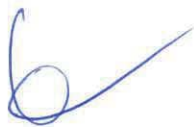




## Organic Waste Treatment Facilities Phase 1

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### Emergency Procedures Plan

Rev. K

<b>Prepared / Checked By:</b> Eric LOH	<b>Reviewed By:</b> Philip WU	<b>Endorsed By:</b> Marshall TSOI
		
<b>Safety Officer</b> Date: 4 May 2016	<b>Environmental Officer</b> Date: 4 May 2016	<b>Deputy Project Manager</b> Date: 4 May 2016

Meinhardt Infrastructure and Environment Limited

**Organic Waste Treatment Facilities  
Phase I**

**Emergency Procedures Plan**

(May 2016)

Verified by: Helen Cochrane 

Position: Independent Environmental Checker

Date: 6 May. 2016

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## Amendment History

Date:	Rev.	Description
18 June 2014	A	1 <sup>st</sup> draft for submission
17 December 2014	B	2 <sup>nd</sup> draft for submission
18 March 2015	C	3 <sup>rd</sup> draft for submission
21 May 2015	D	4 <sup>nd</sup> draft for submission
11 June 2015	E	Response to IC Comments
24 July 2015	F	Response to EPD/EIA Office Comments Updated 10.1.1 Add Section 10.11
30 July 2015	G	Amend according to discussion with IC and ET Leader's comments.
04 September 2015	H	Amend according to IEC comments.
15 February 2016	I	Amend according to EPD/EIA Office Comments
22 April 2016	J	Amend according to EPD/EIA Office Comments (Ref: (2) in EP2/N2/G/56 Pt.6)
3 May 2016	K	Amend according to IEC Comments.

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## CONTENTS

	Page
<b>1. INTRODUCTION .....</b>	<b>1</b>
1.1. Project Scope .....	1
1.2. Site Details .....	1
1.3. Map of Site and surrounding areas .....	1
1.4. Hazardous Substances and Materials .....	2
<b>2. PURPOSE OF THE EPP .....</b>	<b>2</b>
<b>3. SCOPE OF THIS EPP .....</b>	<b>2</b>
<b>4. DEFINITION .....</b>	<b>3</b>
<b>5. WHEN TO USE THIS PLAN .....</b>	<b>3</b>
<b>6. COMMUNICATION OF THIS PLAN .....</b>	<b>4</b>
<b>7. ACCOUNTABILITIES AND RESPONSIBILITIES .....</b>	<b>4</b>
<b>8. NOTIFICATIONS .....</b>	<b>4</b>
<b>9. ACTIVATING AN EMERGENCY .....</b>	<b>5</b>
<b>10. POTENTIAL EMERGENCY SITUATION .....</b>	<b>5</b>
10.1. Chlorine gas release in the Siu Ho Wan Water Treatment Works (SHWWTW) ....	5
10.2. Fire .....	20
10.3. Electrical Supply Failure .....	27
10.4. Closure of the Facility .....	28
10.5. Flooding .....	29
10.6. Inclement Weather .....	30
10.7. Spillage of Chemicals .....	31
10.8. Accident to Persons .....	37
10.9. Vehicle Accident and Breakdown .....	37
10.10. Blockage of Access Road .....	40
10.11. Serious Gas Leakage Arising from Vessel or Gas Pipe in BU .....	39

## LIST OF TABLES

Table 1: Mitigation Measures and Corresponding Actions .....	6
Table 2: Major Chlorine Leak Procedure .....	11

---

Table 3: Emergency Contact List.....	1
Table 4: Sample Agenda of Regular Meeting.....	19

## **LIST OF FIGURES**

Figure 1: Route of Escape in Construction Phase.....	10
Figure 2: Assembly Point Sign .....	11
Figure 3: Routes of Escape in Operation Phase .....	12
Figure 4: Assembly Point Directional Sign.....	13

## 1. INTRODUCTION

### 1.1. Project Scope

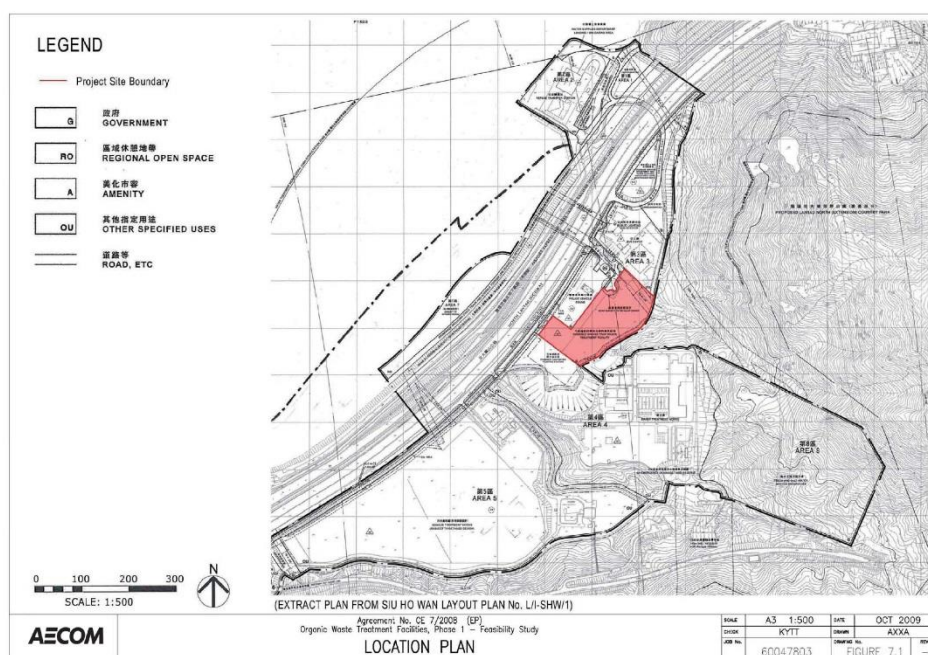
The scope of the Contract EP/SP/61/10 Organic Waste Treatment Facilities, Phase 1 (OWTF) includes the Design, Construction, and the Operation of the Facility to receive and treat the Permitted Waste by means of anaerobic digestion followed by a composting treatment process at a designated site located at Siu Ho Wan, North Lantau.

The OSCAR Bioenergy JV (OSCAR) was awarded the Contract. According to the Specification A Cl. 7.12, the submission is for the risks identified the following potential emergency situations requiring Emergency Procedures in this Emergency Procedure Plan:

### 1.2. Site Details

Name of Site:	Portion 1 and 2
Location:	Siu Ho Wan
Address:	Lantau Island
Nature of Operations:	Construction and Commissioning works

### 1.3. Map of Site and surrounding areas





---

## **1.4. Hazardous Substances and Materials**

- Chlorine gas release in Siu Ho Wan Water Treatment Works (SHWWTW);
- Fire;
- Electrical Supply Failure;
- Closure of Facility;
- Flooding;
- Inclement Weather;
- Spillage of Chemicals;
- Vehicle Breakdown and Accidents;
- Accident to Persons;
- Blockage of Access Road to Facility; and
- Series Gas Leakage Arising from Vessel or Gas Pipe in BU.

## **2. PURPOSE OF THE EPP**

This EPP describes the processes involved in establishing emergency preparedness, and includes;

- Activation, notification and response procedures,
- Roles and responsibilities of OSCAR management team and support personnel,
- External notification and support resources available to OWTF1 and how these resources will be coordinated;
- Training of personnel with emergency response and Emergency management responsibilities.

## **3. SCOPE OF THIS EPP**

This EPP is designed to be activated in the event of an emergency or crisis on site. The plan applies to all personnel, including sub-contractors and visitors throughout the construction, commissioning and operation phase of the OWTF1 project.

The key priorities in an emergency situation are;

- Preserve life and ensure the safety and security of people
- Minimise the impact to the environment;

- Minimise the impact on property;
- Minimize the impact on the community;
- Minimize the impact on business continuity and reputation.

#### 4. DEFINITION

Emergency	Includes an unexpected, abnormal or dangerous event requiring precise action to control, correct, and return to a safe situation
Crisis	A severe interruption event that has the potential to significantly impact and destabilize project personnel and stakeholders: it could affect personnel, business continuity, attract intense scrutiny, jeopardise in positive public and shareholder image, or a combination of these impacts.
ERT	Emergency Response Team
CMT	Crisis Management Team
Statutory Authority	Fire Services Department and Hong Kong Police Force

#### 5. WHEN TO USE THIS PLAN

Situational Guidance	Impact on People	Impact on Assets	Impact on the Environment	Impact on Reputation	Response Required
Emergency	Serious Injury	Serious	The Impact or release requires outside assistance	Potential for media interest	The ERT is activated
Crisis	Permanent disability or fatality	Extensive	There are detrimental effects or residual impacts	There is a potential for public outrage	The ERT, CMT and corporate level are activated

---

## **6. COMMUNICATION OF THIS PLAN**

All staff personnel for OSCAR and its sub-contractors will have access to this plan through the EDMS.

All personnel working on site will be made aware of this Plan through inductions, pre-start meeting and toolbox talks.

Posters and signboards will be placed on strategic areas of the site.

## **7. ACCOUNTABILITIES AND RESPONSIBILITIES**

The Construction Manager or his delegate has the responsibility over this plan. His duties, under an emergency are:

- Respond to emergency as required
- Ensure that appropriate management and authorities are aware of the emergency
- Liaise with authority
- Coordinate recovery and site restoration activities

The construction manager will coordinate with all entities involved which may be:

- Site Security
- Employees, Subcontractors and Visitors
- Site Doctor, Site Paramedic and First Aiders
- Safety supervisors and officers
- Site agents, Supervisors

## **8. NOTIFICATIONS**

Early warning may be communicated to the OWTF by several means, including major weather events system and siren and flashing light system.

When there is an emergency event, siren and flash lighting will be activated, followed by radio communication for evacuation. Contact with staff via telephone will also be made when needed.

