

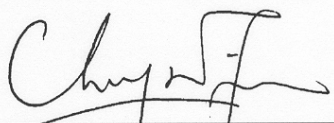
Highways Department

**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**

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

June to August 2005

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.

CINOTECH accepts no responsibility for changes made to this report by third parties.

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EXECUTIVE SUMMARY

- This is the seventh Quarterly 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 summary report documents the findings of EM&A works performed in the period between June and August 2005 for Contract No. HY/2003/02, Route 8 – Eagle's Nest Tunnel and Associated Works (the Project).
- The major site activities undertaken in the reporting month included slope cutting, bored piling, tunnel blasting, excavation works and construction of portal buildings.

Environmental Monitoring Works

- Environmental monitoring for the Project was performed regularly as stipulated in the EM&A Manual and the results were checked and reviewed. Environmental 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 the events and action taken in the reporting quarter is tabulated in **Table I**.

Table I Summary Table for Events Recorded in the Reporting Quarter

<i>Parameter</i>	<i>No. of Events</i>		<i>No. of Events Due to the Project</i>	<i>Action Taken</i>
	<i>Action Level</i>	<i>Limit Level</i>		
<i>June 2005</i>				
1-hr TSP	0	0	0	N/A
24-hr TSP	0	0	0	N/A
Noise	0	0	0	N/A
<i>July 2005</i>				
1-hr TSP	0	0	0	N/A
24-hr TSP	0	0	0	N/A
Noise	1	0	0	Complaint investigation
<i>August 2005</i>				
1-hr TSP	0	0	0	N/A
24-hr TSP	0	0	0	N/A
Noise	2	0	0	Complaint investigation

Environmental Licensing and Permitting

- Licenses/Permits granted to the Project include the Environmental Permit (EP) for the Project, Construction Noise Permits (CNPs) and Water Discharge Licenses (WDLs). The Contractor had also registered as a Chemical Waste Producer.

Key Information in the Reporting Quarter

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

Table II Summary Table for Key Information in the Reporting Quarter

Event	Event Details		Action Taken	Status	Remark
	Number	Nature			
Complaint received	4	1 on dust 3 on noise	Complaint investigation	3 – closed 1 – in progress	---
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	---
<p><u>Future Key Issues:</u></p> <p>Major site activities for the coming month include:</p> <ul style="list-style-type: none"> • Slope cutting; • Haul road construction; • Soil nail installations; • Stepped channel and retaining wall construction; • Portal building construction. <p>The anticipated environmental impacts will be mainly on water quality from surface runoff in rainy days and noise impact from slope works.</p>					

1. INTRODUCTION

- 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 will act 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. 449) (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 in 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. A revised EP No. EP-103/2001/A was 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 in 15th December 2003 for completion in April 2007.
- 1.7 "Route 9" was recently re-titled 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 was appointed as the ET Leader under Condition 2.2 of the EP. Mr. David YEUNG of CH2M-IDC Hong Kong Ltd. was appointed as the IEC under Condition 2.1 of the EP. This is the seventh quarterly EM&A report summarizing the EM&A works for the ENT Project between June and August 2005.

2 PROJECT CHARACTERISTICS

Project Organization and Contacts of Key Management

- 2.1 An organization structure and the line of communication were set up for the Project between the Project Proponent, Engineer's Representative (ER), Independent Environmental Checker (IEC), the Contractor and Environmental Team (ET). The organization chart and contact details are shown in **Appendix A** and **Figure 2**.

Construction Programme and Synopsis of Work

- 2.2 The construction programme is presented in **Appendix B**. The site activities during the reporting period include:
- Tunnel blasting at North Portal, South Portal and Ventilation Adit;
 - Excavation and mucking out in tunnels;
 - Water proofing membrane and lining construction in tunnels;
 - Surface blasting at Butterfly Valley;
 - Bored piling at Butterfly Valley;
 - Cut slope, u-channel, haul road construction and soil nail works at Butterfly Valley;
 - Pile cap construction and building formation at South Portal, North Portal, Toll Plaza and Ventilation Adit;
 - Excavation, concreting of blinding layer, column and wall at South Portal, North Portal, Toll Plaza and Ventilation Adit;
 - Footbridge, subway construction and drainage works at Toll Plaza; and
 - Chlorine barrier wall construction at Portion X.

3 ENVIRONMENTAL MONITORING AND AUDIT REQUIREMENTS

Monitoring Parameters and Monitoring Locations

- 3.1 The EM&A Manual designated locations for the ET to monitor environmental impacts in terms of noise and air quality due to the Project. The monitoring locations are depicted in **Figures 1a** and **1b**. **Appendix C** gives details of monitoring requirements.

Monitoring Methodology and Calibration Details

- 3.2 Monitoring works/equipments were conducted/calibrated regularly in accordance with the EM&A Manual. Copies of calibration certificates are attached in the appendices of the Monthly EM&A Reports.

Environmental Quality Performance Limits (Action and Limit Levels)

- 3.3 The environmental quality performance limits, i.e. Action and Limit Levels were derived from the baseline monitoring results. Should the measured environmental quality parameters exceed the Action/Limit Levels, the respective Event Action Plans would be implemented. The Action/Limit Levels for each environmental parameter are provided in **Appendix D**.

Environmental Mitigation Measures

- 3.4 Relevant mitigation measures as recommended in the project EIA report have been stipulated in the EM&A Manuals for the Contractor to implement. A list of mitigation measures is given in **Appendix G**.

4 MONITORING RESULTS

Weather Conditions

- 4.1 The weather during monitoring sessions was mainly sunny or cloudy. The weather conditions for each individual monitoring session were presented in the field record sheets.

Air Quality

1-hr TSP Monitoring

- 4.2 All 1-hr TSP monitoring was conducted as scheduled in this reporting period, except that the monitoring at AM3 was suspended from 21 to 27 June, 22 to 28 July and 22 to 26 August 2005 due to severe rainstorms, resulting in electricity disconnection to the TSP sampler.

4.3 No Action/Limit Level exceedance was recorded in this reporting quarter.

24-hr TSP Monitoring

4.4 All 24-hr TSP monitoring was conducted as scheduled in this reporting quarter, except that the monitoring at AM3 was suspended on 10, 16 and 22 June, 27 July, 19 and 25 August 2005 due to severe rainstorms, resulting in electricity disconnection to the TSP sampler.

4.5 No Action / Limit Level exceedance was recorded in the reporting quarter.

4.6 The monitoring data of 1-hr and 24-hr TSP Levels are attached in the appendices of the Monthly Reports for June to August 2005. The graphical presentations of the monitoring results are shown in **Appendix E**.

Construction Noise

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

4.8 No Limit Level exceedance was recorded in this reporting period.

4.9 Three Action Level exceedances were recorded due to public noise complaints received on 12 July, 9 and 30 August 2005.

4.10 All the Construction Noise Levels (CNLs) 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.

4.11 The monitoring data of construction noise are attached in the appendices of the Monthly Reports for June to August 2005. The graphical presentations of the monitoring results are shown in **Appendix F**.

4.12 Construction noise exceedances recorded in the reporting quarter and the associated actions taken are summarized in **Appendix J**.

5 ENVIRONMENTAL AUDIT

Implementation Status of Environmental Mitigation Measures

- 5.1 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 Environmental Mitigation Implementation Status (EMIS) is provided in **Appendix G**.

Site Audit Summary

- 5.2 ET's weekly site audits were conducted on 1, 9, 15, 22 and 29 June, 8, 15, 20 and 27 July, 5, 11, 17 and 25 August 2005. IEC's monthly site audits were conducted on 9 June, 8 July and 5 August 2005 together with ET.
- 5.3 During site inspections in the reporting period, no non-conformance was identified. The observations and recommendations are summarized in **Table 5.1**.

Table 5.1 Observations and Recommendations of the Site Audits

Parameters	Date	Observations / Recommendations	Remedial Actions
<i>Water Quality</i>	09-Jun-05	At ventilation adit, direct discharge of muddy water was observed. The Contractor was reminded to provide adequate drainage system.	Rectification was observed during the site audit on 15-Jun-05.
	22-Jun-05	Accumulation of silt in the de-silting pit at Mui Kong Tsuen was observed due to rainstorm during the site inspection. The contractor was reminded to pay more attention on the de-silting facilities in the rainy season.	Rectification was observed during the site audit on 29-Jun-05.
	08-Jul-05 15-Jul-05 20-Jul-05	Overflow of silty water into other construction site was observed at Portion D4 (Toll Plaza). The Contractor was reminded to review the performance and capacity of the sedimentation facility in the area of concern.	As observed on 27-Jul-05, the rate of overflow was reduced significantly and the water was visually clear.
	05-Aug-05 11-Aug-05 17-Aug-05 25-Aug-05 31-Aug-05	Overflow of water into other's construction site was observed at Portion D4. Though the overflowing water was visually clear, the Contractor was reminded to review the capacity of the water treatment system.	Situation would be followed up in Sep 05.
	05-Aug-05	By-pass of untreated muddy water into public drain was observed at Ventilation Adit. The Contractor was reminded to ensure all effluent was de-silted prior to discharge into public drains.	Rectification / improvement was observed during the site audit on 11-Aug-05.
	31-Aug-05	Sands and silts were accumulated in the channel at Portion D6. The contractor was reminded to keep the channel clean.	Situation would be followed up in Sep 05.

Parameters	Date	Observations / Recommendations	Remedial Actions
<i>Air Quality</i>	01-Jun-05	Fugitive dust emission was observed during the breaking works at BVS2. The Contractor was reminded to apply water spray from the breaking works for dust emission.	Rectification was observed during the site audit on 09-Jun-05.
	01-Jun-05	Spot check was conducted at Garden Villa to inspect the condition of dump trucks leaving the site via TAR1. One nos. of dump truck, which was working for ENT Contract, was found uncovered. Three other trucks were found covered inadequately.	Similar deficiency was still observed during the subsequent audit session on 9, 22 and 29 Jun 05. Situation would be followed up in July 2005.
	15-Jun-05	Dark smoke emission was observed from an air-compressor at Mui Kong Tsuen. The contractor was reminded to use well-maintained equipment on site.	Rectification was observed during the site audit on 22-Jun-05.
	08-Jul-05	Spot check was undertaken at Garden Villa to inspect the condition of dump trucks leaving site via TAR1. Two dump trucks (out of total 8 trucks), which are working for ENT Contractor, was found only partially covered.	Rectification was observed during the site audit on 15-Jul-05.
	08-Jul-05	Fugitive dust emission was observed at the unloading / loading area in Portion D4.	Immediate action was taken by the Contractor.
	08-Jul-05 15-Jul-05	Dark smoke emission from excavators was observed at the unloading / loading area in Portion D4 and in South Portal.	Rectification was observed during the site audit on 20-Jul-05.
	05-Aug-05	Exposed slope surfaces were observed at BVS2. The Contractor was recommended to cover the idled slope surfaces by tarpaulin sheets or other means.	Rectification / improvement was observed during the site audit on 11-Aug-05.
	05-Aug-05	Uncovered cement stock was observed at Portion D3. The Contractor was reminded to provide proper cover for the cement bags.	Rectification / improvement was observed during the site audit on 11-Aug-05.
	11-Aug-05 31-Aug-05	Spot check was conducted at Garden Villa to inspect the condition of dump trucks leaving site via TAR1. Uncovered / inadequately covered dump trucks were observed.	Situation would be followed up in Sep 05.
	25-Aug-05	Part of the access road near North Portal was observed dry and fugitive dust emission was observed during vehicle movement. The contractor was reminded to water the road more frequently to prevent the dust emission.	Rectification / improvement was observed during the site audit on 31-Aug-05.

Parameters	Date	Observations / Recommendations	Remedial Actions
Waste / Chemical Management	22-Jun-05 29-Jun-05	Improper chemical storage was observed at North Portal (D3) and Toll Plaza (D7). The contractor was reminded to provide the tray for fuel/chemicals storage.	Rectification was observed during the site audit on 07-Jul-05.
	29-Jun-05	Oily water was accumulated in the tray of chemical at North Portal (D3).	Rectification was observed during the site audit on 07-Jul-05.
	29-Jun-05	Improper storage of the chemical was observed at Ventilation Adit. The contractor was recommended to provide drip tray for the durm.	Rectification was observed during the site audit on 07-Jul-05.
	15-Jul-05	Oil leakage was observed from a drill rig at BSV2. The contractor was reminded to prevent oil leakage and remove the oil stained soils to the chemicals waste storage area.	Rectification was observed during the site audit on 27-Jul-05.
Others	08-Jul-05	Stagnant water was observed at Portion D5 (Workshop). The Contractor was reminded to avoid accumulation of stagnant water and maintain the site tidiness in that area.	Rectification was observed during the site audit on 15-Jul-05.

Status of Environmental Licensing and Permitting

5.4 Environmental licenses and permits including the Environmental Permit for the Project were in place and valid during the reporting quarter. The status of all licenses and permits obtained for the Project is summarized in **Appendix H**.

6 NON-COMPLIANCE (EXCEEDANCES) OF THE ENVIRONMENTAL QUALITY PERFORMANCE LIMITS (ACTION AND LIMIT LEVELS)

Summary of Exceedances

Air Quality

6.1 No Action / Limit level exceedance was recorded for both 1-hr TSP and 24-hr TSP monitoring in the reporting quarter.

Construction Noise Monitoring

6.2 Three Action Level exceedances were recorded due to noise complaints received on 12 July, 9 and 30 August 2005. No Limit Level exceedance was recorded

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

6.3 There was no non-compliance from the site audits in the reporting quarter. As mentioned previously in the Section 5.2 of this report, the observations and recommendations made in each individual site audit session were presented.

7 ENVIRONMENTAL COMPLAINTS

7.1 Four environmental related complaints were received in this reporting quarter, as summarized in Table 7.1.

Table 7.1 Summary of Complaints Received in the Reporting Period

Received Date	Area of Concern	Details	Status
10-Jun-05	Construction dust at Butterfly Valley	Soil nailing work at Slope BV-S2 was likely to be the source of problem. Corrective actions, including use of thicker cover and continuous water spray, were immediately taken by the Contractor after the complaint was received. The complaint was therefore considered valid and related to the Project works. The situation was found improved and no further adverse comment was received from the complainant.	Closed
12-Jul -05	Noise due to blasting near South Portal	The complainant expressed his concern on the nuisance caused by the blasting works between 23:00 to 0700 hours. The concerned noise / vibration nuisance might due to the blasting at the Northbound tunnel from the Ventilation Adit towards the direction of the South Portal. The blasting operation were carried out under a valid blasting permit, the complaint lodged is considered not justifiable.	Closed
09-Aug-05	Noise due to surface blasting at Butterfly Valley	Ad-hoc noise measurement was carried by ET at the rooftop of Government Quarters on 16 th August 2005 and the measured noise level was found well below 75 dB(A). In addition, the subjected blasting operations were carried out under a valid blasting permit. The complaint was considered not justifiable.	Closed
30-Aug-05	Noise due to daytime drilling works and nighttime blasting works	Investigation in process	In progress

7.2 The details of the complaints, the investigation results and the mitigation actions are summarized in **Appendix I**. There were 16 complaints received since the Project commencement.

8 NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

- 8.1 No notification of summon or successful prosecution was recorded in this reporting quarter.
- 8.2 There was no notification of summon or successful prosecution received since the Project commencement.

9 COMMENTS, CONCLUSIONS AND RECOMMENDATIONS

- 9.1 Major site activities for coming months include:

Butterfly Valley

- Cut slope, haul road, drainage works, soil nailing, surface blasting, retaining wall, water mains construction.

South Portal Tunnel and Building

- Blasting, excavation and mucking out, water proofing membrane installation, tunnel lining construction, pile cap construction, construction of building's columns and walls.

North Portal Tunnel and Building

- Blasting, excavation and mucking out, water proofing membrane installation, tunnel lining, pile cap and base slab construction, construction of columns and walls.

Toll Plaza's Structures and Building

- Footbridge and subway construction, drainage works, construction of building's columns and walls.

Ventilation Adit Tunnel and Building

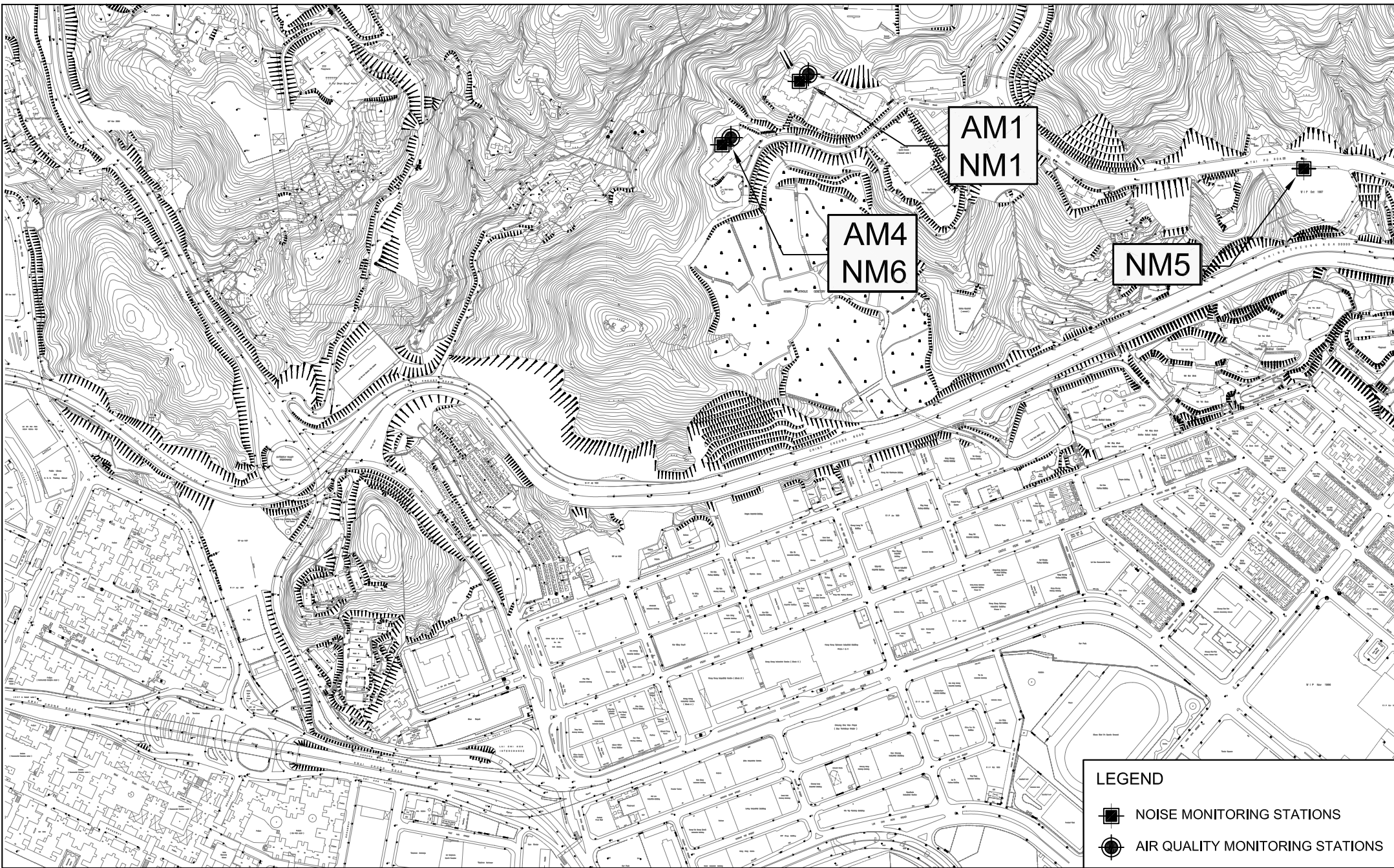
- Blasting, excavation and mucking out, permanent rock dowels and shotcreting, pile cap construction, construction of building's columns and walls.

Other Works Areas

- Chlorine barrier wall construction at Portion X.

- 9.2 The anticipated environmental impacts will be mainly on water quality from surface runoff in rainy days and noise impact from slope works.

FIGURES



LEGEND	
	NOISE MONITORING STATIONS
	AIR QUALITY MONITORING STATIONS

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

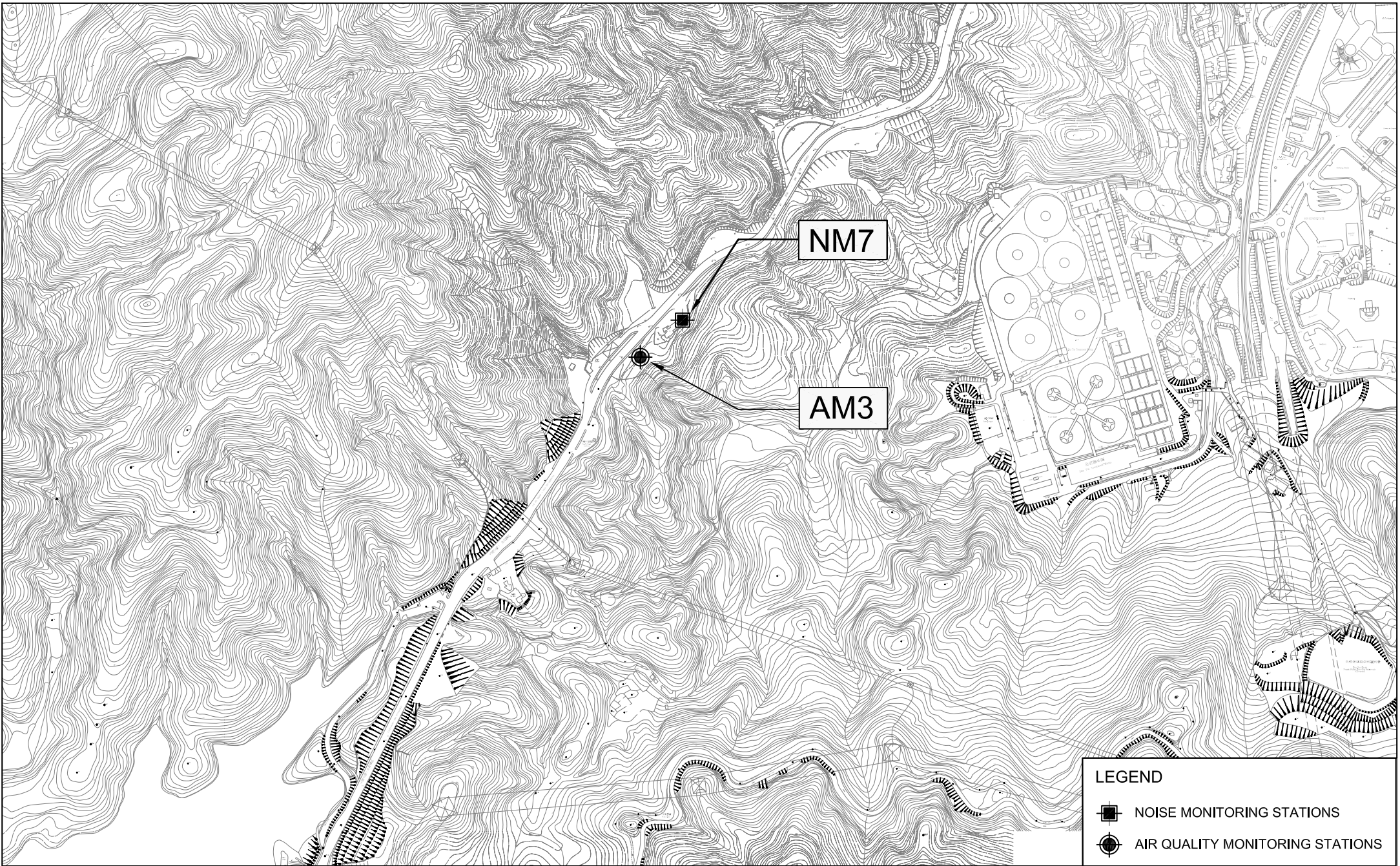
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Date
2005

