

BARFOOT ENERGY PROJECTS LTD

# Hartley Park Farm AD Plant Supporting Documentation

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## Pollution Prevention Plan & Risk Assessment

Revision C

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## 1. Introduction

This document has been produced to support the development of an Anaerobic Digestion plant and waste treatment facility (for the biological treatment of food & agricultural waste) at Hartley Park Farm.

It has been produced & written with reference to the requirements of the conditions laid down in the Environmental Permitting Regulations and the Animal By-Product Regulations. Further the experience gained in operating a similar facility at Sefter Farm, Pagham, West Sussex and its 36 months of operations by Barfoot Energy Ltd has been used to make this plan as robust as possible.

Barfoot Energy Projects is a subsidiary of Barfoots of Botley (B.O.B) a Hampshire based farming & food enterprise with some 40 years of experience in the farming & food process area.

BOB takes its responsibilities with regard to the health & safety of the environment as highly as the health & safety of its workforce & the public, with this in mind it applies the same level of time in professional scrutiny of all of its subsidiary operations and has invested accordingly to maintain the lowest possible level of risk and the prevention of hazards.

This scrutiny has been applied from the concept of the Anaerobic Digestion Facility whereby four years of research and evaluation of the technology and technology providers was carried out by Senior Directors of the company in order to satisfy themselves of the risk to the public, the workforce & the environment before the facility at Sefter Farm was built.

This plan reflects lessons learned in design and operations to promote a lowest risk facility to members of the public, the workforce and the absolute protection of the environment.

## 2. Risk Assessments.

A full design risk assessment of the site facility has been carried out and is detailed here, this is supplemented with an operational risk assessment for pollution prevention and this is attached as Appendix 1 to this document, this operational risk assessment covers the following areas and will be updated as the facility becomes operational.

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### 3. Groundwater Protection

Protection of the groundwater should be of paramount concern at any waste facility and this is achieved in the first instance by the good and intelligent design of waste water and storm water collection systems.

The preferred method of managing normal rainfall is to design the facility with only the absolute required areas of hard impermeable surfaces as is necessary to achieve a safe and efficient facility and afford protection to the environment from spillage.

With the above in mind roadways are limited to the required size for safe access and to afford a route as direct to the building as is possible . Theses roadways will be drained to permeable areas of grassland and gravel.

The concrete areas of the operations yard will be drained to an underground interceptor and then to the groundwater via an underground soakaway swale system, the interceptor will be emptied regularly under a contracted scheme for drainage management.

The building will hold compacted cardboard and plastics that have been baled until collected.

Roof areas of the building will be drained via a gutter and downpipe system and led to a rainwater harvesting system for use as (Grey Water) process water within the building, thus saving on water resources and promoting further attenuation.

The Silage Clamp, Lagoon and the Digester areas have their own particular design for environmental protection, these are detailed in the later chapters and they are specialised.

The remainder of the site will be subject to natural attenuation of rainfall by the use of gravel & / or grassed areas with areas beyond left in the natural state.

## 4. Tank Leakage Prevention

### 4.1 Tank Design (first level of protection)

The tank design preferred is a very robust design which has been in continuous use within the UK waste water industry for 40 years and the Biogas industry throughout Europe for the last 12 years. The tank is a segmental design made up of 200mm thickness pre-stressed concrete panels which are joined together with a very advanced gasket material (used in the channel tunnel and other major underground tunnel construction) the panels are then pulled together under hydraulic tension by cables routed through the tank segments and fixed into a cleat arrangement at a preformed buttress panel (thicker than the normal panels).

This method of tank manufacture has the advantage that the panels are built in a factory under a quality assurance scheme and consequently the quality of manufacture is very high, the second advantage is that erection on site is very quick and is not subject to weather restraints.

Poured in situ tanks are very prone to weather damage as the tanks have to be poured continuously over many hours with the resultant stresses in concrete setting subject to the weather environment.



Fig 1.0 Buttress Panel showing cable ends on segmental constructed tank.



Fig 2.0 Segmental concrete tank construction showing leakage membrane.

