

SUBMISSION OF FURTHER INFORMATION AND CLARIFICATION IN RELATION
TO PLANNING APPLICATION 15/00065/WASFUL

**Change of Use of an Existing IVC Facility to a Biomass Renewable
Energy Generation Plant and associated Waste Water Treatment Plant
including a 100 Square m extension of Existing Building and the
relocation of an existing biofilter**

AT BROWNS ROAD, DAVENTRY

EARTHWORM ENERGY LTD

Version 2
Final

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OVERVIEW

Introduction

This supplementary report supports the suite of information that has been submitted as part of the planning application for a Biomass Renewable Energy Generation Plant and associated Waste Water Treatment Plant at Browns Road, Daventry. The planning application is currently being determined by the Waste Planning Authority who has requested that further information is submitted to clarify details arising from the consultation process.

The consultation process, which has seen responses received from both statutory consultees and members of the public, along with discussions with the Waste Planning Authority has identified that further information is required to deal with the following areas:

- Synergy between the components of the development
- Further clarification on the Waste Water Treatment operations
- Clarification on waste stream supply and security
- Further clarification on Air Quality
- Confirmation of proposed Fire Risk Management measures

In summary the following key points are drawn from the additional information that has been submitted:

- The development should be viewed as an integrated facility due to the intrinsic link between the biomass energy and waste water treatment elements of the scheme. Each of the components of the proposed development is equally as important as they rely upon each other both operationally and commercially.
- The proposed development is classed as a recovery process and therefore contributes to the objectives of the waste hierarchy and also policy by Policy 13 of Northamptonshire's Waste Local Plan in relation to the efficient use of heat and energy.
- The proposed location of the development (because of the synergies between elements) is appropriate. It complies with the strategic spatial requirements of policy 12 of Northamptonshire's Waste Local Plan.
- The contractual arrangement with 3rd party suppliers will ensure that a secure source of wood waste will be available and that any potential variations in seasonality are ironed out.
- A waste water catchment area has been identified. Its extent which is larger than the local scale is justified due to the nature of the development in terms of it being a final treatment solution, the waste stream that is being treated, the service provided and the Waste Local Plan's stated commitment to encouraging technological innovation for waste management solutions.
- It is considered that for the purposes of the planning system it has been sufficiently demonstrated that there will be no adverse Air Quality impact generated by the development.
- A range of fire risk management measures will be put in place. The measures proposed are considered to be compliant with the latest Fire Prevention Plans guidance set by the Environment Agency.

Each of the identified areas is discussed in turn by the subsequent sections of this report. The sections set out the detail that has informed the conclusions set out above.

THE COMPONENTS OF THE DEVELOPMENT

Operational Synergies

The proposed facility integrates a biomass energy generation facility with a waste water treatment plant in order to produce renewable electricity for export to the grid, secure the efficient use of renewable heat and provide a water treatment service that is not widely available in the local area.

The development should be viewed as an integrated facility due to the intrinsic link between the biomass energy and waste water treatment elements of the scheme. Each of the components of the proposed development is equally as important as they rely upon each other both operationally and commercially.

The facility will utilise a waste wood stream to generate renewable electricity and heat. A proportion of the renewable electricity generated, circa 200KWe to start rising to 1MWe in 2017, will be exported to the National Grid. The remainder of the electricity will be utilised in the operation of the integrated facility. In generating the renewable electricity there will be a significant amount of renewable heat produced. This heat will be fed into the waste water treatment facility to treat waste water sources by separation of solids and contaminants via evaporation.

Operation of the individual components of the scheme in isolation will either leave an available heat stream unused as there are currently few potential outlets for heat at the Browns Road site or the Waste Water treatment facility will be run using heat and power generated from electricity sourced from the national grid. Both these scenarios are considered to be inherently less sustainable than what is proposed as part of the planning application. Furthermore, the commercial viability of the scheme would be impacted negatively as there is interdependence between the combined income streams associated with the differing elements of the scheme.

It is considered that the technology to be used in the waste water treatment plant is an emerging technology which is highly efficient method of treating waste water through separating solid and liquid elements of the waste water stream by thermal treatment. The arrangement of the proposed development through the integration of the individual components is considered to be an innovative solution that provides a sustainable and efficient waste management operation.

Energy Efficiency and Recovery

The Waste Planning Authority has identified that clarification is required in relation to whether the operation is a disposal operation or a recovery operations and therefore allowing a judgement on whether the development is compliant with the objectives of the waste hierarchy.

Recent consideration of the definition of waste v recovery by the Waste Planning Authority for an alternative site in the County considered that the key consideration in whether a facility is defined as a recovery operation is compliance with the R1 efficiency factor as set by the European Waste Framework Directive. This requires that a recovery process a facility is required to reach 0.65 or 65% energy efficiency rating..

Initial calculations in relation to the proposed development has identified that there facility can reach 0.85 (85%) efficiency. The key to the efficiency of the operation is the beneficial use of the heat produced in the electricity generation process. Diversion of the heat to the Waste Water Treatment enables a sustainable use of the heat which would be wasted if there wasn't a suitable outlet available.

