

OSCAR Bioenergy Joint Venture

Contract No. EP/SP/61/10  
Organic Waste Treatment Facilities  
Phase 1:  
*Twenty-fourth Monthly EM&A  
Report*

1 May 2017 - 31 May 2017

**Environmental Resources Management**

16/F, Berkshire House,  
25 Westlands Road,  
Quarry Bay, Hong Kong  
Telephone: (852) 2271 3000  
Facsimile: (852) 2723 5660  
E-mail: [post.hk@erm.com](mailto:post.hk@erm.com)  
<http://www.erm.com>

Meinhardt Infrastructure and Environment Limited

**Organic Waste Treatment Facilities,  
Phase I**

Monthly EM&A Report  
(1 May 2017 – 31 May 2017)

(June 2017)

Verified by:           Helen Cochrane           

Position: Independent Environmental Checker




Date:           9 Jun. 2017

OSCAR Bioenergy Joint Venture

Contract No. EP/SP/61/10  
Organic Waste Treatment Facilities  
Phase 1:  
*Twenty-fourth Monthly EM&A  
Report*

1 May 2017 - 31 May 2017

Reference 0279222

For and on behalf of ERM-Hong Kong, Limited	
Approved by:	Frank Wan
Signed:	
Position:	Partner
Certified by:	 (Environmental Team Leader - Mandy To)
Certified by:	 (Registered Landscape Architect No. R-150 - Albert Chung)
Date:	8 June 2017

# CONTENTS

## EXECUTIVE SUMMARY

1	<b>INTRODUCTION</b>	1
1.1	<b>PURPOSE OF THE REPORT</b>	1
1.2	<b>STRUCTURE OF THE REPORT</b>	1
2	<b>PROJECT INFORMATION</b>	3
2.1	<b>BACKGROUND</b>	3
2.2	<b>GENERAL SITE DESCRIPTION</b>	3
2.3	<b>CONSTRUCTION ACTIVITIES</b>	4
2.4	<b>PROJECT ORGANISATION AND MANAGEMENT STRUCTURE</b>	4
2.5	<b>STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS</b>	4
3	<b>ENVIRONMENTAL MONITORING REQUIREMENT, ENVIRONMENTAL MITIGATION MEASURES</b>	6
4	<b>IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS</b>	7
5	<b>WASTE MANAGEMENT</b>	8
6	<b>ENVIRONMENTAL INSPECTIONS</b>	9
6.1	<b>WEEKLY SITE AUDITS</b>	9
6.2	<b>LANDSCAPE AND VISUAL AUDIT</b>	10
7	<b>ENVIRONMENTAL NON-CONFORMANCE</b>	11
7.1	<b>SUMMARY OF ENVIRONMENTAL NON-COMPLIANCE</b>	11
7.2	<b>SUMMARY OF ENVIRONMENTAL COMPLAINT</b>	11
7.3	<b>SUMMARY OF ENVIRONMENTAL SUMMON AND SUCCESSFUL PROSECUTION</b>	11
8	<b>FUTURE KEY ISSUES</b>	12
8.1	<b>KEY ISSUES FOR THE COMING MONTH</b>	12
8.2	<b>CONSTRUCTION PROGRAMME</b>	12
9	<b>CONCLUSIONS</b>	13

## *LIST OF TABLES*

<i>TABLE 2.1</i>	<i>SUMMARY OF CONSTRUCTION ACTIVITIES UNDERTAKEN IN THE REPORTING PERIOD</i>
<i>TABLE 2.2</i>	<i>SUMMARY OF ENVIRONMENTAL LICENSING, NOTIFICATION AND PERMIT STATUS</i>
<i>TABLE 5.1</i>	<i>QUANTITIES OF WASTE GENERATED FROM THE PROJECT</i>
<i>TABLE 8.1</i>	<i>CONSTRUCTION WORKS TO BE UNDERTAKEN IN THE NEXT REPORTING PERIOD</i>

