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**Sleaford Renewable Energy Plant
Boston Road, Sleaford
Transport Statement**

Prepared on behalf of:



eco2

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1.0 **INTRODUCTION**

1.1 This Transport Statement has been prepared by AXIS on behalf eco2 to consider highways and transport issues related to proposals for a Biomass Renewable Energy Plant (hereafter referred to as the Sleaford Renewable Energy Plant or Sleaford REP) at Boston Road, Sleaford. The proposal would involve the development of an electricity generating facility with an installed capacity of 40MW. Electricity will be generated by a steam turbine which would be driven through the combustion of biomass material (primarily straw) supplied via contracts with local farmers.

1.2 This report has been prepared to appraise the Local Planning Authority (North Kesteven District Council - NKDC) and Local Highway Authority (Lincolnshire County Council - LCC) of the anticipated highways and transport issues associated with the development of the Sleaford REP. The site is proposed to operate with an annual input capacity of approximately 240,000 tonnes per annum (tpa) of delivered biomass material, with the energy generating process resulting in approximately 25,000 tpa of ash waste (by weight) to be transported off-site.

1.3 The scope and nature of the assessment issues included within this Transport Statement report reflects the extent of highways and traffic issues identified as likely being of material interest to the Local Planning Authority (LPA) / Local Highway Authority (LHA). This scope has been established during meetings and discussions with officers of both NKDC and LCC during Spring / Summer 2007.

1.4 The structure of the remainder of this Transport Statement is as follows:

- A brief description of the site location and existing conditions - including a description of the local highway network immediately adjacent to the site, prevailing local planning and highway policy, local

network accident history and historical background traffic demand patterns.

- A description of the development proposals for the site - including a review of the proposed access strategy and its acceptability with respect to prevailing local highway standards;
- An assessment of the anticipated future traffic generation to / from the site and the distribution of these trips over the local network;
- A consideration of the potential traffic impact of the traffic generated by the development scheme at key local junctions and highway links on the immediate highway network.

1.5 The report has been prepared to reflect March 2007 Department for Transport (DfT) "Guidance on Transport Assessment" for the preparation of Transport Statement reports.

2.0 **SITE LOCATION & EXISTING CONDITIONS**

2.1 **Site Location**

2.1.1 The location of the Sleaford REP proposal site is illustrated in Figure 1 to this report. This plan identifies the strategic location of the site in relation to the main built up area of the town of Sleaford, the general alignment of Boston Road and the proximity to the A17 and existing all movements interchange at Kirkby La Thorpe.

2.1.2 Photographs of existing key network layout features, including an aerial photograph of the immediate study area to the site are illustrated in Appendix A to this report.

2.2 **Description of Local Network**

Existing Site Conditions

2.2.1 The site comprises approximately 5.3 hectares of arable agricultural land which lies between Boston Road and the A17 (which runs some 150 metres to the north 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 la Thorpe.

2.2.2 The proposal site is ostensibly flat and open and has no obvious defining features, other than a drainage ditch on its northern edge, although it relates strongly to 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 water treatment / pumping facility adjacent to the site. Site boundary to the south is formed by the

alignment of Boston Road. Site boundary to the north and west currently shows few physical boundary features.

Existing Site Access

- 2.2.3 As noted above, the site is currently utilised for agricultural land use. Site vehicular access is therefore limited to existing field access points from the southern boundary route of Boston Road. No formal hard surfaced access is currently available. The general alignment of Boston Road in the immediate vicinity to the Sleaford REP proposal site is illustrated in Figure 2 to this report, with much of the site located on the inside of a bend in the mainline route.

Existing Local Network Connections

- 2.2.4 Boston Road provides 7.3m local distributor road standard access to the town of Sleaford to the west and connections to the A17 at Kirkby La Thorpe to the east. The section of route to the frontage of the proposal site is currently the subject of a general weight restriction relating to larger goods vehicles over 7.5t (except for access to frontage fields). This restriction is associated with the impact of the limited headroom railway bridge located approximately 650m to the west of the proposal site (4.2m operational height restriction) which limits the passage of large goods vehicles to / from Sleaford Town Centre. Warning signs associated with the height restriction and the demarcation of the beginning of the weight restriction are clearly marked on Boston Road close to the access to the A17 southwest of Kirkby La Thorpe (see Figure 2 and Appendix A to this report).

