

**NEW BESPOKE WASTE INSTALLATION ENVIRONMENTAL
PERMIT APPLICATION FOR THE ANAEROBIC DIGESTION
FACILITY**

at

**BRYN QUARRY, GELLIARGWELLT FARM, GELLIGAER
ROAD, GELLIGAER, CAERPHILLY**

NON-TECHNICAL SUMMARY

Prepared for:

BRYN POWER LIMITED

Part of the



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NON TECHNICAL SUMMARY

JPCE Limited is commissioned by Bryn Power Ltd to prepare a bespoke Waste Installation Environmental Permit application for the new Anaerobic Digestion (AD) Facility at Bryn Quarry, Gelligaer. The Anaerobic Digestion Facility will treat up to 35,000 tonnes per annum of food waste primarily from kerbside collections and commercial waste streams, together with up to 13,000 tonnes of cattle slurry, up to 3,500 tonnes of poultry litter and 2,300 tonnes of energy crops. The AD facility will include the storage of liquid digestate in the existing cow slurry lagoon to south of the site and the combustion of biogas generated during the AD treatment.

Bryn Power Ltd is a subsidiary company of the Bryn Group which owns the farming, quarrying, recycling and composting facilities in the vicinity of the site. The site the subject of this application comprises an area of open farmland in which material has been excavated to form a visibility screening bund and a HDPE lined and covered cow slurry lagoon. The site is the subject of a planning permission reference APP/K6920/A/12/2173007 dated 28 March 2013.

The AD site is in an agricultural setting within land owned by Gelliargwellt Uchaf Farm approximately 1.3km to the north east of Nelson in Caerphilly. To the east and south of the site there is an in-vessel composting facility (IVC), resource recycling facility (RRF), and a farm complex comprising cattle sheds and milking parlours together with Gelliargwellt Farmhouse and Ty Ni Farmhouse.

The site which is the subject of this application comprises an area of land that has been excavated to gain material to construct a visibility screening bund and an area of existing concrete slab together with a fully HDPE lined and covered cow slurry lagoon. In order to provide sufficient emergency storage in the event of AD tank failure and for storm water the ground level for the AD tank working area is approximately 2m below the level of the existing adjacent concrete slab. All AD tanks that will hold liquid will be sited on this reduced level. A silage clamp holding dried digestate and feedstock crops will be constructed on the extended concrete pad to the south of the tanks.

The AD facility will comprise:

- 500m³ Non-Animal By-Product (ABP) Liquids Buffer Tank
- 300m³ Sealed Buffer Tank (for ABP feedstocks)
- Non-ABP Solids Feed system
- 3200m³ Semi-Plug Flow (SPF) Primary Digester
- 3200m³ Secondary Digester
- 100m³ ABP Pasteurisation Tank

- Combined Heat and Power (CHP) Unit
- Surplus Gas Burner
- Separator
- Belt Dryer
- 38m³ Post-Separator Buffer Tank

The AD system maintains a continuous 24 hours per day, 7 days per week digestion operation subject to the filling of the liquid and solid feedstock storage vessels. The feedstocks for the system will be food waste ‘soup’ from the de-packaging unit in the IVC, cattle slurry from the farm, liquid food waste fed into the liquids buffer tanks together with energy crops and chicken litter fed into the solid feed system. The quantities of each feedstock will vary dependant on the ‘health’ of the anaerobic digesters.

The digesting material flows around the diameter of the ‘plug flow’ outer ring, completing a full revolution before entering the central tank, ensuring no feedstock ‘short-circuiting’ and providing optimal feedstock retention times.

Biogas generated as a product of the process is collected in the gas holder. A proportion of the biogas is recirculated throughout the digester to uniformly agitate the contents to prevent stratification, ‘dead zones’ and the build-up of a floating layer.

The digester is maintained at a constant temperature by the circulation of hot water through an internal heat exchanger. The hot water for the heat exchanger is provided by the CHP unit during normal operating conditions.

Digested material is discharged from the centre of the Primary Digester, at the point furthest from where it entered, into the Pasteurisation Tank. The pasteurisation process is a fully automatic batch process. The tank is filled from the primary digester until it is full; the tank is heated to a temperature of 72°C; when it reaches this temperature the contents are held for a minimum period of one hour before being discharged into the Secondary Digester.

Digested material is discharged from the centre of the Secondary Digester into the Separator where the dry fraction is deposited in the silage clamp and the liquid fraction is piped to the leachate storage lagoon. The AD facility is designed so that the final digested material reaches the PAS 110 and Quality Protocol standards and is no longer regarded as waste.

The containment system for the reduced level working area is designed in accordance with the recommendations in CIRIA guidance document “C736D - Containment systems for the prevention

of pollution: Secondary, tertiary and other measures for industrial and commercial premises” dated 2014. The pipework carrying feedstocks from the IVC and farm slurry tanks together with the pipework running from the separator to the leachate storage lagoon will be fully welded HDPE pipes laid in clay lined trenches.

Currently the surface water from the site either drains to ground or runs into the unnamed stream to the south east of the site. It is proposed that all surface water collected in the reduced level area is held until such time that the quality of the water is assessed and the water is allowed to drain into the adjacent stream. All surface water runoff from the existing and proposed concrete lab will be directed through interceptors before being discharged into the unnamed stream to the south of the site.

Bryn Power Ltd will operate the facility to the PAS 110 and QP standard for anaerobic digestate produced at the AD facility. The Bryn Group are in the process of finalising an Integrated Management Systems (IMS) Manual to address the requirements of ISO 9001:2008, ISO 14001:2004, OHSAS 18001:2007, PAS 402:2013 and PAS 100:2011. It is anticipated that the system will be fully accredited in May 2015. Once the IMS is finalised the management systems for the AD facility will be incorporated into the IMS