Project No.
MA3024

Figure No.
1a





LEGEND	
	NOISE MONITORING STATIONS
	AIR QUALITY MONITORING STATIONS

Title

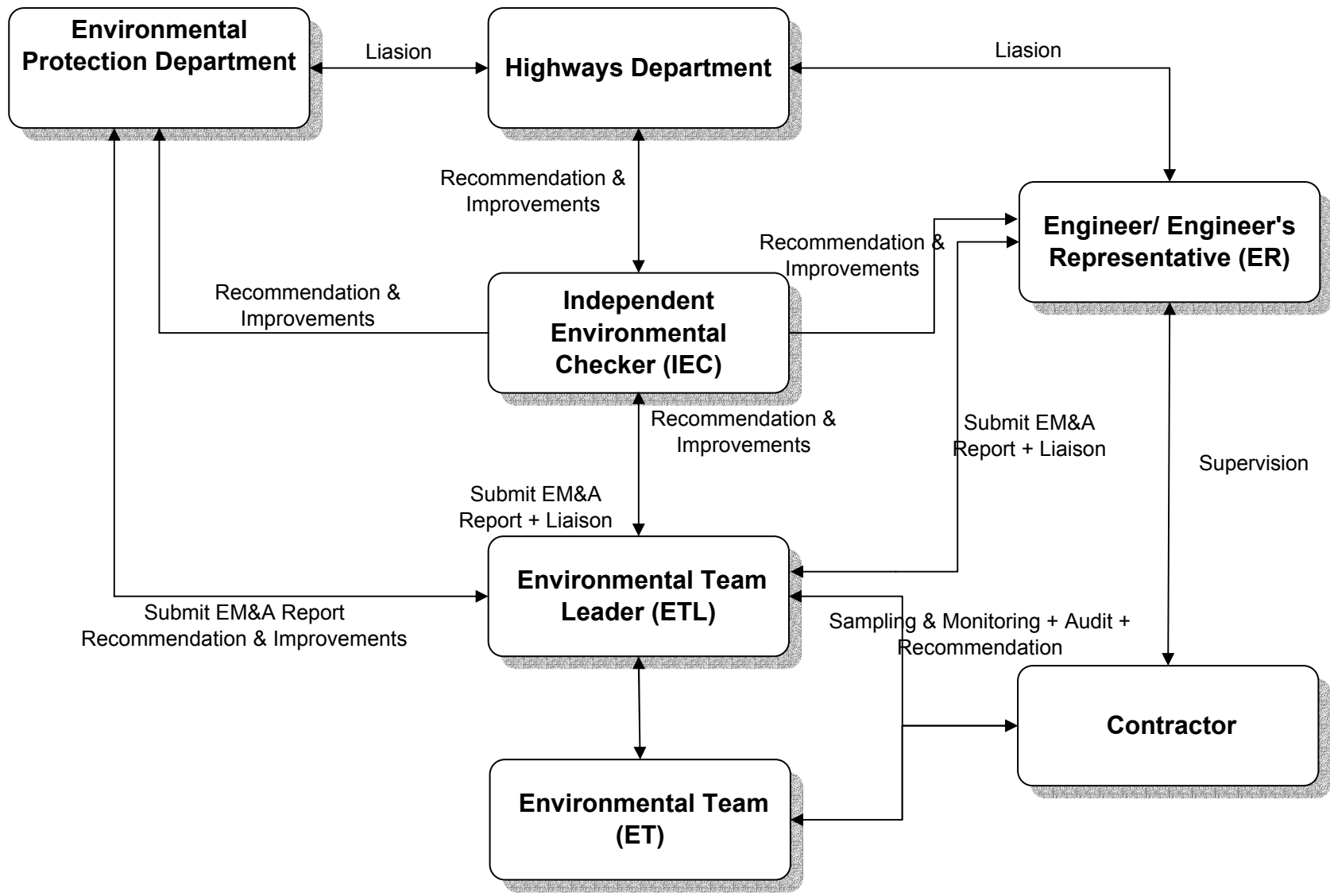
ROUTE 8 (PREVIOUSLY KNOWN AS ROUTE 9) BETWEEN CHEUNG SHA WAN AND SHA TIN
 CONTRACT NO. HY/2003/02 - EAGLE'S NEST TUNNEL AND ASSOCIATED WORKS

LOCATIONS OF MONITORING STATIONS

Scale	1 : 6500 (A4)
Date	2005

Project No.	MA3024
Figure No.	1b





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

Environmental Monitoring and Audit Organization Chart

Scale

N.T.S

Date

2005

Project

No. MA3024

Figure

2

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**APPENDIX A
CONTACT DETAILS OF THE PROJECT
ORGANISATION**

Appendix A - Contact Details of the Project Organisation (ENT)

Party	Role	Name	Position	Phone No.	Fax No.
HyD	Permit Holder	Mr. K.T. Lee	SE3/R8K	2762 3684	2714 5198
		Mr. Albert Cheung	E6/R8K	2762 3598	
		Mr. George Law	E4/R8K	2762 3675	2714 5224
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	The ET Leader	2151 2089	3107 1388
		Mr. KK Chan	Audit Team Leader	2151 2077	
		Mr. Henry Leung	Monitoring Team Leader	2151 2087	
CH2M-IDC	Independent Environmental Checker	Mr. David Yeung	Independent Environmental Checker	2507 2203	2507 2293
		Mr. Billy Yu	Assistant Independent Environmental Checker	2872 2949	
LKJV	Contractor	Mr. Ray Brewster	Project Director	9092 6128	2743 1600
		Mr. Kevin Harman	QA/E Manager	3352 2128	
Enquiries Hotline				3552 2226	-
Complaint Hotline				3552 2380	-

APPENDIX B
CONSTRUCTION PROGRAMME

Data Date 20JUN05
Run Date 29JUN05 11:07

3 MONTH ROLLING PROGRAMME

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

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	DWP % Compl.	Rem Dur	Total Float	Variance Early Finish	APR		MAY			JUN			JUL			AUG				SEP			OCT									
										19	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	3	10		
GENERAL & PRELIMINARIES																																					
SUBMITTALS & APPROVALS																																					
DRAWING SUBMITTAL & APPROVAL																																					
8014	Prep. & Sub. Combined Services Dwgs for ENT	48	20MAR04A	05AUG05	95	100	40	9	-420																												
8023	Prep. & Sub. Independ't Services Dwgs for ENT	48	24JUN04A	15AUG05	95	100	48	9	-344																												
8031	Prep. & Sub. Comb. Services Dwgs for SHT&T3&LCK	48	20JUL04A	15AUG05	95	100	48	69	-296																												
8034	Prep.& Sub. Independ't Serv. Dwgs for SHT&T3&LCK	48	04AUG04A	15AUG05	95	100	48	69	-206																												
8024	Engineer Comment / Approve ENT ISD Submissions	18	06AUG04A	11JUL05	70	100	18	9	-296																												
8030	Res-sub. & Approv of ENT ISD	24	06SEP04A	18JUL05	30	100	24	9	-278																												
8035	Engineer Comment / Approve SHT&T3LCK ISD Sub.	24	13SEP04A	27SEP05	70	100	84	69	-218																												
8032	Engineer Comment / Approve SHT&T3&LCK CSD Sub.	18	25OCT04A	15AUG05	70	100	48	69	-278																												
8033	Re-sub. & Approv. of SHT & T3 & LCK CSD	24	16AUG05	13SEP05	0	100	24	69	-278																												
SEM INTERFACE WITH SHT & T3																																					
SHATIN HEIGHTS TUNNEL																																					
2458	Apprv.for Det.Engineering of Tnnl.Vent.Fans	24	08JUL04A	18JUL05	95	100	24	199	-405																												
SHT RC FULL ENCLOSURE																																					
2473	Apprv.for Det.Engineering of Encl.Vent.Fans	12	07JUL04A	04JUL05	95	100	12	219	-456																												
T3 UNDERPASS																																					
2481	Apprv.for Det.Engineering of T3 Underpass	12	07JUL04A	04JUL05	95	100	12	219	-456																												



Leighton-Kumagai Joint Venture

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**LEIGHTON - KUMAGAI JV
R8- EAGLE'S NEST TUNNEL
DETAILED WORKS PROGRAMME REVISION C**

Proj. Name: W08C
Layout: 3 MONTHS ROLLING PROGRAMME
Filter: 3 MONTH ROLLING PROGRAMME
Current Proj: W08C
Target 1 Proj: BLRC
Target 2 Proj: MSRB

Sheet 1 of 39

LKJV/ENT/DWP/B

Date	Revision	Checked	Approved
27JUN05	Prog update June 05	IT	RB

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	DWP % Compl.	Rem Dur	Total Float	Variance Early Finis	APR							MAY				JUN			JUL				AUG				SEP			OCT			
										19	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	3	10	17	24
LAI CHI KOK VIADUCT																																						
SUBMITTALS & APPROVALS																																						
E&M EQPT./MTRL SUBMITTALS																																						
8313	LCKVd-Sub. Enclosure Lgt sys (incl Excision NEs)	78	02JUL04A	20SEP05	85	50	78	-38	-38																													
8319	LCKVd-Sub. Elect Power sys (incl Excision NEs)	78	02JUL04A	20DEC05	70	50	78	6	-114																													
E&M EQPT./MTRL APPROVALS BY ENGINEER																																						
8314	LCKVd-App. Enclosure Lgt sys (incl Excision NEs)	18	05AUG04A	22DEC05	75	0	156	-38	-98																													
8318	LCKVd-App. Elect Power sys (incl Excision NEs)	18	07DEC04A	10OCT05	65	0	18	6	-36																													
PROCUREMENT - MATERIAL																																						
8320	LCKVd-Proc & Manuf. Elect Power sys (incl Excisi	180	20MAY05A	06MAY06	5	0	180	6	-18																													
BUTTERFLY VALLEY																																						
CONSTRUCTION WORKS																																						
EARTHWORKS & SLOPEWORKS																																						
SITE CLEARANCE & TEMPORARY ACCESS																																						
2235	WA2 Slope Site Clearance BV-S2	90	22DEC03A	25JUN05	95	100	6	-194	-262																													
2345	WA2 Haul Rd Ch 1+830 - 2+020	36	26JUL04A	25JUN05	95	100	6	-81	-241																													
2344	WA1 Haul Rd Ch.1+620-1+830	22	01DEC04A	25JUN05	95	100	6	162	-297																													
SLOPE 11NW-A/C435																																						
3794	11NW-A/C435 hydro-seeding & tensor mat	24	11MAR05A	20JUN05	90	100	1	424	-354																													
SLOPE SP-S2 & SP-S3																																						
EXCAVATION (SOFT & ROCK)																																						
1111	New Activity - 200dia watermain diversion + test	63	20APR05A	04JUL05	80	N/A	12	-60	0																													
1109	SP-S2/S3 Slope excavation	12	05JUL05	18JUL05	0	100	12	-60	-302																													
SLOPE STABILISATION (SOIL NAILS, ROCK BOLTS ETC)																																						
1110	SP-S2/S3 Inst. Soil Nails & Test (97nr.w/3rig)	18	12JUL05	01AUG05	0	100	18	-60	-302																													
3798	SP-S2/S3 hydro-seeding & tensor mat	24	02AUG05	29AUG05	0	100	24	365	-302																													
SLOPE BV-S2																																						
EXCAVATION (SOFT & ROCK)																																						
2683	BV-S2/7 Slope excavation (soft & rock)	56	27APR05A	04JUL05	85	100	12	-194	-174																													
2689	BV-S2/8 Slope excavation (rock & soft)	82	13JUL05	19OCT05	0	100	82	-194	-174																													

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	DWP % Compl.	Rem Dur	Total Float	Variance	APR		MAY			JUN			JUL			AUG			SEP			OCT												
										19	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	3	10	25			
EXCAVATION (SOFT & ROCK)																																							
2692	BV-S2/9 Slope excavation (rock & some soft)	83	24AUG05	01DEC05	0	100	83	-93	-174																														
SLOPE STABILISATION (SOIL NAILS, ROCK BOLTS ETC)																																							
2697	BV-S2/7 Row E2/E3 Soil Nail & Test 100nr.w/3.rig	19	31MAR05A	03JUN05A	100	100	0		-142																														
2684	BV-S2/7 Row D3/D4 Soil Nails & Test 49nr.w/2.rig	14	23MAY05A	06JUL05	0	100	14	-168	-154																														
2688	BV-S2/7 Inst.Rock bolts & Test (12nr.w/1.rig)	13	04JUL05	18JUL05	0	100	13	-194	-174																														
2691	BV-S2/8 Inst.Rock bolts & Test (60nr.w/3.rig)	22	03AUG05	27AUG05	0	100	22	-191	-174																														
HYDRO-SEEDING & TENSAR MAT																																							
3802	BV-S2 Berm 5 hydro-seeding & tensar mat	10	02FEB05A	25JUN05	80	100	6	395	-224																														
3803	BV-S2 Berm 6 hydro-seeding & tensar mat	12	25MAR05A	04JUL05	20	100	12	389	-156																														
3804	BV-S2 Berm 7 hydro-seeding & tensar mat	12	04AUG05	17AUG05	0	100	12	363	-164																														
SURFACE DRAINAGE																																							
3694	BV-S2 Berm 7 Surface drainage	14	19JUL05	03AUG05	0	100	14	333	-164																														
SLOPE BV-S3																																							
COMPACTED FILLING																																							
2702	BV-S3 Compact Fill to +48.5mPD ch.1+740 to 1+860	36	04APR05A	26MAY05A	100	100	0		-156																														
1987	BV-S3 Compact Fill to +56.0mPD ch.1+740 to 1+860	36	20JUN05	01AUG05	0	100	36	-112	-193																														
HYDRO-SEEDING & TENSAR MAT																																							
3806	BV-S3 hydro-seeding & tensarmat to +41.0mPD	60	02AUG05	13OCT05	0	100	60	727	-193																														
SURFACE DRAINAGE																																							
1981	BV-S3 Slope Surface Drainage +33.5mPD	12	19JUL05	01AUG05	0	100	12	-112	-229																														
1982	BV-S3 Slope Surface Drainage +41.0mPD	37	02AUG05	14SEP05	0	100	37	-112	-218																														
1983	BV-S3 Slope Surface Drainage +48.5mPD	50	15SEP05	14NOV05	0	100	50	-112	-218																														
SLOPE BV-S4																																							
EXCAVATION (SOFT & ROCK)																																							
2355	BV-S4/3a Excav.slope [soft]	7	15APR05A	29MAY05A	100	100	0		-241																														
2368	BV-S4 Excavate CLP Cable Trough [soft]	24	20JUN05	18JUL05	0	100	24	-20	-363																														
SLOPE STABILISATION (SOIL NAILS, ROCK BOLTS ETC)																																							
2352	BV-S4/4b Row A2/A3 Soil Nail & Test 28nr.w/2rig	13	20JUN05	05JUL05	0	100	13	-9	-329																														
2356	BV-S4/3 Row A1 Soil Nail & Test 29nr.w/1rig	16	06JUL05	23JUL05	0	100	16	149	-272																														

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	DWP % Compl.	Rem Dur	Total Float	Variance Early Finis	APR							MAY							JUN							JUL							AUG							SEP							OCT						
										19							20							21							22							23							24													
										11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	3	10	17	24	31	7	14	21	28	4														
SLOPE STABILISATION (SOIL NAILS, ROCK BOLTS ETC)																																																										
2358	BV-S4/4a Row A2/A3 Soil Nail & Test 67nr.w/2rig	19	25JUL05	15AUG05	0	100	19	149	-266																																																	
2361	BV-S4/5 Row A4 Soil Nails & Test 25nr.w/1rig	14	16AUG05	31AUG05	0	100	14	150	-260																																																	
SLOPE FINISHES																																																										
1137	(BV-S4) RC CLP Cable Trough	54	19JUL05	20SEP05	0	100	54	-20	-325																																																	
SURFACE DRAINAGE																																																										
3714	11NW-A/C434 Surface Drainage	8	03JAN05A	25JUN05	80	100	6	198	-263																																																	
3705	BV-S4/3 Surface Drainage	8	25JUL05	02AUG05	0	100	8	163	-364																																																	
3706	BV-S4/4 Surface Drainage	12	19AUG05	01SEP05	0	100	12	149	-278																																																	
3707	BV-S4/5 Surface Drainage	10	02SEP05	14SEP05	0	100	10	149	-261																																																	
SLOPE SP-S1																																																										
EXCAVATION (SOFT & ROCK)																																																										
1330	SP-S1 Bulk Exc.to formation (rock) NB/SB	18	21MAR05A	29JUN05	90	100	9	-143	-193																																																	
SURFACE DRAINAGE																																																										
3711	Sp-S1/4 Surface Drainage	7	06JUL04A	27JUN05	40	100	7	418	-266																																																	
RC STRUCTURES																																																										
RETAINING WALL BV-R1																																																										
PILING WORKS																																																										
1140	BV-R1(C) Pre-Bore & Report	14	27JUN05	13JUL05	0	100	14	-81	-160																																																	
EXCAVATION (SOFT & ROCK)																																																										
2700	BV-R1 Excavation (BV-S2/8 rock)	61	27AUG05	09NOV05	0	100	61	-194	-174																																																	
RETAINING WALL BV-R2																																																										
PILING WORKS																																																										
1114	BV-R2(C) Bored Pile 6nr.	42	12APR05A	22JUN05	90	100	3	-113	-178																																																	
1115	BV-R2(C) Bored Pile Test & Report	8	08JUL05	16JUL05	0	100	8	-113	-178																																																	
CONCRETE WORKS																																																										
1116	BV-R2(C) Pile Capping Beam	12	26JUL05	08AUG05	0	100	12	-114	-157																																																	
1117	BV-R2(C) RC Wall	30	09AUG05	13SEP05	0	100	30	-114	-157																																																	
FINISHES																																																										
1123	BV-R2 Wall finishes	60	19JUL05	27SEP05	0	80	60	278	-67																																																	

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	DWP % Compl.	Rem Dur	Total Float	Variance	Early Finish	APR		MAY			JUN			JUL			AUG			SEP			OCT																			
											19	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	3	10										
WSD 200 MAIN																																															
2338	Inst.DN200 pipe (incl.thrust blocks) to BV-S4	60	21SEP05	01DEC05	0	100	60	-20	-319																																						
TERRAIN MITIGATION																																															
NTMM - BV-S2																																															
2392	NTMM - Constr.Peforated Drain Channel	24	20JUN05	18JUL05	0	100	24	-129	-139																																						
2350	NTMM - Afforestation of Area	60	19JUL05	27SEP05	0	100	60	341	-139																																						
RECREATED STREAM																																															
3808	Recreated stream DN525 pipe (east) ch.1+740	18	20JUN05	11JUL05	0	100	18	141	-314																																						
EXCISION WORKS - NOISE BARRIERS & ENCLOSURES																																															
NOISE SEMI-ENCLOSURE [SB]																																															
2738	SB Semi-Encl.Fnds. - Piling (C3,C4,I2)	24	26JUL05	22AUG05	0	100	24	-136	-157																																						
1177	SB Semi-Encl.Fnds. - Piling (C3)	17	03AUG05	22AUG05	0	100	17	-136	-164																																						
2734	SB Semi-Encl.Fnds. - Piling (C4)	21	23AUG05	16SEP05	0	100	21	-136	-164																																						
2739	SB Semi-Encl.Fnds.- RC Base (C3,C4,I2)	51	23AUG05	24OCT05	0	100	51	-129	-157																																						
2736	SB Semi-Encl.Fnds.- Piling (I2)	13	17SEP05	03OCT05	0	100	13	-126	-164																																						
SB/NB ROADWORKS & FINISHES																																															
ROADS - FORMATION																																															
FILLING																																															
1103	BV Compact.Fill to Form.ch.1+920 to 2+020	84	14JUN04A	29JUL05	70	100	34	-136	-125																																						
1102	BV Compact.Fill to Form.ch.2+020 - 2+200	48	11AUG04A	25JUL05	65	100	30	-136	-157																																						
2732	BV Compact.Fill to Form.ch.1+860 to 1+920	78	20JUN05	20SEP05	0	100	78	-94	-127																																						
DRAINAGE																																															
2381	SB/NB Sth.Appr.Rd.Drainage ch.2+030 - 2+200	114	26JUL05	08DEC05	0	100	114	-98	-157																																						
1178	BV.Appr.Rd.Drainage ch.1+920 to 1+960	44	02AUG05	22SEP05	0	100	44	-34	-127																																						
2721	BV.Appr.Rd.Drain Testing ch.1+920 to 1+960	30	23SEP05	29OCT05	0	100	30	200	-127																																						
EVA ROADWORKS & FINISHES																																															
SB (EAST SIDE) EVA ROADWORKS																																															
DRAINAGE																																															
1979	SB EVA rd.drainage (east) ch.2+000 to 2+200	31	11APR05A	04JUL05	75	50	12	256	6																																						

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	DWP % Compl.	Rem Dur	Total Float	Variance Early Finis	APR 19		MAY 20			JUN 21			JUL 22			AUG 23			SEP 24			OCT 25																		
										11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	3	10	17	24							
DRAINAGE																																													
1978	SB EVA rd.drain testing (east) ch.2+000 to 2+200	18	05JUL05	25JUL05	0	0	18	256	6																																				
EXCISION WORK-SHEK LEI PUI WATER TREATMENT PLANT																																													
1619	Soilid Barrier Type I - Foundations	17	13DEC04A	28JUN05	95	100	8	-75	-122																																				
2747	Soilid Barrier Type II - Structural Steelwork	30	20JUN05	25JUL05	0	100	30	-103	-131																																				
2748	Soilid Barrier Type I - Structural Steelwork	18	26JUL05	15AUG05	0	100	18	-97	-131																																				
2751	Soilid Barrier Type II - Cladding	30	26JUL05	29AUG05	0	100	30	-103	-131																																				
2749	Soilid Barrier Type III - Structural Steelwork	24	16AUG05	13SEP05	0	100	24	-97	-130																																				
2752	Soilid Barrier Type I - Cladding	18	30AUG05	20SEP05	0	100	18	-103	-131																																				
2750	Soilid Barrier Type IV - Structural Steelwork	18	14SEP05	05OCT05	0	100	18	-91	-130																																				
2753	Soilid Barrier Type III - Cladding	24	21SEP05	20OCT05	0	100	24	-103	-131																																				
ENT SOUTH PORTAL VENTILATION BUILDING																																													
SUBMITTALS & APPROVALS																																													
E&M EQPT. & MATERIAL.SUBMITTALS																																													
8201	EntSpBldg-Sub.MVAC MCC, power & control sys	54	02JUL04A	22AUG05	85	100	54	-3	-137																																				
8204	EntSpBldg-Sub.TVF, Ductworks & Control sys	78	02JUL04A	20SEP05	95	100	78	-3	-140																																				
8209	EntSpBldg-Sub.HV/ LV main & submain cable sys	54	02JUL04A	22AUG05	70	100	54	-45	-104																																				
8212	EntSpBldg-Sub.FS AFA & FM200 sys	54	05JUL04A	22AUG05	95	10	54	123	-3																																				
8490	EntSpBldg-Sub. building related luminaires	54	06JUL04A	22AUG05	95	100	54	3	-93																																				
8203	EntSpBldg-Sub.LV power dist. sys	54	07JUL04A	22AUG05	95	100	54	-63	-128																																				
8210	EntSpBldg-Sub.MVAC mech.vent. sys	54	03AUG04A	22AUG05	90	100	54	69	-89																																				
8207	EntSpBldg-Sub.FS wet sys	54	05AUG04A	22AUG05	95	100	54	81	-126																																				
8208	EntSpBldg-Sub.MVAC / TVF pneumatic sys	54	14AUG04A	15AUG05	90	0	48	75	58																																				
8200	EntSpBldg-Sub.CMCS & ELV sys	78	26AUG04A	20SEP05	75	100	78	21	-116																																				
8206	EntSpBldg-Sub.PD cleans. & flush water sys	54	20OCT04A	17AUG05	95	100	50	99	-128																																				
8211	EntSpBldg-Sub.MVAC Package AC Units	54	17JAN05A	22AUG05	85	0	54	135	40																																				

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	DWP % Compl.	Rem Dur	Total Float	Variance Early Finish	APR 19							MAY 20				JUN 21			JUL 22				AUG 23				SEP 24			OCT 25			
										11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	3	10	17	24
E&M EQPT. & MATERIAL SUBMITTALS																																						
8205	EntSpBldg-Sub.PD irrig. sys	54	04FEB05A	01DEC05	85	100	54	15	-216																													
1922	SP.Bldg. - Prep & submit louvre details	24	06SEP05	05OCT05	0	100	24	-129	-164																													
1940	SP.Bldg. - Prep & sub balustrade & metal wks	24	06SEP05	05OCT05	0	100	24	-135	-162																													
1942	SP.Bldg. - Prep & sub aluminium cladding	24	06SEP05	05OCT05	0	100	24	-129	-164																													
E&M EQPT. & MATERIAL APPROVALS																																						
6001	EntSpBldg-App. HV power dist. sys	18	14JUL04A	11JUL05	95	100	18	-57	-98																													
6002	EntSpBldg-App. LV power dist. sys	18	13AUG04A	11JUL05	90	100	18	-63	-74																													
8491	EntSpBldg-App. building related luminaires	18	18AUG04A	11JUL05	60	100	18	3	-39																													
6006	EntSpBldg-App. FS wet sys	18	04SEP04A	11JUL05	60	100	18	81	-72																													
6036	EntSpBldg-App. FS AFA & FM200 sys	18	14SEP04A	11JUL05	70	0	18	123	51																													
6192	EntSpBldg-App. of CMCS & ELV sys	18	20SEP04A	11JUL05	50	100	18	21	-38																													
6005	EntSpBldg-App. MVAC mech.vent. sys	18	23SEP04A	11JUL05	50	100	18	69	-35																													
6003	EntSpBldg-App. PD cleans. & flush water sys	18	04NOV04A	11JUL05	60	100	18	99	-78																													
6742	EntSpBldg-App. MVAC MCC, power & control sys	18	12NOV04A	11JUL05	75	100	18	-3	-83																													
6760	EntSpBldg-App. TVF, Ductworks & Control sys	18	12NOV04A	11JUL05	70	100	18	-3	-62																													
7615	EntSpBldg-App. HV/LV main & submain cable sys	18	07DEC04A	11JUL05	65	100	18	-45	-50																													
6013	EntSpBldg-App. MVAC Package AC Unit sys	18	01FEB05A	11JUL05	30	0	18	135	94																													
6004	EntSpBldg-App. PD irrig. sys	18	05MAY05A	20OCT05	30	100	18	15	-162																													
PROCUREMENT - MATERIAL																																						
6007	EntSpBldg-Proc. & Manuf. of HV dist. equip't	180	25MAR05A	19APR06	10	50	180	-120	-143																													
6193	EntSpBldg-Proc. & Manuf. of CMCS & ELV sys	180	25MAR05A	03JUL06	10	20	180	-102	-143																													
6743	EntSpBldg-Proc & Manuf. MCC, power & control sys	180	25MAR05A	09MAY06	8	40	180	-81	-143																													
6761	EntSpBldg-Proc & Manuf. TVF,Ductwks & Cont'l sys	180	09JUN05A	17JUN06	5	30	180	-78	-143																													

