

ROSE ENERGY PLC

**PROPOSED POULTRY BEDDING
AND
MBM POWER PLANT**

SITE AT GLENAVY

PRE-APPLICATION CONSULTATION

December 2007

1. This document is a resume of the project for a proposed bio-mass power plant on a site next to the Ulster Farm By-Products Ltd's rendering plant at Glenavy.
2. The proposed developer is Rose Energy plc, a joint venture company established by Glenfarm Holdings Ltd, the owner of Ulster Farm By-Products Ltd, Moy Park Ltd and O'Kane's Poultry Ltd, the two major poultry producing a processing companies in Northern Ireland.

Project Description

3. Rose Energy plc is proposing to develop a 30 megawatts electrical output (100Mw thermal input) bio-mass power station at a cost of £100 million on a site near Glenavy. The power station is to be fuelled with poultry bedding – a mixture of wood shavings and droppings – and meat and bone meal (MBM), which is the processed material derived from rendering animal by-products, less the tallow which is extracted from the initially rendered material. The power station will burn approximately 240,000Te of poultry bedding and 40,000Te of MBM, or a different proportion up to 300,000Te poultry bedding equivalent capacity of the plant.
4. The poultry bedding will be delivered direct, by road, from a large number of poultry producing farms spread throughout Northern Ireland but predominantly clustered around Dungannon and Ballymena. The meat and bone meal will be delivered either directly by conveyor or, in the short term, by vehicles from the adjoining Ulster Farm By-Products rendering plant.
5. Poultry bedding has reasonable calorific value and its use in power stations is tried and tested; there are a number of plants burning it as a fuel established elsewhere in the UK, such as at Glanford, Eye and Thetford. Meat and bone meal is increasingly being used as a fuel source now that it no longer is utilised as an agricultural feed; it is of considerable calorific value (90% of that of coal) and is now being burnt in a number of electricity plants in the UK and also as a fuel feedstock for cement kilns.

Background to Project

6. The poultry producing and processing industries are of particular importance to the Northern Ireland economy. Traditionally poultry litter has been spread on agricultural land as a fertiliser and also as a means of disposal. This activity is recognised as contributing to the problem of eutrophication of lakes and rivers in nitrate vulnerable zones (NVZ), with resultant adverse impact upon flora and fauna and ultimately upon water abstraction for human consumption; the overloading of land with phosphorous derived from spreading poultry bedding is a less well known but equally difficult problem to resolve. Under the EU Nitrates Directive the current practice and extent of spreading of poultry bedding will no longer be possible (compounded by the reluctance of farmers to accept the material for spreading on their land) and the Water Directive has also brought a requirement for improved quality and security of water supplies for human consumption. If the poultry producing and processing industries of Northern Ireland, with their significant value to the economy (>£50m farm income, £120m salary income excluding incomes in associated transport, packaging etc industries) and jobs, are to survive then alternative use or means of disposal of the poultry bedding must be found. A derogation from the European Commission is currently in force, which provides a breathing space for the industries and the Government of Northern Ireland to find alternative solutions to the spreading of poultry bedding; the derogation expires in 2008 and the Government must renegotiate for an extension with the European Commission during next year which must be against the background of a viable solution if a further derogation is to be granted.

7. The further impetus to the scheme is the Government's policy and the Nation's need for increased renewable energy production and less reliance upon fossil fuel. This has a particular resonance in Northern Ireland which has been dependant upon imported fuels. The project proposed by Rose Energy has been put forward to the Government of Northern Ireland for grant assistance under the Environmental and Renewable Energy Fund (specifically under the Energy from Waste Call); however, it is now being considered for separate funding by Government, outside the EREF, as a major renewable energy project which will meet most of the renewable energy targets for Northern Ireland.

