PLANNING APPLICATION

FOR

A RENEWABLE ENERGY GENERATION FACILITY

AT

PEBBLE HALL, THEDDINGWORTH
For a site located in Northamptonshire, but with its access in Leicestershire

BY

PUREPOWER

PLANNING, DESIGN AND ACCESS STATEMENT

June 2008
1 Proposals

1.1 The proposal is to construct a renewable energy generation facility, compliant with the Waste Incineration Directive (WID) for the processing of 40,000 tonnes of waste timber and biomass, including virgin wood and potentially energy crops. The chosen technology is in use elsewhere and represents an ideal solution to the problem of waste timber and the provision of Embedded Generation of power. The proposal effectively replaces the In Vessel Composting permission DA/07/319 and will occupy a similar footprint to that of the previously approved building. The submission includes the following documents:

- The site location is shown on plan GPP/PP/PH/08/01;
- The application boundary is shown on site plan GPP/PP/PH/08/02;
- The detailed site layout and indicative landscaping is shown on GPP/PP/PH/08/02;
- Cross sections of the site are shown on GPP/PP/PH/08/05;
- Building elevations are shown on GPP/PP/PH/08/06;
- Images of the proposed infrastructure are included in Appendix 1;
- Views of the site are included in Appendix 2;
- Details of the existing planning permission for windrow composting are included in Appendix 3; this will continue to operate;
- A description of the process and explanation of ‘Embedded Generation’ is set out in full in Appendix 4;
- The buildings currently under B1/B8 designation to be given up in conjunction with this application to permit traffic volumes are shown edged red on GPP/PP/PH/08/07;
- Information on flood risk is included in Appendix 5.
- A report detailing the modelling of the atmospheric dispersion of emissions is included in Appendix 6.

1.2 The planning application comprises the following elements:

- A waste reception, fuel preparation and processing and pyrolysis building, 36.6m by 97.5m, divided broadly into a 60:40 relationship. The western 40% will be in the form of a canopy on steel stanchions, covering the waste reception and chipping activities, reaching a ridgeline of 10m in height. In this building the incoming waste will be emptied out of the delivery vehicle; sorted to remove any obvious contaminants such as plastic, metal; shredded and mixed to produce the best possible fuel. The other 60% within a clad structure will house the pyrolysis plant, at 13m to the ridgeline. Alongside the building will be located the thermal oxidiser and cooling plant.
- There will be a stack associated with the pyrolysis plant, which will be 15m in height and a maximum of 30cm in diameter.
• Around the building it is proposed to extend the existing yard to provide manoeuvring space for vehicles.
• It will be necessary, as per the IVC permission, to excavate approximately 46,000m³ of hoggin to provide space to construct the building. This will be exported in exactly the same manner as described in connection with the previous application.

1.3 The existing composting operations have proved to be a successful means of diversification of a farm business that needs to develop additional sources of income to enable it to continue to support 3 families, in the light of the reduced income from agriculture. The proposals for the pyrolysis plant will further aid such diversification.

1.4 The ash residue from the pyrolysis process will be in the order of 1,500 tonnes per annum, and will be spread on the land as a soil improver, under an exemption issued by the Environment Agency.

2 Site history

2.1 On 21 October 2003 (reference DA/03/725C) planning permission was granted by Northamptonshire County Council for green waste composting. This permission has been implemented. A second permission was granted on 4 October 2005, for an extension to the area to be used for green waste composting, it has also been implemented (reference DA/05/773C). A copy of the later permission is included in Appendix 3. These permissions allow a total throughput of 30,000 tonnes per annum of green waste.

2.2 Planning permission DA/07/319 was granted in June 07 for the construction of an In-Vessel Composting plant to deal with mixed green and food waste up to 25,000 tonnes per annum; however as the Waste Collection Authority has subsequently abandoned plans to collect the food waste the permission has not been implemented.

2.3 Separate planning permissions have also granted by Leicestershire County Council for the use of the access on to the A4304 for vehicles delivering green waste for composting and removing hoggin off-site; a copy of the latest permission (2007/0989/03) is included in Appendix 3.