#### 4.2 Tank Leakage Membrane (Second level of protection)

The tank bases are built over a leakage membrane which is brought up the sides of the tank and is secured approx 0.5 metres above the tank base / wall joint. This joint is the weakest area of any tank design and hence any initial leaks will likely occur at this junction.

The leakage membrane has 2 sighting pots built around the perimeter of each tank, these pots are led above the completed ground level and are fitted with lids, periodically these can be inspected to look if there is any evidence of a leak on a tank and remedial action taken in good time.

Should a leak be detected it is a simple task of removing weather cladding and drilling a small hole at the leak position a rapidly expanding chemical sealer is then injected under pressure to seal the leak.

#### 4.3 Earth Containment Bunding (third level of protection)

The tank volumes of the layout shown equate to a maximum fluid reservoir of 5000m<sup>3</sup> the first level of risk mitigation is that the whole volume is distributed across 2 tanks, hence this lowers the risk considerably, rather than having 1 large tank.

However environment agency guidance stipulates that where multiple tanks are hydraulically linked the bund capacity should be 110% of the total volume.

The Bunding around the digesters will provide containment of 6000m<sup>3</sup> of fluid which is greater than the 110% required.

The surface area around the digesters (other than approach and feedhopper loading area) will be constructed of MOT Type 1 impermeable substrate over covered with gravel, this allows natural attenuation by rainfall but does not allow the more viscous digestate from penetrating the groundwater.

#### 5.0 Building Internal drainage (Compliance with EA & ABPR Guidelines)

The building is constructed to form a sealed airtight box with rapid opening and closing doors for delivery vehicles, a purpose designed odour control system using a state of the art technology will eliminate odours at source within the building envelope.

The internal areas of the building are subdivided into the reception area, the process area and the office / personnel area. Within the reception area all drains are considered contaminated and hence are led back to a foul collection tank which pumps to the Digestion System.

Also in the reception area is a truck wheel wash which is also led to the foul system, this ensures that any drainage and wash down disinfectants are collected and disposed of safely.

The process area is considered a dryer & cleaner environment, however it could be subject to spillages and hence drainage here is also led to the foul system, the system is so designed that the process area is upstream of the reception area so contaminated drainage cannot travel back up the system.

The domestic drains system from personnel facilities is led to a Klargester which deals with the sewage and waste water element of the office buildings.

## 6.0 Food Waste Reception (solids & liquids)

Food waste is delivered either by bulk solids loader or if liquid waste by tanker. The waste is delivered through a fast opening door directly into the waste reception building which is internally enclosed by a cold store lining which allows a high quality of seal to the environment.

Unloading of solids then takes place by tipping into a reception area and is then loaded into a receiving hopper from here the food waste is under the control of the process. Once the truck has emptied his wheels are washed and he exits the building.

Following receipt the process, moves the waste on fully enclosed screw auger conveyors through to the process area where the packaging is removed via a purpose designed machine line the removal of plastic, glass, metal and cardboard contamination takes place and these are then fed to a washing system which washes away any remaining organic residue. The packaging & any glass & metal items are securely baled (glass & metal put into euro bins) and removed to the yard periodically through a rapid roll side door located in the process area.

Baling the cardboard & plastic waste ensures that wind blown contamination of the local environment is avoided, it can also be stacked so making the collection yard smaller, (less concrete surfaces).

## 7.0 Silage Clamp Pollution Prevention

The design of the silage clamp has to perform 2 functions in relation to the pollution prevention of groundwater, when full and the silage has been covered with proprietary plastic silage covers it should shed rainfall to a collection system which is led to the ground as this is uncontaminated water. Leakage at the silage clamp floor surface level is most likely contaminated with run off from the bacterial activity associated with silage fermentation, although this is relatively small amounts for an initial period of ensiling (up to 3 months) it is required to be collected.

The collection system is not mixed with other foul liquid wastes, from here the liquid run off will be pumped to the digester reception tanks as it is a valuable feedstock.

