1-Jul-2007	07:00	0.9	SSW
1-Jul-2007	08:00	1.3	W
1-Jul-2007	09:00	1.8	WNW
1-Jul-2007	10:00	1.8	W
1-Jul-2007	11:00	1.3	NW
1-Jul-2007	12:00	2.2	NNE
1-Jul-2007	13:00	2.2	NNE
1-Jul-2007	14:00	1.8	WNW
1-Jul-2007	15:00	1.3	WNW
1-Jul-2007	16:00	1.3	N
1-Jul-2007	17:00	1.3	W
1-Jul-2007	18:00	1.8	NW
1-Jul-2007	19:00	1.3	W
1-Jul-2007	20:00	0.4	NE
1-Jul-2007	21:00	0.4	WNW
1-Jul-2007	22:00	0.9	WNW
1-Jul-2007	23:00	1.3	WNW
2-Jul-2007	00:00	0.9	NW
2-Jul-2007	01:00	0.9	WNW
2-Jul-2007	02:00	0.9	WNW
2-Jul-2007	03:00	0.9	N
2-Jul-2007	04:00	0.9	N
2-Jul-2007	05:00	0.9	W
2-Jul-2007	06:00	1.3	WNW
2-Jul-2007	07:00	0.4	ESE
2-Jul-2007	08:00	0.4	ESE
2-Jul-2007	09:00	1.3	NE
2-Jul-2007	10:00	1.8	W
2-Jul-2007	11:00	2.2	NW
2-Jul-2007	12:00	2.7	WNW
2-Jul-2007	13:00	3.1	WNW
2-Jul-2007	14:00	2.2	WNW
2-Jul-2007	15:00	2.7	WNW
2-Jul-2007	16:00	2.2	WNW
2-Jul-2007	17:00	2.2	N
2-Jul-2007	18:00	3.6	N
2-Jul-2007	19:00	0.4	SE
2-Jul-2007	20:00	0.0	SSE
2-Jul-2007	21:00	1.8	WSW
2-Jul-2007	22:00	1.3	SW
2-Jul-2007	23:00	0.0	---
3-Jul-2007	00:00	0.0	---
3-Jul-2007	01:00	0.0	---
3-Jul-2007	02:00	0.0	SSE
3-Jul-2007	03:00	0.0	S
3-Jul-2007	04:00	0.0	SSW
3-Jul-2007	05:00	1.8	W

Appendix D - Wind Data

Date	Time	Wind Speed m/s	Direction
3-Jul-2007	06:00	1.8	WNW
3-Jul-2007	07:00	0.9	WSW
3-Jul-2007	08:00	0.9	W
3-Jul-2007	09:00	1.8	WNW
3-Jul-2007	10:00	1.3	WNW
3-Jul-2007	11:00	2.7	N
3-Jul-2007	12:00	3.1	WNW
3-Jul-2007	13:00	3.1	W
3-Jul-2007	14:00	2.2	WNW
3-Jul-2007	15:00	3.1	WNW
3-Jul-2007	16:00	3.1	WNW
3-Jul-2007	17:00	3.1	W
3-Jul-2007	18:00	3.1	W
3-Jul-2007	19:00	3.1	WNW
3-Jul-2007	20:00	2.7	WNW
3-Jul-2007	21:00	2.2	NW
3-Jul-2007	22:00	3.1	WNW
3-Jul-2007	23:00	3.6	WNW
4-Jul-2007	00:00	3.1	WNW
4-Jul-2007	01:00	2.7	WNW
4-Jul-2007	02:00	1.3	N
4-Jul-2007	03:00	1.3	W
4-Jul-2007	04:00	1.8	W
4-Jul-2007	05:00	1.8	WNW
4-Jul-2007	06:00	1.8	N
4-Jul-2007	07:00	1.3	WNW
4-Jul-2007	08:00	2.2	WNW
4-Jul-2007	09:00	0.9	NNE
4-Jul-2007	10:00	1.8	N
4-Jul-2007	11:00	1.3	N
4-Jul-2007	12:00	1.8	N
4-Jul-2007	13:00	1.3	WNW
4-Jul-2007	14:00	1.8	NW
4-Jul-2007	15:00	1.8	NNE
4-Jul-2007	16:00	1.3	E
4-Jul-2007	17:00	1.8	NNW
4-Jul-2007	18:00	1.3	W
4-Jul-2007	19:00	1.3	W
4-Jul-2007	20:00	2.2	W
4-Jul-2007	21:00	1.3	WNW
4-Jul-2007	22:00	2.2	WNW
4-Jul-2007	23:00	1.8	WNW
5-Jul-2007	00:00	1.3	NW
5-Jul-2007	01:00	1.3	WNW
5-Jul-2007	02:00	1.8	N
5-Jul-2007	03:00	1.3	W
5-Jul-2007	04:00	2.2	WNW
5-Jul-2007	05:00	1.8	W
5-Jul-2007	06:00	1.3	N
5-Jul-2007	07:00	1.3	N
5-Jul-2007	08:00	0.4	E
5-Jul-2007	09:00	1.3	N
5-Jul-2007	10:00	1.3	NW
5-Jul-2007	11:00	2.7	NNW

Appendix D - Wind Data

Date	Time	Wind Speed m/s	Direction
5-Jul-2007	12:00	1.3	NNW
5-Jul-2007	13:00	2.7	NE
5-Jul-2007	14:00	2.2	N
5-Jul-2007	15:00	1.8	ENE
5-Jul-2007	16:00	1.8	NNE
5-Jul-2007	17:00	2.2	N
5-Jul-2007	18:00	0.9	E
5-Jul-2007	19:00	0.0	N
5-Jul-2007	20:00	0.9	N
5-Jul-2007	21:00	1.8	N
5-Jul-2007	22:00	0.9	N
5-Jul-2007	23:00	1.3	N
6-Jul-2007	00:00	0.4	NNE
6-Jul-2007	01:00	1.3	NNE
6-Jul-2007	02:00	0.9	ENE
6-Jul-2007	03:00	0.9	N
6-Jul-2007	04:00	0.9	NNE
6-Jul-2007	05:00	1.3	N
6-Jul-2007	06:00	1.8	E
6-Jul-2007	07:00	1.3	NNE
6-Jul-2007	08:00	0.9	NE
6-Jul-2007	09:00	1.8	NE
6-Jul-2007	10:00	2.7	NE
6-Jul-2007	11:00	2.7	NE
6-Jul-2007	12:00	3.1	NE
6-Jul-2007	13:00	2.2	NE
6-Jul-2007	14:00	2.7	NE
6-Jul-2007	15:00	2.7	NE
6-Jul-2007	16:00	2.2	NE
6-Jul-2007	17:00	2.7	N
6-Jul-2007	18:00	1.8	N
6-Jul-2007	19:00	0.9	N
6-Jul-2007	20:00	0.4	NNE
6-Jul-2007	21:00	1.3	NNE
6-Jul-2007	22:00	1.3	NNE
6-Jul-2007	23:00	1.3	N
7-Jul-2007	00:00	1.3	N
7-Jul-2007	01:00	0.4	N
7-Jul-2007	02:00	0.9	NNE
7-Jul-2007	03:00	0.0	---
7-Jul-2007	04:00	0.4	N
7-Jul-2007	05:00	0.0	NE
7-Jul-2007	06:00	0.0	---
7-Jul-2007	07:00	0.0	---
7-Jul-2007	08:00	0.0	N
7-Jul-2007	09:00	0.9	N
7-Jul-2007	10:00	1.3	N
7-Jul-2007	11:00	1.8	N
7-Jul-2007	12:00	1.3	NNE
7-Jul-2007	13:00	1.3	N
7-Jul-2007	14:00	1.3	NE
7-Jul-2007	15:00	1.8	N
7-Jul-2007	16:00	1.8	NE
7-Jul-2007	17:00	1.3	NNE

Appendix D - Wind Data

Date	Time	Wind Speed m/s	Direction
7-Jul-2007	18:00	1.3	ENE
7-Jul-2007	19:00	1.3	N
7-Jul-2007	20:00	0.9	NNE
7-Jul-2007	21:00	1.3	N
7-Jul-2007	22:00	0.4	NNE
7-Jul-2007	23:00	0.4	ENE
8-Jul-2007	00:00	0.4	NE
8-Jul-2007	01:00	0.0	ESE
8-Jul-2007	02:00	0.0	SE
8-Jul-2007	03:00	0.0	E
8-Jul-2007	04:00	0.0	E
8-Jul-2007	05:00	0.0	E
8-Jul-2007	06:00	0.0	---
8-Jul-2007	07:00	0.0	E
8-Jul-2007	08:00	0.4	N
8-Jul-2007	09:00	0.9	NNE
8-Jul-2007	10:00	1.8	NE
8-Jul-2007	11:00	1.3	ENE
8-Jul-2007	12:00	2.7	NE
8-Jul-2007	13:00	3.1	NE
8-Jul-2007	14:00	3.1	ENE
8-Jul-2007	15:00	2.7	NE
8-Jul-2007	16:00	3.1	NE
8-Jul-2007	17:00	2.2	ENE
8-Jul-2007	18:00	1.8	ENE
8-Jul-2007	19:00	1.3	ENE
8-Jul-2007	20:00	0.9	NE
8-Jul-2007	21:00	1.3	NNE
8-Jul-2007	22:00	1.3	ENE
8-Jul-2007	23:00	0.9	ENE
9-Jul-2007	00:00	0.9	E
9-Jul-2007	01:00	0.9	E
9-Jul-2007	02:00	0.4	E
9-Jul-2007	03:00	0.0	---
9-Jul-2007	04:00	0.0	E
9-Jul-2007	05:00	0.0	ENE
9-Jul-2007	06:00	0.9	ENE
9-Jul-2007	07:00	0.4	E
9-Jul-2007	08:00	1.3	ENE
9-Jul-2007	09:00	1.8	NNE
9-Jul-2007	10:00	2.2	NE
9-Jul-2007	11:00	2.7	N
9-Jul-2007	12:00	2.7	NNE
9-Jul-2007	13:00	3.1	NE
9-Jul-2007	14:00	2.2	NE
9-Jul-2007	15:00	3.1	NE
9-Jul-2007	16:00	2.7	NE
9-Jul-2007	17:00	2.2	NNE
9-Jul-2007	18:00	1.8	ENE
9-Jul-2007	19:00	2.2	NE
9-Jul-2007	20:00	1.8	E
9-Jul-2007	21:00	1.3	E
9-Jul-2007	22:00	2.2	ENE
9-Jul-2007	23:00	1.3	E

Appendix D - Wind Data

Date	Time	Wind Speed m/s	Direction
10-Jul-2007	00:00	0.9	E
10-Jul-2007	01:00	0.4	E
10-Jul-2007	02:00	0.9	ENE
10-Jul-2007	03:00	0.9	ENE
10-Jul-2007	04:00	0.4	E
10-Jul-2007	05:00	1.3	ENE
10-Jul-2007	06:00	0.9	ENE
10-Jul-2007	07:00	0.4	ENE
10-Jul-2007	08:00	1.3	N
10-Jul-2007	09:00	2.2	NNE
10-Jul-2007	10:00	4.0	N
10-Jul-2007	11:00	3.1	NNE
10-Jul-2007	12:00	3.1	NE
10-Jul-2007	13:00	3.6	NNE
10-Jul-2007	14:00	3.6	N
10-Jul-2007	15:00	3.1	N
10-Jul-2007	16:00	3.1	NNE
10-Jul-2007	17:00	2.2	ENE
10-Jul-2007	18:00	2.2	ENE
10-Jul-2007	19:00	1.8	NE
10-Jul-2007	20:00	1.3	ENE
10-Jul-2007	21:00	1.3	NE
10-Jul-2007	22:00	1.8	ENE
10-Jul-2007	23:00	1.3	E
11-Jul-2007	00:00	1.3	ENE
11-Jul-2007	01:00	1.8	E
11-Jul-2007	02:00	0.9	ENE
11-Jul-2007	03:00	0.9	ENE
11-Jul-2007	04:00	0.4	ENE
11-Jul-2007	05:00	0.4	E
11-Jul-2007	06:00	0.4	ENE
11-Jul-2007	07:00	0.4	ENE
11-Jul-2007	08:00	1.3	N
11-Jul-2007	09:00	1.3	N
11-Jul-2007	10:00	1.8	N
11-Jul-2007	11:00	1.8	N
11-Jul-2007	12:00	3.1	NE
11-Jul-2007	13:00	3.1	NNE
11-Jul-2007	14:00	3.6	NE
11-Jul-2007	15:00	3.1	NE
11-Jul-2007	16:00	2.7	NE
11-Jul-2007	17:00	2.7	NE
11-Jul-2007	18:00	2.2	NE
11-Jul-2007	19:00	1.3	ENE
11-Jul-2007	20:00	0.9	ENE
11-Jul-2007	21:00	1.8	ENE
11-Jul-2007	22:00	2.2	E
11-Jul-2007	23:00	2.7	ENE
12-Jul-2007	00:00	1.8	ENE
12-Jul-2007	01:00	2.2	ENE
12-Jul-2007	02:00	1.8	ENE
12-Jul-2007	03:00	0.9	ENE
12-Jul-2007	04:00	0.0	ENE
12-Jul-2007	05:00	0.0	ENE

Appendix D - Wind Data

Date	Time	Wind Speed m/s	Direction
12-Jul-2007	06:00	0.0	ENE
12-Jul-2007	07:00	0.0	ENE
12-Jul-2007	08:00	0.0	N
12-Jul-2007	09:00	1.3	N
12-Jul-2007	10:00	2.2	N
12-Jul-2007	11:00	2.2	N
12-Jul-2007	12:00	2.7	N
12-Jul-2007	13:00	2.2	NNE
12-Jul-2007	14:00	3.1	NNE
12-Jul-2007	15:00	3.6	NNE
12-Jul-2007	16:00	3.1	NNE
12-Jul-2007	17:00	2.7	NE
12-Jul-2007	18:00	1.8	ENE
12-Jul-2007	19:00	1.3	ENE
12-Jul-2007	20:00	0.9	ENE
12-Jul-2007	21:00	0.9	ENE
12-Jul-2007	22:00	0.9	ENE
12-Jul-2007	23:00	0.9	ENE
13-Jul-2007	00:00	0.4	ENE
13-Jul-2007	01:00	0.4	ENE
13-Jul-2007	02:00	0.4	ENE
13-Jul-2007	03:00	0.4	ENE
13-Jul-2007	04:00	0.4	ENE
13-Jul-2007	05:00	0.4	E
13-Jul-2007	06:00	0.4	E
13-Jul-2007	07:00	0.4	ENE
13-Jul-2007	08:00	0.0	NNE
13-Jul-2007	09:00	1.3	NNE
13-Jul-2007	10:00	1.8	N
13-Jul-2007	11:00	2.2	N
13-Jul-2007	12:00	2.7	NNE
13-Jul-2007	13:00	3.1	NNE
13-Jul-2007	14:00	3.1	NE
13-Jul-2007	15:00	3.1	NE
13-Jul-2007	16:00	2.7	NE
13-Jul-2007	17:00	2.7	NNE
13-Jul-2007	18:00	2.2	ENE
13-Jul-2007	19:00	1.8	ENE
13-Jul-2007	20:00	1.8	ENE
13-Jul-2007	21:00	1.3	ENE
13-Jul-2007	22:00	1.3	E
13-Jul-2007	23:00	1.3	E
14-Jul-2007	00:00	1.3	E
14-Jul-2007	01:00	1.3	ENE
14-Jul-2007	02:00	1.8	E
14-Jul-2007	03:00	1.8	ENE
14-Jul-2007	04:00	1.3	ENE
14-Jul-2007	05:00	0.9	E
14-Jul-2007	06:00	0.9	ENE
14-Jul-2007	07:00	0.4	NNE
14-Jul-2007	08:00	2.2	N
14-Jul-2007	09:00	2.7	NE
14-Jul-2007	10:00	3.1	NNE
14-Jul-2007	11:00	3.1	NNE

Appendix D - Wind Data

Date	Time	Wind Speed m/s	Direction
14-Jul-2007	12:00	3.1	NE
14-Jul-2007	13:00	2.7	NE
14-Jul-2007	14:00	2.7	NE
14-Jul-2007	15:00	2.7	NE
14-Jul-2007	16:00	3.1	NE
14-Jul-2007	17:00	3.1	E
14-Jul-2007	18:00	2.7	ENE
14-Jul-2007	19:00	2.2	NE
14-Jul-2007	20:00	2.2	ENE
14-Jul-2007	21:00	2.2	ENE
14-Jul-2007	22:00	1.8	NE
14-Jul-2007	23:00	1.8	ENE
15-Jul-2007	00:00	2.7	ENE
15-Jul-2007	01:00	1.8	E
15-Jul-2007	02:00	1.3	ENE
15-Jul-2007	03:00	1.8	NE
15-Jul-2007	04:00	2.2	ENE
15-Jul-2007	05:00	1.3	NE
15-Jul-2007	06:00	0.9	ENE
15-Jul-2007	07:00	0.4	NE
15-Jul-2007	08:00	1.8	NNE
15-Jul-2007	09:00	2.7	N
15-Jul-2007	10:00	2.2	NNE
15-Jul-2007	11:00	3.6	NNE
15-Jul-2007	12:00	3.6	N
15-Jul-2007	13:00	2.7	N
15-Jul-2007	14:00	2.7	NE
15-Jul-2007	15:00	3.6	NE
15-Jul-2007	16:00	3.6	NE
15-Jul-2007	17:00	3.1	NE
15-Jul-2007	18:00	2.7	NE
15-Jul-2007	19:00	1.8	NE
15-Jul-2007	20:00	2.2	ENE
15-Jul-2007	21:00	1.8	ENE
15-Jul-2007	22:00	1.3	ENE
15-Jul-2007	23:00	0.9	ENE
16-Jul-2007	00:00	1.8	NE
16-Jul-2007	01:00	2.2	NE
16-Jul-2007	02:00	2.2	NE
16-Jul-2007	03:00	2.7	NE
16-Jul-2007	04:00	2.7	NE
16-Jul-2007	05:00	1.8	ENE
16-Jul-2007	06:00	1.3	ENE
16-Jul-2007	07:00	0.4	ENE
16-Jul-2007	08:00	0.4	ENE
16-Jul-2007	09:00	0.4	ENE
16-Jul-2007	10:00	2.2	NNE
16-Jul-2007	11:00	3.1	NNE
16-Jul-2007	12:00	3.1	NE
16-Jul-2007	13:00	3.1	NE
16-Jul-2007	14:00	3.6	NE
16-Jul-2007	15:00	3.1	NE
16-Jul-2007	16:00	2.7	NE
16-Jul-2007	17:00	3.1	NE

Appendix D - Wind Data

Date	Time	Wind Speed m/s	Direction
16-Jul-2007	18:00	3.1	NE
16-Jul-2007	19:00	3.6	NE
16-Jul-2007	20:00	2.7	NE
16-Jul-2007	21:00	2.7	NE
16-Jul-2007	22:00	2.7	NE
16-Jul-2007	23:00	3.6	NE
17-Jul-2007	00:00	2.7	NE
17-Jul-2007	01:00	2.7	NE
17-Jul-2007	02:00	3.6	NNE
17-Jul-2007	03:00	3.6	NE
17-Jul-2007	04:00	3.1	NE
17-Jul-2007	05:00	2.7	NE
17-Jul-2007	06:00	2.2	NE
17-Jul-2007	07:00	2.7	NNE
17-Jul-2007	08:00	1.3	NE
17-Jul-2007	09:00	2.7	NNE
17-Jul-2007	10:00	3.6	N
17-Jul-2007	11:00	4.5	N
17-Jul-2007	12:00	4.5	NE
17-Jul-2007	13:00	4.0	N
17-Jul-2007	14:00	4.0	NE
17-Jul-2007	15:00	4.0	NE
17-Jul-2007	16:00	3.6	NNE
17-Jul-2007	17:00	3.6	NE
17-Jul-2007	18:00	3.1	NE
17-Jul-2007	19:00	2.7	NE
17-Jul-2007	20:00	2.7	NNE
17-Jul-2007	21:00	3.1	N
17-Jul-2007	22:00	3.6	NE
17-Jul-2007	23:00	2.7	NE
18-Jul-2007	00:00	2.7	NE
18-Jul-2007	01:00	2.2	NE
18-Jul-2007	02:00	2.7	NE
18-Jul-2007	03:00	2.7	NE
18-Jul-2007	04:00	2.7	NNE
18-Jul-2007	05:00	3.1	NE
18-Jul-2007	06:00	3.6	NE
18-Jul-2007	07:00	3.6	NNE
18-Jul-2007	08:00	3.6	NE
18-Jul-2007	09:00	4.0	NNE
18-Jul-2007	10:00	4.0	NNE
18-Jul-2007	11:00	4.5	NNE
18-Jul-2007	12:00	4.5	NNE
18-Jul-2007	13:00	4.5	NE
18-Jul-2007	14:00	4.5	NE
18-Jul-2007	15:00	4.5	NE
18-Jul-2007	16:00	4.0	NE
18-Jul-2007	17:00	4.0	NE
18-Jul-2007	18:00	4.0	NNE
18-Jul-2007	19:00	3.1	NNE
18-Jul-2007	20:00	3.1	NNE
18-Jul-2007	21:00	2.2	NNE
18-Jul-2007	22:00	2.2	NNE
18-Jul-2007	23:00	2.7	ENE

Appendix D - Wind Data

Date	Time	Wind Speed m/s	Direction
19-Jul-2007	00:00	2.2	ENE
19-Jul-2007	01:00	2.2	NE
19-Jul-2007	02:00	2.2	NE
19-Jul-2007	03:00	1.8	NNE
19-Jul-2007	04:00	2.7	ENE
19-Jul-2007	05:00	2.7	ENE
19-Jul-2007	06:00	1.3	ENE
19-Jul-2007	07:00	0.9	ENE
19-Jul-2007	08:00	1.3	NE
19-Jul-2007	09:00	2.7	NE
19-Jul-2007	10:00	3.6	NE
19-Jul-2007	11:00	4.5	NE
19-Jul-2007	12:00	4.0	NNE
19-Jul-2007	13:00	4.0	NNE
19-Jul-2007	14:00	4.9	NE
19-Jul-2007	15:00	4.0	NE
19-Jul-2007	16:00	3.6	NE
19-Jul-2007	17:00	4.0	NNE
19-Jul-2007	18:00	4.5	NNE
19-Jul-2007	19:00	3.6	NNE
19-Jul-2007	20:00	3.6	NNE
19-Jul-2007	21:00	3.1	NE
19-Jul-2007	22:00	3.1	NE
19-Jul-2007	23:00	2.7	NNE
20-Jul-2007	00:00	2.2	NE
20-Jul-2007	01:00	2.2	NE
20-Jul-2007	02:00	2.2	NE
20-Jul-2007	03:00	1.8	NE
20-Jul-2007	04:00	1.3	E
20-Jul-2007	05:00	0.9	ENE
20-Jul-2007	06:00	0.4	ENE
20-Jul-2007	07:00	1.8	NE
20-Jul-2007	08:00	2.7	NNE
20-Jul-2007	09:00	3.1	NE
20-Jul-2007	10:00	3.6	NNE
20-Jul-2007	11:00	4.0	NNE
20-Jul-2007	12:00	4.5	NNE
20-Jul-2007	13:00	4.5	NNE
20-Jul-2007	14:00	4.0	NE
20-Jul-2007	15:00	4.0	NNE
20-Jul-2007	16:00	4.0	NNE
20-Jul-2007	17:00	3.6	NNE
20-Jul-2007	18:00	3.1	NNE
20-Jul-2007	19:00	2.7	NNE
20-Jul-2007	20:00	1.8	NNE
20-Jul-2007	21:00	2.2	NE
20-Jul-2007	22:00	1.3	NE
20-Jul-2007	23:00	1.3	NNE
21-Jul-2007	00:00	0.9	NE
21-Jul-2007	01:00	0.4	NNE
21-Jul-2007	02:00	1.8	ENE
21-Jul-2007	03:00	1.8	ENE
21-Jul-2007	04:00	0.9	ENE
21-Jul-2007	05:00	1.3	ENE

Appendix D - Wind Data

Date	Time	Wind Speed m/s	Direction
21-Jul-2007	06:00	0.9	ENE
21-Jul-2007	07:00	0.9	NE
21-Jul-2007	08:00	2.2	NNE
21-Jul-2007	09:00	3.1	NNE
21-Jul-2007	10:00	2.7	N
21-Jul-2007	11:00	2.7	N
21-Jul-2007	12:00	3.1	NE
21-Jul-2007	13:00	3.1	NE
21-Jul-2007	14:00	4.0	NNE
21-Jul-2007	15:00	4.0	NNE
21-Jul-2007	16:00	3.6	NNE
21-Jul-2007	17:00	3.6	NNE
21-Jul-2007	18:00	3.6	NNE
21-Jul-2007	19:00	2.2	NE
21-Jul-2007	20:00	1.3	ENE
21-Jul-2007	21:00	0.9	NE
21-Jul-2007	22:00	0.9	NE
21-Jul-2007	23:00	0.4	ENE
22-Jul-2007	00:00	0.4	ENE
22-Jul-2007	01:00	0.9	E
22-Jul-2007	02:00	0.9	E
22-Jul-2007	03:00	1.3	ENE
22-Jul-2007	04:00	1.3	ENE
22-Jul-2007	05:00	0.4	ENE
22-Jul-2007	06:00	0.0	ENE
22-Jul-2007	07:00	0.0	ENE
22-Jul-2007	08:00	0.4	N
22-Jul-2007	09:00	0.9	N
22-Jul-2007	10:00	2.7	N
22-Jul-2007	11:00	3.6	N
22-Jul-2007	12:00	3.1	N
22-Jul-2007	13:00	3.1	NE
22-Jul-2007	14:00	4.0	N
22-Jul-2007	15:00	3.6	NE
22-Jul-2007	16:00	3.1	NE
22-Jul-2007	17:00	2.2	ENE
22-Jul-2007	18:00	2.7	NE
22-Jul-2007	19:00	1.8	ENE
22-Jul-2007	20:00	1.3	E
22-Jul-2007	21:00	0.9	NE
22-Jul-2007	22:00	0.4	E
22-Jul-2007	23:00	0.9	E
23-Jul-2007	00:00	0.4	ENE
23-Jul-2007	01:00	0.4	ENE
23-Jul-2007	02:00	0.4	ENE
23-Jul-2007	03:00	0.0	ENE
23-Jul-2007	04:00	0.0	ENE
23-Jul-2007	05:00	0.0	ENE
23-Jul-2007	06:00	0.0	ENE
23-Jul-2007	07:00	0.0	ENE
23-Jul-2007	08:00	1.8	N
23-Jul-2007	09:00	2.7	N
23-Jul-2007	10:00	2.2	N
23-Jul-2007	11:00	2.7	N

Appendix D - Wind Data

Date	Time	Wind Speed m/s	Direction
23-Jul-2007	12:00	4.0	N
23-Jul-2007	13:00	4.5	NNE
23-Jul-2007	14:00	4.0	N
23-Jul-2007	15:00	3.6	NE
23-Jul-2007	16:00	3.6	NNE
23-Jul-2007	17:00	3.1	NNE
23-Jul-2007	18:00	1.8	NNE
23-Jul-2007	19:00	1.8	E
23-Jul-2007	20:00	1.3	E
23-Jul-2007	21:00	1.8	E
23-Jul-2007	22:00	1.8	E
23-Jul-2007	23:00	1.3	E
24-Jul-2007	00:00	1.3	ENE
24-Jul-2007	01:00	0.9	ENE
24-Jul-2007	02:00	1.3	E
24-Jul-2007	03:00	0.9	ENE
24-Jul-2007	04:00	0.4	ENE
24-Jul-2007	05:00	0.9	ENE
24-Jul-2007	06:00	0.9	ENE
24-Jul-2007	07:00	0.0	ENE
24-Jul-2007	08:00	1.3	NNE
24-Jul-2007	09:00	2.2	N
24-Jul-2007	10:00	2.7	N
24-Jul-2007	11:00	3.1	NE
24-Jul-2007	12:00	3.1	NNE
24-Jul-2007	13:00	3.6	NE
24-Jul-2007	14:00	3.6	ENE
24-Jul-2007	15:00	3.1	NE
24-Jul-2007	16:00	3.1	NE
24-Jul-2007	17:00	3.1	ENE
24-Jul-2007	18:00	3.1	ENE
24-Jul-2007	19:00	1.8	ENE
24-Jul-2007	20:00	2.7	NE
24-Jul-2007	21:00	1.3	E
24-Jul-2007	22:00	0.9	E
24-Jul-2007	23:00	0.4	ENE
25-Jul-2007	00:00	1.3	ENE
25-Jul-2007	01:00	0.9	E
25-Jul-2007	02:00	1.3	NE
25-Jul-2007	03:00	0.9	ENE
25-Jul-2007	04:00	0.9	ENE
25-Jul-2007	05:00	0.9	E
25-Jul-2007	06:00	1.3	ENE
25-Jul-2007	07:00	0.9	NNE
25-Jul-2007	08:00	1.8	N
25-Jul-2007	09:00	1.8	N
25-Jul-2007	10:00	1.8	N
25-Jul-2007	11:00	1.8	N
25-Jul-2007	12:00	1.8	NNE
25-Jul-2007	13:00	2.2	NE
25-Jul-2007	14:00	2.2	NE
25-Jul-2007	15:00	2.7	NE
25-Jul-2007	16:00	3.1	ENE
25-Jul-2007	17:00	3.1	ENE

