
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 40MW and would use circa 240,000 tonnes per annum 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 annum 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. 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 potable 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 (i.e. within the defined settlement boundary) 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 and indeed overriding need for the development as set out below.

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- The Energy White Paper includes targets which aim to see renewables grow as a proportion of electricity supply to 10% in 2010 (a target that looks increasingly remote), rising to 20% in 2020. The provision of electricity supply by renewables in 2006 was 4%. A significant number of new facilities will need to come forward if the targets are to be achieved.
 - The UK Biomass Strategy 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.
 - From a national, regional, sub-regional and local perspective, all extant and emerging policy and strategy documentation support renewable energy developments.
 - There is a significant capacity shortfall on a regional basis (the emerging RSS states that only 2% of the region's energy is supplied by renewables). Consequently, there is a need for a range of new renewable energy facilities such as the Sleaford REP.
 - The 2020 target for renewable energy generated from biomass related technologies in the East Midlands is 168MWe. The Sleaford REP facility would produce 40MWe at maximum capacity and as such, would make a significant contribution to the regional target for renewable energy generated from biomass.

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 2,550m² and 29.2m high), two straw storage barns (circa 3,160m² each and 15.3m high) and a wood storage building (circa 532m² and 14m high). These four buildings would be linked by a series of high level conveyors. In addition, there would be stack (chimney) 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;
- 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. A landscape scheme has been designed to mitigate 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 utilising materials excavated wholly from within the site. This sustainable re-use of resources will prevent unnecessary disposal and heavy goods vehicle movements. The bunds will be planted with over 10,000 locally appropriate native trees and shrubs which will mature to provide an effective screen of both the operational activities on site and a substantial proportion of the built form. 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 wildflower rich calcareous grassland will also be created.

Employment

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

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

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 in agricultural use. Site vehicular access 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 access junction located in the south eastern corner of

the site. The proposed layout of this new access would be based on a traditional simple T-junction arrangement (see Figure 2.1).

- 2.2.8 At the request of Lincolnshire County Council highways officers, the proposed site access junction layout has been designed to discourage large goods vehicle movements associated with the Sleaford REP facility from attempting to use 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 runoff generated by the development would be collected via a separate system of below-ground sewers. Paved areas such as car parks, access roads and hardstandings 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 used 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 system. Depending upon the depth to the receiving sewer system, it may be necessary to introduce a proprietary 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 automatically be 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, utilising 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. A shelter with a capacity of ten spaces 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 the 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 and moisture content 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 automatic entrance barrier and their gross 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 store will hold enough wood for 10 hours' operation.
- 2.3.4 Lorries that have discharged their loads will 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 the 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 limits.

Operating Hours

- 2.3.7 The plant 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 7pm 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 the relevant planning policy and guidance has demonstrated that the scheme meets the test of Section 38(6) of the Planning and Compulsory Purchase Act as it fully complies with the provisions 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 (including the PPS1 Supplement, PPS22, Energy White Paper, the UK Biomass Strategy, the East Midlands Regional Energy Strategy and the emerging RSS), which is material to the determination of the planning application.

3.3 Traffic

3.3.1 Following a detailed review of anticipated future operational highway conditions and reference to appropriate guideline standards, it has been concluded that the development of the Sleaford REP will not result in a material change in operational or environmental capacity 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 local improvements to deliver the proposed new site access junction at Boston Road.

3.3.2 Notwithstanding the conclusions of the paragraph above, the Developer has proposed improvements options to the westbound access to the A17 from Boston Road at Kirkby La Thorpe. The Developer of the Sleaford REP scheme would fund and implement these proposals if requested to do so by the planning authority.

3.4 Landscape and Visual Impact

3.4.1 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 Impacts

Landscape Fabric

3.4.2 Although the development would involve the complete removal of landscape fabric, the landscape fabric affected is commonplace (i.e. fields, hedgerows and trees) and is therefore relatively insensitive to such a change. Thus, while the magnitude of the impact is high, the significance of the impact would only be moderate adverse. Moreover, the development proposals include the introduction of substantial areas of locally appropriate landscape elements. It is considered more than compensate for these adverse impacts and result in a beneficial effect upon landscape fabric.

Landscape Character

3.4.3 The plant is located within an area exhibiting low quality landscape character. It contains some isolated fragments of intact and locally distinctive character, but has generally been substantially alte. Thus, although there would be a high magnitude of change in the immediate vicinity of the REP, the resultant effect upon landscape character of would only be of moderate adverse significance. The introduction of five small copses in the area surrounding the facility would be beneficial to local landscape character.

3.4.4 Indirect impacts upon the wider landscape would have a medium magnitude of change to the low quality landscape character baseline and would result in a

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

Visual Assessment

- 3.4.5 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

- 3.4.6 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 infrastructure and places of work, leisure or education.
- 3.4.7 Ten representative visual receptors were assessed and the results of this assessment were applied to the analysis of all relevant receptors. It is predicted that there would be major adverse impacts at approximately 18 residential properties. The impacts at 7 of these properties would be mitigated by off-site planting which will serve to break up or substantially screen views of the plant over time. 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

- 3.4.8 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. On site landscaping is

complemented by five off-site areas of planting that serve to further break up and partially screen the development; again, the effect achieved by this planting would increase over time.

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 has a high woody plant diversity, and would 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 site frontage, 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 will result in the displacement of some birds, although it will not significantly or legally affect any species with special legal protection. The adjacent woodland will not be affected.

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

- planting locally-native scrub species to compensate for hedgerow loss; and
- creating new wetland, 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 reduced to provide a positive impact of local significance 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 sources 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 is no adverse disturbance to the existing surface water regime local to the site.
- 3.6.3 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 receptors located 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 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 Existing daytime and night-time noise levels at receptors located 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.

- 3.7.5 For the construction phase, the noise levels would vary from day to day depending upon a number of factors including type of plant being used, type of activity, distance from the site boundary, screening, duration of activity and nature of activity. For the assessment of impact for the construction phase it is concluded that by adopting a number of proposed mitigation measures, the impact would result in a negligible to slight adverse effect albeit a temporary noise source.
- 3.7.6 When further detailed information is available on specific plant selection, it may be necessary to undertake a further noise assessment to check that the planning consent conditions 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 peak long and short term concentrations are combined with pessimistic background concentrations for comparison with air quality standards and guidelines. No breaches of any of the standards or guidelines are predicted.
- 3.8.3 The results of this 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 from the Sleaford REP is small.

3.9 Archaeology and Heritage

- 3.9.1 A desk based study and subsequent archaeological evaluation have been undertaken to assess the archaeological potential of the Sleaford REP site. The desk-based assessment covered all aspects of the study area, including existing built environment, sub-surface archaeological potential and associated cultural connections, such as important events or figures of national or local historic significance. This provided a baseline of known and potential archaeology, related to existing cultural values, against which the impact of the proposed development has been considered. The subsequent archaeological evaluation included the excavation of 17 trial pits, located by agreement with the North Kesteven District Council Heritage Officer following a geophysical survey of the entire site.
- 3.9.2 This work has concluded that there is nothing on site that should preclude its development, subject to an programme of excavation, recording and reporting to preserve the archaeology that is present (which is deemed to be of local and possibly regional significance). Such work could be managed by attaching appropriate conditions to any planning permission, and the applicant would ensure that this was completed before construction began on site.
- 3.9.3 The desk-based 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 used solely for agricultural purposes. Accordingly, the potential for disturbing pollutants during the construction phase of the development is extremely limited.
- 3.10.2 In 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.

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- 3.10.3 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.
- 3.10.4 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.