RoseEnergy

PROPOSED BIOMASS FUELLED POWER PLANT

LAND OFF BALLYVANNON ROAD, NEAR GLENAVY,
COUNTY ANTRIM

NON-TECHNICAL SUMMARY

MAY 2008

the
GRAHAM BOLTON PLANNING
partnership limited

INTRODUCTION

1. Rose Energy Limited proposes to develop a biomass fuelled power plant on land off Ballyvannon Road, near Glenavy. Biomass is a renewable energy source and the proposal arises from the need of important sectors of agricultural business in Northern Ireland to find alternative uses for by-products in response to legislative restrictions and make better use of them in meeting the challenge of climate change.

2. Rose Energy has submitted a planning application to The Planning Service of Northern Ireland for the proposed power plant. Accompanying the planning application is an Environmental Statement (ES), which reports on the findings of an Environmental Impact Assessment (EIA) of the proposed development. The EIA has been commissioned by Rose Energy and undertaken by a team of consultants, details of whom are provided within the ES. An Environmental Impact Assessment is required under a European Union Directive, enacted into UK law. The UK legislation, the Town and Country Planning (Environmental Impact Assessment) (Northern Ireland) Regulations 1999, as amended, details the specific criteria to identify those proposed developments which need to be the subject of the EIA process. The nature of the proposed power plant development is such that it is one where it is necessary to undertake an EIA to assess the potential impact upon the environment.

3. Energy production is a regulated activity. Apart from the need for planning permission, a Permit to operate the plant under the Pollution Prevention and Control Regulations (N.I.) 2003 to ensure that the plant can operate without harm to the environment is required and also a Licence under the Electricity (Northern Ireland) Order 1992 to generate and supply electricity. The procedures for obtaining the IPPC Permit and Licence under the Electricity Order are separate from those for planning permission but many of the issues covered in the ES are similar to those covered in the application for an IPPC Permit.

Who are Rose Energy?

4. Rose Energy Limited is a joint venture Company which has been set up by three of the leading agri-businesses of Northern Ireland. Moy Park Limited and O'Kane Poultry Limited are the two leading poultry product producers in Northern Ireland, employing some 6000 people directly and 2,500 indirectly and contributing over £400m per annum (at 2006 figures) to the Northern Ireland economy. Glenfarm Holdings Limited is a farmer owned cooperative which processes animal by-products and food waste. As explained in the ES, and summarised later in this document, the three Companies have come together to develop a solution for the disposal and use of the agricultural by-products of poultry bedding and meat and bone meal. While the three Companies have set up and own Rose Energy Limited, they are independent of it. Rose Energy Limited is not responsible for and has no direct operational connection with the activities and businesses of the three Companies of Moy Park Limited, O'Kane Poultry Limited and Glenfarm Holdings Limited.

What is this document?

5. This document is the Non Technical Summary (NTS) of the Environmental Statement, which is a regulatory requirement covering the undertaking of an EIA and provision of an ES. It is a summary only – the full assessment of the proposed development is given in the Environmental Statement.

6. The NTS provides a brief synopsis of the proposed development, describes the processes involved within the scheme, and identifies and describes the significant environmental effects which may be caused by the development, both in terms of its construction and operation. Where potential adverse impacts are identified mitigation measures are proposed, and these are detailed in the full ES.

Where can I see or obtain the full documents?

7. Copies of the full Environmental Statement together with the planning application have been lodged with The Planning Service at Millennium House, 17-25 Great Victoria Street, Belfast. It is understood that copies will be made available for inspection at the Divisional Offices of The Planning Service at Downpatrick, Omagh, Ballymena and Craigavon as well as at the offices in Belfast. The address and contact details for each of the Divisional Offices can be obtained from The Planning Service.

8. Rose Energy has a website where the ES together with this Non Technical Summary and the Planning Statement can be viewed and also downloaded – see www.roseenergy.co.uk. Copies of the full ES together with the NTS and Planning Statement are also available on CD at a cost of £25 and printed copies at a price of £600. CD copies or printed copies can be purchased from Glenconway House, 31 Ballyvannon Road, Glenavy, Crumlin, Co Antrim, BT29 4QJ (contact Sharon Wallace on 02894 451 888); cheques should be made payable to Rose Energy Ltd. Alternatively, copies on CD or printed versions can be obtained by writing to The Graham Bolton Planning Partnership Limited at Onward Buildings, 207 Deansgate, Manchester M3 3NW; a cheque should be enclosed with the request in writing, made payable to Graham Bolton Planning.

The Scope of the Environmental Impact Assessment

9. The EIA Regulations specify what information should be included in an Environmental Statement – one of the specified items is this Non Technical Summary. The precise list of matters to be considered will vary from project to project having regard to the nature of the proposed development, the characteristics of the location and what may be impacted upon. The potential range of issues referred to include population, fauna, flora, soil, water, air, climatic factors, material assets including the architectural and archaeological heritage, landscape and the inter-relationships between these factors.

10. To assist in determining what matters should be the subject of the EIA, a scoping exercise was undertaken which led to initial discussions with The Planning Service and some other key consultees, resulting in informal agreement as to what should be considered in the EIA. This has subsequently been followed up with a formal scoping exercise in accordance with the EIA Regulations with The Planning Service.

THE PROPOSED DEVELOPMENT

11. The proposal is to develop a biomass fuelled power plant on a 5 hectare (12.37 acres) area of land off Ballyvannon Road, 2km to the south west of Glenavy, Co Antrim. The site lies immediately to the west of the property of Glenfarm Holdings Limited and the rendering plant of their wholly owned subsidiary, Ulster Farm By-Products Limited. The location of the proposed development is illustrated in the plan below (Figure 1).

