

## **Fire Prevention and Mitigation Plan**

### **Anaerobic Digestion Plant with use of resultant Biogas.**

### **In accordance with Technical Guidance Note (TGN7.01)**

Asgard Renewables Ltd  
Cardigan AD Plant  
Unit 2 Crugmore Farm  
Penparc  
Cardigan  
SA43 1QY

Date: 30<sup>th</sup> January 2016

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## 1.0 Introduction

As part of the Bespoke Environmental Permit application this fire prevention and mitigation plan has been prepared in support of the application,. The Environment Agency Technical guidance Note TCN7.01 has been referred to and its methodology used to formulate this plan.

### 1.1 Site Location

The site is located in Penparc, near Cardigan, ordinance survey grid ref: SN 20324 47159. It is located on the western outskirts of the village of Penparc, and a new road has been constructed so that vehicles can access the site directly from the A487 trunk road.



The site and surrounding area is largely green field and the development site is surrounded by farmland.

The site is for the Anaerobic digestion of food waste and cattle slurry to create biogas. Biogas burnt in a CHP engine to form renewable energy. The site is not permitted to accept any hazardous waste, all waste is stored inside a reception building or in the digestion tanks.

### 1.2 Emergency Contacts

Asgard Renewables 029 20 484989  
Police/ Fire / Ambulance 999  
Site Manager (Martin Evans) – 07979 032907  
Ceredigion Council – 01970 617911  
Natural Resources Wales – 0300 065 3000

### 1.3 Materials on site

Material	Max Daily Quantity	Location
Food waste	55 tonnes	Reception building
Cattle slurry	20 tonnes	Reception building
Recycling (mixed)	1 x 240 L bin	Reception building
General waste	1 x 240 L bin	Reception building
Methane gas	1,644m <sup>3</sup>	Roofs of AD tank CHP Engines
Diesel bowser for fuelling vehicles	1,000L	Reception building
Digestate	5,000m <sup>3</sup>	Digestate store

### 1.4 Fire Fighting

Asgard Renewables contractors will not attempt to extinguish any other than minor fires.

Access to the site for fire tenders is good. Provision of water on site is through a domestic main only.

### 1.5 Environmental Protection

#### Drainage

- **Reception building** – sealed drainage system to sump in building, this will be emptied after a fire event and if possible re used in the AD system. Or if not possible this will be tankered off site for appropriate waste disposal.
- **The apron to the front of the reception building** - this drains via an oil interceptor to an attenuation tank. This interceptor has a stop valve that will be activated in the event of a fire preventing water entering the surface water drainage system.
- **The tank farm area** – this area is designed to hold 110% of the capacity of the largest tank, fire water would be stored here, and sampled before release to the local stream if the NRW allow.

#### Smoke

- The neighbouring business and property could be affected from smoke from a fire. In the event of a fire MD Recycling would be informed, and the neighbouring houses, they would be advised to close windows until the smoke had subsided.

## 2.0 Fire Risk and Prevention

<b>Reception Building</b>					
<b>Hazard(s)</b>	<b>Ignition Sources</b>	<b>Consequences</b>	<b>Fire Prevention</b>	<b>Further information</b>	<b>Risk</b>
Storage of food wastes and cattle slurry	<ul style="list-style-type: none"> <li>- Static electricity</li> <li>- Mechanical equipment</li> <li>- Vehicle engines</li> </ul>	<p>Risk to life of staff / visitors/ contractors working in the area.</p> <p>Risk to property</p>	<ul style="list-style-type: none"> <li>- Exclusion of dust</li> <li>- Exclusion of flammable liquids</li> <li>- Quick turnaround of waste</li> <li>- Suitable fire extinguisher in vehicle cabs.</li> <li>- Suitable fire extinguishers in reception building</li> </ul>	Fire alarm system installed in accordance with the British Standard Code of Practice BS5839 Part 1 2013.	Low
Storage of wastes for recycling	<ul style="list-style-type: none"> <li>- Static electricity</li> <li>- Mechanical equipment</li> <li>- Vehicle engines</li> </ul>	<p>Risk to life of staff / visitors/ contractors working in the area.</p> <p>Risk to property</p>	<ul style="list-style-type: none"> <li>- Storage in 240l lidded wheeled bin</li> <li>- Quick turnaround of waste.</li> <li>- Suitable fire extinguishers in reception building</li> </ul>	Fire alarm system installed in accordance with the British Standard Code of Practice BS5839 Part 1 2013.	Low
Storage of wastes from Mavitec de packaging unit.	<ul style="list-style-type: none"> <li>- Static electricity</li> <li>- Mechanical equipment</li> </ul>	<p>Risk to life of staff / visitors/ contractors working in the area.</p> <p>Risk to property</p>	<ul style="list-style-type: none"> <li>- Storage in 1100l metal skip</li> <li>- Quick turnaround of waste.</li> <li>- Suitable fire extinguishers in reception building</li> </ul>	Fire alarm system installed in accordance with the British Standard Code of Practice BS5839 Part 1 2013.	Low