Offsite emergency contact list will be developed and communicated.

---

## **9. ACTIVATING AN EMERGENCY**

The Construction Manager or and/or his delegate can at any time take the decision to activate the Emergency Procedure Plan.

The standard trigger to activate the EPP is when there is an abnormal Health, Safety & Environmental (HSE) or security event which has the potential to cause harm to personnel, property, environment, equipment or business reputation.

The person reporting the event will be instructed to provide the following information

- Location of emergency
- Nature of emergency
- Casualties involved
- The caller's name

The manager in charge will then decide:

- Zone evacuation to non-essential personnel
- Zone evacuation of all personnel
- Site wide evacuation of all personnel
- Assembly the site personnel to assembly points

And trigger appropriate response measures.

## **10. POTENTIAL EMERGENCY SITUATION**

### **10.1. Chlorine gas release in the Siu Ho Wan Water Treatment Works (SHWWTW)**

The site of the OWTF is at Siu Ho Wan Area 3, which is located within the consultation zone of Siu Ho Wan Water Treatment Works (SHWWTW) in North Lantau. According to the EIA Report AEIAR-149/2010, a Hazard Assessment (HA) was conducted to evaluate the risk to construction workers and operational staff arising from the transport, storage and use of chlorine associated with the operations at SHWWTW. The emergency procedures are required to be submitted and approved in conformance with the requirements set out in the "Technical Memorandum on Environmental Impact Assessment Process".

The objective of this section is to provide standard procedures to be followed in the event of a release of chlorine. The Construction Manager (during Construction) and the Operation Manager (during Operation) will be in charge of implementing the procedures.

All OSCAR's employees at the site will be given instruction on dealing with the unlikely event of a release of chlorine and will be trained to follow the procedures set out below.

### 10.1.1. Risk Mitigation Measure Identification

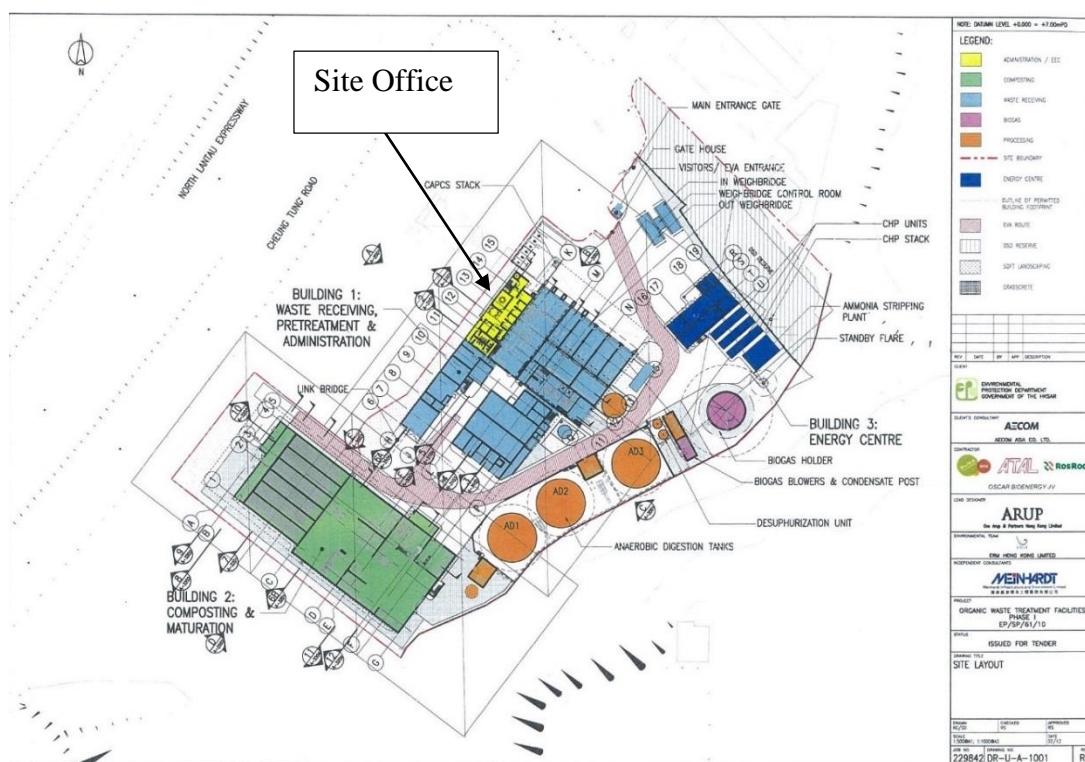
Risk mitigation measures proposed in the approved EIA report Register no. AEIAR-149/2010 are shown in the second column of the **Table 1** below. The corresponding actions proposed by OSCAR are shown in the third column of this table.

**Table 1: Mitigation Measures and Corresponding Actions**

Item	Mitigation Measures by AEIAR-149/2010	Corresponding Actions
Construction Phase		
A.1	Number of workers on site during construction stage.	Keep at the same level as the assumptions adopted in the hazard to life assessment in the Environmental Review Report submitted to the EIAO Authority under Application No. VEP-487/2015 dated 30 November 2015.
A.2	Suspension of construction work during chlorine deliveries	Detailed arrangement is described in Section 10.1.2.
A.3	Enhance emergency response arrangements, e.g. provision of visual and audible alarms, training, safe refuge, emergency and evacuation plan etc.	Detailed arrangement is described in Section 10.1.4.
A.4	Fence around the site boundary facing SHWWTW chlorine store	A temporary fence will be constructed as part of the temporary hoarding plan.  The height of fence along the boundary facing the SHWWTW shall be 3m high.
A.5	Emergency evacuation procedure should be formulated and the Emergency Contact List should be displayed in suitable location(s).	Detail arrangement of refer to Section 10.1.3
A.6	Providing a rapid direct warning to construction workers in the event of chlorine gas release in the SHWWTW	Provide Siren and Flashing Light in construction site (refers to <b>Section 8</b> ).

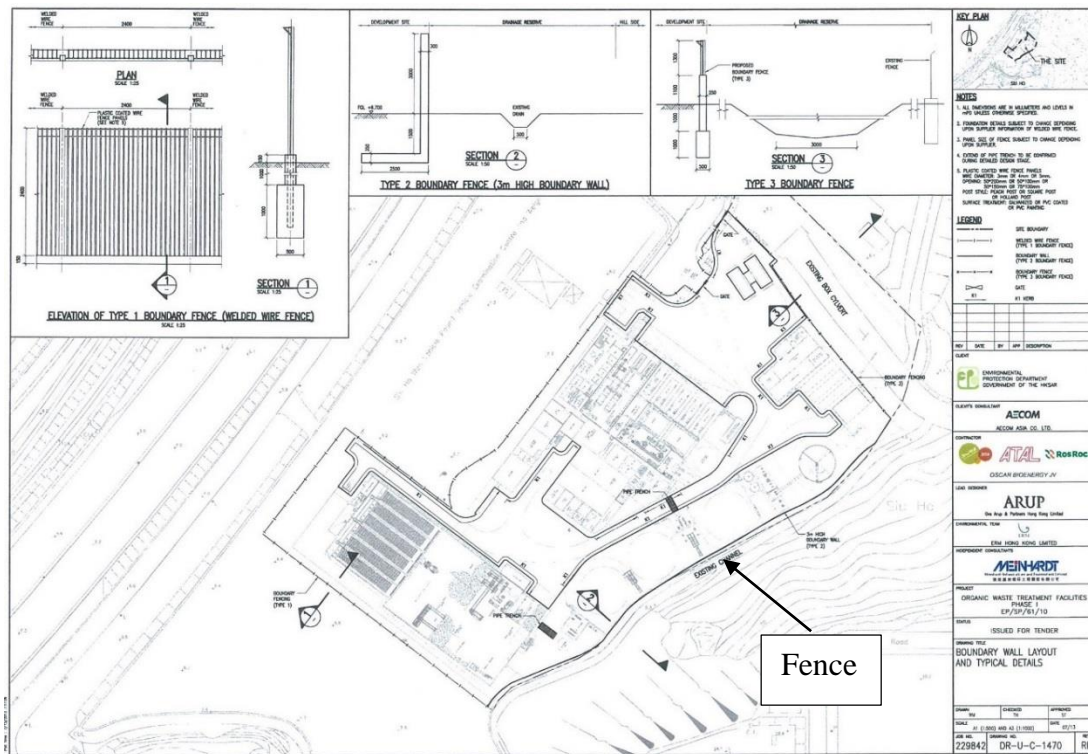
Item	Mitigation Measures by AEIAR-149/2010	Corresponding Actions
A7.	The Contractor should establish a communication channel with the SHWWTW operation personnel and FSD during the construction stage.	OSCAR has established communication channel with SHWWTW and FSD. Detail procedure refer to <b>Section 10.1.5</b> .
A.8	Induction Training	Refer to <b>Section 10.1.7 (2)</b>
A.9	Periodic drill	OSCAR will coordinate and conduct to periodic drill. Prior notice Station Commander of Tung Chung Fire Station.  OSCAR will consider to invite FSD and SHWWTW to join the operation exercise (refers to Section 10.1.7).
Operation Phase		
B.1	Site office as far away as possible from the SHWWTW chlorine store; avoid windows or openings on facades facing the SHWWTW	Detailed arrangement of the site office is presented in drawing no. DR-U-A-1001.
B.2	Fence around the site boundary facing SHWWTW chlorine store	Detailed arrangement of the 3m high boundary wall is presented in drawing no. DR-U-C-1470.
B.3	Emergency evacuation procedures should be formulated and the Contractor should ensure on site staff should be familiar with those procedures.  Diagram showing the escape routes to a safe place.  A copy of the latest version of Emergency Procedure Plan should be dispatched to Tung Chung Fire Station for reference once available.	Safety Induction Training shall include the emergency evacuation procedure.  Refer to Figure 3.  Will distribute the Emergency Procedure Plan to Tung Chung Fire Station once EPD has no further comment on the Plan.
B4	The emergency procedure should provide a rapid direct warning (e.g. Siren and Flashing light) to personnel on site in the event of chlorine gas release in the SHWWTW.	Refer to Section 10.1.4