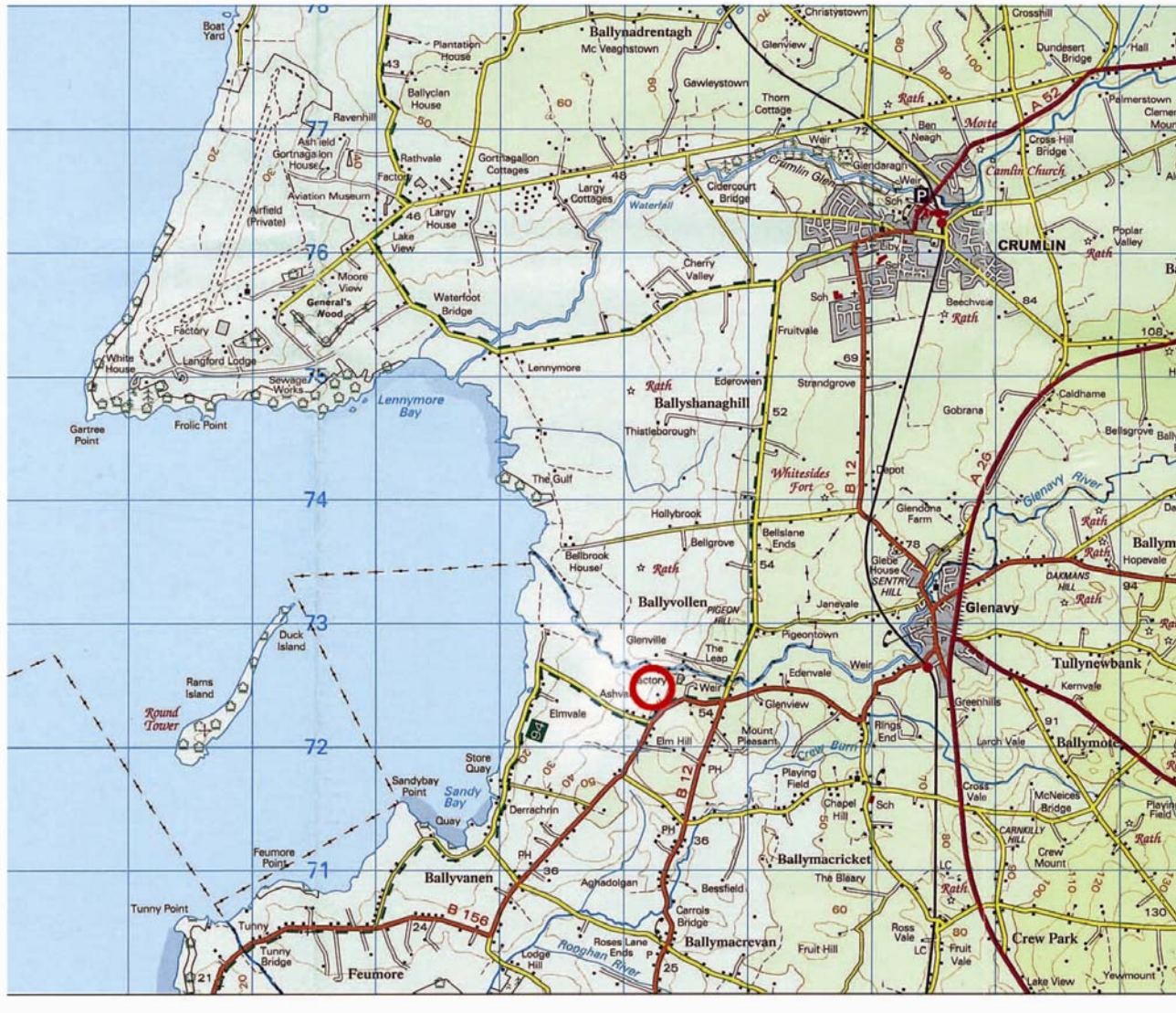

Figure 1: Location Land & Property License No:2453

12. The site's location is largely rural but with nearby groups of residential properties and the significant presence of the adjoining rendering plant within the immediate locality. Approximately 1km to the west is Sandy Bay of Lough Neagh. Lough Neagh is a Special Protection Area (SPA) under the European Birds Directive, a RAMSAR site of International Wetland Importance and designated an Area of Special Scientific Interest. The site, which is green field and last used for grazing, lies immediately south of the Glenavy River which flows into the Lough. The proposed surface water run off and attenuation lagoon will provide a buffer between the power plant and the river.

What is a biomass fuelled power plant?

13. The proposal is to develop a 30Mw electrical output power plant, which will export approximately 25 Mw to the Northern Ireland grid. The main elements of the power plant are:

- Fuel reception building
- Fuel handling and storage building, sufficient for four days supply
- Boilerhouse (42m high)
- Turbine hall and switchgear
- Ash bag filtration and silo
- Cooling towers (a bank of three, approximately 15m high)
- Chimney (80m high)
- NIE metering and switch yard
- Waste water treatment building
- Offices
- Employee Parking
- Surface water and temperature attenuation lagoon

14. Access to the development would be via an improved existing access off Ballyvannon Road which would be used for ingress only. Egress from the site would be via a new road linking into the Ulster Farm By-Products site, immediately to the east, utilising the existing access to that plant for exit purposes on to Ballyvannon Road.