Appendix D - Wind Data

Date	Time	Wind Speed m/s	Direction
25-Jul-2007	18:00	2.7	ENE
25-Jul-2007	19:00	3.1	ENE
25-Jul-2007	20:00	3.1	ENE
25-Jul-2007	21:00	2.7	E
25-Jul-2007	22:00	1.8	E
25-Jul-2007	23:00	1.3	ENE
26-Jul-2007	00:00	0.0	E
26-Jul-2007	01:00	0.0	E
26-Jul-2007	02:00	0.0	E
26-Jul-2007	03:00	0.0	E
26-Jul-2007	04:00	0.0	ENE
26-Jul-2007	05:00	0.0	---
26-Jul-2007	06:00	0.0	---
26-Jul-2007	07:00	0.0	---
26-Jul-2007	08:00	0.0	NNW
26-Jul-2007	09:00	1.8	N
26-Jul-2007	10:00	0.9	NNE
26-Jul-2007	11:00	1.3	N
26-Jul-2007	12:00	2.2	NE
26-Jul-2007	13:00	2.2	NE
26-Jul-2007	14:00	2.7	NNE
26-Jul-2007	15:00	1.8	N
26-Jul-2007	16:00	2.2	NE
26-Jul-2007	17:00	2.2	ENE
26-Jul-2007	18:00	1.8	ENE
26-Jul-2007	19:00	0.9	E
26-Jul-2007	20:00	0.4	E
26-Jul-2007	21:00	0.0	---
26-Jul-2007	22:00	0.0	---
26-Jul-2007	23:00	0.0	---
27-Jul-2007	00:00	0.0	---
27-Jul-2007	01:00	0.0	---
27-Jul-2007	02:00	0.0	---
27-Jul-2007	03:00	0.0	---
27-Jul-2007	04:00	0.0	---
27-Jul-2007	05:00	0.0	---
27-Jul-2007	06:00	0.0	---
27-Jul-2007	07:00	0.0	---
27-Jul-2007	08:00	0.0	---
27-Jul-2007	09:00	0.9	W
27-Jul-2007	10:00	1.3	W
27-Jul-2007	11:00	1.3	WSW
27-Jul-2007	12:00	1.8	N
27-Jul-2007	13:00	1.8	N
27-Jul-2007	14:00	1.8	N
27-Jul-2007	15:00	2.7	N
27-Jul-2007	16:00	2.2	N
27-Jul-2007	17:00	0.9	N
27-Jul-2007	18:00	0.9	W
27-Jul-2007	19:00	1.3	W
27-Jul-2007	20:00	1.3	WSW
27-Jul-2007	21:00	0.4	W
27-Jul-2007	22:00	0.4	WNW
27-Jul-2007	23:00	0.4	W

Appendix D - Wind Data

Date	Time	Wind Speed m/s	Direction
28-Jul-2007	00:00	0.4	W
28-Jul-2007	01:00	0.0	---
28-Jul-2007	02:00	0.0	W
28-Jul-2007	03:00	0.4	W
28-Jul-2007	04:00	0.0	---
28-Jul-2007	05:00	0.0	SW
28-Jul-2007	06:00	0.0	---
28-Jul-2007	07:00	0.4	S
28-Jul-2007	08:00	0.4	W
28-Jul-2007	09:00	1.3	W
28-Jul-2007	10:00	1.8	W
28-Jul-2007	11:00	1.3	W
28-Jul-2007	12:00	2.2	WNW
28-Jul-2007	13:00	2.7	WNW
28-Jul-2007	14:00	1.8	NNW
28-Jul-2007	15:00	1.8	WNW
28-Jul-2007	16:00	2.2	W
28-Jul-2007	17:00	2.2	W
28-Jul-2007	18:00	1.8	W
28-Jul-2007	19:00	1.8	W
28-Jul-2007	20:00	1.3	W
28-Jul-2007	21:00	0.9	WNW
28-Jul-2007	22:00	0.9	WSW
28-Jul-2007	23:00	0.9	WNW
29-Jul-2007	00:00	0.9	WNW
29-Jul-2007	01:00	0.9	N
29-Jul-2007	02:00	0.4	W
29-Jul-2007	03:00	0.9	W
29-Jul-2007	04:00	0.0	NNE
29-Jul-2007	05:00	0.0	N
29-Jul-2007	06:00	0.0	---
29-Jul-2007	07:00	0.0	---
29-Jul-2007	08:00	0.0	---
29-Jul-2007	09:00	0.4	ENE
29-Jul-2007	10:00	0.4	ESE
29-Jul-2007	11:00	1.3	W
29-Jul-2007	12:00	0.4	W
29-Jul-2007	13:00	0.9	NE
29-Jul-2007	14:00	1.8	ENE
29-Jul-2007	15:00	1.3	N
29-Jul-2007	16:00	2.2	ENE
29-Jul-2007	17:00	0.9	E
29-Jul-2007	18:00	0.9	NNE
29-Jul-2007	19:00	0.4	NW
29-Jul-2007	20:00	0.0	W
29-Jul-2007	21:00	0.4	SE
29-Jul-2007	22:00	0.0	SE
29-Jul-2007	23:00	0.0	SE
30-Jul-2007	00:00	0.0	SE
30-Jul-2007	01:00	0.0	E
30-Jul-2007	02:00	0.0	---
30-Jul-2007	03:00	0.0	SE
30-Jul-2007	04:00	0.0	---
30-Jul-2007	05:00	0.0	---

Appendix D - Wind Data

Date	Time	Wind Speed m/s	Direction
30-Jul-2007	06:00	0.0	---
30-Jul-2007	07:00	0.0	---
30-Jul-2007	08:00	0.0	W
30-Jul-2007	09:00	2.2	W
30-Jul-2007	10:00	0.4	NNE
30-Jul-2007	11:00	0.4	NNE
30-Jul-2007	12:00	0.4	NE
30-Jul-2007	13:00	0.9	NE
30-Jul-2007	14:00	0.0	NNE
30-Jul-2007	15:00	2.2	ESE
30-Jul-2007	16:00	1.8	E
30-Jul-2007	17:00	0.4	NNE
30-Jul-2007	18:00	0.9	NNE
30-Jul-2007	19:00	1.8	ENE
30-Jul-2007	20:00	1.3	ENE
30-Jul-2007	21:00	0.0	ENE
30-Jul-2007	22:00	0.0	ENE
30-Jul-2007	23:00	0.0	ENE
31-Jul-2007	00:00	0.0	ENE
31-Jul-2007	01:00	0.0	NE
31-Jul-2007	02:00	0.9	ENE
31-Jul-2007	03:00	0.0	---
31-Jul-2007	04:00	0.0	---
31-Jul-2007	05:00	0.0	---
31-Jul-2007	06:00	0.0	---
31-Jul-2007	07:00	0.0	---
31-Jul-2007	08:00	0.0	N
31-Jul-2007	09:00	0.4	N
31-Jul-2007	10:00	1.8	NNE
31-Jul-2007	11:00	1.3	NNE
31-Jul-2007	12:00	1.8	N
31-Jul-2007	13:00	1.3	WNW
31-Jul-2007	14:00	1.3	ENE
31-Jul-2007	15:00	3.1	NE
31-Jul-2007	16:00	3.6	NE
31-Jul-2007	17:00	2.7	ENE
31-Jul-2007	18:00	2.2	ENE
31-Jul-2007	19:00	2.2	E
31-Jul-2007	20:00	1.3	E
31-Jul-2007	21:00	1.3	ENE
31-Jul-2007	22:00	1.3	E
31-Jul-2007	23:00	0.9	E

APPENDIX E
1-HOUR TSP MONITORING RESULTS AND GRAPHICAL PRESENTATION

Appendix E - 1-hour TSP Monitoring Results

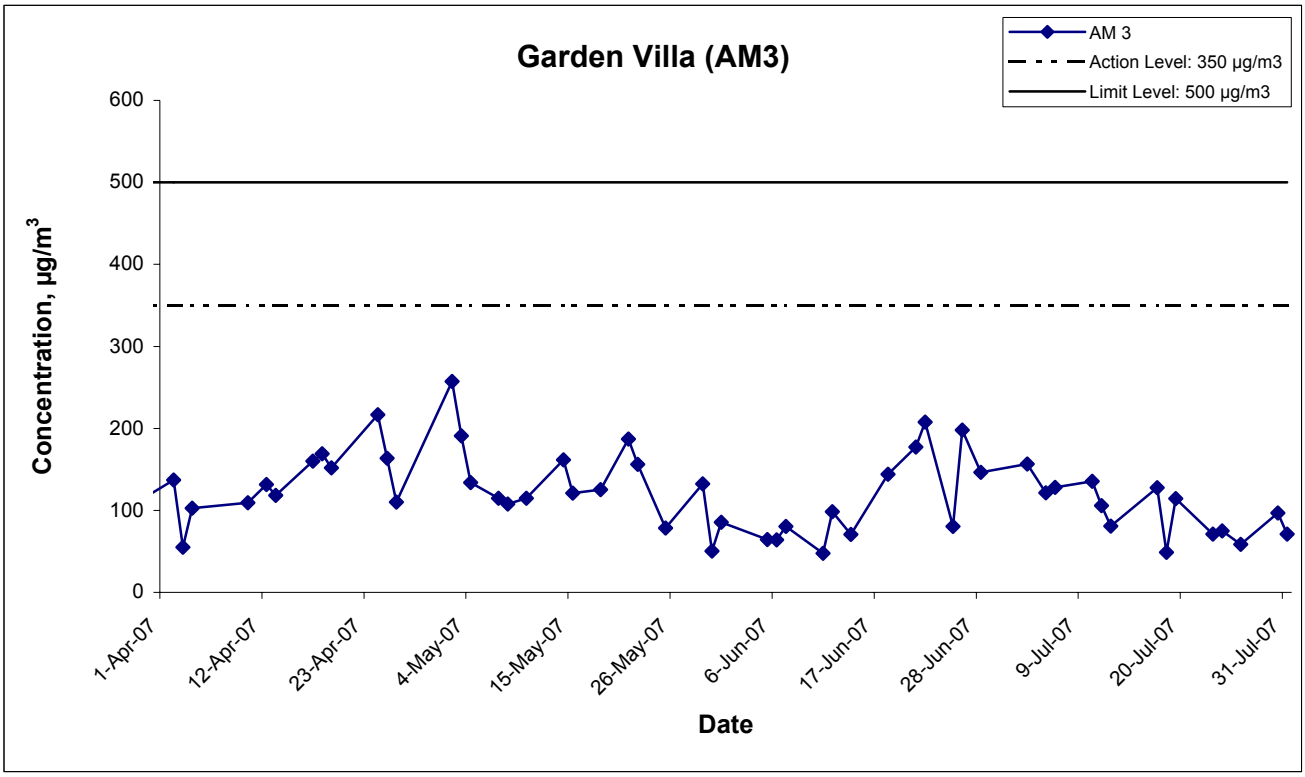
Location AM 3 - Garden Villa

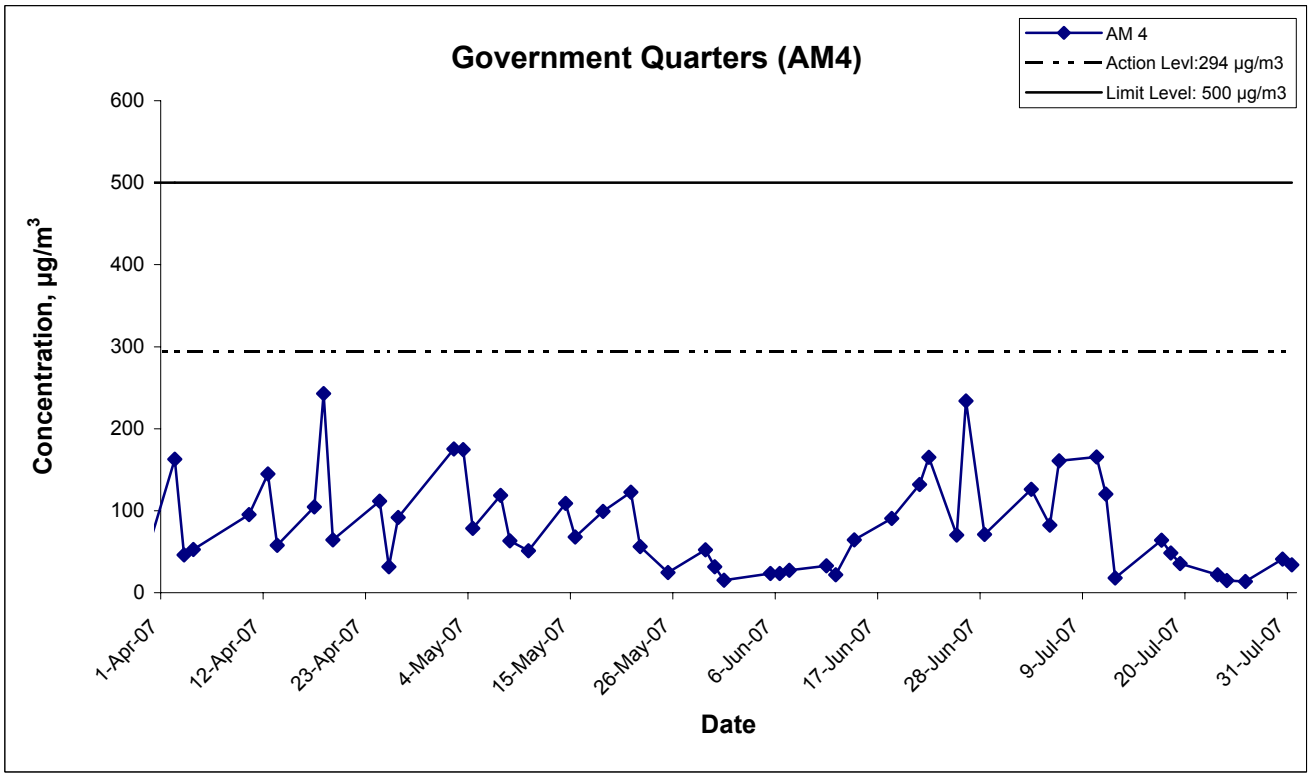
Date	Weather Condition	Filter Weight (g)		Flow Rate (m^3/min.)		Elapse Time		Air Temp. (K)	Atmospheric Pressure(Pa)	Particulate weight(g)	Av. flow (m^3/min)	Total vol. (m^3)	Sampling Time(hrs.)	Conc. ($\mu g/m^3$)
		Initial	Final	Initial	Final	Initial	Final							
3-Jul-07	Sunny	2.7386	2.7501	1.23	1.23	6027.0	6028.0	301.1	758.1	0.0115	1.23	73.5	1.0	156.4
5-Jul-07	Sunny	2.7625	2.7714	1.22	1.22	6052.0	6053.0	302.2	758.2	0.0089	1.22	73.4	1.0	121.2
6-Jul-07	Sunny	2.7674	2.7768	1.22	1.22	6053.0	6054.0	302.2	758.3	0.0094	1.22	73.4	1.0	128.0
10-Jul-07	Sunny	2.7740	2.7840	1.23	1.23	6054.0	6055.0	297.9	755.7	0.0100	1.23	73.8	1.0	135.5
11-Jul-07	Sunny	2.7187	2.7264	1.21	1.21	6079.0	6080.0	305.9	753.4	0.0077	1.21	72.8	1.0	105.8
12-Jul-07	Sunny	2.7516	2.7575	1.22	1.22	6080.0	6081.0	303.0	753.5	0.0059	1.22	73.1	1.0	80.7
17-Jul-07	Sunny	2.8230	2.8324	1.23	1.23	6105.0	6106.0	300.9	758.0	0.0094	1.23	73.6	1.0	127.8
18-Jul-07	Sunny	2.7419	2.7455	1.23	1.23	6106.0	6107.0	297.5	758.5	0.0036	1.23	74.0	1.0	48.7
19-Jul-07	Sunny	2.7870	2.7954	1.22	1.22	6107.0	6108.0	302.5	759.2	0.0084	1.22	73.4	1.0	114.4
23-Jul-07	Sunny	2.8453	2.8505	1.22	1.22	6132.0	6133.0	303.0	759.4	0.0052	1.22	73.4	1.0	70.9
24-Jul-07	Sunny	2.8530	2.8585	1.22	1.22	6133.0	6134.0	304.2	760.1	0.0055	1.22	73.3	1.0	75.1
26-Jul-07	Sunny	2.7969	2.8012	1.22	1.22	6134.0	6135.0	303.2	759.9	0.0043	1.22	73.4	1.0	58.6
30-Jul-07	Sunny	2.8085	2.8156	1.22	1.22	6158.0	6159.0	304.2	759.9	0.0071	1.22	73.3	1.0	96.9
31-Jul-07	Sunny	2.8246	2.8298	1.22	1.22	6159.0	6160.0	304.1	759.1	0.0052	1.22	73.3	1.0	70.9
													Min	48.7
													Max	156.4
													Average	99.3

Location AM 4 - Government Quarters

Date	Weather Condition	Filter Weight (g)		Flow Rate (m^3/min.)		Elapse Time		Air Temp. (K)	Atmospheric Pressure(Pa)	Particulate weight(g)	Av. flow (m^3/min)	Total vol. (m^3)	Sampling Time(hrs.)	Conc. ($\mu g/m^3$)
		Initial	Final	Initial	Final	Initial	Final							
3-Jul-07	Cloudy	2.7676	2.7768	1.22	1.22	6063.5	6064.5	301.1	758.1	0.0092	1.22	72.9	1.0	126.2
5-Jul-07	Sunny	2.7638	2.7698	1.21	1.21	6088.5	6089.5	302.4	758.1	0.0060	1.21	72.8	1.0	82.5
6-Jul-07	Cloudy	2.7889	2.8006	1.21	1.21	6089.5	6090.5	302.2	758.3	0.0117	1.21	72.8	1.0	160.7
10-Jul-07	Sunny	2.8253	2.8374	1.22	1.22	6090.5	6091.5	297.9	755.7	0.0121	1.22	73.2	1.0	165.4
11-Jul-07	Sunny	2.8055	2.8142	1.21	1.21	6115.5	6116.5	304.7	754.3	0.0087	1.21	72.4	1.0	120.2
12-Jul-07	Sunny	2.8191	2.8204	1.21	1.21	6116.5	6117.5	303.0	753.5	0.0013	1.21	72.5	1.0	17.9
17-Jul-07	Sunny	2.8421	2.8468	1.23	1.23	6141.5	6142.5	301.1	757.9	0.0047	1.23	73.6	1.0	63.8
18-Jul-07	Sunny	2.8335	2.8371	1.23	1.23	6142.5	6143.5	297.5	758.5	0.0036	1.23	74.1	1.0	48.6
19-Jul-07	Sunny	2.8069	2.8095	1.23	1.23	6143.5	6144.5	302.5	759.2	0.0026	1.23	73.5	1.0	35.4
23-Jul-07	Sunny	2.8131	2.8147	1.22	1.22	6168.5	6169.5	303.0	759.4	0.0016	1.22	73.5	1.0	21.8
24-Jul-07	Sunny	2.8041	2.8052	1.22	1.22	6169.5	6170.5	304.2	760.1	0.0011	1.22	73.4	1.0	15.0
26-Jul-07	Sunny	2.8067	2.8077	1.22	1.22	6170.5	6171.5	303.2	759.9	0.0010	1.22	73.5	1.0	13.6
30-Jul-07	Sunny	2.8031	2.8061	1.22	1.22	6194.5	6195.5	304.2	759.9	0.0030	1.22	73.4	1.0	40.9
31-Jul-07	Sunny	2.8403	2.8428	1.22	1.22	6195.5	6196.5	304.1	759.1	0.0025	1.22	73.3	1.0	34.1
													Min	13.6
													Max	165.4
													Average	67.6

1-hr TSP Levels





Title	Scale	Project No.
Route 8 (previously known as Route 9) between Cheung Sha Wan & Sha Tin Contract HY/2003/02 - Eagle's Nest Tunnel and Associated Works Graphical Presentation of 1-hour TSP Impact Monitoring Results	N.T.S	MA3024
	Date: Jul 07	Appendix: E

CINOTECH

APPENDIX F
24-HOUR TSP MONITORING RESULTS AND GRAPHICAL PRESENTATION

Appendix F - 24-hour TSP Monitoring Results

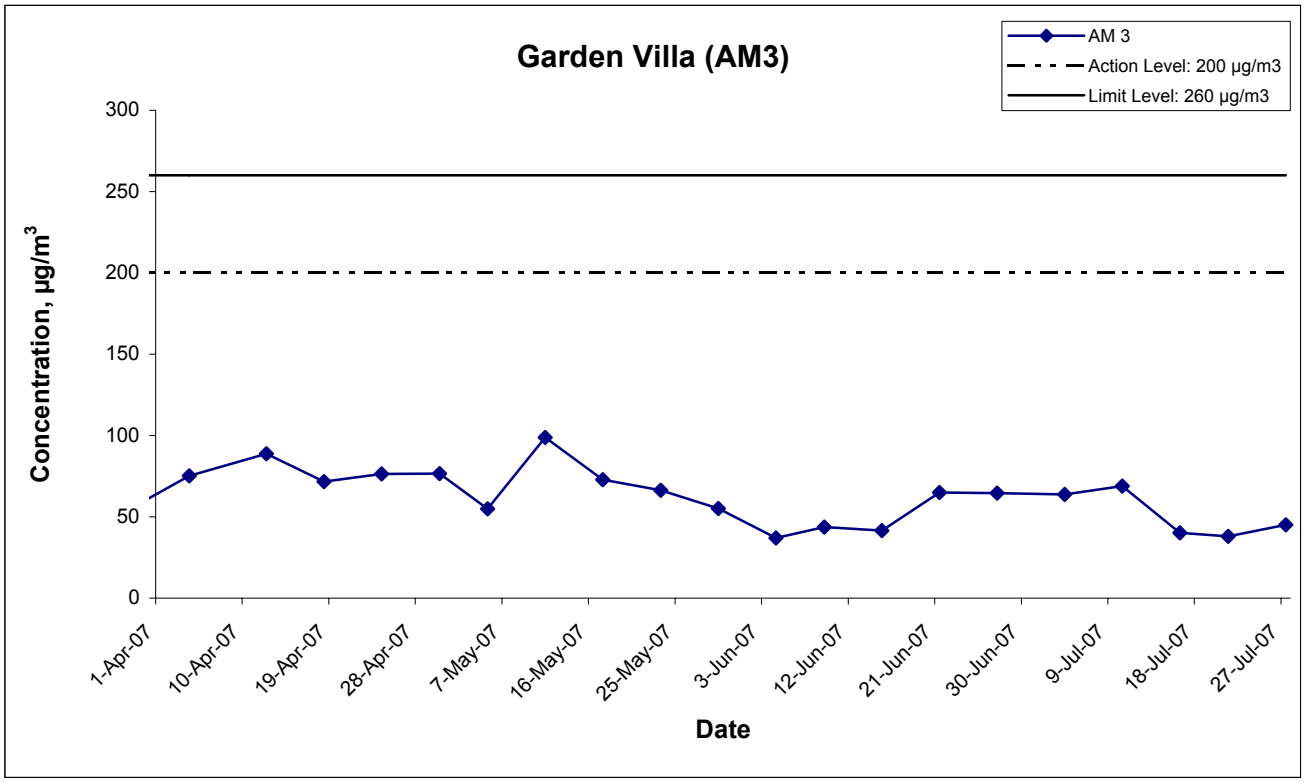
Location AM 3 - Garden Villa

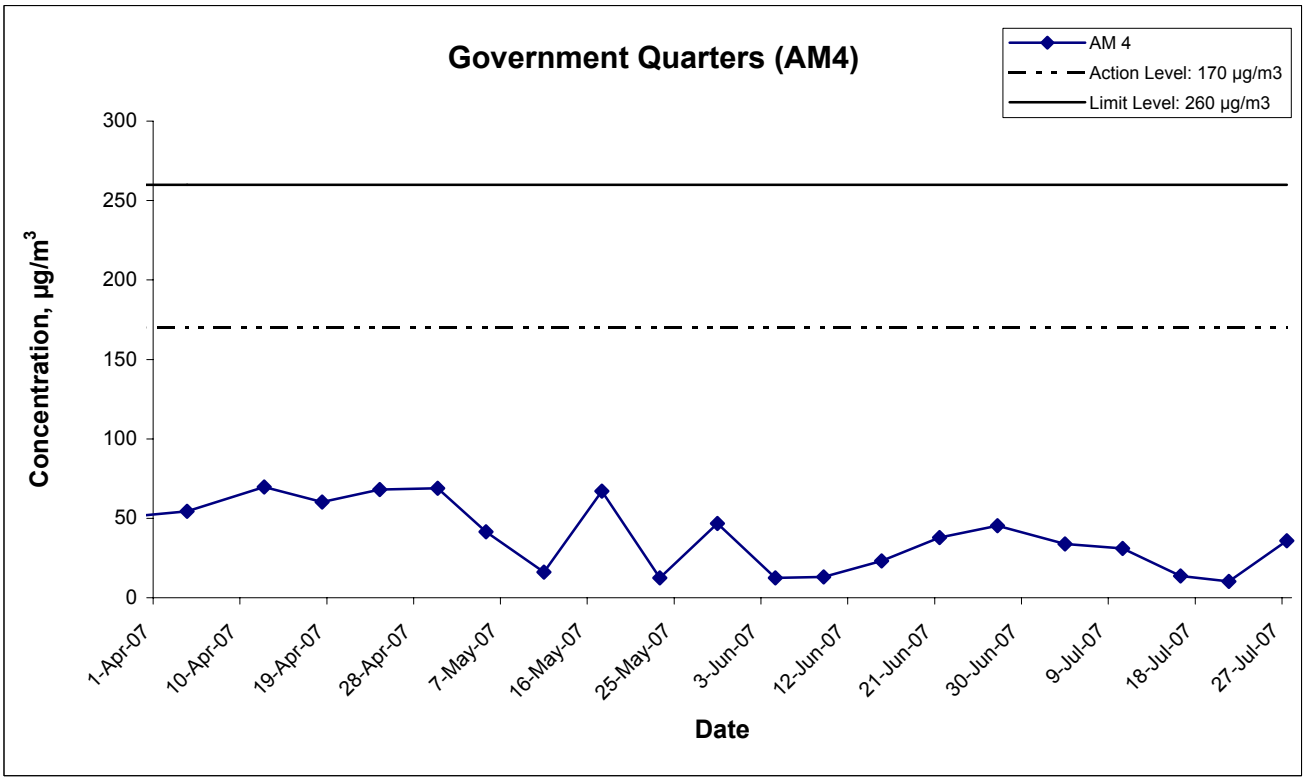
Date	Weather Condition	Filter Weight (g)		Flow Rate (m^3/min.)		Elapse Time		Air Temp. (K)	Atmospheric Pressure(Pa)	Particulate weight(g)	Av. flow (m^3/min)	Total vol. (m^3)	Sampling Time(hrs.)	Conc. ($\mu g/m^3$)
		Initial	Final	Initial	Final	Initial	Final							
4-Jul-07	Sunny	2.7740	2.8864	1.22	1.22	6028.0	6052.0	301.4	757.0	0.1124	1.22	1760.2	24.0	63.9
10-Jul-07	Sunny	2.7119	2.8336	1.23	1.23	6055.0	6079.0	298.3	755.3	0.1217	1.23	1769.4	24.0	68.9
16-Jul-07	Sunny	2.8252	2.8963	1.23	1.23	6081.0	6105.0	300.1	757.5	0.0711	1.23	1766.8	24.0	40.2
21-Jul-07	Sunny	2.8609	2.9279	1.22	1.22	6108.0	6132.0	303.2	758.8	0.0670	1.22	1760.0	24.0	38.1
27-Jul-07	Sunny	2.8361	2.9155	1.22	1.22	6134.0	6158.0	302.6	760.3	0.0794	1.22	1763.2	24.0	45.0
													Min	38.1
													Max	68.9
													Average	51.2

Location AM 4 - Government Quarters

Date	Weather Condition	Filter Weight (g)		Flow Rate (m^3/min.)		Elapse Time		Air Temp. (K)	Atmospheric Pressure(Pa)	Particulate weight(g)	Av. flow (m^3/min)	Total vol. (m^3)	Sampling Time(hrs.)	Conc. ($\mu g/m^3$)
		Initial	Final	Initial	Final	Initial	Final							
4-Jul-07	Sunny	2.7301	2.7892	1.21	1.21	6064.5	6088.5	301.4	757.0	0.0591	1.21	1747.9	24.0	33.8
10-Jul-07	Sunny	2.7862	2.8406	1.22	1.22	6091.5	6115.5	298.1	755.5	0.0544	1.22	1754.8	24.0	31.0
16-Jul-07	Sunny	2.8443	2.8685	1.23	1.23	6117.5	6141.5	300.1	757.5	0.0242	1.23	1769.3	24.0	13.7
21-Jul-07	Sunny	2.8385	2.8566	1.22	1.22	6144.5	6168.5	303.2	758.8	0.0181	1.22	1762.1	24.0	10.3
27-Jul-07	Sunny	2.8011	2.8643	1.23	1.23	6170.5	6194.5	302.6	760.3	0.0632	1.23	1765.5	24.0	35.8
													Min	10.3
													Max	35.8
													Average	24.9

24-hr TSP Levels





Title: Route 8 (previously known as Route 9) between Cheung Sha Wan & Sha Tin Contract HY/2003/02 - Eagle's Nest Tunnel and Associated Works Graphical Presentation of 24-hour TSP Impact Monitoring Results	Scale: N.T.S Date: Jul 07	Project No.: MA3024 Appendix: F	CINOTECH

APPENDIX G
NOISE MONITORING RESULTS AND GRAPHICAL PRESENTATION

Appendix G - Noise Monitoring Results

Location NM5 - Villa Carlton								
Date	Time	Weather	Unit: dB (A) (30-min)					Remarks
			Measured Noise Level			Baseline Level	Construction Noise Level	
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}	
6-Jul-07	09:54	Sunny	73.2	76.0	70.5	77.1	73.2, Measured ≤ Baseline	The major noise source was identified as traffic noise from Tai Po Road.
12-Jul-07	13:00	Sunny	73.1	75.5	71.0		73.1, Measured ≤ Baseline	
19-Jul-07	13:00	Sunny	75.1	76.5	71.0		75.1, Measured ≤ Baseline	
26-Jul-07	10:30	Sunny	77.8	80.0	72.5		69.5	

Location NM6 - Government Quarters						
Date	Time	Weather	Unit: dB (A) (30-min)			Remarks
			Measured Noise Level			
			L_{eq}	L_{10}	L_{90}	
6-Jul-07	10:59	Sunny	59.8	63.5	56.0	-
12-Jul-07	14:00	Sunny	53.6	56.0	52.0	
19-Jul-07	14:00	Sunny	54.6	58.0	51.5	
26-Jul-07	11:20	Sunny	63.7	66.0	60.5	

Location NM7 - Garden Vilia								
Date	Time	Weather	Unit: dB (A) (30-min)					Remarks
			Measured Noise Level			Baseline Level	Construction Noise Level	
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}	
6-Jul-07	09:00	Sunny	69.4	73.5	65.0	59.0	69.0	-
12-Jul-07	09:04	Sunny	66.7	68.5	64.5		65.9	
19-Jul-07	09:03	Sunny	66.4	68.5	63.5		65.5	
26-Jul-07	09:00	Sunny	66.1	68.0	62.0		65.2	

Construction Noise Level (Leq) = Measured Noise Level (Leq) - Baseline Noise Level (Leq)