3 The applicant and the technology.

3.1 Purepower Holdings Ltd (Purepower) is a renewable energy company focused on the application of proven treatment technologies and Advanced Conversion Technology (ACT) to generate electricity in local scale power stations from biomass and waste wood derived fuels.
Development activity has established an extensive portfolio of UK projects which are now at or near the ready-to-build stage. Of these projects, the proposed Huntingdon Biomass Generation scheme is now under construction and a scheme in Bedfordshire will start construction on site shortly.

3.2 The proposed Renewable Generation Facility will be a nominal 4–5MW plant that will utilise Advanced Conversion Technology (ACT) to generate electricity from wood fuels comprising both virgin and non virgin wood. A detailed description of the processes is included in Appendix 4. It is intended to distribute the electricity generated into the regional distribution network rather than into the National Grid. This concept is known as ‘Embedded Generation’; it is explained in more detail in Appendix 4.

3.3 Purepower has agreed to work with Welland Waste Management to construct and operate a renewable energy generation plant and ancillary facilities, together with use of part of the site for the preparation of clean and mixed waste wood for use as a fuel.

4 Planning Policy

Introduction.

4.1 There are a range of planning policies relevant to the consideration of waste and renewable energy developments; national strategies and planning guidance, regional strategies and policies and County and District Local Plan policies. Where text is italicised it indicates that it is quoted from the document.

European Landfill Directive

4.2 The Landfill Directive has set mandatory targets for the reduction of biodegradable municipal waste being disposed of the landfill. By 2010 the reduction must be to 75% of the amount landfilled in 1995, by 2013 to 50% and by 2020 the reduction must be to 35% of the amount landfilled in 1995.

4.3 The Directive also requires that from the end of October 2007 all wastes that are to be landfilled must have been pre-treated.

Kyoto Protocol

4.4 The UK ratified the objectives of the Kyoto Protocol in May 2002, since when government policies have been and are being targeted at devising means to achieve a reduction in a basket of greenhouse gases. The target is to reduce the generation of these gases to 12.5% below 1990 levels, by 2012. One of the approaches to achieving this target is the support for
increasing the proportion of energy produced from renewable sources. The diversion of biodegradable waste from landfill also achieves this objective.

**National Policy.**

4.5 The latest national waste policy is set out in the **Waste Strategy 2007**, which states that the Government wishes to see future waste management decisions based on the Waste Hierarchy. This states that the most effective environmental solution is to **reduce** the generation of waste; this is the approach at the top of the hierarchy. At the next level is where products and materials can be used again – **re-use**; where value can be recovered from waste through **recycling** or **composting** this is at the level above **energy recovery** and at the bottom of the hierarchy, waste which has to be **disposed** of.

4.6 The key objectives of the revised Waste Strategy are to

- decouple waste growth (in all sectors) from economic growth and put more emphasis on waste **prevention and re-use**;
- meet and exceed the **Landfill Directive diversion targets** for biodegradable municipal waste in 2010, 2013 and 2020;
- increase diversion from landfill of **non-municipal waste** and secure better integration of treatment for municipal and non-municipal waste;
- secure the **investment in infrastructure** needed to divert waste from landfill and for the management of hazardous waste; and
- get the most environmental benefit from that investment, through increased **recycling of resources and recovery of energy** from residual waste using a mix of technologies.

4.7 The revised Strategy also sets higher targets for

- **recycling and composting of household waste** – at least 40% by 2010, 45% by 2015 and 50% by 2020; and
- **recovery of municipal waste** – 53% by 2010, 67% by 2015 and 75% by 2020.

