

CONTENT

| | | |
|----------|--|------------|
| 1 | INTRODUCTION | 1-1 |
| 1.1 | PROJECT BACKGROUND | 1-1 |
| 1.2 | STUDY PROGRAMME | 1-1 |
| 1.3 | OBJECTIVES OF THE EIA STUDY | 1-2 |
| 1.4 | CONSIDERATIONS OF ENVIRONMENTAL IMPACT ASSESSMENT ORDINANCE | 1-4 |
| 1.5 | STRUCTURE OF EIA - FINAL REPORT | 1-5 |
| | | |
| 2 | PROJECT DESCRIPTION | 2-1 |
| 2.1 | PROJECT LOCATION | 2-1 |
| 2.2 | DEVELOPMENT REQUIREMENTS, SCOPE AND BENEFITS | 2-1 |
| 2.3 | STUDY AREA | 2-5 |
| 2.4 | PROJECT DESIGN | 2-6 |
| 2.5 | CONSTRUCTION METHODS AND ENGINEERING REQUIREMENTS | 2-7 |
| 2.6 | OPERATION OF THE PROJECT | 2-11 |
| 2.7 | WORKS PROGRAMME | 2-11 |
| 2.8 | “WITHOUT THE PROJECT” SCENARIO | 2-12 |
| 2.9 | EXISTING ENVIRONMENTAL TRENDS | 2-12 |
| 2.10 | CONCURRENT PROJECTS | 2-12 |
| | | |
| 3 | HYDRODYNAMICS, WATER AND SEDIMENT QUALITY IMPACT | 3-1 |
| 3.1 | INTRODUCTION | 3-1 |
| 3.2 | ENVIRONMENTAL LEGISLATION POLICIES, PLANS, STANDARDS AND CRITERIA | 3-1 |
| 3.3 | DESCRIPTION OF THE ENVIRONMENT | 3-3 |
| 3.4 | ASSESSMENT METHODOLOGIES | 3-14 |
| 3.5 | IDENTIFICATION OF HYDRODYNAMIC, WATER AND SEDIMENT QUALITY IMPACT | 3-29 |
| 3.6 | PREDICTION AND EVALUATION OF HYDRODYNAMICS, WATER AND SEDIMENT QUALITY IMPACT | 3-38 |
| 3.7 | MITIGATION OF ADVERSE ENVIRONMENTAL IMPACTS | 3-69 |
| 3.8 | EVALUATION OF RESIDUAL IMPACTS | 3-81 |
| 3.9 | ENVIRONMENTAL MONITORING AND AUDIT | 3-83 |
| 3.10 | CONCLUSION AND RECOMMENDATIONS | 3-83 |
| | | |
| 4 | NOISE | 4-1 |
| 4.1 | INTRODUCTION | 4-1 |
| 4.2 | ENVIRONMENTAL LEGISLATION AND CRITERIA | 4-1 |
| 4.3 | DESCRIPTION OF THE ENVIRONMENT | 4-6 |
| 4.4 | ASSESSMENT METHODOLOGIES | 4-9 |
| 4.5 | IDENTIFICATION OF ENVIRONMENTAL IMPACTS | 4-15 |
| 4.6 | PREDICTION AND EVALUATION OF ENVIRONMENTAL IMPACTS | 4-18 |

