

# Repositioning and Long Term Operation Plan of Ocean Park Environmental Impact Assessment Study

Environmental Monitoring and Audit Manual (Final – Issue 2)

April 2006



**MAUNSELL | AECOM**  
Maunsell Consultants Asia Ltd

**Repositioning and Long Term  
Operation Plan of Ocean Park**

**Environmental Monitoring & Audit Manual**

April 2006

	Name	Signature
Reviewed & Checked:	Dr. Tim Cramp	<i>T. J. Cramp</i>
Approved:	Dr. Tim Cramp	<i>T. J. Cramp</i>

Version:	Final (Issue 2)	Date: 28 April 2006
<p>The information contained in this report is, to the best of our knowledge, correct at the time of printing. The interpretation and recommendations in the report are based on our experience, using reasonable professional skill and judgment, and based upon the information that was available to us. These interpretations and recommendations are not necessarily relevant to any aspect outside the restricted requirements of our brief. This report has been prepared for the sole and specific use of our client and MEMCL accepts no responsibility for its use by others.</p> <p>This report is copyright and may not be reproduced in whole or in part without prior written permission.</p>		

**MAUNSELL ENVIRONMENTAL MANAGEMENT CONSULTANTS LTD**  
 11/F, Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Road, Shatin, NT, Hong Kong  
 Tel: (852) 2893 1551 Fax: (852) 2891 0305 Email: [mem@maunsell.aecom.com](mailto:mem@maunsell.aecom.com)

**TABLE OF CONTENTS**

	Page
<b>1. INTRODUCTION</b> .....	<b>1-1</b>
Project Description .....	1-1
Purpose of the Manual .....	1-2
Project Organisation .....	1-3
<b>2. NOISE</b> .....	<b>2-1</b>
Introduction .....	2-1
Methodology and Criteria .....	2-1
Monitoring Equipment .....	2-1
Monitoring Locations .....	2-1
Baseline Monitoring .....	2-1
Impact Monitoring .....	2-1
Event and Action Plan .....	2-1
Mitigation Measures .....	2-1
<b>3. LANDSCAPE AND VISUAL</b> .....	<b>3-1</b>
Introduction .....	3-1
Monitoring Requirement .....	3-1
Mitigation Measures .....	3-1
<b>4. ECOLOGY</b> .....	<b>4-1</b>
Terrestrial Ecology .....	4-1
Marine Ecology .....	4-1
<b>5. WASTE MANAGEMENT</b> .....	<b>5-1</b>
Introduction .....	5-1
Mitigation Measures .....	5-1
<b>6. LAND CONTAMINATION</b> .....	<b>6-1</b>
Introduction .....	6-1
Land Contamination Assessment .....	6-1
Mitigation Measures during Construction Stage .....	6-1
Mitigation Measures for Remediation Process .....	6-1
<b>7. AIR QUALITY</b> .....	<b>7-1</b>
Introduction .....	7-1
Methodology and Criteria .....	7-1
Monitoring Equipment .....	7-1
Monitoring Locations .....	7-1
Baseline Monitoring .....	7-1
Impact Monitoring .....	7-1
Compliance Assessment .....	7-1
Event and Action Plan .....	7-1
Mitigation Measures .....	7-1
<b>8. WATER QUALITY</b> .....	<b>8-1</b>
Introduction .....	8-1
Site Inspection .....	8-1
Mitigation Measures .....	8-1
<b>9. SEWERAGE AND SEWAGE TREATMENT</b> .....	<b>9-1</b>
Introduction .....	9-1
Monitoring Requirement .....	9-1
Recommendation .....	9-1
<b>10. CULTURAL HERITAGE</b> .....	<b>10-1</b>

	Introduction.....	10-1
	Mitigation Measures before the Construction Phase .....	10-1
	Mitigation Measures during Construction Phase.....	10-1
<b>11.</b>	<b>HAZARD TO LIFE .....</b>	<b>11-1</b>
	Introduction.....	11-1
	Mitigation Measures .....	11-1
	Site Inspection.....	11-1
<b>12.</b>	<b>ENVIRONMENTAL AUDITING .....</b>	<b>12-1</b>
	Site Inspections .....	12-1
	Compliance with Legal and Contractual Requirements .....	12-1
	Environmental Complaints .....	12-1
<b>13.</b>	<b>REPORTING .....</b>	<b>13-1</b>
	General.....	13-1
	Electronic Reporting .....	13-1
	Baseline Monitoring Report.....	13-1
	Monthly EM&A Reports .....	13-1
	Quarterly EM&A Summary Reports .....	13-1
	Final EM&A Review Report.....	13-1
	Operational Phase EM&A Report .....	13-1
	Data Keeping.....	13-1
	Interim Notifications of Environmental Quality Limit Exceedances .....	13-1

### List of Tables

Table 2.1	Acceptable Noise Levels (ANLs) .....	2-1
Table 2.2	Noise Monitoring Stations during Construction Phase .....	2-1
Table 2.3	Noise Monitoring Stations during Operational Phase .....	2-1
Table 2.4	Action and Limit Levels for Construction Noise .....	2-1
Table 2.5	Action and Limit Levels for Entertainment Noise .....	2-1
Table 2.6	Event / Action Plan for Construction Noise.....	2-1
Table 2.7	Event / Action Plan for Entertainment Noise .....	2-1
Table 4.1	Action and Limit Level for Coral Monitoring .....	4-1
Table 4.2	Action and Limit Level Exceedance Procedure for Coral Monitoring .....	4-1
Table 7.1	Air Monitoring Stations during Construction Phase .....	7-1
Table 7.2	Impact Monitoring Programme (TSP) .....	7-1
Table 7.3	Proposed Action and Limit Levels for Impact Monitoring .....	7-1
Table 7.4	Event / Action Plan for Air Quality.....	7-1

### List of Figures

Figure 1.1	Location of the Project Site
Figure 1.2	Project Organisation
Figure 2.1	Locations of Representative Noise Sensitive Receivers
Figure 2.2	Proposed Construction Noise Monitoring Station
Figure 2.3	Proposed Operational Noise Monitoring Station
Figure 4.1	Locations of Proposed Coral Impact Monitoring Station
Figure 7.1	Proposed Air Monitoring Station
Figure 10.1	Area Proposed for Archaeological Survey
Figure 12.1	Environmental Complaint Flow Diagram

**Appendices**

Appendix A	Preliminary Construction Programme
Appendix B	Implementation Schedule of Mitigation Measures
Appendix C	Sample Data Sheets for Air, Noise and Water Quality Monitoring
Appendix D	Sample Template for the Interim Notification