*Bolded value indicated limit level exceedance

Appendix G - Noise Monitoring Results

Restricted Hours - 19:00 to 23:00 on normal weekdays

Location NM5 - Villa Carlton									
Date	Time	Weather	dB (A) (5-min)				Baseline Level	Construction Noise Level	Remarks
			L_{eq}	L_{10}	L_{90}	Average L_{eq}	L_{eq}	L_{eq}	
6-Jul-07	20:15	Cloudy	72.7	76.0	69.0	72.9	75.8	72.9, Measured ≤ Baseline	The major noise source was identified as traffic noise from Tai Po Road.
	20:20		72.8	76.0	69.0				
	20:25		73.2	76.5	69.5				
12-Jul-07	20:20	Cloudy	73.6	75.0	70.0	73.7		73.7, Measured ≤ Baseline	
	20:25		73.7	75.0	70.0				
	20:30		73.9	75.5	70.5				
19-Jul-07	20:20	Cloudy	73.6	78.0	69.5	73.4		73.4, Measured ≤ Baseline	
	20:25		73.1	78.0	69.0				
	20:30		73.5	78.0	69.5				
26-Jul-07	20:15	Cloudy	73.2	76.0	71.0	73.3		73.3, Measured ≤ Baseline	
	20:20		73.4	76.0	71.0				
	20:25		73.2	76.0	71.0				

Location NM6 - Government Quarters									
Date	Time	Weather	dB (A) (5-min)				Baseline Level	Construction Noise Level	Remarks
			L_{eq}	L_{10}	L_{90}	Average L_{eq}	L_{eq}	L_{eq}	
6-Jul-07	19:45	Cloudy	54.8	59.5	51.0	54.8	56.1	54.8, Measured ≤ Baseline	-
	19:50		54.6	59.5	51.0				
	19:55		54.9	59.5	51.0				
12-Jul-07	19:45	Cloudy	55.1	59.5	51.5	55.3		55.3, Measured ≤ Baseline	
	19:50		55.2	59.5	51.5				
	19:55		55.6	60.0	52.0				
19-Jul-07	19:45	Cloudy	54.6	58.0	51.0	54.4		54.4, Measured ≤ Baseline	
	19:50		54.3	58.0	51.0				
	19:55		54.4	58.0	51.0				
26-Jul-07	19:45	Cloudy	52.3	56.0	48.5	52.4		52.4, Measured ≤ Baseline	
	19:50		52.4	56.0	48.5				
	19:55		52.6	56.5	48.5				

Location NM7 - Garden Villa									
Date	Time	Weather	dB (A) (5-min)				Baseline Level	Construction Noise Level	Remarks
			L_{eq}	L_{10}	L_{90}	Average L_{eq}	L_{eq}	L_{eq}	
6-Jul-07	19:00	Cloudy	56.7	60.5	51.5	57.1	58.3	57.1, Measured ≤ Baseline	The major noise source was identified as traffic noise from Tai Po Road.
	19:05		57.2	61.0	51.5				
	19:10		57.3	61.0	51.5				
12-Jul-07	19:00	Cloudy	56.9	59.0	51.5	56.9		56.9, Measured ≤ Baseline	
	19:05		57.1	59.0	51.5				
	19:10		56.7	58.5	51.0				
19-Jul-07	19:00	Cloudy	56.1	59.5	52.0	56.2		56.2, Measured ≤ Baseline	
	19:05		56.4	59.5	52.5				
	19:10		56.2	59.5	52.0				
26-Jul-07	19:00	Cloudy	57.0	61.0	52.5	57.0		57.0, Measured ≤ Baseline	
	19:05		57.0	61.0	52.5				
	19:10		56.9	61.0	52.5				

Construction Noise Level (Leq) = Measured Noise Level (Leq) - Baseline Noise Level (Leq)

*Bolded value indicated limit level exceedance

Appendix G - Noise Monitoring Results

Restricted Hours - 23:00 to 07:00 on normal weekdays

Location NM5 - Villa Carlton									
Date	Time	Weather	dB (A) (5-min)				Baseline Level	Construction Noise Level	Remarks
			L_{eq}	L_{10}	L_{90}	Average L_{eq}	L_{eq}	L_{eq}	
6-Jul-07	23:05	Cloudy	72.6	75.0	69.0	72.6	74.3	72.6, Measured ≤ Baseline	The major noise source was identified as traffic noise from Tai Po Road.
	23:10		72.5	75.0	69.0				
	23:15		72.6	75.0	69.0				
12-Jul-07	23:00	Cloudy	71.6	75.0	68.5	71.4		71.4, Measured ≤ Baseline	
	23:05		71.5	75.0	68.0				
	23:10		71.0	74.5	67.0				
19-Jul-07	23:00	Cloudy	71.8	75.0	68.0	72.0		72.0, Measured ≤ Baseline	
	23:05		71.9	75.0	68.0				
	23:10		72.4	75.5	69.0				
26-Jul-07	23:00	Cloudy	71.6	74.0	68.0	71.9		71.9, Measured ≤ Baseline	
	23:05		71.7	74.0	68.0				
	23:10		72.3	75.0	68.0				

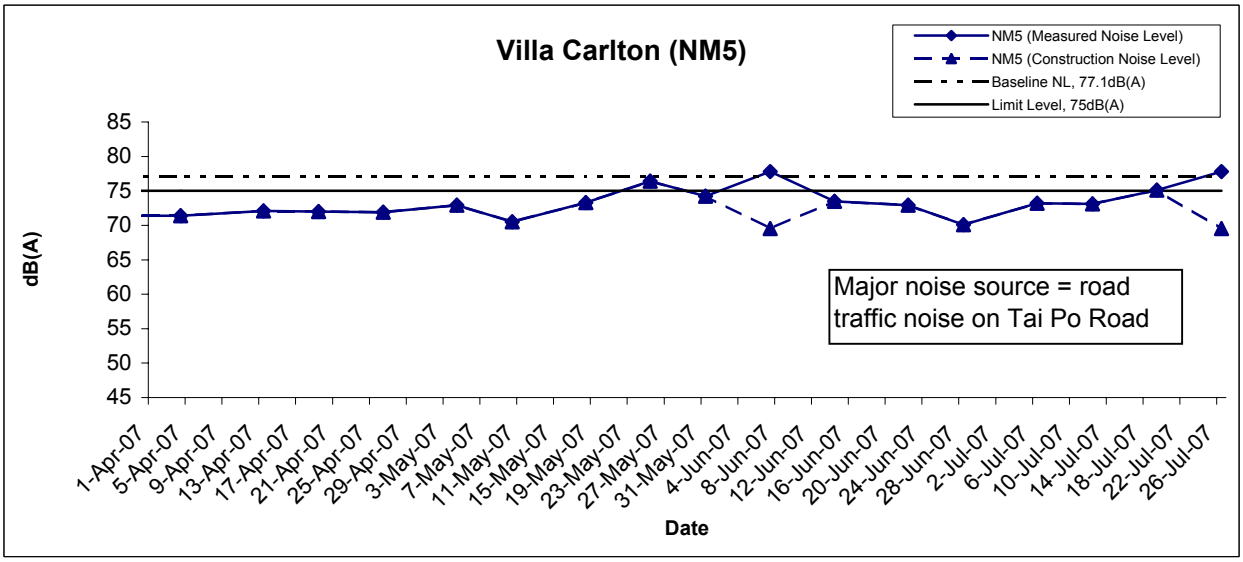
Location NM6 - Government Quarters									
Date	Time	Weather	dB (A) (5-min)				Baseline Level	Construction Noise Level	Remarks
			L_{eq}	L_{10}	L_{90}	Average L_{eq}	L_{eq}	L_{eq}	
6-Jul-07	23:25	Cloudy	51.4	55.0	47.0	51.6	52.8	51.6, Measured ≤ Baseline	The noise monitoring results are well within the range of Baseline Monitoring Level and there is no evidence showing that the dominant noise was generated from the construction activities.
	23:30		51.6	55.0	47.0				
	23:35		51.7	55.0	47.0				
12-Jul-07	23:30	Cloudy	51.2	54.0	47.0	51.2		51.2, Measured ≤ Baseline	
	23:35		51.0	54.0	47.0				
	23:40		51.5	54.5	4.5				
19-Jul-07	23:25	Cloudy	50.6	54.5	47.0	50.5		50.5, Measured ≤ Baseline	
	23:30		50.5	54.5	47.0				
	23:35		50.4	54.5	47.0				
26-Jul-07	23:25	Cloudy	50.2	53.5	47.0	50.7		50.7, Measured ≤ Baseline	
	23:30		50.8	53.5	47.0				
	23:35		51.1	54.0	47.5				

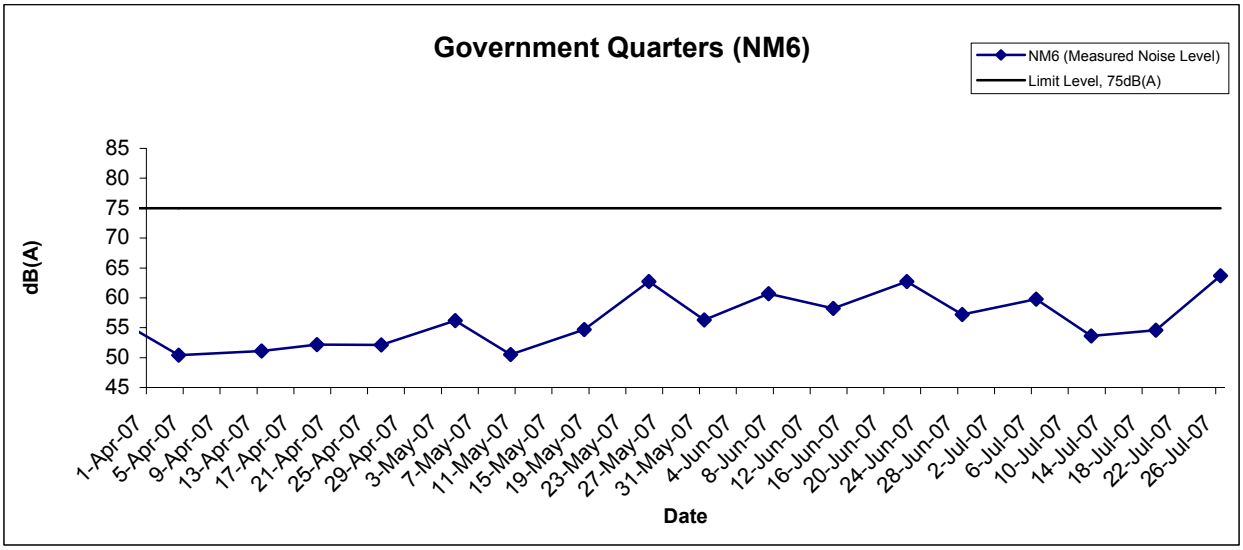
Location NM7 - Garden Villa									
Date	Time	Weather	dB (A) (5-min)				Baseline Level	Construction Noise Level	Remarks
			L_{eq}	L_{10}	L_{90}	Average L_{eq}	L_{eq}	L_{eq}	
6-Jul-07	23:50	Cloudy	54.3	58.5	51.0	54.7	56.5	54.7, Measured ≤ Baseline	The major noise source was identified as traffic noise from Tai Po Road.
	23:55		54.8	59.0	51.5				
	00:00		54.9	59.0	51.5				
12-Jul-07	23:50	Cloudy	54.9	58.0	49.5	55.1		55.1, Measured ≤ Baseline	
	23:55		55.3	58.5	50.5				
	00:00		55.2	58.5	50.5				
19-Jul-07	23:50	Cloudy	55.7	59.0	51.5	55.5		55.5, Measured ≤ Baseline	
	23:55		55.6	59.0	51.5				
	00:00		55.1	59.0	51.0				
26-Jul-07	23:50	Cloudy	55.2	58.5	51.0	55.3		55.3, Measured ≤ Baseline	
	23:55		55.1	58.5	51.0				
	00:00		55.6	59.5	51.5				

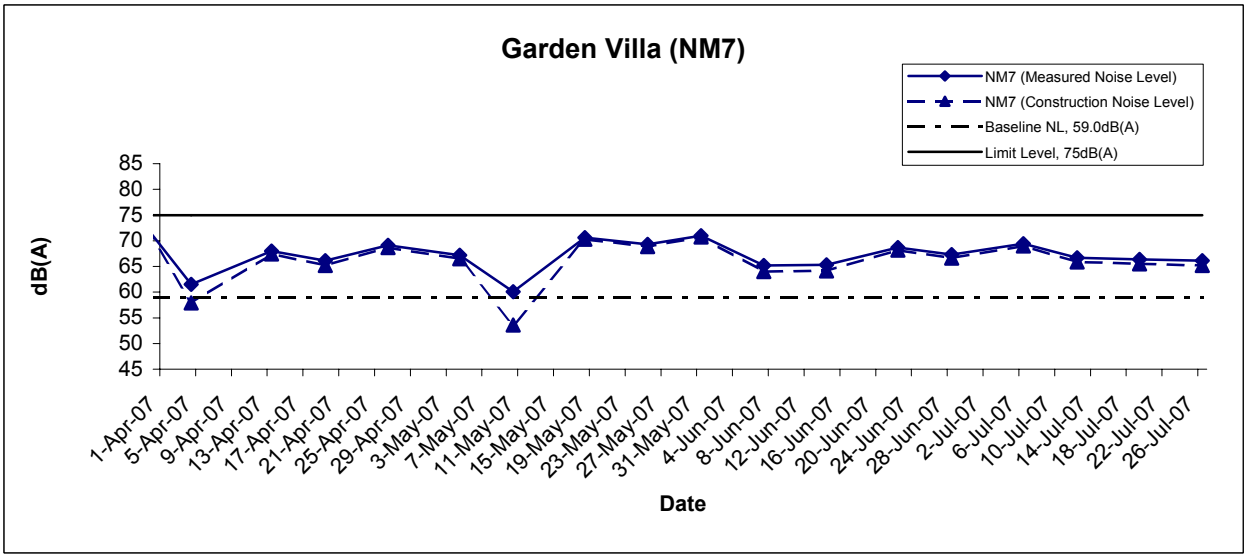
Construction Noise Level (Leq) = Measured Noise Level (Leq) - Baseline Noise Level (Leq)

*Bolded value indicated limit level exceedance

Noise Levels



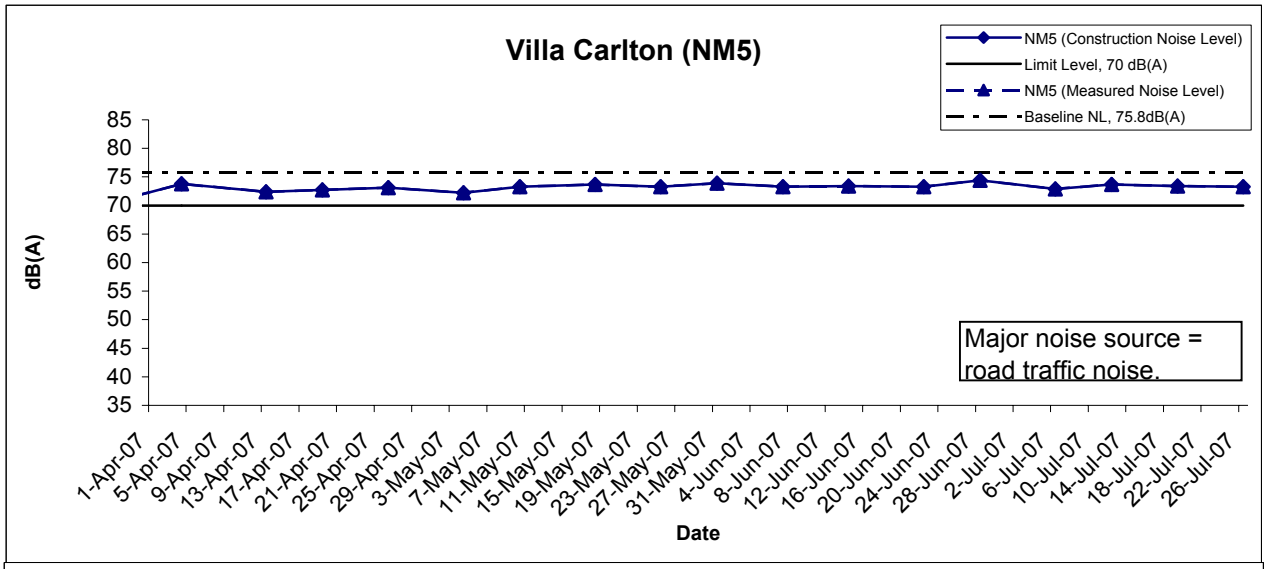


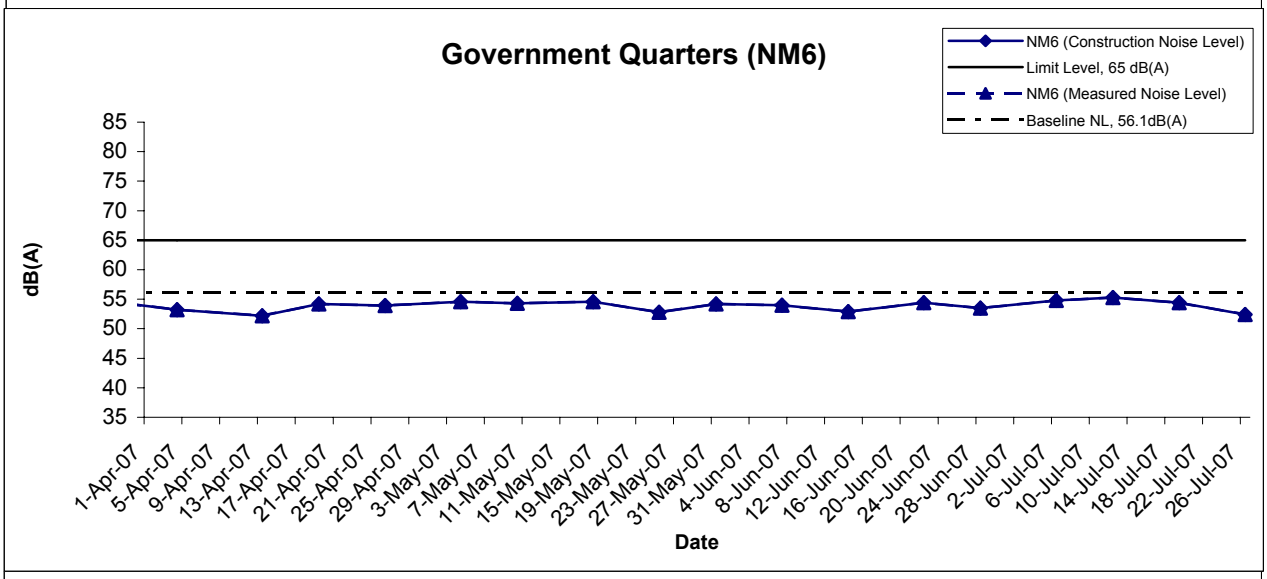


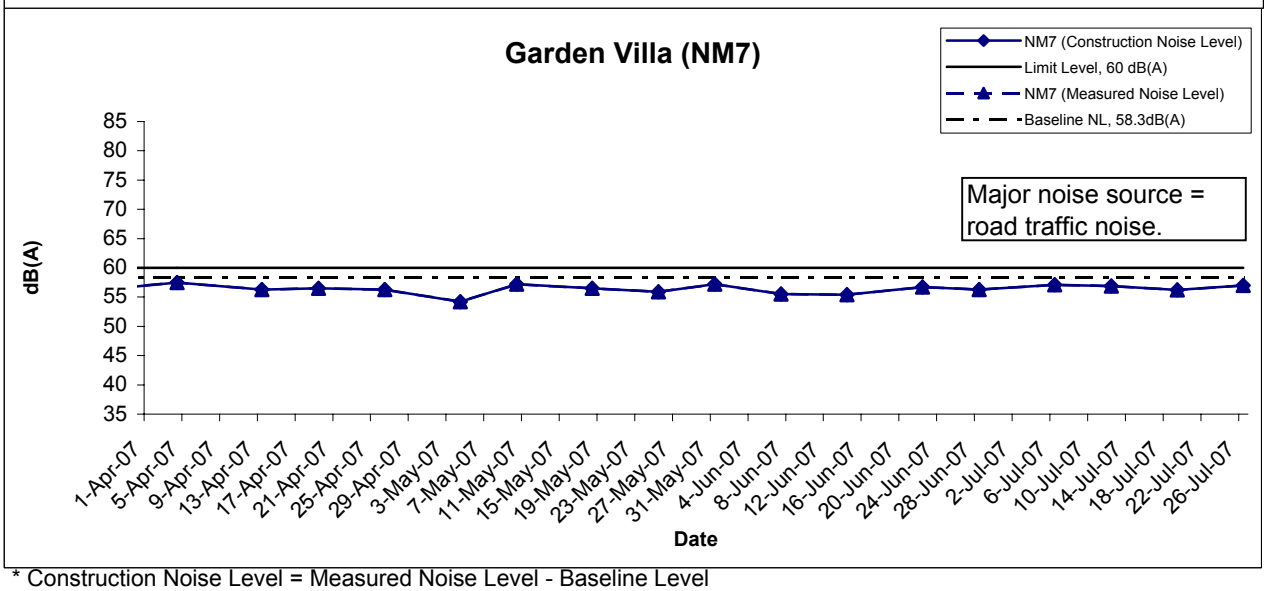
* Construction Noise Level = Measured Noise Level - Baseline Level
(If the measured noise level is lower than the baseline level, the construction noise level will be taken as the meaured one)

Title: Route 8 (previously known as Route 9) between Cheung Sha Wan & Sha Tin Contract HY/2003/02 - Eagle's Nest Tunnel and Associated Works Graphical Presentation of Construction Noise Monitoring Results	Scale: N.T.S	Project No.: MA3024	CINOTECH
	Date: Jul 07	Appendix: G	

Restricted Hours (19:00 to 23:00) - Noise Levels



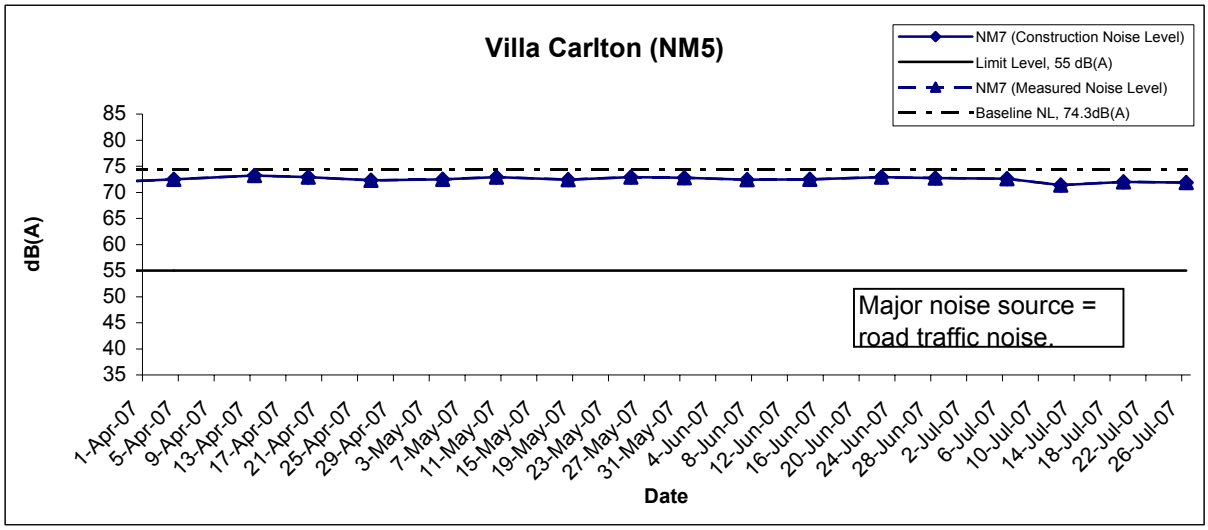


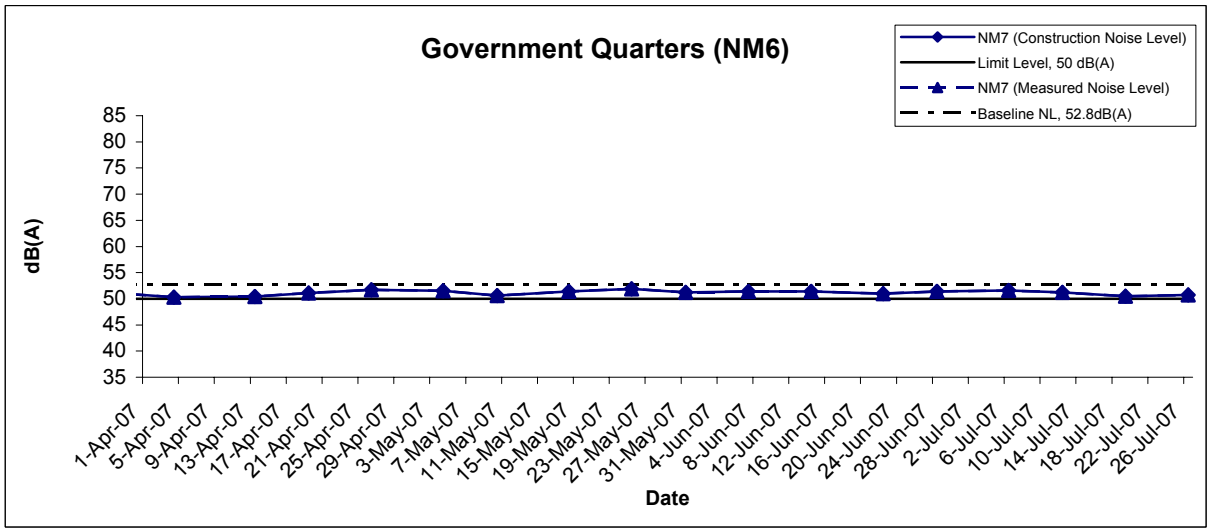


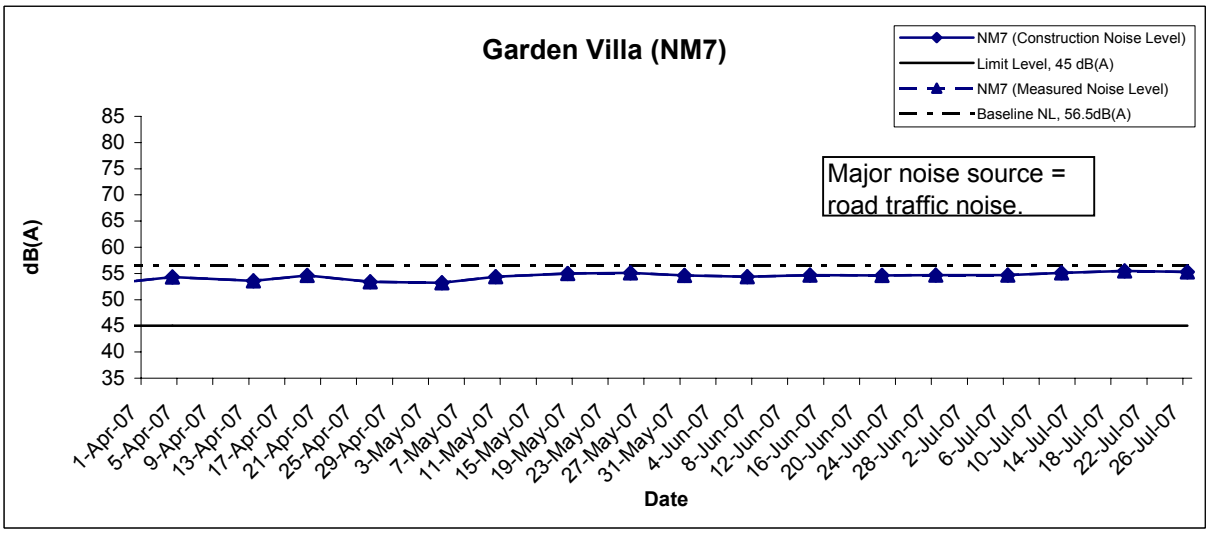
* Construction Noise Level = Measured Noise Level - Baseline Level
(If the measured noise level is lower than the baseline level, the construction noise level will be taken as the meaured one)

Title: Route 8 (previously known as Route 9) between Cheung Sha Wan & Sha Tin Contract HY/2003/02 - Eagle's Nest Tunnel and Associated Works Graphical Presentation of Construction Noise Monitoring Results	Scale: N.T.S Date: Jul 07	Project No.: MA3024 Appendix: G	CINOTECH

Restricted Hours (23:00 to 07:00) - Noise Levels







* Construction Noise Level = Measured Noise Level - Baseline Level
(If the measured noise level is lower than the baseline level, the construction noise level will be taken as the meaured one)

Title: Route 8 (previously known as Route 9) between Cheung Sha Wan & Sha Tin Contract HY/2003/02 - Eagle's Nest Tunnel and Associated Works	Scale: N.T.S	Project No.: MA3024	CINOTECH
Graphical Presentation of Construction Noise Monitoring Results	Date: Jul 07	Appendix: G	

APPENDIX H
SUMMARY OF EXCEEDANCE

Summary of Exceedances Recorded in the Reporting Month

a) Exceedance Report for 1-hr TSP: (NIL)

b) Exceedance Report for 24-hr TSP: (NIL)

c) Exceedance Report for Construction Noise: (NIL)

- No Action/Limit Level exceedance was recorded in the reporting month.

APPENDIX I
SITE AUDIT SUMMARY

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	70703-ENT-TCSS
Date	3 July 2007 (Thursday)
Time	14:00-14:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
	A. Water Quality • No environmental deficiency was identified during the site inspection. ***B. Air Quality*** • No environmental deficiency was identified during the site inspection. ***C. Noise*** • No environmental deficiency was identified during the site inspection. ***D. Waste / Chemical Management*** • No environmental deficiency was identified during the site inspection. ***E. Permit / Licenses*** • No environmental deficiency was identified during the site inspection. ***F. Others*** • Follow-up for previous audit session (Ref. No.: 70531-ENT-TCSS), no environmental deficiency was identified during the site inspection.	

	Name	Signature	Date
Recorded by	Edmond Wu		4 July2007
Checked by	Dr. Priscilla Choy		4 July 2007

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	70703-ENT
Date	3 July 2007 (Tuesday)
Time	14:15 – 15:45

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
70703E-01O	***A. Water Quality*** • Breeding mosquito was observed near Ventilation Building. The Contractor was recommended to remove the standing water.	B14, G1
70703E-02R	***B. Air Quality*** • Stockpile without covering was observed near Admin Building. The Contractor was recommended to cover it with tarpaulin sheet when it is not being used.	C8
	C. Noise • No environmental deficiency was identified during the site inspection.	
	D. Waste / Chemical Management • No environmental deficiency was identified during the site inspection.	
	E. Permit / Licenses • No environmental deficiency was identified during the site inspection.	
	F. Others • Follow-up on previous audit (Ref. No.: 70627-ENT), all environmental deficiencies were improved/rectified by the Contractor. • Covering of loaded truck leaving the site was checked during the site inspection. No truck leaving the construction site was observed during the site inspection.	