| | | |
|------|---|------|
| 4.7 | <i>MITIGATION OF ADVERSE ENVIRONMENTAL IMPACTS</i> | 4-32 |
| 4.8 | <i>EVALUATION OF RESIDUAL IMPACT</i> | 4-39 |
| 4.9 | <i>ENVIRONMENTAL MONITORING AND AUDIT</i> | 4-48 |
| 4.10 | <i>CONCLUSION</i> | 4-48 |
| | | |
| 5 | <i>AIR QUALITY</i> | 5-1 |
| 5.1 | <i>INTRODUCTION</i> | 5-1 |
| 5.2 | <i>ENVIRONMENTAL LEGISLATION AND CRITERIA</i> | 5-1 |
| 5.3 | <i>BASELINE CONDITIONS</i> | 5-3 |
| 5.4 | <i>ASSESSMENT METHODOLOGIES</i> | 5-4 |
| 5.5 | <i>IDENTIFICATION OF IMPACTS</i> | 5-8 |
| 5.6 | <i>EVALUATION OF IMPACTS</i> | 5-11 |
| 5.7 | <i>MITIGATION MEASURES</i> | 5-15 |
| 5.8 | <i>ENVIRONMENTAL MONITORING AND AUDIT REQUIREMENTS</i> | 5-17 |
| 5.9 | <i>CONCLUSIONS</i> | 5-18 |
| | | |
| 6 | <i>SOLID WASTE MANAGEMENT</i> | 6-1 |
| 6.1 | <i>INTRODUCTION</i> | 6-1 |
| 6.2 | <i>ENVIRONMENTAL LEGISLATION POLICIES, PLANS, STANDARDS AND CRITERIA</i> | 6-1 |
| 6.3 | <i>DESCRIPTION OF THE ENVIRONMENT</i> | 6-4 |
| 6.4 | <i>ASSESSMENT METHODOLOGY</i> | 6-4 |
| 6.5 | <i>IDENTIFICATION OF ENVIRONMENTAL IMPACTS</i> | 6-6 |
| 6.6 | <i>PREDICTION AND EVALUATION OF ENVIRONMENTAL IMPACTS</i> | 6-10 |
| 6.7 | <i>MITIGATION OF ADVERSE ENVIRONMENTAL IMPACT</i> | 6-20 |
| 6.8 | <i>DEFINITION AND EVALUATION OF RESIDUAL ENVIRONMENTAL IMPACTS</i> | 6-28 |
| 6.9 | <i>ENVIRONMENTAL MONITORING AND AUDIT</i> | 6-28 |
| 6.10 | <i>CONCLUSION AND RECOMMENDATIONS</i> | 6-28 |
| | | |
| 7 | <i>LANDSCAPE AND VISUAL IMPACT ASSESSMENT</i> | 7-1 |
| 7.1 | <i>INTRODUCTION</i> | 7-1 |
| 7.2 | <i>GOVERNMENT LEGISLATION AND APPLICABLE STANDARDS</i> | 7-1 |
| 7.3 | <i>LANDSCAPE PLANNING AND DEVELOPMENT REVIEW</i> | 7-2 |
| 7.4 | <i>LANDSCAPE IMPACT ASSESSMENT METHODOLOGY</i> | 7-2 |
| 7.5 | <i>VISUAL IMPACT ASSESSMENT METHODOLOGY</i> | 7-4 |
| 7.6 | <i>MITIGATION MEASURES</i> | 7-6 |
| 7.7 | <i>RESIDUAL IMPACTS</i> | 7-7 |
| 7.8 | <i>PLANNING AND DEVELOPMENT REVIEW</i> | 7-8 |
| 7.9 | <i>EXISTING LANDSCAPE CONTEXT</i> | 7-9 |
| 7.10 | <i>PROPOSED DEVELOPMENT</i> | 7-10 |
| 7.11 | <i>SUMMARY OF SIGNIFICANT LANDSCAPE IMPACTS</i> | 7-13 |
| 7.12 | <i>SUMMARY OF LANDSCAPE IMPACTS RELATED TO SCHEDULE 2 DESIGNATED PROJECTS</i> | 7-13 |
| 7.13 | <i>EXISTING VISUAL CONTEXT</i> | 7-25 |
| 7.14 | <i>SUMMARY OF SIGNIFICANT VISUAL IMPACTS</i> | 7-39 |