- 2.2.5 To the east of the proposal site, Boston Road connects to the A17 Sleaford Bypass at a local grade separated all movements junction at the hamlet of Kirkby La Thorpe. The A17 is of dual carriageway nature at this location,

although the route narrows to a single carriageway layout approximately 400m to the east of the main west facing access roads to the Kirkby La Thorpe interchange. To the east of the A17, Boston Road provides limited standard rural lane connections to Mount Road (cul-de-sac) and Church Lane (onward access to the hamlets of Kirkby La Thorpe and Ewerby).

2.2.7 The Boston Road connections to the A17 mainline route are of a limited layout standard, with merge / diverge provision currently being as follows:

Diverge provision:

- A17 Eastbound – simple taper diverge with deceleration section;
- A17 Westbound – simple taper diverge with deceleration section;

Merge provision:

- A17 Eastbound – simple ‘give way’ with no acceleration lane;
- A17 Westbound – simple ‘give way’ with no acceleration lane.

2.2.8 Such existing standard junction layout provision reflects the limited traffic demand for movements to / from the A17 currently experienced from Boston Road, particularly for movements to / from west facing side road junction routes. This limited demand is anticipated to be as a result of:

- Boston Road only directly serves a small proportion of the town of Sleaford, with main access to the town being taken via the B1517 or B1518, and;
- The eastern, more remote, location of the Kirkby La Thorpe junction with respect to the main built up area of Sleaford makes this route more commodious / less attractive for general traffic movements to / from A17 west.

2.2.9 DMRB standard TD42 / 95 “Major / Minor Junctions” notes the following with respect to the provision of merge taper provision at local access points to dual carriageway routes:

“Merging tapers shall only be used at dual carriageway junctions. They shall be provided where a ‘B’ road joins an ‘A’ dual carriageway road having a design speed of 85kph or above. They shall be provided generally where the design speed is 85kph or above and the volume of the left turning traffic is in the design year exceeds 600 vehicles AADT. However, where the merging taper is for an up-gradient of greater than 4% or where the percentage of large goods vehicles exceeds 20% the threshold value may be reduced to 450 vehicles AADT. They shall never be used at single lane dualling junctions. They shall not be provided where the cost of provision would be excessive. (Paragraph 7.59)”

Existing Traffic Demand Conditions

- 2.2.10 Available historical traffic data for the immediate highway network to the proposed Sleaford REP site is generally limited. Indeed, discussions with LCC officers has identified that the only count data available within the vicinity of the proposal site is a 12 hour manual classified link count undertaken in 2006 for the A17 mainline at the Kirkby La Thorpe Interchange. Such count data was undertaken during a ‘neutral’ month (May 2006) and for the section of A17 immediately to the east of the Boston Road access points. This count is therefore considered to represent suitable maximum local A17 demand conditions.
- 2.2.11 Details of the May 2006 A17 link count are illustrated in Appendix B to this report, with directional hourly profile information provided as Figure 3 and two way demand profile as Figure 4. Review of the 2006 data identifies that the A17 demonstrates a generally low level of hourly demand for a dual carriageway route, with typical hourly flow being less than 1400 vehicles per hour during main daytime hours (two way). Peak background traffic demand on the A17 is noted to occur during the traditional AM / PM ‘rush hour’ demand periods of 08:00-09:00 (1641 vehicles per hour) and 17:00-18:00 (1687 vehicles per hour).

2.2.12 Maximum one-way directional demand on the A17 is noted to be less than 900 vehicles per hour in either direction, with typical weekday daytime demand being just 550-750 vehicles per hour. Such flows are well within the 1600 vehicles per lane broad capacity criteria identified for an operational lane on a dual carriageway grade separated route as set out in paragraph 3.3 of DfT standard TD 22/06 “Layout of Grade Separated Junctions” and suggests significant spare background operating capacity at this location.

