

OSCAR Bioenergy Joint Venture

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

1 December 2016 – 31 December 2016

Environmental Resources Management

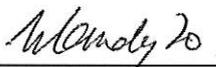
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Organic Waste Treatment Facilities
Phase 1:
Nineteenth Monthly EM&A Report

1 December 2016 – 31 December 2016

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:	10 January 2017

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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 19th EM&A report which summarises the monitoring results and audit findings for the EM&A programme during the reporting period from 1 to 31 December 2016.

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*

Construction Activities Undertaken
<ul style="list-style-type: none"> • Building 1 – superstructure works, defect rectification and ABWF works. • Building 2 – ABWF and finishing work, covered walkway cladding and ABWF, Electrical and BS installation work. • Building 3 – ABWF, Electrical and BS installation inside rooms at G/F. • Erect link bridge structural steelwork. • Weighbridge structure excavation and construction. • Preparation for NTH mitigation works on slope. • Boundary wall (3m high) and boundary fence wall construction. • AD Tank – Cladding to AD2, water filling and testing to AD 3 and SBT. Scaffolding to AD3. ABWF and pump installation to pump rooms. Pipe rack plinths construction. • Biogas Holder & Plant Area –erection of De-sulphurisation tank 1 & 2. • Ammonia Stripping Plant –structural steel and mechanical erection work. • Mechanical installation (pre-treatment equipment, CAPCS - chemical scrubber) at Building 1. • Mechanical installation (composting equipment) inside pipe gallery at Building 2. • Sitewide – Underground drainage and drawpit work. • Portion 2 – temp. traffic arrangement, pavement and roadworks. • Portion 4 – Material handling and storage, steel bending & cutting.

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*

Permit/ Licences/ Notification	Reference	Validity Period	Remarks
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

Permit/ Licences/ Notification	Reference	Validity Period	Remarks
Construction Noise Permit - P1&P2	GW-RW0483-16	12 September 2016 - 11 December 2016	Approved on 22 August 2016
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- O2231-01	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 ^(a)	Non-inert C&D Materials ^(b)		
		C&D Materials Recycled ^(c)	C&D Waste Disposed of at Landfill ^(d)	Chemical Waste
December 2016	2,477.95 tonnes	3,053.00 kg	1,988.95 tonnes	0.00 L

Notes:

- (a) Inert C&D materials (public fill) include bricks, concrete, building debris, rubble and excavated spoil. In total, 2,477.95 tonnes of inert C&D material were generated from the Project, of which 489.00 tonnes were reused in this Contract and the 1,988.95 tonnes were disposed as public fill to the Fill Bank at Tuen Mun Area 38. The detailed waste flow is presented in *Annex F*.
- (b) 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.
- (c) 2,960.00 kg of metals, 93.00 kg of papers/ cardboard packing and 0.00 kg of plastics were sent to recyclers for recycling during the reporting period.
- (d) 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, 12, 21 and 28 December 2016. The IEC was also present at the joint inspection on 21 December 2016. 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 December 2016

- Oil leakage was observed within building 1 area and the contractor was reminded to clean the ground and provide properly maintenance for the plant.
- General refuse not stored in unclosed bins was observed within the building 1 area and the contractor was reminded to remove the refuse.
- Used-up chemical container was observed within the building 1 area and the contractor was reminded to move the container to chemical waste collection area for further disposal.

12 December 2016

- Chemical containers without drip tray were observed within the building 1 area and the contractor was reminded to provide trip tray and remove the used-up chemical containers.
- General refuse was observed not stored in enclosed bins or compaction units near AD tank area and the contractor was reminded to remove the refuse.

21 December 2016

- Chemical containers without drip tray were observed within building 2, near main staff entrance and in the chemical storage area. The contractor was reminded to provide trip trays or remove the used-up chemical containers.
- Oil leakage was observed within building 3 area and the contractor was reminded to clean the ground and provide properly maintenance for the plant.
- The contractor was reminded to remove the excess water in the wheel washing facility to avoid overflow of the waste water.

28 December 2016

- Chemical containers without drip tray were observed near AD tank area

and the contractor was reminded to provide trip trays and remove the used-up chemical containers.

- General refuse was observed not stored in enclosed bins or compaction units near AD tank area and the contractor was reminded to remove the refuse.
- Oil leakage was observed within building 3 area and the contractor was reminded to clean the ground and provide properly maintenance for the plant.
- The contractor was reminded to provide impervious cover for the dusty material near AD tank.

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 5 and 19 December 2016.

Follow-up actions resulting from the last site inspections were taken as reported by the Contractor and their results were observed in the site inspections conducted in the reporting period.

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 5 and 19 December 2016.