Proposed Development

8. The significant elements of the built form of the power station will consist of:
- a reception building incorporating storage and mixing bins
 - a boiler house to the rear of the reception building – this is the tallest building (42m)
 - a turbine hall to one side of the boiler house
 - external dust arrestment equipment, ash silos and handling gear
 - a stack for the dispersion of emissions (estimated at 70m in height)
 - cooling towers (15m in height)
 - switch gear yard
 - ancillary plant and equipment
 - a sustainable drainage system (SuDS) for cooling waters and surface water run-off
(all dimensions are approximate at this stage)

The whole development will cover an area in excess of 2.6 hectares, excluding the SuDS and access. Full details of the size, floorspace and appearance of all elements of the proposed development, including cross-sections, and of the site, including levels and proposed finished land form, will be provided as part of the Planning Statement (PS).

9. The proposed power station will operate seven days a week but with planned down-time to allow for maintenance and replacement of equipment as necessary. Imported poultry bedding, from widely spread farms, and removal of ash, would only take place on Monday to Friday and Saturday mornings within limited hours – the plant will have holding facilities for several days supplies of poultry bedding and MBM feedstock.
10. Exportable electricity will be in excess of 25Mw. This will be transmitted from the plant via buried cables and then to overhead poles (not pylons). This new source of electricity generation will help reinforce supply in the Lisburn area.

Site

11. The proposed site consists of grazing land bounded by hedgerows, including a few hedgerow trees, which slopes downwards from east to west towards the River Glenavy, which it abuts on the northern west side, in the direction of Lough Neagh.

Why this Scheme and Why Here?

12. There is little alternative to spreading poultry bedding other than its use as a fuel or disposal by land filling as a waste. Land filling is not a sustainable option and the EU Landfill Directive effectively limits the potential for landfill particularly as poultry bedding would be a new waste stream when the emphasis is on reducing existing waste streams going into landfill. MBM has traditionally been used as an animal feed but that use has been banned since the advent of the BSE crisis and while some MBM is likely to go back into animal feed, the majority will not. Use as a fertiliser (for certain categories of material only), as fuel or land filling as a waste are the only alternative outlets.
13. Use of poultry bedding and MBM as fuels is:
 - tried and tested
 - recognised as renewable sources of energy, resulting in
 - reductions in CO² emissions in substitution for burning fossil fuels
 - absence of methane production from land filling
 - “home” produced and sustainable fuel sources, resulting in
 - import substitution of fuel, whether fossil or renewable
 - reduces transport and environmental costs over imported fuels
 - security of supply as fuels sources
 - potential added value to the producers by reducing or removing costs for disposal, including transport costs, and creating a potential positive income stream
14. The majority of the proposed fuel feedstock, poultry bedding, will come from a large number and wide ranging poultry farms in the Province. However, though there are concentrations of poultry farms around Ballymena and Dungannon, in the interests of bio-security a plant using poultry bedding as a fuel, and storing it in large quantities prior to use, is precluded within

reasonable proximity (10 kilometres) of a cluster of poultry farms or the poultry processing plants (based in Ballymena and Dungannon). A site has to be found elsewhere.

15. In 2004, the leading poultry producers were supported financially and technically by Invest In Northern Ireland to study options for disposal and an appropriate site. The proposed site near Glenavy was identified with the clear synergies with the MBM producing Ulster Farm By-Products plant, where planning permission for a MBM incinerator was approved in 2001; this led to Glenfarm Holdings joining the joint venture.
16. This location accords with the Waste Strategy and the emerging guidance within Draft Planning Policy Statement 18, Renewable Energy to site renewable energy plants at the source of or close to the producer of the waste or fuel. In identifying a site it was also vital to have a nearby water source, for abstraction for water cooling and potentially return either as a “sink” or disposal.
17. The location is also required to be sustainable in terms of the general transport of non-MBM feedstock. A site where the locality requires or would benefit from the reinforcing of the electricity supply is also of significance bearing in mind the potential costs, financial and environmental, of connection to the grid. The site next to the plant adjacent to the largest single supplier of bio-mass fuel, Ulster Farm By-Products Ltd, fulfils all these requirements.
18. The Planning Statement (PS) and Environmental Statement (ES) will detail the alternative options for the project and sites, including the full review of sites, and also demonstrate that this represents the Best Practical Environmental Option (Sustainable and Strategic Environmental Assessment).
19. The plant will require consent under the Electricity Order and a Permit under the Pollution Prevention and Control Regulations, as a prescribed operation, in addition to detailed planning permission. The plant will be Waste Incineration Directive compliant.