Item	Mitigation Measures by AEIAR-149/2010	Corresponding Actions
B5	The Contractor should establish a communication channel with the SHWWTW operation personnel and FSD. In case of any hazardous incidents in the treatment works, operation personnel of SHWWTW should advise the Contractor to inform personnel on site to proceed with emergency procedure. The contractor should appoint Liaison Officer to communicate with FSD incident Commander on site in case of emergency.	Refer to Section 10.1.6.
B6	Periodic drills should be coordinated and conducted.  Periodic drills should be given to Station Commander of Tung Chung Fire Station.	Refer to <b>Section</b> 10.1.7



DR-U-A-1001





DR-U-C-1407

### 10.1.2. Suspension of construction work during chlorine deliveries

In the Construction phase, construction works are recommended to be suspended during the deliveries of chlorine to **SHWWTW**. Through communications between SHWWTW, Tung Chung FSD, Tung Chung Police, EPD and OSCAR, the delivery schedule will be discussed at regular meetings. The construction works will be organised in a way to suit the deliveries and minimise the impact on the progress of construction works. OSCAR's Construction Manager will liaise closely with SHWWTW and Tung Chung FSD to confirm the exact time of suspension and resumption of the works.

### 10.1.3. Escape Routes to a safe place

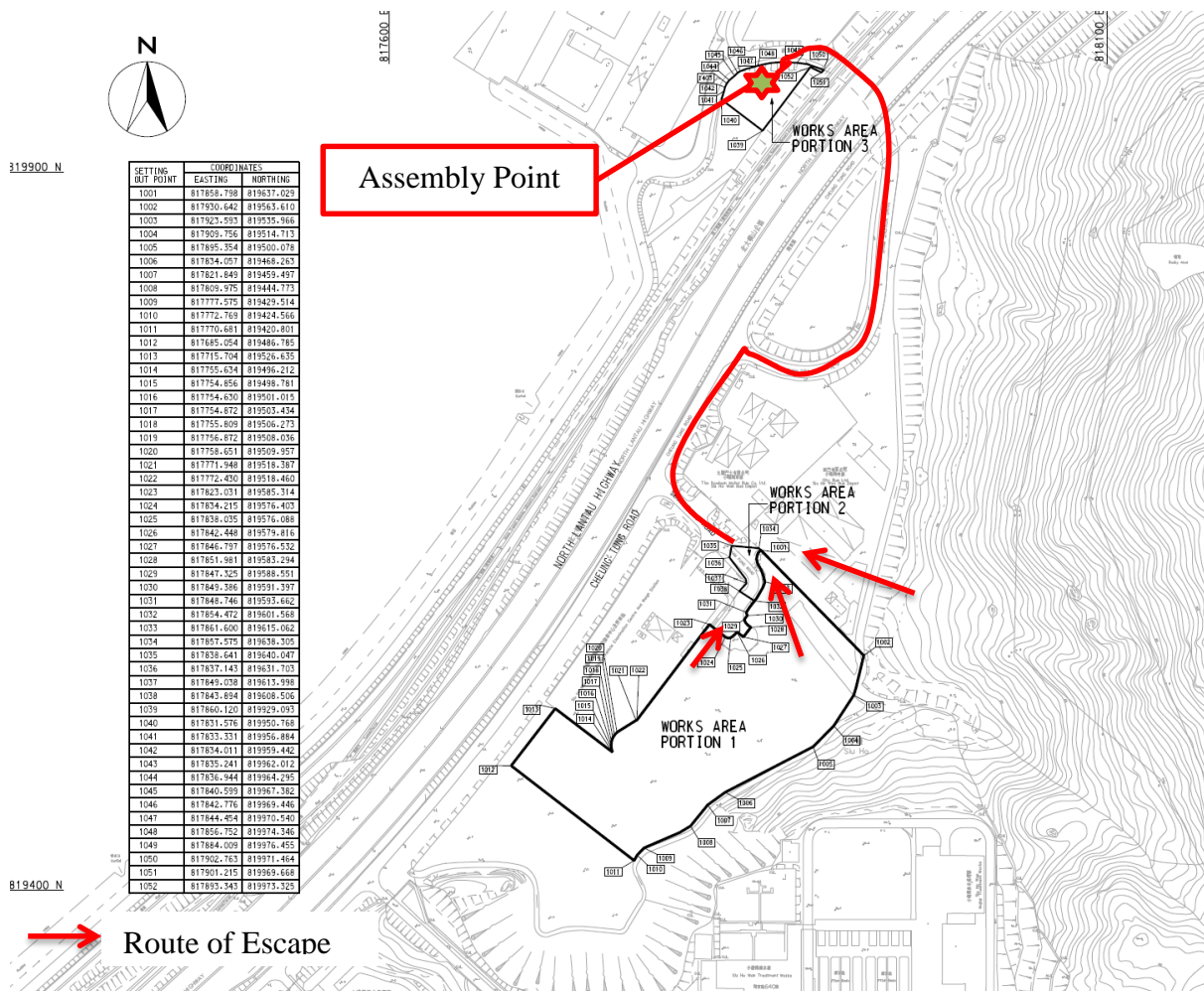
#### 1) Construction Phase

The proposed "emergency assembly point" for the Construction Phase is located at portion 3 of the site, which is an open area adjacent to the proposed temporary site offices for the Employer's Representatives (ER), Independent Checker (IC) and Contractor. The "emergency assembly point" is proposed to be located there because it is furthest away from the hazards of SHWWTW, the chlorine gas storage room and biogas storage tank.

On a regular basis, all OSCAR's workers and engineers will assemble for safety briefings and tool-box talks outside the site offices, so that the "emergency assembly point" is easily



identified by the workers. A temporary sign board indicating the location of the Assembly Point will be erected outside the site offices. In the event of an emergency in portions 1 and 2 of the site, workers will follow the escape route (i.e. Sham Shui Kok Drive) to the “emergency assembly point” as indicated in **Figure 1** below.



**Figure 1: Route of Escape in Construction Phase**

## 2) Operation Phase

The proposed “emergency assemble point” for the Operation Phase will be located at the main entrance of the site. It is proposed to be located there because of the following reasons:

- It is an open area and furthest away from the hazards of the SHWWTW Chlorine gas storage room and biogas storage tank.
- It is an open area and therefore the air is unlikely to be affected unless an extremely high concentration of Chlorine gas is released. This location has the lowest exposure to the hazard of the chlorine and biogas.

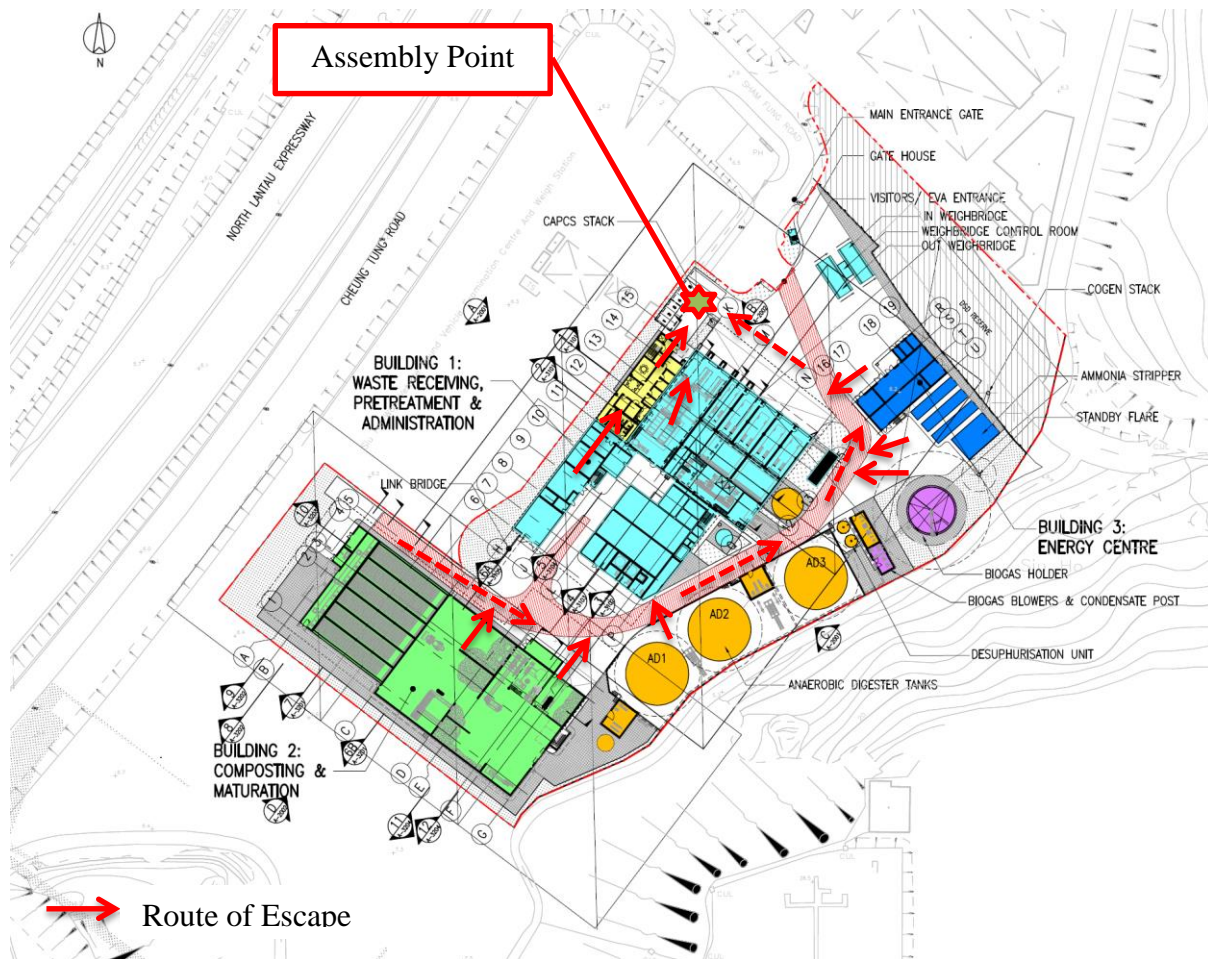
- It is an easy identifiable location for all the workers, technicians, EPD officers and visitors, as it is located at the main entrance.
- It is easily accessible to the large number of people evacuated from the main building (including EPD Office and Environmental Education Centre), Combined Heat and Power Plant (CHP), Anaerobic Digester (AD), Composting building and Wastewater Treatment Plant.