7 ENVIRONMENTAL NON-CONFORMANCE

7.1 SUMMARY OF ENVIRONMENTAL NON-COMPLIANCE

No non-compliance was received during the reporting period.

The non-compliance event of inappropriate wastewater discharge identified by EPD during August 2016 had been investigated and the agreed remedial works and follow-up actions has been completed by the Contractor on 10 January 2017. The contractor was reminded to ensure proper maintenance of the bund.

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*

Construction Activities Undertaken
<ul style="list-style-type: none"> • Building 1 – superstructure works, defect rectification and ABWF works, E&M installation. • Building 2 – ABWF and finishing work, covered walkway cladding and ABWF, installation of GRP ductwork at roof, E&M installation. • Building 3 – ABWF, Electrical and BS installation inside rooms at G/F & 1/F. • Link bridge cladding & ABWF. • Weighbridge and control room structure. • Collection chamber 1, Conical tank footing, primary sedimentation tank and int. pump sump excavation and construction. • NTH mitigation works on slope. • Boundary fence wall construction. • AD Tank –Water filling and testing to AD 3. Cladding to AD3 & SBT. ABWF and pump installation to pump rooms. Pipe rack construction. • Ammonia Stripping Plant –structural steel and mechanical erection work. • CHP pipework and accessories installation. • Mechanical installation (pre-treatment equipment, CAPCS - chemical scrubber & Fan, pumps & pipework) at Building 1. • Mechanical installation (composting equipment) inside pipe gallery at Building 2. • Electrical installation (cable trays installation, B2 MCC panels installation,, B3 cables installation) • Sitewide – Underground drainage and drawpit work. • Portion 2 – temp. traffic arrangement, pavement and roadworks. • Portion 4 – Material handling and storage, steel bending & cutting..

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 December 2016 to 31 December 2016 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.

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 19th monthly Environmental Monitoring and Audit (EM&A) report presenting the EM&A works carried out during the period from 1 December 2016 to 31 December 2016 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 – superstructure works, defect rectification and ABWF works.
- Building 2 – ABWF and finishing work, covered walkway cladding and ABWF, Electrical and BS installation work.
- Building 3 – ABWF, Electrical and BS installation inside rooms at G/F.
- Erect link bridge structural steelwork.
- Weighbridge structure excavation and construction.
- Preparation for NTH mitigation works on slope.
- Boundary wall (3m high) and boundary fence wall construction.
- AD Tank – Cladding to AD2, water filling and testing to AD 3 and SBT. Scaffolding to AD3. ABWF and pump installation to pump rooms. Pipe rack plinths construction.
- Biogas Holder & Plant Area –erection of De-sulphurisation tank 1 & 2.
- Ammonia Stripping Plant –structural steel and mechanical erection work.
- Mechanical installation (pre-treatment equipment, CAPCS - chemical scrubber) at Building 1.
- Mechanical installation (composting equipment) inside pipe gallery at Building 2.
- Sitewide – Underground drainage and drawpit work.
- Portion 2 – temp. traffic arrangement, pavement and roadworks.
- Portion 4 – Material handling and storage, steel bending & cutting.

Environmental Monitoring and Audit Progress

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

- | | |
|---------------------------------------|---------|
| • Joint Environmental Site Inspection | 4 times |
| • Landscape & Visual Monitoring | 2 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, 2,477.95 tonnes of inert C&D material were generated from the Project, of which 489.00 tonnes were reused in this

Contract. The 1,988.95 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. 2,960.00 kg of metals, 93.00 kg of papers/ cardboard packing and 0.00 kg of plastics were sent to recyclers for recycling during the reporting period. 136.80 tonnes of general refuse was disposed as landfill.

0.00 L of chemical waste was collected by licenced waste collector and sent to West New Territories (WENT) Landfill.

Environmental Site Inspection

Four 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 21 December 2016. 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 5 and 19 December 2016. 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:

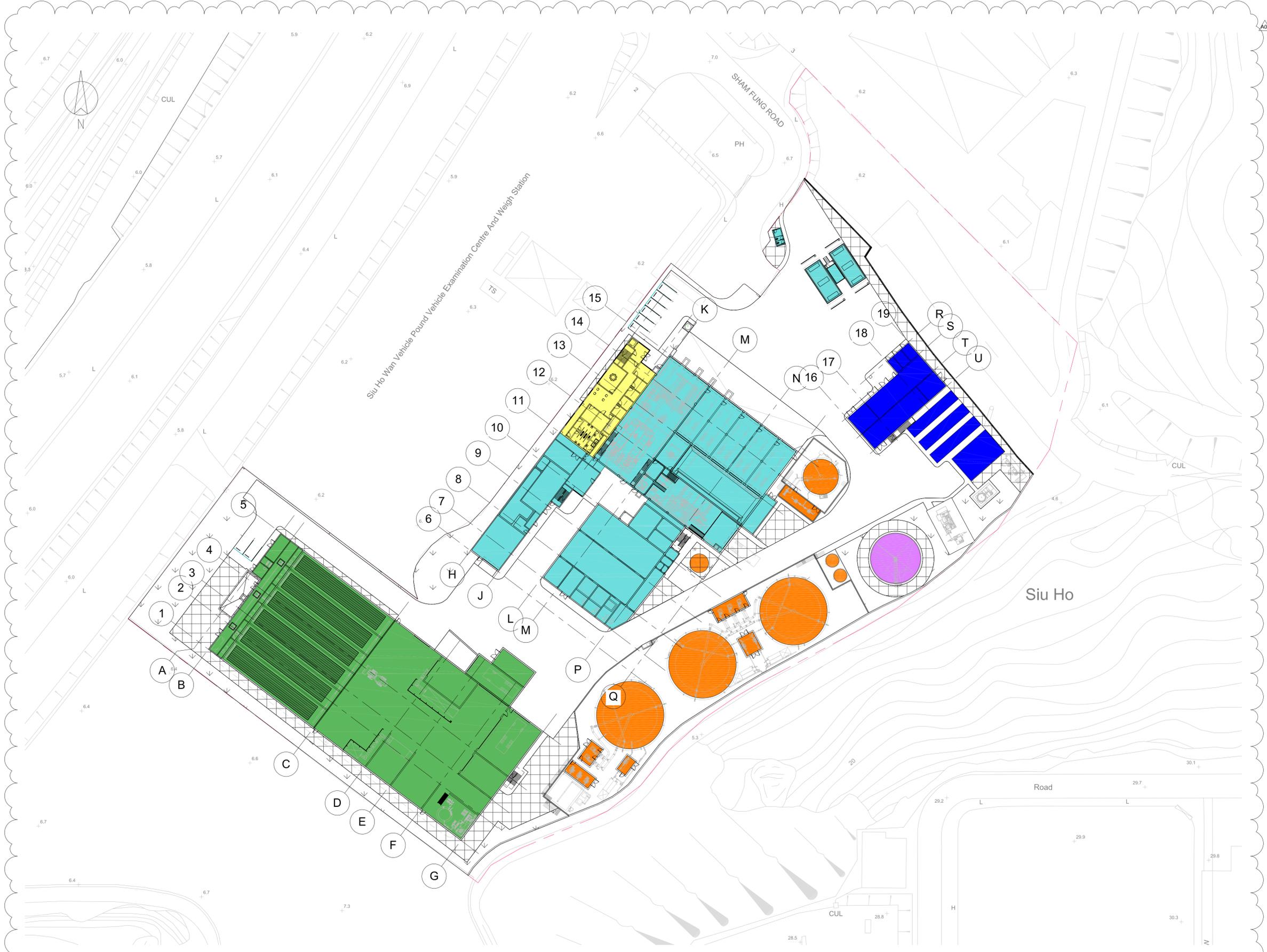
- Building 1 – superstructure works, defect rectification and ABWF works, E&M installation.
- Building 2 – ABWF and finishing work, covered walkway cladding and ABWF, installation of GRP ductwork at roof, E&M installation.
- Building 3 – ABWF, Electrical and BS installation inside rooms at G/F & 1/F.
- Link bridge cladding & ABWF.
- Weighbridge and control room structure.
- Collection chamber 1, Conical tank footing, primary sedimentation tank and int. pump sump excavation and construction.
- NTH mitigation works on slope.
- Boundary fence wall construction.

- AD Tank –Water filling and testing to AD 3. Cladding to AD3 & SBT. ABWF and pump installation to pump rooms. Pipe rack construction.
- Ammonia Stripping Plant –structural steel and mechanical erection work.
- CHP pipework and accessories installation.
- Mechanical installation (pre-treatment equipment, CAPCS - chemical scrubber & Fan, pumps & pipework) at Building 1.
- Mechanical installation (composting equipment) inside pipe gallery at Building 2.
- Electrical installation (cable trays installation, B2 MCC panels installation,, B3 cables installation)
- Sitewide – Underground drainage and drawpit work.
- Portion 2 – temp. traffic arrangement, pavement and roadworks.
- Portion 4 – Material handling and storage, steel bending & cutting.

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

Annex A

Project Layout



A01	05/03/15	CW	MB	IMTECH BACKGROUNDS UPDATED
A00	18/02/15	CW	MB	DRAFT ISSUE
REV	DATE	BY	APP	DESCRIPTION

CLIENT
 ENVIRONMENTAL PROTECTION DEPARTMENT
 GOVERNMENT OF THE HKSAR

CLIENT'S CONSULTANT
 **AECOM**
 AECOM ASIA CO. LTD.