	Name	Signature	Date
Recorded by	Edmond Wu		4 July 2007
Checked by	Dr. Priscilla Choy		4 July 2007

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	70711-ENT
Date	11 July 2007 (Wednesday)
Time	9:30 – 11:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
	A. Water Quality • No environmental deficiency was identified during the site inspection. ***B. Air Quality*** • No environmental deficiency was identified during the site inspection. ***C. Noise*** • No environmental deficiency was identified during the site inspection. ***D. Waste / Chemical Management*** • No environmental deficiency was identified during the site inspection. ***E. Permit / Licenses*** • No environmental deficiency was identified during the site inspection. ***F. Others*** • Follow-up on previous audit (Ref. No.: 70703-ENT), all environmental deficiencies were improved/rectified by the Contractor. • Covering of loaded truck leaving the site was checked during the site inspection. No truck leaving the construction site was observed during the site inspection.	

	Name	Signature	Date
Recorded by	Stanley Liu	Stanley	11 July 2007
Checked by	Dr. Priscilla Choy		11 July 2007

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	70718-ENT
Date	18 July 2007 (Wednesday)
Time	9:30 – 11:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
70718E-01R	***A. Water Quality*** • Standing water was observed near Mui Kong Tsuen . The Contractor was recommended to clear it. ***B. Air Quality*** • No environmental deficiency was identified during the site inspection. ***C. Noise*** • No environmental deficiency was identified during the site inspection.	B14
70718E-02R	***D. Waste / Chemical Management*** • General refuse was observed in the catchpit next to ENT-North Portal Building. The Contractor was reminded to remove it. ***E. Permit / Licenses*** • No environmental deficiency was identified during the site inspection. ***F. Others*** • Follow-up on previous audit (Ref. No.: 70711-ENT), all environmental deficiencies were improved/rectified by the Contractor. • Covering of loaded truck leaving the site was checked during the site inspection. No truck leaving the construction site was observed during the site inspection.	E1i

	Name	Signature	Date
Recorded by	Grace Wong		18 July 2007
Checked by	Dr. Priscilla Choy		18 July 2007

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	70725-ENT
Date	25 July 2007 (Wednesday)
Time	9:15 – 10.40

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
70725E-O01	***A. Water Quality*** • Silt was observed along the side of ENT service road at Mui Kong Tsuen. The Contractor was advised to clear it. ***B. Air Quality*** • No environmental deficiency was identified during the site inspection. ***C. Noise*** • No environmental deficiency was identified during the site inspection. ***D. Waste / Chemical Management*** • No environmental deficiency was identified during the site inspection.	B9
70725E-R01	***E. Permit / Licenses*** • Contraction Noise Permit was observed not posting at the entrance near the ENT-South Portal Building. The Contractor was reminded to post it at the site entrance. ***F. Others*** • Follow-up on previous audit (Ref. No.: 70718-ENT), all environmental deficiencies were improved/rectified by the Contractor. • Covering of loaded truck leaving the site was checked during the site inspection. No truck leaving the construction site was observed without cover during the site inspection.	F2

	Name	Signature	Date
Recorded by	Grace Wong	Grace	25 July 2007
Checked by	Dr. Priscilla Choy		25 July 2007

APPENDIX J
EVENT ACTION PLANS

Appendix J - Event Action Plans

Event/Action Plan for Air Quality

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

EVENT	ACTION			
	ET	IEC	ER	Contractor
	remedial actions and keep EPD and ER & IEC informed of the results	4. Advise the ER & ET on the effectiveness of the proposed remedial measures 5. Supervise the implementation of the remedial measures	proposed remedial actions 5. Ensure remedial actions properly implemented	3. Implement the agreed proposals 4. Amend proposal if appropriate
2. Exceedance for two or more consecutive samples	1. Identify source 2. Inform ER, IEC, Contractor and EPD the cause & actions taken for the exceedances 3. Repeat measurement to confirm findings 4. Increase monitoring frequency to daily 5. Investigate the causes of exceedance 6. Carry out analysis of contractor's working procedures to determine possible mitigation to be implemented. 7. Arrange meeting with EPD, IEC and ER to discuss the remedial actions to be taken 8. Assess effectiveness of Contractor's remedial actions and keep EPD and ER & IEC informed of the results 9. If exceedance stops, cease additional monitoring	1. Checking monitoring data submitted by ET 2. Discuss amongst ER, ET and Contractor on possible remedial measures 3. Review Contractor's remedial measures whenever necessary to ensure their effectiveness and advise the ER accordingly 4. Supervise the implementation of the remedial measures	1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented 4. Discuss amongst ET, IEC and the Contractor on proposed remedial actions 5. In consultation with IEC, agree with the contractor remedial measures to be implemented 6. Ensure remedial measure are properly implemented 7. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated	1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to IEC, ER within 3 working days of notification 3. Implement the agreed proposals 4. Resubmit proposals if problem still not under control 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated

Event/Action Plan for Construction Noise

Exceedance	ACTION			
	ET	.IEC	ER	Contractor
Action Level	1. Discuss with the IEC and ER and seek to identify potential noise source 2. Undertake noise measurement to confirm the validity of complaint 3. Inform ER&IEC in writing Discuss remedial actions required with ER&IEC if an exceedance is recorded 4. Increase monitoring frequency to demonstrate efficacy of remedial measures 5. If exceedance continues, meet with ER&IEC to review implementation of appropriate mitigation measures. 6. If exceedance stops, cease additional monitoring	1. Review the analyzed results submitted by the ET 2. Review the proposed remedial measures by the Contractor and advise the ER & ET accordingly 3. Supervise the implementation of remedial measures	1. Confirm receipt of notification of complaint and notify Contractor immediately 2. Check monitoring data trends and Contractor's working methods 3. Remind the Contractor of his contractual obligations and discuss with ET, IEC and Contractor on proposed remedial actions 4. Assess the efficacy of remedial actions and keep the Contractor informed 5. Inform complainant of actions taken	1. Submit proposals for remedial actions to ER within three working days of notification 2. Amend proposals if required by the Engineer 3. Implement the remedial actions immediately upon instruction 4. Liaise with the ER to optimize the effectiveness of the agreed mitigation 5. Amend proposal if appropriate

Exceedance	ACTION			
	ET	IEC	ER	Contractor
Limit Level	1. Repeat measurement to confirm findings 2. Investigate the cause of the exceedance and identify the main source(s) of impact 3. Inform ER&IEC and EPD in writing 4. Discuss remedial actions required with ER&IEC 5. Increase monitoring frequency to demonstrate efficacy of remedial measures 6. Assess efficacy of remedial actions and keep ER & IEC informed of the results 7. If exceedance continues, meet with ER&IEC to identify appropriate mitigation measures 8. If exceedance stops, cease additional monitoring	1. Check monitoring data submitted by ET 2. Review Contractor's remedial actions to assure their effectiveness and advise the ER &ET accordingly 3. Supervise the implementation of the remedial measures	1. Confirm receipt of notification of exceedance and notify Contractor 2. Check monitoring data trends and Contractor's working methods 3. Discuss with ET, IEC and Contractor on proposed remedial actions to be implemented 4. Assess the efficacy of remedial actions and keep the Contractor informed 5. If exceedance continuous, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is aborted	1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to ER immediately not more than 3 working days of notification 3. Amend proposals if required by the ER 4. Implement remedial actions immediately upon instruction 5. Liaise with the ER to optimize the effectiveness of the agreed mitigation 6. Resubmit proposals if problem still not under control 7. Stop the relevant portion of works as determined by the ER until the exceedance is aborted

APPENDIX K
ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE (EMIS)

Appendix K - Summary of Environmental Mitigation Implementation Schedule

Types of Impacts	Mitigation Measures	Status
Construction Dust	• Any stockpile of dusty materials or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water so as to maintain the entire surface wet.	^
	• A stockpile of dusty materials should not extend beyond the pedestrian barriers, fencing or traffic cones.	^
	• Vehicle washing facilities should be provided at every exit point.	^
	• The area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores.	^
	• Where a site boundary adjoins a road, street, service lane or other area accessible to the public, hoarding of not less than 2.4m high from ground level should be provided along the entire length of that portion of the site boundary except for a site entrance or exit.	^
	• Every main haul road should be sprayed with water or a dust suppression chemical so as to maintain the entire road surface wet.	^
	• The portion of any road leading only to a construction site that is within 30m of a discernible or designated vehicle entrance or exit should be kept clear of dusty materials.	^
	• Any stockpile of dusty materials should be either covered entirely be impervious sheeting, placed in an area sheltered on the top and the 3 sides or sprayed with water or a dust suppression chemical so as to maintain the entire surface wet.	^
	• All dusty materials should be sprayed with water or a dust suppression chemical immediately prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet.	^
	• Every vehicle should be washed to remove any dusty materials from its body and wheels immediately before leaving a construction site.	^
	• The working area of any excavation should be sprayed with water or a dust suppression chemical immediately before, during and immediately after the operation so as to maintain the entire surface wet.	^
Construction Noise	• Only well-maintained plant should be operated on –site and plant should be serviced regularly during the construction works.	^
	• Machines and plant that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum.	^
	• Plant know to emit noise strongly in one direction, should where possible, be orientated to direct noise away from the NSRS.	^
	• Mobile plant should be sited as far away from NSRs as possible.	^
	• Material stockpiles and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.	^
	• Use quite plant and Working Method	^
	• Reduce the number of plant operating in critical areas close NSRs.	^

Types of Impacts	Mitigation Measures	Status
	• Construct temporary and movable noise barriers	^
Water Quality	*Construction Runoff and Drainage*	
	• Use of sediment traps and the adequate maintenance of drainage systems to prevent flooding and overflow.	^
	• Boundaries of critical areas of earthworks should be marked and surrounded by dykes or embankments for flood protection. Temporary ditches should be provided to facilities runoff discharge into the appropriate watercourses, via a silt retention pond. Permanent drainage channels should incorporate sediment basins or traps and baffles to enhance deposition rates.	^
	• All temporary and permanent drainage pipes and culverts provided to facilitate runoff discharge should be adequately designed for the controlled release of storm flows. All sediment traps should be regularly cleaned and maintained. The temporarily diverted drainage should be reinstated to its original condition when the construction works has finished or the temporary diversion is no longer required	^
	• Sand silt in the wash water from the wheel washing facilities, which ensure no earth, mud and debris is deposited on roads, should be settled out the removed before discharging into storm drains. A section of the road between the wheel washing bay and the public road should be paved with backfill to prevent wash water or other site runoff form entering public road drains.	^
	• Oil interceptors should be provided in the drainage system and regularly emptied to prevent the release of oils and grease into the storm water drainage system after accidental spillage. The interceptor should have a bypass to prevent flushing during periods of heavy rain.	^
	• Catchpits and perimeter channels shall be constructed in advance of site formation works and earthworks.	^
	• Silt removal facilities, channels and manholes shall be suitably maintained with the deposited silt and grit being removed at least once a week, and at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times.	^
	• Earthworks final surfaces shall be well compacted and the subsequent permanent work or surface protection shall be carried out immediately after the final surfaces are formed to prevent erosion caused by rainstorms. Appropriate intercepting channels shall be provided along the site boundary or at the locations agreed with the ET Leader. Rainwater pumped out from trenches or foundation excavations shall be discharged into silt removal facilities before discharge into storm drains.	^
	• All generators, fuel and oil storage shall be within bunded areas. Drainage from the areas shall be connected to storm drains via a petrol interceptor.	^
	Tunnelling Work	
	• Temporary open storage of excavated materials should be covered with tarpaulin or similar fabric during rainstorms. Any washout of construction or excavated materials form the drill and blast tunnelling work should be diverted to the drainage system via appropriate sediment traps.	^
	• Ground water pumped out of tunnels should be discharged into the drainage channels which incorporated sediment traps to enhance deposition rates and to remove silt.	^

Types of Impacts	Mitigation Measures	Status
	• Spend grouts used in diaphragm wall construction should be collected in a separate slurry collection system, reconditioned and reused wherever practicable. The disposal of used grouting materials will only be permitted if it is treated to the TM standards before discharge to the storm drains or disposal to landfill.	N/A
	General Construction Activities	
	• Debris and rubbish on site should be collected, handled and disposed of properly to avoid entering the water column and cause water quality impacts. • All fuel tanks and storage areas will be provided with locks and be located on sealed areas (within bunds of a capacity equal to 110% of the storage capacity of the largest tank or 20% by volume of the fuel stored in that areas, whichever in the greatest).	^ ^
	Sewage Effluent	
	• Construction work force sewage discharges form fixed toilet facilities on-site should be connected to the nearby existing trunk sewer wherever feasible. However, for areas where existing trunk sewer is not available, it is recommended that appropriate and adequate on site portable chemical toilets should be provided by a licensed contractor who will be responsible for appropriate disposal and maintenance of these facilities. • It is considered that sewage discharges could also be treated by on-site septic tanks and soakaway. Minimum clearance away form streams and catchments and other requirements for the proposed septic tank and soakaway should be referred to EPD's Practice Note for Professional Persons, Drainage Plans.	^ N/A
Waste	*General*	
	• Training and instruction shall be given at a site to construction staff to increase awareness and draw attention to waste management issues and the need to minimise waste generation. The training requirement shall be included in the site waste management plan.	^
	Storage, Collection and Transportation of Waste	
	• Wastes shall be handled and stored in a manner to ensure that they are held securely without loss or leakage. • Authorised or licensed waste hauliers shall be used and they shall only collect wastes prescribed by their permits. • Waste shall be removed on a daily basis. • Waste storage area shall be maintained and cleaned on a daily basis. • Windblown litter and dust during transportation shall be minimised by either covering trucks or transporting wastes in enclosed containers. • Obtain necessary waste disposal permits from the appropriate authorities if they are required. • Wastes shall be disposed of at licensed waste disposal facilities. • Develop procedure such as ticketing system to facilitate tracking of loads, particularly for chemical waste, and to ensure that illegal disposal of wastes does not occur. • Maintain records of the quantities of wastes generated, recycled and disposed.	^ ^ ^ ^ ^ ^ ^ ^ ^

Types of Impacts	Mitigation Measures	Status
	Surplus Excavated Materials	
	• Due to the high risk of loose material being washed into the existing nullah, stockpile materials should be properly compacted and covered from water erosion and located at least 10m away from the nullah wall.	^
	Construction and Demolition (C&D) Waste	
	• Careful design, planning and good site management shall be adopted to minimise over-ordering and generation of waste materials such as concrete grouts.	^
	• The handling and disposal of bentonite slurries shall be undertaken in accordance with Practice Note for Professional Persons – Construction Site Drainage (ProPECC PN 1/94) on construction site drainage.	N/A
	• Construction and demolition (C&D) material shall be segregated to inert and non-inert parts. The inert portion shall re-used at areas of reclamation or land formation, or to public filling area shall such allocation is deemed necessary. The non-inert portion shall be disposed of to landfill.	^
	Chemical Waste	
	• Chemical waste that is produce during construction shall be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes.	^
	• Containers used for the storage of chemical wastes should: a. Be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; b. Have a capacity of less than 450 litres unless the specifications have been approved by the EPD; c. Display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Chemical Waste Regulations.	^
	• The storage area for chemical wastes should: a. Be clearly labelled and used solely for the storage of chemical waste; b. Be enclosed on at least 3 sides; c. Have an impermeable floor and bunding of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in the area, whichever is largest; d. Have adequate ventilation; e. Be covered to prevent rainfall entering (water collected within the bund must be tested and disposed as chemical waste if necessary); f. Be arranged so that incompatible materials are adequately separated.	^
	• Disposal of chemical waste shall be via a licensed waste collector; and to a facility licensed to receive chemical waste; or a reuser of the waste (under approval from EPD).	^

Types of Impacts	Mitigation Measures	Status
	General Refuse	
	• General refuse generated on-site shall be stored in enclosed bins or compaction unit separate from C&D and chemical wastes. A reputable waste collector shall be employed by the contractor to remove general refuse from the site, separately from C&D and chemical wastes, on a daily for every second day basis to minimise odour, pest and litter impacts. The burning of refuse on construction sites is prohibited by law.	^
	• Reusable rather than disposable dishware shall be used if feasible.	^
Ecology	• A sediment barrier shall be erected to minimize stream sedimentation at downstream of the project boundary of the Toll Plaza.	N/A
	• Conduct a tree survey before commencement of the construction work.	^
	• All measures recommended in the approved landscape proposals under Condition 2.4 in EP above shall be fully implemented in accordance with the details and time schedule set out in the submission.	N/A
	• Loss of the adjacent woodland due to temporary land take shall be returned to the original status immediately.	N/A
	• Wild and uncontrolled fire shall be strictly prohibited	^
	• Fences shall be erected along the boundary of the construction sites at the Toll Plaza before commencement of works, to prevent tipping, vehicle movements, and encroachment of personnel onto adjacent wooded areas.	N/A
Landscape and Visual Impact	• Landscape mitigation measure 1 (LMM1) – Construction programming and management. The periphery of the works areas at street level shall be managed so that they do not appear cluttered, untidy and unattractive and inconvenient to pedestrians. For example, all hoarding shall be colorfully designed with interesting motifs demonstrating the work of Highways Department. Hoardings with bland colours shall be avoided.	^
	• Landscape mitigation measure 2 (LMM2) – Advanced planting and erosion control works. Where possible, the transplantation of existing valuable trees, the stockpiling of topsoil, new planting and erosion control works shall be carried out as early as possible in the construction period instead of at the end. This will assist in maximizing the time for carrying out transplantation and new planting, resulting in a higher success rate for the survival of transplantation and new planting, resulting in a higher success rate for the survival of transplanted trees and the establishment of new screen trees. The stockpiling of topsoil will provide an abundant use of on-site material for growing media. During detailed design, the issue of stockpiling of topsoil in a manner that would avoid washing into the drainage scheme should be examined comprehensively.	^
	• Measurement of vibration would also be carried out on a need basis during the piling work	^

Remarks:

^	Compliance of mitigation measure;	X	Non-compliance of mitigation measure;
N/A	Not Applicable;	•	Non-compliance but rectified by the contractor

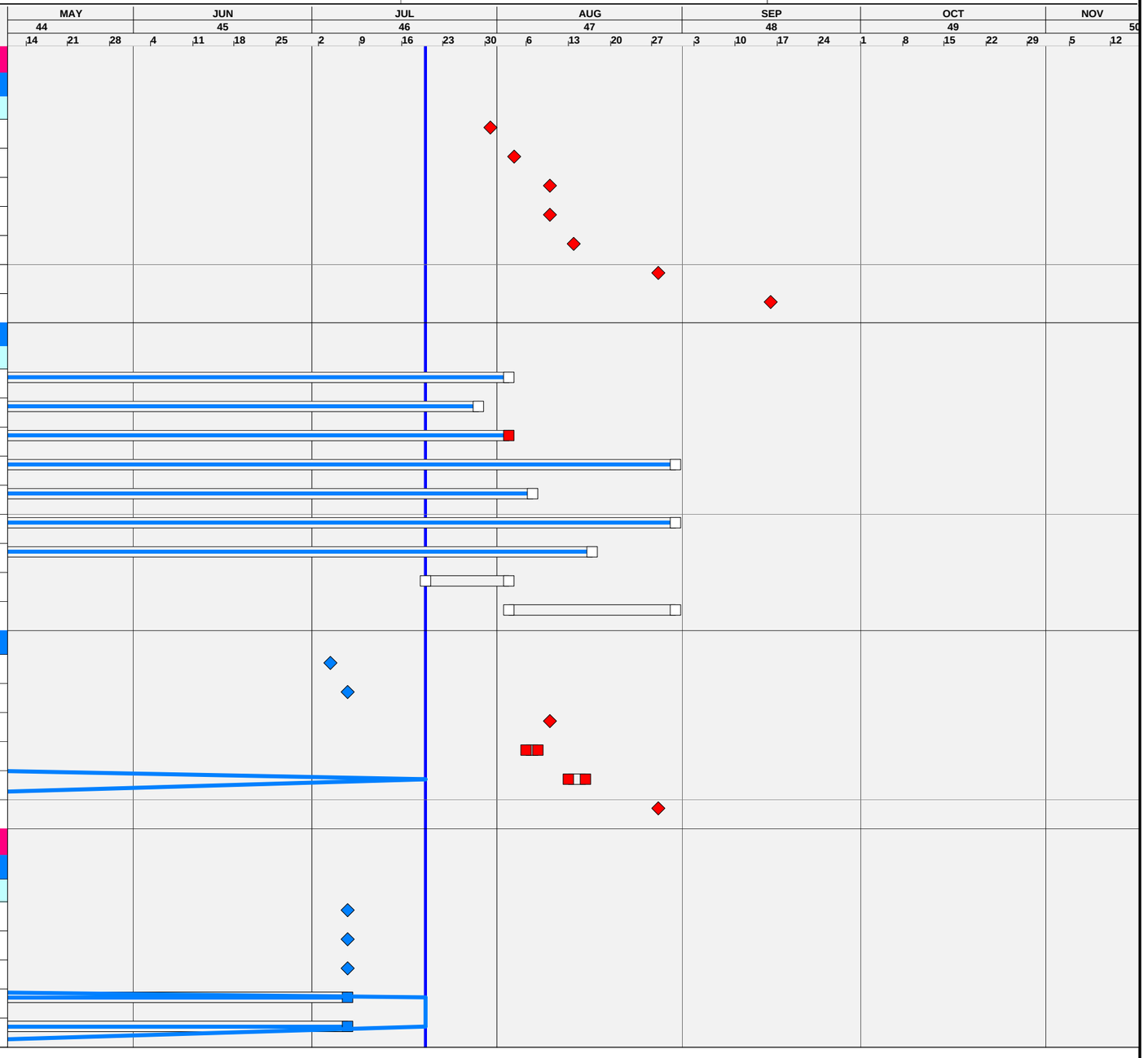
APPENDIX L
CONSTRUCTION PROGRAMME

Data Date 20JUL07
Run Date 26JUL07 10:37

3 MONTH ROLLING PROGRAMME

Monthly Update
Detailed Works Progr.(DWP) rev C
Progress Bar
Critical Activity

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish
GENERAL									
Contract defined dates, stages and sections									
Sections of the Works									
KD14	KD14 - Compl the Works in Portions J2 & J3 (SHT)	0		30JUL07	0	0	0	-248	-181
KD11	KD11 - Complete All Works in F3,F5,G and H4)	0		03AUG07	0	0	0	-251	-207
KD09	KD09 - Complete All BV (Ex KD17 & 20) (25Nov06)	0		09AUG07	0	0	0	-120	-243
KD12	KD12 - Complete all Toll Plaza Works	0		09AUG07	0	0	0	-163	-196
KD10	KD10 - Complete All Works in F2	0		13AUG07	0	0	0	-200	-185
KD17	KD17 - Complete All E&M	0		27AUG07	0	0	0	-157	-166
KD25	KD25 - Complete E&M in Semi Enclosure C3,C4&I2	0		15SEP07	0	0	0	-294	-266
Submittals & Approvals									
Drawing Submittal & Approval									
8034	Prep.& Sub. Independ't Serv. Dwgs for SHT&T3&LCK	48	04AUG04A	02AUG07	98	98	12	95	-359
8024	Engineer Comment / Approve ENT ISD Submissions	18	06AUG04A	28JUL07	85	85	8	99	-359
8030	Res-sub. & Approv of ENT ISD	24	06SEP04A	02AUG07	70	70	12	-55	-359
8035	Engineer Comment / Approve SHT&T3LCK ISD Sub.	24	13SEP04A	30AUG07	85	85	36	71	-359
8032	Engineer Comment / Approve SHT&T3&LCK CSD Sub.	18	25OCT04A	06AUG07	90	90	15	92	-359
8036	Re-sub. & Approv of SHT & T3 & LCK ISD	36	31MAR05A	30AUG07	70	70	36	71	-359
8033	Re-sub. & Approv. of SHT & T3 & LCK CSD	24	28JUN05A	16AUG07	60	60	24	71	-359
8022	Engineer Comment / Approve ENT CSD Submissions	12	20JUL07	02AUG07	0	0	12	71	-359
8029	Re-sub. & Approv. of ENT CSD	24	03AUG07	30AUG07	0	0	24	71	-359
Testing & Commissioning									
EM2460	Submit FSI 501 to FSD (Vent Bldg)	0		03JUL07A	100	0	0		-128
EM3890	Submit FSI 501 to FSD (Admin Bldg)	0		06JUL07A	100	0	0		-125
EM5060	Submit Form 501 to FSD (RC Enc. & T3)	0		09AUG07	0	0	0	-217	-200
EM5030	SHT Tunnel Issue, endorse & submit Form 501 to F	2	06AUG07	07AUG07	0	0	2	-214	-201
EM5080	ENT Tunnel Issue, endorse & submit Form 501 to F	3	13AUG07	15AUG07	0	0	3	-222	0
EM5050	FSD Cert (Form 172) Issued for Entire Project	0		27AUG07	0	0	0	-222	-134
LAI CHI KOK VIADUCT									
CONTRACT DEFINED DATES, STAGES & SECTIONS									
PORTION ACCESS & VACATION									
ACS_M1	Access to Portions - M1	0		06JUL07A	100	0	0		-429
ACS_M2	Access to Portions - M2	0		06JUL07A	100	0	0		-429
ACS_M3	Access to Portions - M3	0		06JUL07A	100	0	0		-429
ACS_M12	Forecast Delay in Access to Portion M2	30	28APR06A	06JUL07A	100	0	0		0
ACS_M13	Forecast Delay in Access to Portion M3	30	28APR06A	06JUL07A	100	0	0		0



Leighton-Kumagai Joint Venture

LEIGHTON - KUMUGAI JV

R8 - EAGLES'S NEST TUNNEL

CONTRACTORS TARGET PROGRAMME REV.1

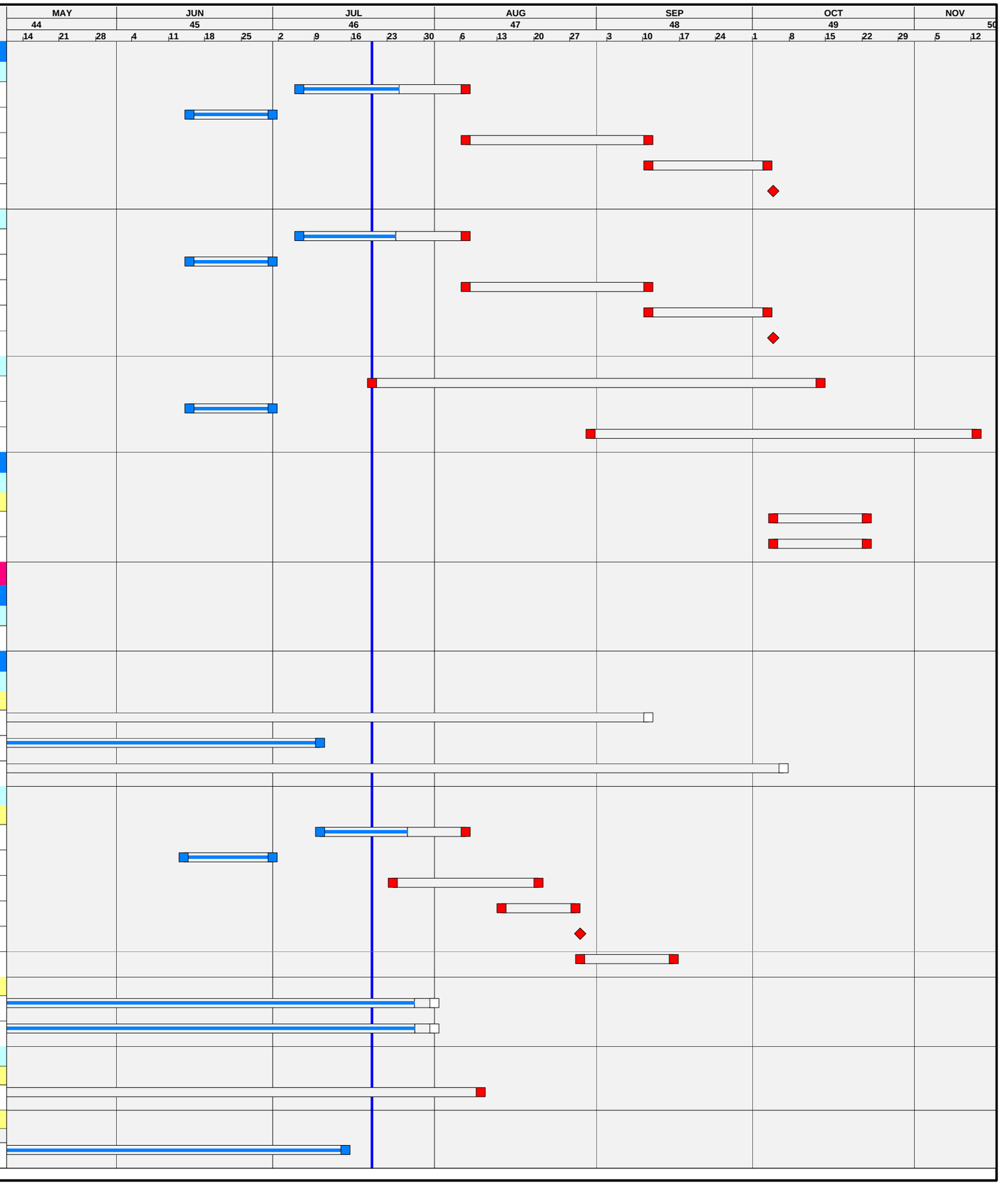
Proj. Name: W33E
Layout: 3 MONTHS ROLLING PROGRAMME
Filter: 3 MONTH ROLLING PROGRAMME
Current Proj: W33E
Target 1 Proj: BE02