15. The power plant will burn biomass fuel and will be Waste Incineration Directive compliant. Biomass is the biodegradable fraction of products, wastes and residues; this includes plant and animal substances. The proposed power plant is to be fuelled with poultry bedding (poultry litter and, for example, wood savings) and meat and bone meal (MBM), a product of rendering. The poultry bedding will come from the over 700 poultry producing farms operated by or contracted to Moy Park and O'Kane Poultry and the MBM primarily from the adjoining plant of Ulster Farm By-Products.

16. The plant is designed to burn the energy equivalent of 300,000 tonnes of poultry bedding – the expected make up is 220,000Te of poultry bedding and 40,000Te of MBM. The fuel will be received in covered heavy goods vehicles which would be off-loaded within the reception hall behind closed entrance doors. After mixing of poultry bedding and MBM, the fuel would be burnt in a fluidised bed boiler to produce steam to drive the turbine to generate electricity. The fuel would be burnt at a temperature of a minimum of 850^0C with flue gasses retained for a minimum of 2 seconds to ensure complete combustion in the interests of both energy efficiency and air quality. Approximately 40,000Te of ash would be created each year for use or disposal off-site.

17. The plant is designed to be water cooled. The cooling water, which will be re-circulated a number of times, will itself need to be cooled after treatment and before disposal and the proposed development includes cooling towers for that purpose. Any power station will generate significant amounts of low grade heat in the cooling water and the Rose Energy project is no different. Low grade heat is defined as being at a temperature below the boiling point of water with limited industrial uses. It is, of course, excellent for heating purposes and could be offered to the local community for district heating and aqua cultural or horticultural purposes.

Reasons for Development

18. Poultry bedding has traditionally been used as a fertiliser on agricultural land. This is not sustainable with the level of poultry bedding produced and the realisation that excessive application of nitrogen and phosphate rich material adversely impacts upon water resources and environmental habitats. The EU Nitrates Directive is aimed at limiting application of fertilisers so that water resources, both for human consumption and as environmental habitats, are protected and quality improved. This Directive has been implemented, as of 1st January, 2007, by the Nitrates Action Programme (Northern Ireland) Regulations, 2006. The limits for nitrates and phosphorus application on land have been reached and there are excess nutrients which have to be used or disposed of elsewhere. For the poultry industry this requires an alternative use or form of disposal to be found for the poultry bedding.

19. Climate change is the most serious environmental challenge facing the world today and establishing sustainable energy solutions is a major part of meeting that challenge. Biomass, such as poultry bedding and MBM, are renewable and indigenous energy sources already widely used elsewhere in the UK as a fuel in electricity generation – MBM is of particularly high calorific value, similar to that of some types of coal. By 2012 Northern Ireland is obliged to source 6.3% of its energy from renewable sources but the Government intends to achieve 12% by helping local companies to develop suitable green energy initiatives.

20. Continued spreading of poultry litter is not an option, and only continues at the current level under a temporary arrangement from the European Commission – any solution needs to be both sustainable and economically viable if the poultry industry in Northern Ireland is to survive. A study supported by Invest NI recommended the use of poultry bedding in an "energy from waste" project providing both a means of disposal of poultry bedding and the generation of "green" electricity. The addition of locally produced MBM, which currently is exported to other parts of the UK primarily for use as a fuel, aides the viability of the project.

21. The alternative solutions for the poultry bedding would be either to landfill it or to export it to elsewhere in the UK for either landfill or use in power generation; neither of these solutions is economically viable and would result in the run down and eventual closure of much of the poultry industry in Northern Ireland. Under the EU Landfill Directive reductions in landfill are mandatory and the escalating landfill Tax is one of the measures forcing cessation of this method of disposal.

22. The ES refers to Best Practicable Environmental Option (BPEO) which is covered in more detail within the Planning Statement. BPEO is a tool to assist with decision making but is not specifically aimed at the waste stream, such as poultry bedding, but rather the plant itself though the two are clearly linked. The alternative uses and means of disposal and the technologies, costs and markets for those alternatives have been investigated by an expert group on behalf of the Government in Northern Ireland as well as the study on behalf of the poultry industry. The recommendation of the expert group, endorsed by the Minister, is for a single poultry litter fired electricity generating plant.

ENVIRONMENTAL BENEFITS

23. The ES assesses the impact of the development itself. There are, however, wider environmental benefits which arise because of the proposed benefits referred to in the ES and detailed more fully in the Planning Statement. These can be summarised as:

- Reduction of excess nutrients application to land
- Water quality improvement
- Renewable energy
- Reduction of greenhouse emissions
- Import substitution of fuel
- Reduction in need for temporary storage facilities for poultry litter
- Odour minimisation
- Destruction of pathogens

SITE SELECTION

24. In determining where the proposed power plant should be located, a number of criteria were taken into account. The key determinants were:

- Bio-security – the need for any "store" of poultry bedding to be away from the main concentrations of poultry producers and the processing plants, clustered around Ballymena and Dungannon
- Availability of water for steam generation and cooling
- A minimum size of approximately 5 hectares
- Proximity to fuel supplies in order to minimise transport costs and emissions

25. In total 45 potential sites were identified and a review of each undertaken. The review included identifying relevant planning policy applicable to each site, conservation and landscape designations, availability, proximity of residential properties and notified environmental habitats, and accessibility. Many sites were discounted because they were either too restricted to enable the development to be undertaken or were unavailable.

26. The location identified fulfils the key criteria and is available. It has the marked benefit of being adjacent to the rendering plant from where a large proportion of the intended fuel would be derived (MBM), is outside the main areas of concentration of poultry production and in an area where additional electricity supply is needed and a connection can be made to the grid.