CONTRACTOR

 OSCAR BIOENERGY JV

LEAD DESIGNER
 **ARUP**
 Ove Arup & Partners Hong Kong Limited

ENVIRONMENTAL TEAM
 **ERM**
 ERM HONG KONG LIMITED

INDEPENDENT CONSULTANTS
 **MEINHARDT**
 Meinhardt Infrastructure and Environment Limited
 邁達基建環保工程顧問有限公司

PROJECT
 ORGANIC WASTE TREATMENT FACILITIES
 PHASE 1
 EP/SP/61/10

STATUS
 DRAFT ISSUE

DRAWING TITLE
 SITE LAYOUT

DRAWN CW	CHECKED RS	APPROVED DP
SCALE 1:500@A1 / 1:1000@A3	DATE 12/02/15	
JOB NO. 239956	DRAWING NO. DR-OAP-20-0-CA-1001	REV. A01

Plot Time: 05/03/15 21:20:07
 Plot Location: C:\Users\mathew.brown\Documents\QWTF_Architectural Working Model (Combined) CEH_mathew.brown.rvt

Annex B

Works Location

Annex C

Construction Programme of the Project

#	Activity Name	BL Project Duration	BL Project Start	BL Project Finish	Remaining Duration	Start	Finish	% Complete	Variance - BL Project Finish Date	2015												2016												2017											
										Nov	Dec	Jan	F	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	F	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
1	Contract No. EP/SP/61/10 - v1.4, Progress updated on 17Dec16	688d	20-Nov-14	17-Mar-17	220d	20-Nov-14 A	17-Sep-17		-149d																																				
2	Preliminary and Site Establishment	217d	20-Nov-14	15-Aug-15	0d	20-Nov-14 A	19-Oct-16 A		-349d																																				
3	Preliminary and Site Establishment	217d	20-Nov-14	15-Aug-15	0d	20-Nov-14 A	19-Oct-16 A	100%	-349d																																				
4	Design	372d	20-Nov-14	23-Feb-16	74d	20-Nov-14 A	21-Mar-17		-319d																																				
5	Design Criteria and Design Preparation	80d	20-Nov-14	27-Feb-15	0d	20-Nov-14 A	01-Sep-15 A	100%	-151d																																				
6	Detailed Design Submission (DDS) - General, Civil, ABWF and Landscape	289d	19-Dec-14	23-Feb-16	60d	18-Dec-14 A	17-Mar-17	99.23%	-265d																																				
7	Detailed Design Submission (DDS) - Building 1	151d	21-Apr-15	25-Nov-15	0d	13-Apr-15 A	27-Jul-16 A	100%	-164d																																				
8	Detailed Design Submission (DDS) - Building 2	158d	12-Mar-15	30-Oct-15	0d	12-Mar-15 A	07-Apr-16 A	100%	-106d																																				
9	Detailed Design Submission (DDS) - Building 3	103d	03-Jun-15	29-Oct-15	0d	20-Jul-15 A	30-Mar-16 A	100%	-102d																																				
10	Detailed Design Submission (DDS) - Auxiliary Buildings & Facilities	177d	10-Feb-15	29-Oct-15	0d	11-Feb-15 A	08-Aug-16 A	100%	-191d																																				
11	Detailed Design Submission (DDS) - E&M and BS	216d	18-Dec-14	04-Nov-15	62d	18-Dec-14 A	21-Mar-17	98.83%	-341d																																				
12	Procurement	507d	12-Feb-15	02-Jul-16	193d	01-Mar-15 A	28-Jun-17		-361d																																				
13	Procurement, Manufacturing, F.A.T., Shipment & Delivery of E&M Systems Equipment	507d	12-Feb-15	02-Jul-16	193d	01-Mar-15 A	28-Jun-17	86.11%	-361d																																				
14	Construction	489d	13-May-15	31-Dec-16	203d	04-May-15 A	28-Aug-17		-193d																																				
15	Construction of Building #1 (Waste Receiving, Pre-treatment & Administration)	178d	19-Aug-15	23-Mar-16	92d	02-Sep-15 A	12-Apr-17	95.2%	-312d																																				
16	Construction of Building #2 (Composting & Maturation, and Link Bridge)	262d	23-May-15	11-Apr-16	21d	16-Jun-15 A	14-Jan-17	91.56%	-229d																																				
17	Construction of Building #3 (Energy Centre)	87d	30-Oct-15	15-Feb-16	0d	24-Mar-16 A	24-Oct-16 A	100%	-205d																																				
18	Construction of Auxiliary Buildings & Facilities (Area 3)	263d	13-May-15	31-Mar-16	127d	04-May-15 A	29-May-17	91.29%	-343d																																				
19	ABWF, Finishing and Fitting-out Works to Building #1, #2, #3 and Auxiliary Buildings & Facilities	303d	23-Dec-15	31-Dec-16	156d	21-Mar-16 A	04-Jul-17	28.16%	-146d																																				
20	External, Boundary Wall, Landscaping and Roadworks	383d	17-Sep-15	31-Dec-16	203d	13-Nov-15 A	28-Aug-17	52.09%	-193d																																				
21	Statutory and Utilities Works	148d	04-Mar-16	06-Oct-16	155d	02-Nov-16 A	03-Jul-17	0%	-216d																																				
22	E&M and Building Services Installation	229d	04-Feb-16	12-Nov-16	139d	11-May-16 A	13-Jun-17		-169d																																				
23	E&M Installation - Mechanical	164d	04-Feb-16	25-Aug-16	124d	11-May-16 A	25-May-17	39.53%	-219d																																				
24	E&M Installation - Piping	144d	24-May-16	12-Nov-16	133d	28-Nov-16 A	06-Jun-17	0.67%	-163d																																				
25	E&M Installation - Electrical, Instrumentation & Control	181d	02-Apr-16	08-Nov-16	139d	28-Sep-16 A	13-Jun-17	5.69%	-173d																																				
26	Building Services Installation	125d	18-Apr-16	14-Sep-16	110d	24-Jun-16 A	09-May-17	10.96%	-188d																																				
27	Energisation of Switchboards / MCC	1d	28-Jul-16	28-Jul-16	39d	25-Feb-17	12-Apr-17	0%	-211d																																				
28	Testing & Commissioning and Completion	232d	29-Jul-16	17-Mar-17	194d	07-Mar-17	17-Sep-17		-183d																																				
29	Pre-Commissioning	144d	29-Jul-16	19-Jan-17	136d	07-Mar-17	20-Jul-17	0%	-182d																																				
30	Process Commissioning, Performance & Acceptance Testing	119d	22-Oct-16	16-Mar-17	149d	21-Apr-17	16-Sep-17	0%	-184d																																				
31	Completion of the Design and the Works including Testing and Commissioning (Extended Completion Date: 5-Jun-17)	0d		16-Mar-17	0d		16-Sep-17*	0%	-184d																																				
32	Commencement of the Operation	0d	17-Mar-17		0d	17-Sep-17*		0%	-183d																																				