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	DWP % Compl.	Rem Dur	Total Float	Variance Early Finis	APR							MAY							JUN							JUL							AUG							SEP							OCT						
										19							20							21							22							23							24													
										11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	3	10	17	24	31																			
CONSTRUCTION																																																										
SUBSTRUCTURE																																																										
1188	SP.Bldg. - RC Fnd & Drainage GL.H-S/10-12	24	14MAY05A	05SEP05	10	100	24	-78	-82																																																	
SUPERSTRUCTURE																																																										
RC WORKS																																																										
NB CARRIAGEWAY & CENTRAL RESERVE																																																										
1189	SP.Bldg. - RC Cols. & Walls to 1FL.GL.H-S/10-12	18	30AUG05	20SEP05	0	100	18	-78	-82																																																	
1190	SP.Bldg. - RC Walls to Tanks/Pits GL.H-S/10-12	18	06SEP05	27SEP05	0	100	18	-78	-82																																																	
EAGLES NEST TUNNEL																																																										
SUBMITTALS & APPROVALS																																																										
E&M EQPT./ MTRL.DETAIL SUBMITTAL																																																										
8214	EntRtNb-Sub.Tunnel Lgt sys	78	02JUL04A	20SEP05	85	100	78	-111	-248																																																	
8216	EntRtNb-Sub.LV main & submain dist sys	54	02JUL04A	22AUG05	70	100	54	-81	-232																																																	
8217	EntRtNb-Sub.TVS control sys	54	02JUL04A	22AUG05	80	100	54	21	-98																																																	
8220	EntRtSb&VA-Sub.TVS control sys	54	02JUL04A	22AUG05	80	100	54	21	-110																																																	
8222	EntRtSb&VA-Sub.LV main & submain dist. sys	54	02JUL04A	22AUG05	70	100	54	-93	-242																																																	
8223	EntRtSb&VA-Sub.Tunnel Lgt sys	78	02JUL04A	20SEP05	85	100	78	-114	-251																																																	
8215	EntRtNb-Sub.FS AFA & Linear sys	54	05JUL04A	17AUG05	95	100	50	-111	-310																																																	
8219	EntRtSb&VA-Sub.FS AFA & Linear sys	54	05JUL04A	17AUG05	95	100	50	-111	-319																																																	
8218	EntRtNb-Sub.TVS in Tunnel	54	07JUL04A	22AUG05	95	100	54	-105	-242																																																	
8224	EntRtSb&VA-Sub.TVS in Tunnel	54	07JUL04A	11JUL05	95	100	18	-105	-218																																																	
8213	EntRtNb-Sub.CMCS & ELV sys	78	26AUG04A	20SEP05	75	100	78	-9	-194																																																	
8221	EntRtSb&VA-Sub.CMCS & ELV sys	78	26AUG04A	20SEP05	75	100	78	-9	-200																																																	
E&M EQPT./MTRL.APPROVAL BY ENGINEER																																																										
7618	EntRtSb&VA-App. TVS in Tunnel	18	29JUL04A	11JUL05	70	100	18	-105	-200																																																	
7621	EntRtNb-App. TVS in Tunnel	18	29JUL04A	11JUL05	70	100	18	-105	-188																																																	
6808	EntRtSb&VA-App. Tunnel Lgt sys	18	05AUG04A	07JUL05	75	100	15	-114	-170																																																	

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	DWP % Compl.	Rem Dur	Total Float	Variance Early Finis	APR							MAY							JUN							JUL							AUG							SEP							OCT						
										19	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	3	10	17	24	31	7	14	21	28	4	11	18	25	1	8	15	22	29	5	12	19	26	3	10
E&M EQPT./MTRL.APPROVAL BY ENGINEER																																																										
DESIGN & ENGINEERING																																																										
PERMANENT WORKS																																																										
TUNNEL																																																										
PROCUREMENT - MATERIAL																																																										
TUNNEL																																																										
NORTHBOUND TUNNEL																																																										
SOUTHBOUND TUNNEL & V.A TUNNEL																																																										

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	DWP % Compl.	Rem Dur	Total Float	Variance Early Finis	Gantt Chart							
										APR 19	MAY 20	JUN 21	JUL 22	AUG 23	SEP 24	OCT 25	
SOUTHBOUND TUNNEL & V.A TUNNEL																	
6799	EntRtSb&VA-Proc & Manuf. CMCS & ELV sys	180	25MAR05A	19APR06	10	60	180	-72	-167								
6803	EntRtSb&VA-Proc & Manuf. ES Cabling	180	20MAY05A	23JAN06	5	90	180	-93	-170								
7619	EntRtSb&VA-Proc & Manuf. TVS in Tunnel	180	09JUN05A	23JAN06	5	100	180	-105	-182								
6809	EntRtSb&VA-Proc & Manuf. Tunnel Lgt sys	180	08JUL05	17FEB06	0	90	180	-114	-170								
MAJOR EQUIPMENT DELIVERY																	
TUNNEL																	
3590	Order/Manufact/Deliver - Travelling Forms (SP)	150	06MAR04A	10JUN05A	100	100	0		-125								
CONSTRUCTION WORKS																	
TUNNEL PREPARATION WORKS																	
TUNNEL LINING																	
SOUTH PORTAL																	
1279	Erect Lining Form SB at SP	24	13JUN05A	14JUL05	20	100	21	-93	-105								
1277	Erect lining form NB at SP	24	20JUN05	18JUL05	0	100	24	-125	-131								
3178	ErectOHVD Form SB at SP	24	15JUL05	11AUG05	0	100	24	-93	-105								
3222	Erect OHVD form NB at SP	24	19JUL05	15AUG05	0	100	24	-107	-131								
NORTHBOUND TUNNEL DRIVE																	
TUNNEL EXCAVATION & PRIMARY SUPPORT																	
NORTH PORTAL																	
3030	D&B NB 49m Tch.2+246 to 2+197 fr.NP	8	16MAY05A	27MAY05A	100	100	0		-76								
3031	D&B NB 10m Tch.2+197 to 2+187 fr.NP*	3	28MAY05A	31MAY05A	100	100	0		-76								
3147	D&B NB 40m Tch.2+187 to 2+147 fr.NP	6	01JUN05A	09JUN05A	100	100	0		-78								
3032	D&B NB 39m Tch.2+147 to 2+108 fr.NP	6	10JUN05A	20JUN05	90	100	1	-75	-80								
3033	D&B NB 59m Tch.2+108 to 2+049 fr.NP	9	21JUN05	30JUN05	0	100	9	-75	-80								
3034	D&B NB 10m Tch.2+049 to 2+039 fr.NP	2	02JUL05	04JUL05	0	100	2	-54	-80								
3035	D&B NB 30m Tch.2+039 to 2+009 fr.NP	5	05JUL05	09JUL05	0	100	5	-54	-80								
3036	D&B NB 10m Tch.2+009 to 1+999 fr.NP*	3	11JUL05	13JUL05	0	100	3	-54	-80								
3037	D&B NB 20m Tch.1+999 to 1+979 fr.NP	3	14JUL05	16JUL05	0	100	3	-54	-80								

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	DWP % Compl.	Rem Dur	Total Float	Variance Early Finis	APR							MAY							JUN							JUL							AUG							SEP							OCT						
										19	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	3	10	17	24	31																			
										11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	3	10	17	24	31																			
SOUTH PORTAL																																																										
1292	D&B.NB LH Tch.1+064 to 1+317 (253m)	80	29MAR05A	11AUG05	41	100	45	-149	-149	[Gantt bar: 29MAR05A - 11AUG05, blue start, grey body, red end]																																																
3054	D&B.(limit) NB 72m Tch.1+163 to 1+235 fr.SP	22	07APR05A	18JUN05A	100	100	0		-138	[Gantt bar: 07APR05A - 18JUN05A, blue bar]																																																
3055	D&B.(limit) NB 20m UH Tch.1+235 to 1+255 fr.SP	6	20JUN05	25JUN05	0	100	6	-132	-138	[Gantt bar: 20JUN05 - 25JUN05, blue start, grey body, red end]																																																
3056	D&B.(limit) NB 31m UH Tch.1+255 to 1+286 fr.SP	8	27JUN05	06JUL05	0	100	8	-132	-138	[Gantt bar: 27JUN05 - 06JUL05, blue start, grey body, red end]																																																
3066	D&B NB 5m FF Tch.1+491 to 1+496 fr.SP	1	02JUL05	02JUL05	0	100	1	812	-91	[Gantt bar: 02JUL05 - 02JUL05, white box]																																																
3057	D&B.(limit) NB 10m UH Tch.1+286 to 1+296 fr.SP	2	07JUL05	08JUL05	0	100	2	-132	-138	[Gantt bar: 07JUL05 - 08JUL05, blue bar]																																																
3058	D&B.(limit) NB 21m UH Tch.1+296 to 1+317 fr.SP	4	09JUL05	13JUL05	0	100	4	-132	-138	[Gantt bar: 09JUL05 - 13JUL05, blue bar]																																																
3059	D&B.NB 20m FF Tch.1+317 to 1+337 fr.SP	3	14JUL05	16JUL05	0	100	3	800	-138	[Gantt bar: 14JUL05 - 16JUL05, white box]																																																
VENTILATION ADIT																																																										
3044	D&B NB 59m Tch.1+753 to 1+812 fr.VA->NP	9	17MAY05A	09JUN05A	100	100	0		-22	[Gantt bar: 17MAY05A - 09JUN05A, blue bar]																																																
3043	D&B NB 10m Tch.1+812 to 1+822 fr.VA->NP	9	10JUN05A	13JUN05A	100	100	0		-22	[Gantt bar: 10JUN05A - 13JUN05A, blue bar]																																																
3042	D&B NB 39m Ch.1822 to 1861 fr. VA->NP	6	14JUN05A	25JUN05	28	100	6	-71	-37	[Gantt bar: 14JUN05A - 25JUN05, blue start, grey body, red end]																																																
3041	D&B NB 10m Ch.1861 to 1871 fr. VA->NP	3	27JUN05	29JUN05	0	100	3	-71	-46	[Gantt bar: 27JUN05 - 29JUN05, blue bar]																																																
3040	D&B NB 39m Ch.1871 to 1910 fr. VA->NP	6	30JUN05	07JUL05	0	100	6	-71	-55	[Gantt bar: 30JUN05 - 07JUL05, blue start, grey body, red end]																																																
3039	D&B NB 40m Ch.1910 to 1950 fr.VA->NP	6	08JUL05	14JUL05	0	100	6	-71	-67	[Gantt bar: 08JUL05 - 14JUL05, blue start, grey body, red end]																																																
3038	D&B NB 29m Ch.1950 to 1979 fr. VA->NP	5	15JUL05	20JUL05	0	100	5	-71	-78	[Gantt bar: 15JUL05 - 20JUL05, blue start, grey body, red end]																																																
3069	D&B NB 17m FF Ch.1553 to 1536 fr.VA->SP	3	18MAY05A	23MAY05A	100	100	0		-47	[Gantt bar: 18MAY05A - 23MAY05A, blue bar]																																																
3068	D&B NB 10m FF Ch.1536 to 1526 fr.VA->SP	2	24MAY05A	27MAY05A	100	100	0		-54	[Gantt bar: 24MAY05A - 27MAY05A, blue bar]																																																
3067	D&B NB 30m FF Ch.1526 to 1491 fr.VA->SP	6	28MAY05A	08JUN05A	100	100	0		-66	[Gantt bar: 28MAY05A - 08JUN05A, blue bar]																																																
3065	D&B.NB 84m FF Ch.1491 to 1407 fr.VA->SP	13	09JUN05A	30JUN05	24	100	10	-32	-91	[Gantt bar: 09JUN05A - 30JUN05, blue start, grey body, red end]																																																
3064	D&B.NB 10m FF Ch.1407 to 1397 fr.VA->SP	2	02JUL05	04JUL05	0	100	2	-32	-106	[Gantt bar: 02JUL05 - 04JUL05, blue bar]																																																
3063	D&B.NB 20m FF Ch.1397 to 1377 fr.VA->SP	8	12AUG05	20AUG05	0	100	8	-60	-149	[Gantt bar: 12AUG05 - 20AUG05, blue start, grey body, red end]																																																
3062	D&B.NB 10m FF Ch.1377 to 1367 fr.VA->SP	2	22AUG05	23AUG05	0	100	2	-60	-163	[Gantt bar: 22AUG05 - 23AUG05, blue bar]																																																
3061	D&B.NB 20m FF Ch.1367 to 1347 fr.VA->SP	3	24AUG05	26AUG05	0	100	3	-60	-168	[Gantt bar: 24AUG05 - 26AUG05, blue bar]																																																

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	DWP % Compl.	Rem Dur	Total Float	Variance	APR							MAY			JUN			JUL			AUG			SEP			OCT			
										19							20			21			22			23			24		25				
										11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	3
VENTILATION ADIT																																			
3060	D&B.NB 10m FF Ch.1347 to 1337 fr.VA->SP	2	27AUG05	29AUG05	0	100	2	-60	-173																										
1290	D&B NB Breakthrough	0	30AUG05		0	100	0	-60	-87																										
TUNNEL INVERT																																			
NORTH PORTAL																																			
3201	NB Kicker/form part Service Trough (fr.NP) 116m	22	24MAR05A	24JUN05	78	100	5	-124	-174																										
3182	NB exc.grnd/foul water drain trough 149m(fr.NP)	28	20JUN05	22JUL05	0	100	28	-146	-178																										
3183	NB exc.grnd/foul water drain trough 128m(fr.NP)	24	20JUN05	18JUL05	0	100	24	-100	-155																										
3184	NB exc.grnd/foul water drain trough 139m(fr.NP)	27	20JUN05	21JUL05	0	100	27	-100	-133																										
3185	NB exc.grnd/foul water drain trough 150m(fr.NP)	28	20JUN05	22JUL05	0	100	28	-77	-104																										
3502	NB Invert lining type 'D' 121m - Rightside	60	20JUN05	29AUG05	0	100	60	-28	-166																										
3186	NB exc.grnd/foul water drain trough 148m(fr.NP)	27	21JUN05	22JUL05	0	100	27	-53	-80																										
3192	NB Invert Cleaning (fr.NP 149m)	24	28JUN05	26JUL05	0	100	24	-146	-178																										
3365	NB Foulwater Gulley ENF-40 to ENF-41 [55m]	12	05JUL05	18JUL05	0	100	12	554	-166																										
3451	NB Ground water ENG-40 to ENG-41B [55m]	12	05JUL05	18JUL05	0	100	12	557	-166																										
3202	NB Kicker/form part Service Trough (fr.NP) 149m	23	07JUL05	02AUG05	0	100	23	-133	-178																										
3187	NB exc.grnd/foul water drain trough 129m(fr.NP)	24	18JUL05	13AUG05	0	100	24	-54	-80																										
3364	NB Foulwater Gulley ENF-39 to ENF-40 [50m]	14	19JUL05	03AUG05	0	100	14	554	-166																										
3366	NB Foulwater Gulley ENF-41 to ENF-42 [52m]	18	19JUL05	08AUG05	0	100	18	781	-166																										
3450	NB Ground water ENG-39 to ENG-40 [50m]	11	19JUL05	30JUL05	0	100	11	557	-166																										
3452	NB Ground water ENG-41B to ENG-41A	6	19JUL05	25JUL05	0	100	6	782	-166																										
3453	NB Ground water ENG-41B to ENG-42 [49m]	11	26JUL05	06AUG05	0	100	11	782	-166																										
3193	NB Invert Cleaning (fr.NP 128m)	22	27JUL05	20AUG05	0	100	22	-146	-178																										
3188	NB exc.grnd/foul water drain trough 118m(fr.NP)	39	29JUL05	13SEP05	0	30	39	-58	-70																										
3449	NB Ground water ENG-38 to ENG-39 [50m]	11	01AUG05	12AUG05	0	100	11	557	-166																										

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	DWP % Compl.	Rem Dur	Total Float	Variance Early Finis	APR			MAY			JUN			JUL			AUG			SEP			OCT													
										19	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	3	10					
NORTH PORTAL																																									
3203	NB Kicker/form part Service Trough (fr.NP) 128m	22	03AUG05	27AUG05	0	100	22	-133	-178																																
3363	NB Foulwater Gulley ENF-38 to ENF-39 [50m]	11	04AUG05	16AUG05	0	100	11	554	-166																																
3448	NB Ground water ENG-37 to ENG-38 [50m]	11	13AUG05	25AUG05	0	100	11	557	-166																																
3362	NB Foulwater Gulley ENF-37 to ENF-38 [50m]	11	17AUG05	29AUG05	0	100	11	554	-166																																
3194	NB Invert Cleaning (fr.NP 139m)	23	22AUG05	17SEP05	0	100	23	-146	-178																																
3447	NB Ground water ENG-36 to ENG-37 [49m]	11	26AUG05	07SEP05	0	100	11	557	-166																																
3204	NB Kicker/form part Service Trough (fr.NP) 139m	22	30AUG05	24SEP05	0	100	22	-134	-178																																
3361	NB Foulwater Gulley ENF-36 to ENF-37 [49m]	11	30AUG05	12SEP05	0	100	11	554	-166																																
3503	NB Invert lining type 'D' 121m - Leftside	60	30AUG05	10NOV05	0	100	60	-28	-166																																
3446	NB Ground water ENG-35 to ENG-36 [50m]	11	08SEP05	21SEP05	0	100	11	557	-166																																
3360	NB Foulwater Gulley ENF-35 to ENF-36 [50m]	11	13SEP05	24SEP05	0	100	11	554	-166																																
3195	NB Invert Cleaning (fr.NP 150m)	24	19SEP05	18OCT05	0	100	24	-146	-173																																
3445	NB Ground water ENG-34 to ENG-35 [50m]	11	22SEP05	05OCT05	0	100	11	557	-166																																
3359	NB Foulwater Gulley ENF-34 to ENF-35 [50m]	11	26SEP05	08OCT05	0	100	11	554	-166																																
SOUTH PORTAL																																									
3210	NB exc.grnd/foul water drain trough 253m(fr.SP)	50	21JUN05	18AUG05	0	100	50	-149	-149																																
3216	NB Invert Cleaning [fr.SP] 253m	18	02AUG05	22AUG05	0	100	18	-149	-149																																
3226	NB Kicker/form part Service Trough (fr.SP) 253m	35	09AUG05	19SEP05	0	100	35	-149	-149																																
3211	NB exc.grnd/foul water drain trough 90m(fr.SP)	21	19AUG05	13SEP05	0	100	21	-71	-145																																
3217	NB Invert Cleaning [fr.SP] 90m	20	24AUG05	16SEP05	0	100	20	-68	-145																																
3212	NB exc.grnd/foul water drain trough 146m(fr.SP)	27	14SEP05	17OCT05	0	100	27	-71	-141																																
3227	NB Kicker/form part Service Trough (fr.SP) 90m	13	20SEP05	05OCT05	0	100	13	-65	-149																																
3218	NB Invert Cleaning [fr.SP] 146m	24	21SEP05	20OCT05	0	100	24	-71	-141																																

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	DWP % Compl.	Rem Dur	Total Float	Variance Early Finis	APR							MAY							JUN							JUL							AUG							SEP							OCT							
										19							20							21							22							23							24														
										11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	3	10																							
TUNNEL LINING																																																											
NORTH PORTAL																																																											
3235	NB NP Arch Lining 150m Tch.3+030 to 2+880	30	27FEB05A	24MAY05A	100	100	0		-157																																																		
3245	NB NP OHVD 150m Tch.3+030 to 2+880	30	31MAR05A	01JUN05A	100	100	0		-152																																																		
3236	NB NP Arch Lining 150m Tch.2+880 to 2+730	30	25MAY05A	30JUN05	69	100	10	-156	-158																																																		
3246	NB NP OHVD 150m Tch.2+880 to 2+730	30	25MAY05A	13JUL05	33	100	20	-156	-156																																																		
3237	NB NP Arch Lining 150m Tch.2+730 to 2+580	30	02JUL05	05AUG05	0	100	30	-154	-158																																																		
3247	NB NP OHVD 150m Tch.2+730 to 2+580	30	14JUL05	17AUG05	0	100	30	-156	-156																																																		
3238	NB NP Arch Lining 150m Tch.2+580 to 2+430	30	06AUG05	10SEP05	0	100	30	-154	-158																																																		
3248	NB NP OHVD 150m Tch.2+580 to 2+430	30	18AUG05	22SEP05	0	100	30	-156	-156																																																		
3239	NB NP Arch Lining 150m Tch.2+430 to 2+280	30	12SEP05	18OCT05	0	100	30	-154	-158																																																		
3249	NB NP OHVD 150m Tch.2+430 to 2+280	30	23SEP05	29OCT05	0	100	30	-156	-156																																																		
SOUTH PORTAL																																																											
3310	NB SP Arch Lining 150m Tch.1+063 to 1+213	42	16AUG05	05OCT05	0	100	42	-149	-149																																																		
3314	NB NP OHVD 150m Tch.1+063 to 1+213	30	06SEP05	13OCT05	0	100	30	-125	-149																																																		
TUNNEL FINISHING WORKS																																																											
SERVICE TROUGH & UTILITIES																																																											
3511	NB NP 200 main 183m Tch.3+063 to 2+880 fr.NP	23	20JUN05	16JUL05	0	100	23	-163	-178																																																		
3527	NB service trough 150m Tch.3+030 to 2+880 fr.NP	23	05JUL05	30JUL05	0	100	23	-163	-178																																																		
3512	NB NP 200 main 150m Tch.2+880 to 2+730 fr.NP	23	18JUL05	12AUG05	0	100	23	-155	-177																																																		
3528	NB service trough 150m Tch.2+880 to 2+730 fr.NP	23	01AUG05	26AUG05	0	100	23	-163	-178																																																		
3513	NB NP 200 main 150m Tch.2+730 to 2+580 fr.NP	23	13AUG05	08SEP05	0	100	23	-155	-170																																																		
3529	NB service trough 150m Tch.2+730 to 2+580 fr.NP	23	27AUG05	23SEP05	0	100	23	-163	-178																																																		
3514	NB NP 200 main 150m Tch.2+580 to 2+430 fr.NP	23	10SEP05	07OCT05	0	100	23	-155	-163																																																		
3520	NB SP 200 main 150m Tch.1+063 to 1+213 fr.SP	23	21SEP05	19OCT05	0	100	23	-96	-149																																																		
3530	NB service trough 150m Tch.2+580 to 2+430 fr.NP	23	24SEP05	22OCT05	0	100	23	-163	-171																																																		