PLANNING POLICY

27. A review of policy at all levels has been undertaken and is more fully detailed in the Planning Statement accompanying the application and the ES. Firstly, there is legislative requirement and policy support to divert disposal of poultry bedding away from spreading or landfill and to make best use of it in accordance with the waste hierarchy. Secondly, there is major policy support for renewable energy as one of the

main means of reducing dependence upon fossil fuel generated electricity and power. Thirdly, there is broader policy support for the maintenance of existing economic activity and job creation – the plant will employ 30 people directly and up to 400 during the construction period and protect the thousands of jobs directly and indirectly involved in the poultry industry.

28. The Department of the Environment recently published (November 2007) a consultation draft Planning Policy Statement on Renewable Energy (PPS18) which highlights the problems of climate change; this is set within the context of the UK Government's energy policy, most recently set out in the Energy Challenge Energy Review Report (July 2006) to achieve 20% of electricity generation from renewable sources by 2020. The Regional Development Strategy for Northern Ireland 2025 also addresses the issues of climate change, by proposing the reduction in the consumption of natural resources and energy from non-renewable sources. The Sustainable Development Strategy (SDS) is set out in the document "First Steps Towards Sustainability – A Sustainable Development Strategy for Northern Ireland" (May 2006) and the subsequent Implementation Plan for the SDS. The SDS identifies beyond the current targets for renewable energy the need to ensure that beyond 2025 40% of electricity consumed in Northern Ireland is obtained from indigenous renewable energy sources with at least 25% of this being generated by non-wind technologies – the Rose Energy power plant would provide approximately 40% of the non-wind derived renewable energy requirement for 2012. This is allied to the target of the Strategy of achieving a 25% reduction in Northern Ireland's greenhouse gas emissions against 1990 levels by 2025.

29. Proposals for new power plants rarely feature within local plans as they are one-off projects outside the general scope of planning consideration in the drafting and preparation of statutory development plans. Site specific designations and allocations for such a development do not, therefore, appear within plans at local level. However, there are general policies supporting the need for security of electricity and other utility supplies and more specifically in support of renewable energy within the development plan and also within strategic economic plans for the economy and agricultural sector. The policy position is, consequently, one of considerable strategic

policy support for such proposals but without specific identification of potential or allocated sites for such forms of development.

30. At local level there are policies protecting the countryside and generally restricting development except in specific circumstances. In addition, the site is included within an identified Area of High Scenic Value. In this situation of potentially conflicting policies a view has to be taken on the need for the development in the context of strategic policy support for the proposal against more local and site specific policies.

31. The Environmental Statement helps inform this consideration by assessing the environmental impact of the proposed development. It is the conclusion of the proposers of the development that the need for this biomass fuelled power plant can be satisfactorily accommodated on the proposed site without unacceptable harm. It will provide a solution to the pressing problem facing the poultry industry and at the same time it will be a major step in achieving the renewable energy targets for Northern Ireland and using indigenous fuel. Having regard to the conclusions of the Environmental Impact Assessment, the strategic policy support and exceptions policy outweigh the local site specific policy objections.

GEOLOGY AND HYDROGEOLOGY

32. The Geological Survey of Northern Ireland was commissioned to report on the geology and hydrogeology of the site and environs. The study extended over the area of the site, adjoining construction compound and the rendering plant site and environs. The importance of the study is in identifying potential geo-hazards and opportunities.

33. The bedrock is the Upper Basalt Formation - the basalt is variable in strength. It is overlain with superficial Glacial Till and River Alluvium; there is also made ground in the vicinity though this is unlikely on the development site itself. The basalt is identified as a “locally important aquifer” and a number of boreholes and well water

abstraction points have been identified in the locality. Soils are Surface water gley 2, based on mica schist; the agricultural land classification is 3B.

34. The report notes the potential vulnerability of the aquifer where it is exposed and also of groundwater. It will be an inherent part of the design and construction of the development to ensure, and a condition of obtaining an IPPC permit, that there is no adverse impact upon either the aquifer or groundwater. In contrast, it is the specific aim of the Nitrates Directive, which is a driving force behind this project, to improve water quality. It is intended to tap into the aquifer and abstract water for use in the power plant.

ACCESS

35. A Transport Assessment (TA) has been undertaken. The capacity and use of the existing road network in the immediate locality and links to the primary road network has been assessed including the use of Ballyvannon Road. The TA has included within its review the intended operating hours of the plant. While the power plant is intended to operate 24 hours per day, 7 days per week, except during planned shut down maintenance periods, deliveries of fuel and materials and removal of ash from the site would be restricted to between the hours of 7am and 7pm Monday to Friday and 7am and 1pm on a Saturday with no deliveries or collections outside those hours.

36. Ballyvannon Road and the local network are used by heavy goods vehicles visiting Ulster Farm By-Products and also in association with the sand dredging businesses operating on Lough Neagh. Traffic counts were undertaken in 2007 and 2008 and compared with the calculated levels of traffic expected from the proposed development. The traffic counts indicate that there is low usage of the local highway network and that the increased traffic levels resulting from the proposed development will be modest and well within the capacity of the local road network. The traffic expected to result from the power plant would be around 140 per day (two way trips, all types of vehicles), less than half the volume of traffic associated with Ulster Farm.

EMISSIONS

37. The power plant will give rise to a number of possible emissions. Exhaust gases from the combustion process will be emitted via the chimneystack. There will be noise associated with the operation of the plant and delivery and collection of materials. Dust could arise both during the construction phase and operation, and the fuels to be used, poultry bedding and MBM, are potential odorous. Water used in the cooling process and for various functions on site, such as washing down of vehicles, together with a small amount of human effluent will need to be disposed of. Each of these areas of potential concern has been reviewed.