### 7.1 Silage Clamp Construction (Protection of Groundwater)

The construction of the silage clamp floor will involve excavation of topsoil construction of a deep substrate onto which is rolled an impermeable MOT Type 1 substrate and then the whole area is covered by a 1200 gauge Visqueen membrane, following this a designed concrete pavement is used to surface the floor, this will prevent any silage run off within the clamp going into directly through the floor surface into groundwater.

The short walls are designed to provide an initial foot holding for clamped silage and provide a drainage path for rainfall. The covers of the clamped silage are terminated at this wall drain and hence prevent ingress of rainfall into the clamp (which is detrimental to good silage management) and would add to the contaminated load. However rainfall on the working face of the silage would be directed to the foul collection system.

## 7.2 The Management of Silage (Odour & Rainfall)

In order for Silage to provide the necessary energy contribution to the process it should be managed by carrying out the ensiling of the crop in as short a time as possible, this means harvesting (Oct / early Nov) and upon placing and rolling in the clamp covering it immediately.

The cover of silage carries out several functions, it prevents ingress of rainwater and subsequent spoilage of the silage. It creates an anaerobic (without air) environment within the silage and this causes the product to remain stable with a small amount of anaerobic fermentation taking place.

In covering silage it prevents odour generation (by aerobic bacteria) while this fermentation takes place (6 weeks – 3 months). The cover has a secondary bird / insect netting which discourages crows and other birds from trying to peck through the plastic sheeting. When the silage is to be used only the front face is exposed so limiting any degradation of the feedstock to the minimum, once again this limits odour breakout.

## 8.0 Lagoon & Bio-Fertilizer offloading. (Protection of Groundwater)

The lagoon will provide a reservoir of 24,900m<sup>3</sup> of Bio-Fertiliser which will be used as an organic replacement for conventional fertiliser on Hartley Park Farm farm.

The Lagoon is constructed by excavation of the top and subsoil and this is used to form a rounded rectangular shape some 3.5 metres deep and likely 3 metres above the original ground levels.

The Lagoon is fully lined with a purpose designed lagoon liner of 1.0 – 1.5mm High Density Polyethylene liner laid over a protection fleece, this liner has heat welded seams (pressure tested on completion) and hence the integrity of the liner is guaranteed against leakage.

At HPF the storage and distribution of Bio-Fertiliser will benefit from the 3 years of experience in the management and safe keeping of Bio-Fertiliser at the Barfoot Energy Plant at Sefter Farm, Bognor Regis.

The Bio-Fertilizer system now proposed at HPF has been developed on the back of this experience where for the past 3 years we have been spreading Bio-Fertilizer onto Sweetcorn and other crops gaining valuable experience in the storage, moving & spreading of Bio-Fertilizer and contributing to savings in the use of fossil fuel fertilizers.

The system at Sefter Farm has been further refined for the second plant at Herriard Bio-Power (Commissioning expected late 2013) and has resulted in the use of a stationary pump delivering bio-fertilizer to over 2.6 kilometres to point of use and the use of secondary nurse tanks.

This system has inbuilt safety devices to ascertain when demand is not there (a shut valve or leak) and will allow only 15 seconds of pump operation before stopping in such a situation, the pump is controlled by the farm labourer at point of application by the use of modern mobile

technology to start and stop the pump when required and so avoids incidents due to lack of communication or misinterpretation.

From the storage lagoon at Hartley Park farm Bio-Fertilizer will be pumped through the existing irrigation system to strategic positions on the farm estate where it will be discharged into farm tankers or nurse tanks for spreading on the local fields.

This system minimises the traffic on local roads by Farm tankers as most of the field layout at HPF can be accessed by existing farm lanes and tracks.

## Appendix 1 : Risk Assessment of Hazards to the Environment & the Public.

Page 1 : Assessment of Noise Risks

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Appendix 2 : Silage Clamp Construction Drawing.

