



**PROPOSED DEVELOPMENT OF A  
RENEWABLE ENERGY PLANT AT  
SLEAFORD, LINCOLNSHIRE**

**ENVIRONMENTAL STATEMENT  
NON-TECHNICAL SUMMARY  
Volume 3**

August 2007





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# PROPOSED DEVELOPMENT OF A RENEWABLE ENERGY PLANT AT SLEAFORD, LINCOLNSHIRE

**August 2007**

This report has been prepared in support of the planning application for the Sleaford Renewable Energy Plant and has been prepared on behalf of Eco2, the applicant. The application has been co-ordinated by AXIS with technical inputs from:

- AXIS – Planning, Transportation and Environment
- Fichtner – Air Quality
- RPS Burks Green – Design
- Argus – Ecology
- NVC – Noise
- AOC – Archaeology



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## FOREWORD

This Environmental Statement is submitted in support of a planning application made by Eco2 Limited to develop a Renewable Energy Plant at Sleaford, Lincolnshire. It consists of the following three documents:

- the Environmental Statement (ES) Main Report (Volume 1), which contain the detailed project description, an evaluation of the current environment in the area of the proposed development, the predicted environmental impacts of the scheme and details of the proposed mitigation measures which would alleviate, compensate for, or remove those impacts identified in the study. Volume 1 also includes a summary of the overall environmental impacts of the proposed development and all relevant schematics, diagrams and illustrative figures.
- Technical Appendices (Volume 2), which include details of the methodology and information used in the assessment, detailed technical schedules and, where appropriate, raw data.
- a Non-Technical Summary (Volume 3), containing a brief description of the proposed development and a summary of the ES, expressed in non-technical language.

Copies of the documents, as a three volume set, are available at a cost of £180.00 from the applicant's planning consultants: AXIS, Camellia House, 76 Water Lane, Wilmslow, Cheshire, SK9 5BB (contact: Mr N Roberts). Alternatively, the Non-Technical Summary can be purchased on its own from the same point of contact for £20.00. An electronic, copy of the Non-Technical Summary is also available via email, free of charge. In addition the all of the planning application documentation, including the ES can be viewed on [www.sleafordrep.co.uk](http://www.sleafordrep.co.uk)

## **1.0 INTRODUCTION**

### **1.1 The Proposal**

1.1.1 Eco2 Lincs Ltd (hereafter referred to as Eco2) has submitted an application for planning permission to North Kesteven District Council, for the development of a Renewable Energy Plant at Sleaford, Lincolnshire (hereafter referred to as The Sleaford REP). The facility would comprise a biomass fired power station, for which the primary fuel would be straw.

1.1.2 The facility would have an electricity generating capacity of 40 Megawatts (MW) and would utilise approximately 240,000 tonnes per year of biomass, consisting primarily of baled straw sourced from the local area.

1.1.3 Eco2 is in the process of completing contracts for the straw fuel which will be sourced from producers within a 50 mile radius of the facility (the majority of which are significantly closer). Contracts for fuel supply will be based upon a 12 year initial commitment and result in over £6 million per year investment into the local agricultural economy. Whilst the vast majority of fuel will be straw, the plant would be able to accept a modest proportion of other biomass (e.g. willow coppice) and clean, untreated wood, which would be delivered to the site as chippings.

1.1.4 A more detailed description of the Sleaford REP development is contained within Section 2.0 of this document.

### **1.2 The Site**

1.2.1 The site comprises circa 5.8 hectares of arable agricultural land which lies between Boston Road (from which the site is accessed) and the A17, which runs some 300 metres to the east (see Figure 1.1). It is located approximately 1.6 kilometres east of Sleaford town centre and 650 metres from the edge of the main settlement boundary, defined locally by a railway line/embankment. To the east, at a distance of around 1 kilometre is the small hamlet of Kirkby le Thorpe. The site is ostensibly flat and open, and stands at a level of circa 12-13 m AOD.