Air Quality

38. A baseline survey of existing air quality was undertaken over a six month period in 2007. This was followed by a full and comprehensive assessment of the emissions to atmosphere. Using standard, accepted mathematical modelling techniques, an assessment has been made of the dispersion characteristics of emissions from the combustion plant and used to determine the height of the proposed chimneystack. The chimney, at 80m high (111.5 AOD) and 2.22m internal width, will result in all emissions being dispersed to ensure that the National Air Quality Standards are fully met. Air Quality Standards are laid down at European level and have been considerably tightened in recent years. A range of chimney heights was considered and it is concluded that the benefits from increasing the chimney height reduces significantly beyond 80m. The same reduction in dispersion with increase in chimney height is evident for short term air borne pollutants, long term air borne pollutants and deposition rates.

39. To operate the plant in compliance with an IPPC Permit, the emissions from the power plant must meet the Air Quality Strategy targets and objectives for air pollutants, which are derived from the European Union Air Quality Framework Directive and subsequent updating. Additionally, the EU Waste Incineration Directive also applies which sets restrictions on permitted emissions and the combustion of residues and monitoring. The impact of emissions from the chimney

has been assessed against European Limit Values, UK Objectives and Environmental Assessment Levels (EAL) for both human and ecological significance. Various combustion gas flows have been used to calculate the mass emissions from the process and emission rates have been based on permitted emission rates and estimated combustion gases. In brief, the assessment considers the worst case factors, and the model used has been tested against other models to improve the robustness of the predictions.

40. The predicted nitrogen dioxide, sulphur dioxide and particles (PM_{10}) have been assessed and assume the worst case at any receptor – no Air Quality Standard or EAL is breached.

41. Deposition rates have also been assessed, including metals such as cadmium and mercury. Long term exposure, based upon the robust assumptions, to cadmium is predicted to be of moderate adverse significance but in practice it is likely to be of minor significance as exhaust gases are unlikely to contain significant quantities – it was assumed for the purposes of the exercise that all cadmium and heavy metals would be emitted via the flue gases and none trapped by the abatement systems which will be installed specifically to do so. Similarly so with mercury where in practice exposure is likely to be insignificant. Long term deposition of other heavy metals is either of minor significance or insignificant and long term exposure to all other air pollutants similarly of minor significance or insignificant.

42. The significance of exposure to emissions is considered in a separate report (Human Health Risk and Health Impact Assessments), but in terms of the Air Quality Report, the proposed installation is unlikely to result in any objective or limit value being exceeded and ecological impacts are likely to be insignificant.

Noise

43. There are a number of potential sources of noise associated with the proposed development: activity directly associated with the process of generating electricity, notably the steam driven turbine, activity from the reception of fuel and loading and despatch of ash and the operation of various pieces of external equipment. The choice and positioning of plant, site arrangement and acoustic bunding and fencing have been designed to reduce and mitigate noise, informed by a Noise and Vibration Report. The Report has reviewed the existing background noise in the locality of the site and determined target noise levels at the boundary of 40dBL_{Aeq} and 35dB_{Aeq} for daytime and night time respectively. These target levels are met and not exceeded beyond the boundary of the site except in respect of delivery vehicle noise in one location; however, there is no sensitive receptor adjoining the boundary in the location identified and the assessment used conservative assumptions.

44. The report has also reviewed the likely levels of noise and vibration associated with the construction period, which is expected to last for approximately two and a half years. Construction would be constrained by planning conditions restricting the hours of operation and also by working practices to limit potential on-site problems such as noise generation.

45. The report concludes that during the construction period and subsequently during operation noise levels will be contained within suitably attenuated buildings, where appropriate, and otherwise restricted to ensure that they do no exceed the target levels.

Dust and Odour

46. The proposed fuels can become dry and friable and together with the loading of ash for off-site disposal or use could be a source of dust. In practice both these potential sources are fully contained and controlled. All fuel will be delivered in covered vehicles with off-loading within the reception building once the entrance doors have closed. The production, storage and loading of ash generated in the combustion

process will be fully contained at all times and ash will be taken away in bulk, covered vehicles. No issues associated with dust are expected to arise.

47. Both poultry bedding and meat and bone meal are potentially odorous, and less so when dry. Poultry bedding will be delivered in covered vehicles and off-loaded within the material reception building behind closed doors. MBM will be delivered in covered vehicles to a separate reception bin and silo. Containment of odour will also be assisted by the intended use of air extracted from the reception hall and storage and mixing bunkers for use in the combustion process; it will thus draw in air from these areas to introduce into the boiler. It is concluded that while there is potential for odour from the particular fuels to be used, their transportation, delivery and handling and the process have been designed to prevent odours being emitted.

Waste Water and Effluent

48. The power generation process involves the production of steam to drive the electricity turbine – this water, within an enclosed loop system, needs to be cooled. Water derived from bore holes on site, mains water and rain water harvesting would be used for cooling and for other purposes on site – approximately 160m^3 of water per hour will be required. This water can be recirculated a number of times before treatment and disposal.

49. In addition to waste cooling water, there will be some water derived from "blow down" from the boilers, from plant and vehicle washing, some backflush effluent from the incoming water treatment plant and also domestic effluent. Washing water will be recycled but the eventual effluent will be combined with the other waste waters and effluent, including cooling water, for treatment. That treatment process will be designed to remove any residues (particles) of the two fuels and contaminants which may be left from the addition of chemicals to water used in the various processes in the plant.