<b>Anaerobic Digester System</b>					
<b>Hazard(s)</b>	<b>Ignition Sources</b>	<b>Consequences</b>	<b>Fire Prevention</b>	<b>Further information</b>	<b>Risk</b>
Methane gas produced within the biological process stored in flexible roofs above the tanks	<ul style="list-style-type: none"> <li>- Static electricity</li> <li>- Instrumentation</li> <li>- Agitators</li> <li>- Incident up stream</li> </ul>	<p>If there was an explosion then the vessel would be damaged and the effects may be seen outside the plant.</p> <p>Damage to property</p>	<ul style="list-style-type: none"> <li>- No ignition sources</li> <li>- Controls to prevent air ingress (keeping the atmosphere in the tanks above the LEL).</li> <li>- Continual plant monitoring</li> <li>- Flame arrestors before the flare stack which prevent flame flowing back</li> </ul>	Inherent protection is provided by the design of the tanks, which is a balloon dome, which in effect is a large bursting disc, so tank wall damage is unlikely.	Medium
Methane gas within the gas pipework to the CHP	<ul style="list-style-type: none"> <li>- Static electricity</li> <li>- Instruments in the duct work</li> <li>- Maintenance work</li> </ul>	<p>Fire or explosion in the duct work which will go into the carbon absorber.</p> <p>This could propagate up or down the ducts.</p> <p>The ducting may have a fire or the deposits on the duct wall could burn</p>	<ul style="list-style-type: none"> <li>- No ignition sources</li> <li>- Maintain the gas to be free of oxygen</li> <li>- Earth bonding</li> </ul>	This applies to all pipe-work with biogas	Low
De- humidifier	<ul style="list-style-type: none"> <li>- static electricity</li> <li>- maintenance work</li> </ul>	Small explosion that could propagate	<ul style="list-style-type: none"> <li>- No ignition sources</li> <li>- Maintain the gas to be free of oxygen</li> <li>- Earth bonding</li> </ul>		Low
Blower	<ul style="list-style-type: none"> <li>- Static electricity</li> <li>- Instruments in the duct work</li> <li>- Maintenance work</li> <li>- Friction on the</li> </ul>	Fire or explosion in the duct work which will go into the carbon absorber.	<ul style="list-style-type: none"> <li>- Maintain the gas free of oxygen</li> <li>- Maintenance of the blower</li> <li>- Earth bonding</li> </ul>		Low

	blower	This could propagate up or down the ducts.  The ducting may have a fire or the deposits on the duct wall could burn	- Elimination of a flammable oxygen concentration in the biogas.		
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<b>Combined Heat and Power Engine</b>					
<b>Hazard(s)</b>	<b>Ignition Sources</b>	<b>Consequences</b>	<b>Fire Prevention</b>	<b>Further information</b>	<b>Risk</b>
CHP Engine Room – leakage of biogas from flanges	- Heat from CHP - Static discharge - Friction - Electrical equipment	If the area was allowed to fill with gas and find a source of ignition the consequences would be large.	- Installation to the gas regulations - Inspection every 4000 operational hours and maintenance by competent gas engineers - Earth bonding - Low pressure - Room ventilated - Gas has odour	CHP is CE marked  The ventilation is important to the prevent the unit overheating and hence ventilation is inherently linked to the operation of the CHP unit.	Low
CHP Control room	- Heat from CHP - Static discharge	See above	See above	SCAN alarm system K110 20M2  Audible alarm and strobe lights	Low
Flare	Ignition flame	This is designed to burn excess biogas in a safe manner.  It has been installed a safe distance from the building and staff access is restricted	Flash back prevention	Fire is the normal mode of operation  This is a CE marked item of equipment  The fan is EX rated	Low

<b>Site office and Weighbridge</b>					
<b>Hazard(s)</b>	<b>Ignition Sources</b>	<b>Consequences</b>	<b>Fire Prevention</b>	<b>Further information</b>	<b>Risk</b>
Paper, computer equipment, office furniture eg chairs, table, printer	Electrical spark Toaster Electric heaters	Data loss Damage to property	All small electrical equipment PAT tested.  Toaster not to be left unattended  Electric heaters with DO NOT COVER signs  Fire extinguishers located close to the door	Data backed up on a daily basis and stored.	Medium

### 3.0 Fire Mitigation

<b>Material</b>	<b>Max Daily Quantity</b>	<b>Flamability</b>	<b>Mitigation</b>
Food waste	55 tonnes	Non flammable	n/a
Cattle slurry	20 tonnes	Non flammable	n/a
Recycling (mixed)	1 x 240 L bin	Flamable	Small quantities stored Hand fire extinguisher
General waste	1 x 240 L bin	Flamable	Small quantities stored Hand fire extinguisher
Methane gas	1,644m <sup>3</sup>	Flamable	Professional assistance sought
Diesel bowser for fuelling vehicles	1,000L	Non Flamable	n/a
Digestate	5,000m <sup>3</sup>	Non flammable	n/a

Appendix A details the actions taken by staff in the event of a fire.

## Appendix A – Fire Action Notice

### FIRE ACTION NOTICE

**Asgard Renewables  
Cardigan AD**

#### Objective

To evacuate the site as quickly and as safely as possible.

#### **Actions On**

##### **Discovering a Fire:**

**Shout "Fire, Fire, Fire" continuously and operate the nearest fire alarm call point by pushing firmly in the centre of the plastic cover.  
Dial 999 and ask for the Fire Brigade**

On Hearing the Fire Alarm:

**If you are in the reception building or site office leave immediately through the nearest fire exit  
Proceed to the Fire Assembly Point adjacent to the site office  
Remain at the Fire Assembly Point until instructed otherwise  
DO NOT re-enter the building until the Site Manager indicates that it is safe to do so**

#### Reception Building Escape Routes

- Front door
- Rear door
- Side door

#### **Other Responsibilities**

Know the location of the **fire alarm call points** (break-glass points). They are adjacent to all fire escapes

Know the location of the **fire escapes and routes to them**

Know the location of the **fire fighting equipment**. However, you are not expected to use it unless you know how to and it is safe to do so

Know the location of the **fire assembly point** (adjacent to the site office)