2.2.13 Figure 5 to this report illustrates the vehicle types recorded during the over the 12 hour survey period for the A17. This broad modal split is summarised below:

	Weekday (12 hr demand)
• Private Car/Light Goods;	82.7%
• OGV 1 Classification;	6.1%
• OGV 2 Classification;	10.8%
• Public Service Vehicles:	0.4%

2.2.14 Analysis of the modal split data demonstrates that up to almost 17% of vehicles currently utilising the A17 corridor can be classified as heavy goods vehicles.

2.3 Personal Injury Accident Records

2.3.1 Personal Injury Accident data (PIA) for the immediate highway network to the Sleaford REP proposal site has been provided by LCC highways for the 5 year time period Jan 20021 to Dec 2006. A summary plan of the location of all 2001 - 2006 recorded accidents is summarised as Figure 6 to this report and detailed incident descriptions are provided in Appendix C.

2.3.2 Review of Figure 6, illustrates that 18 accidents have been recorded over the full search area. 3 of these accidents were classified as ‘serious’ incidents, with the remaining 15 incidents being of a ‘slight’ nature. No fatal accident incidents were recorded during the 5 year search period (see table below).

Year	Accident Type			Total
	Fatal	Serious	Slight	
2002	0	1	5	6
2003	0	0	3	3
2004	0	1	3	4
2005	0	1	2	3
2006	0	0	2	1
Total	0	3	15	38

2.3.3 More detailed review of the PIA data illustrates that just 5 accidents were recorded within the immediate vicinity of the slip road access points to the Kirkby La Thorpe interchange. A range of causation factors were recorded for these incidents, with the one serious incident relating to a collision with a pedestrian who had entered the carriageway whilst attempting to catch a stray animal. It is not considered that the recorded incidents demonstrate a significant accident trend which would require improvements to address existing background safety conditions:

- Driver loses control on approach to bend in exit taper (eastbound exit);
- Driver pulls onto A17 into the path of an on-coming vehicle (eastbound entry);
- Driver conflict between vehicle entering carriageway and onset of single lane section (eastbound entry);
- Vehicle shunt to rear of stationary vehicle waiting to safely access the A17 mainline (westbound entry);
- Pedestrian hit attempting to catch a stray animal (west of eastbound exit).

2.3.4 It is not considered that this review of accident history identifies an accident concern at the interchange or indeed suggests that highway safety would be materially affected by the introduction of traffic associated with the Sleaford REP site. Two of the five accident incidents recorded, for example, relate to traffic movements at or near the eastbound entry slip road (which will be unaffected by Sleaford REP operational traffic due to routeing agreements –

see para's 3.1.12 – 3.1.15 to this report) and a further incident relates to a 'one-off' pedestrian accident, unrelated to the operation of the junction itself.

2.3.5 In addition to those incidents recorded at the Kirkby La Thorpe interchange, a further six accidents have been recorded on the section of Boston Road between the proposal site and the village of Kirkby La Thorpe. Accident causation factors within this section of highway can be summarised as follows:

- Driver losing control * 2;
- Collision with pedestrians making inappropriate manoeuvres * 2;
- Driver skids on ice;
- Failure to stop on side road arm and collision with vehicle on main carriageway.

2.3.6 The majority of these incidents did not involve direct 'vehicle to vehicle' collisions and only one involved traffic accessing Boston Road from a side road. No accidents were recorded at or near to the frontage of the proposal site and no incidents involved HGV movements. It is not considered that any clear accident trend is demonstrated from the recorded incidents and it is concluded that the route would be suitable to accommodate additional development traffic without additional highway safety improvements.

2.3.7 Overall it is not considered that the recorded Personal Injury Accident data identifies any existing major road safety concerns across the study area. Accident rates at or near the Kirkby la Thorpe junction are low and there is no evidence to suggest that the existing junction layout results in any inherent safety issues for traffic movements entering or leaving the A17.