Sheet 1 of 11

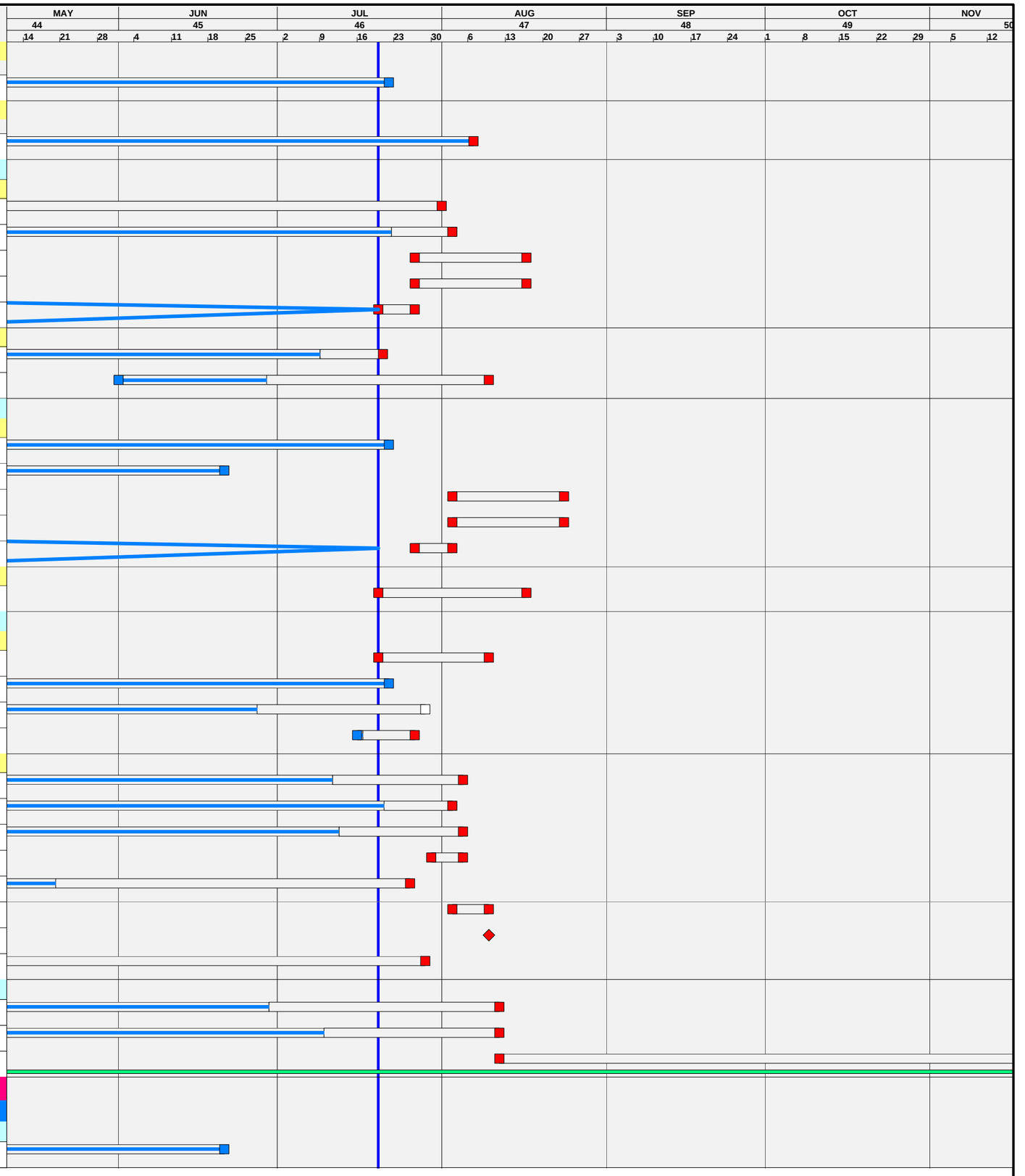
LKJV/ENT/DWP/B

Date	Revision	Checked	Approved
20FEB07	Prog update Feb 07	GW	RB

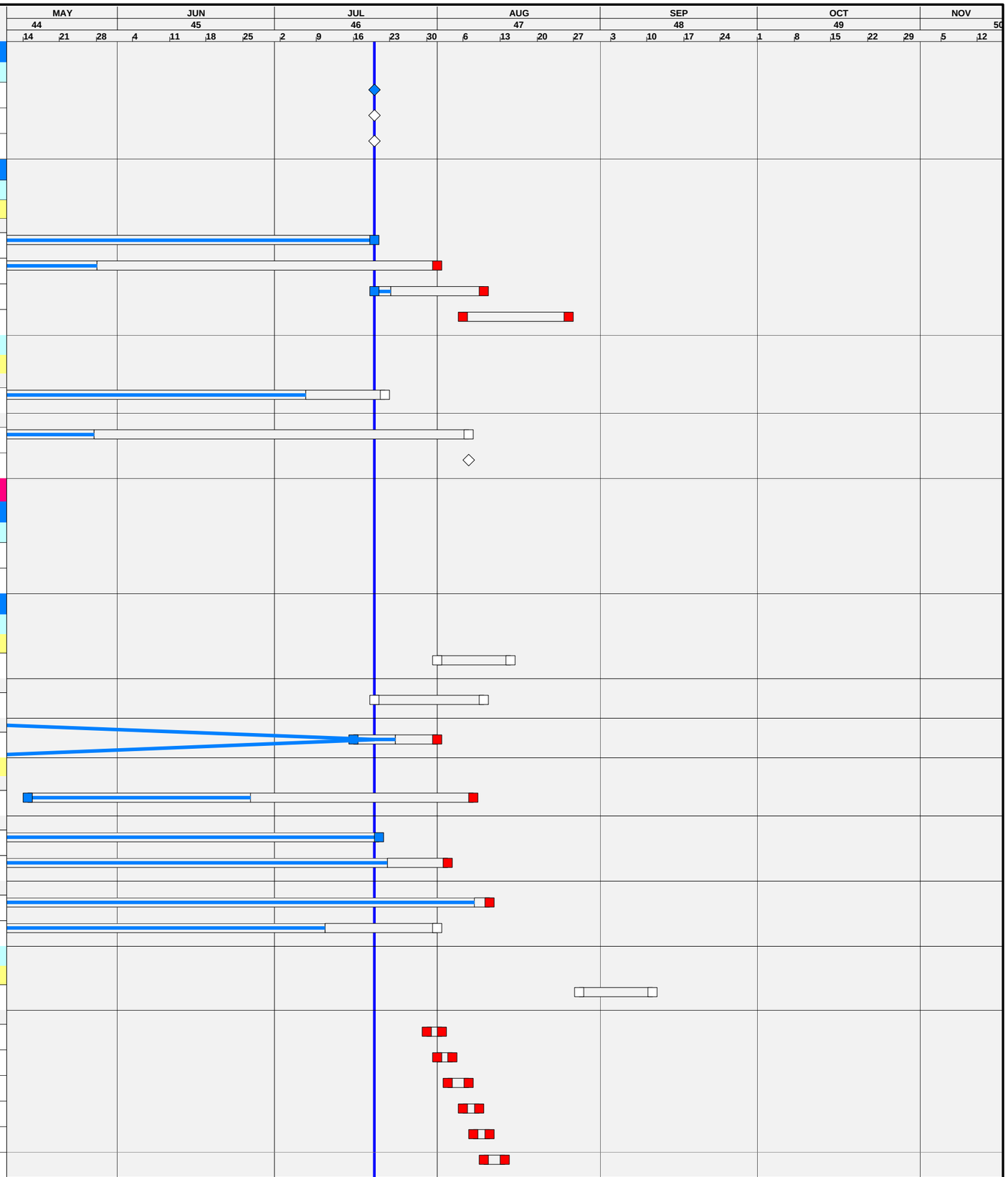
Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish
Construction Works									
LCK Viaduct Noise Enclosure 1									
8322	LckVd NE1-Elect Works 1st Fix	36	06JUL07A	06AUG07	60	0	15	-104	-338
8342	LckVd NE1- Elect Cabling ENT SPB to N.E.	18	15JUN07A	30JUN07A	100	0	0		-243
8332	LckVd NE1-Elect Works 2nd Fix	30	07AUG07	10SEP07	0	0	30	-104	-338
8352	LckVd NE1 Elect Works Fin Fix	18	11SEP07	03OCT07	0	0	18	-104	-338
8362	LckVd NE1 Ready for Energization	0		04OCT07	0	0	0	-104	-257
LCK Viaduct Noise Enclosure 2									
7400	LckVd NE2-Elect Works 1st Fix	36	06JUL07A	06AUG07	58	0	15	-104	-338
7420	LckVd NE2- Elect Cabling ENT SPB to N.E.	18	15JUN07A	30JUN07A	100	0	0		-243
7410	LckVd NE2-Elect Works 2nd Fix	30	07AUG07	10SEP07	0	0	30	-104	-338
7430	LckVd NE2 Elect Works Fin Fix	18	11SEP07	03OCT07	0	0	18	-104	-338
7440	LckVd NE2 Ready for Energization	0		04OCT07	0	0	0	-104	-257
LCK Viaduct Noise Enclosure 3									
6737	LckVd NE3 & Elect Works 1st Fix	72	20JUL07*	13OCT07	0	0	72	-153	-359
6757	LckVd NE3 Cabling ENT SPB to N.E. 3	24	15JUN07A	30JUN07A	100	0	0		-234
6747	LckVd NE3 Elect Works 2nd Fix	60	31AUG07	12NOV07	0	0	60	-153	-359
Testing & Commissioning									
LCK Viaduct Structure									
Test on Completion									
106740	LckVd NE 2 - Elect T&C	18	05OCT07	22OCT07	0	0	18	-126	-318
108344	LckVd NE 1 (Excision) - Elect T&C	18	05OCT07	22OCT07	0	0	18	-126	-318
BUTTERFLY VALLEY									
Contract Key Dates & Milestones									
Area Access & Vacation Dates									
ACS_A	Access to Portions - A	0	20OCT03A		100	100	0		-442
Construction Works									
BUTTERFLY VALLEY 3RD PARTY WORKS									
Noise Barrier Works by ACCIONA									
S2562	Access for 7m N.B. Works by Acciona at BV South	77	23JUN06A	10SEP07	30	0	45	62	-293
S2612	Access for S-Enclosure Works (Primary Elements)	90	08JUL06A	09JUL07A	100	0	0		-218
S2662	1Access for 5m N.B. Works by Acciona at BV South	90	27SEP06A	06OCT07	0	0	66	41	-269
BUTTERFLY VALLEY E&M WORKS									
Noise Enclosure 6 at South Portal Area									
8372	LckVd NE6 - Elect Works 1st Fix	30	10JUL07A	06AUG07	60	0	15	-238	-222
8392	LckVd NE6 - Elect Cabling ENT SPB to N.E.	9	14JUN07A	30JUN07A	100	0	0		-180
8382	LckVd NE6 - Elect Works 2nd Fix	24	24JUL07	20AUG07	0	0	24	-238	-228
8402	LckVd NE6 - Elect Works Fin Fix	12	14AUG07	27AUG07	0	0	12	-238	-228
8412	LckVd NE6 - Ready for Energization	0		28AUG07	0	0	0	-238	-228
108347	NE 6 (Excision) - Elect T&C	18	29AUG07	15SEP07	0	0	18	-294	-283
Butterfly Valley Miscellaneous E&M Works									
8410	Butterfly valley - Elect Works Fin Fix	24	22JAN07A	31JUL07	98	0	10	97	-215
8420	Butterfly Valley - Cabling	24	25JAN07A	31JUL07	98	0	10	97	-215
EARTHWORKS & SLOPEWORKS									
SLOPE SP-S2 & SP-S3									
S2370	Remaining Works to Slopes SP-S3 & SP-S2	24	19JUL06A	09AUG07	4	0	18	-99	-335
SLOPE BV-S2									
SURFACE DRAINAGE									
103697	BV-S2 Berm 10 Surface drainage	14	01MAR06A	14JUL07A	100	0	0		-331



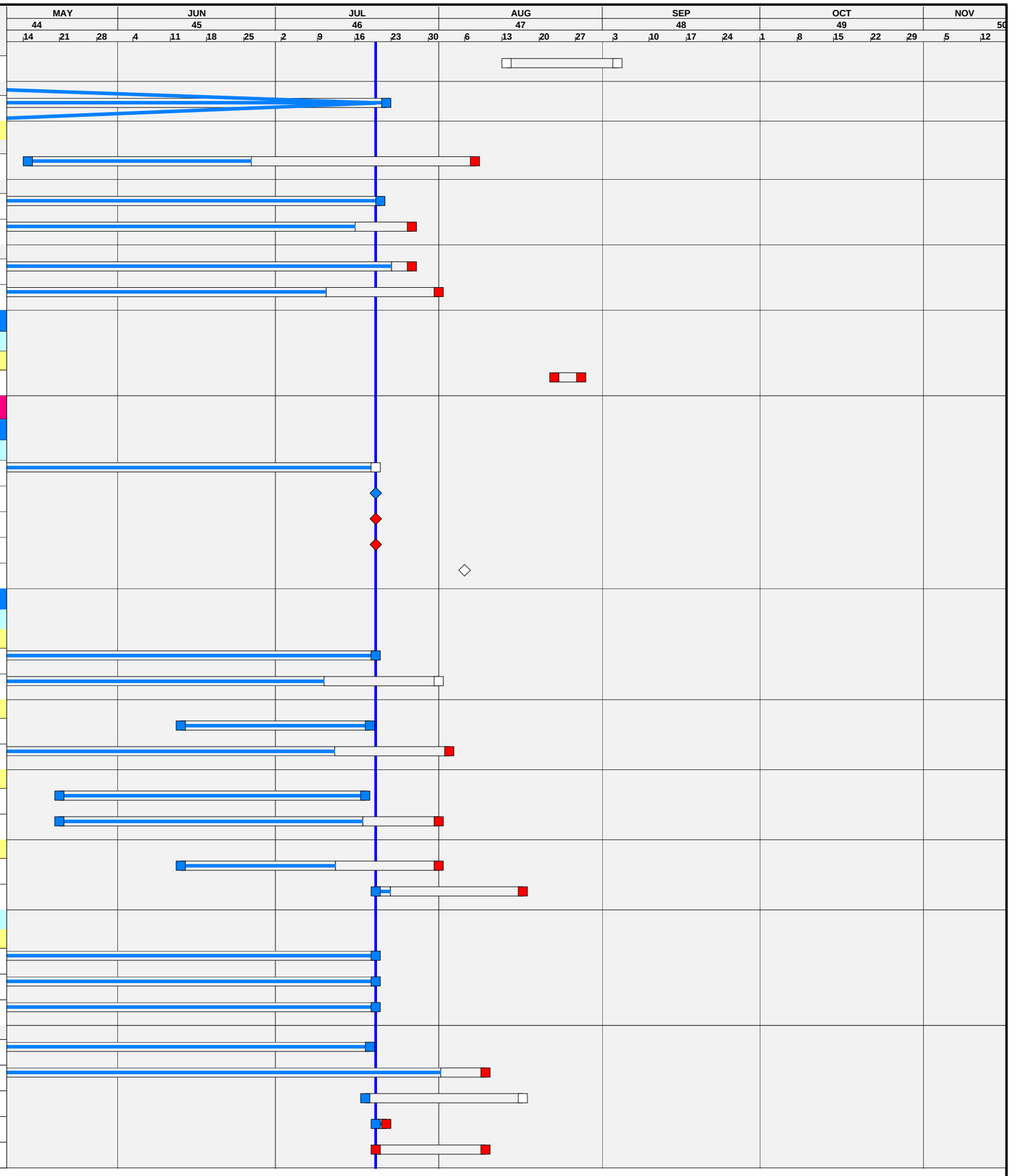
Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish
SLOPE BV-S4									
SURFACE DRAINAGE									
103706	BV-S4/4 Surface Drainage	12	07SEP05A	21JUL07A	100	5	0		-343
SLOPE SP-S1									
SURFACE DRAINAGE									
103711	Sp-S1/4 Surface Drainage	7	06JUL04A	06AUG07	95	40	15	-96	-367
ROADWORKS - North End of BV									
Road Pavement & Associated Work									
S2920	Road Works to East Loop Rd Typ III (EVA)	13	15FEB07A	31JUL07	50	0	10	-91	-320
S2930	Road Works to West Loop Road Typ III (EVA)	13	10APR07A	02AUG07	90	0	12	-93	-271
S2900	Road Marking & White Lining (Staged for Access)	18	27JUL07	16AUG07	0	0	18	-63	-220
S3010	Installation of Road Signage (Sign Plates Only)	18	27JUL07	16AUG07	0	0	18	-63	-220
S3660	NEW ACTIVITY - Road Pavement Friction Course	6	20JUL07	26JUL07	0	0	6	-93	0
Miscellaenous Works									
S2690	Installation of Drip Feed Irrigation System	12	24MAR07A	20JUL07	90	0	1	-82	-203
S3000	Construct Recreated Stream	25	01JUN07A	09AUG07	40	0	18	-99	-290
ROADWORKS - South End of BV									
Road Pavement & Associated Work									
S2970	BV Sth - Bitu. Pavement to Sth Bnd Carrig'way	20	20SEP06A	21JUL07A	100	0	0		-207
S2980	BV Sth - Bitu. Pavement to Nrth Bnd Carrig'way	23	06NOV06A	20JUN07A	100	0	0		-176
S2990	Road Marking & White Lining (Staged Access)	18	03AUG07	23AUG07	0	0	18	-69	-212
S3190	Installation of Road Signage (Sign Plates Only)	18	03AUG07	23AUG07	0	0	18	-69	-212
S3670	NEW ACTIVITY - Road Pavement Friction Course	6	27JUL07	02AUG07	0	0	6	-93	0
Miscellaneous Works									
S2780	Install & Commission Weighbridge	24	20JUL07	16AUG07	0	0	24	-117	-200
DSD MAINTENANCE ROAD									
DSD Maintenance Rd DSD1-1 (Acciona Interface)									
S3570	WSD Slope Reinstatement	18	20JUL07	09AUG07	0	0	18	-99	-317
S2380	Complete DSD1-1 Surface Drainage & CP's	18	20MAR07A	21JUL07A	100	0	0		-229
S3140	Complete Sub-base & kerbs at DSD1-1	12	14APR07A	28JUL07	70	0	8	99	-223
S3150	Complete Surfacing at DSD1-1 (Type IV)	8	16JUL07A	26JUL07	10	0	6	-87	-213
DSD Maintenanace Rd DSD1 (Parallel to Channel)									
S3390	Complete Formation at DSD1	6	02DEC06A	04AUG07	90	0	14	-107	-324
S2730	Construct Recreated Stream	45	27MAR07A	02AUG07	90	0	12	-93	-218
S3120	DN 200 Watermain Diversion EB18 - EB70	40	10APR07A	04AUG07	80	0	12	-107	-284
S2700	Access rd DSD1 -barrier footings	6	30JUL07	04AUG07	0	0	6	-99	-318
S3220	Subbase & Kerbs	18	15DEC06A	25JUL07	70	0	5	-89	-214
S2720	Access rd DSD1 - Barriers	6	03AUG07	09AUG07	0	0	6	-99	-310
S3160	REINSTATE BV ACCESS	0		09AUG07	0	0	0	-99	-225
S3230	Surfacing (Type IV)	6	20DEC06A	28JUL07	60	0	6	-89	-211
Landscaping & Establishment									
101476	BV - Soft Landscaping & Planting	100	03JUN06A	11AUG07	90	0	20	-141	-97
101475	BV - Hard Landscaping	90	03JAN07A	11AUG07	85	0	20	-209	-259
101477	BV - Establishment works	365	12AUG07	10AUG08	0	0	365	-260	-113
ENT SOUTH PORTAL VENTILATION BUILDING									
SUBMITTALS & APPROVALS									
E&M EQPT.& MATERIAL APPROVALS									
1919	SP.Bldg. - Approve doors details	24	07MAY05A	20JUN07A	100	80	0		-326



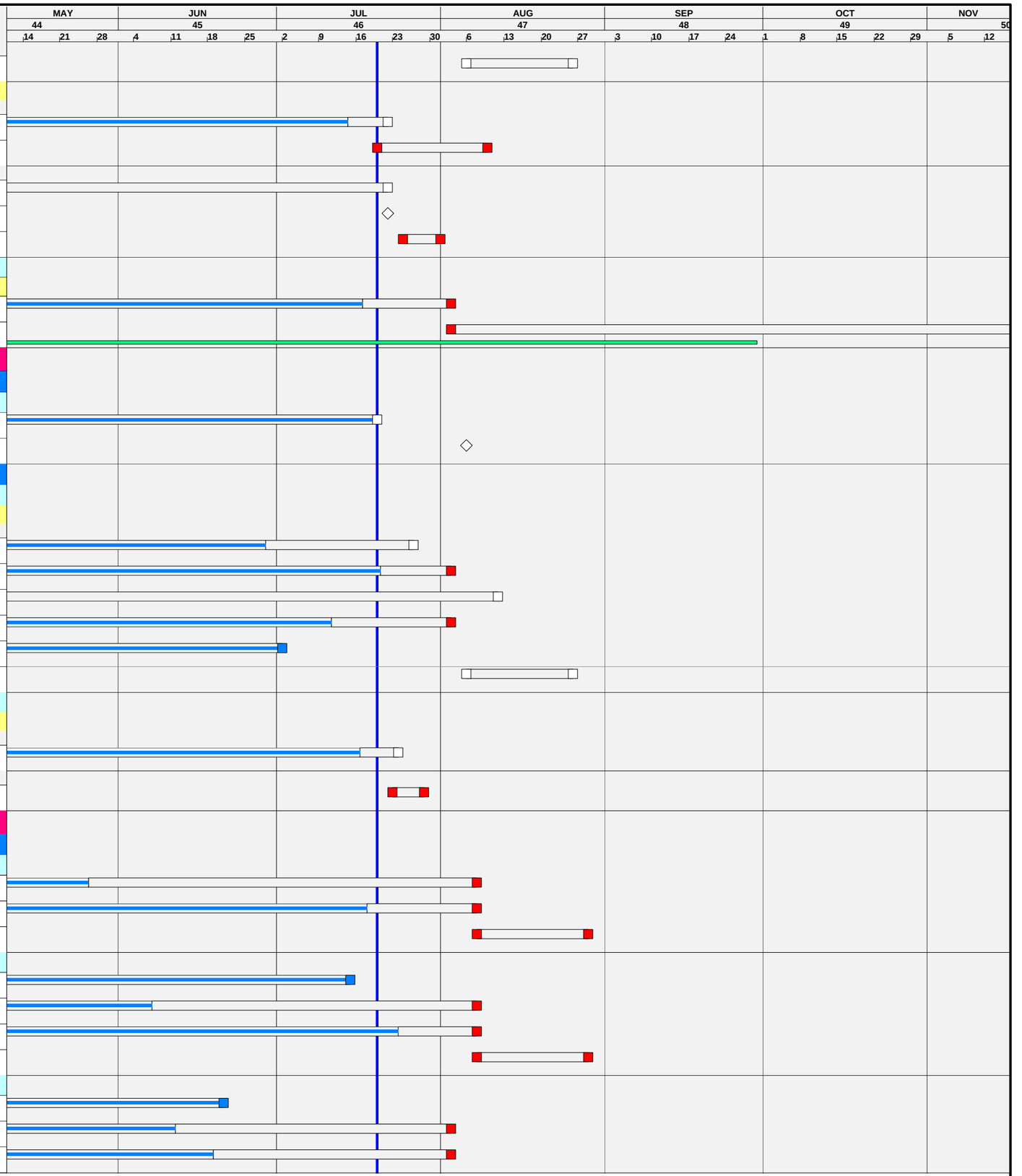
Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish
PROCUREMENT - MATERIAL									
ABWF WORKS									
2019	SP.Bldg. - Initial deliver of slate replacement	0	20JUL07A		100	0	0		-287
2018	SP.Bldg. - Initial deliver fall arrest roof syst	0	20JUL07*		0	0	0	107	-312
2030	SP.Bldg. - Initial deliver balust & metal works	0	20JUL07*		0	0	0	107	-312
CONSTRUCTION									
South Portal Bldg. - CIVIL & ABWF WORKS									
ABWF WORKS									
Roof & External Facade									
T2400	Ent SPB - Alum. Comp Panel Cladding to Ext Walls	60	20JAN07A	19JUL07A	100	0	0		-201
T2360	Ent SPB - GMS,S/S Channel, Balustrade & Railing	24	24MAR07A	31JUL07	50	0	10	-91	-239
T2540	Ent SPB - Slate Cladding above NB/SB Carriageway	30	20JUL07A	09AUG07	15	0	18	-57	-269
T2390	Ent SPB - Expanded metal cladding to Ext Walls	18	06AUG07*	25AUG07	0	0	18	-71	-270
ENT South Portal Bldg. - BUILDING SERVICES									
E & M WORKS									
Testing and Commissioning									
EM1130	Genset Termination + T&C	12	21FEB07A	21JUL07	90	0	2	105	-259
Statutory Inspection & Issued Certificates									
EM1320	Submit Form WWO46 for Water Supply to WSD	30	17MAR07A	06AUG07	50	0	15	92	-301
EM1340	Water Supply Certificate issued	0		06AUG07	0	0	0	92	-301
EAGLES NEST TUNNEL									
Contract defined dates, stages & sections									
Area access & vacation dates									
ACS_F1	Access to Portions - F1 (U/Gnd Sth Portal)	0	20OCT03A		100	100	0		-442
ACS_F2	Access to Portions - F2 (U/Gnd Sth Tunnel)	0	20OCT03A		100	100	0		-442
Construction Works									
Tunnel Drive North Bound									
Tunnel Finishing Works									
1443	NB Cleaning/Inspection & Install Induction Loop	12	01AUG07	14AUG07	0	0	12	85	-160
Bituminous Pavement									
1339	NB Road Marking 1950m	18	20JUL07	09AUG07	0	0	18	89	-156
VE Panel Installation									
3646	NB - Bespoke Panels (Niches)	20	16JUL07A	31JUL07	50	0	10	-149	0
ENT NB TUNNEL - (E&M) BUILDING SERVICES									
MVAC / Tunnel Ventilation Syst Above OHVD									
277968	Ent NB - TVF Testing and T&C	36	15MAY07A	07AUG07	50	0	16	-222	-220
Fire Protection System									
277996	Ent NB - FS Wiring and Terminations	30	10OCT06A	20JUL07A	100	0	0		-224
277997	Ent NB - FS Testing and T&C	24	10APR07A	02AUG07	90	0	6	-214	-211
Electrical Works Below OHVD									
278013	Ent NB - Lighting / Equipt Testing and T&C	60	19MAR07A	10AUG07	98	0	19	-221	-246
278011	Ent NB-Install CCTV,Camera,Eqpt @C/Lvl (By TCSS)	72	16APR07A	31JUL07	80	0	10	97	-279
Tunnel Drive South Bound									
Tunnel Finishing Works									
2172	SB Cleaning/Inspection & Install Induction Loop	12	28AUG07	10SEP07	0	0	12	62	-171
Bituminous Pavement									
1350	SB Wearing Course - RHS 650m Ch3030->2380	3	30JUL07*	01AUG07	0	0	3	-160	-181
1370	SB Wearing Course - RHS 650m Ch2380->1730	3	01AUG07	03AUG07	0	0	3	-160	-179
1390	SB Wearing Course - RHS 650m Ch1730->1080	3	03AUG07	06AUG07	0	0	3	-160	-177
1360	SB Wearing Course - LHS 650m Ch3030->2380	3	06AUG07	08AUG07	0	0	3	-160	-175
1380	SB Wearing Course - LHS 650m Ch2380->1730	3	08AUG07	10AUG07	0	0	3	-160	-173
1400	SB Wearing Course - LHS 650m Ch1730->1080	3	10AUG07	13AUG07	0	0	3	-160	-171