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	DWP % Compl.	Rem Dur	Total Float	Variance Early Finis	Gantt Chart							
										APR 19	MAY 20	JUN 21	JUL 22	AUG 23	SEP 24	OCT 25	
SERVICE TROUGH & UTILITIES																	
3537	NB service trough 150m Tch.1+063 to 1+213 fr.SP	23	26SEP05	24OCT05	0	100	23	-88	-149	[Gantt bar: Green from 26SEP to 24OCT, with a red start marker]							
TUNNEL DRIVE SOUTHBOUND																	
TUNNEL EXCAVATION & PRIMARY SUPPORT																	
NORTH PORTAL																	
3101	D&B SB 20m Tch.2+313 to 2+293 fr.NP	3	19MAY05A	27MAY05A	100	100	0		-92	[Gantt bar: Blue from 19MAY to 27MAY]							
3102	D&B SB 10m Tch.2+293 to 2+283 fr.NP	5	28MAY05A	30MAY05A	100	100	0		-89	[Gantt bar: Blue from 28MAY to 30MAY]							
3103	D&B SB 20m Tch.2+283 to 2+263 fr.NP	3	31MAY05A	03JUN05A	100	100	0		-90	[Gantt bar: Blue from 31MAY to 03JUN]							
3104	D&B SB 10m Tch.2+263 to 2+252 fr.NP	2	04JUN05A	07JUN05A	100	100	0		-91	[Gantt bar: Blue from 04JUN to 07JUN]							
3105	D&B SB 50m Tch.2+252 to 2+202 fr.NP	8	08JUN05A	19JUN05A	100	100	0		-92	[Gantt bar: Blue from 08JUN to 19JUN]							
3106	D&B SB 10m Tch.2+202 to 2+192 fr.NP	2	20JUN05	21JUN05	0	100	2	-87	-92	[Gantt bar: Red from 20JUN to 21JUN]							
3107	D&B SB 41m Tch.2+192 to 2+151 fr.NP	6	22JUN05	28JUN05	0	100	6	-87	-92	[Gantt bar: Red from 22JUN to 28JUN]							
3108	D&B SB 40m Tch.2+151 to 2+111 fr.NP	6	29JUN05	06JUL05	0	100	6	-87	-92	[Gantt bar: Red from 29JUN to 06JUL]							
3109	D&B SB 61m Tch.2+111 to 2+050 fr.NP	9	07JUL05	16JUL05	0	100	9	-87	-92	[Gantt bar: Red from 07JUL to 16JUL]							
3110	D&B SB 10m Tch.2+050 to 2+040 fr.NP	2	18JUL05	19JUL05	0	100	2	-87	-92	[Gantt bar: Red from 18JUL to 19JUL]							
3111	D&B SB 31m Tch.2+040 to 2+009 fr.NP	5	20JUL05	25JUL05	0	100	5	-87	-92	[Gantt bar: Red from 20JUL to 25JUL]							
3112	D&B SB 10m Tch.2+009 to 1+999 fr.NP*	4	26JUL05	29JUL05	0	100	4	-87	-92	[Gantt bar: Red from 26JUL to 29JUL]							
3113	D&B SB 20m Tch.1+999 to 1+979 fr.NP	3	30JUL05	02AUG05	0	100	3	-87	-92	[Gantt bar: Red from 30JUL to 02AUG]							
3114	D&B SB 31m Tch.1+979 to 1+948 fr.NP	5	03AUG05	08AUG05	0	100	5	-87	-92	[Gantt bar: Red from 03AUG to 08AUG]							
3115	D&B SB 41m Tch.1+948 to 1+907 fr.NP	6	09AUG05	15AUG05	0	100	6	-60	-92	[Gantt bar: Red from 09AUG to 15AUG]							
SOUTH PORTAL																	
3131	D&B (limit) SB 15m UH Tch.1+152 to 1+167 fr.SP	10	10MAY05A	31MAY05A	100	100	0		-108	[Gantt bar: Blue from 10MAY to 31MAY]							
1297	D&B SB LH Tch.1+063 to 1+152 (89m)	30	14MAY05A	16JUL05	25	100	23	-143	-150	[Gantt bar: Blue from 14MAY to 16JUL, with a grey extension from 16JUL to 22JUL and a red end marker]							
3132	D&B (limit) SB 57m UH Tch.1+167 to 1+224 fr.SP	30	01JUN05A	20JUL05	12	100	26	-116	-119	[Gantt bar: Blue from 01JUN to 20JUL, with a grey extension from 20JUL to 29JUL and a red end marker]							
3165	D&B SB LH Tch.1+152 to 1+302 (150m)	42	18JUL05	03SEP05	0	100	42	-125	-128	[Gantt bar: Red from 18JUL to 03SEP]							
3133	D&B (limit) SB 19m UH Tch.1+224 to 1+243 fr.SP	11	21JUL05	02AUG05	0	100	11	-116	-119	[Gantt bar: Red from 21JUL to 02AUG]							

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	DWP % Compl.	Rem Dur	Total Float	Variance	Early Finis	Gantt Chart											
											APR 19	MAY 20	JUN 21	JUL 22	AUG 23	SEP 24	OCT 25					
SOUTH PORTAL																						
3134	D&B (limit) SB 29m UH Tch.1+243 to 1+272 fr.SP	7	03AUG05	10AUG05	0	100	7	-116	-119													
3135	D&B (limit) SB 10m UH Tch.1+272 to 1+282 fr.SP	2	11AUG05	12AUG05	0	100	2	-116	-119													
3136	D&B (limit) SB 20m UH Tch.1+282 to 1+302 fr.SP	4	13AUG05	17AUG05	0	100	4	-116	-119													
VENTILATION ADIT																						
3119	D&B SB 84m Ch.1652 to 1736 fr.VA->NP	13	14MAR05A	05JUL05	29	100	13	-48	-66													
3123	D&B SB 20m UH Tch.1+604 to 1+584 fr.VA->SP	4	24APR05A	22JUN05	40	100	3	-132	-132													
3124	D&B SB 10m UH Tch.1+584 to 1+574 fr.VA->SP	2	23JUN05	24JUN05	0	100	2	-132	-132													
3125	D&B SB 51m UH Tch.1+574 to 1+523 fr.VA->SP	11	25JUN05	08JUL05	0	100	11	-132	-132													
3120	D&B SB 10m Ch.1736 to 1746 fr.VA->NP	2	06JUL05	07JUL05	0	100	2	-48	-66													
3121	D&B SB 60m Ch.1746 to 1806 fr.VA->NP	10	08JUL05	19JUL05	0	100	10	-48	-66													
3145	D&B SB 10m UH Tch.1+523 to 1+513 fr.VA->SP	2	09JUL05	11JUL05	0	100	2	-132	-132													
3144	D&B SB 30m UH Tch.1+513 to 1+483 fr.VA->SP	6	12JUL05	18JUL05	0	100	6	-132	-132													
3143	D&B SB 91m UH Tch.1+483 to 1+392 fr.VA->SP	19	19JUL05	09AUG05	0	100	19	-132	-132													
3118	D&B SB 10m Ch.1806 to 1816 fr.VA->NP	2	20JUL05	21JUL05	0	100	2	-48	-66													
4148	D&B SB 41m Ch.1816 to 1857 fr.VA->NP	6	22JUL05	28JUL05	0	100	6	-48	-66													
3117	D&B SB 10m Ch.1857 to 1867 fr.VA->NP	3	29JUL05	01AUG05	0	100	3	-40	-66													
3116	D&B SB 40m Ch.1867 to 1907 fr.VA->NP	6	02AUG05	08AUG05	0	100	6	-40	-80													
3142	D&B SB 10m UH Tch.1+392 to 1+382 fr.VA->SP	2	10AUG05	11AUG05	0	100	2	-132	-132													
3141	D&B SB 20m FF Tch.1+382 to 1+362 fr.VA->SP	8	12AUG05	20AUG05	0	100	8	-132	-132													
3140	D&B SB 10m FF Tch.1+362 to 1+352 fr.VA->SP	3	22AUG05	24AUG05	0	100	3	-132	-132													
3139	D&B SB 20m FF Tch.1+352 to 1+332 fr.VA->SP	4	25AUG05	29AUG05	0	100	4	-132	-132													
3138	D&B SB 10m FF Tch.1+332 to 1+322 fr.VA->SP	2	30AUG05	31AUG05	0	100	2	-132	-132													
3137	D&B SB 20m FF Tch.1+322 to 1+302 fr.VA->SP	4	01SEP05	05SEP05	0	100	4	-132	-132													
1291	D&B SB Breakthrough No.2 VA-NP	0	21AUG05		0	100	0	-41	-100													

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	DWP % Compl.	Rem Dur	Total Float	Variance Early Finis	APR							MAY							JUN							JUL							AUG							SEP							OCT						
										19							20							21							22							23							24							25						
										11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	3	10	17	24	31	7	14	21	28	4	11	18	25	1	8	15	22	29	5	12	19	26	3	10
VENTILATION ADIT																																																										
3162	D&B SB Breakthrough No.1 VA-SP	0	06SEP05		0	100	0	-132	-132																																																	
TUNNEL INVERT																																																										
NORTH PORTAL																																																										
1568	SB exc.grnd/foul water drain trough 156m(fr.NP)	28	21FEB05A	20JUL05	10	100	26	-180	-205																																																	
1931	SB Kicker/form part Service Trough (fr.NP) 156m	22	31MAR05A	04JUL05	30	100	12	-166	-169																																																	
1569	SB exc.grnd/foul water drain trough 162m(fr.NP)	30	20JUN05	25JUL05	0	100	30	-175	-179																																																	
1570	SB exc.grnd/foul water drain trough 152m(fr.NP)	28	20JUN05	22JUL05	0	100	28	-142	-150																																																	
1579	SB exc.grnd/foul water drain trough 151m(fr.NP)	28	20JUN05	22JUL05	0	100	28	-112	-119																																																	
3500	SB Invert lining type 'D' 121m - Rightside	60	20JUN05	29AUG05	0	100	60	-68	-175																																																	
1580	SB exc.grnd/foul water drain trough 137m(fr.NP)	25	22JUN05	21JUL05	0	100	25	-67	-92																																																	
1594	SB Invert Cleaning (fr.NP) 156m	20	30JUN05	23JUL05	0	100	20	-180	-205																																																	
3408	SB Foulwater Gulley ESF-40 to ESF-41 [55m]	12	05JUL05	18JUL05	0	100	12	-49	-175																																																	
3495	SB Ground water ESG-40 to ESG-41B [55m]	12	05JUL05	18JUL05	0	100	12	-61	-175																																																	
1581	SB exc.grnd/foul water drain trough 152m(fr.NP)	28	18JUL05	18AUG05	0	100	28	-66	-92																																																	
3407	SB Foulwater Gulley ESF-39 to ESF-40 [50m]	11	19JUL05	30JUL05	0	100	11	-49	-175																																																	
3409	SB Foulwater Gulley ESF-41 to ESF-42 [48m]	11	19JUL05	30JUL05	0	100	11	788	-175																																																	
3494	SB Ground water ESG-39 to ESG-40 [50m]	11	19JUL05	30JUL05	0	100	11	-49	-175																																																	
3497	SB Ground water ESG-41B to ESG-42 [153m]	34	19JUL05	26AUG05	0	100	34	-61	-175																																																	
1595	SB Invert Cleaning (fr.NP) 162m	22	25JUL05	18AUG05	0	100	22	-180	-197																																																	
1932	SB Kicker/form part Service Trough (fr.NP) 162m	23	01AUG05	26AUG05	0	100	23	-180	-184																																																	
3406	SB Foulwater Gulley ESF-38 to ESF-39 [50m]	11	01AUG05	12AUG05	0	100	11	-49	-175																																																	
3493	SB Ground water ESG-38 to ESG-39 [50m]	11	01AUG05	12AUG05	0	100	11	-49	-175																																																	
3405	SB Foulwater Gulley ESF-37 to ESF-38 [50m]	11	13AUG05	25AUG05	0	100	11	-49	-175																																																	
1582	SB exc.grnd/foul water drain trough 142m(fr.NP)	26	16AUG05	15SEP05	0	100	26	-60	-92																																																	

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	DWP % Compl.	Rem Dur	Total Float	Variance Early Finish	APR	MAY	JUN	JUL	AUG	SEP	OCT	
										19	20	21	22	23	24	25	
										11 18 25	2 9 16 23 30	6 13 20 27	4 11 18 25	1 8 15 22 29	5 12 19 26	3 10	
NORTH PORTAL																	
1596	SB Invert Cleaning (fr.NP) 152m	18	19AUG05	08SEP05	0	100	18	-171	-188								
3404	SB Foulwater Gulley ESF-36 to ESF-37 [50m]	11	26AUG05	07SEP05	0	100	11	-49	-175								
1933	SB Kicker/form part Service Trough (fr.NP) 152m	22	27AUG05	22SEP05	0	100	22	-172	-180								
3492	SB Ground water ESG-37 to ESG-38 [50m]	11	27AUG05	08SEP05	0	100	11	-61	-175								
3501	SB Invert lining type 'D' 121m - Leftside	60	30AUG05	10NOV05	0	100	60	-68	-175								
3403	SB Foulwater Gulley ESF-35 to ESF-36 [50m]	11	08SEP05	21SEP05	0	100	11	-49	-175								
1597	SB Invert Cleaning (fr.NP) 150m	18	10SEP05	30SEP05	0	100	18	-159	-175								
3491	SB Ground water ESG-36 to ESG-37 [50m]	11	10SEP05	22SEP05	0	100	11	-61	-175								
3150	SB exc.grnd/foul water drain trough 213m(fr.NP)	39	21SEP05	07NOV05	0	50	39	-60	-92								
3402	SB Foulwater Gulley ESF-34 to ESF-35 [50m]	11	22SEP05	05OCT05	0	100	11	-49	-175								
1934	SB Kicker/form part Service Trough (fr.NP) 150m	22	23SEP05	20OCT05	0	100	22	-164	-171								
3490	SB Ground water ESG-35 to ESG-36 [50m]	11	23SEP05	06OCT05	0	100	11	-61	-175								
SOUTH PORTAL																	
1583	SB exc.grnd/foul water drain trough 89m(fr.SP)	25	24JUN05	23JUL05	0	100	25	-143	-150								
1311	SB Invert Cleaning (fr.SP) 239m	66	25JUL05	12OCT05	0	100	66	-143	-143								
3741	SB Kicker/form part Service Trough (fr.SP) 89m	13	01AUG05	15AUG05	0	100	13	-113	-143								
1584	SB exc.grnd/foul water drain trough 150m(fr.SP)	41	03AUG05	20SEP05	0	100	41	-132	-132								
3742	SB Kicker/form part Service Trough (fr.SP) 150m	22	01SEP05	27SEP05	0	100	22	-102	-132								
VENTILATION ADIT																	
1586	SB exc.grnd/foul water drain trough 342m(fr.VA)	60	12JUL05	20SEP05	0	100	60	-132	-132								
3166	SB Invert Cleaning (fr.SP 342m)	48	02AUG05	27SEP05	0	100	48	-132	-132								
TUNNEL LINING																	
NORTH PORTAL																	
2186	SB NP Arch Lining 150m Tch.3+035 to 2+885	30	02APR05A	06JUN05A	100	100	0		-177								
3153	SB NP OHVD 150m Tch.3+035 to 2+885	30	25APR05A	17JUN05A	100	100	0		-174								

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	DWP % Compl.	Rem Dur	Total Float	Variance Early Finis	APR		MAY			JUN			JUL			AUG				SEP			OCT										
										19	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	3	10		
NORTH PORTAL																																						
2187	SB NP Arch Lining 150m Tch.2+885 to 2+735	30	07JUN05A	11JUL05	42	100	18	-172	-175																													
3154	SB NP OHVD 150m Tch.2+885 to 2+735	30	18JUN05A	22JUL05	8	100	28	-172	-173																													
2188	SB NP Arch Lining 150m Tch.2+735 to 2+585	30	23JUL05	26AUG05	0	100	30	-180	-184																													
3155	SB NP OHVD 150m Tch.2+735 to 2+585	30	02AUG05	05SEP05	0	100	30	-180	-181																													
2189	SB NP Arch Lining 150m Tch.2+585 to 2+435	30	27AUG05	03OCT05	0	100	30	-180	-184																													
3156	SB NP OHVD 150m Tch.2+585 to 2+435	30	06SEP05	13OCT05	0	100	30	-180	-181																													
SOUTH PORTAL																																						
1320	SB SP Arch Lining 150m Tch.1+063 to 1+213	30	13SEP05	19OCT05	0	100	30	-143	-143																													
TUNNEL FINISHING WORKS																																						
SERVICE TROUGH & UTILITIES																																						
3545	SB NP 200 main 150m Tch.3+035 to 2+885 fr.NP	23	20JUN05	16JUL05	0	100	23	-164	-193																													
3560	SB service trough 150m Tch.3+035 to 2+885 fr.NP	23	24JUN05	21JUL05	0	100	23	-164	-193																													
3546	SB NP 200 main 150m Tch.2+885 to 2+735 fr.NP	23	18JUL05	12AUG05	0	100	23	-164	-186																													
3561	SB service trough 150m Tch.2+885 to 2+735 fr.NP	23	22JUL05	17AUG05	0	100	23	-164	-186																													
3547	SB NP 200 main 150m Tch.2+735 to 2+585 fr.NP	23	16AUG05	12SEP05	0	100	23	-166	-181																													
3562	SB service trough 150m Tch.2+735 to 2+585 fr.NP	23	20AUG05	16SEP05	0	100	23	-166	-181																													
3548	SB NP 200 main 150m Tch.2+585 to 2+435 fr.NP	23	21SEP05	19OCT05	0	100	23	-173	-181																													
3563	SB service trough 150m Tch.2+585 to 2+435 fr.NP	23	26SEP05	24OCT05	0	100	23	-173	-181																													
CROSS PASSAGES																																						
X-PASSAGE EXCAVATION																																						
2556	Excavate Part Cross Passage CP.13 from NB	2	30MAY05A	15JUN05A	100	100	0		-97																													
2557	Excavate Part Cross Passage CP.12 from NB	2	20JUN05	21JUN05	0	100	2	-65	-85																													
2561	Excavate Part Cross Passage CP.8 from NB	2	20JUN05	21JUN05	0	100	2	-5	-29																													
2563	Excavate Part Cross Passage CP.6 from NB	2	20JUN05	21JUN05	0	100	2	25	-27																													
2567	Excavate Part Cross Passage CP.2 from NB	16	20JUN05	08JUL05	0	100	16	-70	-141																													
2577	Excavate Part Cross Passage CP.13 from SB	2	20JUN05	21JUN05	0	100	2	-75	-100																													

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	DWP % Compl.	Rem Dur	Total Float	Variance Early Finish	APR							MAY				JUN			JUL				AUG				SEP			OCT							
										19							20				21			22				23				24			25							
										11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	3	10						
X-PASSAGE EXCAVATION																																										
2583	Excavate Part Cross Passage CP.2 from SB	16	20JUN05	08JUL05	0	100	16	-82	-142																																	
2560	Excavate Part Cross Passage CP.9 from NB	2	27JUN05	28JUN05	0	100	2	-21	-37																																	
2578	Excavate Part Cross Passage CP.12 from SB	2	29JUN05	30JUN05	0	100	2	-73	-92																																	
2558	Excavate Part Cross Passage CP.11 from NB	2	02JUL05	04JUL05	0	100	2	-75	-80																																	
2579	Excavate Part Cross Passage CP.11 from SB	2	18JUL05	19JUL05	0	100	2	-78	-92																																	
2582	Excavate Part Cross Passage CP.8 from SB	2	20JUL05	21JUL05	0	100	2	-30	-66																																	
2559	Excavate Part Cross Passage CP.10 from NB	2	26JUL05	27JUL05	0	100	2	-75	-80																																	
2581	Excavate Part Cross Passage CP.9 from SB	2	29JUL05	30JUL05	0	100	2	-48	-66																																	
2566	Excavate Part Cross Passage CP.3 from NB	2	08AUG05	09AUG05	0	100	2	-70	-141																																	
2580	Excavate Part Cross Passage CP.10 from SB	2	09AUG05	10AUG05	0	100	2	-87	-92																																	
2584	Excavate Part Cross Passage CP.3 from SB	2	26AUG05	27AUG05	0	100	2	-82	-142																																	
2565	Excavate Part Cross Passage CP.4 from NB	2	31AUG05	01SEP05	0	100	2	-70	-141																																	
2585	Excavate Part Cross Passage CP.4 from SB	2	20SEP05	21SEP05	0	100	2	-82	-142																																	
X-PASSAGE LINING																																										
2590	Invert Clean & Lining to CP.20	10	12MAY05A	10JUN05A	100	100	0		-151																																	
2591	Invert Clean & Lining to CP.19	10	04JUN05A	21JUN05	83	100	2	-125	-149																																	
2592	Invert Clean & Lining to CP.18	10	22JUN05	04JUL05	0	100	10	-125	-149																																	
2593	Invert Clean & Lining to CP.17	10	05JUL05	15JUL05	0	100	10	-125	-149																																	
2594	Invert Clean & Lining to CP.16	10	16JUL05	27JUL05	0	100	10	-125	-149																																	
2595	Invert Clean & Lining to CP.15	10	28JUL05	08AUG05	0	100	10	-125	-149																																	
2596	Invert Clean & Lining to CP.14	10	09AUG05	19AUG05	0	100	10	-125	-149																																	
2597	Invert Clean & Lining to CP.13	10	20AUG05	31AUG05	0	100	10	-125	-149																																	
2598	Invert Clean & Lining to CP.12	10	01SEP05	13SEP05	0	100	10	-125	-144																																	
2599	Invert Clean & Lining to CP.11	10	14SEP05	24SEP05	0	100	10	-125	-139																																	

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	DWP % Compl.	Rem Dur	Total Float	Variance Early Finis	APR							MAY							JUN							JUL							AUG							SEP							OCT						
										19							20							21							22							23							24													
										11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	3	10																						
X-PASSAGE LINING																																																										
2600	Invert Clean & Lining to CP.10	10	26SEP05	07OCT05	0	100	10	-125	-130																																																	
X-PASSAGE INVERT																																																										
2610	Invert Lining to CP.20	8	27JUN05	06JUL05	0	100	8	-101	-151																																																	
2611	Invert Lining to CP.19	8	07JUL05	15JUL05	0	100	8	-97	-149																																																	
2612	Invert Lining to CP.18	8	19JUL05	27JUL05	0	100	8	-95	-149																																																	
2613	Invert Lining to CP.17	8	30JUL05	08AUG05	0	100	8	-93	-149																																																	
2614	Invert Lining to CP.16	8	11AUG05	19AUG05	0	100	8	-91	-149																																																	
2615	Invert Lining to CP.15	8	23AUG05	31AUG05	0	100	8	-91	-149																																																	
2616	Invert Lining to CP.14	8	03SEP05	13SEP05	0	100	8	-93	-149																																																	
2617	Invert Lining to CP.13	8	16SEP05	24SEP05	0	100	8	-95	-149																																																	
X-PASSAGE FINISHING WORKS																																																										
2630	Construct Rooms (incl.ABWF) at CP.20	24	14JUL05	10AUG05	0	100	24	-101	-151																																																	
2631	Construct Rooms (incl.ABWF) at CP.19	24	28JUL05	24AUG05	0	100	24	-101	-151																																																	
2632	Construct Rooms (incl.ABWF) at CP.18	24	11AUG05	07SEP05	0	100	24	-101	-151																																																	
2633	Construct Rooms (incl.ABWF) at CP.17	24	25AUG05	22SEP05	0	100	24	-101	-151																																																	
2634	Construct Rooms (incl.ABWF) at CP.16	24	08SEP05	07OCT05	0	100	24	-101	-151																																																	
2635	Construct Rooms (incl.ABWF) at CP.15	24	23SEP05	22OCT05	0	100	24	-101	-151																																																	
VENTILATION ADIT & BUILDING																																																										
SUBMITTALS & APPROVALS																																																										
ABWF & BUILDER'S WORKS																																																										
1971	VA Bldg. - Prep & submit door & window detail	90	07MAY05A	21NOV05	40	100	55	-108	-143																																																	
1975	VA Bldg. - Prep & sub balustrade & metal wks	90	20JUN05	05OCT05	0	100	90	-135	-162																																																	
1985	VA Bldg. - Prep & sub aluminium cladding	90	20JUN05	05OCT05	0	100	90	-129	-164																																																	
E&M EQPT./MTRL.DETAIL SUBMITTAL																																																										
8232	VaBldg-Sub.TVF, Ductworks & Control sys	78	02JUL04A	20SEP05	95	90	78	72	-71																																																	