Annex D

Project Organization Chart with Contact Details

Annex E

Implementation Schedule of Mitigation Measures

Annex E Summary of Mitigation Measures Implementation Schedule

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location/ Timing	Status
<i>Summary of Environmental Mitigation Measures in the EIA and EM&A Manual</i>				
A. Air Quality				
3.73	2.5	<p><u>Air Pollution Control (Construction Dust) Regulation & Good Site Practices</u></p> <ul style="list-style-type: none"> • Use of regular watering, with complete coverage, to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather. • Use of frequent watering for particularly dusty construction areas and areas close to ASRs. • Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering should be applied to aggregate fines. • Open stockpiles should be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs. • Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations. • Establishment and use of vehicle wheel and body washing facilities at the exit points of the site. • Provision of wind shield and dust extraction units or similar dust mitigation measures at the loading points, and use of water sprinklers at the loading area where dust generation is likely during the loading process of loose material, particularly in dry seasons/ periods. • Imposition of speed controls for vehicles on unpaved site roads. 8 kilometers per hour is the recommended limit. • Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs. • Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides. • Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed. • Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system. 	Construction Site / During Construction Period	<>
B. Hazard to Life				
4.102	3.3	<u>Construction Phase</u>	Construction Site / During	√

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location/ Timing	Status
		<ul style="list-style-type: none"> • The number of workers on site during construction stage should be kept at the same level as the assessment. • Construction works should be suspended when delivery of chlorine takes place. • 3m high fence should be constructed along the boundary facing the SHWWTW. • Emergency evacuation procedures should be formulated and the Contractor should ensure all workers on site should be familiar with these procedures as well as the route to escape in case of gas release incident. Relevant Departments, such as Fire Services Department (FSD), should be consulted during the development of Emergency procedures. Diagram showing the escape routes to a safe place should be posted in the site notice boards and at the entrance/exit of site. A copy of the latest version emergency procedures should be dispatched to Tung Chung Fire Station for reference once available. • The emergency procedures should specify means of providing a rapid and direct warning (e.g. Siren and Flashing Light) to construction workers in the event of chlorine gas release in the SHWWTW. • The Contractor should establish a communication channel with the SHWWTW operation personnel and FSD during construction stage. In case of any hazardous incidents in the treatment works, operation personnel of SHWWTW should advise the Contractor to inform construction workers to proceed with emergency procedure. The Contractor should appoint a Liaison Officer to communicate with FSD Incident Commander on site in case of emergency. • Introduction training should be provided to any staff before carryout construction works at the Project site. • Periodic drills should be coordinated and conducted to ensure all construction personnel are familiar with the emergency procedures. Upon completion of the drills, a review on every step taken should be conducted to identify area of improvement. Prior notice of periodic drills should be given to Station Commander of Tung Chung Fire Station. Joint operational exercise with FSD and SHWWTW is recommended. 	Construction Period	
<i>C. Water Quality</i>				
5.44	4.5	<u>Construction site run-off and general construction activities:</u> The mitigation measures as outlined in the ProPECC PN 1/94 Construction Site Drainage should be adopted where applicable.	Construction Site / During Construction Period	<>
5.45	4.5	<u>Excavation of Soil Materials</u> The construction programme should be properly planned to minimise soil excavation, if any, in rainy seasons. This prevents soil erosion from exposed soil surfaces. Any exposed soil surfaces should also be properly protected to minimise dust emission. In areas where a large amount of exposed soils exist, earth bunds or sand bags should be provided. Exposed	Construction Site / During Construction Period	<>