1.2.2 The site itself has no obvious defining features, other than a drainage ditch on its northern and eastern edge, and an (immediately) adjacent mature woodland copse, which narrows down into a broad hedgerow, and forms the site's eastern boundary. The copse contains, and largely conceals, a small drinking water treatment / pumping facility.

1.2.3 Due to the very flat nature of the surrounding area, views into and out of the site can be long distance, but even relatively small features can provide a high degree of screening. In terms of context, there is practically no intervisibility between properties in Sleaford and the site due to the aforementioned railway embankment. This feature, which wraps around the western and southern aspects of the site (at around 600metres distance), together with a tall, long conifer hedge also curtails many views to / from the south. Some views from due east are masked by the copse. Elsewhere, principally to the north, north east and south east, views are open although traffic along the A17 (to the north and north east) provides a degree of visual interruption.

### **1.3 This Document**

1.3.1 This document is the Non-Technical Summary of the Environmental Statement (ES), which has been prepared to accompany the planning application. It summarises, in non-technical language, the potential environmental effects of the proposed scheme, both during its construction and operation. It has been prepared in accordance with European Community (EC) Directives on the assessment of the effects of certain projects upon the environment (85/337/EEC updated by 97/11/EEC). This legislation is now manifest in England through the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 (the EA Regulations), with which this report is fully compliant.

### **1.4 The Need for the Development**

1.4.1 The need for the Sleaford REP development has been considered in the context of a number of strategic policy documents. The assessment has established that there is a demonstrable need for the development as:

- the Government's Energy White Paper published in May 2007 includes targets which aim to see renewables grow as a proportion of electricity supply to 10% in 2010, rising to 20% in 2020. The White Paper indicates that the provision of electricity supply by renewables in 2006 was 4%. Consequently, a significant number of new facilities will need to come forward if the targets are to be achieved;
- the Government's "UK Biomass Strategy" which was also published in May 2007 promotes the use of biomass as an energy source and notes that biomass will have a central role to play in meeting the Government's aspiration of 20% renewable energy by 2020. It also acknowledges the importance of energy generated from biomass in tackling climate change. The Sleaford REP would generate energy from biomass and as such, would contribute towards the requirement of the UK Biomass Strategy;
- renewable energy development is supported in a range of national, regional and local policy and strategy documentation including the Energy White Paper; the UK Biomass Strategy; the East Midlands Regional Energy Strategy; the existing and emerging East Midlands RSS', the Lincolnshire Structure Plan and the emerging North Kesteven Local Plan;
- the East Midlands Regional Spatial Strategy (RSS) contains a number of targets for renewable energy generation. The 2010 target for renewable energy generated from biomass related technologies in the East Midlands is 66.1 Megawatts electrical capacity (MWe). The Sleaford REP would produce 40MWe at maximum capacity and as such, would be capable of providing almost two-thirds of the 2010 regional target for renewable energy generated from biomass;
- the emerging East Midlands RSS indicates that there is a significant shortfall in renewable energy capacity within the region and states that only 2% of the region's energy is supplied by renewables. This figure is significantly lower than the Governments target of 10% in 2010. As a

consequence, there is a need for a range of new renewable energy facilities such as the Sleaford REP.

## **2.0 SCHEME DESCRIPTION**

### **2.1 Introduction**

2.1.1 This section provides a description of the intended layout and design of the Sleaford REP. It also outlines the processes that would take place at the facility.

### **2.2 Intended Layout and Design of the Proposed Development**

2.2.1 The Sleaford REP development would be based around four main buildings comprising the turbine and boiler hall (circa 2,550m<sup>2</sup> and 32.5m high), two straw storage barns (circa 3,160m<sup>2</sup> each and 18m high) and a wood storage building (circa 532m<sup>2</sup> and 14m high). These four buildings would be linked by a series of high level conveyor belts. In addition, there would be chimney stack of 60m in height. The development would also include the following ancillary / infrastructure elements:

- an air cooled condenser;
- a vehicle weighbridge;
- offices, control room and staff welfare facilities (i.e. changing rooms / toilets);
- site fencing and a security barrier;
- external hardstanding areas for vehicle manoeuvring / parking;
- internal access roads and car parking;
- radiator fans;
- sedimentation tank;
- water tank;
- bottom ash storage and transfer area;
- transformers;
- silos;
- surface water drainage attenuation basins;
- extensive new areas of landscape planting.