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	DWP % Compl.	Rem Dur	Total Float	Variance Early Finis	APR 19		MAY 20			JUN 21			JUL 22			AUG 23			SEP 24			OCT 25																	
										11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	3	10								
E&M EQPT./MTRL.DETAILED SUBMITTAL																																												
8234	VaBldg-Sub.MVAC MCC, power & control sys	54	02JUL04A	22AUG05	85	100	54	20	-127																																			
8231	VaBldg-Sub.FS AFA & FM200 sys	54	05JUL04A	22AUG05	95	100	54	114	-67																																			
8494	VaBldg-Sub. building related luminaires	54	06JUL04A	13JUL05	95	100	20	18	-75																																			
8226	VaBldg-Sub.LV power dist. sys	54	07JUL04A	22AUG05	95	100	54	18	-115																																			
8229	VaBldg-Sub.MVAC mech.vent. sys	54	03AUG04A	22AUG05	90	100	54	-18	-115																																			
8228	VaBldg-Sub.FS wet sys	54	05AUG04A	22AUG05	95	100	54	114	-67																																			
8233	VaBldg-Sub.MVAC / TVF pneumatic sys	54	14AUG04A	15AUG05	90	0	48	78	17																																			
8230	VaBldg-Sub.CMCS & ELV sys	78	26AUG04A	20SEP05	75	100	78	24	-109																																			
8227	VaBldg-Sub.PD all fresh & flush water sys	54	20OCT04A	17AUG05	95	100	50	64	-75																																			
8514	VaBldg-Sub.MVAC Package AC Units	54	17JAN05A	22AUG05	85	50	54	126	-25																																			
8235	VaBldg-Sub.PD irrig. sys	54	04FEB05A	31OCT05	85	100	54	51	-142																																			
E&M EQPT./MTRL.APPROVAL BY ENGINEER																																												
6578	VaBldg-App. HV power dist. sys	18	14JUL04A	04AUG05	95	100	18	-9	-106																																			
6579	VaBldg-App. LV power dist. sys	18	13AUG04A	11JUL05	90	100	18	18	-61																																			
8495	VaBldg-App. building related luminaires	18	18AUG04A	11JUL05	60	100	18	18	-55																																			
6581	VaBldg-App. FS wet sys	18	04SEP04A	11JUL05	60	90	18	114	-13																																			
6590	VaBldg-App. FS AFA & FM200 sys	18	14SEP04A	11JUL05	70	90	18	114	-13																																			
6587	VaBldg-App. of CMCS & ELV sys	18	20SEP04A	11JUL05	50	100	18	24	-31																																			
6582	VaBldg-App. MVAC mech.vent. sys	18	23SEP04A	11JUL05	50	100	18	-18	-61																																			
6580	VaBldg-App. PD all fresh & flush water sys	18	04NOV04A	17AUG05	60	100	50	64	-57																																			
6850	VaBldg-App. TVF, Ductworks & Control sys	18	12NOV04A	11JUL05	70	0	18	72	7																																			
6864	V6aBldg-App. MVAC MCC, power & control sys	18	12NOV04A	11JUL05	75	100	18	20	-73																																			
8515	VaBldg-App. MVAC Package AC Unit sys	18	01FEB05A	11JUL05	30	0	18	126	29																																			

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	DWP % Compl.	Rem Dur	Total Float	Variance	Early Finis	APR		MAY				JUN			JUL			AUG				SEP			OCT									
											19	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	3	10		
E&M EQPT./MTRL.APPROVAL BY ENGINEER																																							
7590	VaBldg-App. PD irrig. sys	18	05MAY05A	16SEP05	30	100	18	51	-88																														
PROCUREMENT																																							
ARCHITECTURAL																																							
1993	VA Bldg. - Procure louvres	180	04JUL05	13FEB06	0	70	180	-97	-119																														
1995	VA Bldg. - Procure aluminium cladding	180	04JUL05	13FEB06	0	70	180	-97	-119																														
1996	VA Bldg. - Procure fall arrest system	180	04JUL05	13FEB06	0	70	180	-97	-119																														
1997	VA Bldg. - Procure slate cladding	180	04JUL05	13FEB06	0	70	180	-97	-119																														
1992	VA Bldg. - Procure doors & windows	120	13SEP05	13FEB06	0	40	120	-97	-119																														
1994	VA Bldg. - Procure balustrade & metal works	120	13SEP05	13FEB06	0	40	120	-97	-119																														
E&M MATERIALS																																							
6584	VaBldg-Proc & Manuf. LV power dist. equip't	180	20MAR05A	24MAR06	12	30	180	-27	-88																														
6583	VaBldg-Proc. & Manuf. of HV dist. equip't	180	25MAR05A	24FEB06	10	40	180	-9	-88																														
6591	VaBldg-Proc. & Manuf. of CMCS & ELV sys	180	25MAR05A	06APR06	10	10	180	-31	-68																														
6865	VaBldg-Proc & Manuf. MCC, power & control sys	180	25MAR05A	10MAR06	8	20	180	-13	-88																														
6851	VaBldg-Proc & Manuf. TVF, Ductwks & Cont'l sys	180	09JUN05A	10MAY06	5	0	180	-7	-54																														
6588	VaBldg-Proc & Manuf. MVAC mech.vent. sys	180	27JUL05	08MAR06	0	20	180	-31	-74																														
8496	VaBldg-Proc & Manf bldg related luminaires	180	19AUG05	31MAR06	0	20	180	-15	-88																														
7591	VaBldg-Proc & Manuf. PD irrig. sys	120	17SEP05	17FEB06	0	10	120	51	-88																														
6585	VaBldg-Proc & Manuf. PD fresh & flush water sys	120	24SEP05	24FEB06	0	10	120	33	-88																														
CONSTRUCTION WORKS																																							
ADIT TUNNEL																																							
TUNNEL LINING																																							
1535	VA Portal Lining (20m) Bldg.	24	06SEP05	05OCT05	0	100	24	-119	-119																														
VA TRANSITION STRUCTURE																																							
1565	VA Excav.VA-RT LH Junction 54m w/CP.7	10	05MAR05A	24JUN05	52	100	5	-58	-166																														
1923	VA RC Tnl Interface Lower part	40	06SEP05	25OCT05	0	100	40	-107	-119																														

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	DWP % Compl.	Rem Dur	Total Float	Variance Early Finis	APR							MAY							JUN							JUL							AUG							SEP							OCT						
										19	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	3	10	17	24	31	7	14	21	28	4	11	18	25	1	8	15	22	29	5	12	19	26	3	10
SUBSTRUCTURE																																																										
1642	VA Bldg. Fnd.GL.A-F/1-6 +101.7mPD	24	23APR05A	18JUL05	40	100	24	-51	-53																																																	
6589	VaBldg Drainage & Earth mat	48	23APR05A	25JUL05	30	100	30	-51	-71																																																	
ENT NORTH PORTAL VENTILATION BUILDING																																																										
SUBMITTALS & APPROVALS																																																										
E&M EQPT. & MATERIAL SUBMITTALS																																																										
8260	EntNpBldg-Sub.MVAC MCC, power & control sys	54	02JUL04A	22AUG05	85	100	54	-27	-166																																																	
8257	EntNpBldg-Sub.FS AFA & FM200 sys	54	05JUL04A	22AUG05	95	30	54	111	-14																																																	
8498	EntNpBldg-Sub. building related luminaires	54	06JUL04A	13JUL05	95	100	20	27	-88																																																	
8251	EntNpBldg-Sub.LV power dist. sys	54	07JUL04A	22AUG05	95	100	54	-33	-136																																																	
8254	EntNpBldg-Sub.MVAC mech.vent. sys	54	03AUG04A	22AUG05	90	100	54	-51	-178																																																	
8253	EntNpBldg-Sub.FS wet sys	54	05AUG04A	22AUG05	95	100	54	105	-98																																																	
8259	EntNpBldg-Sub.MVAC / TVF pneumatic sys	54	14AUG04A	15AUG05	90	0	48	75	32																																																	
8255	EntNpBldg-Sub.CMCS & ELV sys	78	28AUG04A	20SEP05	75	100	78	21	-124																																																	
8252	EntNpBldg-Sub.PD cleans. & flush water sys	54	20OCT04A	17AUG05	95	100	50	105	-112																																																	
8256	EntNpBldg-Sub.MVAC Package AC Units	54	17JAN05A	22AUG05	85	0	54	123	32																																																	
E&M EQPT. & MATERIAL APPROVALS																																																										
6196	EntNpBldg-App. HV power dist. sys	18	14JUL04A	11JUL05	95	100	18	-27	-118																																																	
6197	EntNpBldg-App. LV power dist. sys	18	13AUG04A	11JUL05	90	100	18	-33	-82																																																	
8499	EntNpBldg-App. building related luminaires	18	18AUG04A	11JUL05	60	100	18	27	-68																																																	
6199	EntNpBldg-App. FS wet sys	18	04SEP04A	11JUL05	60	100	18	105	-44																																																	
6210	EntNpBldg-App. FS AFA & FM200 sys	18	14SEP04A	11JUL05	70	0	18	111	40																																																	
6203	EntNpBldg-App. CMCS & ELV sys	18	20SEP04A	27SEP05	50	100	18	-45	-112																																																	
6200	EntNpBldg-App. MVAC mech.vent. sys	18	23SEP04A	11JUL05	50	100	18	-51	-124																																																	
6198	EntNpBldg-App. PD cleans. & flush water sys	18	04NOV04A	11JUL05	60	100	18	105	-62																																																	

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	DWP % Compl.	Rem Dur	Total Float	Variance	Early Finish	Gantt Chart											
											APR 19	MAY 20	JUN 21	JUL 22	AUG 23	SEP 24	OCT 25					
E&M EQPT. & MATERIAL APPROVALS																						
6823	EntNpBldg-App. TVF, Ductworks & Control sys	18	12NOV04A	11JUL05	70	100	18	21	-56													
6837	EntNpBldg-App. MVAC MCC, power & control sys	18	12NOV04A	11JUL05	75	100	18	-27	-112													
6207	EntNpBldg-App. MVAC Package AC Unit sys	18	01FEB05A	11JUL05	30	0	18	123	86													
PROCUREMENT - MATERIAL																						
ABWF WORKS																						
1955	NP.Bldg. - Prep & submit louvre details	24	06JUN05A	06JUN05A	100	100	0		-132													
1957	NP.Bldg. - Prep & sub balustrade & metal wks	24	20JUN05	18JUL05	0	100	24	-105	-116													
1959	NP.Bldg. - Prep & sub aluminium cladding	24	20JUN05	18JUL05	0	100	24	-81	-166													
1946	NP.Bldg. - Prep & submit door & window detail	24	12JUL05	08AUG05	0	100	24	-3	-116													
1956	NP.Bldg. - Approve louvre details	24	19JUL05	15AUG05	0	100	24	-81	-166													
1958	NP.Bldg. - Approve balustrade & metal works	24	19JUL05	15AUG05	0	100	24	-105	-116													
1960	NP.Bldg. - Approve aluminium cladding	24	19JUL05	15AUG05	0	100	24	-81	-166													
1963	NP.Bldg. - Approve slate cladding	24	19JUL05	15AUG05	0	100	24	-81	-166													
1954	NP.Bldg. - Approve door & window details	24	09AUG05	05SEP05	0	100	24	-3	-116													
1965	NP.Bldg. - Procure louvre details	180	16AUG05	28MAR06	0	80	180	-81	-166													
1966	NP.Bldg. - Procure balustrade & metal works	120	16AUG05	09JAN06	0	60	120	-105	-116													
1967	NP.Bldg. - Procure aluminium cladding	180	16AUG05	28MAR06	0	80	180	-81	-166													
1969	NP.Bldg. - Procure slate cladding	180	16AUG05	28MAR06	0	80	180	-81	-166													
1961	NP.Bldg. - Prep & sub fall arrest system	24	30AUG05	27SEP05	0	100	24	-81	-166													
1964	NP.Bldg. - Procure doors & windows	120	06SEP05	07FEB06	0	50	120	-3	-116													
E&M WORKS																						
6202	EntNpBldg-Proc & Manuf. LV power dist. equip't	180	20MAR05A	28MAR06	12	40	180	-81	-112													
6201	EntNpBldg-Proc. & Manuf. of HV dist. equip't	180	25MAR05A	23JAN06	10	60	180	-27	-100													
6208	EntNpBldg-Proc. & Manuf. of CMCS & ELV sys	180	25MAR05A	22APR06	10	20	180	-45	-94													

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	DWP % Compl.	Rem Dur	Total Float	Variance	Early Finish	Gantt Chart						
											APR 19	MAY 20	JUN 21	JUL 22	AUG 23	SEP 24	OCT 25
E&M WORKS																	
6838	EntNpBldg-Proc & Manuf. MCC, power & control sys	180	25MAR05A	21FEB06	8	60	180	-45	-112								
6824	EntNpBldg-Proc & Manuf. TVF, Ductwks&Cont'l sys	180	09JUN05A	07JUN06	5		180	-81	-140								
6206	EntNpBldg-Proc & Manuf. MVAC mech.vent. sys	180	12JUL05	21FEB06	0	70	180	-51	-124								
8500	EntNpBldg-Proc & Manf bldg related luminaires	180	01SEP05	18APR06	0	30	180	-17	-112								
6204	EntNpBldg-Proc & Manuf. Cleans & flush water sys	120	14SEP05	14FEB06	0	50	120	51	-116								
CONSTRUCTION																	
SUBSTRUCTURE																	
RC WORKS																	
1386	NP.Bldg. - RC Found & Drainage GL.A-K/2-6	54	14FEB05A	18JUL05	70	100	24	-83	-94								
SUPERSTRUCTURE																	
RC WORKS																	
NB CARRIAGEWAY & CENTRAL RESERVE																	
1384	NP.Bldg. - Nth Bound C/Way RC Base Slab	18	05JUL05	25JUL05	0	100	18	-83	-94								
1387	NP.Bldg. - RC Cols.& Walls to 1FL.GL.A-K/2-6	18	08JUL05	28JUL05	0	100	18	-76	-91								
1385	NP.Bldg. - Nth Bound C/Way RC Ret. Wall W1	24	19JUL05	15AUG05	0	100	24	-83	-94								
1388	NP.Bldg. - RC Walls to Tanks/Pits GL.A-K/2-6	18	19JUL05	08AUG05	0	100	18	-79	-94								
1389	NP.Bldg. - RC S/Slab 1FL.+72.50mPD GL.A-K/2-6	18	09AUG05	29AUG05	0	100	18	-79	-94								
1390	NP.Bldg. - RC Cols.& Walls to 2FL.GL.A-K/2-6	18	23AUG05	13SEP05	0	100	18	-79	-94								
1391	NP.Bldg. - RC S/Slab LPL.+74.40mPD GL.A-K/2-6	12	06SEP05	20SEP05	0	100	12	-79	-94								
1392	NP.Bldg. - RC S/Slab LPL.+75.50mPD GL.G-K/2-6	12	14SEP05	27SEP05	0	100	12	-79	-94								
SB CARRIAGEWAY																	
1404	NP.Bldg. - Sth Bound C/Way RC Base Slab	18	16AUG05	05SEP05	0	100	18	-83	-94								
1405	NP.Bldg. - Sth Bound C/Way RC Ret Wall W2	24	06SEP05	05OCT05	0	100	24	-83	-94								
TOLL PLAZA & ANCILLIARY STRUCTURES																	
CONTRACT DEFINED DATES & SECTIONS																	
PROGRAMME RESTRAINTS																	
T_PLAZA	Loss of Access to Toll Plaza Temp. Access Road	0		31AUG05*	0	100	0	956	-102								

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	DWP % Compl.	Rem Dur	Total Float	Variance Early Finis	APR 19							MAY 20				JUN 21			JUL 22				AUG 23				SEP 24			OCT 25			
										11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	3	10	17	24
SUBMITTALS & APPROVALS																																						
ABWF & BUILDER'S WORKS																																						
1513	TP/FB - Engineering & Submit lift details (x2)	78	22FEB05A	01JUN05A	100	100	0		-18	[Gantt bar: Apr 18 - Jun 6]																												
1524	TP/FB - Prep & submit footbridge details	24	23MAY05A	18JUL05	0	100	24	-24	-225	[Gantt bar: May 23 - Jul 18]																												
1514	TP/FB - Approve lifts (x2) details	24	20JUN05	18JUL05	0	100	24	18	-32	[Gantt bar: Jun 20 - Jul 18]																												
1522	TP/FB - Approve footbridge details	24	20JUN05	18JUL05	0	100	24	-24	-201	[Gantt bar: Jun 20 - Jul 18]																												
E&M EQPT. / MTRL. SUBMITTALS																																						
8258	EntNpBldg-Sub.TVF	78	02JUL04A	20SEP05	95	100	78	21	-134	[Gantt bar: Jul 2 - Sep 20]																												
8236	TP-Sub.MVAC Package AC Units	54	17JAN05A	12APR06	85	0	54	0	-89	[Gantt bar: Jan 17 - Apr 12]																												
E&M EQPT. / MTRL. APPROVALS																																						
7547	TP-App. MVAC Package AC Unit sys	18	01FEB05A	28FEB06	30	0	18	0	-35	[Gantt bar: Feb 1 - Feb 28]																												
DESIGN & ENGINEERING																																						
TEMPORARY WORKS																																						
1345	Design/ICE Temp Falsework Foot Bridge Piers	24	01JUN05A	04JUL05	50	100	12	90	-96	[Gantt bar: Jun 1 - Jul 4]																												
PERMANENT WORKS																																						
1650	Design/ICE Check Foot Bridge	36	20JUN05	01AUG05	0	20	36	11	-3	[Gantt bar: Jun 20 - Aug 1]																												
1651	Eng Approve Dsg Foot Bridge	12	02AUG05	15AUG05	0	0	12	11	-3	[Gantt bar: Aug 2 - Aug 15]																												
1652	Issue Constr Dwgs Foot Bridge	0		23AUG05	0	0	0	11	-3	[Gantt bar: Aug 23]																												
PROCUREMENT - MAJOR MATERIAL																																						
2184	Order/Fabricate/Deliver FBridge Structural Steel	120	24AUG05	17JAN06	0	0	120	11	-3	[Gantt bar: Aug 24 - Jan 17]																												
TOLL PLAZA																																						
1512	TP/FB - Procure & manufacture lifts (x2)	270	19JUL05	21JUN06	0	10	270	18	-32	[Gantt bar: Jul 19 - Jun 21]																												
1521	TP/FB - Procure & fabricate footbridge	180	19JUL05	28FEB06	0	100	180	-24	-201	[Gantt bar: Jul 19 - Feb 28]																												
CONSTRUCTION WORKS																																						
TOLL PLAZA ROADWORKS																																						
ROADS - FORMATION																																						
1770	TP/Rd - Perm materials storage area; Ptn D2 & D3	175	01JUN04A	14JUL05	90	100	21	-6	-17	[Gantt bar: Jun 1 - Jul 14]																												

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	DWP % Compl.	Rem Dur	Total Float	Variance Early Finis	APR		MAY			JUN			JUL			AUG			SEP			OCT																							
										19	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	3	10														
ROADS - FINISHES																																																		
1824	TP/Rd - Ptn D4 TCSS Ducts S&NB ch.4+460 to 4+520	24	01AUG05	27AUG05	0	0	24	-32	-32																																									
1736	TP/Rd - Ptn D2&D3TCSS Dct S&NB ch.4+320 to 4+460	42	29AUG05	19OCT05	0	0	42	-32	-32																																									
TOLL PLAZA COLLECTOR'S SUBWAY																																																		
STRUCTURE																																																		
1467	TP/CS - Excavation - Ptn A	8	20JUN05	28JUN05	0	100	8	-29	-72																																									
1468	TP/CS - Excavation - Ptn B	8	05JUL05	13JUL05	0	100	8	-23	-70																																									
1469	TP/CS - Excavation - Ptn C	8	14JUL05	22JUL05	0	100	8	-7	-64																																									
1714	TP/CS - Substructure construction - Ptn A	18	05SEP05	26SEP05	0		18	-86	-100																																									
TOLL PLAZA FOOTBRIDGE																																																		
RC SUPERSTRUCTURE																																																		
1694	TP/FB - Column & bearings C2	12	27APR05A	04JUL05	20	100	12	168	-9																																									
1707	TP/FB - Column & bearings C1	12	29APR05A	04JUL05	20	100	12	168	-8																																									
1494	TP/FB - Column & bearings W2 (FT4)	12	13MAY05A	04JUL05	10	100	12	156	-36																																									
1502	TP/FB - Lift Machine room walls & stair (FT4)	15	05JUL05	21JUL05	0		15	159	-36																																									
ADMINISTRATION BUILDING																																																		
SUBMITTALS & APPROVALS																																																		
ABWF & BUILDER'S WORKS																																																		
1517	Admin Bldg - Engineering & Submit lift details	78	22FEB05A	01JUN05A	100	100	0		-43																																									
1889	Admin.Bldg. - Prep & submit curtain wall details	24	02APR05A	18JUL05	10	100	24	-111	-207																																									
1894	Admin.Bldg. - Approve louvre details	24	08APR05A	21JUN05	80	100	2	-83	-191																																									
1891	Admin.Bldg. - Prep & submit door & window detail	24	06MAY05A	18JUL05	10	100	24	-105	-171																																									
1880	Admin.Bldg. - Approve glass canopy details	24	07MAY05A	21JUN05	80	100	2	-83	-191																																									
1883	Admin.Bldg. - Prep & sub sheet decking details	24	07MAY05A	18JUL05	10	100	24	-105	-171																																									
1895	Admin.Bldg. - Prep & sub balustrade & metal wks	24	20JUN05	18JUL05	0	100	24	-105	-129																																									
1897	Admin.Bldg. - Prep & sub aluminium cladding	24	20JUN05	18JUL05	0	100	24	685	-237																																									
1881	Admin.Bldg. - Prep & sub GRP water tank details	24	18JUL05	13AUG05	0	100	24	-110	-146																																									

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	DWP % Compl.	Rem Dur	Total Float	Variance Early Finis	APR							MAY							JUN							JUL							AUG							SEP							OCT						
										19			20				21				22			23				24				25																										
										11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	3	10	17	24	31																			
ABWF & BUILDER'S WORKS																																																										
1884	Admin.Bldg. - Approve sheet decking details	24	19JUL05	15AUG05	0	100	24	-105	-171																																																	
1890	Admin.Bldg. - Approve curtain wall details	24	19JUL05	15AUG05	0	100	24	-111	-207																																																	
1892	Admin.Bldg. - Approve door & window details	24	19JUL05	15AUG05	0	100	24	-105	-171																																																	
1896	Admin.Bldg. - Approve balustrade & metal works	24	19JUL05	15AUG05	0	100	24	-105	-129																																																	
1899	Admin.Bldg. - Prep & sub fall arrest system	24	19JUL05	15AUG05	0	100	24	-105	-165																																																	
1885	Admin.Bldg. - Prep & submit wood ceiling details	24	08AUG05	03SEP05	0	100	24	-116	-206																																																	
1882	Admin.Bldg. - Approve GRP water tank details	24	15AUG05	12SEP05	0	100	24	-110	-146																																																	
1900	Admin.Bldg. - Approve fall arrest system	24	16AUG05	13SEP05	0	100	24	-105	-165																																																	
1886	Admin.Bldg. - Approve wood ceiling details	24	05SEP05	04OCT05	0	100	24	-116	-206																																																	
1516	Admin Bldg - Approve lifts details	24	21SEP05	20OCT05	0		24	-81	-135																																																	
E&M EQPT. / MTRL. SUBMITTALS																																																										
8244	AdmBldg-Sub.FS AFA & FM200 sys	54	05JUL04A	22AUG05	95	80	54	93	-37																																																	
8502	AdmBldg-Sub. building related luminaires	54	06JUL04A	22AUG05	95	100	54	9	-103																																																	
8238	AdmBldg-Sub.LV power dist. sys	54	07JUL04A	22AUG05	95	100	54	-3	-217																																																	
8241	AdmBldg-Sub.MVAC mech.vent. sys	54	03AUG04A	22AUG05	90	100	54	-27	-193																																																	
8240	AdmBldg-Sub.FS wet sys	54	05AUG04A	22AUG05	95	100	54	99	-181																																																	
8242	AdmBldg-Sub.CMCS, TCS & ELV sys	78	26AUG04A	20SEP05	75	100	78	-37	-171																																																	
8239	AdmBldg-Sub.PD all fresh & flush water sys	54	20OCT04A	17AUG05	95	100	50	99	-201																																																	
8245	AdmBldg-Sub.Chiller & Pumps	54	30DEC04A	19OCT05	85	100	54	-14	-258																																																	
8243	AdmBldg-Sub.FCUs & PAUs	54	04JAN05A	22AUG05	90	100	54	-24	-253																																																	
8247	AdmBldg-Design LPG sys	54	07APR05A	07JAN06	80	100	54	-65	-170																																																	
8249	AdmBldg-Sub.LPG sys	54	07APR05A	07JAN06	80	10	54	-65	-116																																																	
E&M EQPT. / MTRL. APPROVALS																																																										
6385	AdmBldg-App. HV power dist. sys	18	14JUL04A	11JUL05	95	100	18	-3	-199																																																	