50. It is intended that the treated waste water and effluent streams will be discharged to the Glenavy River – this will require a Discharge Consent from the regulatory authority. The discharge will be via the proposed Sustainable Drainage System (SuDS) which includes a large lagoon at the lowest end of the site adjoining the river which will provide not only for retention of surface water run off but also cooling of the treated waste waters and effluent streams to comply with the expected requirements of a Discharge Consent.

51. It is estimated that approximately 60m^3 of waste water and effluent will be discharged per hour. Preliminary discussions have been held with the Environment and Heritage Service and design parameters will be agreed as part of the IPPC application to ensure appropriate choice and design of equipment and compliance with Best Available Technique. In principle, final disposal via the river is acceptable.

Lighting

52. Inappropriate lighting can lead to light pollution which in turn can be a nuisance and also result in disturbance to wildlife. While having regard to health and safety requirements, appropriate design of lighting can significantly reduce potential problems. The choice of luminaires, their positioning, the level of light itself and the control of when lights need to be on should be considered at the outset in the context of the specific site and development. A light pollution study has assessed a generic but appropriate lighting design for the proposed development in the context of the locality and the intended landscaping scheme and concluded that with the landscape mitigation proposed there would be limited impact. The results of the study and recommendations will be incorporated into the detailed lighting proposals for the plant.

LANDSCAPE AND VISUAL IMPACT

53. The application site is within a rural area with residential and industrial development in the immediate context, and predominantly rural to the west leading to the shore of Lough Neagh with intermittent residential and farming properties. An assessment has been undertaken of the Zone of Visual Influence (ZVI). This is a theoretical exercise to determine the area within which views of the site or development can be obtained. In practice it is somewhat less as minor topography, forestry, road side hedges and fences and other planted areas restrict views. The ZVI has been restricted to a 10km zone from the site as a field survey has established that no significant landscape or visual impacts will occur beyond that distance even if theoretically the site and plant potentially may be visible.

54. The landscape on the eastern side of Lough Neagh is "fringe agricultural landscape", which has, in part, been designated as an Area of High Scenic Value in the Draft Belfast Metropolitan Area Plan – such a designation is *"…to protect the setting of the Metropolitan Urban Area and other areas of particular landscape merit"*. The proposed facility with its tall buildings and chimneystack will result in a dominance over the immediate surrounding landscape within a radius of approximately 1km though in part it will be read with the existing rendering plant though less so from the more sensitive areas to the south and west towards Lough Neagh. Beyond 1km to the north, south and east, the undulating and enclosed landscape means there would be a limited influence of the development over the rural landscape in those areas. The development will be visible from Lough Neagh and Ram's Island, however. New planting and earth mounds will blend much of the low level aspects with the adjacent countryside. The overall conclusion is that landscape impact within 1km will be substantially negative and moderate negative beyond that distance. In terms of visual impact, rather than upon the landscape, a variety of viewpoints have been chosen and reviewed with varying effects, from substantial to moderate or slight. The nature of the landscape with overgrown hedges and substantial tree cover means that visual impact is substantial from certain viewpoints close to the site of the development and considerably less so beyond except from the Lough Neagh and Ram's Island direction.

55. In response to the assessment of impact upon landscape character and visual impact, mitigation measures are proposed aimed at reduction of impact upon views, retention and protection of existing trees and provision of new woodland planting and the creation of a quality woodland landscape setting to allow the development to blend with its surroundings. A Landscape Masterplan has been drawn up, together with a Landscape Management Plan to implement and maintain the proposed landscaping.

DESIGN AND ACCESS

56. A power station is a large industrial structure. In response to the landscape sensitivity of the area a design for the plant was commissioned to minimise its size, to be compact but also express the industrial nature of the development rather than be less angular and homogenous which would lead to a more bulky form. The use of materials and colour are also important considerations to assist in assimilating this large structure and reducing its potential dominance. The result is a development where the main built form and ancillary plant and circulation space sits on half of the site which, using the natural fall in levels, will be excavated to lower the eventual ground levels of the plant which will step down from the delivery level to the boiler house/turbine hall level to the SuDs lagoon level. With the associated landscape proposals, including earth mounding and deep landscaping, the development's impact upon the landscape and its visual prominence will be reduced.

57. Accessibility by a variety of transport modes including on foot is an important consideration. The site is not close to public means of transport but access by cycle and on foot has been accommodated. The internal access arrangements have been designed to segregate heavy goods traffic from cars and similarly the positioning of the office and reception building to reduce the need for visitors and staff to enter into areas of the site where greater risks are posed from the presence of HGV's. Appropriate personal access for disabled and non-ambulant persons has also been designed into the scheme.

ECOLOGY

58. There are potential effects arising from the development upon the natural environment of the site, its surroundings and the flora and fauna within. In order to assess the potential impact of the development in various media, upon the plants and creatures, a number of studies have been undertaken and further work is continuing. These studies cover the fisheries aspect of the Glenavy River, which is particularly relevant in the context of discharging a treated effluent stream, and possible subsequent impact upon Lough Neagh. As an identified ASSI, Special Protection Area and RAMSAR site, reviews have been undertaken of existing knowledge of this important wetland area and assessments made of the potential impact and further areas of work identified where there are knowledge gaps. The additional studies included a review of WeBS data, which are counts of over wintering birds using the Lough and surrounding areas. Other studies have reviewed the development site, including the adjoining construction compound area, and identified flora and fauna which will be affected. Specific studies into the presence of bats, badgers and otters have also been undertaken and are referred to in full in the ES and supporting documents.