## Assessment of Accident Risks

HAZARD	RECEPTOR	PATHWAY	RISK MANAGEMENT	PROBABILITY OF EXPOSURE	CONSEQUENCE	MAGNITUDE OF RISK
Leak from Digester Tank	Groundwater & eventually water course	Crack in Tank Structure	All Tanks have impermeable leakage detection system installed.	Low	Contamination of local groundwater leading to pollution in local watercourses.	Low
Spillage from Reception tank on delivery of Slurry	Groundwater & eventually water course	Incorrectly connected bauer Coupling from tanker to receipt on tank	Training for Operatives in delivery operations and catchment sump for small spillages.	Medium	Contamination of local area groundwater and soil, unlikely to spread far.	Low
Silage Seepage Water Tank overflow into surrounding permeable ground.	Groundwater & eventually water course	Accidental release caused by Pump High Level Alarm failure	Pump systems have dual high level alarm fitted, Pump systems to be on a planned maintenance system.	Low	Contamination of local groundwater leading to pollution in local watercourses.	Low
Liquor Leak from Silage Clamp	Groundwater & eventually water course	Failure of Silage Clamp impermeable surface	Construction of Silage clamp included the construction of an impermeable membrane under the slab surfaces and perimeter gutters resulting in a bunded arrangement led to collection drains	Low	Contamination of local groundwater leading to pollution in local watercourses.	Low
Fire in Control Room, causing emissions to air and damage to control room	Local population & local environment	Air transport of smoke, spillages and contaminated fire water by direct run off to the adjacent ground to drainage ditches.	Electrical Panels & Control Room have smoke and heat detectors fitted, system will shutdown on overheat.	Low	Toxic emissions to air from burning cables and polystyrene insulation (tank coverings).	Low
Fire in CHP Unit	Local population & local environment	Air transport of smoke, spillages and contaminated fire water by direct run off to the adjacent ground to drainage ditches.	CHP in self contained purpose designed module with inlet and outlet ventilation dampers controlled by fire alarm system. Engine protection will shutdown unit on overheat or fire.	Low	Toxic emissions to air & contamination of local groundwater leading to pollution in local watercourses.	Low
Explosion	Operatives, local population and local environment	Air transport of smoke, spillages and contaminated fire water by direct run off to the adjacent ground to drainage ditches.	Biogas explosibility limits are very low unless mixed with air, system fitted with over pressure valves on gas storage balloons & gas flare for burring off excess methane. Management procedures to include zoning for explosion risk & precautions to be taken in maintenance operations	Low	Toxic emissions, uncontrolled release of biogas, damage to structures from pressure wave	Low
Arson & Vandalism causing damage, fire or uncontrolled releases to air, ground and water.	Operatives, local population and local environment	Air transport of smoke, spillages and contaminated fire water by direct run off to the adjacent ground to drainage ditches.	The site is secure, some 300 metres from the main highway and is fully fenced to prevent casual access, the site has CCTV installed linked to the parent company (manned 24 - 7 all year).	Low	Toxic emissions to air & contamination of local groundwater leading to pollution in local watercourses.	Low
Collision of structures by Tractor Drivers delivering silage during harvest season	Operatives, local population and local environment	Damage to structures causing uncontrolled releases to air, water & ground	Track & Road ways are designed to limit speed, counter measures against collision and to aid reversing tractor drivers are in place	Medium	Toxic emissions to air & contamination of local groundwater leading to pollution in local watercourses.	Medium