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	DWP % Compl.	Rem Dur	Total Float	Variance	Early Finish	APR							MAY							JUN							JUL							AUG							SEP							OCT						
											19			20				21				22				23				24				25																									
											11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	3	10	17	24	31																			
ABWF WORKS																																																											
6394	AdmBldg-Proc & Manuf. FS wet sys	90	01AUG05	16NOV05	0	90	90	82	-114																																																		
1903	Admin.Bldg. - Procure sheet decking	90	16AUG05	01DEC05	0	100	90	-105	-141																																																		
1906	Admin.Bldg. - Procure curtain wall	90	16AUG05	01DEC05	0	90	90	-111	-117																																																		
1907	Admin.Bldg. - Procure doors & windows	90	16AUG05	01DEC05	0	100	90	-105	-141																																																		
1909	Admin.Bldg. - Procure balustrade & metal works	90	16AUG05	01DEC05	0	90	90	-105	-129																																																		
6479	AdmBldg-Proc & Manuf. Chiller & Pumps	90	05SEP05	21DEC05	0	80	90	-14	-114																																																		
1902	Admin.Bldg. - Procure GRP water tank	90	13SEP05	30DEC05	0	70	90	-110	-116																																																		
1915	Admin.Bldg. - Procure fall arrest system	90	14SEP05	31DEC05	0	80	90	-105	-135																																																		
CONSTRUCTION																																																											
CIVIL & ABWF WORKS																																																											
SUBSTRUCTURE																																																											
1417	Admin.Bldg. - Pile caps 74nr.	52	02JUN05A	06AUG05	18	100	41	-116	-100																																																		
1364	Admin.Bldg. - Ground slab drainage	46	28JUN05	20AUG05	0	100	46	-110	-100																																																		
1732	Admin.Bldg. - Toll collectors tunnel - Exc & RC	24	08AUG05	03SEP05	0	100	24	-86	-100																																																		
6398	Admin.Bldg. - Earth Mat & Rods - All in ptn D4	36	24SEP05	07NOV05	0	100	36	35	-228																																																		
RC SUPERSTRUCTURE																																																											
NORTH [GL.1-11]																																																											
1557	Admin.Bldg Nth - GF Slab	24	08AUG05	03SEP05	0	100	24	-116	-116																																																		
1647	Admin.Bldg Nth - Columns & walls GF to 1F	24	22AUG05	19SEP05	0	100	24	-116	-116																																																		
1648	Admin.Bldg Nth - 1F Slab	24	05SEP05	04OCT05	0	100	24	-116	-116																																																		
1649	Admin.Bldg Nth - Columns & walls 1F to 2F	24	20SEP05	19OCT05	0	100	24	-116	-116																																																		
SOUTH [GL.11-21]																																																											
1624	Admin.Bldg Sth - GF Slab	24	22AUG05	19SEP05	0	100	24	-110	-116																																																		
1784	Admin.Bldg Sth - Columns & walls GF to 1F	24	05SEP05	04OCT05	0	100	24	-110	-116																																																		
1785	Admin.Bldg Sth - 1F Slab	24	20SEP05	19OCT05	0	100	24	-110	-116																																																		

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	DWP % Compl.	Rem Dur	Total Float	Variance	Gantt Chart							
										APR 19	MAY 20	JUN 21	JUL 22	AUG 23	SEP 24	OCT 25	
SHATIN HEIGHTS SOUTH PORTAL BUILDING																	
SUBMITTALS & APPROVALS																	
ABWF & BUILDER'S WORKS																	
1998	SHT SPB - Prep & submit door & window detail	24	13JUL05	09AUG05	0	0	24	20	0	[Gantt bar: 13JUL05 to 09AUG05]							
1999	SHT NPB - Prep & submit door & window detail	24	13JUL05	09AUG05	0	0	24	14	0	[Gantt bar: 13JUL05 to 09AUG05]							
2006	SHT SPB - Prep & sub balustrade & metal wks	24	13JUL05	09AUG05	0	0	24	2	0	[Gantt bar: 13JUL05 to 09AUG05]							
2008	SHT NPB - Prep & sub balustrade & metal wks	24	13JUL05	09AUG05	0	0	24	2	0	[Gantt bar: 13JUL05 to 09AUG05]							
2000	SHT SPB - Approve door & window details	24	10AUG05	06SEP05	0	0	24	20	0	[Gantt bar: 10AUG05 to 06SEP05]							
2001	SHT NPB - Approve door & window details	24	10AUG05	06SEP05	0	0	24	14	0	[Gantt bar: 10AUG05 to 06SEP05]							
2007	SHT SPB - Approve balustrade & metal works	24	10AUG05	06SEP05	0	0	24	2	0	[Gantt bar: 10AUG05 to 06SEP05]							
2009	SHT NPB - Approve balustrade & metal works	24	10AUG05	06SEP05	0	0	24	2	0	[Gantt bar: 10AUG05 to 06SEP05]							
E&M EQPT. / MTRL. SUBMITTALS																	
8266	ShtSpBldg-Sub.TVF, Ductworks & Control sys	78	02JUL04A	20SEP05	95	100	78	21	-77	[Gantt bar: 02JUL04A to 20SEP05]							
8268	ShtSpBldg-Sub.MVAC MCC, power & control sys	54	02JUL04A	22AUG05	85	100	54	-9	-83	[Gantt bar: 02JUL04A to 22AUG05]							
8284	ShtRtSb-Sub.HV/LV main & submain dist. sys	54	02JUL04A	22AUG05	70	100	54	15	-68	[Gantt bar: 02JUL04A to 22AUG05]							
8270	ShtSpBldg-Sub.FS AFA & FM200 sys	54	05JUL04A	22AUG05	95	0	54	135	51	[Gantt bar: 05JUL04A to 22AUG05]							
8506	ShtSpBldg-Sub. building related luminaires	54	06JUL04A	13JUL05	95	100	20	33	-25	[Gantt bar: 06JUL04A to 13JUL05]							
8510	ShtSpBldg-Sub. building related luminaires	54	06JUL04A	13JUL05	95	80	20	37	-7	[Gantt bar: 06JUL04A to 13JUL05]							
8262	ShtSpBldg-Sub.LV power dist. sys	54	07JUL04A	22AUG05	95	100	54	15	-83	[Gantt bar: 07JUL04A to 22AUG05]							
8265	ShtSpBldg-Sub.MVAC mech.vent. sys	54	03AUG04A	22AUG05	90	50	54	35	-23	[Gantt bar: 03AUG04A to 22AUG05]							
8269	ShtSpBldg-Sub.FS wet sys	54	05AUG04A	22AUG05	95	50	54	77	-29	[Gantt bar: 05AUG04A to 22AUG05]							
8267	ShtSpBldg-Sub.MVAC / TVF pneumatic sys	54	14AUG04A	15AUG05	90	0	48	81	79	[Gantt bar: 14AUG04A to 15AUG05]							
8263	ShtSpBldg-Sub.CMCS & ELV sys	78	26AUG04A	20SEP05	75	60	78	63	-41	[Gantt bar: 26AUG04A to 20SEP05]							
8271	ShtSpBldg-Sub.PD cleans. & flush water sys	54	20OCT04A	17AUG05	95	70	50	57	-31	[Gantt bar: 20OCT04A to 17AUG05]							
8264	ShtSpBldg-Sub.MVAC Package AC Units	54	17JAN05A	22AUG05	85	0	54	111	31	[Gantt bar: 17JAN05A to 22AUG05]							

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	DWP % Compl.	Rem Dur	Total Float	Variance Early Finis	APR							MAY							JUN							JUL							AUG							SEP							OCT													
										19	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	3	10	17	24	31	7	14	21	28	4	11	18	25	1	8	15	22	29	5	12	19	26	3	10							
E&M EQPT. / MTRL. SUBMITTALS																																																																	
8272	ShtSpBldg-Sub.PD irrig. sys	54	04FEB05A	22AUG05	85	80	54	95	-35																																																								
E&M EQPT. / MTRL. APPROVALS																																																																	
7040	ShtSpBldg-App. HV power dist. sys	18	14JUL04A	11JUL05	95	100	18	27	-35																																																								
7209	ShtSpBldg-App. PD cleans. & flush water sys	18	04AUG04A	17AUG05	60	0	50	57	-13																																																								
7046	ShtSpBldg-App. LV power dist. sys	18	13AUG04A	11JUL05	90	100	18	15	-29																																																								
8507	ShtSpBldg-App. building related luminaires	18	18AUG04A	11JUL05	60	40	18	33	-5																																																								
7155	ShtSpBldg-App. FS wet sys	18	04SEP04A	11JUL05	60	0	18	77	25																																																								
7205	ShtSpBldg-App. FS AFA & FM200 sys	18	14SEP04A	11JUL05	70	0	18	135	105																																																								
7085	ShtSpBldg-App. of CMCS & ELV sys	18	20SEP04A	11JUL05	50	0	18	63	37																																																								
7116	ShtSpBldg-App. MVAC mech.vent. sys	18	23SEP04A	11JUL05	50	0	18	35	31																																																								
7133	ShtSpBldg-App. TVF, Ductworks & Control sys	18	12NOV04A	11JUL05	70	0	18	21	1																																																								
7147	ShtSpBldg-App. MVAC MCC, power & control sys	18	12NOV04A	11JUL05	75	100	18	-9	-29																																																								
7101	ShtSpBldg-App. MVAC Package AC Unit sys	18	01FEB05A	11JUL05	30	0	18	111	85																																																								
7229	ShtSpBldg-App. PD irrig. sys	18	05MAY05A	02AUG05	30	0	18	76	0																																																								
PROCUREMENT - MATERIAL																																																																	
E & M WORKS																																																																	
7047	ShtSpBldg-Proc & Manuf. LV power dist. equip't	180	20MAR05A	23JAN06	12	10	180	15	-11																																																								
7041	ShtSpBldg-Proc. & Manuf. of HV dist. equip't	180	25MAR05A	23JAN06	10	10	180	27	-17																																																								
7086	ShtSpBldg-Proc. & Manuf. of CMCS & ELV sys	180	25MAR05A	06APR06	10	0	180	8	0																																																								
7148	ShtSpBldg-Proc & Manuf. MCC, power & control sys	180	25MAR05A	23JAN06	5	10	180	-9	-11																																																								
7134	ShtSpBldg-Proc & Manuf. TVF,Ductwks & Cont'l sys	180	09JUN05A	22FEB06	5	0	180	2	0																																																								
8508	ShtSpBldg-Proc & Manf bldg related luminaires	180	12JUL05	21FEB06	0	0	180	33	-5																																																								
7230	ShtSpBldg-Proc & Manuf. PD irrig. sys	120	03AUG05	23DEC05	0	0	120	76	0																																																								
7156	ShtSpBldg-Proc & Manuf. FS wet sys	120	10AUG05	03JAN06	0	0	120	52	0																																																								

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	DWP % Compl.	Rem Dur	Total Float	Variance Early Finis	APR 19							MAY 20				JUN 21			JUL 22			AUG 23				SEP 24			OCT 25				
										11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	3	10	17	24
E&M EQPT. / MTRL. APPROVALS																																						
6985	ShtRtNb-App. HV/LV main & submain dist. sys	18	13AUG04A	11JUL05	70	90	18	15	-14																													
6969	ShtRtSb-App. FS AFA & Linear sys	18	14SEP04A	11JUL05	70	100	18	7	-44																													
7022	ShtRtNb-App. FS AFA & Linear sys	18	14SEP04A	11JUL05	70	100	18	7	-44																													
6945	ShtRtSb-App. CMCS & TCS & ELV sys	18	20SEP04A	11JUL05	50	0	18	45	25																													
6998	ShtRtNb-App. CMCS & ELV sys	18	20SEP04A	11JUL05	50	0	18	37	17																													
6957	ShtRtSb-App. TVS control sys	18	12NOV04A	11JUL05	70	0	18	73	34																													
7010	ShtRtNb-App. TVS control sys	18	12NOV04A	11JUL05	70	0	18	73	34																													
PROCUREMENT - MATERIAL																																						
SHT TUNNEL NORTHBOUND																																						
6986	ShtRtNb-Proc & Manuf. ES Main & submain dist.	180	20MAR05A	27JAN06	12	0	180	11	0																													
6999	ShtRtNb-Proc & Manuf. CMCS & ELV sys	180	25MAR05A	13MAR06	10	0	180	2	0																													
7023	ShtRtNb-Proc & Manuf. FS AFA & Linear sys	180	25MAR05A	23JAN06	10	20	180	7	-26																													
7011	ShtRtNb-Proc & Manuf. TVS control sys	180	25MAY05A	01APR06	5	0	180	21	0																													
7628	ShtRtNb-Proc & Manuf. TVS in Tunnel	180	09JUN05A	25FEB06	5	0	180	21	0																													
6992	ShtRtNb-Proc & Manuf. Tunnel Lgt sys	180	12JUL05	21FEB06	0	0	180	0	-2																													
SHT TUNNEL SOUTHBOUND																																						
6946	ShtRtSb-Proc & Manuf. CMCS & ELV sys	180	25MAR05A	22MAR06	10	0	180	2	0																													
6970	ShtRtSb-Proc & Manuf. FS AFA & Linear sys	180	25MAR05A	23JAN06	10	20	180	7	-26																													
6933	ShtRtSb-Proc & Manuf. ES Main & submain dist.	180	20MAY05A	27JAN06	5	0	180	11	0																													
6958	ShtRtSb-Proc & Manuf. TVS control sys	180	25MAY05A	01APR06	5	0	180	21	0																													
7625	ShtRtSb-Proc & Manuf. TVS in Tunnel	180	09JUN05A	25FEB06	5	0	180	21	0																													
6939	ShtRtSb-Proc & Manuf. Tunnel Lgt sys	180	30JUL05	11MAR06	0	0	180	5	0																													

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	DWP % Compl.	Rem Dur	Total Float	Variance	Early Finish	APR				MAY				JUN				JUL				AUG				SEP				OCT				
											19	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	3	10	17	
PROCUREMENT - MATERIAL																																							
ABWF WORKS																																							
7269	ShtNpBldg-Proc & Manuf. LV power dist. equip't	180	20MAR05A	23JAN06	12	5	180	-3	-5																														
7263	ShtNpBldg-Proc. & Manuf. of HV dist. equip't	180	25MAR05A	23JAN06	10	5	180	1	-5																														
7308	ShtNpBldg-Proc. & Manuf. of CMCS & ELV sys	180	25MAR05A	22MAR06	10	0	180	6	0																														
7370	ShtNpBldg-Proc & Manuf. MCC, power & control sys	180	25MAR05A	23JAN06	5	20	180	-27	-29																														
7428	ShtNpBldg-Proc & Manuf. FS AFA & FM200 sys	120	25MAR05A	15MAR06	10		120	26	0																														
7356	ShtNpBldg-Proc & Manuf. TVF,Ductwks&Cont'l sys	180	09JUN05A	27FEB06	5	0	180	2	0																														
8512	ShtSpBldg-Proc & Manf bldg related luminaires	180	27JUL05	08MAR06	0	0	180	24	0																														
7432	ShtNpBldg-Proc & Manuf. Cleans & flush water sys	120	03AUG05	23DEC05	0	0	120	68	0																														
7339	ShtNpBldg-Proc & Manuf. MVAC mech.vent. sys	120	17AUG05	10JAN06	0	0	120	5	0																														
7378	ShtNpBldg-Proc & Manuf. FS wet sys	120	24AUG05	17JAN06	0	0	120	62	0																														
2016	SHT NPB - Procure doors & windows	120	07SEP05	08FEB06	0	0	120	14	0																														
2028	SHT NPB - Procure balustrade & metal works	120	07SEP05	08FEB06	0	0	120	2	0																														
SHT RC ENCLOSURE & T3 UNDERPASS																																							
SUBMITTALS & APPROVALS																																							
E&M EQPT./ MTRL.SUBMITTALS																																							
8302	Sht-N.R9-Sub.Tunnel Lgt sys	78	02JUL04A	20SEP05	85	80	78	33	-47																														
8304	Sht-N.R9-Sub.TVS control sys	54	02JUL04A	22AUG05	80	0	54	73	-1																														
8307	Sht-N.R9-Sub.TVF, Ductworks & Control sys	78	02JUL04A	20SEP05	95	70	78	51	-47																														
8309	Sht-N.R9-Sub.MCC, power & control sys	54	02JUL04A	22AUG05	85	30	54	58	-16																														
8305	Sht-N.R9-Sub.FS AFA & Linear sys	54	05JUL04A	22AUG05	95	0	54	102	12																														
8301	Sht-N.R9-Sub.HV/LV main & submain dist. sys	54	07JUL04A	22AUG05	95	30	54	60	-14																														
8308	Sht-N.R9-Sub.LCC, power & control sys	54	07JUL04A	22AUG05	85	0	54	54	-2																														
8303	Sht-N.R9-Sub.CMCS & ELV sys	78	26AUG04A	20SEP05	75	20	78	80	-18																														

Act. ID	Activity Description	Orig Dur	Early Start	Early Finish	% Compl.	DWP % Compl.	Rem Dur	Total Float	Variance Early Finis	APR 19							MAY 20					JUN 21				JUL 22				AUG 23				SEP 24			OCT 25				
										11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	3	10	17	24	31		
E&M EQP. / MTRL. APPROVALS																																									
7487	Sht-N.R9-App. Tunnel Lgt sys	18	05AUG04A	11JUL05	75	0	18	33	31																																
7481	Sht-N.R9-App. HV/LV main & submain dist. sys	18	13AUG04A	11JUL05	70	0	18	60	40																																
7604	Sht-N.R9-App. LCC, power & control sys	18	18AUG04A	11JUL05	75	0	18	54	52																																
7517	Sht-N.R9-App. FS AFA & Linear sys	18	14SEP04A	11JUL05	70	0	18	102	66																																
7494	Sht-N.R9-App. CMCS & ELV sys	18	20SEP04A	11JUL05	50	0	18	80	60																																
7505	Sht-N.R9-App. TVS control sys	18	12NOV04A	22AUG05	70	0	54	73	17																																
7529	Sht-N.R9-App. TVF, Ductworks & Control sys	18	12NOV04A	11JUL05	70	0	18	51	31																																
7612	Sht-N.R9-App. MCC, power & control sys	18	12NOV04A	11JUL05	75	0	18	58	38																																
PROCUREMENT - MATERIAL																																									
SHT RC FULL ENCLOSURE / T3 UNDERPASS																																									
7482	Sht-N.R9-Proc & Manuf. ES Main & submain dist.	180	20MAR05A	10APR06	12	0	180	2	0																																
7495	Sht-N.R9-Proc & Manuf. CMCS & ELV sys	180	25MAR05A	09MAY06	10	0	180	2	0																																
7518	Sht-N.R9-Proc & Manuf. FS AFA & Linear sys	120	25MAR05A	28FEB06	10		120	18	0																																
7613	Sht-N.R9-Proc & Manuf. MCC, power & control sys	180	25MAR05A	07APR06	5	0	180	2	0																																
7506	Sht-N.R9-Proc & Manuf. TVS control sys	180	25MAY05A	28APR06	5	0	180	2	0																																
7530	Sht-N.R9-Proc & Manuf. TVF, Ductwks & Cont'l sys	180	09JUN05A	29MAR06	5	0	180	2	0																																
7488	Sht-N.R9-Proc & Manuf. Tunnel Lgt sys	180	17AUG05	29MAR06	0	0	180	2	0																																
7605	Sht-N.R9-Proc & Manuf. LCC, power & control sys	180	12SEP05	27APR06	0	0	180	2	0																																

APPENDIX C
MONITORING REQUIREMENTS

Appendix C - Environmental Impact Monitoring Requirements for Eagle's Nest Tunnel and Associated Works

Type of Monitoring	Parameter	Frequency	Location	Measurement Conditions
Air Quality	1-hour TSP	3 times every 6 days	<ul style="list-style-type: none"> AM1 (Yew Chung International School / PLK Choi Kai Yau School) AM3⁽³⁾ (Garden Villa) AM4 (Government Quarters) 	<ul style="list-style-type: none"> AM1 – Rooftop AM3 – On ground AM4 – Ground floor close to the refuse collection station of Government Quarters
	24-hour TSP	Once every 6 days		
Noise	L _{eq} , L ₉₀ & L ₁₀ at 30 minute intervals during (0700 to 1900 on normal weekdays)	Once per week	<ul style="list-style-type: none"> NM1 (Yew Chung International School / PLK Choi Kai Yau School) NM5 (Villa Carlton) NM6 (Government Quarters) NM7 (Garden Villa) 	<ul style="list-style-type: none"> NM1 – Rooftop (Façade measurement) NM5 – Ground Floor⁽²⁾ - (Façade measurement) NM6 – Rooftop of Refuse Collection Station (Free field measurement) NM7 – Rooftop (Façade measurement)
	L _{eq} , L ₉₀ & L ₁₀ at 5 minute intervals during (1900 to 2300) ⁽¹⁾	Once per week (include 3 consecutive 5-min measurements)		
	L _{eq} , L ₉₀ & L ₁₀ at 5 minute intervals during (2300 to 0700 of next day) ⁽¹⁾	Once per week (include 3 consecutive 5-min measurements)		
	L _{eq} , L ₉₀ & L ₁₀ at 5 minute intervals during (0700 to 1900 on holidays) ⁽¹⁾	Once per week (include 3 consecutive 5-min measurements)		

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

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

⁽³⁾ – Station AM3 was relocated from Garden Villa to the nearby slope no. 07SW-D/FR4 and the monitoring was resumed on 14 February 2005.

**APPENDIX D
ENVIRONMENTAL QUALITY
PERFORMANCE (ACTION/LIMIT)
LEVELS**

Appendix D - Action and Limit Levels (ENT)

1-Hour TSP

Location	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
AM1	296	500
AM3	350	
AM4	294	

24-Hour TSP

Location	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
AM1	168	260
AM3	200	
AM4	170	

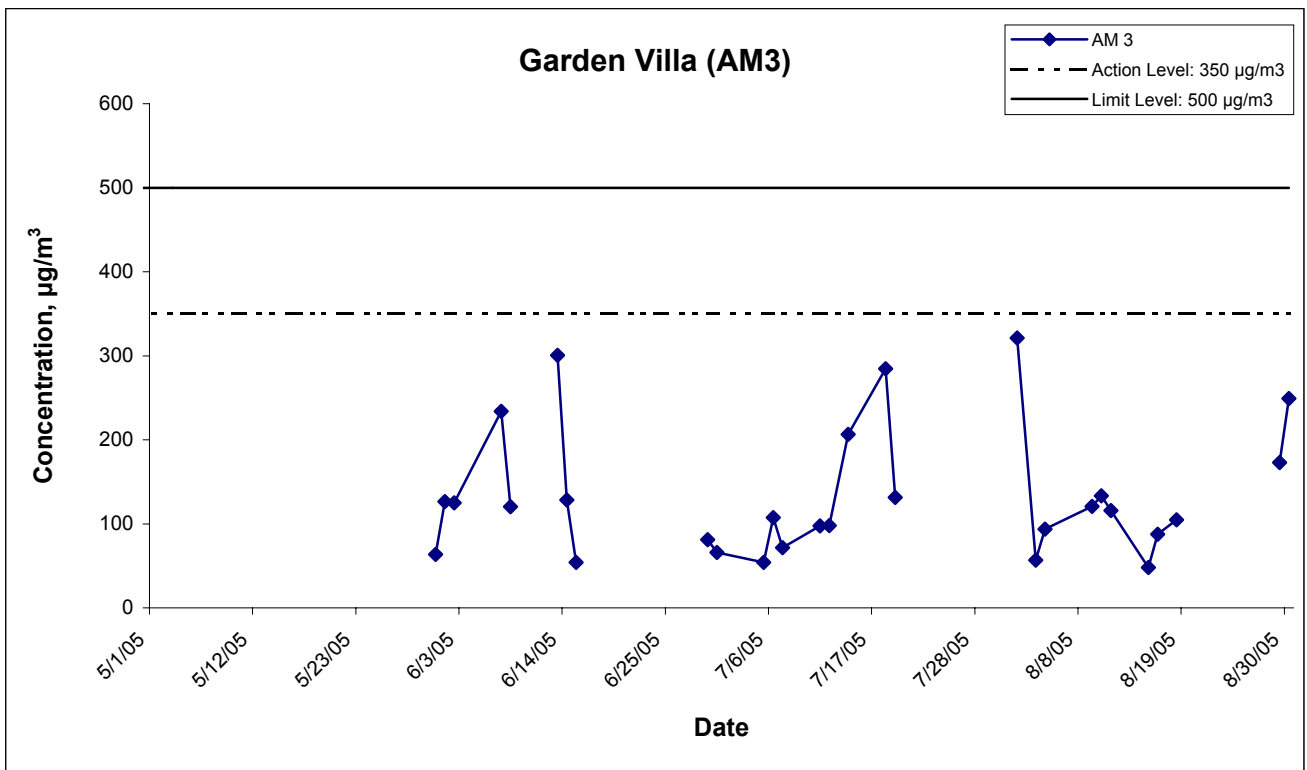
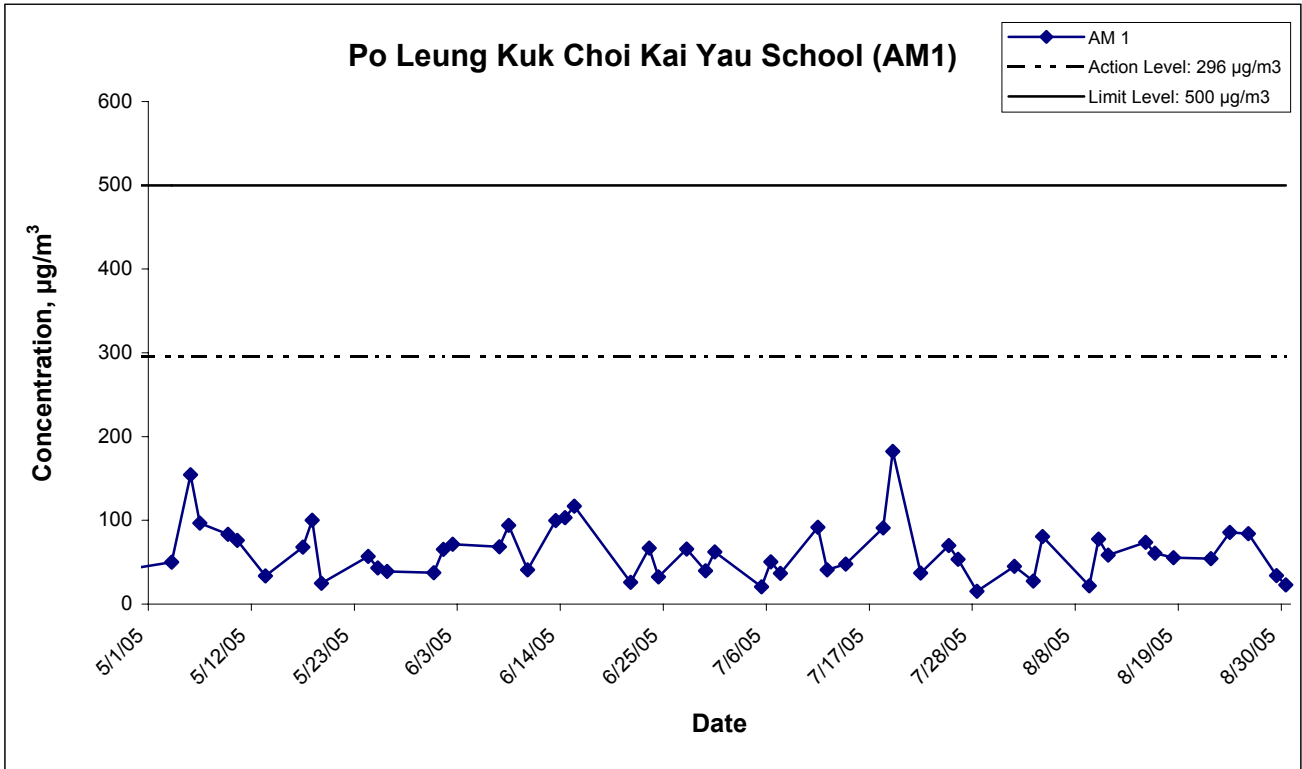
Construction Noise

Period	Action Level for all stations	Limit Level, dB(A)			
		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 reduce to 65 dB(A) during school examination periods.