4.8 In the **Energy White Paper, 2003** the Government set out an Energy Hierarchy, which is based on the most desirable way forward for energy use in the future. It seeks to

- Minimise demand for energy & cut unnecessary use; where this is not possible for
- Energy use to be as efficient as possible; where this is not possible for
- Renewable energy to be used and renewable sources developed and as a last resort for the
- Continuing use of fossil & other fuels to be clean and efficient for heating and CHP

This approach has subsequently provided the basis for the development of energy policy at all levels.
4.9 In May 2007 a new Energy White Paper was published. In respect of renewable energy, into which category the proposed development falls, it states that “Renewables are key to our strategy to tackle climate change and deploy cleaner sources of energy. We have a target that aims to see renewables grow as a proportion of our electricity supplies to 10% by 2010, with an aspiration for this level to double by 2020. The Renewables Obligation (RO) is the main mechanism for incentivising this growth. This White Paper confirms our intention to strengthen the RO, increasing the Obligation to up to 20% as and when increasing amounts of renewables are deployed. We shall introduce banding of the RO to offer differentiated levels of support to different renewable technologies. This will encourage the increased development and deployment of a broader set of renewable technologies. Based on our projections our proposals to strengthen and modify the RO will see electricity supplies from renewable sources tripling between now and 2015 to around 15% of the total electricity supplied. The RO and the Climate Change Levy exemption is projected to provide around £1billion of annual support for deployment of renewable electricity in 2010, rising to around £2billion of annual support in 2020. A strengthened EU ETS should also support investment in renewables”.

4.10 Planning Policy Statements contain the national guidance on how planning authorities should interpret national strategies and government policy.

4.11 **PPS1**: Creating Sustainable Communities sets out “the overarching planning policies on the delivery of sustainable development through the planning system.” It states that “Sustainable development is the core principle underpinning planning”. With regard to energy, this means, local planning authorities should contribute in a variety of ways in meeting national targets for climate change, renewable energy generation, the deployment of CHP and the reduction of energy consumption.

4.12 **PPS 10** advises waste planning authorities “in deciding which sites of identify for waste management facilities, waste planning authorities should (i) assess their suitability for development against each of the following criteria: (i) the extent to which they support the policies of this PPS; (ii) the physical and environmental constraints on development, including existing and proposed neighbouring land uses; (iii) the cumulative effect of previous waste disposal facilities on the well-being of the local community, including any significant adverse impacts on environmental quality, social cohesion or economic potential; (iv) the capacity of existing and potential transport infrastructure to support the sustainable movement of waste, and products arising from resource recovery, seeking when practicable and beneficial to use modes other than road transport.”
(ii) give priority to the re-use of previously developed land and redundant agricultural and forestry buildings and their curtilages.

4.13 **PPS 10** also states that “when proposals are consistent with an up-to-date development plan, waste planning authorities should not require applicants for new or enhanced waste management facilities to demonstrate a quantitative or market need for their proposal”.

4.14 **PPS 22** Planning for Renewable Energy

The Government states that

*The development of renewable energy, alongside improvements in energy efficiency and the development of combined heat and power, will make a vital contribution to these aims. It has already set a target to generate 10% of UK electricity from renewable energy sources by 2010. The White Paper set out the Government’s aspiration to double that figure to 20% by 2020.*

Increased development of renewable energy resources is vital to facilitating the delivery of the Government’s commitments on both climate change and renewable energy.

**Regional Policy**

4.15 The Regional Spatial Strategy for the East Midlands (RSS8), adopted in March 2005, has as one of its Core Objectives the following:

“This promotes the prudent use of resources, in particular through patterns of development and transport that make efficient and effective use of existing infrastructure, optimise waste minimisation, reduce overall energy use and maximise the role of renewable energy generation”

4.16 RSS8 also sets out targets for each county to achieve for electricity generation from renewables. There is no clear category for energy from waste, but the target for energy from biomass (energy crops) is the closest to the proposal to use wood waste. By 2010, Northamptonshire should have operational capacity for 10MWe. This scheme will provide between 4-5 MWe, nearly half of the target requirement. No other scheme has yet been permitted to contribute towards this target.

4.17 The RSS highlights the benefits of smaller scale grid and non-grid connected generation that are possible by small scale renewable energy facilities.

**Northamptonshire Waste Local Plan**

4.18 **Policy 4** Development of Local Waste Facilities

*Proposals for waste development to provide local facilities (those dealing with 50,000 tonnes or less per annum of non-hazardous waste) will be permitted if it can be*
demonstrated they will contribute to a sustainable waste management system for Northamptonshire.