The sign shown in **Figure 2** will be fixed to a post at the main entrance near the car park, where it is strategically located for everyone to be aware of the assembly location before entering the facilities.



**Figure 2: Assembly Point Sign**

In the event of an emergency during the Operation Phase, people in the main building (including EPD office and Environmental Education Centre) will be evacuated to the emergency assembly point via the nearest staircases and corridors. Workers in the CHP, AD, Composting building and Wastewater Treatment Plant, will be evacuated via the Emergency Access Road to the Assembly Point. The escape routes, as shown in **Figure 3** are designed to allow an evacuation of a large number of people effectively.



**Figure 3: Routes of Escape in Operation Phase (DR-U-A-1001)**

#### **10.1.4. Warning (Operation Phase)**

In the event of a fire or chlorine gas release, OWTF primary will active sire and flash lighting follow with radio communication for evacuation, secondary will active telephone as needed. When the warning system is engaged during an emergency, it will be provision of a rapid and direct warning (e.g. Siren and Flashing Light) to all site personnel that they must evacuate to the emergency assembly point. Along all evacuation and fire escape routes within the main building and from the CHP units, Weighbridge, Wastewater Treatment Plant, and Anaerobic Digester Tanks, primary radio communication and secondary telephone warnings will be installed according to the FSD requirement and code of practice. Along the escape routes, signs as shown in **Figure 4** will be installed to direct people to the emergency assembly point.



**Figure 4: Assembly Point Directional Sign**

#### 10.1.5. Standard Procedure for Handling the Chlorine Leakages

In the event of a Major Chlorine Leak, the procedure shown in **Table 2** will be activated.

**Table 2A: Major Chlorine Leak Procedure – Construction Phase**

Procedure Item	Details	Responsible Person
1	Report the incident of major chlorine release to FSD and inform OSCAR of evacuation.	SHWWTW person in charge
2	Report to EPD, FSD and Police the commencement of evacuation of the facility.	OSCAR Construction Manager
3	Instruct General Foreman to raise the evacuation alarm and engage the audio warning system.	OSCAR Construction Manager
4	Suspend construction works.	OSCAR General Foreman
5	Check the presence of the staffs and workers at the Assembly Point and report to the Safety Officer, Sub-agents (Civil/E&M) and Construction Manager.	OSCAR Construction Manager and Safety Officer
6	Report to FSD the status of evacuation.	OSCAR Construction Manager
7	Identify a safe place for further evacuation. Otherwise, FSD will instruct the Construction	FSD



Procedure Item	Details	Responsible Person
	Manager to lead the team and stay at the Assembly Point.	
8	Report to ER/IC/EPD and OSCAR Project Manager the details of the event and status of evacuation.	OSCAR Construction Manager
9	Confirm the facility is safe.	FSD

**Table 3B: Major Chlorine Leak Procedure – Operation Phase**

Procedure Item	Details	Responsible Person
1	Report the incident of major chlorine release to FSD and inform OSCAR of evacuation.	SHWWTW person in charge
2	Report to EPD, FSD and Police the commencement of evacuation of the facility.	OSCAR Operation Manager
3	Instruct control room supervisor to raise the evacuation alarm and engage the audio warning system.	OSCAR Operation Manager
4	Suspend the operation of the automatic mechanical equipment. Ensure the operation system is shut down safely.	OSCAR Control Room Supervisor
5	Conduct “Roll Call” and check the presence of the team members at the Assembly Point and report to the chief emergency warden and Operation Manager.	OSCAR Supervisors, EPD representatives
6	Report to FSD the status of evacuation.	OSCAR Operation Manager
7	Identify a safe place for further evacuation. Otherwise, FSD will instruct the Operation Manager to lead the team and stay at the Assembly Point.	FSD
8	Report to EPD and OSCAR Project Manager the details of the event and status of evacuation.	OSCAR Operation Manager
9	Confirm the facility is safe.	FSD

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### **10.1.6. Communication Channel with Siu Ho Wan Water Treatment Works (SHWWTW) and Fire Services Department (FSD)**

After the award of the Contract, OSCAR will arrange a kick-off meeting with EPD, FSD and SHWWTW. OSCAR will develop and circulate an emergency contact list comprising contact phone numbers of EPD, FSD, SHWWTW and OSCAR key personnel. For public safety and security reasons, the Police may be required to be informed of such list to facilitate their traffic management or road block measures.

#### **1) Formal Communication Channel**

During the kick-off meeting, the definitions of a “Major Chlorine Leak” and “Transportation of Chlorine” will be discussed and agreed. In the event of a major chlorine leak, the formal communication channel between SHWWTW, EPD, FSD, Police and OSCAR will be utilised in order mitigate and remedy the emergency situation efficiently. SHWWTW should have sufficient equipment and knowledge to detect and manage a minor leakage of chlorine gas, and should such an event occur, SHWWTW should be capable of managing the event without the need of a major evacuation of OWTF Phase 1. SHWWTW will be responsible for the gas detection during the Operation Phase and report to FSD in case of a major leakage. In this case, SHWWTW must inform OSCAR’s key personnel immediately about the incident to allow them to manage the evacuation procedure accordingly.

#### **2) Non-working Hours Arrangement**

OSCAR’s key personnel in relation to the Contract will be available 24-hour a day to deal with an emergency. In case no key personnel can be reached during the non-working hours, SHWWTW will contact OSCAR’s security guard, who will be trained to manage the evacuation of the plant and appointed as a contact point for FSD and the Police.

#### **3) Contact List**

It is vital during emergency situations to have fast and clear communications; OSCAR will maintain an Emergency Communication List and display it in the Central Control Room and OSCAR’s office. The list will contain telephone contact numbers for:

- the Employer’s Representative(s) both on-site and off-site
- necessary essential services, including:
  - nearest Fire Service Station
  - nearest Police Station
  - EPD Regional Office

- nearest medical centre
- DSD
- SHWWTW
- Labour Department
- Waylung' s Collection Services
- ATAL' s Emergency Out-call Service
- waste producers, including:
- FEHD
- LCSD
- registered waste generators
- registered waste collectors
- operators of IOWCPS
- facilities nearby, including
- bus depot next to OWTF
- operator of disposal facilities including:
- WENT Landfill
- NLTS.

To minimise the communication time during an emergency, OSCAR will only nominate two to three contact points for the contact list. The emergency contact list as show in Table 3 below:

**Table 3 Emergency Contact List**

Organisation	Phone	Fax	Email
<b>Emergency Services</b>			
Emergency services (police, fire, ambulance)	999		
Police Hotline	+852 2527 7177		
<b>EPD Regional Office</b>			
EPD Regional Office (South)	+ 852 2516 1718	+852 2960 1760	

Organisation	Phone	Fax	Email
<b>Nearest Fire Station</b>			
Tung Chung Fire Station	+852 2988 1898	+852 2988 1688	tc_fstn@hkfsd.gov.hk

<b>Nearest Medical Centre</b>			
North Lantau Hospital	+852 3467 7000	+852 3467 7004	nlth.enquiry@ha.org.hk
North Lantau Community Health Centre	+852 3467 7374	+852 3467 7377	

<b>Nearest Police Station</b>			
Lantau North Police Division	+852 2988 2368 +852 3661 1694	+852 2988 1822	

<b>Nearby Facilities</b>			
City Bus Ltd.(Siu Ho Wan Depot)	+852 2963 4888	+852 2579 0202	
New Lantau Bus Co., (1873) Ltd. (Siu Ho Wan Depot)	+852 2984 8361 +852 2984 9848	+852 2984 8812	
Long Win Bus Co., Ltd. (Siu Ho Wan Depot)	+852 2708 5678 +852 2261 2791	+852 2745 6779	
Siu Ho Wan Sewage Treatment Works	Drainage Hotline: +852 2300 1110, General Enquiries: +852 2877 0660		
Siu Ho Wan Vehicle Pound Vehicle Examination Centre and Weight Station			
Siu Ho Wan Water Treatment Works	+852 2824 5000(24-hour hotline)		wsdinfo@wsd.gov.hk

<b>Operators of Disposal Facilities</b>			
North Lantau Transfer Station (operated by SITA Waste Services Ltd.)	+852 2984 1822		
WENT landfill (operated by SITA Waste Services Ltd.)	+852 2472 3455 (Facility Office)		



Organisation	Phone	Fax	Email
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Other government departments			
Drainage Services Department	+852 2300 1110 (24-hour hotline)		<a href="mailto:enquiry@dsd.gov.hk">enquiry@dsd.gov.hk</a>
Electrical & Mechanical Services Department (Siu Ho Wan Government Maintenance Depot)	+852 2984 7186	+852 2364 2613	
Food and Environmental Hygiene Department	+852 2868 0000 (24-hour hotline)	+852 2869 0169	<a href="mailto:enquiries@fehd.gov.hk">enquiries@fehd.gov.hk</a>
Labour Department – Employment Services Division (Tung Chung Job Centre)	+852 3428 2206	+852 3580 2936	<a href="mailto:lo-es-tc@labour.gov.hk">lo-es-tc@labour.gov.hk</a>
Leisure and Cultural Services Department (Islands District Leisure Services Office)	+852 2852 3220	+852 2854 3949	
Marine Department	+852 2542 3711 +852 2233 7808 (24-hour hotline)	+852 2541 7194 +852 2858 6646	<a href="mailto:mdenquiry@mardep.gov.hk">mdenquiry@mardep.gov.hk</a>
Water Supplies Department	+852 2824 5000 (24-hour hotline)		

#### 4) Regular Meetings

It is anticipated that SHWWTW will have six deliveries of chlorine every year. During such deliveries, the Construction works will be suspended according to the EIA report mitigation measures. In order to allow effective cooperation between SHWWTW and OSCAR, a meeting between the two parties will be held every six months. The meetings will allow both parties to exchange information on, for example, updated contact list, delivery schedule, etc. An agenda will be prepared for each meeting comprising the items, without limitation, shown in **Table 3** below.