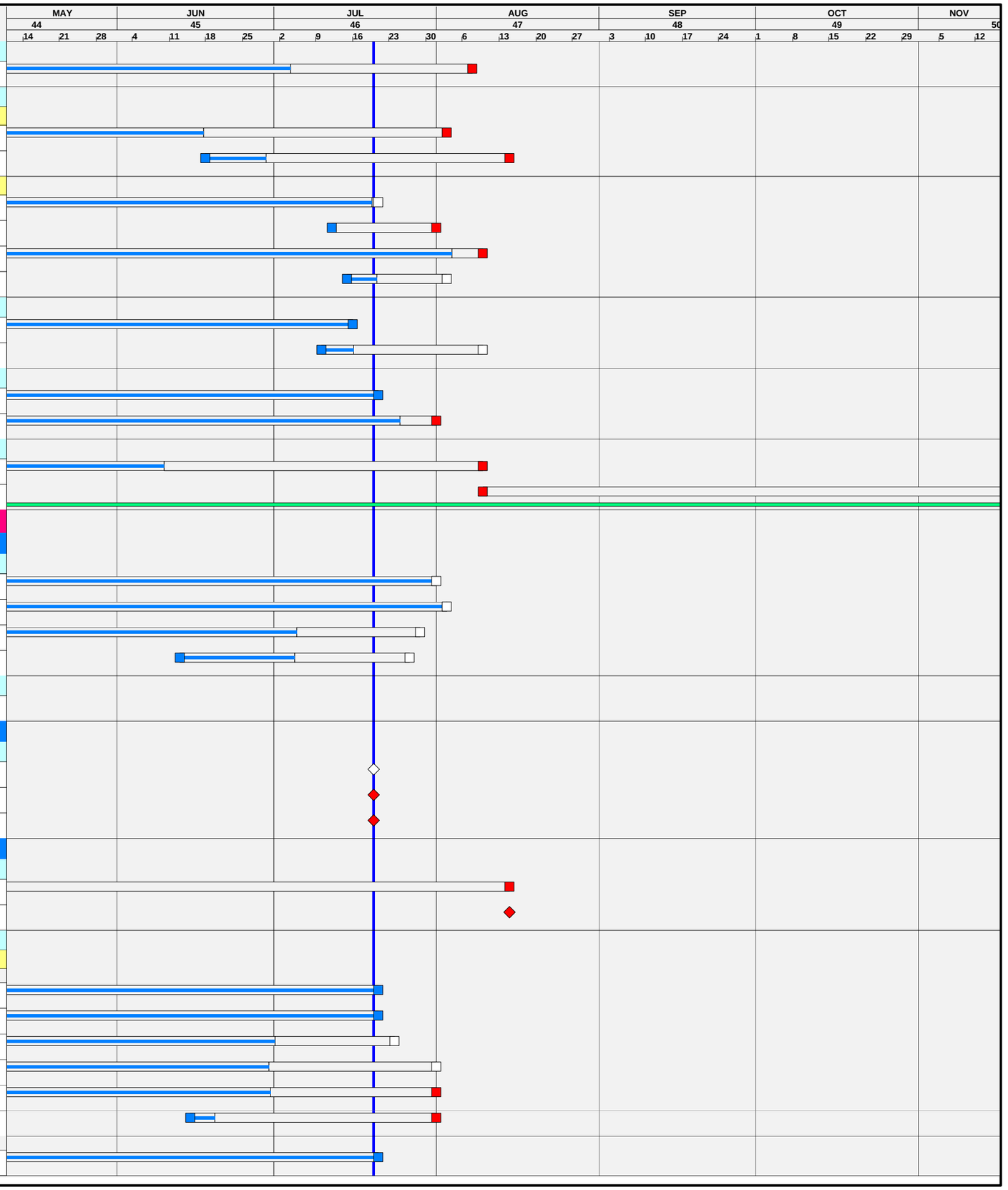
Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish
Bituminous Pavement									
1340	SB Road Marking	18	14AUG07	03SEP07	0	0	18	62	-171
VE Panel Installation									
3653	SB - Bespoke Panels (Niches)	20	18APR07A	21JUL07A	100	0	0		0
ENT SB TUNNEL - (E&M) BUILDING SERVICES									
MVAC / Tunnel Ventillation System Above OHVD									
278019	Ent SB - TVF Testing and T&C	35	15MAY07A	07AUG07	50	0	16	-222	-216
Fire Protection System									
278039	Ent SB - FS Wiring and Terminations	30	10OCT06A	20JUL07A	100	0	0		-238
278040	Ent SB - FS Testing and T&C	24	10APR07A	26JUL07	90	0	6	-208	-219
Electrical Works Below OHVD									
278056	Ent SB - Lighting / Equipt Testing and T&C	60	15JAN07A	26JUL07	98	0	6	-208	-209
278054	Ent SB-Install CCTV,Camera,Eqpt @C/Lvl (by TCSS)	72	16APR07A	31JUL07	80	0	10	-103	-261
Testing & Commissioning									
Eagle's Nest Tunnel									
Statutory Inspections									
EM5020	ENT Tunnel FSD Insp(Tunnel System)	4	23AUG07	27AUG07	0	0	4	-222	-140
VENTILATION ADIT & BUILDING									
PROCUREMENT									
ARCHITECTURAL									
2026	VA Bldg. - Procure expanded metal mesh cladding	60	06JUN05A	19JUL07	50	50	0	75	-350
2031	VA Bldg. - Initial delivery slate cladding	0	20JUL07A		100	0	0		-274
2034	VA Bldg. - Initial delivery fall arrest roof sys	0	20JUL07*		0	0	0	-200	-305
2035	VA Bldg. - Initial delivery balust & metal works	0	20JUL07*		0	0	0	-200	-305
2043	VA Bldg. - Initial deliv exp metal mesh cladding	0	06AUG07		0	0	0	75	-288
CONSTRUCTION WORKS									
EXTERNAL WORKS									
Drainage									
S1960	Storm Drain at West Side	24	01MAR07A	19JUL07A	100	0	0		-318
S1970	Storm Drain & Gullies at Access Apron	24	14APR07A	31JUL07	80	0	10	97	-304
Ducting & Drawpits									
S1910	Ducting & Drawpits	18	13JUN07A	18JUL07A	100	0	0		-251
S1980	HGC Ducting & Drawpits	18	16APR07A	02AUG07	80	0	12	-195	-246
Watermain Works									
S1950	Watermain & Valve Chambers at Building Apron	24	21MAY07A	17JUL07A	100	0	0		-268
S1990	Irrigation Pipework	14	21MAY07A	31JUL07	80	0	10	-199	-262
Road Pavement & Associated Work									
S1920	Preparation and Block Paving	22	13JUN07A	31JUL07	60	0	6	-199	-196
S1930	Signage, furniture and finishes	24	20JUL07A	16AUG07	10	0	24	-201	-186
VENTILATION BUILDING									
VA Building - ABWF									
T3050	ABWF - Fan Rooms & Plenums Touch Up & Doors	12	20MAR07A	19JUL07A	100	0	0		-217
T3030	ABWF - GL Paint Touch Up & Doors	12	14APR07A	19JUL07A	100	0	0		-217
T3040	ABWF - 1FL Paint Touch Up & Doors	12	14APR07A	19JUL07A	100	0	0		-217
VA Building - External Finishes									
T3110	VA Bldg. - Install Aluminum louvres & doors	60	11NOV06A	18JUL07A	100	0	0		-256
T3120	VA Bldg. - Alum Comp Panel Cladding to Ext Walls	60	21FEB07A	09AUG07	95	0	18	-200	-235
T2140	VA Bldg. - Aluminium/Slate Cladding	32	18JUL07A	16AUG07	0	0	24	83	-254
T3105	VA Bldg. - Removed Ext Scaffolding (excl slate)	12	20JUL07A	21JUL07	80	0	2	-197	-207
T3100	VA Bldg. - GMS,S/S Channel, Balustrade & Railing	18	20JUL07*	09AUG07	0	0	18	-200	-279



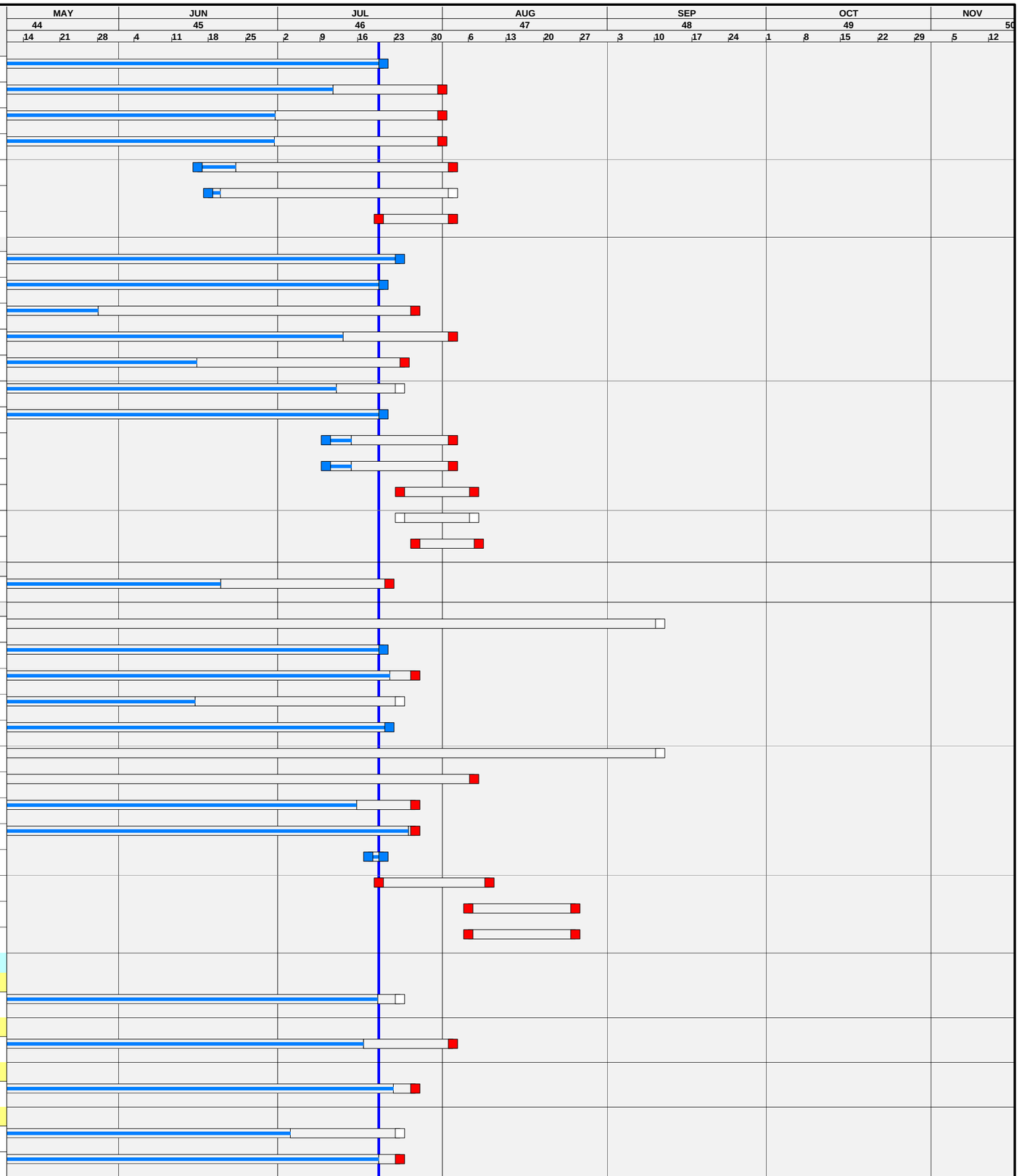
Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish
VA Building - External Finishes									
T2110	VA Bldg. - Expanded metal cladding to Ext Walls	18	06AUG07	25AUG07	0	0	18	75	-284
E & M WORKS									
Testing and Commissioning									
EM2240	Genset Termination + T&C	12	21FEB07A	21JUL07	95	0	2	105	-267
EM2360	Integrated E&M System T&C	18	20JUL07	09AUG07	0	0	18	-111	-160
Statutory Inspection & Issued Certificates									
EM3001	Submit Form WWO46 for Water Supply to WSD	30	17MAR07A	21JUL07	30	0	2	105	-162
EM3003	Water Supply Certificate issued	0		21JUL07	0	0	0	105	-162
EM2500	Bldg FSD insp. (Excl. Tunnel System) (VB)	6	25JUL07	31JUL07	0	0	6	-199	-124
EXTERNAL AREAS									
LANDSCAPING & ESTABLISHMENT WORKS									
T3180	Planting Works	18	02SEP06A	02AUG07	95	0	12	-201	-246
T3200	Establishment Works	365	03AUG07	01AUG08	0	0	365	-251	-307
ENT NORTH PORTAL VENTILATION BUILDING									
PROCUREMENT - MATERIAL									
ABWF WORKS									
1981	NP.Bldg. - Procure expanded metal cladding	180	06JUN05A	19JUL07	50	50	0	89	-350
2066	NP.Bldg. - Initial deliv expanded metal cladding	0	06AUG07*		0	0	0	75	-288
CONSTRUCTION									
North Portal Bldg. - CIVIL & ABWF WORKS									
ABWF WORKS									
NP Bldg - Roofing & External Facade									
T1800	Ent NPB - Roof Waterproofing & Test	12	20OCT06A	26JUL07	90	0	6	101	-327
T1750	Ent NPB - Alum. Comp Panel Cladding to Ext Walls	60	09NOV06A	02AUG07	95	0	12	-126	-213
T1780	Ent NPB - Slate replacement cladding above NB/SB	36	25NOV06A	11AUG07	40	0	20	87	-284
T1790	Ent NPB - GMS,S/S Channel, Balustrade & Railing	24	05MAR07A	02AUG07	85	0	12	-126	-279
T1795	Ent NPB - Removed Ext Scaffolding (excl slate)	12	27MAR07A	01JUL07A	100	0	0		-174
T1770	Ent NPB - Expanded metal cladding to Ext Walls	18	06AUG07	25AUG07	0	0	18	75	-270
ENT North Portal Bldg. - BUILDING SERVICES									
E & M WORKS									
Testing and Commissioning									
EM2840	Genset Termination + T&C	12	01MAR07A	23JUL07	95	0	3	104	-284
Statutory Inspection & Issued Certificates									
EM3100	Bldg FSD insp. NP Bldg (Excl. Tunnel System)	6	23JUL07*	28JUL07	0	0	6	-197	-115
TOLL PLAZA & ANCILLIARY STRUCTURES									
Construction Works									
TOLL PLAZA EAST SIDE									
S1420	Road Pavement Surfacing (Flex & Rigid)	56	18OCT06A	07AUG07	75	0	16	-130	-234
K1192	East Loop Road - Formation & Roadworks	36	12JAN07A	07AUG07	90	0	16	-130	-209
S1140	Furniture, signage (face only), white lining	18	08AUG07	28AUG07	0	0	18	-106	-234
TOLL PLAZA WEST SIDE									
S1510	FW Waterminam Centre to Admin Bldg & FH12, FH13	24	10JUL06A	14JUL07A	100	0	0		-284
S1310	Road Pavement Surfacing	57	07MAR07A	07AUG07	60	0	16	-130	-201
K1171	West Loop road - Roadworks	36	12MAR07A	07AUG07	90	0	16	-130	-300
S1410	Furniture, signage (face only), white lining	18	08AUG07	28AUG07	0	0	18	-106	-201
TOLL PLAZA - works adjacent to building									
S1427	Admin Blg & Wshop - Drainage & ducting	36	07MAR06A	20JUN07A	100	25	0		-318
S1400	ENT NPB - Kerbs & Rwks & misc Finishes	12	15NOV06A	02AUG07	80	0	12	-126	-351
S1417	SHT SPB - Kerbs & Rwks & misc finishes	12	06MAR07A	02AUG07	70	0	12	-126	-349



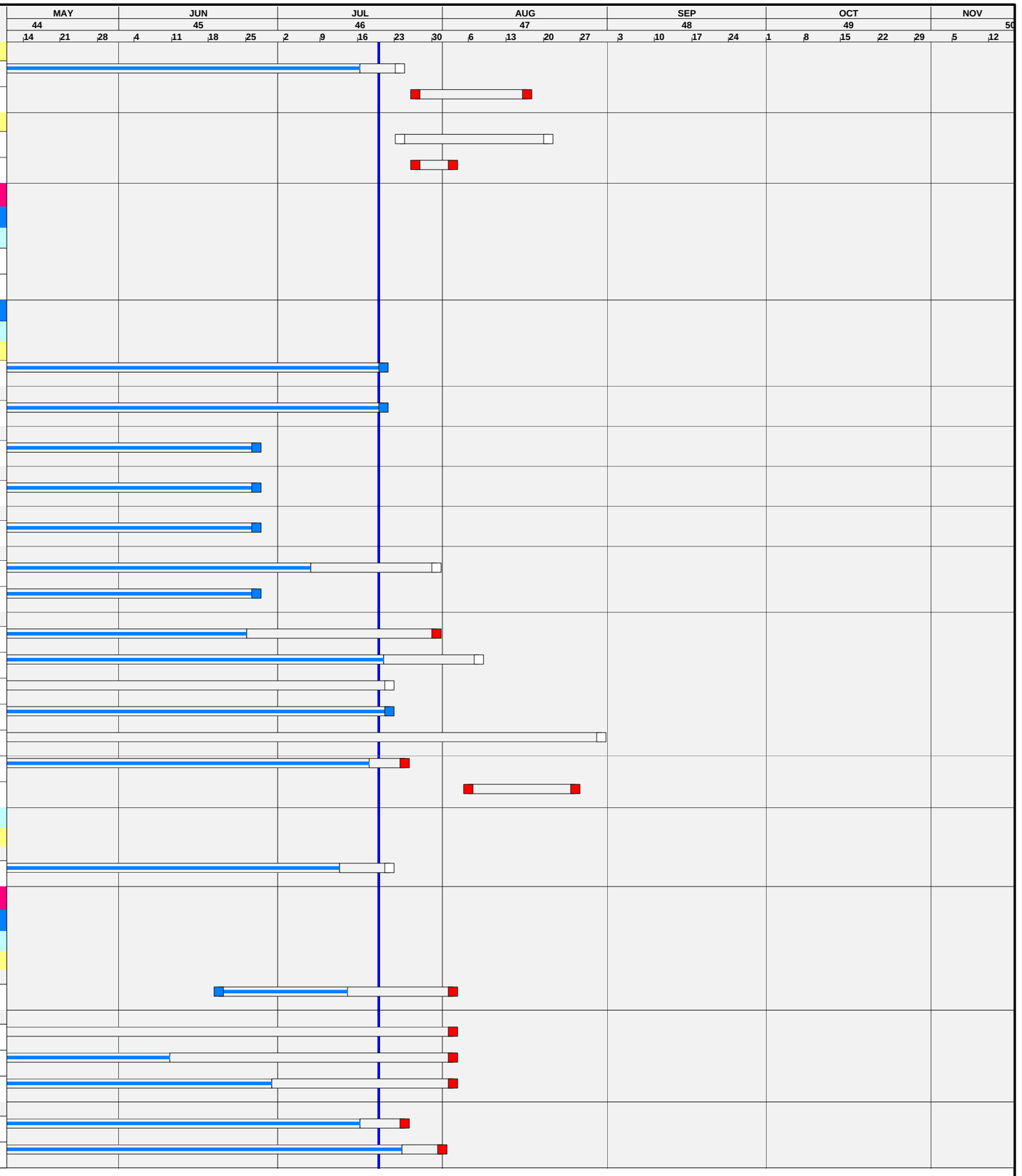
Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish
TOLL PLAZA - works adjacent to building									
S1437	Admin Blg & Wshop - kerbs, Rwks & misc finishes	30	22MAR07A	07AUG07	75	0	16	-130	-289
TOLL PLAZA FOOTBRIDGE									
ABWF									
S1264	Installation of Aluminium Cladding	38	01MAR07A	02AUG07	70	0	12	-132	-325
S1250	Toll Ftbrdge - Finishes	54	18JUN07A	14AUG07	20	0	22	-130	-251
E & M WORKS									
S1200	Toll Plaza Footbridge - Lift Installation	72	24MAR07A	20JUL07	99	0	1	106	-264
S1450	Toll Plaza Footbridge - Lift Commissioning	24	12JUL07A	31JUL07	0	0	12	-154	-311
S1470	E&M Installation at Footbridge	30	14APR07A	09AUG07	95	0	6	-132	-301
S1500	E&M Footbridge T&C	18	15JUL07A	02AUG07	30	0	12	95	-277
TOLL PLAZA BOOTHS									
S1300	Toll Booths All E&M, CMCS & TCS	54	05MAY07A	15JUL07A	100	0	0		-159
S1460	Toll Booths E&M - T&C	24	10JUL07A	09AUG07	20	0	18	89	-157
ADMIN.BLDG. - WORKSHOP									
S1350	Workshop - External Finishes	60	03AUG06A	20JUL07A	100	0	0		-258
S1320	Workshop - Remaining internal Finishes	36	20AUG06A	31JUL07	98	0	10	-124	-267
LANDSCAPING & ESTABLISHMENT WORKS									
S1480	Planting Works at Toll Plaza	24	10APR07A	09AUG07	50	0	18	-139	-115
S1490	Establishment Works at Toll Plaza	365	10AUG07	08AUG08	0	0	365	-258	-134
ADMINISTRATION BUILDING									
SUBMITTALS & APPROVALS									
ABWF. MTRL SUBMiTTALS									
1885	Admin.Bldg. - Prep & submit wood ceiling details	24	20NOV04A	31JUL07	50	50	10	97	-357
1881	Admin.Bldg. - Prep & sub GRP water tank details	24	12JAN05A	02AUG07	50	50	12	95	-359
1888	Admin.Bldg. - Approve suspended ceiling details	24	02APR07A	28JUL07	80	0	8	99	-331
1886	Admin.Bldg. - Approve wood ceiling details	24	13JUN07A	26JUL07	50	0	6	101	-329
E&M EQPT. / MTRL. SUBMITTALS									
8248	AdmBldg-Engineer to provide Cater'g equip detail	0	07APR05A		100	100	0		-671
PROCUREMENT - MATERIAL									
ABWF WORKS									
2056	Admin.Bldg. - Initial delivery sheet decking	0	20JUL07		0	0	0	107	-317
2059	Admin.Bldg.- Initial deliv fall arrest roof syst	0	20JUL07*		0	0	0	-132	-312
2060	Admin.Bldg. - Initial deliver balust & metal wks	0	20JUL07*		0	0	0	-132	-312
CONSTRUCTION									
TCSS Access at Admin Bldg									
T3350	TCSS Works Within Admin Bldg / Tunnel & Ext	140	15SEP06A	14AUG07	50	0	22	-215	-192
T2930	ALL TCSS COMPLETE FOR FSD INSPECTION	0		14AUG07	0	0	0	-215	-192
CIVIL & ABWF WORKS									
ABWF									
Admin Bldg (G/F) - Internal Work @ Grid 1 to 21									
T1682	AB (G/F to 1/F) - Staircase Finishing Works	30	18APR06A	20JUL07A	100	5	0		-332
T1685	AB G/F (Grid 1-21) - Wall Plaster & Flr Screed	20	19APR06A	20JUL07A	100	10	0		-346
T1680	AB G/F (Grid 1-21) - Windows & door frames	18	24APR06A	23JUL07	95	56	3	104	-354
T2990	AB G/F (Grid 1-21) - Tileworks & Sanitary Fixt	30	15SEP06A	31JUL07	90	0	10	97	-339
T2150	AB G/F (Grid 1-21) - Door Leaf & Final Paints	12	02JAN07A	31JUL07	85	0	10	-124	-266
T2160	AB G/F (Grid 1-21) - Install Ceiling Panels	10	15JUN07A	31JUL07	10	0	10	-124	-280
Admin Bldg (1/F) - Internal Work @ Grid 1 to 18									
T1982	AB (1/F to 2/F) - Staircase Finishing Works	30	18APR06A	20JUL07A	100	5	0		-332



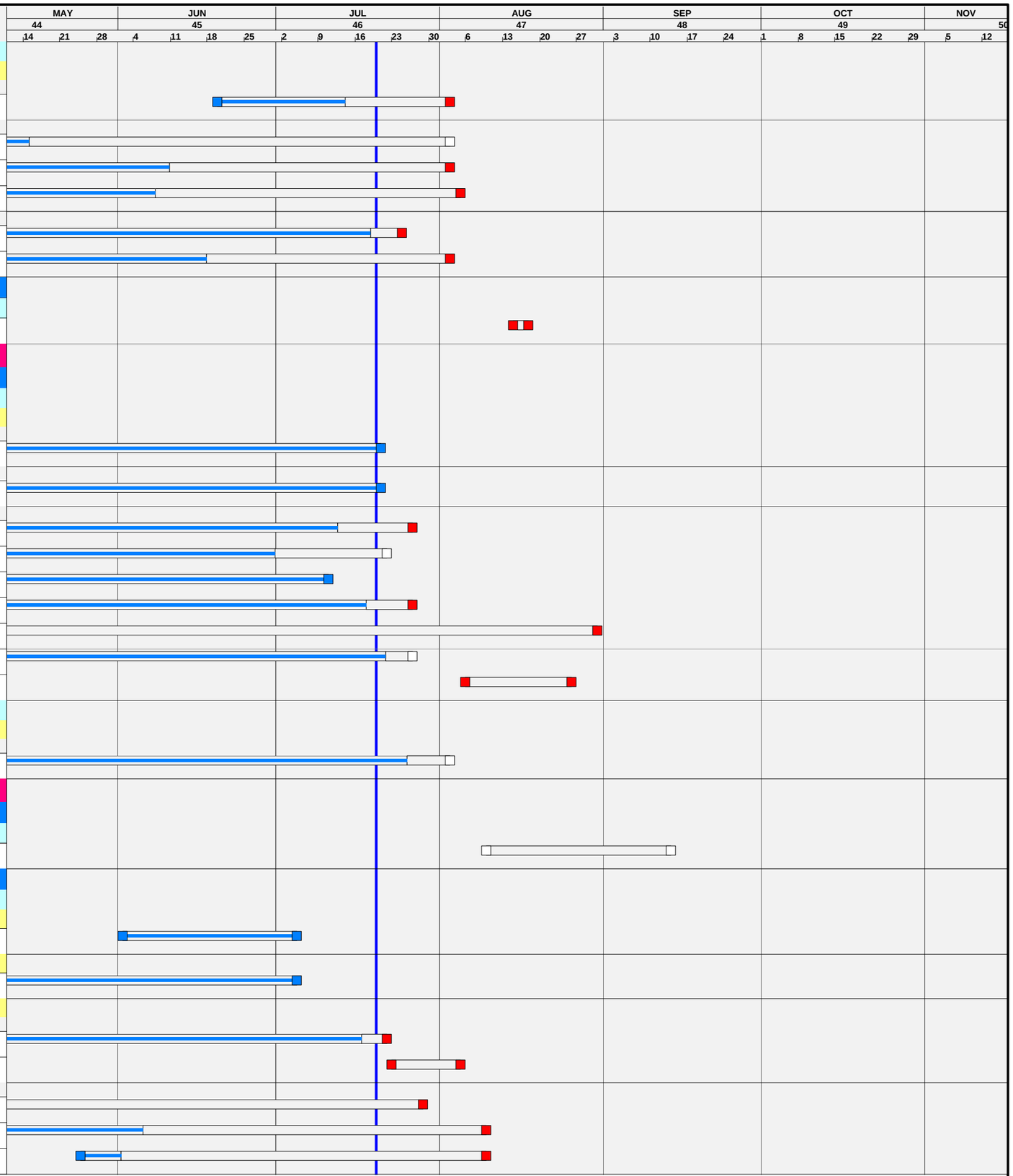
Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish
Admin Bldg (1/F) - Internal Work @ Grid 1 to 18									
T1980	AB 1/F (Grid 1-18) - Wdws & Door Frames	18	24APR06A	20JUL07A	100	56	0		-351
T2165	AB 1/F (Grid 1-18) - Install Skirting	14	15JUN06A	31JUL07	95	0	10	-124	-253
T2010	AB 1/F (Grid 1-18) - Tileworks & Sanitary Fixt	21	20SEP06A	31JUL07	90	0	10	-124	-348
T2170	AB 1/F (Grid 1-18) - Door Leaf & Final Paints	12	02JAN07A	31JUL07	85	0	10	-124	-255
T2185	AB 1/F (Grid 1-18) - Install Ceiling Panels	10	16JUN07A	02AUG07	15	0	10	-126	-281
T3015	AB 1/F (Grid 1-18) - Floor Carpets	12	18JUN07A	02AUG07	5	0	12	95	-269
T2012	AB 1/F (Grid 10-18) - Proprietary Toilet Cubicle	12	20JUL07	02AUG07	0	0	12	-126	-338
Admin Bldg (2/F) - Internal Work @ Grid 1 to 18									
T2060	AB 2/F (Grid 1-18) - Wdws & Door Frames	12	11APR06A	23JUL07A	100	50	0		-356
T2062	AB (2/F to Rf/Lvl) - Staircase Finishing Works	30	18APR06A	20JUL07A	100	5	0		-332
T2020	AB 2/F (Grid 1-18) - Tileworks & Sanitary Fixt	18	01OCT06A	26JUL07	80	0	6	-130	-323
T1865	AB 2/F (Tel, Comp, Cont) - Door Lf & Final Paint	12	08JAN07A	02AUG07	90	0	2	-126	-217
T2220	AB 2/F (Grid 1-18) - Door Leaf & Final Paints	12	10JAN07A	24JUL07	80	0	4	-118	-215
T3045	AB 2/F (Tel, Comp, Cont Rm) - Ceiling Grids	18	26MAR07A	23JUL07	90	0	3	104	-271
T2045	AB 2/F (Grid 1-18) - Install Ceiling Grids	18	17APR07A	20JUL07A	100	0	0		-269
T2058	AB 2/F (Grid 1-18) - Install Ceiling Panels	18	10JUL07A	02AUG07	20	0	12	-126	-235
T3065	AB 2/F (Corridor & Cont Rm) - Ceiling Panels	18	10JUL07A	02AUG07	20	0	12	-126	-229
T2068	AB 2/F (Grid 1-18) - Floor Carpets	12	24JUL07	06AUG07	0	0	12	-87	-250
T3068	AB 2/F (Corridor & Cont Rm) - Floor Carpets	12	24JUL07	06AUG07	0	0	12	92	-238
T2028	AB 2/F (Grid 1-18) - Proprietary Toilet Cubicle	10	27JUL07	07AUG07	0	0	10	-130	-323
Admin Bldg (Roof/Flr) - Inter Works Grid 3 to 16									
T2235	AB R/F (Grid 3-16) - Door Leaf & Final Paints	6	22DEC06A	21JUL07	85	0	2	-116	-282
Admin Bldg - Upper Roof & External Facade									
T2340	AB Ext (GL 11-21) - Slate R replacement Cladding	30	03APR06A	10SEP07	50	30	45	62	-383
T2850	AB Ext (GL 1-11) - Install Louvres & Wdw Glazing	60	03APR06A	20JUL07A	100	70	0		-342
T2860	AB Ext (GL 11-21)- Install Louvres & Wdw Glazing	60	03APR06A	26JUL07	99	70	6	-201	-347
T2230	AB Ext (GL 6-11) - Curtain Wall & Glass Canopy	30	03JUL06A	23JUL07	90	0	3	104	-290
T2841	AB Ext UR/LR - Render&wall paint to Open Area Rf	12	25JUL06A	21JUL07A	100	0	0		-307
T2330	AB Ext (GL 1-11) - Slate Cladding	45	15OCT06A	10SEP07	50	0	45	62	-338
T2900	AB Ext UR/LR - Insulation & Conc Roof Tile	30	06NOV06A	06AUG07	50	0	15	-125	-290
T2350	AB Ext (GL 1-11) - Ceramic Wall Tiles	30	18DEC06A	26JUL07	95	0	6	-120	-294
T2830	AB Ext (GL 11-21) - Ceramic Wall Tiles	30	20MAR07A	26JUL07	99	0	6	-120	-324
T2245	AB Ext (GL 1-21) - Remove External Scaffolding	12	18JUL07A	20JUL07A	100	0	0		-234
T2915	AB Ext UR/LR- Install GMS, Balustrades & Railing	18	20JUL07	09AUG07	0	0	18	-132	-254
T2270	AB Ext (GL 3-11) - Expanded metal mesh cladding	18	06AUG07*	25AUG07	0	0	18	-128	-271
T2280	AB Ext (GL 11-16) - Expanded metal mesh cladding	18	06AUG07*	25AUG07	0	0	18	-128	-295
BUILDING SERVICES									
Admin Bldg (G/F) - E & M Works									
EM3540	BS Works in G/F	90	01JUN06A	23JUL07	99	12	3	104	-283
Admin Bldg (1/F) - E & M Works									
EM3560	BS Works in 1/F	90	08JUN06A	02AUG07	96	12	3	-126	-292
Admin Bldg (2/F) - E & M Works									
EM3580	BS Works in 2/F	90	08JUN06A	26JUL07	99	0	3	-125	-247
Admin Bldg (Int. & Ext. Roof Lvl) - E & M Works									
EM3600	BS Works in R/F	78	06JUN06A	23JUL07	95	1	3	104	-289
EM3190	Admin Bldg - Lift Installation	72	19JUN06A	23JUL07	99	0	3	-117	-206