## *LIST OF ANNEXES*

<i>ANNEX A</i>	<i>LOCATION OF PROJECT</i>
<i>ANNEX B</i>	<i>WORKS LOCATION</i>
<i>ANNEX C</i>	<i>CONSTRUCTION PROGRAMME FOR THE PROJECT</i>
<i>ANNEX D</i>	<i>PROJECT ORGANIZATION CHART AND CONTACT DETAIL</i>
<i>ANNEX E</i>	<i>IMPLEMENTATION SCHEDULE OF MITIGATION MEASURES</i>
<i>ANNEX F</i>	<i>WASTE FLOW TABLE</i>
<i>ANNEX G</i>	<i>ENVIRONMENTAL COMPLAINT, ENVIRONMENTAL SUMMONS AND PROSECUTION LOG</i>

## EXECUTIVE SUMMARY

The construction works of *No. EP/SP/61/10 Organic Waste Treatment Facilities Phase I (the Project)* commenced on 21 May 2015. This is the 24<sup>th</sup> monthly Environmental Monitoring and Audit (EM&A) report presenting the EM&A works carried out during the period from 1 to 31 May 2017 in accordance with the EM&A Manual.

### Summary of Construction Works undertaken during the Reporting Month

Works undertaken in the reporting month included:

- Building 1 - ABWF and finishing work for steel roof & covered walkway. CAPCS stack structural steelwork, E&M & BS installation.
- Building 2 - ABWF and finishing work, installation of GRP ductwork at roof, E&M & BS installation.
- Building 3 - ABWF and finishing work, Electrical and BS installation.
- Link bridge steelwork.
- Weighbridge control room structure.
- Collection chamber 1, Primary Sedimentation Tank & Int. Pump Sump construction, backfilling.
- NTH mitigation works on slope.
- AD Tank - Piping work.
- Biogas holder installation.
- Pipe rack and cable rack installation.
- Ammonia Stripping Plant -mechanical and electrical work.
- Electrical installation (cable trays, MCC and Local Control panels installation, general cabling works, cable pulling and energization of Building 1 & 3 MCC rooms).
- Sitewide - Underground drainage and drawpit work, water pipe, boundary fence wall construction.
- Portion 4 - Material handling and storage.
- Dismantle of tower crane, excavation for footing of store room.

### Environmental Monitoring and Audit Progress

A summary of the monitoring activities undertaken in this reporting period is listed below:

- |                                       |         |
|---------------------------------------|---------|
| • Joint Environmental Site Inspection | 5 times |
| • Landscape & Visual Monitoring       | 3 times |

### Waste Management

Waste generated from this Project includes inert construction and demolition (C&D) materials (public fill) and non-inert C&D materials (construction wastes).

Inert C&D materials (public fill) include bricks, concrete, building debris, rubble and excavated spoil. In total, 388.82 tonnes of inert C&D material were generated from the Project, of which 211.00 tonnes were reused in this Contract. The 177.82 tonnes of inert C&D material were disposed of as public fill to the Fill Banks at Tuen Mun Area 38.

Non-inert C&D materials (construction wastes) include metals, paper / cardboard packaging waste, plastics and other wastes such as general refuse. 1,090.00 kg of metals, 64.00 kg of papers/ cardboard packing and 0.00 kg of plastics were sent to recyclers for recycling during the reporting period. 109.10 tonnes of general refuse was disposed of at the landfill.

0.00 L of chemical waste was collected by licenced waste collector.

### Environmental Site Inspection

Five weekly joint environmental site inspections were carried out by the representatives of the Contractor, SOR and the Environmental Team (ET). The IEC was also present at the joint inspection on 18 May 2017. Details of the audit findings and implementation status of the mitigation measures are presented in *Section 6.1*.

### Landscape & Visual

Onsite inspections on landscape and visual mitigation measures were performed on 2, 16 and 30 May 2017. Details of the audit findings and implementation status of the mitigation measures are presented in *Sections 6.2*.

### Environmental Exceedance/Non-conformance/Compliant/Summons and Prosecution

No exceedance was recorded during the reporting period.

No non-compliance event was received during the reporting period.

No environmental complaint and summon/prosecution was received in this reporting period.