**Table 4: Sample Agenda of Regular Meeting**

Item	Agenda
1	Contract List Updates for SHWWTW, EPD, FSD, Police and OSCAR
2	Emergency Notation Procedures Update
3	Chlorine Transportation Schedule in Coming half-year
4	Details of Emergency Drill/ Joint Drill
5	Traffic Management Interface
6	Other Interface Issue between OWTF Phase 1 Construction/ Operation and SHWWTW
7	Next Meeting Schedule

### 10.1.7. Training and Periodic Drills to Site Personnel

#### 1) Training

OSCAR recognises that the delivery of adequate safety and health information and training for all staff and stakeholders is vital to an effective accident prevention programme. OSCAR will therefore ensure that well-structured schedules for safety and health information provision and training programmes (comprising the safety and health initiatives described in the following sub-sections) are available and updated throughout the Project.

#### 2) Site Specific Safety Induction Training for Construction Phase

All site staff will undergo Site Specific Safety Induction Training which will contain core topics such as, Safety and Health Induction, relevant safety and health regulations, emergency rescue and typhoon procedures, emergency procedure in the event of chlorine gas release in SHWWTW, assessment of site hazards, accident reporting and first aid

procedures. The Safety and Health Induction will cover topics on site specific issues and requirements including, but not limited to, the following:

- Safety and Health Policies
- Safety and Health Plan
- Fitness for work – fatigue, drugs and alcohol, stress, heat stress
- Emergency response, e.g. fire, typhoon, chlorine gas release in SHWWTW, confined space, etc.
- Golden Rules & Site Rules
- Site specific hazards, e.g. working at heights, plant and equipment, etc.
- Hazard identification and reporting
- Site-specific PPE requirements
- Job Safety and Environmental Analysis (JSEA)
- Core Systems of Work
- First Aid (CPR)
- Incident and accident reporting.

All supervisory personnel and operatives will attend regular refresher courses to ensure best practice behaviour at all times.

### 3) Operational Safety & Health Training for Operation Phase

To eliminate or minimise the risk of exposure to hazards during the Operation, all personnel will be adequately instructed and trained in safety procedures, systems of work and the tasks they are required to perform. All Operation personnel and relevant subcontractors must participate in any training programmes and inductions in accordance with the OSCAR Safety and Health Policy. The Operation Management team will ensure that all personnel receive the appropriate training in accordance with any legislative safety and health regulations. A training program will be developed for the site in accordance with the Safety and Health Plan. Included in this programme will be safety training related to all identified hazards and safety areas applicable to the OWTF including training in the following areas:

- Induction
- First Aid
- Work at heights
- Confined space
- Manual handling

- 
- Hazardous substance and dangerous goods
  - Risk management
  - Skills training
  - Incident management
  - Emergency response, e.g. fire, typhoon, chlorine gas release in SHWWTW, confined space; and
  - Fire control.

All personnel will have the necessary skills and qualifications or have received adequate information, instruction and training to allow them to perform their work safely without risk to themselves or others. Refresher training will be undertaken to maintain competency in key and high-risk activities and as required by law, including activities associated with working in confined spaces, forklift operations, dangerous goods handling and storage and First Aid procedures. A certificate of prescribed occupation competency must be held prior to commencing any positions or task in which it is required, e.g. electrical, confined space, and forklift operation. Site verification of such competencies will be undertaken for all positions requiring a certificate of competency and as required by regulatory authorities. Such skills include:

- Instrument and Control Technicians
- Electricians, including high voltage competency
- Mechanical Fitters.

All training records will be maintained as per documented Record Management Procedures.

#### 4) Periodic Drills

Periodic drill of emergency procedure will be carried out during the construction and operation phase including the following procedures:

- “DRILL” sign displayed on panel
- FSD informed (Before this drill)
- FSD attended (If yes, arrival time should be recorded)
- Emergency (evacuation) Alarm should be raised manually
- The non-essential personnel to assemble at the Emergency Assembly Point for the Roll Call. EPD, IC and OSCAR will nominate their own staff as wardens to be in charge of the roll call for each organisations staff. Each warden will report to the Chief Warden after the roll call exercise and record in the report
- Check the function of all emergency (evacuation) alarms

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- Test all air louvres, check the function of fans and dampers and the scrubber system when the chlorine leakage signal is activated. Attach the completed checklists for the individual items of plant to the drill record
  - Silence the sirens, reset all alarms and reset system back to normal
  - Remove all “DRILL” and “WARNING” signs and declare the drill completed
  - Report defects found
  - The drill report to be witnessed and certified by Chief Warden. End the drill and dismiss all personnel.

### **10.1.8. First Aid**

Should an accident occurs involving chlorine leakage, the affected person will be brought to a safe place with fresh air. An ambulance will be called immediately. The following measures will be carried out whilst waiting for the ambulance to arrive:

- Lay the casualty on his back with head and shoulders raised by cushions. Loosen clothing at the neck and waist and remove any clothing that is contaminated. Keep the casualty as still as possible
- If the casualty’s skin or eyes are affected, rinse the affected parts with clean water
- If available, give the casualty a glass of hot milk, sweet tea or coffee with a lump of butter or margarine added. Alcohol must be avoided
- Persuade the casualty not to cough.

## **10.2. Fire**

### **10.2.1. Introduction**

The Works will be designed and constructed with care to ensure that the risk of fire is minimised, and in the event that a fire occurs the impact of the fire is minimised. The Operation phase will continue this philosophy.

The objective of this section is to provide an initial and appropriate response to different scenarios of fire. The Operation Manager (Construction Manager during construction of the Works) based on the prevailing circumstances and needs, will manage the initial response the fire.

All OSCAR employees resident at the station will be given basic instruction and training in how to deal with a fire and they will be required to follow the procedures set out below.

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### **10.2.2. Smoking and Naked Flames**

- Smoking will not be permitted anywhere inside main building and around the diesel fuel storage tank and the Biogas System area.
- Naked flames will not be permitted anywhere within the station except where prior permission has been given by the Operation Manager. The Operation Manager will, prior to giving permission for a naked flame, develop a safe system of work. The safe system of work shall be followed.

### **10.2.3. Fire Alarms and Equipment**

All employees are to be made aware of the location of fire alarms and fire fighting equipment at the station, and be familiar with their locations and how they are activated. They will be informed through training and regular updates of the following:

- There are fire hydrants located at staircases for the main building, two adjacent to the traffic control-room at both ends of the Tipping Hall, staff canteen, maintenance workshop, main office, wastewater treatment plant, and compactor hall. The water for these fire hydrants is supplied by the onsite fire pumps
- Smoke / heat detectors are located in the weighbridge control room, emergency generator room, transformer room, fire service pump room, water pump room and main switch room
- Activation of the smoke detectors will raise an audible alarm which will automatically inform Fire Services Department that there is a fire. This automatic communication with Fire Services Department does not relieve any person of their responsibility to telephone the emergency services
- CO<sub>2</sub> fire extinguishers are located in the weighbridge control room, emergency generator room, store room, fire system control room, fire system pump room, vehicle wash control room, main switch room, water pump room, transformer room, workshop ventilation fan room and tipping hall
- Dry powder / Foam fire extinguisher is located in EPD office, EPD conference room and fuel storage tank
- Sand buckets are located in the underground fuel storage tank
- Sprinklers are located in the ceilings of the OSCAR office, EPD office, conference room, staff mess room, changing rooms, toilets, first aid room, store room, workshop, waste water treatment plant, ventilation fan room, ventilation fan corridor and tipping hall. If a fire occurs, heat may activate the sprinkler or sprinklers above the heat source. Activation of the sprinklers will automatically start the sprinkler pump, which in turn will activate the audible fire alarm and will automatically inform Fire Services Department that there is a fire. The automatic communication with Fire Services

Department does not relieve any person of their responsibility to telephone the emergency services

- There are hose reels and fire alarm activation points located in OSCAR office, staff mess room, tipping hall next to traffic control room on both sides, ventilation fan corridor near entrance of the stairs, workshop, entrance of waste water treatment plant, compactor hall beside the compactors and the main entrance
- Activation of the fire alarm by breaking the glass cover will sound an audible fire alarm, start the fire pumps and will automatically inform Fire Services Department that there is a fire. This automatic communication with Fire Services Department does not relieve any person of their responsibility to telephone the emergency services
- The hose reels are supplied with water from a storage tank on site. The water is pumped to the hose reel. The pump will operate automatically when the hose reel is used. An audible alarm will be activated once the pump starts
- The fire services equipment and emergency lighting can be supplied with electricity from the CHP plant, CLP Power HK Ltd (CLP) or an emergency generator. The emergency generator will automatically start in the event of a failure in both the CHP and CLP supply. Following reinstatement of the supply the electricity supply will automatically transfer to CHP or CLP power and the generator will stop automatically
- There is a fire assembly point at the car park area near to the main entrance labelled "ASSEMBLY POINT".