Such development should comply with one or more of the following:
- be located on existing or designated industrial land;
- be on derelict, despoiled or brownfield land or building;
- contribute to agricultural diversification or to rural regeneration;
- be a former or existing mineral working or waste management facility;
- be on a site linked to rail or water transport;
- be a part of and specifically serve one of the identified Strategic Development Areas at Daventry, Rothwell/Desborough, Towcester and Wellingborough East (or any other urban extension of over 1,000 dwellings).

4.19 **Policy 20 Waste to Energy Recovery**

Proposals for the development of waste to energy recovery facilities will be permitted where:
- the waste facility located as close as possible to the source of the waste, and/or in accordance with the proximity principle;
- the waste has first been separated (preferably on-site at source);
- target levels for recycling and/or composting have first been facilitated;
- the proposal is consistent with the BPEO for the waste stream;
- where possible, the scheme should integrate the re-use of energy, heat and residues and is associated with new or the facility is located as close as possible to the source of the existing development that can use the surplus heat recovered.

**Compliance with policy**

4.20 The proposal complies with national and regional waste and renewable energy policies and strategies.

4.21 The choice of the site will provide a facility to serve Market Harborough, the southern part of Leicestershire and the northern part of Northamptonshire.

4.22 The choice of technology to be employed at the site will enable the production of renewable energy from one of the main biodegradable elements of the waste from commercial and municipal sources. Energy Recovery supports the waste hierarchy, providing a sustainable waste management option for waste timber. As new facilities are established around the county, waste will increasingly be dealt with closer to its source of arising, in compliance with the proximity principle and the meeting of local needs.

4.23 The proposal is for a site that already has planning permission for a larger building for waste processing. In Northamptonshire’s Waste Local Plan Pebble Hall is included in the list of Non-Main Sites for Waste Management in Appendix 1 as a site with composting facilities.
Therefore, the proposal should be permitted, provided that it complies with other policies in the adopted plan. The relevant policies all relate to the ability to control the impacts from the activity, which is clearly demonstrated in Section 5.

5 Mitigation of environmental impacts

Traffic

5.1 There will be a modest increase in traffic associated with this proposal, but this will be offset by the owners of Pebble Hall Farm giving up use of buildings already consented for B1/8 usage, which have the potential to generate a similar volume of traffic. Therefore the traffic impact will be neutral when the traffic generating potential of the existing permitted uses are taken into account.

5.2 The traffic associated with the green waste composting operations will remain unchanged. Inputs to the energy recovery facility are likely to be delivered in loads averaging 18 tonnes, as evidenced from similar waste wood handling operations elsewhere. Therefore, there is the potential to generate an annual total of 2222 loads, which over 52 weeks, and 5.5 days per week, gives an average daily rate of 8 loads or 16 vehicle movements. The only materials to be removed off site would be contaminants within the waste wood, which it is hoped will only amount to one load per week. Ash from the process will be used on the farm, so will not generate any lorry movements.

5.3 On the basis of TRICS data for rural B8 units, traffic of 3.5 to 5 vehicle movements per day per 100 square metres is predicted. To enable the traffic to serve the energy recovery facility, J M Clarke and Son will demolish

1) Unit 12 within the complex of B8 units, which has a floor area of 260m² and thus could generate between 9.1 and 13 vehicle movements and
2) 2 bays at the end of the large building at the western end of the site, which have a floor area of 180m² and thus could generate between 6.3 and 9 vehicle movements.

Removal of these two units from the commercial complex will reduce the potential number of vehicle movements relating to B8 use from between 12.4 and 21 per day.

The extent of the two structures to be demolished is shown on GPP/PP/PH/08/07.