2.2.2 The layout of these elements is shown on Figure 2.1 (the Site Layout).

### **Landscaping**

2.2.3 The landscape proposals are illustrated on Figure 2.1. The landscape scheme has been designed to prevent visual impact through screening, assist in integrating (over time) the development into the wider landscape and to create valuable new areas of habitat for wildlife. Soil bunds of around three to four metres in height will be formed along the north, south and west boundaries using materials from within the site. This sustainable re-use of resources will prevent the disposal of materials elsewhere and a number of associated heavy goods vehicle movements. The bunds will be planted with over 10,000 locally occurring trees and shrubs which will mature to provide an effective screen of both the activities on site and a substantial proportion of the buildings. The new woodland and scrub areas will link with the established site of nature conservation interest (Birch Wood SNCI) which adjoins the site and provide a new wildlife corridor. Approximately a hectare of new grassland will also be created.

### **Employment**

2.2.4 During the operation of the REP, the following permanent jobs would be created:

<b>Job</b>	<b>Number of Jobs Created</b>
operational staff	5 shifts of 4 jobs each (20 in total)
administration and management staff	approximately 10 jobs
baling, management and haulage straw	approximately 50 jobs
<b>Total</b>	<b>approximately 80 Jobs</b>

2.2.5 It should also be noted that further (temporary) employment opportunities might be available during the construction of the facility.

## **Access**

- 2.2.6 The site is currently within an agricultural use. Vehicular access to the site is therefore limited to existing field access points from Boston Road to the south. No formal hard surfaced access is currently available.
- 2.2.7 Vehicular access to the proposal site would be taken from Boston Road via a new industrial standard junction located in the south eastern corner of the site. The proposed layout of this new access would be based on a simple T-junction arrangement (See Figure 2.1).
- 2.2.8 At the request of Lincolnshire County Council highways officers, the proposed site access has been designed to discourage large goods vehicle movements associated with the Sleaford REP facility from attempting to utilise the section of Boston Road to the west of the site. This layout accords with the proposed routeing agreement which seeks to ensure that large goods vehicles do not enter Sleaford Town Centre via Boston Road.

## **Drainage**

- 2.2.9 Surface water (rain water) runoff generated by the development would be collected via a separate system of below-ground pipes. Paved areas such as car parks, access roads etc would have approved oil separators / interceptors.
- 2.2.10 The surface water would then flow into a series of large lagoons, constructed on the northern part of the site (See Figure 2.1). From here it would be released into an adjacent land drainage system.
- 2.2.11 The proposals also involve an element of 'rainfall harvesting' which would be utilised in the renewable energy process and wash-down activities.
- 2.2.12 The small quantity of foul drainage (toilets etc) generated by the proposed development would be collected via a separate system of below-ground sewers before passing into the existing public sewer network. Depending

upon the depth to the existing sewer system, it may be necessary to introduce a pumping station to transfer effluent to the public sewer network.

### ***Lighting***

- 2.2.13 As stated above, once commissioned the Sleaford REP would operate on a continuous basis. During hours of darkness there would be a need for a degree of lighting to ensure a safe working environment for operatives on site. However, the full external lighting system would only operate during hours of darkness (i.e. in winter) when vehicle deliveries are occurring, this being during the normal working day. After this time the main lighting would be automatically switched off. In order to cater for the health and safety needs of night shift workers at the plant, a reduced, low level lighting system would remain in operation after dark, using low level lanterns and restricted to required walking routes and staff parking areas.