2.4 **Site Accessibility**

Walk / Cycle Access

2.4.1 Boston Road provides opportunities for some walking and cycling links from the proposal site to the nearby town of Sleaford and other surrounding local villages. Footway provision already exists on the proposal site side of Boston Road with the site located within a suitable maximum walking catchment (1.2km – 2.0km) of parts of the built up area of the town. Furthermore, Boston Road is an existing quiet road cycle route for connections to local villages to the south and east of the town. Existing local cycle path connections to the site are illustrated in Figure 7 to this report, including a 5km ‘as the crow flies’ typical cycle catchment. This exercise demonstrates that all of the main built up area of Sleaford lies within a acceptable cycle journey catchment.

Access to Public Transport

2.4.2 The Sleaford REP proposal site is not currently directly served by public transport services. Closest bus stops to the site are available on Boston Road, just to the west of the limited height railway bridge (at the junction with St Giles Avenue / Russell Crescent). These stops are served by the local Sleaford Town Circular Bus Service and offer a 30 minute Monday – Saturday weekday service.

2.4.3 The above bus connections are located approximately 800m from the Sleaford REP proposal site and are therefore outside a preferred day to day walking catchment for regular access to local public transport. (Ref: Institution of Highways and Transportation Document “Guidelines for Planning for Public Transport in Developments”). Given the strictly limited number of staff proposed to be employed at the Sleaford REP site (see Section 3 to this report), however, and the shift patterns proposed, it is not anticipated that the

site will generate a significant level of public transport demand or that direct access by public transport services will be necessary.

2.5 **Review of prevailing Local Planning & Highway Policy**

2.5.1 A full review of planning policy relevant to the development of the Sleaford REP facility is provided as Chapter 5 to the Environmental Statement prepared to support the formal planning application (Axis Doc Ref: 552-01 / Environmental Statement / Final). This review of issues identifies that the scheme is designed to accord with both the Draft North Kesteven Local Plan and Lincolnshire Structure Plan policy (policies C16 and NE9 respectively). These policies identify the need to promote and encourage a range of renewable energy sources and those developments which deliver these objectives. The reasoned justification associated with Lincolnshire Structure Plan Policy NE9, for example, states:

“For technological and economic reasons on shore wind (which is covered in more detail in Policy NE11) is currently the most viable and hence exploited renewable technology in the county, however other, perhaps more appropriate, if longer term opportunities are also considered to exist, notably biomass from energy crops, agricultural waste and biofuel production. Given Lincolnshire’s traditional agricultural heritage and expertise and the associated dominant land use and agricultural landscape, the county has a potentially contribution to make in this area, and such development would also have the advantage of additionally contributing to the revitalisation of the rural economy which other Policies in the Structure Plan seek to achieve”

2.5.2 In addition the development of the Sleaford REP scheme will accord with general policy and strategic criteria as set out in a range of national and strategic guidance such as The May 2007 Energy White Paper, UK Biomass Strategy, PPS22 “Renewable Energy” and the emerging East Midlands

Regional Spatial Strategy. These core policy documents identify the advantages of delivering renewable energy facilities and the locational factors which must be considered when assessing renewable energy facilities.

Paragraph 24 of PPS22 notes:

“...for biomass projects the need to transport crops to the energy production plant does have the potential to lead to increases in traffic. Local planning authorities should make sure that the effects of such increases are minimised by ensuring that generation plant are located in as close proximity as possible to sources of fuel that have been identified. But in determining planning applications, planning authorities should recognise that there are other considerations (such as connections to the grid and the potential to use heat generated from the project) which may influence the most suitable locations for such projects.”

- 2.5.3 Relevant local transport policy for new development in Sleaford and North Kesteven is outlined in the Draft North Kesteven District Local Plan. In addition the local policy approach identified with the District Local Plan must also be considered alongside the general policy and strategy as identified in the 2nd Local Transport Plan (2006/7 – 2010/11) for Lincolnshire.
- 2.5.4 The Local Plan seeks to address movement and transport requirements in a manner that is appropriate to the District’s particular characteristics and circumstances. The Plan identifies for example, that North Kesteven is a predominately rural district and that opportunities to promote alternatives to the use of the private car can often be restricted. It also identifies that contributions to deliver transport infrastructure improvements and facilities should only be provided where such contributions would be necessary and that any such provision should be of an appropriate nature and properly related to the impact of the development scheme proposed.