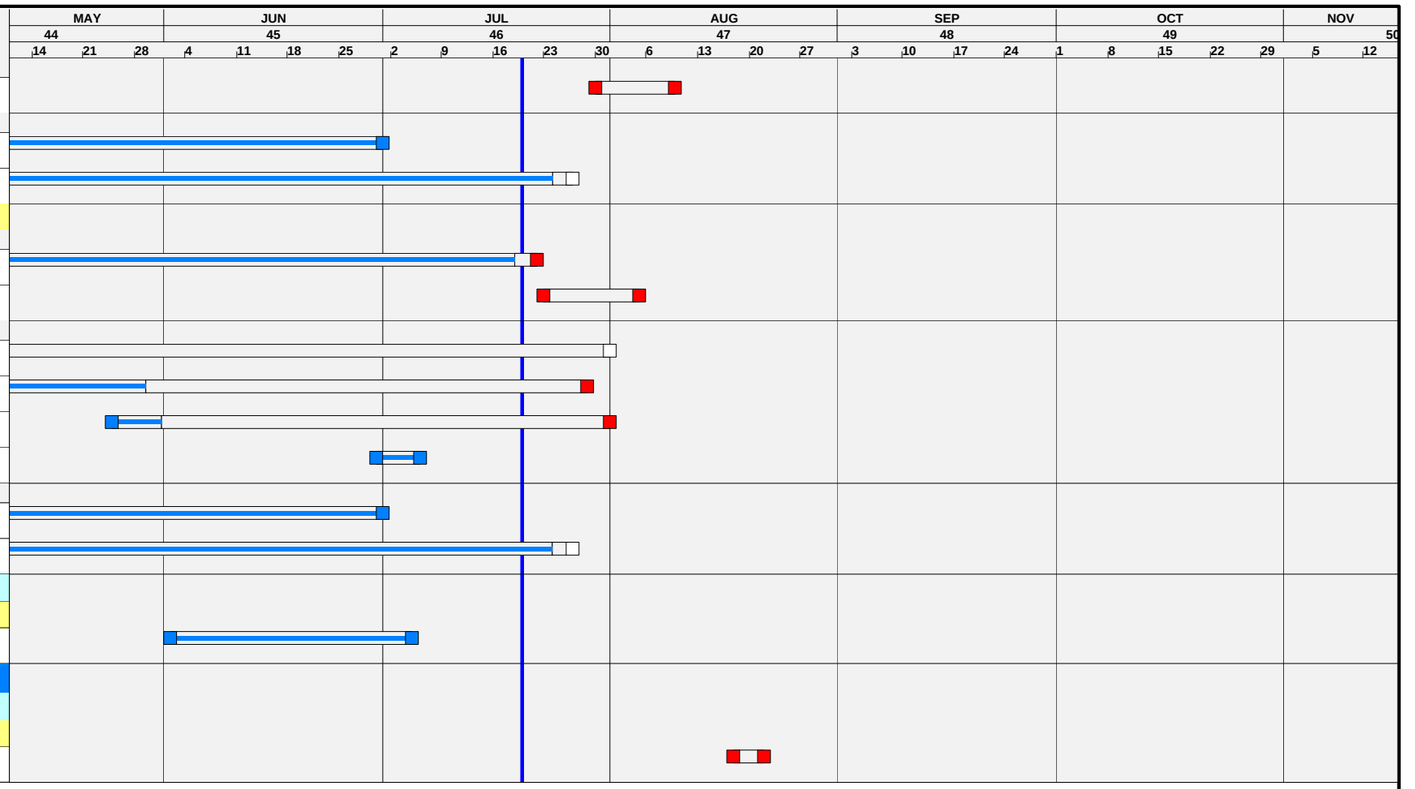
Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish
Admin Bldg - Testing and Commissioning									
EM3460	Genset Termination + T&C	12	23FEB07A	23JUL07	95	0	3	104	-276
EM3740	Integrated E&M System T&C	18	27JUL07	16AUG07	0	0	18	-201	-160
Admin Bldg - Statutory Inspection and Handover									
EM3370	Admin Bldg - Lift Commissioning	24	24JUL07	20AUG07	0	0	24	80	-206
EM3880	Bldg FSD insp. (Excl. Tunnel System) (ADB)	6	27JUL07	02AUG07	0	0	6	-201	-123
SHATIN HEIGHTS SOUTH PORTAL BUILDING									
CONTRACT DEFINED DATES & SECTIONS									
AREA ACCESS & VACATION DATES									
ACS_J2	Access to - J2 (T.Plate & above) SH-S.Vent.Bldg.	0	10DEC05A		100	100	0		-442
ACS_D8	Access to Portion - D8	0	03JAN06A		100	100	0		-442
CONSTRUCTION									
CIVIL & ABWF WORKS									
ABWF									
AB6022	Remedy SHT Contractor Defects	25	12DEC05A	20JUL07A	100	90	0		-355
ABWF at GF									
AB6042	G/F Paint Touch Up & Doors	12	22JAN07A	20JUL07A	100	0	0		-218
ABWF at 1F & LP									
AB5995	Initial Finishes to Lower Plenum	12	10APR06A	26JUN07A	100	15	0		-323
ABWF at 2F									
AB6052	2/F Paint Touch Up & Doors	12	11NOV06A	26JUN07A	100	0	0		-198
ABWF at 3F									
AB6062	3/F Paint Touch Up & Doors	12	11NOV06A	26JUN07A	100	0	0		-198
ABWF at 4F and above									
AB6004	Initial Finishes to 4/F and above	24	13APR06A	30JUL07	95	10	9	98	-333
AB6072	4/F and above Paint Touch Up & Doors	12	21FEB07A	26JUN07A	100	0	0		-198
Roof & External Facade									
AB6077	Sht SPB - Alum. composite cladding to ext walls	60	07AUG06A	30JUL07	90	0	9	-198	-226
AB6047	Sht SPB - GMS, S/S Channel, Balustrade & Railing	18	14AUG06A	07AUG07	95	0	6	91	-295
AB6037	Sht SPB - Roof Waterproofing & Test	12	15DEC06A	21JUL07	67	0	2	105	-335
AB6057	Sht SPB - 25thk Roof Screed & Roofing Tiles	18	25JAN07A	21JUL07A	100	0	0		-305
AB6007	Sht SPB - Slate Cladding above NB/SB Carriageway	36	12FEB07A	30AUG07	10	0	36	71	-321
AB6027	Sht SPB - External Wall Painting	30	13MAR07A	24JUL07	95	0	4	-193	-301
AB6034	Sht SPB - Expanded metal cladding to ext walls	18	06AUG07*	25AUG07	0	0	18	-179	-289
SHT South Portal Bldg. - BUILDING SERVICES									
E & M WORKS									
Testing and Commissioning									
EM6280	Genset Termination + T&C	12	15JAN07A	21JUL07	95	0	2	105	-278
SHT TUNNEL									
CONSTRUCTION									
SHT NORTHBOUND TUNNEL									
(E & M) BUILDING SERVICES									
MVAC / Tunnel Ventillation System Above OHVD									
207008	Sht NB - MVAC/TVF Testing and T&C	35	20JUN07A	02AUG07	55	0	12	-212	-277
Fire Protection System									
221057	Sht NB - Hose Reel Cabinets & Equipts	40	08MAY06A	02AUG07	80	0	12	-212	-301
221059	Sht NB - FS wiring & termination	24	09NOV06A	02AUG07	80	0	12	-212	-275
221061	Sht NB - FS Testing and T&C	15	11APR07A	02AUG07	70	0	12	-212	-263
Electrical Works Below OHVD									
235165	Sht NB - Cabling, Wiring and Termination	36	30MAY06A	24JUL07	98	0	4	-210	-282
235166	Sht NB - Lighting Test and T&C	12	02MAR07A	31JUL07	95	0	8	-210	-276



Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish
SHT SOUTHBOUND TUNNEL									
(E & M) BUILDING SERVICES									
MVAC / Tunnel Ventilation System Above OHVD									
242274	Sht SB - MVAC/TVF Testing and T&C	35	20JUN07A	02AUG07	55	0	12	-212	-263
Fire Protection System									
256518	Sht SB - Hose Reel Cabinets & Equipts	40	30JUN06A	02AUG07	80	0	12	95	-247
256520	Sht SB - FS Wiring & Termination	24	10NOV06A	02AUG07	80	0	12	-212	-221
256521	Sht SB - FS Testing and T&C	18	11APR07A	04AUG07	50	0	14	-214	-211
Electrical Works Below OHVD									
270803	Sht SB - Cabling, Wiring and Termination	36	01OCT06A	24JUL07	98	0	4	-210	-236
270804	Sht SB - Lighting Test and T&C	12	02MAR07A	02AUG07	70	0	12	-212	-232
STATUTORY INSPECTIONS									
FSD INSPECTIONS									
EM5040	SHT Tunnel FSD Insp.	3	15AUG07	17AUG07	0	0	3	-214	-192
SHT NORTH PORTAL BUILDING									
CONSTRUCTION									
CIVIL & ABWF WORKS									
ABWF Works									
ABWF at GF									
AB7330	G/F paint Touch Up & Doors	12	22JAN07A	20JUL07A	100	0	0		-197
ABWF at 1F & LP									
AB7320	1F & LP Paint Touch Up & Doors	12	18JAN07A	20JUL07A	100	0	0		-197
Roofing & External Facade									
AB7280	Sht NPB - Alum. composite cladding to ext walls	60	16OCT06A	26JUL07	95	0	6	-195	-223
AB7270	Sht NPB - Roof Waterproofing & Test	12	22DEC06A	21JUL07	90	0	2	105	-334
AB7300	Sht NPB - 25thk Roof Screed & Roofing Tiles	18	25JAN07A	10JUL07A	100	0	0		-294
AB7260	Sht NPB - External Wall Painting	30	01FEB07A	26JUL07	95	0	6	-195	-299
AB7310	Sht NPB - Slate Cladding above NB/SB Carriageway	36	12FEB07A	30AUG07	25	0	36	-165	-312
AB7250	Sht NPB - GMS, S/S Channel, Balustrade & Railing	18	16APR07A	26JUL07	95	0	6	101	-264
AB7220	Sht NPB - Expanded metal cladding to Ext Walls	18	06AUG07*	25AUG07	0	0	18	-179	-289
Sht North Portal Bldg. - BUILDING SERVICES									
E & M WORKS									
Testing and Commissioning									
EM7500	Genset Termination + T&C	12	21FEB07A	02AUG07	95	0	12	95	-289
SHT RC ENCLOSURE & T3 UNDERPASS									
INTERFACE DATES									
SHT RC FULL ENCLOSURE / T3 UNDERPASS									
EM4030	Integrated T&C	30	10AUG07	13SEP07	0	0	30	59	-170
CONSTRUCTION WORKS									
SHT RC FULL ENCLOSURE / T3 UNDERPASS									
Koisk S1 at Shatin North Control Point									
EM3954	Kiosk S1 - E&M Testing and T&C	6	02JUN07A	04JUL07A	100	0	0		-298
RC Full Enclosure - LV Switch Room									
280079	LV SW Rm - MCCB,MCB,LV Sw,FS panels Term & Test	18	20APR07A	04JUL07A	100	0	0		-268
STN RC FULL ENCLOSURE (North Bound) - E&M WORKS									
MVAC / Tunnel Ventillation System									
280006	RCFE NB - Cabling, wiring and termination	24	25NOV06A	21JUL07	98	0	2	-213	-272
280008	RCFE NB - TVF Testing and T&C	12	23JUL07	04AUG07	0	0	12	-213	-196
Fire Protection System									
280026	RCFE NB - FS Conduit, Hose Reel Cabinets & Eqpt.	16	31JUL06A	28JUL07	60	0	8	-217	-291
280030	RCFE NB - FS Wiring & Termination	24	28FEB07A	09AUG07	60	0	8	-217	-273
280032	RCFE NB - FS Testing and T&C	12	25MAY07A	09AUG07	10	0	10	-217	-200



Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	Target 1 % Comp	Rem Dur	Total Float	Variance Early Finish
Fire Protection System									
280029	RCFE NB - Install Smoke detector @ N1-N3	10	30JUL07	09AUG07	0	0	10	-217	-291
Electrical Works									
280038	RCFE NB - HV & LV Cabling Works @ C Trough	36	21FEB07A	30JUN07A	100	0	0		-272
280040	RCFE NB - Install Power Distn Panels & Test	30	13MAR07A	26JUL07	98	0	6	101	-263
STN RC FULL ENCLOSURE (South Bound) - E&M WORKS									
MVAC / Tunnel Ventillation System									
280088	RCFE SB - Cabling, wiring and termination	24	21FEB07A	21JUL07	98	0	2	-213	-272
280090	RCFE SB - TVF Testing and T&C	12	23JUL07	04AUG07	0	0	12	-213	-196
Fire Protection System									
280096	RCFE SB - FS Conduit, Hose Reel Cabinets & Eqpt.	16	01NOV06A	31JUL07	60	0	10	97	-330
280102	RCFE SB - FS Wiring & Termination	24	28FEB07A	28JUL07	60	0	8	-207	-300
280104	RCFE SB - FS Testing and T&C	12	25MAY07A	31JUL07	10	0	10	-209	-192
280100	RCFE SB - Install Smoke detector @ S1-S4	10	30JUN07A	05JUL07A	100	0	0		-298
Electrical Works									
280112	RCFE SB - HV & LV Cabling Works @ C Trough	36	21FEB07A	30JUN07A	100	0	0		-272
280114	RCFE SB - Install Power Distn Panels & Test	30	10MAR07A	26JUL07	98	0	6	101	-263
T3 UNDERPASS									
Kiosks S2 at T3 Underpass Portal									
EM4002	Kiosk S2 - E&M Testing and T&C	6	02JUN07A	04JUL07A	100	0	0		-278
T&C and Inspections									
SHT RC Full Enclosure / T3 Underpass									
Statutory Inspection and Certs.									
EM5070	FSD insp. (SHT RC Enclosure & T3)	3	18AUG07	21AUG07	0	0	3	-217	-140



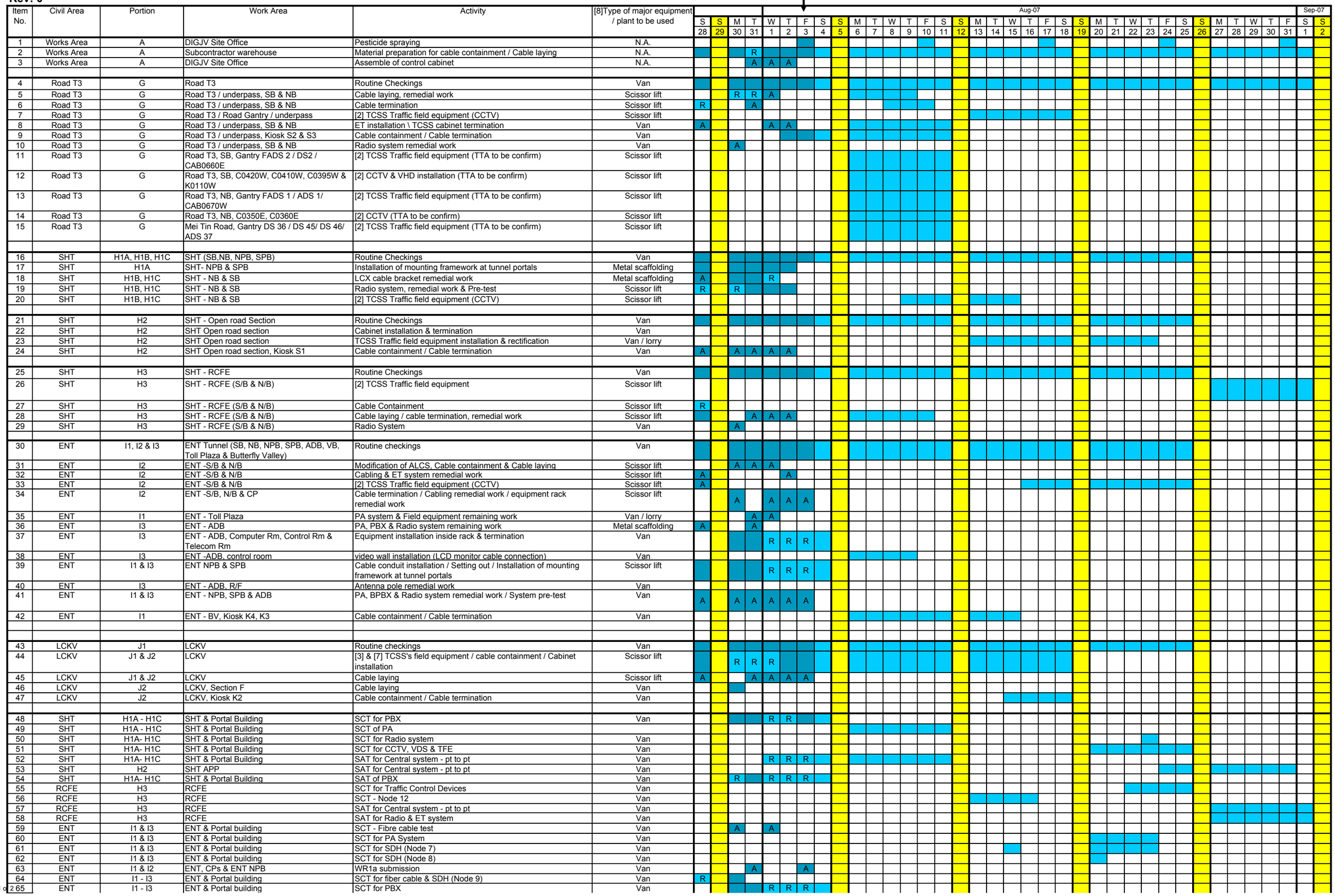
Delcan-Imtech-GTECH Joint Venture
Contract No. HY/2003/05
Route 8 - Traffic Control and Surveillance System

DIG 道易通聯營公司 DELCAN-IMTECH-GTECH JOINT VENTURE

Record Date: 03-08-2007

5-week Rolling Programme of Site Works
Rev: 0

Item No.	Civil Area	Portion	Work Area	Activity	[8]Type of major equipment / plant to be used
1	Works Area	A	DIGJV Site Office	Pesticide spraying	N.A.
2	Works Area	A	Subcontractor warehouse	Material preparation for cable containment / Cable laying	N.A.
3	Works Area	A	DIGJV Site Office	Assemble of control cabinet	N.A.
4	Road T3	G	Road T3	Routine Checkings	Van
5	Road T3	G	Road T3 / underpass, SB & NB	Cable laying, remedial work	Scissor lift
6	Road T3	G	Road T3 / underpass, SB & NB	Cable termination	Scissor lift
7	Road T3	G	Road T3 / Road Gantry / underpass	[2] TCSS Traffic field equipment (CCTV)	Scissor lift
8	Road T3	G	Road T3 / underpass, SB & NB	ET installation \ TCSS cabinet termination	Van
9	Road T3	G	Road T3 / underpass, Kiosk S2 & S3	Cable containment / Cable termination	Van
10	Road T3	G	Road T3 / underpass, SB & NB	Radio system remedial work	Van
11	Road T3	G	Road T3, SB, Gantry FADS 2 / DS2 / CAB0660E	[2] TCSS Traffic field equipment (TTA to be confirm)	Scissor lift
12	Road T3	G	Road T3, SB, C0420W, C0410W, C0395W & K0110W	[2] CCTV & VHD installation (TTA to be confirm)	Scissor lift
13	Road T3	G	Road T3, NB, Gantry FADS 1 / ADS 1/ CAB0670W	[2] TCSS Traffic field equipment (TTA to be confirm)	Scissor lift
14	Road T3	G	Road T3, NB, C0350E, C0360E	[2] CCTV (TTA to be confirm)	Scissor lift
15	Road T3	G	Mei Tin Road, Gantry DS 36 / DS 45/ DS 46/ ADS 37	[2] TCSS Traffic field equipment (TTA to be confirm)	Scissor lift
16	SHT	H1A, H1B, H1C	SHT (SB,NB, NPB, SPB)	Routine Checkings	Van
17	SHT	H1A	SHT- NPB & SPB	Installation of mounting framework at tunnel portals	Metal scaffolding
18	SHT	H1B, H1C	SHT - NB & SB	LCX cable bracket remedial work	Metal scaffolding
19	SHT	H1B, H1C	SHT - NB & SB	Radio system, remedial work & Pre-test	Scissor lift
20	SHT	H1B, H1C	SHT - NB & SB	[2] TCSS Traffic field equipment (CCTV)	Scissor lift
21	SHT	H2	SHT - Open road Section	Routine Checkings	Van
22	SHT	H2	SHT Open road section	Cabinet installation & termination	Van
23	SHT	H2	SHT Open road section	TCSS Traffic field equipment installation & rectification	Van / lorry
24	SHT	H2	SHT Open road section, Kiosk S1	Cable containment / Cable termination	Van
25	SHT	H3	SHT - RCFE	Routine Checkings	Van
26	SHT	H3	SHT - RCFE (S/B & N/B)	[2] TCSS Traffic field equipment	Scissor lift
27	SHT	H3	SHT - RCFE (S/B & N/B)	Cable Containment	Scissor lift
28	SHT	H3	SHT - RCFE (S/B & N/B)	Cable laying / cable termination, remedial work	Scissor lift
29	SHT	H3	SHT - RCFE (S/B & N/B)	Radio System	Van
30	ENT	I1, I2 & I3	ENT Tunnel (SB, NB, NPB, SPB, ADB, VB, Toll Plaza & Butterfly Valley)	Routine checkings	Van
31	ENT	I2	ENT -S/B & N/B	Modification of ALCS, Cable containment & Cable laying	Scissor lift
32	ENT	I2	ENT -S/B & N/B	Cabling & ET system remedial work	Scissor lift
33	ENT	I2	ENT -S/B & N/B	[2] TCSS Traffic field equipment (CCTV)	Scissor lift
34	ENT	I2	ENT -S/B, N/B & CP	Cable termination / Cabling remedial work / equipment rack remedial work	Scissor lift
35	ENT	I1	ENT - Toll Plaza	PA system & Field equipment remaining work	Van / lorry
36	ENT	I3	ENT - ADB	PA, PBX & Radio system remaining work	Metal scaffolding
37	ENT	I3	ENT - ADB, Computer Rm, Control Rm & Telecom Rm	Equipment installation inside rack & termination	Van
38	ENT	I3	ENT -ADB, control room	video wall installation (LCD monitor cable connection)	Van
39	ENT	I1 & I3	ENT NPB & SPB	Cable conduit installation / Setting out / Installation of mounting framework at tunnel portals	Scissor lift
40	ENT	I3	ENT - ADB, R/F	Antenna pole remedial work	Van
41	ENT	I1 & I3	ENT - NPB, SPB & ADB	PA, BPBX & Radio system remedial work / System pre-test	Van
42	ENT	I1	ENT - BV, Kiosk K4, K3	Cable containment / Cable termination	Van
43	LCKV	J1	LCKV	Routine checkings	Van
44	LCKV	J1 & J2	LCKV	[3] & [7] TCSS's field equipment / cable containment / Cabinet installation	Scissor lift
45	LCKV	J1 & J2	LCKV	Cable laying	Scissor lift
46	LCKV	J2	LCKV, Section F	Cable laying	Van
47	LCKV	J2	LCKV, Kiosk K2	Cable containment / Cable termination	Van
48	SHT	H1A - H1C	SHT & Portal Building	SCT for PBX	Van
49	SHT	H1A - H1C	SHT & Portal Building	SCT of PA	
50	SHT	H1A- H1C	SHT & Portal Building	SCT for Radio system	Van
51	SHT	H1A- H1C	SHT & Portal Building	SCT for CCTV, VDS & TFE	Van
52	SHT	H1A- H1C	SHT & Portal Building	SAT for Central system - pt to pt	Van
53	SHT	H2	SHT APP	SAT for Central system - pt to pt	Van
54	SHT	H1A- H1C	SHT & Portal Building	SAT of PBX	Van
55	RCFE	H3	RCFE	SCT for Traffic Control Devices	Van
56	RCFE	H3	RCFE	SCT - Node 12	Van
57	RCFE	H3	RCFE	SAT for Central system - pt to pt	Van
58	RCFE	H3	RCFE	SAT for Radio & ET system	Van
59	ENT	I1 & I3	ENT & Portal building	SCT - Fibre cable test	Van
60	ENT	I1 & I3	ENT & Portal building	SCT for PA System	Van
61	ENT	I1 & I3	ENT & Portal building	SCT for SDH (Node 7)	Van
62	ENT	I1 & I3	ENT & Portal building	SCT for SDH (Node 8)	Van
63	ENT	I1 & I2	ENT, CPs & ENT NPB	WR1a submission	Van
64	ENT	I1 - I3	ENT & Portal building	SCT for fiber cable & SDH (Node 9)	Van
65	ENT	I1 - I3	ENT & Portal building	SCT for PBX	Van



Delcan-Imtech-GTECH Joint Venture
Contract No. HY/2003/05
Route 8 - Traffic Control and Surveillance System

道易通聯營公司
DELCAN-IMTECH-GTECH
JOINT VENTURE

Record Date: 03-08-2007

5-week Rolling Programme of Site Works
Rev: 0

Item No.	Civil Area	Portion	Work Area	Activity	[8]Type of major equipment / plant to be used					Aug-07																																Sep-07	
						S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S
						28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2
66	ENT	I1 - I3	ENT (ADB & Toll plaza)	SCT for PA	Van																																					
67	ENT	I1 - I3	ENT & Portal building	SCT for fibre cable test (Node 7 & 8)	Van				A	A	A	A																														
68	ENT	I1 - I3	ENT & Portal building	SCT for Radio system	Van																																					
69	ENT	I1	EBT BV, Kiosk K3	SCT for Radio system	Van																																					
70	ENT	I1 - I3	ENT & Portal building	SAT for Central system (AID, Video wall, TCS,CMCS, TMIS/TIS)	Van																																					
71	ENT	I1 - I3	ENT & Portal building	SAT for BPBX	Van			R		R	R	R																														
72	ENT	I1 - I3	ENT & Portal building	SAT for PA	Van																																					
73	ENT	I1 - I3	ENT & Portal building	SAT of Central System (AID, Video wall, TCS, CMCS & TMIS / TIS)	Van																																					
74	LCKV	J1 & J2	LCKV	SCT for fiber cable	Van																																					
75	Road T3	G	T3	SCT for SDH (Node 12)	Van																																					
76	T3 & RCFE	G & H3	T3 & RCFE	SCT for Traffic Control Devices	Van																																					
77	NSCV	D	NSCV	Routine checkings	Van																																					
78	NSCV	D	NSCV	[2] TCSS Traffic field equipment & Cabinet	Crane Lorry	R		R	R	R	R	R																														
79	NSCV	D	NSCV	Cable laying	Van																																					
80	WKH	D	WKH	[2] TCSS Traffic field equipment	Crane Lorry																																					
81	WKH	D	WKH, FVMS F9X (TTA)	[3] & [4] TCSS's field equipment and related cable containment installation	Van																																					
82	NWT	B & C	NWT (E/B, W/B & WEB)	Routine checkings	Van																																					
83	NWT	B	WTYV, Gantry	Installation of TCSS equipment	Scissor lift					R																																
84	NWT	D	WPB & WCB	Fill-up opening & PA system remedial work	Van				A	A	A																															
85	NWT	D	EPB	PA cable laying	Van							A																														

Legend :
= Planned activity
= Work Done
= Public Holiday

R - Re-scheduled
N - New activity
A - Awaiting spatial co-ordination for TCSS installation

Note:
[1] Works depends on spatial co-ordination among related Main Contractor and TCSS.
[2] Works Subject to Traffic Tube arrangement
[3] Works subject to condition of site access & civil provision.
[4] Works depend on Civil Contractor to complete / rectify their provision

Distribution: Arup-Johnny Mac, Hara,Alex C, Franco L, Hamlyn K, Joseph C, KT Chan, Patrick L, Simon Cheung,
Philip C, PF Li, Sharon H, Tony C, Wilson W, Winnie M, Donald L, Johnny L, Kenny C , Thomas Wong, Andy Wong

Remark: 1) The schedule only shows the anticipated works planned and shall be subject to changes which will be reported by daily labour forecast on ad-hoc bases.
2) Should it have any query on the above activity, please approach the following personnel.
R8K : KY Chan / J. Lam / A. Kwok / A. Luk ; R8T: KY Chan / A. Kan / CK Fung / A. Luk
R8K / R8T - SCT / SAT: KY Chan / YS Ma / HF Leung

APPENDIX M
COMPLAINT LOG

Appendix M - Complaint Log

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
40426	Butterfly Valley	26 April 2004	A public noise complaint was recently received by EPD. The complaint was related to the noise generated from the Route 8 – ENT site near Butterfly Valley at the night time on 21 April 2004. EPD subsequently referred the complaint to the Environmental Team (ET) Leader of the Project on 23 April 2004.	<u>Noise at night time</u> The information provided by the RSS indicated that no works were undertaken by the Contractor during the concerned period. The concerned noise might probably be due to a burglary case occurred at same night. <u>Noise during day-time</u> It is believed that the day-time noise complaint was due to the site formation works of the Project. Considering the powered mechanical equipment used at the Butterfly Valley and the echo effect of the valley, ET believe that the day-time construction noise from the site at Butterfly Valley might cause nuisance to the nearby resident to some extent, though there was no noise level exceedance at the Government Quarters during our routine monitoring in last three months. The Contractor agreed to implement mitigation measures, including good site practices, selecting quieter plant and working methods and reduction in numbers of noisy plant operating currently, in order to mitigate noise impacts at the NSRs.	Closed
40914	Garden Villa	13-Sep-04 (by EPD) 14-Sep-04 (by ET Leader)	Environmental Protection Department (EPD) received a public noise complaint on 13 September 2004 about construction noise generated from the Route 8 – Eagle's Nest Tunnel and Associated Works (R8-ENT) Project, nearby by Garden Villa at Tai Po Road, Sha Tin. EPD subsequently referred the complaint to the Environmental Team (ET) Leader of the Project on 14 September 2004. The complaint was about general construction noise generated from a construction site nearby Garden Villa at Tai Po Road, Sha Tin. As informed by EPD,	<u>Environmental Permits</u> A Construction Noise Permit (No. GW-RN0405-04) was obtained by the Contractor for the use of powered mechanical equipment (PME) in the concerned works area and use of TAR no.1 during restricted hours. <u>Blasting Works</u> According to the information provided by the Resident Site Staff (RSS), for carrying out blasting works, a blasting permit should be issued by the Mines Division of Civil Engineering and Development Department (CEDD), but not under the jurisdiction of EPD. The CNP issued by EPD only specified the use of PME but not the blasting works during restricted hours.	Closed