### ***Security Fencing and Gates***

- 2.2.14 The boundary of the REP complex perimeter would be secured by a 3 metre steel fence with matching lockable steel gates to provide means of access (all fencing would be green in colour). Further security would be provided by means of a CCTV monitoring system.

### ***Car Parking Provision***

- 2.2.15 The facility would include twenty car parking spaces including at least one disabled car parking space. In addition, a shelter would also be provided for bicycles and motorcycles.
- 2.2.16 It is not anticipated that any lorries would need to park overnight at the site. Any temporary / short-term requirement for lorry parking can be accommodated within hard standing areas provided.

## 2.3 Proposed Site Operations

### **Introduction**

2.3.1 The operation of the facility is illustrated on Figure 2.2 and is described in non-technical language below.

### **Fuel Reception and Handling**

#### *Straw Deliveries*

2.3.2 Straw will typically be delivered in the form of bales. These bales will be delivered on flat bed trailers, normally carrying three layers of 12 bales or 36 bales per load. Once on site, lorries will be directed to one of the two straw barns. Each straw barn contains two overhead cranes which are capable of unloading two lorries at the same time. The cranes remove a layer of 12 straw bales at a time. Each crane records the weight of their particular bales before placing them in a storage area. Each straw barn is capable of storing enough bales for 36 hours operation (72 hours storage in total).

#### *Wood Deliveries*

2.3.3 Wood will be delivered in chip form in bulk tipping lorries. Wood lorries will drive onto the weighbridge situated just beyond the entrance barrier where their weight will be recorded. The lorry will then be directed to the wood chip storage building where they will unload in a storage area. The wood chip store will hold enough wood for 10 hours operation.

2.3.4 Lorries that have discharged their loads will be weighed at the weighbridge before leaving the site in order that the net weight of the load can be calculated.

### **Energy Recovery**

2.3.5 Straw, or a combination of straw and wood chips, are transferred by conveyor belt from the storage buildings to the furnace where they are burned. Hot gases from the furnace pass to boilers which convert the heat from the gases into steam. The steam is then passed through a turbine to

generate electricity. At maximum capacity the REP would be capable of generating 40 megawatts of power.

### ***Flue Gas Treatment***

- 2.3.6 Gases generated during the combustion process would be the subject of a comprehensive cleaning system before being released into the atmosphere through the chimney stack. Emissions from the chimney are monitored continuously to ensure that they are within required emission limits.

### ***Operating Hours***

- 2.3.7 The plant will generate electricity on a 24-hour basis, 7 days per week. Despite this it is only proposed that straw / wood chip is brought into the site between the hours of 7am to 5pm Monday to Friday and between 8am and 2pm on Saturdays. No fuel deliveries would take place on Sundays or public holidays
- 2.3.8 Plant maintenance shall be required once a year, halting the operation for a period of two weeks (typically scheduled during the summer).

## **3.0 SUMMARY OF POTENTIAL EFFECTS**

### **3.1 Introduction**

3.1.1 This part of the NTS provides, in non-technical language, a summary of the potential environmental effects of the proposals under a series of headings which reflect the assessment sections of the main Environmental Statement (ES) document.

### **3.2 Planning Policy**

3.2.1 An assessment of the proposals against relevant planning policy has demonstrated that the scheme meets the requirements of the Planning and Compulsory Purchase Act as it fully complies with the policies of the statutory development plan and specifically Policy NE9 of the Lincolnshire Structure Plan and Policy C16 of the Revised Draft North Kesteven Local Plan, which relate to renewable energy development. In addition, a comprehensive assessment of other material considerations has not revealed any justification for determining this application other than in accordance with the development plan. In fact, the proposals have also been found to strongly accord with, and be supported by, a range of other material factors, specifically planning policy and guidance which is material to the determination of the planning application.

### **3.3 Traffic**

3.3.1 Following a detailed review of the anticipated future operational highway conditions and reference to appropriate guideline standards, it has been concluded that the development of the Sleaford REP would not result in a material impact in operational or environmental conditions over the local highway network. Traffic flow increases will generally be low and it is considered that there is no requirement for development related off-site highway improvement works to support the scheme over and above the proposed new site access junction at Boston Road.