Landscape and Visual Impact

5.4 The site is situated in an area of landscape defined in the Northamptonshire Landscape Character Assessment as the Northamptonshire/Leicestershire Vales. The gently undulating clay vales and ridges which make up much of the area, have a strong pattern of Tudor and Parliamentary Enclosure, often with low, but well maintained, hedges and variable densities of hedgerow trees. Woodlands are small. They are confined mainly to valley-side areas and to
The proposed building will be designed to have the appearance of a modern agricultural building, which will be appropriate for the farmland setting of the site. A similar style and larger building was granted planning permission in connection with the proposal for in-vessel composting at the site. The building required for this facility will occupy a smaller footprint and nearly 40% of it will be open-sided, providing a canopy under which timber will be stored to keep it dry.

The cross-sections on drawing GPP/PP/PH/08/05 demonstrate that the proposed building will not be visible from the south and east. Views from the north are all long-distance and the proposed building will be seen in the context of the existing extensive complex of modern agricultural buildings, as illustrated in the photographs included in Appendix 2. The highest point of the building will be the stack associated with the pyrolysis plant, which will protrude 2m above the proposed ridgeline. This will be of a maximum 30cm in diameter, and will be painted a mid-grey with a matt finish.

To enhance the setting of the site and aid the screening of the structures from their surroundings it is proposed to plant a hedge, with trees, around the northern, eastern and southern boundaries, as shown on plan GPP/PH/PH/08/03, and a belt of trees on the eastern side of the site. The southern and eastern banks surrounding the site will be increased in height with a 2m earth bund, which will sit under this proposed planting, further masking the site.

Also in Appendix 2 is a montage to demonstrate the change in the view from the nearest property and the A4304 to the north-west. The new building will be over 700m away, which means that it will appear extremely small in the wider landscape.

Flood Risk Assessment

The site is not at risk of flooding, as it is on high ground well above the stream that runs along the northern boundary of the farm holding and which comprises the line of the county boundary.

The additional area of roof will increase the run-off rate, although the new building is to be provided with soakaways that will direct the water away from the surface water run-off, and a tank for retention of water for on site usage. The site already has a contained drainage system in place to contain the run-off for yard water. No formal Flood Risk Assessment is submitted for this application. See Appendix 5 for details.
Groundwater and surface water protection

5.11 The site is not within a groundwater protection zone. A water storage tank will be provided to retain water from the roof for use on site. All waste handling operations will take place on an impermeable pavement, under cover or inside a building, therefore there is only a very low risk of contamination of surface water.

Nature and archaeological conservation

5.12 There is no known archaeological interest at the site. The agricultural use of the land means that there are no plants of nature conservation interest. There are no known badger setts or habitats likely to contain other protected species. The ground disturbance, to excavate the site for the built development, has been granted planning permission in conjunction with the proposal for the in-vessel composting operations on the same site.

Air emissions

5.13 A report describing the modelling of air dispersion of emissions from the proposed facility has been prepared by Millennium Science and Engineering Ltd; a copy is included in Appendix 6. The overall conclusion from modelling the emissions associated with this development is that the resulting increases in background pollutant concentrations are likely to be small and have an insignificant impact on local air quality in the vicinity of the site.

Odour, dust, litter and pests impacts

5.14 These impacts will be largely controlled by carrying out the chipping operations under cover and screened by the embankment to be created by the removal of material to a depth of about 9m. The new process will need a Permit from the Environment Agency. The controls imposed by means of such permits will mean that all of these impacts will be managed to avoid any adverse environmental effects. The nearest housing is over 500m away; therefore it is unlikely to experience any adverse levels of odour, dust, litter or pests.

Noise impacts

5.15 Noise from chipping the incoming waste and of the generators will be contained by the proposed buildings and the earth banks that surround the site. Although the main building will have one open side with louvers for ventilation, the generating units will be contained with the latest acoustic housing, to minimise the noise from them. The only additional noise generated outside will be from delivery vehicles, and from the loading shovels that will be used to move the material in and out of the building. The noise from this proposal is likely to be similar to that generated by the in-vessel composting operation, previously permitted, and by the existing green waste composting at the site. The distance from the nearest noise sensitive receptor is over 500m, therefore no detailed noise assessment has been carried out.
Lighting

5.16 To enable the site to operate during the winter, floodlights will need to be installed. These will be downward facing, 500w lights mounted on the building. They will only be used during the hours of darkness, when the site is operational; they will be controlled by a timer, which will switch them off at 5.30pm, leaving the site in darkness overnight to avoid adverse impacts on the wildlife. This will have the benefit of not drawing attention to the facility and thus assisting with site security.