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location/ Timing	Status
		stockpiles should be covered with tarpaulin or impervious sheets at all times. The stockpiles of materials should be placed at locations away from any stream courses so as to avoid releasing materials into the water bodies. Final surfaces of earthworks should be compacted and protected by permanent work.		
5.46	4.5	<u>Accidental spillage of chemicals:</u> Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	Construction Site / During Construction Period	√
5.47	4.5	Maintenance of vehicles and equipments involving activities with potential for leakage and spillage should only be undertaken within the areas which appropriately equipped to control these discharges.	Construction Site / During Construction Period	√
5.48	4.5	Oils and fuels should only be used and stored in designated areas which have pollution prevention facilities. All fuel tanks and storage areas should be sited on sealed areas in order to prevent spillage of fuels and solvents to the nearby watercourses. All waste oils and fuels should be collected in designated tanks prior to disposal.	Construction Site / During Construction Period	<>
5.49	4.5	Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows: <ul style="list-style-type: none"> • Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. • Chemical waste containers should be suitably labeled, to notify and warn the personnel who are handling the wastes, to avoid accidents. • Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area. 	Construction Site / During Construction Period	<>
5.50		Construction solid waste, debris and rubbish on site should be collected, handled and disposed of properly to avoid entering to the nearby watercourses. Stockpiles of cement and other construction materials should be kept covered when not being used. Rubbish and litter from construction sites should also be collected to prevent spreading of rubbish and litter from the site area. It is recommended to clean the construction sites on a regular basis.	Construction Site / During Construction Period	√<>

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location/ Timing	Status
5.51	4.5	<p><u>Sewage Effluent</u></p> <p>The presence of construction workers generates sewage. It is recommended to provide sufficient chemical toilets in the works areas. The toilet facilities should be more than 30m from any watercourse. A licensed waste collector should be deployed to clean the chemical toilets on a regular basis.</p>	Work site/During the construction period	√
5.52	4.5	<p>Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the nearby environment during the construction phase of the project. Regular environmental audit on the construction site can provide an effective control of any malpractices and can achieve continual improvement of environmental performance on site.</p>	Work Site / During Construction Period	√
5.53	4.5	<p><u>Nullah Decking</u></p> <p>To minimize the potential water quality impacts from the nullah reconstruction works, the practices outlined below should be adopted where applicable:</p> <ul style="list-style-type: none"> • The proposed works should be carried out within the dry season between October and March when the flow in the open nullah is low. • The use of less or smaller construction plants may be specified to reduce the disturbance to the nullah bed. • Temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from the nullah and any water courses during carrying out of the construction works. • Stockpiling of construction materials and dusty materials should be covered and located away from the nullah any water courses. • Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nullah and nearby water receivers. • Construction activities, which generate large amount of wastewater, should be carried out in a distance away from the nullah, where practicable. • Construction effluent, site run-off and sewage should be properly collected and/or treated. • Any works site inside the nullah should be temporarily isolated, such as by placing of sandbags or silt curtains with lead edge at bottom and properly supported props to prevent adverse impact on the water quality. • Proper shoring may need to be erected in order to prevent soil/mud from slipping into the nullah and nearby watercourse. • Supervisory staff should be assigned to station 	Work Site / During Construction Period	N/A