| | | |
|------|--|------|
| 7.15 | <i>SUMMARY OF VISUAL IMPACTS RELATED TO SCHEDULE 2 DESIGNATED PROJECTS</i> | 7-69 |
| 7.16 | <i>MITIGATION OF LANDSCAPE AND VISUAL IMPACTS</i> | 7-41 |
| 7.17 | <i>EVALUATION OF RESIDUAL IMPACTS</i> | 7-50 |
| 7.18 | <i>RESIDUAL IMPACTS OF SCHEDULE 2 DESIGNATED PROJECTS</i> | 7-50 |
| 7.19 | <i>ENVIRONMENTAL MONITORING AND AUDIT</i> | 7-54 |
| 7.20 | <i>IMPLEMENTATION, MANAGEMENT AND MAINTENANCE OF LANDSCAPE WORKS</i> | 7-54 |
| 7.21 | <i>SUMMARY OF PUBLIC VIEWS ON LANDSCAPE AND VISUAL ASPECTS</i> | 7-56 |
| 7.22 | <i>SUMMARY</i> | 7-56 |
| 8. | <i>MARINE ECOLOGY</i> | 8-1 |
| 8.1 | <i>INTRODUCTION</i> | 8-1 |
| 8.2 | <i>GOVERNMENT LEGISLATION AND STANDARDS</i> | 8-1 |
| 8.3 | <i>BASELINE CONDITIONS</i> | 8-2 |
| 8.4 | <i>ECOLOGICAL IMPORTANCE</i> | 8-8 |
| 8.5 | <i>MARINE ECOLOGICAL SENSITIVE RECEIVERS</i> | 8-12 |
| 8.6 | <i>POTENTIAL IMPACTS</i> | 8-12 |
| 8.7 | <i>IMPACT EVALUATION</i> | 8-16 |
| 8.8 | <i>MITIGATION MEASURES</i> | 8-17 |
| 8.9 | <i>RESIDUAL IMPACT</i> | 8-18 |
| 8.10 | <i>ENVIRONMENTAL MONITORING AND AUDIT</i> | 8-18 |
| 8.11 | <i>CONCLUSIONS</i> | 8-18 |
| 9 | <i>FISHERIES IMPACT</i> | 9-1 |
| 9.1 | <i>INTRODUCTION</i> | 9-1 |
| 9.2 | <i>GOVERNMENT LEGISLATION AND GUIDELINES</i> | 9-1 |
| 9.3 | <i>BASELINE INFORMATION</i> | 9-2 |
| 9.4 | <i>SENSITIVE RECEIVERS</i> | 9-5 |
| 9.5 | <i>POTENTIAL IMPACTS</i> | 9-5 |
| 9.6 | <i>IMPACT EVALUATION</i> | 9-6 |
| 9.7 | <i>FISHERIES MITIGATION MEASURES</i> | 9-7 |
| 9.8 | <i>RESIDUAL IMPACT</i> | 9-8 |
| 9.9 | <i>FISHERIES MONITORING AND AUDIT REQUIREMENTS</i> | 9-8 |
| 9.10 | <i>CONCLUSION</i> | 9-8 |
| 10 | <i>MARINE ARCHAEOLOGICAL INVESTIGATION</i> | 10-1 |
| 10.1 | <i>INTRODUCTION</i> | 10-1 |
| 10.2 | <i>ENVIRONMENTAL LEGISLATION, POLICIES, STANDARDS AND CRITERIA</i> | 10-1 |
| 10.3 | <i>MARINE ARCHAEOLOGICAL REVIEW AND GEOPHYSICAL SURVEY</i> | 10-2 |
| 10.4 | <i>IDENTIFICATION OF ENVIRONMENTAL IMPACTS</i> | 10-3 |
| 10.5 | <i>PREDICTION AND EVALUATION OF ENVIRONMENTAL IMPACTS</i> | 10-3 |
| 10.6 | <i>CONCLUSION</i> | 10-3 |

