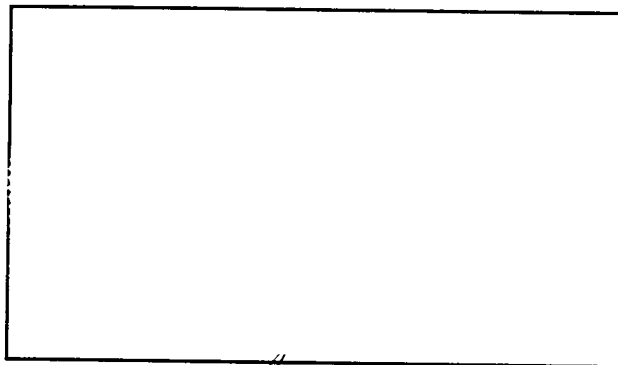


Agreement No. CE 46/96

Feasibility Study on Alternative
Alignment for the Western Coast
Road, TKO : *Environmental Impact
Assessment Report*

27 August 1999

Reference C1609



CONTENTS:

| | | |
|----------|--------------------------------------|------------|
| 1 | INTRODUCTION | 1-1 |
| 1.1 | Preamble | 1-1 |
| 1.2 | Objective of the EIA | 1-2 |
| 1.3 | Study Area | 1-3 |
| 1.4 | Structure of the EIA Report | 1-4 |
| 2 | PROJECT DESCRIPTION | 2-1 |
| 2.1 | Introduction | 2-1 |
| 2.2 | Alignment Option Selection | 2-1 |
| 2.3 | Construction Phase | 2-3 |
| 2.4 | Operation Phase | 2-6 |
| 2.5 | Designated Projects | 2-6 |
| 3 | NOISE | 3-1 |
| 3.1 | Introduction | 3-1 |
| 3.2 | Government Legislation and Standards | 3-2 |
| 3.3 | Baseline Conditions | 3-5 |
| 3.4 | Noise Sensitive Receivers | 3-6 |
| 3.5 | Construction Noise | 3-12 |
| 3.6 | Operational Noise | 3-16 |
| 3.7 | Conclusions | 3-23 |
| 3.8 | EM&A Requirements | 3-24 |
| 4 | AIR QUALITY | 4-1 |
| 4.1 | Introduction | 4-1 |
| 4.2 | Government Legislation and Standards | 4-2 |
| 4.3 | Baseline Conditions | 4-3 |
| 4.4 | Air Sensitive Receivers | 4-4 |
| 4.5 | Construction Phase | 4-5 |
| 4.6 | Operational Phase | 4-9 |
| 4.7 | Conclusions | 4-14 |
| 4.8 | EM&A Requirements | 4-14 |
| 5 | WATER QUALITY | 5-1 |
| 5.1 | Introduction | 5-1 |
| 5.2 | Government Legislation and Standards | 5-1 |
| 5.3 | Baseline Conditions | 5-3 |
| 5.4 | Water Quality Sensitive Receivers | 5-5 |
| 5.5 | Construction Phase | 5-6 |
| 5.6 | Operation Phase | 5-26 |
| 5.7 | Conclusions | 5-31 |
| 5.8 | EM&A Requirements | 5-32 |