### Future Key Issues

Works to be undertaken in the next reporting month include:

- Building 1 - ABWF and finishing work for steel roof & covered walkway. CAPCS stack structural steelwork, E&M & BS installation.
- Building 2 - ABWF and finishing work, installation of GRP ductwork at roof, E&M & BS installation.
- Building 3 - ABWF and finishing work, Electrical and BS installation.
- Link bridge steelwork.
- Weighbridge control room structure.
- Collection chamber 1, Primary Sedimentation Tank & Int. Pump Sump construction, backfilling.
- NTH mitigation works on slope.
- AD Tank - Piping work.
- Biogas holder installation.
- Pipe rack and cable rack installation.
- Ammonia Stripping Plant -mechanical and electrical work.
- Electrical installation (cable trays, MCC and Local Control panels installation, general cabling works, cable pulling and energization of Building 1 & 3 MCC rooms).
- Sitewide - Underground drainage and drawpit work, water pipe, boundary fence wall construction.

- Portion 4 - Material handling and storage.
- Dismantle of tower crane, excavation for footing of store room.

Environmental impacts arising from the above construction activities are mainly associated with dust, construction noise, site runoffs, waste management and landscaping issues.



# 1 INTRODUCTION

ERM-Hong Kong, Limited (ERM) was appointed by OSCAR Bioenergy Joint Venture (the Contractor) as the Environmental Team (ET) to undertake the Environmental Monitoring and Audit (EM&A) programme for the *Contract No. EP/SP/61/10 of Organic Waste Treatment Facilities Phase I (the Project)*.

## 1.1 PURPOSE OF THE REPORT

This is the 24<sup>th</sup> EM&A report which summarises the monitoring results and audit findings for the EM&A programme during the reporting period from 1 to 31 May 2017.

## 1.2 STRUCTURE OF THE REPORT

The structure of the report is as follows:

### Section 1: **Introduction**

It details the scope and structure of the report.

### Section 2: **Project Information**

It summarises the background and scope of the Project, site description, project organization, construction programme, construction works undertaken and status of the Environmental Permits (EP)/licences over the construction phase of the Project.

### Section 3: **Environmental Monitoring Requirements**

It summarises the environmental monitoring requirements including monitoring parameters, programmes, methodologies, frequency, locations, Action and Limit Levels, Event/ Action Plans, environmental mitigation measures as recommended in the EM&A Manual and approved EIA report.

### Section 4: **Implementation Status on Environmental Mitigation Measures**

It summarises the implementation of environmental protection measures during the reporting period.

### Section 5: **Waste Management**

It summarises the quantity of public fill and construction waste generated in the reporting period

### Section 6: **Environmental Site Inspection**

It summarises the audit findings of the weekly site inspections undertaken within the reporting period.

### Section 7: **Environmental Non-conformance**

It summarises any exceedance of environmental performance standard, environmental complaints and summons received within the reporting period.

Section 8: **Further Key Issues**

It summarises the impact forecast and monitoring schedule for the next reporting month.

Section 9: **Conclusions**

**2.1****BACKGROUND**

The Organic Waste Treatment Facilities (OWTF) Phase I development (hereinafter referred to as “the Project”) is to design, construct and operate a biological treatment facility with a capacity of about 200 tonnes per day and convert source-separated organic waste from commercial and industrial sectors (mostly food waste) into compost and biogas through proven biological treatment technologies.

The environmental acceptability of the construction and operation of the Project had been confirmed by findings of the associated Environmental Impact Assessment (EIA) Study completed in 2009. The Director of Environmental Protection approved this EIA Report under the Environmental Impact Assessment Ordinance (EIAO) (Cap. 499) in February 2010 (Register No.: AEIAR-149/2010) (hereafter referred to as the approved EIA Report). Subsequent Report on Re-assessment on Environmental Implications and Report on Re-assessment on Hazard to Life Implications were completed in 2013, respectively.