## Assessment of Fugitive Emissions Risks

HAZARD	RECEPTOR	PATHWAY	RISK MANAGEMENT	PROBABILITY OF EXPOSURE	CONSEQUENCE	MAGNITUDE OF RISK
<b>To Ground &amp; Water</b>						
Leak from Digester Tank	Groundwater & eventually water course	Crack in Tank Structure	All Tanks have impermeable leakage detection system installed.	Low	Contamination of local groundwater leading to pollution in local watercourses.	Low
Spillage from Reception tank on delivery of Slurry	Groundwater & eventually water course	Incorrectly connected bauer Coupling from tanker to reception tank	Training for Operatives in delivery operations and catchment sump for small spillages.	Medium	Contamination of local area groundwater and soil, unlikely to spread far.	Low
Silage Seepage Water Tank overflow into surrounding permeable ground.	Groundwater & eventually water course	Accidental release caused by Pump High Level Alarm Failure	pump systems have dual high level alarm fitted, Pump systems to be on a planned maintenance system.	Low	Contamination of local groundwater leading to pollution in local watercourses.	Low
Liquor Leak from Silage Clamp	Groundwater & eventually water course	Failure of Silage Clamp impermeable surface	Construction of Silage clamp included the construction of an impermeable membrane under the slab surfaces and perimeter gutters resulting in a bunded arrangement led to collection drains system.	Low	Contamination of local groundwater leading to pollution in local watercourses.	Low
<b>To Air</b>						
Biogas from Digesters when servicing Mixers and internal fittings	Local population & local environment	Air Transport	Gas Balloon only to be exposed to air following run down of biogas production to nil and storage reduced to absolute minimum by running engine on the digester requiring maintenance.	Low	Bioaerosols and biogas released into air in local environment.	Low
Odour	Local population & local environment	Air Transport	Management of Silage Operations and feedstock loading under recognised procedures to reduce odour impact, see Odour assessment.	Medium	Nuisance to local population & local environment	Low
Exceeding European agreed limits for exposure to the products of Combustion of Biogas by the CHP Unit Gas Engine.	Local population & local environment	Air Transport	Minimised by good planned maintenance of Gas Engine and associated plant, subject to exhaust gas monitoring under MCERTS regime.	Low	Causing distress or harm to local population and local environment	Low
<b>Pests</b>						
Ensilaged Maize Silage attractive to vermin and birds.	Local population & local environment from an increased vermin activity in vicinity of Biogas Plant.	Ground	Site will contract a vermin management plan to national vermin control agency utilising enviro friendly vermin traps. Silage remains covered by a purpose designed cover and bird mesh to prevent birds from gaining access to the silage.	Low	Nuisance to local population & local environment	Low

## Assessment of Emissions to Air Risks

Emission Source	Substances Released	Height & Location Ref Unit	Emission Flow Rate	Emission Temperature	Normal Emission Rate	Maximum Emission rate	Statistical Basis
CHP Unit - Gas Engine MWM TCG 2020 - Exhaust Stack	Given Below	Height - 7220mm from groundlevel, location CHP Unit	3.881 Nm3-hour	450 Celsius	n/a	n/a	
CHP Unit - Gas Engine MWM TCG 2020 - Exhaust Stack	Volatile Organic Compounds (VOC's)	Height - 7220mm from groundlevel, location CHP Unit	n/a	n/a	<150mg/Nm3	150mg/Nm3	Based on Biogas with 55% CH4
CHP Unit - Gas Engine MWM TCG 2020 - Exhaust Stack	Nox	Height - 7220mm from groundlevel, location CHP Unit	n/a	n/a	<500 mg/Nm3	500 mg/Nm3	Based on Biogas with 55% CH4
CHP Unit - Gas Engine MWM TCG 2020 - Exhaust Stack	CO	Height - 7220mm from groundlevel, location CHP Unit	n/a	n/a	<1200 mg/Nm3	1200 mg/Nm3	Based on Biogas with 55% CH4
CHP Unit - Gas Engine MWM TCG 2020 - Exhaust Stack	S02	Height - 7220mm from groundlevel, location CHP Unit	n/a	n/a	<128mg/Nm3	128mg/Nm3	Based on Biogas with 55% CH4 & H2S level of 300ppm.
Emergency Gas Flare	All of the above Biogas with usual constituents of 60% CH4, 35% CO2, 1% H2s, 1% H, 3% O2.	Height 4 metres from Ground Level, location Flare Stack.	500 Nm3-Hour		0 Nm3/Hour	500 Nm3-Hour	Emergency Use Only
Biogas Over Pressure Valve		6.4 metres above ground level mounted on Bio Digester Gantry.	n/a	40 celsius	0 Nm3/Hour	n/a	Emergency Use Only