| | | |
|-----------|--|-------------|
| 6 | WASTE MANAGEMENT | 6-1 |
| 6.1 | Introduction | 6-1 |
| 6.2 | Government Legislation and Standards | 6-1 |
| 6.3 | Construction Waste Impacts | 6-3 |
| 6.4 | Conclusion | 6-20 |
| 6.5 | Construction Waste EM&A Requirements | 6-21 |
| 7 | ECOLOGY | 7-1 |
| 7.1 | Introduction | 7-1 |
| 7.2 | Government Legislation and Standards | 7-1 |
| 7.3 | Terrestrial Ecology Baseline Conditions | 7-3 |
| 7.4 | Marine Ecology Baseline Conditions | 7-6 |
| 7.5 | Terrestrial Ecology Impact Evaluation | 7-17 |
| 7.6 | Marine Ecology Impact Evaluation | 7-20 |
| 7.7 | Conclusion | 7-31 |
| 7.8 | Environmental Monitoring and Audit | 7-32 |
| 8 | LANDSCAPE AND VISUAL ASSESSMENT | 8-1 |
| 8.1 | Introduction | 8-1 |
| 8.2 | Methodology | 8-1 |
| 8.3 | Existing Landscape Baseline Conditions | 8-4 |
| 8.4 | Existing Visual Baseline Conditions | 8-10 |
| 8.5 | Landscape Impacts Assessment | 8-16 |
| 8.6 | Visual Impact Assessment | 8-20 |
| 8.7 | Mitigation Measures | 8-24 |
| 8.8 | Conclusions | 8-26 |
| 9 | CULTURAL HERITAGE | 9-1 |
| 9.1 | Introduction | 9-1 |
| 9.2 | Legislation and Standards | 9-1 |
| 9.3 | Existing Conditions | 9-1 |
| 9.4 | Cultural Heritage | 9-2 |
| 9.5 | Conclusions | 9-3 |
| 9.6 | Environmental Monitoring and Audit | 9-3 |
| 10 | ENVIRONMENTAL MONITORING AND AUDIT REQUIREMENTS | 10-1 |
| 10.1 | Introduction | 10-1 |
| 10.2 | Objectives of Environmental Monitoring & Audit | 10-1 |
| 10.3 | Noise | 10-1 |
| 10.4 | Air Quality | 10-3 |
| 10.5 | Water Quality | 10-4 |
| 10.6 | Waste Management | 10-6 |
| 10.7 | Ecology | 10-7 |
| 10.8 | Visual and Landscape | 10-7 |
| 10.9 | Cultural Heritage | 10-7 |
| 11 | OVERALL CONCLUSIONS | 11-1 |
| 11.1 | Introduction | 11-1 |

| | | |
|------|----------------------|-------|
| 11.2 | Noise | 11-1 |
| 11.3 | Air Quality | 11-2 |
| 11.4 | Water Quality | 11-2 |
| 11.5 | Waste | 11-4 |
| 11.6 | Ecology | 11-4 |
| 11.7 | Visual and Landscape | 11-7 |
| 11.8 | Cultural Heritage | 11-9 |
| 11.9 | Overall Conclusions | 11-10 |

ANNEX

| | |
|----------|---|
| A | Construction Noise Assessment |
| B | Operational Noise Results |
| C | Water Quality Objectives |
| C | Comparative Water Quality Assessment for TKO Section |
| E | Hydrodynamic and Sediment Plume modelling for Reclamation at Yau Tong |
| F | Area 131 Study Final Laboratory Testing Report and Western Coast Road Dredging of Contaminated Material Report |
| G | Terrestrial Ecology - Plant Species List |
| H | Visual and landscape Figures |
| I | Reprovisioning of FMO Kwun Tong Wholesale Fish Market and CED Maintenance Depot |