An Environmental Permit (EP) (No. EP-395/2010) was issued by the Environmental Protection Department (EPD) to the EPD, the Permit Holder, on 21 June 2010 and varied on 18 March 2013 (No. EP-395/2010/A) and 21 May 2013 (No. EP-395/2010/B), respectively. The Design Build and Operate Contract for the OWTF (Contract No. EP/SP/61/10 Organic Waste Treatment Facilities Phase I (the Contract)) was awarded to SITA Waste Services Limited, ATAL Engineering Limited and Ros-Roca, Sociedad Anonima jointly trading as the OSCAR Bioenergy Joint Venture (OSCAR or the Contractor). A Further EP (No. FEP-01/395/2010/B) was issued by the EPD to the OSCAR on 16 February 2015. Variation to both EPs No. EP-395/2010/B and No. FEP-01/395/2010/B were made in December 2015. The latest EPs, No. EP-395/2010/C and No. FEP-01/395/2010/C, were issued by the EPD on 21 December 2015.

Under the requirements of Condition 5 of the EP (No. FEP-01/395/2010/C), an Environmental Monitoring and Audit (EM&A) programme as set out in the Agreement No. CE7/2008 (EP) EM&A Manual (hereinafter referred to as EM&A Manual) is required to be implemented. ERM-Hong Kong, Ltd (ERM) has been appointed by OSCAR as the Environmental Team (ET) to undertake the EM&A programme for the Contract.

The construction works commenced on 21 May 2015 and are scheduled for completion by April 2017.

**2.2****GENERAL SITE DESCRIPTION**

The Project Site is located at Siu Ho Wan in North Lantau with an area of about 2 hectares. The layout of the Project Site is illustrated in *Annex A*.

## 2.3 CONSTRUCTION ACTIVITIES

A summary of the major construction activities undertaken in the reporting period is shown in *Table 2.1*. The locations of the construction activities are shown in *Annex B*. The construction programme of the Project is presented in *Annex C*.

**Table 2.1** *Summary of Construction Activities Undertaken in the Reporting Period*

<b>Construction Activities Undertaken</b>	
•	Building 1 - ABWF and finishing work for steel roof & covered walkway. CAPCS stack structural steelwork, E&M & BS installation.
•	Building 2 - ABWF and finishing work, installation of GRP ductwork at roof, E&M & BS installation.
•	Building 3 - ABWF and finishing work, Electrical and BS installation.
•	Link bridge steelwork.
•	Weighbridge control room structure.
•	Collection chamber 1, Primary Sedimentation Tank & Int. Pump Sump construction, backfilling.
•	NTH mitigation works on slope.
•	AD Tank - Piping work.
•	Biogas holder installation.
•	Pipe rack and cable rack installation.
•	Ammonia Stripping Plant -mechanical and electrical work.
•	Electrical installation (cable trays, MCC and Local Control panels installation, general cabling works, cable pulling and energization of Building 1 & 3 MCC rooms).
•	Sitewide - Underground drainage and drawpit work, water pipe, boundary fence wall construction.
•	Portion 4 - Material handling and storage.
•	Dismantle of tower crane, excavation for footing of store room.

## 2.4 PROJECT ORGANISATION AND MANAGEMENT STRUCTURE

The project organisation chart and contact details are shown in *Annex D*.

## 2.5 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS

A summary of the valid permits, licences, and/or notifications on environmental protection for this Project is presented in *Table 2.2*.

**Table 2.2** *Summary of Environmental Licensing, Notification and Permit Status*

<b>Permit/ Licences/ Notification</b>	<b>Reference</b>	<b>Validity Period</b>	<b>Remarks</b>
Environmental Permit	FEP-01/395/2010/C	Throughout the Contract	Permit granted on 21 December 2015
Notification of Construction Works under the Air Pollution Control (Construction Dust) Regulation	Ref No. 386715	Throughout the Contract	-
Effluent Discharge License	WT00021482-2015	21 May 2015 - 31 May 2020	Approved on 21 May 2015