Terrestrial and other Surveys

59. An initial study of the site and surroundings was carried out to assess what flora and fauna was present on site or close by and to identify what further studies may be necessary. The site is grazing land and no protected or rare plant species were found on the site or nearby; it is considered that removal of the grassland will not adversely impact upon local fauna. A hedgerow with a few tress within it will need to be removed but will be replaced by new planting; all other hedgerows will be retained. The presence of two outlier badger setts outside the site boundary, possible otter holts and foraging bats were identified, resulting in further studies into each of these, of over-wintering birds, a fisheries assessment and an ongoing study into nesting birds and further bat survey. The otter holt was found to be in use but the badger setts presently inactive.

60. The site of the plant will not directly impact adversely upon local fauna provided there is appropriate care and mitigation. The initial and further reports incorporate recommendations for operations in the vicinity of protected species, particularly during construction, and generally in respect of the trees and hedgerows, the habitat of many species. Abiding by these recommendations will enable the proposed plant to be developed without unacceptable harm. The winter bird review identified the site being used mainly by common birds and concluded that the development would have negligible effect upon birds within the site itself if good practice and mitigation is followed. In respect of Lough Neagh, it was concluded that a negative impact is unlikely due to the distance from the site.

Fisheries and Aquatic Surveys

61. The Glenavy River is a designated *salmonid* river and a short stretch of river to the north of the site is an identified Site of Local Nature Conservation Importance. The survey and reports have identified knowledge gaps and the need for further survey work but also concluded that disposal via the river of temperature attenuated waste water within the proposed parameters would be unlikely to cause harm except in extremely low flow rates of between Q95 and Q99. Similarly it is concluded that there is likely to be no adverse impact upon the Lough, though knowledge gaps and recommendations for further studies have been identified.

62. The potential effect of airborne emissions upon flora and fauna, except fish, has also been reviewed. These studies utilised the air quality dispersion information and specialist deposition modelling to provide the base information. No adverse effects of deposition of heavy metals upon micro-flora, flora and fauna are predicted at the assessed levels of emissions, nor from the outfall of nitrogen dioxide, sulphur dioxide or ammonia. The position in respect of acid deposition is less clear due to existing background levels, but the overall conclusion is that there would be no negative impacts upon improved grassland and no significant impacts upon livestock in the area.

FLOOD RISK AND DRAINAGE

63. The flood risk assessment has been undertaken to provide the information required by PPS15 Planning and Flood Risk – Annex D. In order to assess the potential for the development site to flood in the event of a 1 in 100 year return storm event, a mathematical hydraulic model of the section of the Glenavy River close to the site was developed. Though a storm event of this magnitude would result in some breaching of the river bank, the river level is predicted to rise to a level of under 27m AOD in the upstream section above the site. This level is below the lowest level of the main development site (31m AOD) and below the level of the lowest proposed facility, the SuDS and attenuation lagoon.

64. Surface water run-off is presently attenuated by the green field nature of the site and proposed construction compound area but with a substantial built area and hard surfacing with internal road, marshalling area for delivery vehicles and hard standing, there is the potential for considerable and rapid run-off. The construction compound and storage area will be essentially hard stoned and therefore rain water will be less able (than current) to infiltrate into the ground and therefore more will be shed across the surface. Such uncontrolled flows can contribute to flooding, carry silt and cause damage. The aim is to restrict the potential run-off to the maximum level from a green field site for discharge into the Glenavy River, which would be the equivalent of 109 l/sec.

65. The study has revealed that almost 1500 m^3 of water would be collected by the drainage system of the site and construction compound in a 1 in 10 year storm event, though the magnitude of the potential storm water flows into the river (0.88m^3/s) is relatively small in comparison to a flood flow in the river (37.6m^3/s). To control and attenuate this storm water flow it is proposed to adopt sustainable urban drainage systems which will be primarily achieved by creating a lagoon at the lowest part of the site adjacent to the river to accommodate 1100 m^3 of water – the lagoon will have a controlled discharge into the river. This lagoon would be constructed at the outset to accommodate surface water run-off from the construction compound and also to use it to settle silt carried during the construction phase to prevent discolouration of

the discharge into the river. An enlarged lagoon would also be used to attenuate the temperature of waste water prior to discharge and be developed as an ecological buffer between the river and the site.

ARCHAEOLOGY

66. An assessment has been carried out in accordance with appropriate guidance. A desk top review, walk over and studying of aerial photography has not revealed the likely presence of any past settlement or historic activity on the site or the adjoining area to be used as the construction compound. However, as there are known past settlements and historic features in the locality it is recommended that there be a watching brief by a qualified archaeologist during a full soil strip of the site.

HUMAN HEALTH AND HUMAN HEALTH RISK

67. The aims of the Health Impact Assessment were to:

- assess the potential positive and negative health impacts on the residents around the proposed plant;
- quantify, where possible, the potential negative health impacts of the emissions likely to be generated by the proposed plant; and
- identify measures to remove or mitigate any potential negative health impacts on the local community.

This is achieved by adopting a systematic approach to identifying the different health and wellbeing impacts of plans and projects.

68. As a first step it was necessary to review the current evidence, both positive and negative, of the impact of combustion. Overall, the evidence to date of adverse health impacts due to the emissions from waste incineration facilities is strongly suggestive that modern, well designed, well managed and well regulated waste incineration facilities have little or no negative health impacts. Possible negative health impacts

have been reported in populations exposed to emissions from older incinerators before the advent of lower emission standards such as under the EU Waste Incineration Directive; the evidence for these negative health outcomes is, however, weak.

69. A further stage was to assess the deposition and outfall of emissions from the chimneystack and other sources of potential pollution. The work of other reports was drawn upon, and particularly the Air Quality Impact Assessment to inform this work. Specialised modelling was utilised to assess the dispersion and deposition of pollutants and assumptions were made to model worst case scenarios to determine potential impact against EAL's. A list of potential sensitive receptors was identified and the potential impact upon those receptors, including imaginary worst case receptors, was then established in order to estimate the impact and consequential risk to health and well being.