## Assessment of Odour Risks

HAZARD	RECEPTOR	PATHWAY	RISK MANAGEMENT	PROBABILITY OF EXPOSURE	CONSEQUENCE	MAGNITUDE OF RISK
Odour from Digesters	Local population & local environment	Air Transport	Digesters are fully sealed and are designed to be gas tight, any odorous compounds in the feedstock are destroyed within the first 3 days of entry into the digester. Silage is only stored in the purpose built silage clamp, it will be covered with a purpose designed silage cover once filled and only the front face exposed for removal. Perimeter gutters to be washed through with clean water weekly to prevent odour build up from seepage.	Low	Nuisance to local population & environment	Low
Odour from Silage Clamp	Local population & local environment	Air Transport	Seepage tank covers are air tight and are to be kept closed unless under maintenance. Lagoon is designed to receive only separated liquor which is predominantly odour free. However to ensure that no odorous compounds build up in the lagoon it is fitted with an active floating cover which destroys odorous compounds.	Medium	Nuisance to local population & environment	Medium
Odour from Seepage Tanks	Local population & local environment	Air Transport	All tanks are fully enclosed to prevent odour breakout and vents are led to an odour abatement plant.	Low	Nuisance to local population & environment	Low
Odour from Separated Liquor Lagoon	Local population & local environment	Air Transport	Separated liquor (digestate) is relatively odour neutral, however it is directed on separation to a closed tank before pumping to the lagoon. The solids cake has a very low perceptible odour and is unlikely to cause offence.	Low	Nuisance to local population & environment	Low
Odour from Reception Tank	Local population & local environment	Air Transport		Low	Nuisance to local population & environment	Low
Odour from separated liquor & solids cake	Local population & local environment	Local population & local environment		Low	Nuisance to local population & environment	Low

### Assessment of Noise Risks

HAZARD	RECEPTOR	PATHWAY	RISK MANAGEMENT	PROBABILITY OF EXPOSURE	CONSEQUENCE	MAGNITUDE OF RISK
Noise from CHP Unit	Local population & local environment	Air Transport	CHP Unit is housed in a purpose designed noise attenuated enclosure with extremely low noise breakout. Digesters are submersible type and are noise free since noise breakout is prevented by immersion under the liquid level and a sealed gas balloon and roof cover.	Low	Nuisance to local population & environment	Low
Noise from Digester Mixers	Local population & local environment	Air Transport	Noise from electrical motors is very low and due to the operating profile and electrical diversity the motors will only run for short periods (minutes) each day in an intermittent manner. Silage loading operations will be required twice daily for approximate duration of 1 hour each time during normal working hours, the machine will be a loader type vehicle, diesel powered.	Low	Nuisance to local population & environment	Low
Noise from Electrical Motors	Local population & local environment	Air Transport	Waste Delivery trucks will be a maximum of 8 per day OGV Class 2, the trucks will not deliver outside the hours of 7am - 7pm. Silage Harvesting in the period Sept - October will take place over a 3 day period either as one duration or more weather dependant, once harvesting is complete this operation ceases until the next year.	Medium	Nuisance to local population & environment	Medium
Noise from Silage Loading Operations	Local population & local environment	Air Transport		Medium	Nuisance to local population & environment	Low
Noise from waste delivery trucks	Local population & local environment	Air Transport		Medium	Nuisance to local population & environment	Medium
Noise from Silage deliveries (Harvest time only)	Local population & local environment	Air Transport		Medium	Nuisance to local population & environment	Low