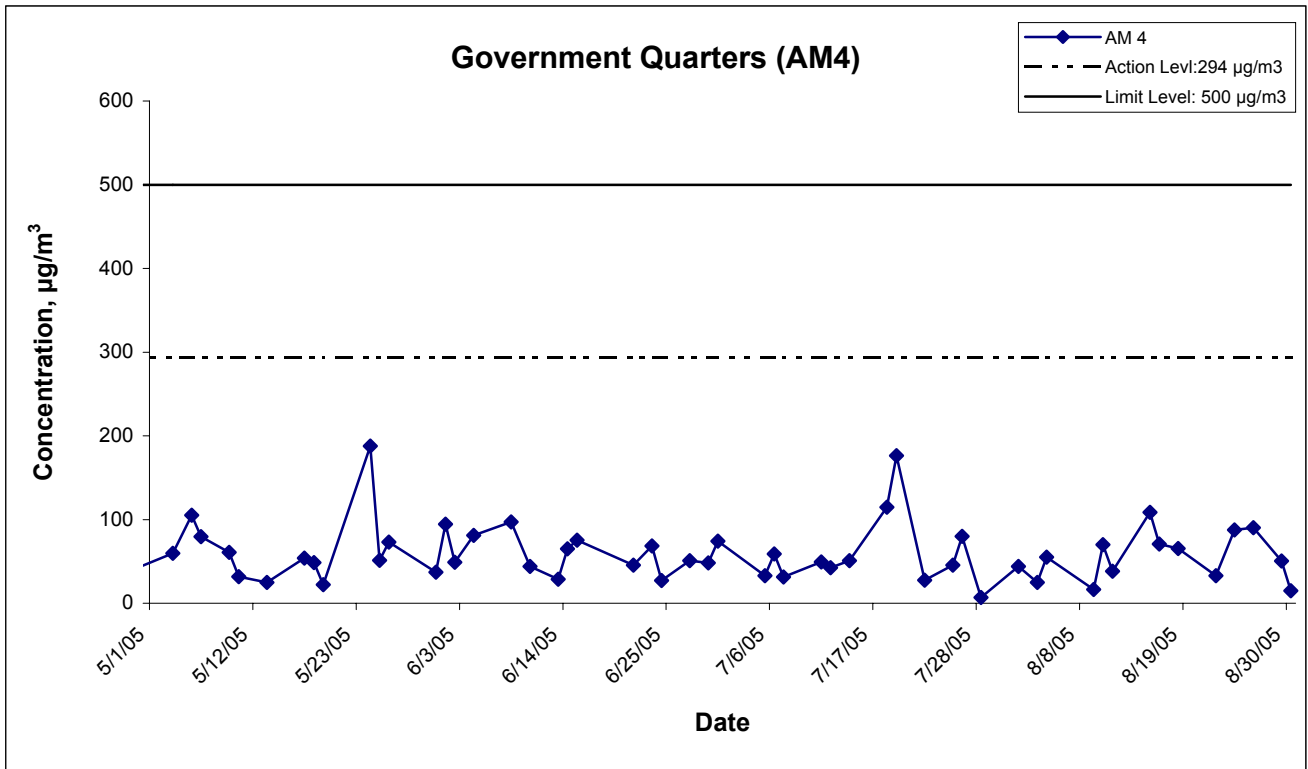
**APPENDIX E
GRAPHICAL PRESENTATION OF AIR
QUALITY MONITORING RESULTS**


1-hr TSP Levels



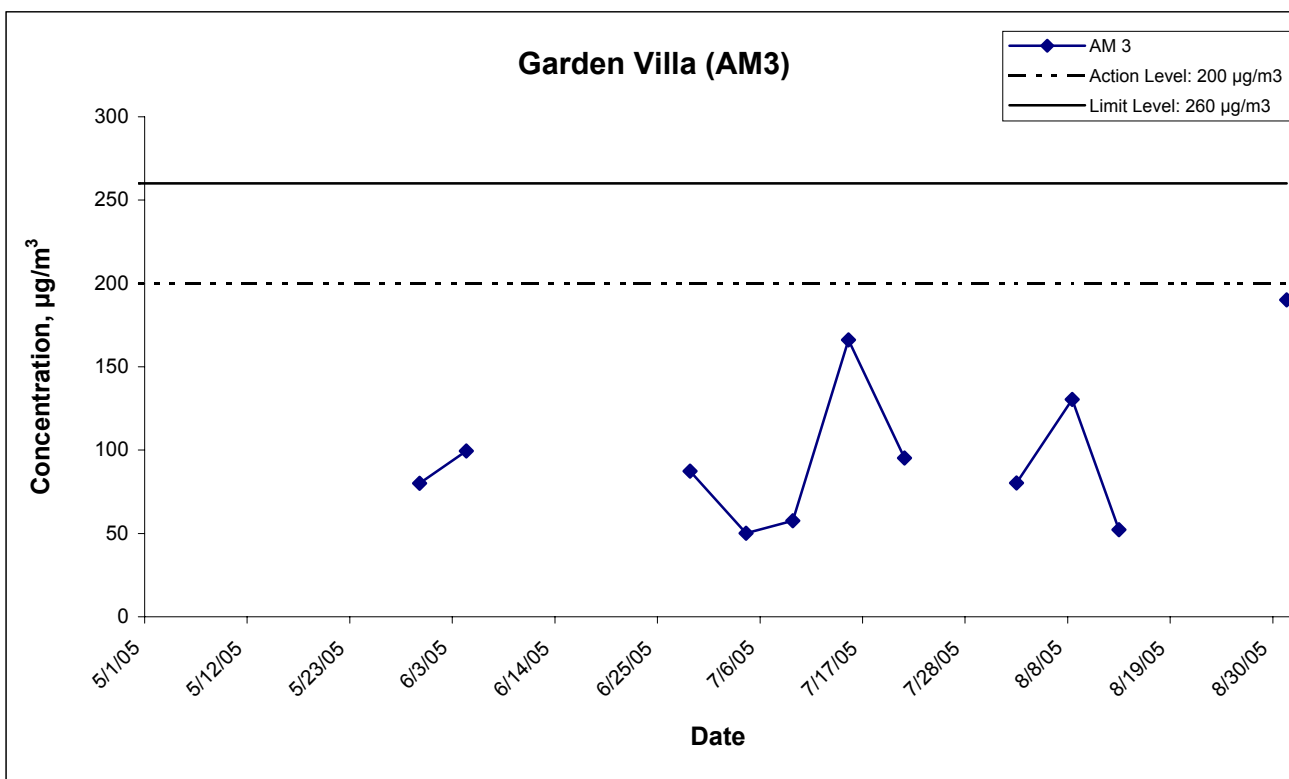
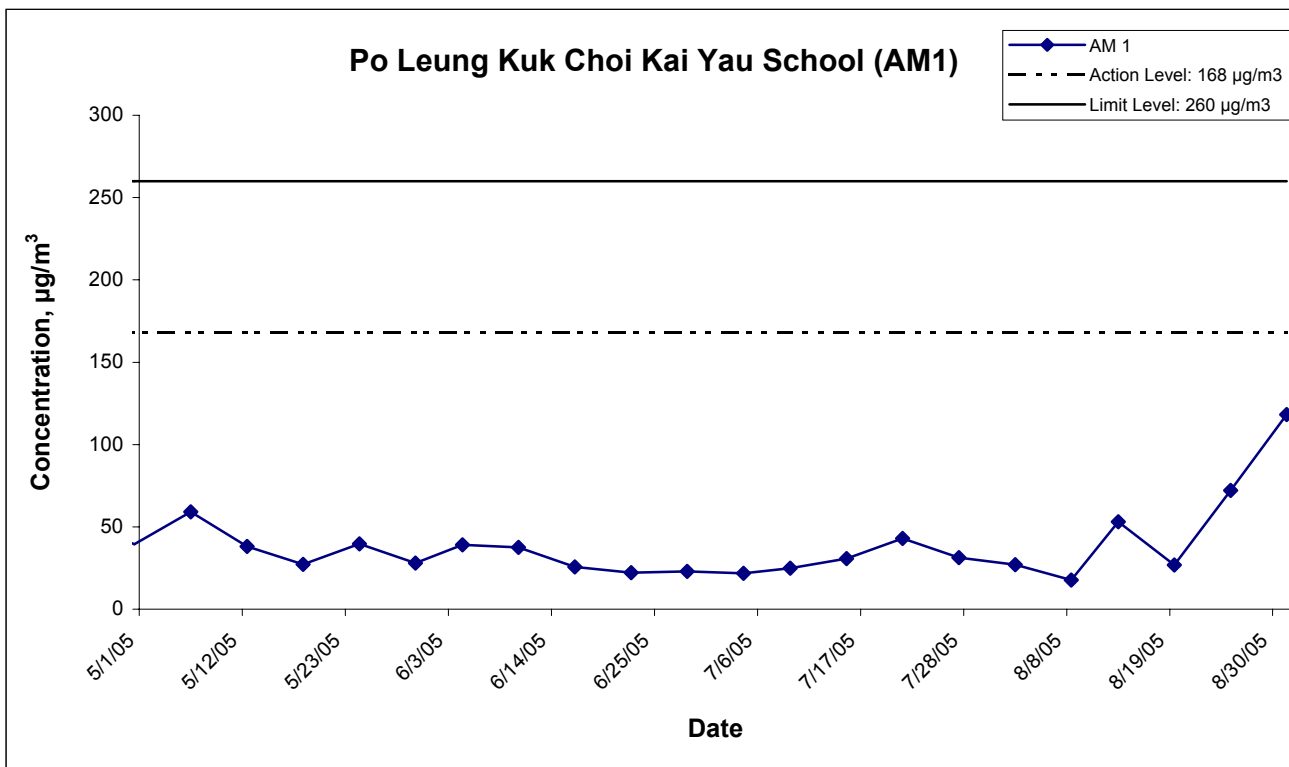
Title Route 8 (previously known as Route 9) between Cheung Sha Wan & Sha Tin Contract HY/2003/02 - Eagle's Nest Tunnel and Associated Works Graphical Presentation of 1-hour TSP Impact Monitoring Results	Scale N.T.S	Project No. MA3024	
	Date Aug 05	Appendix E	

1-hr TSP Levels



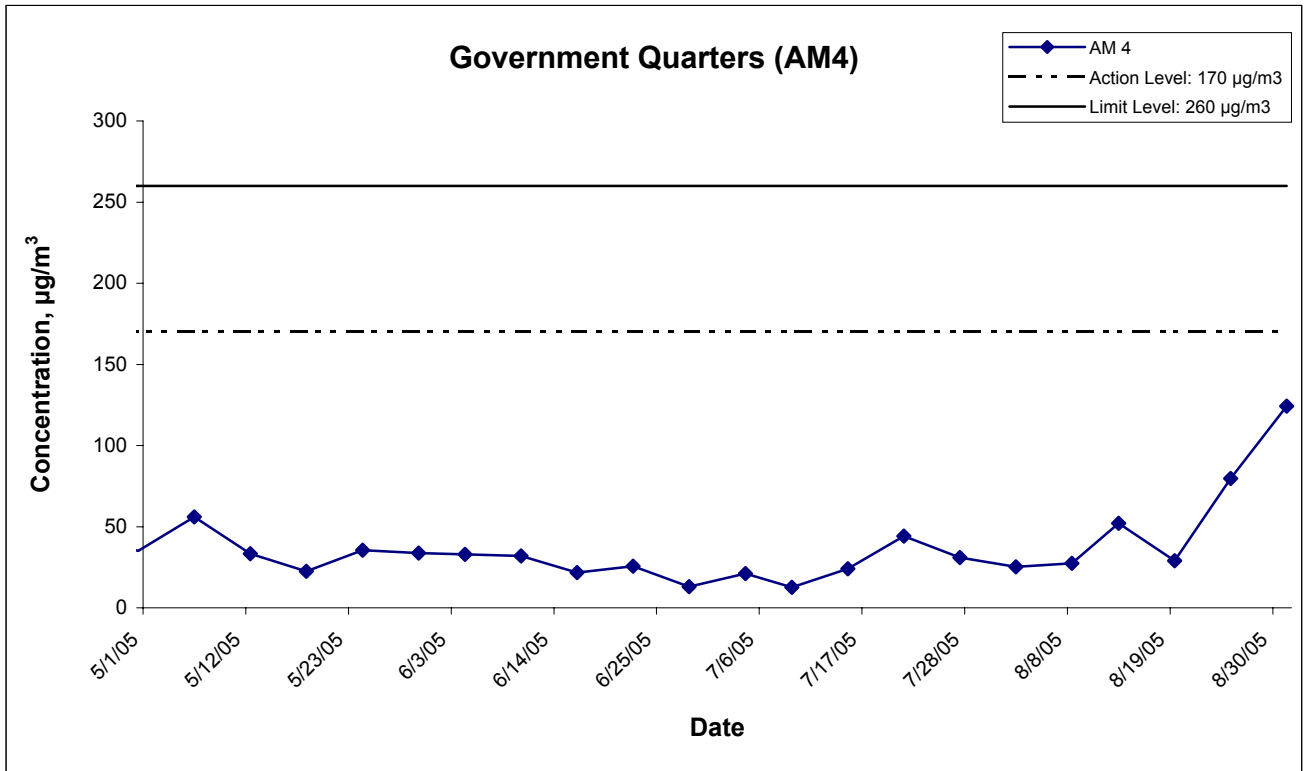
Title Route 8 (previously known as Route 9) between Cheung Sha Wan & Sha Tin Contract HY/2003/02 - Eagle's Nest Tunnel and Associated Works Graphical Presentation of 1-hour TSP Impact Monitoring Results	Scale	Project No.	
	Date	Appendix E	
	N.T.S	MA3024	
	Aug 05	E	

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	Project No. MA3024	
	Date Aug 05	Appendix E	

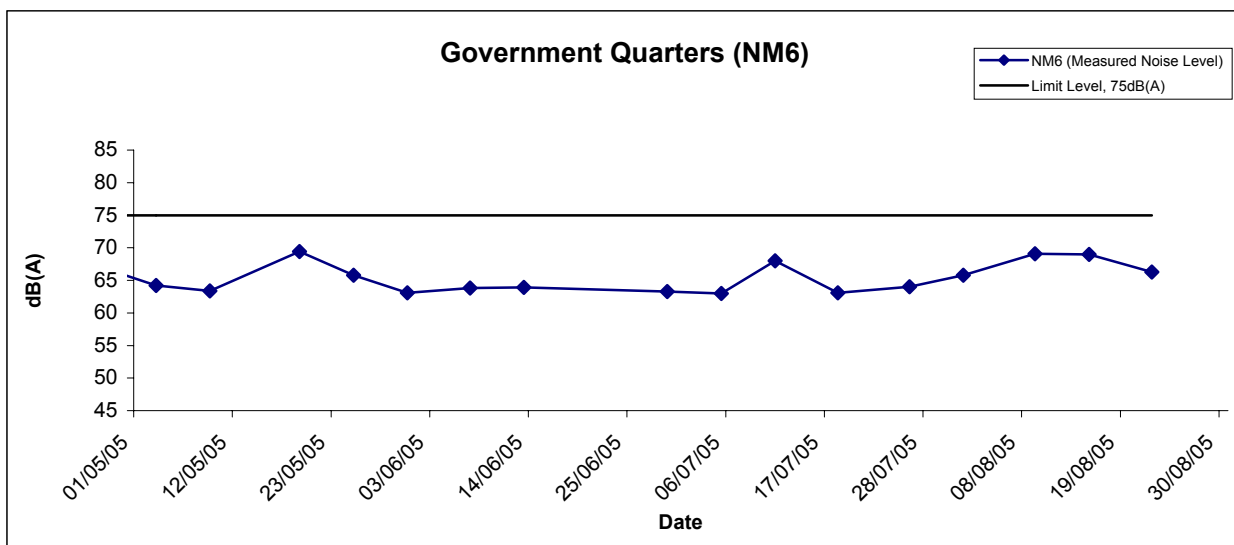
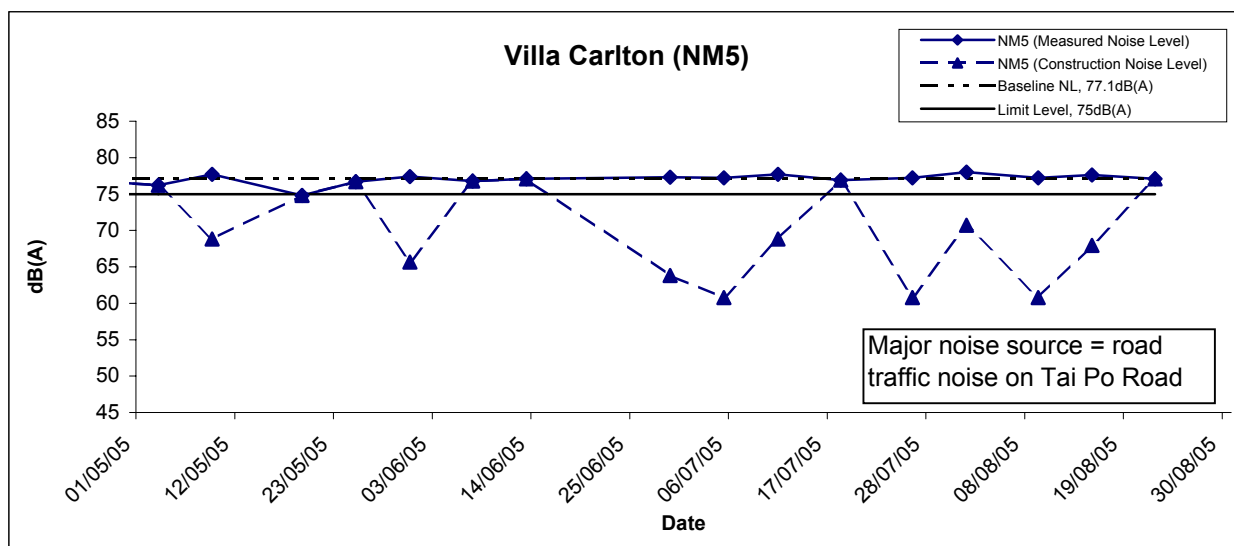
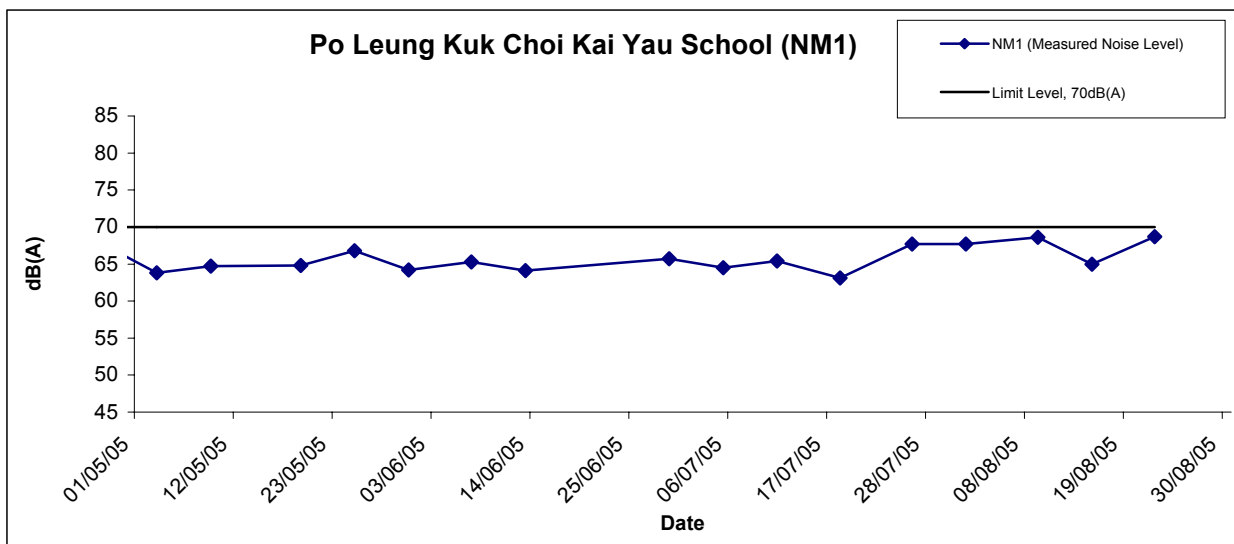
24-hr TSP Levels



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	Project No. MA3024	
	Date Aug 05	Appendix E	

**APPENDIX F
GRAPHICAL PRESENTATION OF
NOISE MONITORING RESULTS**

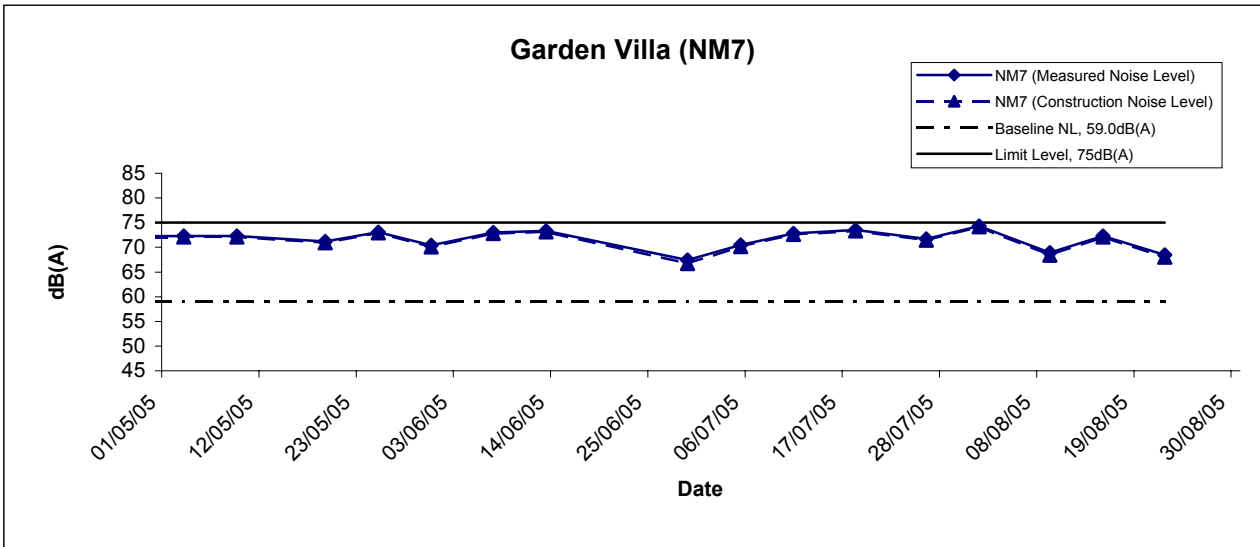
Noise Levels



* 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 measured 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	
	Date Aug 05	Appendix F	