### **3.4 Landscape and Visual Impact**

3.4.1 Landscape and visual assessments have been carried out for the proposed development.

#### ***Landscape Impacts***

3.4.2 The landscape assessment considered the effect that the proposed development would have firstly on the individual components that make up the landscape (landscape fabric) and upon the overall character of the landscape.

#### ***Landscape Fabric***

3.4.3 Impacts on landscape fabric would be moderately adverse. The elements that would be affected by the development are commonplace (i.e. fields' hedgerow and trees). Whilst these elements would disappear completely the development proposals would introduce new landscape components. It is considered that these additions would more than compensate for the moderate adverse impacts and result in a beneficial effect overall.

#### ***Landscape Character***

3.4.4 Whilst the landscape contains some isolated fragments of intact and locally distinctive character, there has generally been substantial alteration to the landscape which has resulted in a loss of character. The alteration is attributable to modern agricultural practices, the introduction of power and transport infrastructure and other built development. On this basis the area has been assessed as possessing low landscape quality.

3.4.5 In the immediate vicinity of the proposed development there would be a very apparent change to the landscape. This would have an effect upon landscape character of moderate adverse significance. From the wider landscape the proposed development would be visible but the degree of change would be reduced by virtue of distance. Consequently effects on landscape character would reduce to minor adverse significance. However,

the significance of effect would increase under certain atmospheric conditions which could lead to the formation of a plume of steam above the chimney.

### ***Visual Assessment***

- 3.4.6 The generally open, flat nature of the landscape means that long distance vistas can be experienced but also that local topography and vegetation cover can be particularly effective in screening views.

### *Visual Receptors*

- 3.4.7 Visual impact relates to the changes that the development would have upon views experienced by the public. Visual receptors are the locations from which people could experience views of a development. The types of visual receptor that would potentially be affected by this development include residential property, public footpaths, the local transport network and places of work, leisure or education.

- 3.4.8 Ten representative visual receptors were assessed and the results of this assessment were applied to an analysis of all relevant receptors. It is predicted that there would be moderate changes in the nature of views from approximately 18 residential properties resulting in major adverse impacts. Local footpaths would experience moderate and minor to moderate effects. The Sleaford Cycle Trail would experience a localised major effect. Finally, users of local transport infrastructure, workers (primarily agricultural) and people engaged in active recreation (principally football) would experience moderate or lower effects.

### *Mitigation*

- 3.4.9 An extensive landscape scheme consisting of earth bunds planted with woodland belts would quickly mature to provide screening of the lower level buildings and operational areas of the site. This would reduce visual impacts over time for many of the affected visual receptors, although it would never fully screen the taller components of the project.

### **3.5 Ecology and Nature Conservation**

3.5.1 The Sleaford REP site contains few features of significant nature conservation interest, although it lies adjacent to a woodland which has been designated as a non-statutory site of conservation importance. The hedgerow along the southern boundary would also qualify as Important under the 1997 Hedgerow Regulations.

3.5.2 The predicted impacts of the development will involve the loss of most of the hedgerow along the southern boundary, in order to provide road access to the site with appropriate visibility splays. This will also affect the current usage of the roadside by foraging bats.

3.5.3 The development would also result in the displacement of some birds, although it will not affect any species with special legal protection. The adjacent woodland would not be affected.

3.5.4 Mitigation, compensation and enhancement measures are proposed which involve:

- planting locally-native bushes to compensate for hedgerow loss; and
- creating new grassland and woodland areas around the facility.

3.5.5 Based on currently available data, the development would result in a negative ecological impact of local significance. However, through the implementation of compensation and mitigation measures, this impact can be ameliorated to provide a positive impact through the creation of new habitats.

### **3.6 Flood Risk and Water Quality**

3.6.1 The proposed development does not lie within an identified area of flood plain and the risks posed to the development from flooding are negligible.