#### **10.2.4. Fire Procedures for OSCAR resident employees**

In the event of a fire being detected the OSCAR employees resident at the site will be instructed to follow the procedures given below:

**A. Minor Fire;**

1. If you see a minor fire and you have the equipment available to extinguish the fire, without endangering yourself, extinguish the fire.
2. If you have extinguished a minor fire immediately report the circumstances to the Operation Manager.
3. If you cannot extinguish the fire proceed to Step B1.

**B. Fire Other than a Minor Fire;**

1. If you see a fire within the external to the Facility immediately proceed to a telephone and contact the emergency services. In proceeding to a telephone and without delaying your progress, inform any person you meet that there is a fire and instruct them that they must proceed to the "EMERGENCY ASSEMBLY POINT".

2. When speaking to the emergency services stay calm and answer the questions you will be asked, which may include:
  - your name
  - your ID card number
  - the telephone number you are calling from
  - the name and address of the location of the fire will be:
    - OSCAR Bioenergy Ltd. Organic Waste Treatment Facility Phase 1; or
    - A fire adjacent to the above location but external to the Station
  - - the event is a fire and whether it is major
  - - are there any known injuries to persons
3. Contact the Operation Manager by the quickest means available and inform the Operation Manager that a fire has occurred and the circumstances.
4. Proceed to the "Emergency Assembly Point" and await instructions.

**C. Fire Alarm or Informed That There is a Fire**

1. Proceed to the "EMERGENCY ASSEMBLY POINT" and await instructions. In proceeding to the "EMERGENCY ASSEMBLY POINT" and without delaying your progress inform any person you meet that there is a fire and that they must proceed to the "EMERGENCY ASSEMBLY POINT".

**D. Communication**

1. In a fire emergency telephone and mobile phone communication will be important. Stop any communication not related to the fire, keep all communication related to the fire as brief as possible.

### **10.2.5. Fire Procedure for FSD Emergency Response**

In the event that the FSD are called the following procedure will be activated;

1. Upon arrival at the "EMERGENCY ASSEMBLY POINT" the senior member of the OSCAR staff will assume the position of Controller.
2. The Controller will identify one person at the "EMERGENCY ASSEMBLY POINT" who will be instructed to attend the entrance gate, ensure the gate is open and await the Emergency Services to direct them. The Emergency Services will be fire, ambulance and police.
3. The Controller will identify whether any person is missing. If a person is identified to be missing no attempt shall be made to find the missing person until the Fire Services Department has arrived and been informed. Under these circumstances the instructions of the Fire Services Department will be obeyed.



4. The Controller will, upon the arrival of the Fire Services Department, identify himself to the senior officer on site of the Fire Services Department. He will assist the senior officer of the Fire Services Department, by answering his questions, following his instructions and providing relevant information with regard to potential hazards.

The Operation Manager will, upon being informed of a fire, proceed immediately to the "EMERGENCY ASSEMBLY POINT" and offer advice and instruction to the Controller with regard to special precautions.

The simple procedure is suggested when there is a fire beyond manageable:

- run
- shout to nearby personnel
- trigger the alarm on the way
- dial "999" in a safe place.

#### **10.2.6. Fire Hazards**

With the exception of diesel fuel storage tank and biogas storage tank, no other media are stored at the station in sufficient quantities which are likely to maintain a major fire, produce dangerous gases or explode.

The diesel fuel storage tanks have been constructed in accordance with requirements set out by the FSD and the contents are in compliance with FSD requirements. The Operation Manager will inform FSD of the quantity and type of diesel stored in the tank. The FSD will be familiar with dealing with this kind of hazard.

The buildings have been constructed in accordance with requirements set out by FSD and the contents are in compliance with FSD requirements. The Operation Manager will inform FSD of the function and contents of the buildings. The FSD will be familiar with the risks presented by these buildings.

The wastewater treatment plant is predominantly constructed of steel and concrete. With the exception of isolated small electrical fires, the wastewater treatment plant does not pose a significant risk. The FSD will be informed that leachate is not flammable nor will it give off gases, other than in a confined space, which would immediately harm people. The FSD will be familiar with extinguishing small electrical fires.

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## 10.3. Electrical Supply Failure

### 10.3.1. Power Failure Situations

The following situations may lead to power failure from either the CHP or CLP grid:

1) Shutdown of Biogas Storage and Distribution

Multiple causes can lead to failure, but would generally include a critical component of the process systems such as gas leak on a common high pressure gas header, which would require shutting down the process of the plant.

2) Interruption of the connection to the CLP grid

CLP connections fail or are interrupted and the facility will only be reliant on locally generated power.

- Adverse weather conditions

Under extreme conditions in the typhoon season, it is necessary to deflate the biogas buffer storage which may lead to suspension of CHP due to unstable gas pressure.

- Fire

A situation where part or the entire Facilities have to be shutdown in emergency, such as fire outbreak could damage one or more of the common areas of the Facilities, which may lead to emergency shutdown of CHP.

In order to address the power failure scenarios and mitigate the impact on the facilities, the electric supply has been developed with the following hierarchy of priorities:

- Level 1: Self-supply from OWTF Biogas generators, with each of them sized to satisfy the demand of the Facilities (about 1.5MW load at its peak)
- Level 2: CLP power supply is arranged for redundancy during the failure of the complete CHP plant.
- Level 3: Essential and emergency power supplies will be provided by using an emergency diesel generator. An independent generator will be designed to provide power for all essential and emergency process equipment and fire service equipment of the Facilities.

### 10.3.2. Essential Services

Essential services are those services needed to guarantee a safe shutdown of the plant in an emergency situation when there is a failure of both the CHP and CLP grid supply.

- Biogas Blower is critical to maintaining steady gas transportation to avoid biogas accumulation in the anaerobic digesters with resultant explosion hazard
- Biogas Flare Unit (or Standby Flaring Gas Unit) must be available at all times to flare excess biogas to avoid excessive pressure accumulation in anaerobic digesters and biogas storage
- Weighbridge data server is required to record and store data on all vehicles in and out of the Facility
- AD circulation pumps are critical to provide mixing of the contents to avoid settlement and dead zones in the digesters, and to ensure continuous degasing of digestate to maximise the digestion performance
- Control system including the SCADA System and CEMS is critical to ensure that all processes are still under control and that emissions are still being monitored even during emergency situations; and
- Biogas Storage Tank supporting blower is critical in maintaining adequate storage volume in the Biogas Storage Tank.

When Level 1 and 2 power supplies are unavailable, essential services are supplied from a diesel generator rated to 300kW in the plant to maintain the principle of plant independence.

### **10.3.3. Emergency Facility**

These services are required to operate in emergency situations, regardless of the condition of the process equipment. They are supplied from a dedicated diesel generator to avoid any interaction with process equipment, and to comply with FSD requirements. They include:

- Fire water pumps
- All other fire protection related systems that require an electric power supply
- Emergency lighting.

## **10.4. Closure of the Facility**

The following are identified risks that could lead to closure of the Facility:

- Blockage of access road
- Inclement weather
- Fire inside OWTF
- Leakage of chlorine gas; and
- Other emergency within the Facility, e.g. accident.

The detailed procedures to be adopted for each the identified risks are covered elsewhere in this Emergency Procedures Plan, along with the mitigation measures to prevent occurrence.

If closure of the facility is necessary the Operation Manager will communicate with EPD and FEHD, and any other emergency departments including the Police and FSD on the reasons for the closure. The following action will be taken:

- 1 Inform the Employer that temporary closure of OWTF is required.
- 2 Agree with the Employer measures to handle cause of blockage.
- 3 Co-ordinate with the Police Department and/or other government department to resolve the issue (eg Traffic diversion, clearance of debris, completion of emergency repairs).
- 4 Inform Registered Waste Generators and Registered Waste Collectors about the blockage and temporary closure of OWTF.
- 5 Monitor healthiness of the process during the time of blockage and adjust process parameter(s) (eg. Anaerobic Digesters feed rate) if necessary.
- 6 Ready standby resources to cater for possible sudden rush of collection vehicles into OWTF after the blockage is cleared.

## **10.5. Flooding**

The Design has examined all likely sources of flooding and appropriate flood protection measures will be provided at the facility site. Runoff from roofs will typically be intercepted and captured for rainwater harvesting with the general site drainage discharging to the inter-tidal drainage nullah routed along the north eastern boundary of the site. During extreme events the nullah may be subject to surcharging and the site formation level has been located above the nominal 1:200 year flood level of + 6.5mpD to mitigate potential flooding of the facility.

The site abuts steep hillsides but the toe of the slope along the south east side of the site is provided with channels within the DSD easement, which will intercept storm flows from the hillside and drain them to the tidal nullah. A 3m high wall will be constructed at the edge of the easement and a lower solid wall will be constructed along the north-eastern drainage reserve, which will offer additional protection against flooding and material from landslides, caused by heavy rain, from entering the site. Hard standings and roads within the site will be provided with adequate falls to ensure that water does not pond on and cause localised flooding.

The Facility will therefore be provided with a high level of flood protection and the risk of flooding is minimal. The specific precautions to be adopted in response to tropical cyclones and rain warnings are given below in **Section 10.6.3**

## **10.6. Inclement Weather**

### **10.6.1. Weather Warnings**

Severe weather phenomena that affect Hong Kong, generally between April to September, are tropical cyclones (typhoons), and thunderstorms. The Hong Kong Observatory has a comprehensive warning system to alert the general public to these weather conditions:

- tropical cyclones warning
- rainstorm warning
- thunderstorm warning.

These warnings will provide valuable information for the Operation Manager and all departmental managers to assess, monitor and forecast the situation, and derive appropriate action plans whenever necessary.