D. Waste Management

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location/ Timing	Status
6.41	5.4	<p><u>Good Site Practices</u></p> <p>Recommendations for good site practices during the construction phase would include:</p> <ul style="list-style-type: none"> • Obtain relevant waste disposal permits from appropriate authorities, in accordance with the Waste Disposal Ordinance (Cap. 354) and subsidiary Regulations and the Land (Miscellaneous Provisions) Ordinance (Cap. 28); • Provide staff training for proper waste management and chemical handling procedures; • Provide sufficient waste disposal points and regular waste collection; • Provide appropriate measures to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; • Carry out regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; • Separate chemical wastes for special handling and disposed of to licensed facility for treatment; and • Employ licensed waste collector to collect waste. 	Work Site / During Construction Period	<>
6.42	5.5	<p><u>Waste Reduction Measures</u></p> <p>Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include:</p> <ul style="list-style-type: none"> • Design foundation works that could minimise the amount of excavated material to be generated; • Provide training to workers on the importance of site cleanliness and appropriate waste management procedures, including waste reduction, reuse and recycling; • Sort out demolition debris and excavated materials from demolition works to recover reusable/ recyclable portions (i.e. soil, broken concrete, metal etc.); • Segregate and store different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal; • Encourage the collection of aluminium cans by providing separate labelled bins to enable this waste to be segregated from other general refuse generated by the workforce; and • Plan and stock construction materials carefully to minimize the amount of waste to be generated and to avoid unnecessary generation of waste. 	Work Site/During Design & Construction Period	<>
6.44	5.7	<p><u>Excavated and C&D Materials</u></p> <p>In order to minimise the impact resulting from collection and transportation of C&D material for off-site disposal, the excavated material arising from site formation and foundation works should be reused on-site as backfilling material and for landscaping works as far as practicable. Other mitigation requirements are listed below:</p> <ul style="list-style-type: none"> • A WMP, which becomes part of the Environmental Management Plan (EMP), should be 	Work Site/During Design & Construction Period	√

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location/ Timing	Status
		<p>prepared in accordance with ETWB TCW No.19/2005;</p> <ul style="list-style-type: none"> • A recording system for the amount of wastes generated, recycled and disposed of (including the disposal sites) should be adopted for easy tracking; and • In order to monitor the disposal of excavated and C&D material at public filling facilities and landfills and to control fly-tipping, a trip-ticket system should be adopted (refer to ETWB TCW No. 31/2004). 		
6.45 - 6.46	5.8 - 5.9	<p>An EMP should be prepared and implemented in accordance with ETWB TCW No. 19/2005 which describes the arrangements for avoidance, reuse, recovery, recycling, storage, collection, treatment and disposal of different categories of waste to be generated from construction activities. The EMP should be submitted to the Supervising Officer (SO) and Supervising Officer's Representative (SOR) for approval. The EMP should be reviewed regularly and updated, preferably on a monthly basis.</p> <p>A system should be devised to work for on-site sorting of excavated and C&D materials and promptly removing all sorted and process materials arising from the construction activities to minimize temporary stockpiling on-site. The system should be included in the EMP identifying the source of generation, estimated quantity, arrangement for on-site sorting, collection, temporary storage areas and frequency of collection by recycling Contractors or frequency of removal off-site.</p>	Work Site/During Design & Construction Period	√
6.47	5.10	<p><u>Chemical Waste</u></p> <p>Should chemical wastes be produced at the construction site, the Contractor would be required to register with EPD as a Chemical Waste Producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste (such as explosive, flammable, oxidizing, irritant, toxic, harmful, or corrosive). The Contractor should employ a licensed collector to transport and dispose of the chemical wastes, to either the CWTC in Tsing Yi, or any other licensed facilities, in accordance with the Waste Disposal (Chemical Waste) General Regulation.</p>	Work Site / During Construction Period	<>
6.48	5.11	<p><u>General Refuse</u></p> <p>General refuse should be stored in enclosed bins or compaction units separated from C&D material. A licensed waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D material. Preferably an enclosed and covered area should be provided to reduce the occurrence of 'wind blown' light material.</p>	Work Site / During Construction Period	<>
<i>E. Landscape and Visual</i>				
7.99 & Table 7.7	Table 6.1	<u>Construction Phase</u>	Work site/During Design &	√

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location/ Timing	Status
		<ul style="list-style-type: none"> • Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical • Compensatory tree planting should be provided to compensate for felled trees. <ul style="list-style-type: none"> - Compensation tree species shall be chosen from both indigenous and ornamental species - Compensatory tree planting quantities shall be as per DLO approved requirement. • Control of night-time lighting • Erection of decorative screen hoarding compatible with the surrounding setting 	Construction Stages	
<i>F. Noise</i>				
8.25	7.3	<p>Good Site Practice:</p> <ul style="list-style-type: none"> • Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program; • Mobile plant, if any, should be sited as far from noise sensitive receivers (NSRs) as possible; • Machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and • Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities. 	Work site/During Design & Construction Stages	√

Remark:

- √ Compliance of Mitigation Measures
- <> Compliance of Mitigation but need improvement
- x Non-compliance of Mitigation Measures
- ▲ Non-compliance of Mitigation Measures but rectified by OSCAR Bioenergy JV
- Δ Deficiency of Mitigation Measures but rectified by OSCAR Bioenergy JV
- N/A Not Applicable in Reporting Period

Annex F

Waste Flow Table

**No. EP/SP/61/10 of Organic Waste Treatment Facilities Phase I
Monthly Summary Waste Flow Table**

Month	Actual Quantities of Inert C&D Materials Generated					Actual Quantities of Non-inert C&D Materials (Construction Waste) Generated				
	Total Quantity Generated	Reused in the Contract	Reused in other Projects	Hard Rocks & Large Broken Concrete	Disposed as Public Fill	Metals (see Note 1)	Paper/ cardboard packaging (see Note 1)	Plastics (see Note 2)	Chemical Waste	Others, e.g. general refuse (see Note 3)
	tonne	tonne	tonne	tonne	tonne	kilogram	kilogram	kilogram	Litre	tonne
May 2015	29.58	0.00	0.00	0.00	29.58	0.00	0.00	0.00	0.00	0.00
June 2015	2226.90	0.00	0.00	0.00	2226.90	0.00	0.00	0.00	0.00	9.66
July 2015	2832.27	0.00	0.00	0.00	2832.27	0.00	0.00	0.00	0.00	33.68
August 2015	6657.25	0.00	0.00	0.00	6657.25	0.00	20.00	0.00	0.00	55.06
September 2015	5467.05	0.00	0.00	0.00	5467.05	3480.00	0.00	0.00	0.00	83.81
October 2015	5419.04	0.00	0.00	0.00	5419.04	18710.00	0.00	0.00	0.00	20.45
November 2015	1375.26	0.00	0.00	0.00	1375.26	21610.00	0.00	0.00	0.00	17.38
December 2015	2199.56	75.28	0.00	0.00	2124.28	0.00	41.00	0.00	0.00	21.83
January 2016	4601.43	0.00	0.00	0.00	4601.43	18140.00	50.00	0.00	640.00	20.86
February 2016	4167.01	0.00	0.00	0.00	4167.01	510.00	79.00	0.00	0.00	16.57
March 2016	299.92	41.28	0.00	0.00	258.64	22320.00	75.00	0.00	0.00	22.69
April 2016	3186.37	98.37	0.00	0.00	3088.00	60690.00	77.00	0.00	255.00	37.63
May 2016	1612.33	63.41	0.00	0.00	1548.92	13490.00	35000.00	0.00	0.00	40.76
June 2016	1144.73	30.43	0.00	0.00	1114.30	14600.00	120.00	0.00	0.00	58.34
July 2016	662.76	0.00	0.00	0.00	662.76	13370.00	0.00	0.00	0.00	40.48
August 2016	391.88	0.00	0.00	0.00	391.88	18660.00	84.00	0.00	0.00	61.91
September 2016	324.35	0.00	0.00	0.00	324.35	56800.00	2780.00	0.00	0.00	138.25
October 2016	1561.82	39.00	0.00	0.00	1522.82	40000	9.30	0.00	700.00	114.47
November 2016	897.23	507.94	00.00	0.00	389.76	0.00	123.00	0.00	0.00	154.22
December 2016	2477.95 (See Note 4)	489.00	0.00	0.00	1988.95	2960.00	93.00	0.00	0.00	136.80

Total	47552.07	1344.24	0.00	0.00	46207.83	305340.00	38551.30	0.00	1595.00	1084.85
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- Notes:
- (1) Metal and paper/cardboard packaging were collected by recycler for recycling.
 - (2) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material collected by recycler for recycling.
 - (3) General refuse was disposed of at NENT by subcontractors.
 - (4) In total, 2477.95 tonnes of inert C&D material were generated from the Project, of which the 1,988.95 tonnes were disposed as public fill to Fill Bank at Tuen Mun Area 38 in reporting period and the 489.00 tonnes were reused in this contract.

Annex G

Environmental Complaint,
Environmental Summons
and Persecution Log

Annex G Cumulative Complaint and Summons/Prosecutions Log

Reporting Month	Number of Complaints in Reporting Month	Number of Summons/Prosecutions in Reporting Month
May 2015	0	0
June 2015	0	0
July 2015	0	0
August 2015	0	0
September 2015	0	0
October 2015	0	0
November 2015	0	0
December 2015	0	0
January 2016	0	0
February 2016	0	0
March 2016	0	0
April 2016	0	0
May 2016	0	0
June 2016	0	0
July 2016	0	0
August 2016	0	0
September 2016	0	0
October 2016	0	0

Reporting Month	Number of Complaints in Reporting Month	Number of Summons/Prosecutions in Reporting Month
November 2016	0	0
December 2016	0	0
Overall Total	0	0