5.17 No fixed lights will be needed in the yard, as work here during the dark can be adequately illuminated by headlights on the mobile equipment.

6 Community consultation

6.1 On 14 March 2008 local residents, parish, district and county councillors, District and County Planning Officers, District Environmental Health Officers and Environment Agency Officers were invited to an open morning at the site. Eight individuals attended and were shown plans and photomontages of the proposed development and the operations at the site were described in detail.

7 Conclusions

7.1 The development complies with national, regional and local policies for the diversion of waste from landfill and will enable local authorities to meet their targets for waste treatment. Also, the facility complies with the policies for renewable energy and will assist in meeting the target for generation capacity set by the Regional Spatial Strategy.

7.2 The existing planning permission for composting has established that the site is suitable for similar types of development, including the construction of a large building. The additional building will fit in with the adjacent farm building complex, in terms of scale and design. It will only be visible from the highway and one house to the north, which is so far away that they will only have long-distance views. The building will be seen in the context of the existing buildings on the adjacent site.

7.3 Environmental impacts of the development can be mitigated so that there is very little risk of any adverse impact on the locality.

7.4 To compensate for the proposed traffic to service the proposal, the site owners are prepared to demolish sufficient B8 floorspace, so that it cannot be brought in to commercial use.
DESIGN AND ACCESS STATEMENT

Use of Site.
The existing and proposed activities at the site are described in Sections 1 and 2 of this Supporting Statement.

Amount
The proposal is to construct a building with a floor area of 1280m², 10m to the eaves and 13m to the ridge, with a covered yard area of 640m² 10m to the ridge. In addition the outside yard will have an area of 2,240m². The cooling fans will occupy a footprint of 88m² and the thermal oxidiser will occupy a footprint of 80m².

Layout
It is proposed to construct the building within an area to be excavated to a depth of 9m, to minimise the impact on the local landscape. The earth banks surrounding the excavated area will be retained and those on the southern and eastern boundaries enhanced with 2m earth bunds on their tops to increase the visual screening of the site.

Scale
The proposed building will have the scale and appearance of a large, modern agricultural building, which when seen in the context of the extensive complex of modern farm buildings alongside, will fit in with its surroundings.

Landscaping
A hedge and trees are proposed for planting around the top of the bank above the excavated area. These will be on top of a 2m bund at the top of the banks. A detailed planting scheme will be prepared and submitted for approval in the event that planning permission is granted.

Appearance
The building will be designed to reflect the agricultural complex adjacent; it will be finished in profiled steel cladding Juniper Green in colour.

Access
It is intended that the site will enable easy access for vehicles and pedestrians and give good visibility across the entire area. The site is well spaced out giving plenty of manoeuvring room for vehicles. There is to be no general public access to the site, which can be controlled by the weighbridge office near the point of entry to the site. As there will be heavy plant and machinery operating on the site, a large part of the site will be unsuitable for access other than by able-bodied persons.
Appendix 1

Images of the proposed infrastructure

Proposed building, canopy, cooling fans, thermal oxidiser and stack

Proposed buildings shown in relation to existing farm and commercial buildings.
Appendix 2.

Views of the site

Existing view from Husbands Bosworth Road

Existing view from Husbands Bosworth Road near immediately west of site access
Existing view from Husbands Bosworth Road at Theddingworth 30mph limit

Montage showing magnified proposed view from Husbands Bosworth Road.
Appendix 3.

Existing planning permissions for composting and use of the access
Appendix 4

Process Description and ‘Embedded Generation’ explanation

Facility Technical Specification
The proposed biomass generation facility will have the capability to accept around 35,000 tonnes of waste wood per annum. Subject to negotiating final contractual terms, the chosen technology provider will be Prestige Thermal Equipment Ltd (Prestige) of South Africa, which specialises in the design and manufacture of advanced thermal processing technology. Prestige has developed a pyrolysis system that will principally utilise mixed waste wood but with the capability to use clean wood as and when required. The facility will meet the specification of the Waste Incineration Directive, thus allowing it to handle treated as well as clean wood.