<b>Permit/ Licences/ Notification</b>	<b>Reference</b>	<b>Validity Period</b>	<b>Remarks</b>
Construction Noise Permit - P1&P2	GW-RW0678-16	12 December 2016 - 11 June 2017	Approved on 2 December 2016
Construction Noise Permit - P3	GW-RW0628-16	1 December 2016 - 31 May 2017	Approved on 8 November 2016
Chemical Waste Producer Registration	WPN 5213-961-02231-01	Throughout the Contract	Approved on 29 April 2015
Waste Disposal Billing Account	Account number: 702310	Throughout the Contract	-

***ENVIRONMENTAL MONITORING REQUIREMENT, ENVIRONMENTAL MITIGATION MEASURES***

All the relevant environmental mitigation measures listed in the EIA Report and EM&A Manual are summarised in *Annex E*.

According to the EM&A Manual and EP requirement, no air quality, noise and water quality monitoring is required.

Bi-weekly landscape and visual audit is required to ensure that the design, implementation and maintenance of landscape and visual mitigation measures recommended in the EIA Report are fully achieved.

**IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION  
REQUIREMENTS**

The Contractor has implemented environmental mitigation measures and requirements as stated in the approved EIA Report and EM&A Manual. The implementation status of the measures during the reporting period is summarised in *Annex E*.

Wastes generated from this Project include inert construction and demolition (C&D) materials (public fill) and non-inert C&D materials (construction waste). Construction waste comprises general refuse, metals and paper/cardboard packaging materials. Metals generated from the Project are also grouped into construction waste as the materials were not disposed of with others at public fill. Reference has been made to the Monthly Summary Waste Flow Table prepared by the Contractor (see *Annex F*). With reference to the relevant handling records and trip tickets of this Project, the quantities of different types of waste generated in the reporting month are summarised in *Table 5.1*.

**Table 5.1** *Quantities of Waste Generated from the Project*

Month/Year	Quantity			
	Total Inert C&D Materials Generated <sup>(a)</sup>	Non-inert C&D Materials <sup>(b)</sup>		
		C&D Materials Recycled <sup>(c)</sup>	C&D Waste Disposed of at Landfill <sup>(d)</sup>	Chemical Waste
May 2017	388.82 tonnes	1,154.00 kg	109.10 tonnes	0.00 L

**Notes:**

- Inert C&D materials (public fill) include bricks, concrete, building debris, rubble and excavated spoil. In total, 388.82 tonnes of inert C&D material were generated from the Project, of which 211.00 tonnes were reused in this Contract and the 177.82 tonnes were disposed as public fill to the Fill Bank at Tuen Mun Area 38. The detailed waste flow is presented in *Annex F*.
- Non-inert C&D materials (construction wastes) include metals, paper / cardboard packaging waste, plastics and other wastes such as general refuse. Metals generated from the Project were grouped into construction wastes as the materials were not disposed of with others at the public fill.
- 1,090.00 kg of metals, 64.00 kg of papers/ cardboard packing and 0.00 kg of plastics were sent to recyclers for recycling during the reporting period.
- Construction wastes other than metals, paper/cardboard packaging, plastics and chemicals were disposed of at NENT Landfill by subcontractors.



## 6.1 WEEKLY SITE AUDITS

Joint site inspections were conducted by representatives of the Contractor, the ER, IC and the ET on 5, 8, 18 22 and 29 May 2017. The IEC was also present at the joint inspection on 18 May 2017. Follow-up actions resulting from the last site inspections were generally taken as reported by the Contractor.

Key observations during the reporting period are summarised as follows:

*5 May 2017*

- Aggregates without any side enclosure and covering were observed on the roof of Building 1 and the contractor was reminded to cover the aggregates or remove them.
- Chemical containers without drip tray were observed on the roof of Building 1 and the contractor was reminded to provide trip tray or remove the used-up containers to designated area according to the Code of Practice.

*8 May 2017*

- Dusty material without covering was observed on the roof of Building 1 and the contractor was reminded to provide impervious cover to the dusty material.
- The contractor was reminded to provide water inlet caps of water filling road barriers to prevent mosquito breeding.