3.0 DESCRIPTION OF THE DEVELOPMENT PROPOSALS

3.1 Proposed Development Scheme & Operating Process

3.1.1 The scheme proposals for the Boston Road site promote the construction of a Renewable Energy Plant to generate electricity via the combustion of biomass material (primarily straw) supplied from within a local catchment. The site is proposed to process of the order of 240,000 tonnes per annum (tpa) of biomass input material and would generate a 40MW operating electricity supply.

Development Scheme Elements

3.1.2 A masterplan of the proposed development scheme is illustrated in Figure 8 to this report. Review of the masterplan layout demonstrates that the proposed scheme would comprise the following elements:

- New main site vehicular access from Boston Road;
- Main boiler house for the combustion of straw / input materials and associated stack of 50-60m;
- Storage barn facilities capable of storing up to 3 days straw input (to allow continuous electricity generation across weekends and during periods when input deliveries might be reduced in number);
- Associated infrastructure including a separate office, external hard-standing for vehicle manoeuvring / parking, a weighbridge, and an electricity sub-station;
- Surface water drainage attenuation lagoon and perimeter landscaping.

Site operation activities

- 3.1.3 All input vehicles to the site would be operated under an appropriate transport logistics contract, with materials transported using large HGV vehicles specifically modified in order to maximise biomass loads. Such an approach ensures high input tonnages per vehicle and would maximise the delivery performance of the site, therefore reducing overall vehicle demand movements to / from the site. The use of contracted vehicles also allows for the close control of vehicle routeing and the ability to deliver suitable local routeing agreements to minimise vehicle impact (see paragraphs 3.1.12 to 3.1.15).
- 3.1.4 Incoming straw loads to the site would be unloaded from input HGV on-site by four grab cranes - with a typical crane unloading capacity of the order of 30 minutes per vehicle. Input straw product would be transferred to the on-site barns where it would be stored until required. The grab cranes will include for weight measuring to record straw input levels and allow monitoring of stored supply levels.
- 3.1.5 As straw bales are required for fuel, the grab cranes would transfer them to a high level conveyor for transfer to the boiler house. The bales would then be shredded prior to being fed onto the combustion grade. The combusted biomass would heat water to drive a steam turbine which would in turn generate electricity. Electricity would be exported to the national grid via an on-site sub-station. A small quantity of lime reagent will be added to the burn process in order to assist in the removal of waste products from the flue gases.
- 3.1.6 Non straw fuel to the Sleaford REP facility (i.e. non treated wood, etc) would be handled in much the same manner as above, but would be required to be 'weighed-in' via an on-site weighbridge and would be unloaded in a separate

specific on-site wood store area. Materials would then be transferred to the boiler house by conveyor

3.1.7 Physical waste arisings from the Sleaford REP facility would effectively be limited to ash from the combustion process and residual lime reagent. Ash products would be quenched (wetted) and sold as an agricultural soil conditioner. Anticipated quantities of derived ash would equate to approximately 5.8% of biomass input by weight. These ash waste arisings can effectively be separated into:

- Bottom Ash - making up approximately three quarters of all ash arisings;
- Fly Ash – making up the remainder of ash waste.

NB - The wetting of the bottom ash will effectively result in a doubling of the export weight of the product. This water for the ash wetting process will be derived via the re-use of collected rainwater on site.

3.1.8 The proposed Sleaford REP facility has a design life of 25 years, following which it would require refurbishment for continued operation.

Proposed Operating Hours

3.1.9 The Sleaford REP site will operate for 50 weeks of the year (allowing for a 2 week shutdown / maintenance period during the summer) requiring an average hourly throughput of the order of 30 tonnes of straw to the facility. The on-site storage barns will allow for the storage of up to 3 days straw supply - allowing for both uninterrupted operation of the boiler over weekend periods (when product input movements will be restricted) and some operational flexibility.

3.1.10 It is proposed that the combustion process at the Sleaford REP facility would operate on a 24 hour basis, 7 days a week basis. Deliveries of biomass material and exports of ash waste, however, would be restricted to 5.5 days a week, viz:

- Monday – Friday 07:00 - 19:00, and;
- Saturdays 08:00 - 14:00.

No deliveries would take place on a Sunday.