It is understood that the efficiency of electricity generation facilities that solely produce electricity and do not utilise the heat that is generated typically have an efficiency of 35%.

On the basis of the above the proposed development is classed as a recovery process and therefore contributes to the objectives of the waste hierarchy. It is also compliant with Policy 13 of Northamptonshire's Waste local Plan which indicates that for advanced treatment that the re-use of energy, heat and residues should be maximised.

WASTE WATER TREATMENT

Description of Development (further details)

As already highlighted the intrinsic link between the various elements of the development enables all the outputs of the renewable electricity generation process to be utilised in a beneficial manner. The heat produced by the biomass facility is fed through the screw expanders when generating renewable electricity. Rather than being dissipated to air the heat (in the form of steam) is then fed into the evaporator units located within the building. There will be 4 x evaporator units located within the building.

At the same time as the heat is fed from the biomass facility into the evaporator unit waste water will be fed into the evaporator unit for treatment. The waste water will be stored in the liquid storage tanks.

The waste water sources are treated through the separation of the liquid and solid elements of waste. Once the clean water molecules have been evaporated via the stack a sludge or paste will remain. This sludge will contain the solid and contamination elements of the original waste water input and will be transported offsite for further treatment or disposal. The amount of sludge produced will equate to approximately 1% of the input amount.

There will be a condenser unit located within the waste water treatment facility. The condenser units provide the Applicant with an opportunity to condense the water vapour emitted by the evaporator units in the event that the treated water vapour is too odorous to emit. The condenser unit effectively distils the collected water vapour enabling the distilled water to be diverted back through the evaporator unit for further treatment to extract any remaining odour content. This process can be repeated a number of times in order to meet an appropriate standard prior to emitting the steam.

The waste water treatment element of the proposal is a continuous process which requires a constant supply of both heat and water. Water will be diverted from the liquid waste storage tanks in order to maintain the required feed.

Acceptance of Waste Water Feedstock

Waste water will be transported to the site in tankers and accepted into the liquid storage tanks. The acceptance arrangements are wholly enclosed as pipes from the tankers will be connected directly to connection points on the individual tanks. The vents will be fitted with activated carbon canisters which will provide odour mitigation during the unloading of the waste into the tanks.

Reasons for the Proposed Location

There is no specific planning policy in Northamptonshire's Waste Local Plan which deals with waste water treatment facilities and as such the Waste Local Plan does not allocate or plan for new/additional waste water treatment facilities to come forward. However, paragraph 5.77 of the Waste Local Plan does indicate that '*if there is a need for an increase in waste water treatment capacity during the plan period that cannot be accommodated within the curtilages of existing facilities, then the proposal should have regard to the spatial strategy for waste management.*'

Interpretation of paragraph 5.77 of the Waste Local Plan indicates that in the first instance new waste water treatment facilities should be directed to existing sewage and waste water treatment sites.

However, the proposed development does not neatly fit with the general objectives of the plan for waste water treatment facilities as it is an innovative process which does not rely upon the presence of the sewage network for either the delivery of waste water or for discharge purposes. The facility is reliant on the Biomass element of the scheme for the production of renewable electricity and heat. The nature of the waste water that is to be treated is not normally transported by the piped sewage network and is already on the strategic highway as it is commonly tankered from its source to existing sewage or waste water treatment works for processing.

The reliance on the renewable electricity and heat being supplied by the Biomass element of the scheme means that the location of the development is dictated by the availability of grid connection capacity to export excess electricity generated to the National Grid. The Applicant can confirm that there is a grid capacity available at the Application Site at Browns Road, Daventry. Further to this Northamptonshire's Waste Local Plan directs renewable energy generation facilities (advanced treatment) which utilise waste streams as fuel to locations within the strategic spine and the sub-regional centre of Daventry. The requirement is set by policy 12 of the Waste Local Plan.

On the basis of the intrinsic link between the various elements of the proposed development, the importance of grid capacity availability and the direction provided by policy 12 of the Waste Local Plan it is considered that the location of the Waste Water Treatment Facility at Browns Road is appropriate and therefore compliant with the strategic waste management strategy for the County.

Furthermore, paragraph 5.54 of the Waste Local Plan indicates that for advanced treatment there is an aim to encourage the integration and co-location together and with complementary activities. This requirement is set out as a policy objective by Policy 13 which also indicates that for advanced treatment that the re-use of energy, heat and residues should be maximised. The waste water treatment plant enables the heat output of the biomass plant to be utilised effectively through treating another waste stream and the location of the biomass plant at Browns Road enables the export of renewable energy to the National Grid. Neither element of the scheme would be able to operate effectively in isolation from a commercial perspective.

WASTE STREAM SUPPLY AND SECURITY

Proposed Contractual Arrangements

Wood Waste

Wood waste will be supplied to the Biomass facility by contracted 3rd party wood suppliers. It is the intention to enter into supply contracts with a number of operators in order to ensure that a steady stream of wood waste can be provided to the facility. The arrangement minimises the potential risk of a single supplier defaulting on their contract leaving the proposed development with an insufficient flow of wood waste to fuel the operations. It is the intention to maintain a 2 week working supply within the Fuel Hall.