### **10.6.2. Affect of Inclement Weather on Operation**

Inclement weather may have the following impacts on the Operation of OWTF:

- Tropical Cyclones
  - strong wind that may cause human injury and equipment damage;
  - suspension of collection and delivery of SSOW to OWTF;
  - road blockage/traffic jam along delivery route to OWTF affecting delivery of SSOW to OWTF;
  - suspension of public transport affecting employees of OWTF going to work; and
  - road blockage/traffic jam along route to OWTF causing OWTF's employees to be late in reporting for duty.
- Heavy Rainstorm
  - heavy rainstorm may cause flooding to OWTF;
  - suspension of collection and delivery of SSOW to OWTF;
  - road blockage/traffic jam along delivery route to OWTF affecting delivery of SSOW to OWTF;
  - suspension of public transport affecting employees of OWTF going to work; and
  - road blockage/traffic jam along route to OWTF causing OWTF's employees to be late in reporting for duty.
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- Thunderstorm
  - this may accompany the heavy rainstorm that has been described above; and
  - lightning strike may cause human injury and damage to equipment and/or control system.
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### **10.6.3. Procedures for Inclement Weather**

The specific measures and procedures to be taken for inclement weather will be:

#### **1) Tropical Cyclone**

- all the buildings, structures and equipment installed in OWTF will have been designed to Hong Kong wind codes, and any areas undergoing maintenance work will be secured before a typhoon
- after the Hong Kong Observatory has hoisted typhoon signal number 3, the Operation Team, with the assistant from the Maintenance Team, will patrol the whole facility and secure or move in-doors anything that is vulnerable to strong wind
- the Operation Manager will review the situation and, if deemed necessary, agree with the Employer to deflate the Biogas Holder by either sending more biogas to CHPs or using the standby flare
- if weather conditions worsen and the chance of hoisting typhoon signal number 8 is high, the Operation Manager will agree with departmental managers (the Operation Superintendent and Maintenance Manager in particular) on staff arrangements if typhoon signal number 8 is hoisted
- reduce staff levels to the minimum required, only staff from the Operation Team and Maintenance Team will be required to work on site
- if it is safe and practical, normal shift change will take place and inclement weather staff transport arrangement will be launched
- if it is not safe, arrange for extension of existing shift during typhoon signal number 8 hoisting period
- if Hong Kong Observatory announce typhoon signal number 8 will be hoisted within two hours, departmental managers will arrange unnecessary staff to leave OWTF in an orderly manner
- duty Supervisor and Maintenance Manager will inform all necessary staff if shift change is required in a reasonable time before the normal time of the shift change. In case of any doubt staff will telephone their immediate supervisor or departmental manager for clarification
- essential staff will arrive at the pickup points on time to wait for transportation to OWTF
- duty Supervisor will ensure that staff of the next shift have arrived to work before releasing staff of existing shift from work

- duty Supervisor will arrange staff release from work to make use of staff transportation arrangement to go to drop off points, or if it is unsafe to leave OWTF arrange safe accommodation for them until it is safe to depart OWTF
- in case any member of staff finds that it is not safe or practical to go to work, he/she will telephone the duty Supervisor immediately and the duty Supervisor will make necessary arrangement to ensure uninterrupted operation
- during the typhoon period, staff will avoid going outdoors unless they are deployed to undertake emergency operation/maintenance, staff will put on weatherproof clothing to perform any outdoor activities and maintain communication with the duty Supervisor at all times
- staff safety is of highest priority and the duty Supervisor will balance between the risk of any outdoor works, including the need to maintain broken down equipment, and human safety The Operation Superintendent and Operation Manager will be consulted in case of any doubt
- waste reception will normally be discontinued two hours after the hoisting of the typhoon signal number 8 or above. OSCAR will contact the RWG and Collectors to confirm the status of collection and delivery of SSOW to OWTF. Temporary arrangements to allow reception of SSOW beyond the two hours limit will be agreed with the Employer, if necessary
- OSCAR will liaise with Waylung, sub-contractor for waste collection in IOWCPs, to gain an understanding of the situation of IOWCPs waste collection. Empty trucks will return to their depot and loaded trucks, if safe and practical, will continue to deliver waste to OWTF. OSCAR will keep the Employer and operators of IOWCPs informed on the status
- during period of hoisting typhoon signal number 8 or above, SSOW delivery to OWTF will normally be stopped, duty Supervisor will closely monitor the level of waste stored in waste reception hoppers and suspension buffer tanks, and if necessary reduce in-feeding and out-feeding rate of the anaerobic digesters; and
- if there are any visitors at OWTF the CRO (or Administration Manager) will liaise with the Employer to make arrangements for safe departure, or safe accommodation if it is not safe to do so.

## 2) Heavy Rainstorm

- the site level at OWTF will be +6.5mPD which is above the nominal 1:200 year flood level and will be above the level of all but the most extreme flood events, and the risk of flooding will be minimal during a black rainstorm
- OWTF will reduce staff level to the minimum required which will normally be the Operation Team and Maintenance Team
- normal shift change will take place and inclement weather staff transport arrangement will be launched



- essential staff are required to arrive the pickup points on time to wait for transportation to OWTF
- in case of doubt staff will telephone their immediate supervisor or departmental manager for clarification
- the duty Supervisor will ensure that staff of the next shift have arrived at work before releasing staff of the existing shift
- the duty Supervisor will arrange staff release from work to make use of staff transportation arrangement to go to drop off points, or if it is unsafe to leave OWTF arrange safe accommodation to them until it is safe to depart
- in case it is unsafe or impractical for any member of staff to go to work, he/she will telephone the duty Supervisor immediately, and the duty Supervisor will make the necessary arrangements to ensure uninterrupted operation
- during the black rainstorm warning period, staff will avoid going outdoors unless they are deployed to undertake emergency operation/maintenance. Staff will put on weatherproof clothing to perform any outdoor activities and maintain communication with duty Supervisor at all times
- staff safety is of highest priority and the duty Supervisor will balance between the risk of any outdoor works, including the need to maintain broken down equipment, and human safety The Operation Superintendent and Operation Manager will be consulted in case of any doubt
- waste reception will normally be discontinued two hours after the hoisting of the black rainstorm warning, OSCAR will contact RWG and Collectors to confirm the status of collection and delivery of SSOW to OWTF. Temporary arrangements to allow reception of SSOW beyond the two hours limit will be agreed with the Employer, if necessary
- during period of black rainstorm warning, SSOW delivery to OWTF will normally be stopped, the duty Supervisor will closely monitor the level of waste stored in the waste reception hoppers and suspension buffer tanks, and if necessary reduce the in-feeding and out-feeding rate of anaerobic digesters
- if there are any visitors at OWTF the CRO (or Administration Manager) will liaise with the Employer to make arrangements for safe departure, or safe accommodation if it is not safe to do so.

### 3) Thunderstorm

- thunderstorms will affect operation of OWTF by lightning and/or heavy rainfall but there will have no disruption to the operation of OWTF and waste reception
- OWTF will be equipped with properly maintained lightning protection, and lightning will not present a significant problem
- OWTF will be built on a level higher than the major source of floods, and the risk of flooding will be minimal



- during the thunderstorm warning period, staff will avoid staying outdoors in high ground and open areas. Staff will put on weatherproof clothing to perform any outdoor activity and maintain communication with duty Supervisor; and
- if there are any visitors at OWTF the CRO (or Administration Manager) will stop all outdoor activities and ensure that all visitors remain indoors. The CRO will liaise with the Employer to make available safe accommodation until it is safe to leave OWTF.

## **10.7. Spillage of Chemicals**

### **10.7.1. Introduction**

OSCAR will maintain stringent discipline in maintaining the storage of chemicals, dangerous goods and hazardous materials to avoid any incidents that are detrimental to the safety and health performance. Appropriate stock levels will be maintained to allow continuous and efficient Operation of OWTF while not exceeding regulatory limits. Storage of drums or containers in unauthorised areas will be prohibited. Operation staff will ensure safe storage and handling by:

- careful inspection and monitoring when chemicals and dangerous goods are delivered to OWTF to ensure that the chemicals and dangerous goods are of the correct specification and delivered to the correct location
- sampling and analysis of chemicals delivered by the in-house laboratory
- careful handling with appropriate PPE after reading the MSDS before the chemicals and dangerous goods are delivered.

The most probable chemical waste generated within OWTF will be the spent chemicals from the laboratory and the waste lubricating oil from the maintenance workshop. OSCAR will register OWTF as a Chemical Waste Producer. Chemical waste will be temporarily stored in drums of suitable design and construction to prevent leakage, spillage or escape of content and kept in safe areas in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Storage areas including rooms, cupboards, cabinets or bins, will display hazard warning markings at or near the entrances or openings of the storage areas. A reputable and licensed chemical waste collector will be dedicated to collect the chemical waste and empty the drums on a regularly frequent basis.

Some of the chemicals used are classified as dangerous by the FSD. For these potentially hazardous chemicals, OSCAR will comply with the Dangerous Goods Ordinance and carefully implement safety procedures. As mentioned in the Safety and Health Plan, for the handling and storage of any hazardous substances to health, the following measures will be implemented:

- maintenance of the MSDS register

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- health and risk assessment of substances according to frequency and quantity in use, method of application and the hazards of the materials
  - training and information
  - storage and issue control
  - access control during chemical handling; and
  - PPE.

For the chemicals classified as dangerous goods, safety instructions and first-aid measures from the chemical suppliers' MSDS will be carefully implemented by. In the latter are also the MSDS of the more frequently used chemicals, such as ferric chloride, polymer and antifoam agent, even though they are not classified as dangerous goods by the FSD. The Annexure highlights that specific measures will be considered by OSCAR for all these chemicals according to the risk they represent.

OSCAR will pay particular attention on all relevant legislative requirements from the Labour Department, the Fire Services Department and the Environmental Protection Department.