Policy

20. A review of economic and planning policies, including policies in relation to agricultural support, renewable energy and response to climate change, will be provided. No spatial plans within the Province include for sites for power stations – there are, therefore, no site specific policies which directly relate to this proposed type of development. The review will demonstrate that though there are spatial and environmental policies which might indicate that this form of proposed development should not be located in the vicinity of the Ulster By-Products plant off Ballyvannon Road near Glenavy, there are synergies in locating the plant where proposed and that there is substantial policy support for the type and form of development, vital economic and environmental benefits which will accrue, including the abatement of the eutrophication of Lough Neagh, which is of international importance, such that the development at this location should be supported and granted planning permission and a Licence to operate under the Electricity Order.

Water Cooling, Use and Disposal

21. The proposed power station is to be water cooled. There are three potential means of cooling:
- a closed loop system abstracting large volumes of water and returning them to a “sink”
 - the abstraction of a much smaller amount of water either from a river/lough or aquifer and its use in evaporative cooling via cooling towers and return of residual water to the river or lough,
 - or air cooling using condensers.
22. It cannot currently be demonstrated that the closed loop water cooling system represents BAT as this will require an extensive and long term study to assess the potential impact of both abstraction and return of large volumes of water to and from Lough Neagh which is a sensitive site of international importance, designated a RAMSAR site, SPA and ASSSI and which contains unique species such as *Pollan*. Of the remaining two options, air cooling is relatively straightforward and tried and tested, though air cooled condensers are potentially noisy, but has a significant financial penalty in operating costs and revenue. The proposed power station will utilise evaporative water cooling, extracting water from the aquifer below the site (subject to

testing) and return of the cooling water, appropriately treated if necessary, and attenuated for temperature to the River Glenavy.

23. The ES will demonstrate the existing conditions of geology and hydrology, including illustrating the water usage and disposal requirements for the proposed plant, environmental pathways of water to be disposed of (both clean and effluent) and potential effects upon the aquatic environment. Prevention of contamination by use of evaporative cooling, representing BAT, will be demonstrated and containment and mitigation measures in respect of water resource needs and disposal. The use and reuse of water, including the farming of water from the buildings and site, will be shown within the ES.

Flood Risk Assessment

24. A full Flood Risk Assessment is being undertaken in respect of the proposed development including quantifying and mitigating the effect of surface water run-off. A SuDS is proposed to ensure that all run off from the site is controlled and released into the water courses within the prescribed limits and temperature (in the case of cooling water). A separate study relating to the construction phase assesses the potential impact of surface water run off for the duration of this phase and the particular containment and attenuation measures required to prevent contamination of water courses. This includes the particular temporary requirements for dealing with larger quantities of human sewage for the duration of the construction phase

Traffic Generation and Access

25. Forecasts of the numbers and types of vehicles to visit the proposed plant have been made. Because of the offset of vehicle movements which currently export meat and bone meal from Ulster Farm for incineration or disposal elsewhere in the UK, there will be minimal additional traffic (and notably HGV traffic) arising from the proposed development. Details of HGV routing, frequency of movement and impact upon the local highway network will be provided in the Transport Assessment. A separate study relating to the construction phase, when a much larger number of vehicles, and particularly private cars, will be visiting the site, will be provided.

26. Access to the proposed development will be off Ballyvannon Road. The currently proposed access is shown on the appended illustrative plan at a position some 60m beyond the existing access to Ulster Farm. It is expected that a temporary access will be required off Ballyvannon Road or alternatively via the existing access to Ulster Farm to service a construction compound – a construction compound is likely to be created in the field adjoining Ballyvannon Road and separating the site of Ulster Farm from the proposed site of the power station.

