



Agreement No. CE 42/96

**Route 16 Investigation Assignment  
from West Kowloon to Sha Tin**

**Alternative Alignment  
Environmental Impact Assessment**

**Environmental Monitoring &  
Audit Manual**

**23 August 1999**

**Status - Final**

**Scott Wilson/Parsons Brinckerhoff**

in association with  
**ERM Hong Kong, MVA Asia**

1.	INTRODUCTION	1-1
1.1	Background	1-1
1.2	Purpose of the Manual	1-2
1.3	Project Description	1-3
1.4	Construction Activities	1-3
1.5	Operation Phase	1-4
1.6	Study Area and the Environmental Sensitive Receivers	1-4
1.7	Summary of the EIA Study and Environmental Monitoring and Audit Requirements	1-5
1.8	Project Organisation	1-8
2.	AIR QUALITY	2-1
2.1	Construction Dust	2-1
2.2	Air Quality Parameters	2-1
2.3	Monitoring Equipment	2-1
2.4	Laboratory Measurement / Analysis	2-2
2.5	Monitoring Locations	2-3
2.6	Baseline Monitoring	2-4
2.7	Impact Monitoring	2-5
2.8	Event and Action Plan for Construction Dust	2-5
2.9	Construction Dust Mitigation Measures	2-9
2.10	Tunnel Emission	2-10
2.11	Air Quality Parameters and Standards	2-10
2.12	Monitoring Requirement	2-10
3.	NOISE	3-1
3.1	Construction Noise	3-1
3.2	Noise Parameters	3-1
3.3	Monitoring Equipment	3-1
3.4	Monitoring Locations	3-1
3.5	Baseline Monitoring	3-2
3.6	Impact Monitoring	3-2
3.7	Event and Action Plan for Noise	3-3
3.8	Noise Mitigation Measures	3-4
3.9	Operational Noise	3-6
3.10	Noise Parameters	3-6
3.11	Monitoring Equipment	3-6
3.12	Monitoring Locations	3-6
3.13	Baseline Monitoring	3-7
3.14	Noise Monitoring	3-7
3.15	Noise Mitigation Measures	3-8
3.16	Event and Action Plan	3-8

4.	WATER QUALITY	4-1
4.1	Introduction	4-1
4.2	Water Quality Mitigation Measures	4-1
4.3	Site Inspection	4-3
5.	WASTE MANAGEMENT	5-1
5.1	Introduction	5-1
5.2	Mitigation Measures	5-1
5.3	Site Inspection	5-5
6.	ECOLOGY AND CULTURAL HERITAGE	6-1
6.1	Ecology	6-1
6.2	Cultural Heritage	6-2
7.	ENVIRONMENTAL AUDIT	7-1
7.1	Site Inspections	7-1
7.2	Compliance with Legal and Contractual Requirements	7-1
7.3	Environmental Complaints	7-2
8.	REPORTING	8-1
8.1	General	8-1
8.2	Baseline Monitoring Report	8-1
8.3	EM&A Reports	8-2
8.4	Data Keeping	8-7
8.5	Interim Notifications of Environmental Quality Limit Exceedances	8-8

Annex A1 - Environmental Sensitive Receivers

Annex A2 - Implementation Schedule of Mitigation Measures and Key EM&A Requirements

Annex A3 - Implementation Status Proforma

Annex A4 - TSP Monitoring Data Sheet

Annex A5 - Construction Noise Monitoring Field Record Sheet

Annex A6 - Operational Noise Monitoring Field Record Sheet

Annex A7 - Site Inspection Proforma

Annex A8 - Proactive Environmental Protection Proforma

Annex A9 - Complaint Response Procedures - Action Flow Chart

Annex A10 - Regulatory Compliance Proforma

Annex A11 - Complaint Log

Annex A12 - Incident Report on Action Level or Limit Level Non-Compliances

### LISTS OF TABLES

Table 1.7a	Summary of Environmental Monitoring and Audit Requirements
Table 2.3a	Total Suspended Particulates (TSP) Monitoring Equipment
Table 2.5a	Construction Dust Monitoring Locations
Table 2.8a	Derivation of Action and Limit Levels for 24-Hour Construction Dust Monitoring
Table 2.8b	Derivation of Action and Limit Levels for 1-Hour Construction Dust Monitoring
Table 2.8c	Action and Limit Levels for Construction Dust
Table 2.8d	Event/Action Plan for Construction Dust
Table 2.11a	Tunnel Air Quality Guideline
Table 3.4a	Construction Noise Monitoring Locations
Table 3.7a	Action and Limit Levels for Construction Noise
Table 3.7b	Event/Action Plan for Construction Noise
Table 3.8a	Summary of Proposed Mitigation Measures for Construction Noise
Table 3.12a	Operational Noise Monitoring Locations
Table 3.16a	Action Levels for Operational Phase Traffic Noise
Table 3.16b	Event/Action Plan for Operational Phase Traffic Noise

### LISTS OF FIGURES

Figure 1.1a	General Layout of the Alternative Alignment
Figure 1.4a	Tentative Works Programme
Figure 1.8a	Project Organisation
Figure 2.5(a-b)	Location of Air Quality Monitoring Stations During Construction Phase
Figure 3.4(a-d)	Location of Construction Noise Monitoring Stations
Figure 3.12(a-b)	Location of Operational Noise Monitoring Stations