Common fire fighting measures will also be implemented for all chemicals:

- water spray, dry chemical powder, carbon dioxide or chemical foam will be used for handling small fires
- suitable protective equipment will be used; and
- contact with combustible materials, metals, organic materials will be avoided.

Chemical delivery will be conducted by trucks and/or trailers only. The delivery vehicle will be:

- with valid vehicle licences
- comply with FSD and relevant statutory requirements
- maintained in good and clean operational condition
- properly maintained to avoid excessive emission.

All containers/tanks will be:

- corrosion-resistant if required
- able to withstand accidental impact
- suitably designed and constructed to prevent leakage and spillage
- made with material suitable for application. Same material should be used for any pipes and valves equipped.

With the exception of leachate and diesel, chemicals will be stored in small quantities in sealed drums and any spillage which may occur at the facility will be minor.

In the event that a minor spillage occurs, the Operation Manager will consult the MSDS register to determine the nature of the chemical. If it is safe to do so the following procedure in respect of minor spillages will be followed.

1. Whenever possible stop source of leakage.
2. If leakage cannot be stopped, try to use bucket to contain the spillage to prevent it from dropping onto the ground.
3. If spill is spreading, use sand bags to contain the affected area.
4. Put an adequate amount of absorbent material on the spill.
5. Use dust pan and brush to collect the spill saturated absorbent material. Safety goggles and rubber gloves to be worn when collecting.
6. Put the absorbent material collected in a plastic bag.
7. Inform Operation Manager and await further instructions.
8. The assigned person shall use suitable materials to clean up the spills. The clean up wastes are treated as chemical wastes as well
9. The chemical waste should be packed, labeled and stored into a designated Chemical Waste Container.
10. The chemical waste should be collected and disposed by the Licensed Chemical Waste Collector.

The storage of leachate takes place within the Waste Water Treatment Plant which is located in a concrete containment bund inside the main building. In the event that a major spillage were to occur as a result of a failure in the leachate collection system, immediate steps would be taken to stop any pumps operating which were contributing to the spillage. If leachate is leaking from the containment bund it will be contained using sandbags and the construction of earth bunds. Suction tankers would be engaged to remove the contaminated liquid if necessary. The cause of the leakage would be rectified. The contaminated materials used for containment would then be disposed of in a proper manner.

The storage of diesel takes place within one diesel storage tank. The storage tank has been constructed in accordance with requirements set out by FSD and is located within a concrete containment bund. In the event that a major spillage were to occur, immediate steps would be taken to stop any pumps operating and close any valves which were contributing to the spillage. The diesel supplying company will be informed and they will provide technical assistance in handling the spill saturated absorbent material.

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## **10.8. Accident to Persons**

In the event of an accident to a person the supervisor responsible for the person to take the following action:

1. Following an accident first identify whether there is any person who requires hospitalisation. If there is call the emergency services on Tel No. 999.
2. Contact by any means possible the nearest trained First Aider who will assess the injury and administer appropriate First Aid.
3. When speaking to the emergency services stay calm and answer the question asked which may include:
  - name
  - ID card number
  - the telephone number you are calling from
  - the name and address of the location of the accident
  - the event is an accident and whether it is major
  - that there are injuries to persons
4. Contact the Operation Manager by the quickest means available and inform the Operation Manager that an accident has occurred and the circumstances.

The Operation Manager upon being notified that an accident has occurred will take the following action:

- Ensure that the source of the injury is contained.
- Ensure that appropriate measures have been taken with regard to the injured person.
- The circumstances of the accident are fully understood.
- Appropriate steps are taken to minimise the disruption which the accident may have created which may include cordon off the area of accident.

## **10.9. Vehicle Accident and Breakdown**

### **10.9.1. Vehicle Accident**

In the event of an accident involving vehicles the following procedure will be followed.

1. Following a vehicle accident the driver to identify whether there is any person who is injured and requires hospitalisation. If any person is injured call the emergency services on Tel. No. 999.
2. When speaking to the emergency services stay calm and answer the questions asked which may include:
  - your name

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- your ID card number
  - the telephone number you are calling from
  - the name and address of the location of the accident
  - the event is a vehicle accident and whether it is major
  - that there are injuries to persons
3. If the accident involves a third party vehicle, the driver to provide the following information only to the third party
- name
  - ID card number
  - vehicle registration number
  - the name and address of OSCAR
  - the name and address of our insurers

Similarly, the following information shall be requested from the driver or driver(s) of the other vehicle(s).

- their name
  - their ID card number
  - their vehicle registration number
  - their name and address
  - their Company names and address if the vehicle is owned by a Company
  - their insurers' names
4. Make sketches and notes with regard to the events leading to the accident.
5. Contact the Operation Manager by the quickest means available and inform the Operation Manager that a vehicle accident has occurred and the circumstances.

The Operation Manager upon being notified that a vehicle accident has occurred will take the following action:

- Ensure that appropriate measures have been taken with regard to any injured persons
- the circumstances of the accident are fully understood
- appropriate steps are taken to minimise the disruption which the accident may have created; and
- if spillage occurred ensure that appropriate steps are taken to minimise the effect of spillage to environment.

### **10.9.2. Vehicle Breakdown Inside the Facility**

In the event of vehicle breakdown inside the facility, the following procedure will be followed.

1. The duty Supervisor is to be informed immediately where and what type of vehicle was broken down immediately.

2. The duty Supervisor to proceed to the breakdown location and ensure the breakdown vehicle is not affecting the operation. Arrange traffic control when necessary.
3. Inform EPD site staff that a waste collection vehicle is broken down inside the facility and when and where it happened.
4. If the vehicle belongs to a third party inform that party that their vehicle has broken down inside the Station.
5. Inform the Operation Manager that a waste collection vehicle is broken down inside the Station and when and where it happened.

The Operation Manager upon being notified that a vehicle is broken down will take the following action:

- Ensure that the circumstances of the breakdown are fully understood.
- Take appropriate steps are taken to bring the operation back to normal which may include, if it is an OSCAR vehicle:
  - (i) Arranging for a tractor to replace the broken down one to continue the operation,
  - (ii) Arranging for a maintenance crew to repair the broken down vehicle.
  - (iii) Arranging for a towing service to move the vehicle (if it is blocking access) and/or bring the broken down vehicle back to the facility or workshop for repair.
- If the vehicle belongs to a third party communicate with the third party and inform them of the breakdown and the need to replace/remove/repair/tow the vehicle. If the vehicle is blocking access and the third party is unable respond quickly OSCAR to arrange for the towage of the vehicle to a location where it does not interfere with the operation.
- Ensure that appropriate safety measures have been taken.

### **10.9.3. Vehicle Breakdown Outside the Facility**

In the event of an OSCAR vehicle breakdown outside the Station, the following procedure will be followed.

1. The driver of the broken down vehicle to ensure that the vehicle is stopped at a safe and location and, if possible, not causing an obstruction.
2. The driver to leave the cab and stay at a safe place, if possible behind the safety barrier, close to the vehicle.
3. The driver to contact the Operation Manager that the vehicle is broken down and the circumstances.
4. The driver to stay close to the vehicle and await further instruction.

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The Operation Manager upon being notified that a OSCAR vehicle is broken down outside the Station will take the following action:

- Ensure that the circumstances of the breakdown are fully understood.
- Take appropriate steps are taken to bring the operation back to normal which may include:
  - (i) Arranging for a tractor to replace the broken down one to continue the operation.
  - (ii) Arranging for a maintenance crew to repair the broken down vehicle.
  - (iii) Arranging for a towing service to bring the broken down vehicle back to the facility or workshop for repair.
- Ensure that appropriate safety measures have been taken.

#### **10.10. Blockage of Access Road**

The access road to the Facility may become blocked for a variety of reasons such as public protest, traffic accident, flooding, fallen debris during a typhoon or emergency repairs to utility services.

Upon being notified that the facility access road is blocked the Operation Manager will communicate with all relevant parties including, EPD, FEHD and any other emergency department including the Police and FSD on the condition and progress of the situation. The following action will be taken:

- 1 Inform the Employer that the access to OWTF is blocked (eg. due to protest), and that temporary closure of OWTF is required.
- 2 Agree with the Employer measures to handle cause of blockage (eg. EPD representative to meet protesters)
- 3 Co-ordinate with the Police Department and/or other government department to resolve the issue (eg Traffic diversion, clearance of debris, completion of emergency repairs).
- 4 Inform Registered Waste Generators and Registered Waste Collectors about the blockage and temporary closure of OWTF.
- 5 Monitor healthiness of the process during the time of blockage and adjust process parameter(s) (eg. Anaerobic Digesters feed rate) if necessary.
- 6 Ready standby resources to cater for possible sudden rush of collection vehicles into OWTF after the blockage is cleared.



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## **10.11. Serious Gas Leakage Arising from Vessel or Gas Pipe in BU**

### **10.11.1. Definition and Background Information**

- a. Refer to the Gas Safety Ordinance (Cap. 51), Biogas Unit (BU) is a notifiable gas installation and response procedure should be established for major gas emergencies including fire, serious gas leakage and explosion.
- b. Serious gas leakage is defined as any reading of greater than 20% LEL flammable gases is recorded in any area of the BU.
- c. Flanged joints, valves and joints between gas pipe and vessel are locations with higher possibility of leakage.

### **10.11.2. Procedure**

- a. If situation allow, close the valves upstream and downstream of the leaked vessel / pipeline.
- b. Alert occupants and report the emergency by telephone or walkie-talkie to the following, as appropriate in each case:
  - Immediate supervisor
  - Emergency services [2988 1898 or 999]
  - Security guard [TBA]
- c. Implement the following action in some instances to protect life and property, and continuous action until the conditions are no longer hazardous:
  - Stopping the flow of gas by closing valves or other means
  - Eliminating sources of ignition
  - Venting the area
  - Evacuating premises
  - Blocking off the area
  - Rerouting traffic
  - Notifying Fire Service Department
  - Notifying GSO of EMSD

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- Notifying EPD