Pyrolyzer
The proposed Prestige pyrolysis process involves the thermal decomposition of wood in the absence of air. The pyrolyzer is designed to process the wood to produce a synthetic gas (syngas) suitable for firing in a reciprocating engine for the production of electricity.

Wood is fed to the pyrolyzer from a dedicated intermediate storage and blending bin through a system of screw conveyors and a chain conveyor. The last stage of screw conveying is heated to 500°C and is used as a pre-pyrolysis step. The feedstock is introduced into a vertical heating vessel by a hopper that is fed by a screw conveyor, the vessel is heated by six zones of individually controlled burners that operate on LPG during start up and syngas after startup. The feedstock is heated to 900°C in the pyrolyzer where it is converted to syngas. Automatically controlled adjustable vanes within the pyrolyzer control the descent and heating rate of the feedstock as it leaves the system. The syngas is then scrubbed in a wet scrubber to remove particulates and chlorides before being sent to the reciprocating engines. The process will conform to the requirements of the Waste Incineration Directive (WID) and to conditions set by an Environmental Permit for the site.

Reciprocating Engines and Plant Load
Reciprocating engines designed to operate on syngas will be utilised using the latest lean burn combustion system to reduce the formation of NOx in the engine. It is anticipated that an engine package will be selected that will generate around 3-4MW of electricity for export to the local network, whilst also providing sufficient output to supply the onsite fuel processing and handling operations under a “private wire” type arrangement.
**Air emissions**
The emissions from the thermal decomposition and syngas energy generation process will be vented via a small flue. A detailed assessment of the impact of the emissions on local air quality has been carried out and is attached as a separate appendix to the planning statement. The emissions will be subject to continuous monitoring and periodic sampling in line with conditions imposed on the Permit to be issued by the Environment Agency.

**Fuel Processing and Handling**
Fuel processing and handling will use a combination of chipping, drying and grinding systems supplied by third-party, original equipment manufacturers, (OEM’s) to produce a feedstock suitable for pyrolysis. Details of the fuel process and handling systems are as follows:

**Chipping System**
The chipping plant is designed to reduce the size of the raw feedstock to a size and range that is suitable for drying. Maximum feedstock size that can be fed to the chipper is 200x100x100mm; therefore a level of minimal processing is required before the feedstock can be fed to the dosing feeder. In the chipper the feedstock is reduced to a maximum size of 8x8x8mm by two chipping knives and a counter knife with four cutting edges.

The chipping system comprises several different pieces of major equipment, with feedstock entering the chipper through a dosing and vibratory feeder. A metal detector and magnet are installed in line with the feed system to ensure that no metal pieces are introduced to the system that could damage the equipment or contaminate the syngas. The chipper uses a rotating drum with steel knives and a counter knife to reduce the size of the feedstock, with the chips then exiting the chipper to a conveyor for transport to a ripening mixer/holding bin.

**Drying System**
The drying system is designed to remove moisture from the feedstock to a level suitable for pyrolysis. The system is designed for a feedstock with nominally 20% moisture but can handle feedstocks with up to 40% moisture content. Feedstock exiting the dryer is around 10%.

The dryer requires a hot stream of gas in order to evaporate the moisture from the feedstock and remove it from the system. Under normal operation this is accomplished by using part of the exhaust flue gas stream from the engines. During start up the hot drying gas stream is generated by burning an alternative fuel, most likely a portable propane start up system.