Air Quality

27. A baseline study and monitoring exercise has been undertaken and the results of the study will be provided. This study has assisted in providing further information to the regular air quality monitoring undertaken by Ulster Farm By-Products Limited at its adjoining site and has informed the air dispersal modelling exercise being undertaken.
28. Using ADMS, a full air dispersal modelling exercise is being completed. Early consultation with IPRCI has taken place and agreed parameters have been established. The current indications are that the chimney will be approximately 70m high to ensure adequate and appropriate dispersal and full compliance with not only the existing but also the proposed EU and UK Air Quality Standards, including taking account of emissions from the adjoining Ulster Farm plant. The plant will be Waste Incineration Directive compliant and, therefore, further attenuate and monitor emissions from the stack.
29. As noted below, while there will be full compliance with the EU and UK Air Quality Standards, the potential impact of emissions upon flora and fauna and human health, including social and welfare concerns, are being assessed and will be reported upon both as part of the ES and the planning application in as far as a Human Health Risk Assessment is not required as part of the ES.

Odour

30. Both poultry bedding and meat and bone meal are potentially odorous. All material for burning as a fuel will be delivered to the plant in covered vehicles and delivered into the reception building of the proposed plant. The material reception building and storage area will be kept

under negative pressure to prevent fugitive emissions of odour. This arrangements is represents BAT and is similar to the approach adopted in the control of odours at the adjoining rendering plant. The ES will detail the potential sources of fugitive emissions and also point emissions, that being primarily restricted to the emissions from the stack which, because of the incineration process, will no longer carry the odours associated with the fuel feedstocks.

Noise and Vibration

31. A baseline survey of the existing noise environment of the proposed site has been undertaken and details will be provided. There are two distinct areas which have been studied, that concerning the proposed power plant when in operation and that during the construction phase, both including the noise and vibration resulting from associated traffic.
32. The report separates the three sources of noise, and their potential impact, into construction, facility and vehicle noise, and relates them to the appropriate assessment using BS5228 (1984 and 1997), BSE 4142 (1997) together with PP24 and WHO criteria, and BS5228 and the methodology detailed in “Calculation of Road Traffic Noise (1999)” respectively. The plant project documentation requires that target noise levels should not exceed 45 dBL_{Aeq} at the boundary fence of the site during night-time and 55 dBL_{Aeq} at 1m from the plant building.
33. The report addresses construction activity, typical and worst case, and calculates the attenuation by minimum and typical distance to properties to illustrate the typical and worst case noise impacts upon “sensitive” properties. Attenuation measures are proposed, which will include no operations on a Sunday and no audible noise between the hours of 2200 and 0700. The target noise levels, based on the survey data, are set at:
 - daytime target level at 35 dBL_{Aeq}
 - night time target level – 30 dBL_{Aeq} .Separate target levels for permissible noise for a single or combined items of plant at 10m have also been set.
34. Insulation, noise from external fixed plant, internal noise levels at the power plant, HGV movement on internal site roads, loading/unloading activity of vehicles, the movement of roller

shutter doors and activity from cars arriving and departing have all been considered and a worst case impact level assessed and target levels and mitigation proposed as necessary.

35. The current review of vibration potential, and of the appropriate BS guidance, suggests that there is a “low probability of adverse comments”; further work on this aspect will be undertaken as the specific construction requirements of this project are better known, and reported in the ES.

Landscape and Visual Amenity

36. Landscape assessment of the existing site and as proposed when developed has been undertaken based upon the Guidelines for Landscape and Visual Impact Assessment: 2nd Edition 2002” published by the Landscape institute and Institute of Environmental Management & Assessment, including establishment of the Zone of Visual Influence (ZVI). The provided assessment as part of the ES and PS fully accords with the requirements of the DOE.
37. The proposed development is large scale and cannot be hidden. However, the development is proposed to be set down into the existing land by several metres which will be beneficial in obscuring and setting the development better into the existing landscape, providing the opportunity for better mitigation with mounding and landscaping, and the added benefit of assisting in attenuating noise from on site activities.
38. As part of the process of consideration of the project the specific design, appearance and use of materials in the proposed development has been undertaken to militate the effects of this large-scale building within this landscape.
39. The potential for a plume from the stack has been assessed and also the potential for mist or “fogging” from the water-cooling towers. The likelihood of these events occurring will be detailed and an assessment of their potential visual amenity impact provided.