Staffing Levels

3.1.11 Due to the high level of automation within the loading / unloading and combustion process, it is not anticipated that operation of the site would require significant staff input. Site operation would be undertaken via a five 12hr shift system, with a small number of other additional 'day staff'. It is anticipated that for a typical working weekday, the site will be manned on the basis of the following staffing levels:

- Day Staff – 10 members of staff;
- Shift Staff (12hr shifts) – 4 staff per shift

HGV Routeing Agreement

3.1.12 In order to support the operation of the Sleaford REP facility and to limit traffic impact on Sleaford Town Centre routes, it is proposed that operational (HGV) traffic movements to / from the site will only be undertaken via the agreed route corridors illustrated in Figure 9a&b to this report. Such a routeing agreement will be rigorously enforced by the site operator who will have direct control over HGV movements to / from the site, due to the fact that all delivery trips will be undertaken either by:

- HGV units directly owned and operated by the site operator, or;
- By contracted material providers whose terms of contract will include routeing agreements.

3.1.13 Figure 9 demonstrates that the proposed routeing agreement will result in all HGV delivery movements only accessing the site from Boston Road to the east, with operational movements utilising the Kirkby La Thorpe interchange to access the A17. All exiting operational traffic to / from the Sleaford REP site will also be required to utilise the west facing exit slip road at the Kirkby La Thorpe interchange. Any exit traffic with a destination to the east will be directed to travel west to the A17 / A153 Sleaford North interchange and perform a safe U-turn manoeuvre at this grade separated junction. As identified in section 4.2 to this report, it is not anticipated that significant levels of operational traffic will be generated which will require access to the A17(E).

3.1.14 No operational delivery movements will take place over the immediate local access routes of Mount Lane, Church Lane & Boston Road (west of site).

3.1.15 The above routeing agreement will be supported by a suitable signing strategy on local links and at key junctions.

3.2 **Site Access**

3.2.1 Vehicular access to the proposal site would be taken from Boston Road via a new industrial standard access junction located to the south eastern corner of the proposal site. The proposed layout of this new access is illustrated in Figure 10 to this statement and is based on a traditional simple T-junction layout. Lateral visibility splays of 2.4m by 215m are available in both directions from the proposed site access point.

3.2.2 A simple T-junction access scheme, is considered entirely appropriate when reviewed against highway design standards outlined in paragraph 2.15 in DETR TD42/95 “Form of Major / Minor Priority Junctions” which states:

“Simple junctions are appropriate for most minor junctions on single carriageway roads, but must not be used for wide single carriageways or dual carriageways. For new rural junctions they shall only be used where the design flow of the minor road is not expected to exceed about 300 vehicles 2-way AADT, and that on the major road is not expected to exceed 13,000 vehicles 2-way AADT.”

As noted in Sections 4 & 5 to this Transport Statement, predicted development site related traffic demand levels are not anticipated to exceed the 300 vehicle per day threshold level for the provision of higher standard (ghost island) access arrangements, even including for ‘absolute worst case’ operating scenarios.

3.2.3 At the request of LCC highways officers, the proposed site access junction layout has been modified 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 has been achieved through the use of suitable geometric design parameters within the layout such as width restrictions on exit lanes and limited entry / exit turning radii. Such a layout strategy accords with the proposed routeing agreement developed to manage operational movements to / from the site (see para’s 3.1.12 – 3.1.15 above) and also assists in reinforcing the existing height / weight restrictions associated with the limited height railway bridge to the west of the site. It is anticipated that the combination of the proposed access design, routeing agreement and bridge height limit will result in no HGV’s associated with the Sleaford REP proposal site entering Sleaford Town Centre via Boston Road.

3.2.4 Swept path assessments demonstrating typical operational and staff trip movements to / from the proposal site at the proposed site access junction are illustrated in Appendix D to this report. The site access provides suitable stacking distance for an additional full size operational vehicle on the approach to the site entry barriers gates and sufficient vehicle storage space is provided on site to accommodate vehicles waiting to be unloaded (including for 'one-off' situations of unloading crane failure, etc).