*18 May 2017*

- Chemical container was observed without drip tray on Building 1 roof and the contractor was reminded to provide drip tray to the container or remove the container to the designed area according to the Code of Practice.
- Oil stain was observed near the second vehicle entrance and the contractor was reminded to clean the oil stain and dispose of as chemical waste.

*22 May 2017*

- White water was observed near Building 1 and the contractor was reminded to clean the white water.

*29 May 2017*

- Chemical containers without trip tray were observed near the staff entrance and first vehicle entrance and the contractor was reminded to remove the containers to designated area according to the Code of

Practice.

## 6.2

### *LANDSCAPE AND VISUAL AUDIT*

In accordance with the EM&A Manual, bi-weekly landscape and visual inspection is required to ensure that the design, implementation and maintenance of landscape and visual mitigation measures recommended in the EIA Report are fully achieved. Onsite inspections of the landscape and visual mitigation measures were performed on 2, 16 and 30 May 2017.

It was confirmed that the necessary landscape and visual mitigation measures as summarised in *Annex E* were generally implemented by the Contractor. No specific observation was found during site inspection on 2, 16 and 30 May 2017.

## 7 ENVIRONMENTAL NON-CONFORMANCE

### 7.1 SUMMARY OF ENVIRONMENTAL NON-COMPLIANCE

No non-compliance was received during the reporting period.

### 7.2 SUMMARY OF ENVIRONMENTAL COMPLAINT

No complaint was received during the reporting period. The cumulative environmental complaint log is shown in *Annex G*.

### 7.3 SUMMARY OF ENVIRONMENTAL SUMMON AND SUCCESSFUL PROSECUTION

No summon/prosecution was received during the reporting period. The cumulative summons/prosecution log is shown in *Annex G*.

### 8.1 KEY ISSUES FOR THE COMING MONTH

Works to be undertaken for the coming monitoring period are summarised in *Table 8.1*.

**Table 8.1 Construction Works to be undertaken in the Next Reporting Period**

<b>Construction Activities Undertaken</b>
<ul style="list-style-type: none"> <li>• Building 1 – structure for store room, ABWF and finishing work, cladding work for steel roof, covered walkway and CAPCS stack, external wall cladding &amp; painting, E&amp;M &amp; BS installation.</li> <li>• Building 2 – ABWF and finishing work, installation of GRP ductwork at roof, E&amp;M &amp; BS installation.</li> <li>• Building 3 – ABWF and finishing work, E&amp;M and BS installation.</li> <li>• Link bridge steelwork and cladding.</li> <li>• Weighbridge control room structure, guard house and water meter cabinet structure.</li> <li>• Conical tank footing construction.</li> <li>• NTH mitigation works on slope.</li> <li>• AD Tank – Piping work</li> <li>• Biogas holder installation.</li> <li>• Pipe rack and cable rack installation, piping work.</li> <li>• Ammonia Stripping Plant –mechanical and electrical work.</li> <li>• Electrical installation (cable trays, Local Control panels/switch installation, general cabling works, instrumentation and control installation, lighting installation)</li> <li>• Sitewide – Underground drainage, drawpit and catchpit work, water pipe, boundary fence wall construction, roadworks.</li> <li>• Portion 4 – Material handling and storage.</li> </ul>

Potential environmental impacts arising from the above construction activities will be mainly associated with dust, construction noise, site runoffs, waste management and landscaping issues.

### 8.2 CONSTRUCTION PROGRAMME

The most up-to-date construction programme for the Project is presented in *Annex C*.

## CONCLUSIONS

This EM&A Report presents the EM&A programme undertaken during the reporting period from 1 to 31 May 2017 in accordance with EM&A Manual and requirements of EP (FEP-01/395/2010/C).

No air quality, noise and water quality monitoring is required.

Bi-weekly landscape and visual monitoring was conducted in the reporting period. The necessary landscape and visual mitigation measures recommended in the EIA Report were generally implemented by the Contractor.

No non-compliance event was received during reporting period.

No complaint and summons/prosecution was received during the reporting period.

The ET will keep track of the EM&A programme to ensure compliance of environmental requirements and the proper implementation of all the necessary mitigation measures in the coming periods.