Ecology

40. A Phase I Habitat baseline study of the terrestrial ecology of the locality has been undertaken, together with that of the adjoining Glenavy River. The potential sources of harm or disturbance by the proposed development, both during its construction and operational phases, have been assessed and mitigation measures proposed. These include considering the impact of the disposal of effluent and “clean” water and the affect on the aquatic environment. No protected flora species were found within the site.
41. WeBS data has been reviewed and a survey of breeding birds will be undertaken and similarly a survey of over wintering birds is also being undertaken.
42. A bat survey has been undertaken and the presence of various species identified together with their foraging areas; no bat roosts have currently been identified within the proposed site or adjoining land or property. A further bat survey is to be undertaken in the Spring, 2008.
43. The presence of badgers in the locality has been identified, but no setts, active or otherwise, within or immediately adjoining the site have been found. A possible active sett away from the boundary of the site of the development has been identified and mitigation measures proposed for both construction and operational phases of the development.
44. In undertaking the Phase 1 habitat survey, the presence of otters within the confines of the River Glenavy have been identified. In developing the SuDS and outfall to the river, particular regard will be had to the potential impact upon holts and will be designed to mitigate impact upon this species and their habitat.
45. The potential affect of the emissions upon flora and fauna are being investigated. The formerly proposed Ulster Farm incinerator, with a 40m+ stack, involved studies of the potential affect of emissions fall-out upon grazing land, and subsequent take-up by dairy cows in particular, and upon Lough Neagh and potential affect upon the eel fishery. Similarly, the potential affects of emission fall-out from the proposed 70m stack of the Rose Energy proposed power plant are

being reviewed, even though emissions will be within the prescribed EU and UK air quality standards and emission limitations, including those that may be prescribed under the IPPC Permit for non-UK air quality specified emissions, and that the plant will be Waste Incineration Directive compliant.

46. A wider assessment of the potential affects of abstraction and return of large volumes of water to Lough Neagh has been the subject of a thorough desk-top study and consultation with Queens University. A possible further extended study, which would last for 12-15 months, of the potential impact of the proposed development is being reviewed. Currently, there are no proposals for large scale abstraction of water as it cannot be demonstrated that this, together with the return of water in a closed loop cooling system, represents BAT but it remains an option for the proposed power plant.
47. A full Environmental Management Plan (EMP) will be put into effect as part of the construction phase of the project in addition to a Site Protection and Monitoring Programme pursuant to the grant of an IPPC permit. The outline of the proposed EMP will be included within the ES accompanying the planning application.

Dust

48. Dust may arise from three sources –
- incoming fuel feedstocks,
 - the incineration process and
 - the handling and loading of ash.

The ES will provide detailed explanations of the potential sources and the means of prevention and arrestment; this will illustrate the compliance with BAT which will be required under IPPC.

49. The means of arrestment include:
- receipt of fuel feedstock material in covered vehicles
 - off-loading within the enclosed material reception shed, maintained under negative pressure at all times with the extracted air used within the boiler
 - electrostatic precipitation of flue gases

- absorption reactor
- bag filters
- sieve screening of boiler ash
- pneumatic handling of loading of ash for off-site disposal

Light

50. Light pollution may arise from reflected light, due to the power of illumination (lux) and the reflectiveness of surfaces, direct lighting from poorly directed/angled lights and “night glow” arising from a combination of the above. An analysis of the proposed built form and operational requirements is being conducted and guidance developed for the design and implementation of a lighting scheme to avoid light pollution where possible and otherwise minimise it.

Archaeology

51. An archaeology desk-top study has been undertaken. No indication of existing or past human habitation or remains of interest on or near the site have been noted from the research, including records of local physical investigation. As a precautionary measure, it is proposed that there be a full site strip under the watching brief of a qualified archaeologist.

Waste Disposal

52. All streams of waste production have been reviewed and will be further reviewed as part of the IPPC permit process and BAT compliance; it is inherent in BAT compliance as part of the operation of the proposed plant under IPPC that waste streams, and use of resources, are minimised on an on-going, planned basis of monitoring and review. There are few waste streams, the primary ones being waste water (from cooling), blow down from the boilers (which carries treatment chemicals) and ash.; the first two have been referred to earlier.
53. Ash can potentially be used in block making. However, due to the presence of ash derived from MBM, and the requirements for ultimate disposal of certain animal by-products’ derived material as a waste under the current EU Animal By-Products Regulations. Consequently, it is unlikely that the ash will be capable of re-use and will, instead, be disposed of to land fill as a

waste. Details of the quantity, characteristics, means and probable initial location of disposal will be provided as part of the ES.