The moist air from the drying process is ducted via a condenser, to remove the water, which will be stored in a tank. When the tank is nearly full, it will be emptied and the liquid removed off-site for disposal at a suitably licensed facility.
Grinding System

The grinding system converts the feedstock using a high speed hammer mill and regrind chamber reducing dried chips to sawdust type consistency with a maximum diameter of 6mm. A full length magnet is used to remove any metal shavings from the feedstock to avoid contamination of the syngas. The feedstock is then transported from the grinding system via a screw conveyor, which takes the feedstock to an intermediate storage system for the pyrolyzer and pelletizer. An extraction fan pulls air through the hammer mill and air separator, whilst a cyclone is used to separate feedstock from the air before it is vented to the atmosphere.

Embedded Generation

Embedded Generation is the term used for any electricity generating plant that is connected to the regional electricity distribution networks. These networks are owned and operated by the Distribution Network Operators (DNOs). The DNOs are the distribution arms of the former Public Electricity Suppliers (PESs) and came into existence when the distribution and supply licences were separated by the Utility Act (2000). At present, most power generating plant in the UK is connected to the high-voltage transmission system, which, in England and Wales, is owned and operated by the National Grid Company.

A key characteristic of new energy generation technologies is that they are either small in scale or electricity can be produced economically in a range of sizes. In many cases they are ideally suited to producing power where it is needed. They therefore lend themselves to being embedded in electricity distribution networks that have, in the recent past, been designed to deliver power from the high-voltage transmission system to the final customer in a low-cost, minimal intervention manner.

Embedded power generation plant can deliver power where it is required. The greater use of embedded plant will help the UK to meet its targets for reducing greenhouse gas emissions. This is because such plant will usually consist of low- or zero-carbon technologies.

Significant growth in embedded generation will contribute to fuel diversity and security of supply as diverse forms of generation are brought forward, including renewable plant that is not reliant on imported fuel.

In the longer term, embedded generation plant has the potential to reduce overall costs to the consumer by providing a more efficient electricity system that generates and delivers power close to the point of use.

The addition of embedded generation reduces the demand for electricity from the national grid.
Appendix 5

FRA Requirements.

The application site, as marked in red on the plan below, is in Zone 1.

PPS25 has the following to say regarding the requirement for FRA, with the element relevant to this site shown in Bold. ‘Site-specific Flood Risk Assessments (FRAs)

E8. At the planning application stage, an appropriate FRA will be required to demonstrate how flood risk from all sources of flooding to the development itself and flood risk to others will be managed now and taking climate change into account. Policies in LDDs should require FRAs to be submitted with planning applications in areas of flood risk identified in the plan.

E9. Planning applications for development proposals of 1 hectare or greater in Flood Zone 1 and all proposals for new development located in Flood Zones 2 and 3 (see Table D.1, Annex D) should be accompanied by a FRA. This should identify and assess the risks of all forms of flooding to and from the development and demonstrate how these flood risks will be managed, taking climate
change into account. For major developments in Flood Zone 1, the FRA should identify opportunities
to reduce the probability and consequences of flooding. A FRA will also be required where the
proposed development or change of use to a more vulnerable class may be subject to other sources of
flooding (see Annex C) or where the Environment Agency, Internal Drainage Board and/or other
bodies have indicated that there may be drainage problems.

E10. The FRA should be prepared by the developer in consultation with the LPA. The FRA should
form part of an Environmental Statement when one is required by the Town and Country Planning

As the site is in Zone 1 and is of less than 1ha in area, there is no requirement under PPS25 for a site
specific FRA.

The use, either previously (general industry) or proposed (waste treatment) both fall within the ‘Less
Vulnerable’ category as shown below.

| Less Vulnerable | • Buildings used for: shops; financial, professional and other services; restaurants and cafes; hot food takeaways; offices; general industry; storage and distribution; non-residential institutions not included in ‘more vulnerable’; and assembly and leisure.
|                 | • Land and buildings used for agriculture and forestry.
|                 | • Waste treatment (except landfill and hazardous waste facilities).
|                 | • Minerals working and processing (except for sand and gravel working).
|                 | • Water treatment plants.
|                 | • Sewage treatment plants (if adequate pollution control measures are in place). |

As seen in the table above, ‘Less Vulnerable’ development in ‘Zone 1’ is classed as appropriate.
Appendix 6

Report by MSE on Atmospheric Dispersion Modelling of Emissions