3.6.2 Surface water (rain water) runoff from the development would be managed in such a fashion so as to ensure that the resulting flows are regulated to the

equivalent 'green field' runoff rate. This, in turn, would ensure there would be no adverse disturbance to the existing surface water regime local to the site.

- 3.6.2 The proposed development would not affect the water quality of the surrounding area as a result of the infrastructure that would be installed to service the site and the specific practices employed to manage runoff from the different parts of the development.

### **3.7 Noise**

- 3.7.1 Existing daytime and night-time noise levels at locations around the Sleaford REP site have been determined through noise monitoring, the results of which have been compared with the predicted impacts on noise during the construction and operation of the facility.
- 3.7.2 The construction impacts have been considered in terms of the proposed hours for construction and key construction activities that are likely to take place on the site. The assessment concludes that by adopting a number of proposed mitigation measures, the impact would result in a negligible to slight adverse effect, albeit from a temporary noise source.
- 3.7.3 Operational noise levels have been computer modelled with regard to the design of the proposed development and the location of noisy operations within it. The results of the modelling have indicated that the predicted noise levels from the site operations would have a negligible effect or at worst a slight effect on noise levels at the nearest residential dwellings.
- 3.7.4 When further detailed information is available on specific plant selection, it may be necessary to undertake a further noise assessment to check that the conditions of any planning permission would be achieved. However, the provision of appropriate mitigation measures within the detailed design would assist in minimising any noise impact and the level of risk is anticipated to be low.

### **3.8 Air Quality**

- 3.8.1 The potential environmental effects of the emissions from the Sleaford REP have been assessed using detailed computer modelling. The assumptions that have been adopted to determine the predicted emission levels from the plant, maximum ground level concentrations and background levels in the vicinity of the plant, have been based on a 'worst-case' scenario.
- 3.8.2 The results of the modelling have indicated that the operation of the plant is not predicted to result in any breaches of air quality objectives. As a result, the impact on both the local community and the general population from the atmospheric emissions for the Sleaford REP is small.

### **3.9 Archaeology and Heritage**

- 3.9.1 A desk based study has been undertaken to assess the archaeological potential of the Sleaford REP site. The assessment covered all aspects of the study area, including existing built environment, below ground archaeological potential and associated cultural connections, such as important events or figures of national or local historic significance. This has provided a baseline of known and potential archaeology, related to existing cultural values, against which the impact of the proposed development has been considered.
- 3.9.2 It has been established from the baseline information that there is a high likelihood of encountering archaeological finds and features at the site. As any such remains (should they be present) are considered at this stage to be of Local to Regional importance, it is recommended that a programme of archaeological field work is conducted ahead of any future development.
- 3.9.3 This approach is consistent with historic environment policies and can be advanced through a suitably worded planning condition.
- 3.9.4 The assessment also confirmed that there are no Scheduled Ancient Monuments, HER entries or Listed Buildings within the site boundary and the site is not within an archaeological priority zone or conservation area.

### **3.10 Geology and Hydrogeology**

3.10.1 An assessment has been carried out into the potential effects of the proposed REP development on the geology and groundwater local to the site. This assessment established that the study area has not previously been developed and has been utilised solely for agricultural purposes. Accordingly, the potential for disturbing pollutants during the construction phase of the development is extremely limited.

14.10.1 Given the absence of any hazardous substances in the processes proposed at the REP, the risk of contamination of the local geology or groundwaters is considered to be negligible.

14.10.2 It has been predicted that any potential adverse environmental effects would occur predominantly during the construction phase and, specifically, in relation to excavation activities. Measures to mitigate these effects would be determined through appropriate ground investigation, together with the control of pathway creation through good site practice. No significant residual effects are predicted.

14.10.3 Although no significant effects are predicted during the operation of the proposed development, generic measures would be introduced to ensure effective site management including procedures for dealing with accidental oil and fuel spillage during the use of plant, equipment and machinery and these would be included as part of the Environmental Management System for the site.