## Emergency Actions to be taken.

Event	Environmental Hazard	Causation	Emergency Actions to be taken	Possible Consequence
Leak from Digester Tank	Possibility of Pollution to Groundwater.	Crack in Tank Structure or leak around a pipe passing through the tank wall.	Initial action is to try to contain leak effects by pumping from leakage protection membrane into the silage seepage tank (however this is not a long term solution). Initiate controlled shutdown of the affected digester (stop mixers and empty gas storage balloon). Transfer remaining digestate to other digester and storage tank. Make remedial repairs to tank.	Contamination of the natural groundwater (unlikely due to leakage detection and bunded area).
Spillage from Reception tank on delivery of Slurry	Possibility of Pollution to Groundwater & eventually Rose Green drain to the south of the silage clamp.	Incorrectly connected bauer Coupling from tanker to reception tank	Stop tanker unloading pump. Ensure connection is correctly fitted, if there has been a substantial leak to the surrounding ground, dilute with fresh water and / or using submersible pump to recover the spilled liquor to the seepage tank or the tanker. Over next 3 weeks check daily evidence of contamination to local water courses, inform EA. Switch pumps to manual to lower level of seepage tank, open valve to foul system to evacuate tank contents to municipal foul sewer. Investigate cause of pump & control failure, call pump maintenance contractor to investigate & remedy faults found. If leakage to surrounding area is substantial then take remedial actions as above.	Contamination limited to bunded tank containment.
Sludge Seepage Water Tank overflow into surrounding permeable ground.	Possibility of Pollution to Groundwater.	Accidental release caused by Pump High Level Alarm Failure	Investigate source of leak (if at surface and can be seen) and take remedial action to close leak with either temporary sand bags or use loose sand to redirect evidence of seepage into the ground. Once leak has been found take remedial repair actions starting with emptying of the silage from the effected bay into another bay. Carry out assessment of any pollution to local water courses and monitor for next 3 weeks, (during dry spells this may need to be extended).	Contamination of local water courses, however amounts should be minimal as leachate run off is minimal during ensilament.
Liquor Leak from Silage Clamp	Possibility of Pollution to Groundwater.	Failure of Silage Clamp impermeable surface	Call the Fire Brigade (see details in section 2.0. Carry out assessment of any pollution risk and inform EA, ensure fire water, foam residue etc held in bunded area is pumped to a tanker and sent off site for disposal.	Contamination of local water courses, however amounts should be minimal as leachate tank only holds 4m3.
Fire in Control Room, causing emissions to air and damage to control room	Possibility of Pollution to Groundwater by Fire Water.	Air transport of smoke, spillages and contaminated fire water by direct run off to the adjacent ground to drainage ditches.	Call the Fire Brigade (see details in section 2.0. Carry out assessment of any pollution risk and inform EA, ensure fire water, foam residue etc held in bunded area is pumped to a tanker and sent off site for disposal.	Toxic emissions to air from burning cables and polystyrene insulation (tank coverings).
Fire in CHP Unit	Pollution of Groundwater.	Air transport of smoke, spillages and contaminated fire water by direct run off to the adjacent ground to groundwater.	Call the Fire Brigade (see details in section 2.0. Carry out assessment of any pollution risk and inform EA, ensure fire water, foam residue etc held in bunded area is pumped to a tanker and sent off site for disposal.	Toxic emissions to air & contamination of local groundwater leading to pollution in local water courses.
Explosion	Operatives, local population and local environment	Air transport of smoke, spillages and contaminated fire water by direct run off to the adjacent ground to drainage ditches.	Call the Fire Brigade (see details in section 2.0. Carry out assessment of any pollution risk and inform EA, ensure fire water, foam residue etc held in bunded area is pumped to a tanker and sent off site for disposal.	Toxic emissions, uncontrolled release of biogas, damage to structures from pressure wave
Arson & Vandalism causing damage, fire or uncontrolled releases to air, ground and water.	Operatives, local population and local environment	Air transport of smoke, spillages and contaminated fire water by direct run off to the adjacent ground to drainage ditches.	Asses damage caused and take remedial actions as detailed above, call fire brigade and Police.	Toxic emissions to air & contamination of local groundwater leading to pollution in local water courses.
Collision of structures by Tractor Drivers collecting dry cake from digester separator and delivering silage during harvest season	Operatives, local population and local environment	Damage to structures causing uncontrolled releases to air, water & ground	Asses damage to structures, Technical Director to make assessment and bring in specialists as required. Check for leaks of digestate and biogas, if gas leak evident or suspected evacuate area and call fire brigade, carry out emergency evacuation of AD Plant area and carry out controlled shutdown of AD Plant.	Toxic emissions to air & contamination of local groundwater leading to pollution in local water courses.

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