HIGHWAYS DEPARTMENT MAJOR WORKS PROJECT MANAGEMENT OFFICE

AGREEMENT NO. CE 73/98 INVESTIGATION ASSIGNMENT FOR WIDENING OF TOLO HIGHWAY/FANLING HIGHWAY BETWEEN ISLAND HOUSE INTERCHANGE AND FANLING

ENVIRONMENTAL IMPACT ASSESSMENT FINAL REPORT

MARCH 2000

Volume 2 of 2



in association with

MVA Hong Kong Ltd Enviros Hong Kong Ltd ACL Asia Ltd ERM Hong Kong Ltd

HIGHWAYS DEPARTMENT MAJOR WORKS PROJECT MANAGEMENT OFFICE

AGREEMENT NO. CE 73/98
INVESTIGATION ASSIGNMENT FOR
WIDENING OF TOLO HIGHWAY/FANLING HIGHWAY
BETWEEN ISLAND HOUSE INTERCHANGE AND FANLING

ENVIRONMENTAL IMPACT ASSESSMENT FINAL REPORT

MARCH 2000

Issue and Revision Record

| Rev | Date | Originator | Checked By | Approved By | Description |
|-----|---------|------------------|------------|-------------|-----------------------------|
| A | July 99 | MCL/Enviros/ACLA | H T Cheng | K W Lee | Draft |
| В | Oct 99 | MCL/Enviros/ACLA | T Ishola | K W Lee | Advance Copy of Draft Final |
| C | Dec 99 | MCL/Enviros/ACLA | T Ishola | K W Lee | Draft Final |
| D | Mar 00 | MCL/Enviros/ACLA | H T Cheng | K W Lee | Final |

ENVIRONMENTAL IMPACT ASSESSMENT FINAL REPORT

Contents

Volume 2 of 2

FIGURES

| Figure 1.1 | Location Plan |
|--|---|
| Figure 3.1 | Tolo Harbour Supplementary Water Control Zone |
| Figure 4.1.1 - 4.1.3 Figure 4.2.1 - 4.2.5 Figure 4.3.1 - 4.3.5 Figure 4.4.1 - 4.3.5 Figure 4.5.1 - 4.5.5 Figure 4.6.1 - 4.6.5 Figure 4.7.1 - 4.7.5 Figure 4.8 | Air Sensitive Receiver Locations Hourly NO ₂ Concentration Isopleths at 6 mPD Hourly NO ₂ Concentration Isopleths at 35 mPD Hourly NO ₂ Concentration Isopleths at 64 mPD Daily RSP Concentration Isopleths at 6 mPD Daily RSP Concentration Isopleths at 35 mPD Daily RSP Concentration Isopleths at 64 mPD Plot Areas of Air Pollutant Concentration Isopleths |
| Figure 5.1.1 - 5.1.40 Figure 5.2 Figure 5.3 Figure 5.4.1 - 5.4.7 Figure 5.5.1 - 5.5.7 Figure 5.6.1 - 5.6.5 Figure 5.7.1 - 5.7.4 Figure 5.8 | Noise Sensitive Receiver Locations Phasing of Construction Work NOT USED Background Noise Measurement Results Spot Measurements of the $L_{\text{eq}(5 \text{ min})}$ Noise Levels Proposed Locations of Purpose-Built Noise Barriers During Construction Illustration of "New" and "Existing" Roads for Road Traffic Noise Modelling Noise Barriers Proposed between Island House Interchange and Ma Liu Shui for Widening of Tolo Highway |
| Figure 6.1 Figure 6.2 | Water Quality Sensitive Receivers Proposed River Training Works |
| Figure 8.1.1 - 8.1.6 | The Habitat Map Showing the Tolo Highway/Fanling Highway and the 100m and 500m Study Area |
| Figure 8.2 | Location of Key Important Areas and Habitats Identified During the Baseline Ecological Surveys Utilised by Birds |
| Figure 8.3.1 - 8.3.4 | Location of Point Courts and Numbers of Birds Identified at each site during May to August 1999 |
| Figure 8.4 | Ecological Sensitive Receiver Locations |
| Figure 8.5.1 - 8.5.6 Figure 8.6 | The Impacted Habitat Water Course Sampling Locations |
| Figure 9.1 | Landscape Character and Quality Assessment |
| Figure 9.2a - 9.2b | Landscape Character Photographs |
| Figure 9.3 | Visual Envelope |
| Figure 9.4a - 9.4b Figure 9.5 | Visual Impact Assessment NOT USED |
| Figure 9.5a - 9.6c | Typical Details |
| Figure 9.7 | Photomontage Location Plan |
| Figure 9.8a - 9.8j | Photomontages |
| Figure 10.1 - 10.2 | Extent of Archaeological Monitoring |

Contents (Cont'd)

DRAWINGS

| 551/L/5101 -5109 | Preliminary Landscape Plans |
|-------------------|------------------------------------|
| 551/R/9001 - 9016 | General Layout Plans for EIA Study |
| 551/R/9017 - 9018 | Typical Details of Noise Barriers |

APPENDICES

| Appendix 1.1 | Construction Program | |
|---------------|---|--|
| Appendix 4.1 | Emission Factors | |
| Appendix 4.2 | "CALINE4" Modelling Results Summary | |
| Appendix 4.3 | "CALINE4" Modelling Output Files | |
| Appendix 5.1 | Construction Plant Inventory | |
| Appendix 5.2 | Estimation of Maximum Construction Traffic Flows | |
| Appendix 5.3 | Traffic Flow Forecast supplied by MVA Hong Kong Limited | |
| Appendix 5.4 | Predicted Construction Noise Levels | |
| Appendix 5.5 | Correspondence from MVA Indicating the Worst Traffic Scenario is Year 2020 | |
| Appendix 5.6 | Predicted Traffic Noise Levels | |
| Appendix 5.7 | "siteNoise" (Construction Noise) Input Files Sample | |
| Appendix 5.8 | "roadNoise" Input Files Sample | |
| Appendix 5.9 | Computer Plot of "roadNoise" Model | |
| Appendix 5.10 | Correspondences from Government Department | |
| Appendix 5.11 | Equipment Sound Power Levels Information from Local Suppliers | |
| Appendix 5.12 | 2006 Cross Border Freight Traffic Flows Extracted from the NIA for 24 Hour | |
| A 5 12 | Opening of Border Crossings Final Report August 1996 | |
| Appendix 5.13 | Predicted Year 2006 Cross Border Freight Traffic Noise with the Widened Highways and Proposed Mitigation Measures | |
| Appendix 8.1 | Summary of Freshwater Benthic & Fisheries Surveys | |
| Appendix 8.2 | Photos from Ecological Survey | |
| Appendix 9.1 | Compensatory Planting Proposals | |
| Appendix 10 | Archaeological Impact Assessment Report | |