3.3 **Car Parking**

3.3.1 Sufficient car parking would be made available for staff and visitor parking in dedicated car parking areas. Figure 8 to this report demonstrates that of the order of 20 car parking spaces will be provided with formal car parking areas close to the main control room and welfare facilities. At least one car parking space will be provided at disabled standard.

3.3.2 In addition to the staff and visitor parking areas, a suitable standard coach parking facility will also be provided on site to serve educational visits.

3.4 **On-site Staff Facilities**

3.4.1 Site operator, eco2 is committed to encouraging staff and visitor journeys to the site by alternative travel modes to the private car where practical. As part of this commitment, the scheme design would include:

- A suitable secure area for cycle parking;
- Staff shower and changing area available for staff who walk / cycle to work;
- On site staff catering facilities to encourage staff to stay on-site for the duration of the working day and avoid excess travel.

- 3.4.2 The site operator would also ensure that a 'Travel Plan' Noticeboard is provided on site to promote issues to staff such as healthy living and up-to-date public transport information (including timetables and maps for services available from the nearby bus stops at Boston Road and / or local rail connections at Sleaford station).

4.0 **ANTICIPATED TRIP GENERATION AND DISTRIBUTION FROM THE DEVELOPMENT SITE**

4.1 **Estimated Development Trip Generation**

4.1.1 Anticipated demand estimates for trip movements to / from the proposed Sleaford REP facility have been calculated via a 'first principles' approach, based on main site operating assumptions such as anticipated site processing capacity, site operating / delivery hours and anticipated input / export vehicle tonnages. Base information and operating assumptions have been provided by the site operator and have been developed through operational experience at similar facilities in the UK and Europe.

Operating Demand Assumptions

4.1.2 Calculation of the 'first principles' estimate of vehicle trip movements is outlined in Appendix E to this report and is based on the following methodology:

- Maximum site processing capacity of 240,000tpa of straw / input material;
- Site operational for 50 weeks per year;
- Material delivered / collected over 5.5 days per week;
- Material delivered / collected over a 12 hour day (weekday);
- Ash waste product produced at rate of 5.8% of total input material levels.

4.1.3 Biomass material will be input to the boiler house on a continuous basis over a 24hr period during site operational periods, with a predicted hourly demand capacity of approximately 30 tonnes per hour. In order to achieve maximum site operating capacity, straw will need to be delivered at a relatively constant

rate across the year, with some stocks stored on-site within the storage barns to cover those days when deliveries do not take place.

- 4.1.4 On the basis of a 50 week operational year, it can be anticipated that site operating capacity will be of the order of 4800t per week of input material. Assuming a typical 5.5 day weekly delivery / export window, it can be anticipated that maximum site demand will be of the order of 867 tonnes per full working day of biomass input and 136 tonnes per day ash production (including char and moisture weight).

Vehicle Operating Assumptions

- 4.1.5 The following operating vehicle loading tonnages are anticipated to be achieved when servicing the Sleaford REP facility. These tonnage estimates have been generated via reference to operational experience at other locations and the loading capacity of the proposed contracted vehicle fleet:

- HGV Straw Input: 19 tonnes per vehicle;
- Lime Input: 30 tonnes per vehicle;
- Bottom Ash Export: 23 tonnes per vehicle;
- Fly Ash Export: 16 tonnes per vehicle.

- 4.1.6 All vehicles will operate in one direction only (i.e. either arrive full / leave empty or vice versa). No 'back-loading' will take place at the site.

Staff Traffic Movements

- 4.1.7 It is anticipated that the Sleaford REP facility will be operated according to the staffing levels identified in paragraph 3.1.11. In order to ensure a robust assessment of anticipated vehicular demand relating to the operation of the proposal site, for the purposes of this assessment it has been assumed that

all staff will access the site using of the private car. No account has therefore been taken for any opportunities to encourage sustainable transport practice to reduce private vehicle demand, such as car sharing or walking / cycling opportunities.