| | | |
|-------------|---|--------------|
| 11 | LAND USE IMPACT | 11-1 |
| 11.1 | INTRODUCTION | 11-1 |
| 11.2 | PLANS AND GUIDELINES | 11-1 |
| 11.3 | DESCRIPTION OF THE ENVIRONMENT | 11-2 |
| 11.4 | ASSESSMENT METHODOLOGY | 11-5 |
| 11.5 | POTENTIAL LAND USE IMPACTS UPON IMPLEMENTATION OF THE PROPOSED RECLAMATION AND PROPOSED NEW DEVELOPMENTS | 11-5 |
| 11.6 | MITIGATION MEASURES | 11-8 |
| 11.7 | RESIDUAL IMPACTS | 11-10 |
| 11.8 | CONCLUSION | 11-10 |
| | | |
| 12 | BIOGAS ASSESSMENT | 12-1 |
| 12.1 | INTRODUCTION | 12-1 |
| 12.2 | POTENTIAL SOURCES OF BIOGAS | 12-1 |
| 12.3 | BIOGAS RISK ASSESSMENT CRITERIA | 12-1 |
| 12.4 | ESTIMATION OF LIKELY RATES OF GAS EMISSION | 12-4 |
| 12.5 | SEDIMENT SAMPLING AND TESTING PROGRAMME | 12-6 |
| 12.6 | ESTIMATION OF POTENTIAL GAS EMISSION FROM STD | 12-9 |
| 12.7 | ASSESSMENT OF METHANE HAZARD TO STD | 12-15 |
| 12.8 | CONCLUSIONS | 12-16 |
| 12.9 | RECOMMENDATIONS | 12-16 |
| | | |
| 13 | ENVIRONMENTAL MONITORING AND AUDIT | 13-1 |
| 13.1 | INTRODUCTION | 13-1 |
| 13.2 | HYDRODYNAMICS, WATER AND SEDIMENT QUALITY IMPACT | 13-1 |
| 13.3 | NOISE IMPACT | 13-3 |
| 13.4 | AIR QUALITY IMPACT | 13-3 |
| 13.5 | SOLID WASTE MANAGEMENT | 13-4 |
| 13.6 | VISUAL AND LANDSCAPE IMPACT | 13-5 |
| 13.7 | MARINE ECOLOGICAL AND FISHERIES IMPACT | 13-5 |
| 13.8 | IMPACT OF BIOGAS | 13-5 |
| | TABLE 13.1A IMPLEMENTATION SCHEDULE (NON-DESIGNED PROJECTS) | 13-6 |
| | TABLE 13.2A IMPLEMENTATION FOR RECLAMATION WORKS | 13-21 |
| | TABLE 13.2B IMPLEMENTATION FOR SHAM TSENG BYPASS | 13-36 |
| | TABLE 13.2C IMPLEMENTATION FOR SEWAGE PUMPING STATION | 13-49 |
| | TABLE 13.2D IMPLEMENTATION FOR CASTLE PEAK ROAD UNDERPASS | 13-60 |
| | | |
| 14 | CONCLUSIONS | 14-1 |
| 14.1 | INTRODUCTION | 14-1 |
| 14.2 | HYDRODYNAMICS, WATER AND SEDIMENT QUALITY IMPACT | 14-1 |
| 14.3 | NOISE IMPACT | 14-4 |
| 14.4 | AIR QUALITY IMPACT | 14-5 |
| 14.5 | SOLID WASTE MANAGEMENT | 14-6 |
| 14.6 | VISUAL AND LANDSCAPE IMPACT | 14-7 |

| | | |
|--------------|---|--------------|
| 14.7 | <i>MARINE ECOLOGICAL IMPACT</i> | 14-8 |
| 14.8 | <i>FISHERIES IMPACT</i> | 14-9 |
| 14.9 | <i>MARINE ARCHAEOLOGICAL INVESTIGATION</i> | 14-9 |
| 14.10 | <i>LAND USE IMPACT</i> | 14-9 |
| 14.11 | <i>BIOGAS ASSESSMENT</i> | 14-9 |
| 14.12 | <i>OVERALL CONCLUSION</i> | 14-10 |

ANNEXES (REFER VOLUME 2 OF 2)

ANNEXES

| | |
|----------------|--|
| <i>ANNEX A</i> | <i>RESULTS OF MARINE BOTTOM SEDIMENT ANALYSIS</i> |
| <i>ANNEX B</i> | <i>WATER QUALITY OBJECTIVES AND STANDARDS FOR THE WESTERN BUFFER, VICTORIA HARBOUR PHASE I AND NORTH WESTERN WATER CONTROL ZONES</i> |
| <i>ANNEX C</i> | <i>DERIVATION OF SEDIMENT LOSS RATE AND SETTINGS OF WATER QUALITY MODEL</i> |
| <i>ANNEX D</i> | <i>CONSTRUCTION WATER QUALITY MODELLING RESULTS</i> |
| <i>ANNEX E</i> | <i>OPERATIONAL WATER QUALITY MODELLING RESULTS</i> |
| <i>ANNEX F</i> | <i>PLANT INVENTORY AND CONSTRUCTION NOISE CALCULATION</i> |
| <i>ANNEX G</i> | <i>DETAILS OF NOISE SENSITIVE RECEIVERS AND TRAFFIC NOISE CALCULATION</i> |
| <i>ANNEX H</i> | <i>CHIMNEY DATA, ODOUR STRENGTH INFORMATION AND CONSTRUCTION DUST EMISSION RATE CALCULATION</i> |
| <i>ANNEX I</i> | <i>CONSTRUCTION NOISE, WATER QUALITY AND OPERATIONAL WATER QUALITY ASSESSMENT OF THE PROPOSED NEW 800 MM DIAMETER SEWAGE OUTFALL FROM THE TING KAU AND SHAM TSENG SEWAGE TREATMENT WORKS</i> |
| <i>ANNEX J</i> | <i>MARINE ARCHAEOLOGICAL INVESTIGATION REPORT</i> |