Noise Levels

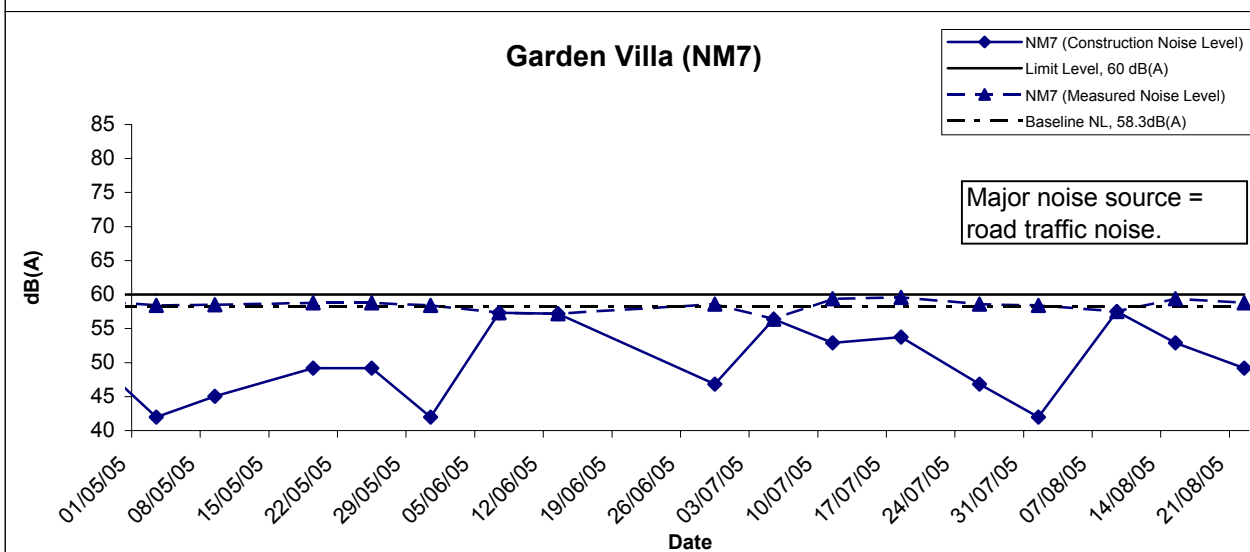
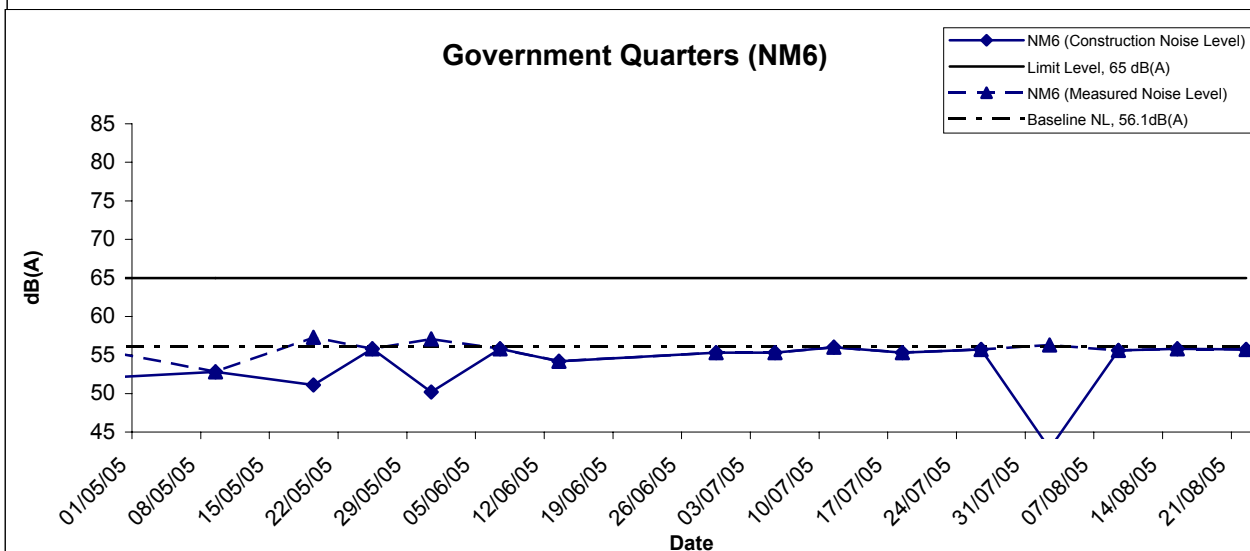
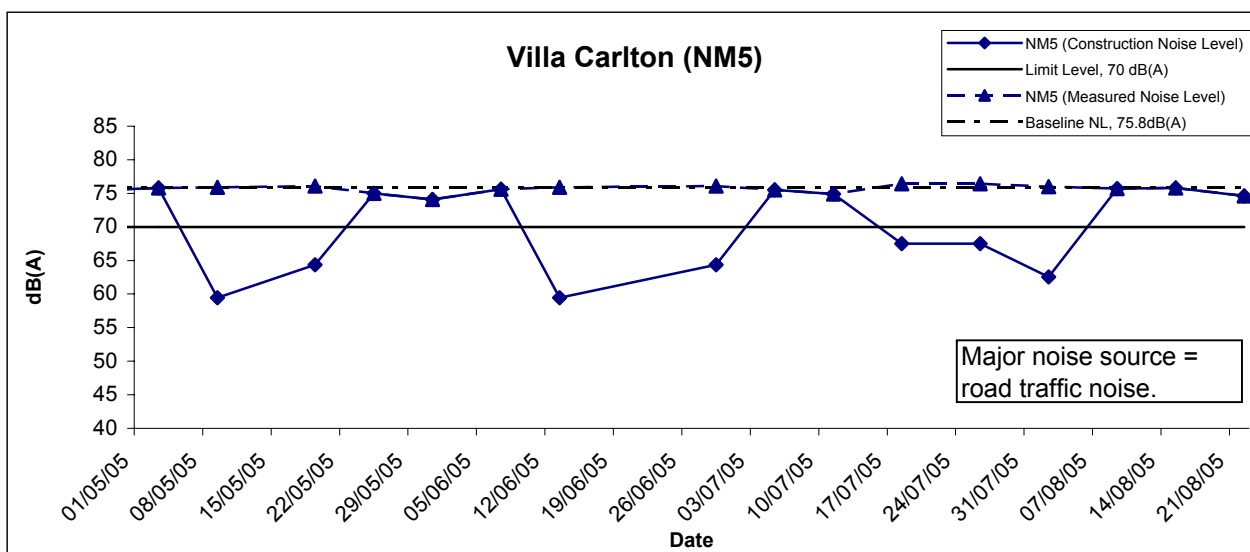


* Construction Noise Level = Measured Noise Level - Baseline Level

(If the measured noise level is lower than the baseline level, the construction noise level will be taken as the measured 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 Aug 05	Appendix F	

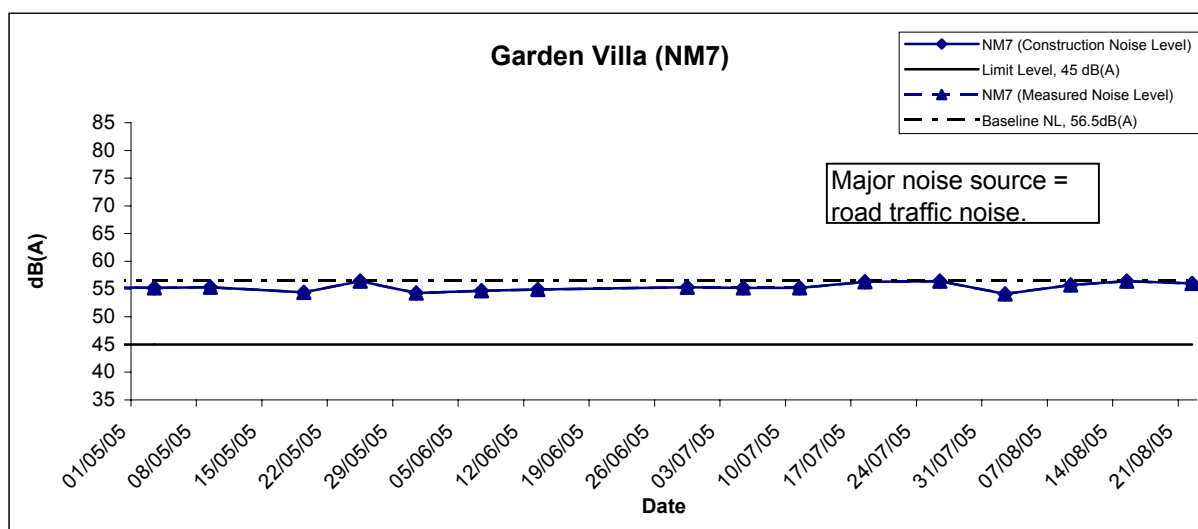
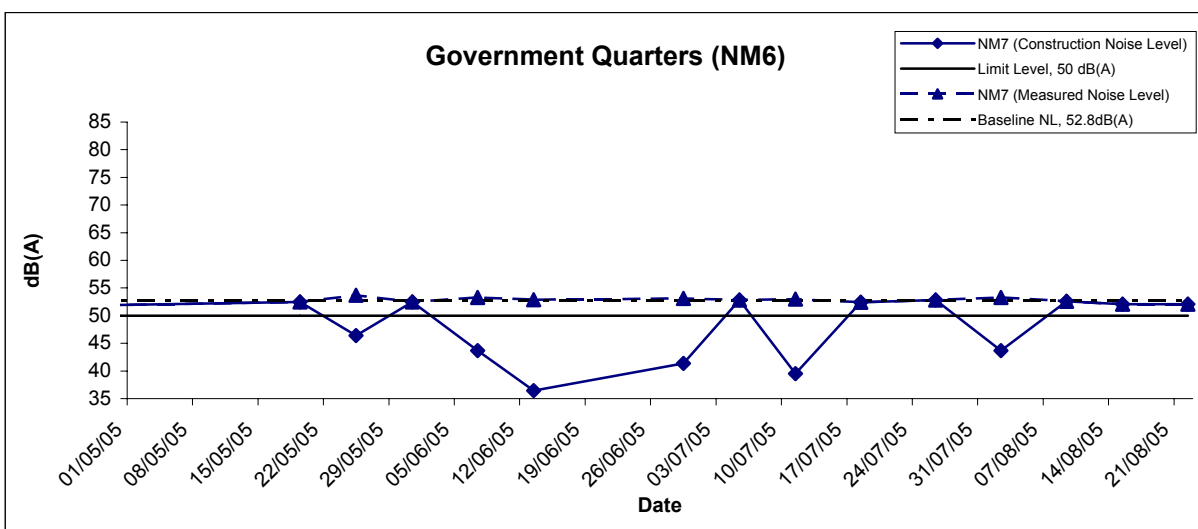
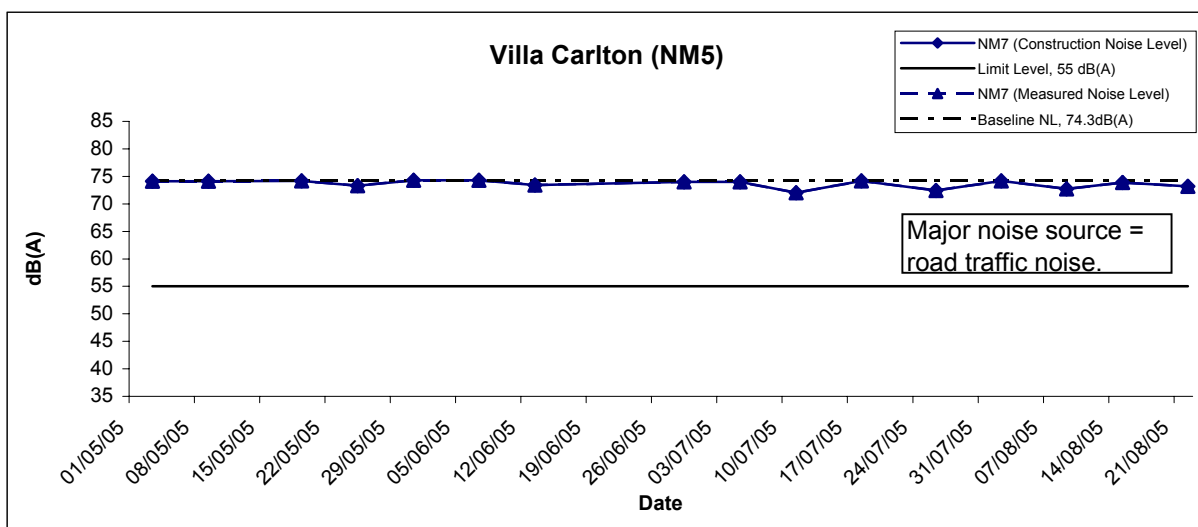
Restricted Hours (19:00 to 23:00) - Noise Levels



* 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 measured 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	Project No.	CINOTECH
	N.T.S	MA3024	
	Date	Appendix	
	Aug 05	F	

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 measured 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 Aug 05	Appendix F	

**APPENDIX G
IMPLEMENTATION SCHEDULE OF
ENVIRONMENTAL MITIGATION
MEASURES (EMIS)**

Appendix G - Summary of Environmental Mitigation Implementation Schedule

Types of Impacts	Mitigation Measures	Status
Construction Dust	<ul style="list-style-type: none"> • 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 by 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. 	<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>
Construction Noise	<ul style="list-style-type: none"> • 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 known 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 quiet plant and Working Method • Reduce the number of plant operating in critical areas close NSRs. 	<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>

Types of Impacts	Mitigation Measures	Status
	<ul style="list-style-type: none"> Construct temporary and movable noise barriers 	^
Water Quality	<i>Construction Runoff and Drainage</i>	
	<ul style="list-style-type: none"> 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. 	^ ^ ^ ^ ^ ^ ^ ^
	<i>Tunnelling Work</i>	
	<ul style="list-style-type: none"> 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
	<ul style="list-style-type: none"> Spent 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
	<i>General Construction Activities</i>	
	<ul style="list-style-type: none"> Debris and rubbish on site should be collected, handled and disposed of properly to avoid entering the water column and cause water quality impacts. 	^
	<ul style="list-style-type: none"> 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). 	^
	<i>Sewage Effluent</i>	
Waste	<ul style="list-style-type: none"> Construction work force sewage discharges from 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 from 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
	<i>General</i>	
	<ul style="list-style-type: none"> 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. 	^
	<i>Storage, Collection and Transportation of Waste</i>	
	<ul style="list-style-type: none"> Wastes shall be handled and stored in a manner to ensure that they are held securely without loss or leakage. 	^
	<ul style="list-style-type: none"> Authorised or licensed waste hauliers shall be used and they shall only collect wastes prescribed by their permits. 	^
	<ul style="list-style-type: none"> Waste shall be removed on a daily basis. 	^
<ul style="list-style-type: none"> Waste storage area shall be maintained and cleaned on a daily basis. 	^	
<ul style="list-style-type: none"> Windblown litter and dust during transportation shall be minimised by either covering trucks or transporting wastes in enclosed containers. 	^	
<ul style="list-style-type: none"> Obtain necessary waste disposal permits from the appropriate authorities if they are required. 	^	
<ul style="list-style-type: none"> Wastes shall be disposed of at licensed waste disposal facilities. 	^	
<ul style="list-style-type: none"> 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. 	^	
<ul style="list-style-type: none"> Maintain records of the quantities of wastes generated, recycled and disposed. 	^	
<i>Surplus Excavated Materials</i>		

Types of Impacts	Mitigation Measures	Status
	<ul style="list-style-type: none"> 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. 	N/A
	<i>Construction and Demolition (C&D) Waste</i>	
	<ul style="list-style-type: none"> Careful design, planning and good site management shall be adopted to minimise over-ordering and generation of waste materials such as concrete grouts. 	^
	<ul style="list-style-type: none"> 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
	<ul style="list-style-type: none"> 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. 	^
	<i>Chemical Waste</i>	
	<ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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). 	^ ^ ^
<i>General Refuse</i>		
<ul style="list-style-type: none"> 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. 	^	

Types of Impacts	Mitigation Measures	Status
	<ul style="list-style-type: none"> Reusable rather than disposable dishware shall be used if feasible. 	N/A
Ecology	<ul style="list-style-type: none"> A sediment barrier shall be erected to minimize stream sedimentation at downstream of the project boundary of the Toll Plaza. 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. Loss of the adjacent woodland due to temporary land take shall be returned to the original status immediately. 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. 	<p>N/A</p> <p>^</p> <p>N/A</p> <p>N/A</p> <p>^</p> <p>N/A</p>
Landscape and Visual Impact	<ul style="list-style-type: none"> 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 	<p>N/A</p> <p>N/A</p> <p>N/A</p>

Remarks:

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

**APPENDIX H
SUMMARY OF ENVIRONMENTAL
LICENCES AND PERMITS**

Appendix H - Summary of Environmental Licensing and Permit Status (ENT)

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; (c) 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	N/A	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-RW0214-05	06/04/05	07/10/05	<i>Location:</i> Butterfly Valley <i>Time period:</i> general holiday (including Sundays) between 0700 and 2300 hours, and any other day between 1900 and 2300 hours.	Valid
GW-RW0503-05	06/08/05	05/02/06	<i>Location:</i> Ventilation Adit <i>Time period:</i> general holiday (including Sundays) between 0700 and 2300 hours, and any other day between 1900 and 2300 hours.	Valid
GW-RW0504-05	06/08/05	05/02/06	<i>Location:</i> Ventilation Adit <i>Time period:</i> Any day between 2300 and 0700 hours on next day.	Valid

Permit No.	Valid Period		Details	Status
	From	To		
GW-RN0359-05	11/08/05	15/02/06	<i>Location:</i> South Portal <i>Time period:</i> general holiday (including Sundays) between 0900 and 2300 hours, and any other day between 1900 and 2300 hours.	Valid
GW-RN0358-05	11/08/05	10/02/06	<i>Location:</i> South Portal <i>Time period:</i> Any day between 2300 and 0700 hours on next day.	Valid
GW-RN0339-05	01/08/05	31/01/06	<i>Location:</i> North Portal <i>Time period:</i> general holiday (including Sundays) between 0900 and 2300 hours, and any other day between 1900 and 2300 hours.	Valid
GW-RN0338-05	01/08/05	31/01/06	<i>Location:</i> North Portal <i>Time period:</i> Any day between 2300 and 0700 hours on next day.	Valid

**APPENDIX I
COMPLAINT LOG**

Appendix I - Complaint Log

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
40426	Butterfly Valley	26 April 2004	<p>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.</p>	<p><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.</p> <p><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.</p> <p>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.</p>	Closed
40914	Garden Villa	<p>13-Sep-04 (by EPD)</p> <p>14-Sep-04 (by ET Leader)</p>	<p>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.</p> <p>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,</p>	<p><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.</p> <p><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.</p>	Closed

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
			<p>the complainant was particularly concerned of two issues:</p> <ol style="list-style-type: none"> 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. 	<p>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.</p> <p><u>Use of TAR no.1</u> According to Condition 3d of the above-mentioned CNP, there was restriction on the use of site vehicles traveling on TAR no.1.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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</p>	

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
				<p>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).</p> <p>Nevertheless, the Contractor was reminded to ensure the compliance of the CNP conditions and adopt good site practice to minimize the construction noise.</p>	
41021	Garden Villa	<p>09-Oct-04 (by EPD)</p> <p>21-Oct-04 (by ET Leader)</p>	<p>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.</p> <p>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:</p> <ul style="list-style-type: none"> • 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. 	<p>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.</p> <p>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:</p> <ol style="list-style-type: none"> 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. <p>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:</p> <ol style="list-style-type: none"> 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 20 th 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 23 rd October 2004.	<p>The complaint was considered valid based on:</p> <ol style="list-style-type: none"> 1. ER's site observations; 2. ET's weekly site audit; and 3. 1-hr TSP exceedance record. <p>Also, the sources of dust generation were identified as</p> <ol style="list-style-type: none"> 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. <p>Enhanced dust suppression measures had been implemented by the Contractor:</p> <ul style="list-style-type: none"> • 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. <p>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.</p> <p>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.</p> <p>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.</p>	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 21 st 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 24 th November 2004.	According to the ER, the only construction activity at Butterfly Valley undertaken on 21 st 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 21 st and 28 th 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 1 st 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
				<p>Contractor.</p> <p>However, owing to the prevailing of the dry season, the Contractor was reminded to ensure the dust control measures are effectively implemented.</p>	
50125	Garden Villa (North Portal)	<p>21-Jan-05 (by EPD)</p> <p>25-Jan-05 (by ET Leader)</p>	<p>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.</p> <p>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:</p> <ol style="list-style-type: none"> 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. 	<p><u>Noise from blasting</u> 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:</p> <ul style="list-style-type: none"> • 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. <p><u>Uncovered dump trucks</u> 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.</p> <p>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.</p> <p>LKJV was reminded to keep closely monitoring on the condition and the effectiveness of the proposed control measures.</p>	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)	<p>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.</p> <p>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:</p> <ol style="list-style-type: none"> 1. Nighttime & Sunday construction noise 2. Noise from tunnel blasting at early morning and nighttime 3. Dust from construction activities 	<p><i>Nighttime & Sunday construction noise</i></p> <ul style="list-style-type: none"> • 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 <p><i>Noise from tunnel blasting at early morning and nighttime</i></p> <ul style="list-style-type: none"> • no exceedance for noise monitoring • valid blasting permit had been obtained from CEDD • blasting work is not under the jurisdiction of EPD <p><i>Dust from construction activities</i></p> <ul style="list-style-type: none"> • 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 <p><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.</p>	Closed
50330	Garden Villa (TAR1)	30-Mar-05 (by EPD & ET Leader)	<p>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.</p> <p>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.</p>	<p>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).</p> <p>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.</p> <p>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</p>	Closed

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
				<p>criterion of 75 dB(A).</p> <p>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.</p> <p>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).</p>	
50415	Government Quarters	<p>09-Apr-05 (by EPD)</p> <p>15-Apr-05 (by ET Leader)</p>	<p>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).</p> <p>EPD subsequently referred the complaint to the Environmental Team (ET) Leader of the Project on 15th April 2005.</p> <p>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.</p>	<p>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.</p> <p>Since the commencement of the Project, no exceedance of daytime noise criterion of 75 dB(A) was recorded at this station.</p> <p>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).</p> <p>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.</p>	Closed

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
50419	Government Quarters	15-Apr-05 (by EPD) 19-Apr-05 (by ET Leader)	<p>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.</p> <p>EPD subsequently referred the complaint to the Environmental Team (ET) Leader of the Project on 19th April 2005.</p> <p>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.</p>	<p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>	Closed

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
50512	Yew Chung International School	12-May-05	<p>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.</p> <p>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.</p> <p>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.</p>	<p>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.</p> <p>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)).</p> <p>The complaint lodged was therefore considered not justifiable.</p> <p>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.</p>	Closed

Log Ref.	Location of Concern	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
50610	Government Quarters	10-Jun-05	<p>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.</p> <p>The complainant had not specified which construction activities had contributed to the dust generation.</p>	<p><i>Site Observations</i></p> <p>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.</p> <p><i>Corrective Actions</i></p> <p>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).</p> <p>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.</p> <p><i>Environmental Outcome</i></p> <p>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.</p> <p><i>Conclusions</i></p> <p>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.</p>	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	<p>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).</p>	<p><i>Site Activity</i></p> <p>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.</p> <p><i>Environmental Requirements</i></p> <p>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.</p> <p>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.</p> <p>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.</p> <p><i>Contractor's Actions</i></p> <p>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).</p> <p><i>Conclusions</i></p> <p>The subjected blasting operations were carried out by the Contractor under a valid blasting permit. The complaint lodged is therefore considered not justifiable.</p>	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	<p>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.</p> <p>Noise impact arising from the blasting works was one of the issues raised by the complainant.</p>	<p><i>Ad-hoc Noise Measurement</i></p> <p>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.</p> <p>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).</p> <p><i>Conclusion and Recommendation</i></p> <p>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.</p>	Closed
50830	Government Quarters (8-10 Caldecott Road)	30-Aug-05	<p>The RSS received a public complaint from a resident of Government Quarters at 0915hrs, addressing two noise issues:</p> <ol style="list-style-type: none"> 1. Noise nuisance caused by drilling works at Butterfly Valley; 2. Noise nuisance due to blasting 0045 hrs of 28 August 2005. 	Investigation in progress	In progress

APPENDIX J
SUMMARY OF EXCEEDANCES

Summary of Exceedances Recorded in the Reporting Quarter

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

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

c) Exceedance Report for Construction Noise

- Three action level exceedances were recorded due to public noise complaints received by the ET Leader on 12 July, 9 and 30 August 2005. The details can refer to **Appendix I**.
- No noise limit level exceedance was recorded in the reporting period.