Carbon Footprint

54. The full extent of the likely end carbon footprint has yet to be calculated. Calculations of the saving in CO² emissions from using poultry bedding as a fuel, rather than spreading or land fill, have been undertaken and similar savings in respect of burning MBM in as far as it is not currently used as a fuel in power stations elsewhere.
55. In addition, an assessment of “saved” CO² will be made in using the renewable energy resources of poultry bedding and MBM as opposed to select carbon fuels.
56. The saving of emissions arising from reduced transportation of fuels for use or disposal elsewhere is being prepared. The overall picture arising from the assessment of the carbon footprint will be provided, and form part of the BPEO assessment. This assessment will not be based upon a “whole life” assessment of all construction materials and construction.

Health Impact/Human Health Risk Assessment

57. There is no requirement under EIA to undertake a Human Health Risk Assessment (HHRA) or similar study. However, there are clearly understandable concerns that a project of this type and scale raises, even with full compliance with all statutory requirements, notably in respect of emissions to air and water or effluent disposal, and control under IPPC. This study seeks to address those concerns.
58. This study can only be undertaken when the air quality assessment, and some other studies, have been fully completed. Rather than utilise the HMIP method developed by HMIP, used in connection with the Ulster Farm incineration proposal, it is proposed to use the Lakes IRAP software to generate the risk assessment output. This takes the model outputs from ISC/AERMOD and automatically generates the output based on a set of site specific variables, eg water, bodies, farm land etc, for different receptors, eg farmers, children fishermen, etc. The software implements the USEPA HHRA methodology which was last updated in 2006. This is

similar in principle to the methods developed by HMIP in the 1990's, with the advantage that in the software model Quality Assurance is already included. This information will then be passed on to the occupational medicine consultants.

59. The scope of the HIA/HHRA would be agreed as far as possible with the Planning Service and relevant Health Authority. The assessments would:

- undertake a rapid scoping through an initial qualitative assessment of the potential sources of ill health arising from the proposed scheme and an appraisal of the properties likely to be affected by emissions from the scheme
- assess the existing health of the affected population, including a quantitative assessment of the potential effects of existing levels of air pollution, in the form of a rapid local community health profile
- review research and grey literature to provide an up-to-date picture of the known health impacts of such developments
- provide a quantitative assessment of the health impacts of the predicted air quality changes, including plant and vehicle emissions, using exposure-response information developed for UK and EU regulatory impact studies or other exposure-response information published by international authorities such as the World Health Organization
- provide a qualitative assessment of other potential impacts that have been identified during health impact assessments of other similar developments
- assess the how the development fits with the wider health and non-health policies and strategies of the Government and health board
- propose mitigation and enhancement measures (alongside and in addition to ones that are/might be developed in the other assessment work carried out to date).

What If? Analysis

60. The likely and possible effect of not proceeding with the project are given in the economic review and case for the proposed development. This section of the ES and PS is aimed at considering other scenarios such as:

- closure of the plant for planned and non-planned maintenance or failure
- the cessation of the operation of the adjoining rendering plant
- reduction in supply of base poultry bedding feedstock
- variations in fuel supply/calorific value
- security

Construction Phase

61. The construction phase will last in excess of two years. The construction compound will require a site of similar size to the development site, accommodate up to 50 portacabins, with a peak employment of 400 persons. The logistical and environmental consequences of the construction phase are considerable even though temporary.
62. The site of the construction compound will be located on the open field between the adjoining development site and the Ulster Farm plant with a separate temporary access to that proposed for the development site, either directly off Ballyvannon Road or via the existing access to Ulster Farm.
63. The ES will detail the environmental considerations relevant to this temporary facility, notably
- traffic, HGV and cars
 - drainage, including
 - surface water run-off
 - containment of contamination
 - effluent treatment
 - noise containment, control and restriction on hours of construction