FIGURES

- Figure 1.3a WCR Study Area
- Figure 2.2a Preferred Alignment Option for Yau Tong
Figure 2.2b Preferred Alignment Option for TKO Section
Figure 2.3a - 1 Implementation Programme
Figure 2.3a - 2 Implementation Programme
Figure 2.3b Construction Areas
Figure 2.3c TKO Section Reclamation
Figure 2.3d Yau Tong Coastal Reclamation - Phase 1
Figure 2.3e Yau Tong Coastal Reclamation - Phase 2
Figure 2.3f Yau Tong Coastal Reclamation - Phase 3
Figure 2.4a Traffic Figures for the Year 2021
- Figure 3.4a Western Coast Road - Noise Sensitive Receivers (Sheet 1 of 2)
Figure 3.4b Western Coast Road - Noise Sensitive Receivers (Sheet 2 of 2)
Figure 3.4c NSR1 Lei Yue Mun - Noise Assessment Points
Figure 3.4d NSR 2/NSR 3 - Noise Assessment Points
Figure 3.4e NSR 4/NSR 5 - Noise Assessment Points
Figure 3.4f NSR 6 - Yau Tong Bay Development
Figure 3.4g NSR 7 - Noise Assessment Points
Figure 3.4h NSR 8 - Noise Assessment Points
Figure 3.4i NSR 9 - Assessment Points
Figure 3.4j NSR 10 - Noise Assessment Points
Figure 3.5a Construction Areas
Figure 3.6a WCR Classification - Yau Tong
Figure 3.6b WCR Classification - TKO Section
Figure 3.6c Western Coast Road Noise Mitigation (Sheet 1 of 4)
Figure 3.6d Western Coast Road Noise Mitigation (Sheet 2 of 4)
Figure 3.6e Western Coast Road Noise Mitigation (Sheet 3 of 4)
Figure 3.6f Western Coast Road Noise Mitigation (Sheet 4 of 4)
Figure 3.6g 8 m Semi - Enclosure (East Bound Carriageway)
Figure 3.6h Cross Section of 6.8 m SEMI Enclosure (with overhang)
Figure 3.6i WCR Roadside Barriers
Figure 3.6j Cross Section of WCR in Vicinity of Cha Kwo Ling
Figure 3.6k Yau Tong Bay Development Noise Mitigation
- Figure 4.4a WCR, TKO Yau Tong - Air Sensitive Receivers (Sheet 1 of 2)
Figure 4.4b WCR, TKO - Air Sensitive Receivers (Sheet 2 of 2)
Figure 4.4c ASRs - A4
Figure 4.4d ASRs - A5
Figure 4.4e ASRs - A6, A10, A12 & A16
Figure 4.4f ASRs - 7 & 13
Figure 4.4g Yau Tong Bay CDA Site - ASRs A8, A9 & A15
Figure 4.4h Cha Kwo Ling Site - ASRs 11
Figure 4.4i Yau Tong HKHA ASR'S 7 & 17
Figure 4.4j ASR A14
Figure 4.4k ASR A18
Figure 4.6a Cumulative Predicted Maximum Hourly NO₂ Concentration at Ground Level
Figure 4.6b Cumulative Predicted Maximum Hourly NO₂ Concentration at Alignment Level
Figure 4.6c Contour of Hourly NO₂ Concentration Near Noise Enclosure at Ground Level
Figure 4.6d Contour of Hourly NO₂ Concentration Near Noise Enclosure at Alignment Level
Figure 4.6e Contour of Hourly NO₂ Concentration Near Tunnel at Alignment Level
Figure 4.6f Contour of Hourly NO₂ Concentration at Ground Level for Portal Emission
- Figure 5.2a Study Area Boundary and Water Control Zones
Figure 5.3a Location of EPD Monitoring Stations
Figure 5.4a Location of Water Quality Sensitive Receivers

- Figure 5.5a** Location of Sewage Screening Plants in Victoria Harbour
Figure 5.5b Eastern Kowloon SMP - Sub-Catchments
Figure 5.6a Culverts in Submerged Reef
- Figure 7.3a** Terrestrial Habitat Map of the Study Area
Figure 7.3b Habitat Types within the Study Area at Lei Yue Mun Headland of Western Coast Road
Figure 7.3c The Protected Species Chinese New Year Flower *Enkianthus quinqueflorus* Found in the Study Area
Figure 7.3d The Protected Species Bamboo Orchid *Arundina chinensis* Found in the Study Area
Figure 7.3e Black Kite Nest in Orchard Formed Woodland
Figure 7.4a WCR, TKO Section - Intertidal Surveys
Figure 7.6a Location of Habitat Types affected by the Western Coast Road Development
Figure 7.6b Location of Tetrapod Seawalls as Mitigation for Loss of Subtidal Habitat
- Figure 10.3a** WCR, TKO Yau Tong Reclamation Area Construction Noise Monitoring Locations
Figure 10.3b WCR, TKO - Construction Noise Monitoring Locations
Figure 10.3c WCR, TKO Yau Tong Reclamation Area Operational Noise Monitoring Locations
Figure 10.4a WCR, TKO Yau Tong Reclamation Area - Location of Dust Monitoring Stations
Figure 10.5a TKO Section Reclamation - Water Quality Monitoring Stations
Figure 10.5b Yau Tong Coastal Reclamation - Water Quality Monitoring Stations
- Figure 11.9a** Development Constraints for Yau Tong Estate (Phase 5) and Ko Chiu Road Estate (Phase 5)