The contractual arrangement with 3rd party suppliers will ensure that a secure source of wood waste will be available and that any potential variations in seasonality are ironed out. The arrangement will also enable the operator at Browns Road to efficiently manage wood stockpiles within the building ensure that the development is compliant with the appropriate guidance; such as the latest EA Fire Risk Management Guidance.

Waste Water

The Applicant intends to target sources of liquid with low levels of solids and low odour potential for cleaning. The waste differs to that that is traditionally taken to sewage and water treatment plants which tend to treat liquids with high levels of solids. An example of the waste water that can be treated by the facility is yard water collected from composting maturation pads and water from industrial processes such as plating plants.

Waste Water Catchment

A waste catchment plan has been produced in order to identify potential waste water streams that will be treated at the facility. As already stated it is the intention to accept and treat waste water sources which have low odour and solids content.

The Waste Planning Authority has indicated that the waste water treatment element of the facility is considered to be preliminary treatment. On the basis of the facility being preliminary treatment a local scale catchment area would be required. The Waste Local Plan sets out the following for local scale catchments:

- *Waste to be managed on site originates from within up to two adjacent local planning authority areas or an equivalent geographical area.*
- *The facility is intended to serve either an urban area and its immediate rural hinterland, or be located in a rural area for the purpose of dealing with agricultural and/or similar wastes produced locally.*
- *The facility should be for preliminary treatment, however in certain circumstances may be for advanced treatment.*
- *The facility supports the waste hierarchy and is not for the disposal of waste.*

Preliminary treatment is defined as:

'Any waste management process that involves the recycling or biological processing of waste, for example materials recycling facility, recycling / processing of inert waste, composting, anaerobic digestion (without energy recovery), etc.'

On the basis of the development being a preliminary treatment facility a waste catchment area for waste water has been proposed. It is set out on drawing GGP/EW/BRD/15/07 and attached at Appendix 1.

The proposed waste catchment area is larger than the *'two adjacent local planning authority areas or an equivalent geographical area'* as set out by the Waste Local Plan. However, as the facility provides a service that is not currently available in the local area and is an innovative solution that will help to relieve pressure on the existing sewage and waste water treatment network the proposed that the proposed catchment area is reasonable in this case.

Further to this the proposed facility is located within the strategic spine and sub-Centre of Daventry with good access to the strategic highway network. Its location enables the waste sources to be transported to the site in the most sustainable manner possible through the utilization of the strategic road network within the County and the surrounding area.

Paragraph 5.24 of the Waste Local Plan identifies the importance of ensuring that the plan is sufficiently flexible as not to *'stifle innovation and uptake of emerging technologies'*. It is considered that the proposed development is an innovative solution that provides a final treatment solution for the liquid element of the waste water stream. The proposed catchment area allows for the efficient operation of the facility and does not stifle the development of an emerging technology.

AIR QUALITY

Air Quality Modelling

Further information has been submitted in relation to Air Quality. The updated Air Quality Assessment, which has been prepared to support the Environmental Permit Application, assesses a wider range of pollutants inclusive of NO_x, PM, SO₂, VOCs, HCl, HF, CO, Cd and TI, Hg, Metals, PCDD/Fs, NH₃, BaP, PCBs. The Assessment is attached as an Appendix to this document.

The Assessment identifies that the impacts on existing pollutant concentrations are not predicted to be significant at any locations within the assessment extents in accordance with Environment Agency criteria. The Assessment has identified appropriate residential receptors and environmental designations in considering potential impacts.

On the basis of the findings of the attached Assessment it is considered that there will be no adverse impacts in terms of Air Quality generated by the proposed development. The attached information therefore provides the necessary confidence in relation to concerns raised by members of the public, Councillor Collyer and Daventry Town Council in relation to potential adverse impacts caused by pollutants. Furthermore the Assessment also provides the necessary information in relation to comments raised by Northamptonshire County Council's Senior Environmental Planner on potential impacts on identified Local Wildlife Sites.

FIRE RISK

Fire Risk Management Measures

The latest Environment Agency Fire Risk Management Guidance has been considered in the development of the site layout. A range of fire risk management measures will be put in place (set out below). These measures are focused on the Fuel Hall as the area where wood waste acceptance, storage and handling will be undertaken:

- A PYROsmart early warning heat detection system will be installed in the Fuel Building. The system uses infrared technology to detect hot spots within the stored wood waste material. Should an area of the wood be detected as above a threshold temperature then the PYROsmart will sound an alarm and direct a jet of foam to the hotspot to suppress the potential fire. The foam starves the potential fire of oxygen preventing a fire from taking hold within the stored wood waste stockpile. The system is operational 24/7 and can be configured so that all areas within the Fuel Hall can be scanned to ensure a complete and effective coverage of the wood waste stockpile.

The Fire Risk Management measures will be formally agreed through the Environmental Permitting regime. It is considered that the proposed measures are compliant with the latest guidance.

APPENDIX 1: GPP/EW/BRD/15/07 Waste Water Catchment Plan

APPENDIX 2: Air Quality Assessment