70. It was concluded that assuming the worst case position of emissions and deposition, within permissible emission limits, there would be no adverse impact upon receptors in terms of potential carcinogenic risks and hazards due to dioxins and heavy metals. All activities carry a risk but those potentially presented by the burning of the biomass fuels of poultry bedding and meat and bone meal do not demonstrate either a significant or extraordinary risk; quite the contrary, the cancer risk to human health and well being is extremely low at less than 1 in 1 million per annum (74 in 1 million for lifetime exposure or 1 in 13,500), which compares with the risk of dying in any one year of 1 in 200 for a person who smokes 10 cigarettes a day, of 1 in 850 from all natural causes for a person aged 40, of 1 in 100,000 for murder or of 1 in 500,000 for a person having a fatal accident while travelling on a train. Similarly, the likelihood of getting cancer in Northern Ireland up to the age of 74 is 1 in 3 with the chance of breast cancer being 1 in 21 and that for lung cancer being 1 in 27 for all persons.

CONSTRUCTION PHASE

71. In order to construct the development large laying out areas for materials, equipment, plant and machinery are required. In total, around 2.5 hectares is required for the civil engineering materials and equipment, the mechanical and engineering laying out area, equipment and workspace for the suppliers of the boiler, turbine and associated equipment and accommodation space for all contractors during the expected construction period of about two and a half years.

72. The land immediately adjoining the application site has been identified as a temporary construction site and laying out area. The topsoil will be stripped and stored, the site partially stoned and drained for the period of construction, and thereafter restored to pasture land. At the preliminary stage the SuDS lagoon will be constructed to attenuate surface water run off and stop silt going into the river.

73. Within the individual supporting reports to the ES the construction phase has been considered and issues addressed. Drainage, traffic, noise and dust are particularly relevant. Additionally, a scheme for the return of the land to its green field state will be developed and a timetable agreed with the Planning Service. There will be pressure for this restoration to be carried out quickly and comprehensively as this land is not owned by Rose Energy and there will be a commercial imperative to return it in the same state before it was temporarily occupied.

ELECTRICITY EXPORT

74. Approximately 25MW will be available for export to the grid in an area where there is envisaged need to reinforce supply in the future. The link to the grid will be via an underground connection for 1km and thereafter via pole mounted wires – not pylons. The link will be the subject of a separate planning application, where necessary, prepared by NIE.

WHAT IF?

75. There is no alternative plan for resolving the problem of poultry bedding disposal as all other possibilities have the same result as doing nothing – the demise of the poultry industry in Northern Ireland. The EIA application and supporting documents, including the ES, does not therefore consider alternatives, but does refer to the options for disposal or alternative use considered by the poultry industry and Government and the conclusion that a poultry litter powered electricity generating plant is the solution.

76. Security of supplies of fuel is an important consideration. The exportable electrical output of the plant will be supplied to the grid under an off-take supply agreement which will require guarantees for continuity of supply, and this largely depends on ensuring continued and adequate supplies of appropriate fuel. No potential supply problems are envisaged and the two poultry producing partners in the Rose Energy project are in a position to guarantee those supplies. There are also other potential supplies of poultry bedding available more generally within Ireland and also of MBM.

77. There is also no envisaged problem in securing an off-take agreement for supply as this is driven by regulatory controls which are escalating the requirement for electricity suppliers to provide “green energy”.

CONCLUSIONS

78. It is not the purpose of the Environmental Statement to conclude on whether planning permission should be given but to provide a statement of the results of the investigations undertaken into those matters which may be impacted upon by the proposed development and to assess whether there may be harm and to recommend mitigation measures where appropriate. The results of the investigations and mitigation measures, where proposed, are briefly listed above and detailed in the full ES and supporting documents which form part of the ES.

79. The proposed power plant cannot operate without an IPPC Permit. To obtain a Permit it is necessary to demonstrate Best Available Technique in operation to prevent, or minimise where that is not possible, emissions to air, water, groundwater and land. The operation of an IPPC Permit is monitored by the EHS and can be suspended or revoked.

80. The plant was originally designed for closed loop cooling involving abstraction of large amounts of water from the Lough, and its return, but with the current available knowledge it is not possible to demonstrate that such a process would represent Best Available Technique and in consequence the plant has been designed for evaporative cooling. Review of further investigatory work on the closed loop cooling possibilities continues.

81. The ecology studies have concluded that with appropriate care and maintaining the design parameters which would also be regulatory supervised, there would be no unacceptable adverse impact upon flora, fauna or soils. Gaps in knowledge have been identified and further investigations are being undertaken. However, sufficient knowledge and investigation has been undertaken to conclude that adverse impact upon the internationally and nationally important Lough Neagh is unlikely. It is concluded that the information gathered is sufficient to determine whether an Appropriate Assessment under the Habitats Directive is required.

82. The research evidence of the AQIA has established the appropriate height of the chimneystack which will provide for dispersion of emissions to accord with statutory standards even with the conservative assumptions adopted for the study. With operation within these standards, there is no extraordinary or unusual risk posed to human health or well-being by the proposed operation of the biomass fuelled power plant.

83. The remaining research with the exception of the landscape assessment has demonstrated that potential impacts either would not occur or can be controlled to within acceptable limits. The landscape and visual impact will be significant within 1km and further afield from some points. This adverse impact will need to be assessed against the policy background for this type of development and this locality to assess whether the development should be granted planning permission.