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
			the complainant was particularly concerned of two issues: 1. The complainant was informed by the Contractor (Leighton – Kumagai Joint Venture) that blasting works would be conducted during restricted hours. He worried about the noise nuisance would be induced by the blasting works. 2. Noise nuisance from some site vehicles traveling on the Temporary Access Road (TAR no.1) near Garden Villa was noted by the complainant during restricted hours.	As advised by the RSS, the Contractor did intend to apply for a permit to the Mines Division of CEDD for blasting works during restricted hours. However, up to the time of preparation of this report, the Contractor still had not obtained the approval from the Mines Division and therefore, no blasting works were performed by the Contractor during restricted hours. <u>Use of TAR no.l</u> According to Condition 3d of the above-mentioned CNP, there was restriction on the use of site vehicles traveling on TAR no.1. The usage of site vehicles on TAR no.1 in a 2-week period before the date of complaint, i.e. 30th August to 12th September 2004 showed that the only vehicle type using TAR no.1 for the concerned period was concrete truck and the number of vehicle pass was limited to 4 times per hour, which was in compliance with the above CNP's conditions. Regular noise monitoring was undertaken by ET at Garden Villa on 30th August and 6th September 2004 during restricted hours (1900 – 2300 hours). The monitoring results were 58.7 dB(A) and 58.6 dB(A), respectively, which were below the noise limit level of 60 dB(A). However, it should be noted that site vehicles were not used by the Contractor on TAR no.1 during restricted hours on these two monitoring day. Based on the information obtained, the validity for the noise complaint in associated with night-time blasting works could not be concluded under ET's investigation, since no blasting works had been performed by the Contractor during restricted hours at the time of the report preparation. Also, it should be highlighted that for carrying out blasting works, permission should be obtained by Mines Division of CEDD, but not under the control of EPD. For the use of TAR no.1, the RSS's records showed that the number of vehicle pass in the period between 30th August and 12th September 2004 was complied with the CNP's conditions. It should be noted that only a maximum of 3 concrete trucks	

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
				passing the site entrance was recorded. Therefore, it was considered that the nuisance noted by the complainant was not due to the site vehicles adopted by the Contractor (LKJV). Nevertheless, the Contractor was reminded to ensure the compliance of the CNP conditions and adopt good site practice to minimize the construction noise.	
41021	Garden Villa	09-Oct-04 (by EPD) 21-Oct-04 (by ET Leader)	Environmental Protection Department (EPD) received a public noise complaint on 9 October 2004 about construction noise generated from the Route 8 – Eagle's Nest Tunnel and Associated Works (R8-ENT) Project, nearby by Garden Villa at Tai Po Road, Sha Tin. EPD subsequently referred the complaint to the Environmental Team (ET) Leader of the Project on 21 October 2004. The complaint was about nighttime construction noise generated from a construction site nearby Garden Villa at Tai Po Road, Sha Tin. As informed by EPD, the complainant was particularly concerned of two issues: • Construction works undertaken by the Contractor (Leighton–Kumagai Joint Venture) were noted after 2300 hour. • Some workers were noted leaving the site through Temporary Access Road (TAR) no.1 at around 2 am, causing nuisance to the residents in Garden Villa.	According to the information provided by the RSS, no construction activity was undertaken in the nighttime period (2300 – 0700 hours) at the concerned site area. LKJV did admit that some vehicles had been operating at midnight for transporting LKJV's survey workers from the site. Inconsiderate behaviors were noted causing nuisance to Garden Villa residents: 1. Driving the vehicles too fast, which generated excessive engine noise; 2. Noise inside the vehicles (such as staff talking or radios) escaping through the open vehicle windows; and 3. Vehicle beeping horn to request the guards to open the gate. In order to rectify the situation, LKJV had notified the relevant staff with the receipt of the complaint and urged them to take appropriate measures when using TAR1 at night: 1. to drive slowly in order to reduce the engine noise, especially when approaching Garden Villa; 2. to roll up the vehicle windows to contain any noise from talking or radios; and 3. to prohibit beeping the vehicle horn for gate opening; instead, to park the car and approach the guard on foot.	Closed

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
41023	Government Quarters (Butterfly Valley)	20-Oct-04 (by MHJV) 23-Oct-04 (by ET Leader)	A public complaint was received by the Engineer's Representative (ER) of Route 8 – Eagle's Nest Tunnel and Associated Works (R8-ENT) Project on 20th October 2004. The complaint was raised by a resident of the Government Quarters at Caldecott Road, concerning dust generation as a result of the construction activities at Butterfly Valley. The ER subsequently referred the complaint to the Environmental Team (ET) Leader of the Project on 23rd October 2004.	The complaint was considered valid based on: 1. ER's site observations; 2. ET's weekly site audit; and 3. 1-hr TSP exceedance record. Also, the sources of dust generation were identified as 1. 2 portions of the haul roads, one at Slope BV-S2 and one linking between South Portal Tunnel to Mui Kong Tsuen, were found to be dry. 2. Dust impact due to the haulage of excavated materials at the South Portal. Enhanced dust suppression measures had been implemented by the Contractor: • added rockfill to the haul road between South Portal Tunnel and the Gully fill area; • maintained watering to haul road at Slope BV-S2; • requested the fill material supplier to ensure the material was in a damp condition before leaving quarry; • provided for material not dampened at the Quarry to be directed to the wheel wash for water spray before entering the site; • when cleaning drill holes along slope BV-S4 to ensure adequate water was available for flushing to suppress dust emission; AND • provided damper stockpiles of cleared material at BV-S2 before loading. Based on ER's site observations, most of the above mitigation measures have been implementing by the Contractor. Also, an additional water browser was delivered to site on 29th Oct 04. No significant fugitive dust emission has been found. During ET's site inspections on 27th Oct and 3rd Nov 2004, the situation was found improved. No deficiency relating to air quality impact was noted by ET during the two audit sessions. The results of air quality monitoring (1-hr and 24-hr TSP) in the period between 21st Oct and 2nd Nov 2004 were all found to be complied with the Action / Limit Levels.	Closed

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
41124	Government Quarters (Butterfly Valley)	21-Nov-04 (by LKJV) 24-Nov-04 (by ET Leader)	A public complaint was received by the Contractor of Route 8 – Eagle's Nest Tunnel and Associated Works (R8-ENT) Project on 21st November 2004 (Sunday). The complaint was concerned about excessive noise generation from construction machinery at Butterfly Valley on the same day. The Engineer's Representative (ER) subsequently referred the complaint to the Environmental Team (ET) Leader of the Project on 24th November 2004.	According to the ER, the only construction activity at Butterfly Valley undertaken on 21st Nov 04 was formation of access road near Slope BV-S2. The activity only involved operations of 1 no. of excavator and 1 no. of dump truck with grab, which complied with the condition stipulated in a valid CNP GW-RW0484-04, which was hold by the Contractor. Routine noise monitoring was conducted on 21st and 28th Nov 2004 at NM6. All the measured noise levels (48.5 to 56.4 dB(A)) were well below the noise limit level. In addition, the measurement results were within the baseline noise level. Therefore, the complaint was considered to be invalid. Nevertheless, the Contractor was reminded to ensure the compliance of the conditions stipulated in CNP. The Contractor was also recommended to adopt good site practice in order to minimize the construction noise.	Closed
41201	Government Quarters (Butterfly Valley)	01-Dec-04 (by MHJV & ET Leader)	A public complaint was received by the Engineer's Representative (ER) of Route 8 – Eagle's Nest Tunnel and Associated Works (R8-ENT) Project on 1st December 2004. The complaint was raised by a resident of the Government Quarters at Caldecott Road, concerning dust generation at Butterfly Valley. The Environmental Team (ET) of the Project was informed with the complaint on the same day. The resident complained that a large portion of the excavated slopes was not properly covered, which caused dust nuisance to her.	The complaint was considered valid based on: 1. ER's site observations; 2. ET's weekly site audit Upon receipt of the complaint, a series dust control measures had been implemented by the Contractor, such as covering of the exposed slopes with appropriate sheeting, regular watering to the haul roads and excavated slope faces, etc. During the ET's weekly site audit on 08-Dec-04 together with the representative of HyD, IEC, ER and the Contractor, the above mitigation measures were observed. The idle slopes at BVS2 had been covered by tarpaulin sheeting and erosion mat. The left exposed slope surfaces at BVS2 were under excavation, thus being unable to be covered. According to the ER, the complainant has expressed his satisfaction to the site condition on 07-Dec-04, after the implementation of dust mitigation measures by the	Closed

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
				Contractor. However, owing to the prevailing of the dry season, the Contractor was reminded to ensure the dust control measures are effectively implemented.	
50125	Garden Villa (North Portal)	21-Jan-05 (by EPD) 25-Jan-05 (by ET Leader)	Environmental Protection Department (EPD) received a public noise complaint on 21 January 2005 about construction noise and dust generated from the Route 8 – Eagle's Nest Tunnel and Associated Works (R8-ENT) Project, nearby by Garden Villa at Tai Po Road, Sha Tin. EPD subsequently referred the complaint to the Environmental Team (ET) Leader of the Project on 25 January 2005. The complaint was about construction noise and dust generated from a construction site nearby Garden Villa at Tai Po Road, Sha Tin. The complainant was particularly concerned of two issues: 1. Noise from tunnel blasting work carrying out at around 7:30am and 10:00pm; and 2. Dump trucks without covering of canvas when leaving the construction site.	**Noise from blasting** For carrying out the blasting, the Contractor had obtained the permit from relevant authority. The ET's noise monitoring results did not show any exceedance for the measurement taken when blasting was in place. It should be highlighted that for carrying out blasting works, permission should be obtained by Mines Division of CEDD, but not under the control of EPD. In order to minimize the nuisance from the works, the Contractor was recommended: • To inform the residents around the area about the time of blasting in advance; and • To re-schedule the blasting time table, if possible, in order to avoid nuisance. **Uncovered dump trucks** In order to evaluate the situation, two inspections were carried out by the ET at Garden Villa on 27-Jan and 28-Jan-05 to identify the dump trucks leaving the site with uncovered load. On 27-Jan-05, 3 nos. of trucks, which were working for ENT Project, was noted by-passing Garden Villa without proper cover. Enhanced control (penalty system) was implemented by the Contractor after the inspection on 27-Jan. During the inspection on 28-Jan-05, 24 nos. of dump trucks for ENT Project were found leaving the site. No non-compliance was noted for the trucks working for ENT Project. LKJV was reminded to keep closely monitoring on the condition and the effectiveness of the proposed control measures.	Closed

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
50308	Garden Villa (North Portal)	05-Mar-05 (by EPD) 08-Mar-05 (by ET Leader)	EPD received a public complaint on 5 March 2005 about construction noise and dust generated from the construction sites of Route 8 – Eagle's Nest Tunnel and Associated Works (R8-ENT) and Route 8 - Sha Tin Heights Tunnel and Approaches (R8-SHT), nearby by Garden Villa at Tai Po Road, Sha Tin. EPD subsequently referred the complaint to the Environmental Team (ET) Leader of the Project on 8 March 2005. The complaint was about construction noise and dust generated from the construction sites nearby Garden Villa at Tai Po Road, Sha Tin. The complainant was particularly concerned of the following issues: 1. Nighttime & Sunday construction noise 2. Noise from tunnel blasting at early morning and nighttime 3. Dust from construction activities	*Nighttime & Sunday construction noise* • no exceedance for noise monitoring • restricted hour works were found complied with the CNPs • records of vehicular trips on TAR1 did not show non-compliance of CNP conditions *Noise from tunnel blasting at early morning and nighttime* • no exceedance for noise monitoring • valid blasting permit had been obtained from CEDD • blasting work is not under the jurisdiction of EPD *Dust from construction activities* • dump trucks with uncovered / inadequately covered materials were observed leaving site • no exceedance for TSP monitoring • enhanced dust suppression measures had been implemented by the Contractor <u>Conclusions</u> The complaint against the dust issue (uncovered / inadequately covered dump trucks) was considered justifiable The Contractor was reminded to review the current checking system. Continuous spot checks would be performed by ET and RSS.	Closed
50330	Garden Villa (TAR1)	30-Mar-05 (by EPD & ET Leader)	Environmental Protection Department (EPD) received a public complaint on 30th March 2005 about construction noise from the sites of Route 8 – Eagle's Nest Tunnel and Associated Works (R8-ENT) near Garden Villa at Tai Po Road, Sha Tin. The complaint, which was lodged by a resident of Garden Villa on 29th March 2005, was about the noise generated by heavy vehicles traveling in and out of the construction site near Garden Villa. According to the complaint, the noise was made from 7am onwards.	The site of concern was likely to be the Temporary Access Road no.1 (TAR1) connecting Tai Po Road and the construction sites of R8-ENT and Route 8 - Sha Tin Heights Tunnel and Approaches (R8-SHT). The time period of concern was within normal working hours (7am to 7pm) on a weekday not being holidays. According to the EM&A Manual, the criterion of construction noise in term of L_{eq}-30min within this period is 75 dB(A) for domestic premises. Since the commencement of the Project, no exceedance of daytime noise criterion of 75 dB(A) was recorded at Station AM3 (Garden Villa). During the 2-hour measurement period of the ad-hoc monitoring (0700-0900 hrs), all the measured noise levels (L_{eq}-30min) were below the daytime noise	Closed

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				criterion of 75 dB(A). Based on the results of routine noise monitoring and the ad-hoc measurement on 1st April 2005 at Garden Villa, no exceedance of daytime noise criterion of 75 dB(A) was recorded. The complaint lodged is therefore considered not justifiable. In order to minimize the nuisance generated by the vehicle use at Garden Villa, the Contractor has proposed to limit the frequency of trucks existing from TAR1 at a rate of one truck per minute during the time period of concern (7am to 8:30am).	
50415	Government Quarters	09-Apr-05 (by EPD) 15-Apr-05 (by ET Leader)	The complaint, which was lodged by a resident of 7/F, 38B, 8-10 Caldecott Road (Governmental Quarters) on 9th April 2005, was about the noise generated by the construction works at the Butterfly Valley during daytime. The complainant mentioned that the instant noise level taken by himself was 78 to 82 dB(A). EPD subsequently referred the complaint to the Environmental Team (ET) Leader of the Project on 15th April 2005. The time period of concern was within normal working hours (7am to 7pm) on a weekday not being public holidays. According to the EM&A Manual, the criterion of construction noise in term of L_{eq}-30min within this period is 75 dB(A) for domestic premises.	Governmental Quarters (Station NM6) is one of the designated noise monitoring stations in the EM&A programme. Routine monitoring is undertaken on a weekly basis in accordance with the EM&A Manual. Since the commencement of the Project, no exceedance of daytime noise criterion of 75 dB(A) was recorded at this station. Ad-hoc measurement was conducted at the complainant's premises on 22 Apr 05. The measured noise level was 69.0 dB(A), which was well below the daytime noise criterion of 75 dB(A). Based on the results of routine noise monitoring and the ad-hoc measurements conducted in the complainant premises, no exceedance of daytime noise criterion of 75 dB(A) was recorded. The complaint lodged is therefore considered not justifiable.	Closed

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50419	Government Quarters	15-Apr-05 (by EPD) 19-Apr-05 (by ET Leader)	The complaint was lodged by a resident of 8-10 Caldecott Road (Government Quarters) on 15th April 2005 to EPD as well as the Chief Resident Engineer of the Project. EPD subsequently referred the complaint to the Environmental Team (ET) Leader of the Project on 19th April 2005. The complainant mentioned that they had experienced quite a lot of noise emanating from the tunnel drilling area after 11pm over several nights and most particularly at the night of 14th April 2005 and at 4am on 15th April 2005.	The site of concern was likely to be the South Portal. For carrying out construction works at this area during restricted hours, two Construction Noise Permits (CNPs no. GW-RW0085-05 and GW-RW0086-06) were obtained by the Contractor in accordance with the requirements stipulated in Noise Control Ordinance. According to the information provided by the Resident Site Staff and the Contractor, the construction activities undertaken in the period between 11th and 15th April 2005 from 1900 to 0700 hours included drilling, breaking, trimming, set up of rock drill, installation of arch-rib and grouting. The powered mechanical equipment (PME) involved in the above works included backhoe, rock drill, loader, dumper, shot-crete machine, group pump, mobile platform and grout machine, which were covered by the CNPs. According to the routine monitoring results, for the time period between 2300-0700 hours, the measured noise levels exceeded the corresponding noise Limit Level of 50dB(A). However, the measured levels were found within the range of baseline level and below the average baseline level. Based on the routine noise monitoring results at Station NM6, the measured noise levels for the period between 2300-0700 hours were below the baseline noise level, which was comparable to the ambient level. According to the RSS's record, the PME items operated during the concerned period were found covered by the 2 CNPs hold by the Contractor. Based on the available information, there is not enough evidence to prove whether the complaint against nighttime construction noise generated in the concerned period (11th to 15th April 2005) is justifiable or not.	Closed

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50512	Yew Chung International School	12-May-05	On 11 May 05, a notice was sent to Yew Chung International School (YCIS) by the Contractor, providing their tentative blasting schedule on 12 May 05. It was shown that one of the blasting operations was scheduled at 09:30am, at when an examination was being held in YCIS. Upon receipt of the notice, a representative of YCIS lodged a complaint to the Contractor via the Project's hotline at 07:40 on 12 May 2005. The complainant expressed her objection to the blasting operation taken at 09:30am when the examination was taken place. The Contractor then agreed on one occasion only to delay the tunnel blast planned for 9:30am until 9:50am (i.e. 5 min after the examination). The complainant satisfied but did expect no future blasting during the examination period. According to the Engineer's Representative, the Contractor did not wish to make any commitment to ensure no blasting would be taken within the examination period.	A 1-day continuous noise measurement was conducted by the Environmental Team at Station NM1 on 26 May 05. According to the ER's record, two blasting operations were taken in the vicinity of YCIS on 26 May 05. One surface blast was taken at Butterfly Valley at 15:42 and one tunnel blasting was taken at South Portal at 16:56. The measurement results showed that the noise impact in term of Leq-5min and Leq-30min arising from the blasting operations was insignificant. No exceedance of construction noise criterion for examination period was recorded (Leq-30min < 65dB(A)). The complaint lodged was therefore considered not justifiable. However, in order to minimize the potential nuisance arising from the blasting noise and the siren sounds prior to blasting, the Contractor was recommended to consider scheduling the blasting operations beyond the examination periods.	Closed

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
50610	Government Quarters	10-Jun-05	On 10 June 2005, the Resident Site Staff (Maunsell-Hyder Joint Venture) received a complaint from a resident of the Government Quarters at Caldecott Road. The complaint was concerned about the construction dust generation as a result of the construction activities of the Project at Butterfly Valley. The complainant had not specified which construction activities had contributed to the dust generation.	*Site Observations* According to the RSS's preliminary investigation, it was considered that soil nailing at Slope BV-S2 was the dominant dust source and was likely to be the activity of concern. The dust suppression measures taken were found inadequate to control the dust dispersion from the works. Noticeable dust dispersion from the soil nailing work could be observed. *Corrective Actions* After the Contractor was notified by the RSS of the complaint, immediate action was taken by the Contractor on the same day (10 June 2005). The dust mitigation measures for the soil nailing were enhanced. An additional thicker cover was used. Also, continuous water spray was applied to suppress the dust emission. *Environmental Outcome* The RSS made a response to the complainant on 10 June 2005. The complainant was informed of the rectification actions taken by the Contractor. No further adverse comment was received from the complainant. *Conclusions* Based on the RSS's information, this complaint is considered to be valid and related to the construction activities of the Project. However, corrective action had been taken by the Contractor immediately and the situation was found improved.	Closed

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
50712	A scattered house near South Portal and Tai Po Road Water Treatment Works Staff Quarters	12-Jul-05	On 12 July 2005, a resident, whose house is located near South Portal and Tai Po Road Water Treatment Works Staff Quarters, lodged a complaint to the Contractor via the Project's hotline at 11:40am. The complainant expressed his concern on the nuisance caused by the blasting works at early morning (before 07:00 hours) and late night (after 23:00 hours).	*Site Activity* According to the information provided by the RSS, tunnel blasting works have been taken place in the concerned period in north bound tunnel from the Ventilation Adit towards the direction of the South Portal. *Environmental Requirements* In the EP, the EM&A Manual of the Project and the NCO, no requirement is specified for the control of blasting operation and the associated environmental impact, such as blasting noise. It should be highlighted that for carrying out blasting works, permission should be obtained by Mines Division of CEDD, but not under the jurisdiction of EPD. For carrying out the above-mentioned blasting operations, the Contractor has obtained a valid blasting permit from CEDD under the Dangerous Goods Ordinance (Cap. 295). Under this permit, the Contractor is allowed to carry out 24-hour blasting works within the designated area. *Contractor's Actions* Though the blasting noise is not under the control of any environmental related regulation and the Contractor is allowed to carry out 24-hour blasting, the Contractor would try to keep the blasts of concern undertaken between 07:00 to 23:00 hours. This arrangement could effectively reduce the potential nuisance to the residents within the more sensitive time period (23:00 to 07:00 on next day). *Conclusions* The subjected blasting operations were carried out by the Contractor under a valid blasting permit. The complaint lodged is therefore considered not justifiable.	Closed

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
50809	Government Quarters (8-10 Caldecott Road)	09-Aug-05	On 9 August 2005, a resident of 8-10 Caldecott Road (Government Quarters) lodged a complaint to the Contractor via the Project's hotline at 14:30. The complainant expressed her concern on the nuisance caused by the blasting works undertaken at Butterfly Valley. Noise impact arising from the blasting works was one of the issues raised by the complainant.	*Ad-hoc Noise Measurement* An ad-hoc noise measurement was carried out on the roof of Government Quarters during a surface blast on 16 August 2005. According to the record of the RSS and the site observation, a surface blasting was undertaken at Butterfly Valley at around 15:38 on the monitoring day. The results show that the measured noise level in term of Leq-30min, i.e. 69.1 dB(A) during the surface blasting was well below the daytime construction noise criterion of 75 dB(A). *Conclusion and Recommendation* According to the results of ad-hoc noise measurement taken at Government Quarters on 16 August 2005, the measured noise levels (Leq-30min) did not exceed the noise criterion of 75 dB(A). In addition, the subjected blasting operations were carried out by the Contractor under a valid blasting permit. For the concern of noise impact, the complaint was considered not justifiable.	Closed
50830	Government Quarters (8-10 Caldecott Road)	30-Aug-05	The RSS received a public complaint from a resident of Government Quarters addressing two noise issues: 1. Noise nuisance caused by drilling works at Butterfly Valley; 2. Noise nuisance due to blasting 0045 hrs of 28 August 2005.	*Noise Measurement* No exceedance was recorded for the routine noise monitoring at NM6 (Government Quarters). Ad-hoc noise measurement was conducted on 1 and 2 Sept 05. All measured noise levels complied with the noise criteria. *Conclusion* The complaint was considered not justifiable. However, the Contractor had taken proactive actions in order to minimize the nuisance of the residents, (1) to stop the rock breaking works at BVS2 and (2) to install temporary noise barriers for drilling works.	Closed

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
50928	Government Quarters (8-10 Caldecott Road)	28-Sept-05	A resident of Government Quarters complaint about a blast undertaken at 0215hr on 28 Sept 05.	*Environmental Monitoring* After receiving the complaint, the ET carried out a continuous noise measurement at Station NM6 (Government Quarters) from 29 to 30 September 2005. All the measured noise levels in term of Leq-5min are close to the baseline noise level. The noise levels after correction of baseline levels were all below the noise criterion of 50 dB(A). *Conclusion* The subjected blasting operations were carried out by the Contractor under a valid blasting permit. In addition, no noise exceedance was recorded for the ad-hoc noise monitoring. The complaint lodged is therefore considered not justifiable.	Closed
51025	Caldecott Hill (2 Caldecott Road)	25-Oct-05	A public complaint was received by the MWPMO of Highways Department on 25 October 2005. The complaint was subsequently refereed to the RSS and Environmental Team of Route 8 – Eagle's Nest Tunnel and Associated Works (R8-ENT) Project. The complaint was lodged by the management company of Caldecott Hill (No.2 Caldecott Road). It was about dust generation when construction vehicles, particularly dump trucks and concrete trucks, traveling along the Water Treatment Works (WTW) access road and its junction with Caldecott Road. According to the photos provided by the complainant, noticeable dust generation was observed during construction vehicles movement on the roads of concern.	*Site Observations* Ad-hoc site inspections were carried out on 25 and 26 Oct 05. On 26 Oct 05, the WTW access road was observed dry. Deposition of dusty materials was noted. Significant dust generation was identified during vehicle movement. *Contractor's Actions* Mitigation actions were taken by the Contractor: 1. One labour was appointed to water spray the concerned road junction and clear up of dusty materials deposited on the WTW access road. 2. Regular watering on access road by hose pipe was performed to keep the road wet. 3. All vehicles would be wheel-washed and loads of dusty materials would be covered before leaving the site. *Conclusions* Based on the site observations, this complaint was considered to be valid and related to the Project works. However, enhanced dust mitigation measures were taken by the Contractor and the situation was found improved.	Closed

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
51031	Po Leung Kuk Choi Kai Yau School	31-Oct-05	The resident site staff (MHJV) of R8-ENT received a complaint from the Principal of PLKCKY School. She commented that the blasting noise (nighttime and daytime) at Butterfly Valley became louder than before.	An ad-hoc noise measurement was taken by ET on 5 Nov 05 to evaluate the noise impact due to daytime surface blasting at the BV. The measurement results revealed that there has been no exceedance of noise level criteria. The complaint was therefore considered not justifiable.	Closed
51101	Butterfly Valley (Government Quarters)	1-Nov-05	On 1 Nov 05, the Resident Site Staff received a complaint from a resident of the Government Quarters. On 2 Nov 05, a complaint of similar natures and same location was received by the Environmental Protection Department. The complainant was concerned about the following environmental issues: 1. Noise nuisance due to tunnel blasting works undertaken at midnights and in early mornings (3am to 5am); 2. Noise nuisance due to operation of a generator after 11pm; 3. Construction dust and daytime noise due to processing and stockpiling of crushed rocks at Butterfly Valley; 4. Noise nuisance due to works outside tunnel in the early morning of 2 Nov 05.	*Item 1: Noise nuisance due to tunnel blasting* For carrying out the above-mentioned blasting operations, the Contractor has obtained a valid blasting permit from CEDD. Under this permit, the Contractor is allowed to carry out 24-hour blasting works. As advised by the Contractor, all the blasting operations had been completed by 12 Nov 05. *Item 2: Noise due to operation of a generator after 11pm* According to the Construction Noise Permit issued by EPD, one generator was allowed to be operated after 11pm at South Portal area outside the tunnel. In view of the provision of acoustic enclosure and the separation distance from the generator to Government Quarters (around 300m), the noise impact arising from this generator onto the residents of the Quarters was believed to be insignificant. During the ET's investigation on 11 Nov 05, no engine-like noise generated from the construction site could be identified. *Item 3: Dust and noise due to handling of crushed rocks* No noise exceedance was recorded. During the weekly site inspections, deficiencies regarding inadequate dust mitigation measures for the crushed rock processing and stockpiling were occasionally observed. Dry / uncovered stockpiles and dust emissions from crushed rocks handling were sometimes noted. *Item 4: Noise from works out of tunnel in morning of 2 Nov 05* According to the RSS's site records, there has been no activity outside the tunnel in the early morning of 2 November 2005. Work was undertaken deep inside the tunnel during the concerned period. The mentioned noise nuisance might not be related to R8-ENT Project. An ad-hoc noise measurement was carried out by ET from 8 to 10 November 2005 in order to evaluate the noise at Quarter's residents and no exceedance was recorded.	Closed

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				Conclusion Based on the information obtained, environmental monitoring results and site observations, this complaint was considered not justifiable, except for the concern of dust nuisance due to crushed rock processing.	
51205	Caldecott Road junction	5-Dec-05	The complaint was lodged by the management company of Villa Carlton. The complainant mentioned that several complaints from the occupants of Villa Carlton were received, against the dust emission when they drove to Kowloon via the Caldecott Road Junction. She also considered that the amount of water spraying by the Contractor was insufficient to suppress dust emission at Caldecott Road Junction.	*Complaint Record* A similar complaint (Log no. 51025) was received on 25 Oct 05 from Caldecott Hill. Significant dust emission was noted when construction vehicles traveling along the WTW access road and its junction with Caldecott Road. With implementation of enhanced dust mitigation measures, the situation was found improved and satisfactory. *Site Observations* Since Nov 05, in order to observe the Contractor's actions taken for the above-mentioned complaint, the area of interest was included during the weekly environmental audit. No deficiency had been noted at this area during the audit. After receiving this new complaint (Log no.51205), several ad-hoc site inspections were carried out on 6, 8 and 14 Dec 05. In addition, the RSS of the Project had carried out daily checking of the condition of the Caldecott Road Junction. Sufficient dust mitigation measures had been implemented by the Contractor. The condition was found satisfactory. Therefore, this complaint was considered not justifiable. However, it is noted that the Contractor had stepped up dust mitigation measures to further improve the condition at Caldecott Road junction.	Closed

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
60204	Garden Villa	4-Jan-06 (by ETL)	A public complaint was received by the Environmental Protection Department on 3 January 2006. The complaint was subsequently referred to the Environmental Team of Route 8 – Eagle's Nest Tunnel and Associated Works (R8-ENT) Project on 4 January 2006. According to EPD's information, the complaint was lodged by a complainant, who walked along Tai Po Road on 1-2 January 2006. The following information was given by EPD for our investigation: • Time of concern: 1-2 January 2006 (Daytime) • Suspected site area of concern: ENT's Toll Plaza and Administration Building. • Dust and noise nuisance was noted by the complainant when he passed Garden Villa. • Noise from wood saw and crane or alike was noted.	**A. Construction Noise Impact** According to the Contractor's information, construction activities were carried out on 1 and 2 Jan 06, including: • Erection and dismantling of formwork • Fixing water pipe All the equipment operated by the Contractor on 1-2 Jan 06 complied with the permissible equipment stated in the CNP. On 1 Jan 06, noise monitoring was carried out. All the results complied with the noise criterion. **B. Construction Dust Impact** Erection and dismantling of formwork and fixing water pipe were considered not dust emissive in nature. For stockpiles of materials in Toll Plaza area, dust mitigation measures had been implementing by the Contractor. The condition in term of dust control was found satisfactory during the audit sessions on 4 and 11 Jan 06. Since December 2005, all TSP monitoring results complied with the Action / Limit Level. **Conclusion** Based on the information given, site observations and environmental monitoring results, this complaint was considered not justifiable. Nevertheless, the Contractor was reminded to adopt good site practice to minimize the environmental impacts at the nearby sensitive receivers	Closed