Predicted daily traffic demand levels

- 4.1.8 Application of the ‘first principle’ traffic generation assumptions over the proposed core delivery period, suggests the following one-way trip demand levels for a typical operational day:

Input Movements:

Straw: 44 HGV movements per day

Output Movements:

Bottom Ash: 4 HGV movements per day;

Fly Ash: 2 HGV movement per day;

Other:

Staff Vehicles 18 staff movements per day

- 4.1.9 Assuming no back-loading of operational vehicles, day to day operation of the Sleaford REP facility can therefore be anticipated to generate the following total number of daily vehicle movements (in + out):

- HGV operational movements: 100 trips per day;
- Staff (private car) movements: 36 trips per day

- 4.1.10 Overall two-way trip movements to / from the site for a typical operational day are therefore anticipated to be of the order of 136 vehicle movements per day. Such demand levels are significantly lower than the threshold levels for ghost island junction provision as identified in DfT guidance TD42/95 and support the justification for the proposed simple site access T-junction layout (see section 3.2 to this report).

'Worst Case Demand' Sensitivity Test

- 4.1.11 As noted above, typical operation of the site is not anticipated to reach the 300 vehicle per day threshold level for provision of more substantial access arrangements. Indeed, it is considered that vehicle loading / unloading operating constraints at the site are such that there are no circumstances where such a threshold would be exceeded.
- 4.1.12 As noted in section 3.1 to this report, straw delivery vehicle unloading would be undertaken at the site by four grab crane facilities which operate with an approximate 30 minute vehicle unloading capacity. Such operation will therefore restrict theoretical maximum site input HGV demand to 96 vehicles per day (assuming 'worst case' 12 hr operation at 8 vehicles per hour) or 192 operational vehicle movements per day (to / from the site). Such maximum levels are still well below the identified DfT threshold of 300 vehicles per day. In addition, the total 12hr demand levels identified above would be spread evenly across the daytime period (due to the operating constraints associated with crane grab capacity), which would further limit the effects of operational traffic demand.
- 4.1.13 It should be noted, however, that the above identified maximum theoretical vehicle demand is considered highly unlikely to occur in practice - as the Sleaford REP facility is designed to allow for on-site storage of straw input materials to provide up to three days operating supply. Such practice will result in little need for intensive delivery operation. For the purposes of this assessment, the maximum unloading scenario represents a suitable 'absolute worst case' estimate of future development demand conditions.
- 4.1.14 The above maximum traffic demand conditions have therefore been included within this report to act as a 'sensitivity test' to the base typical demand

estimates and to provide further comfort to LCC officers re: future traffic impact of the Sleaford REP scheme.

4.2 **Development Trip Distribution and Assignment**

4.2.1 The distribution and assignment of traffic over the immediate local highway network to the development site has been estimated via reference to both:

- Proposed local routeing agreements for development traffic on Boston Road & A17 corridors – i.e. no HGV trips via Boston Road (W);
- Details of the distribution of the local catchment for commercial straw supply contracts (see Appendix F to this report).

4.2.2 Given the identified catchment of commercial straw supply contracts illustrated in Appendix F, it is anticipated that the majority of straw delivery vehicles would approach the proposed Sleaford REP facility via the A17 from the west of the Kirkby La Thorpe interchange (reflecting also the available major road connections to the remainder of the North Kesteven District from this direction such as A17(W), A15 and A153).

4.2.3 As identified in paragraphs 3.1.12 - 3.1.15 to this report, it is proposed that HGV operational traffic to / from the proposal site will be subject to local routeing arrangements restricting traffic to agreed local route corridors. This routeing agreement will ensure that all operational traffic will approach the site via Boston Road and the A17 and that any exiting traffic to destinations via A17(E) will be required to U-turn at the A315 Sleaford North junction.

4.2.4 In order to ensure a comprehensive appraisal of development traffic demand at the A17 / Boston Road junction, however, two assignment scenarios have been considered (see Figure 11 to this report):

- All approach traffic (including staff vehicles) via A17(W) – Base Scenario;
- 80% of all approach traffic via A17(W), 20% via A17(E) – Sensitivity Scenario.

As identified via reference to a review of the anticipated straw catchment area (see Appendix F to this report), it is anticipated that the majority of the main commercial straw contracts relating to the Sleaford REP site will be generated from origins served by A17(W). The 20% value for traffic from the A17(E) as utilised in the sensitivity distribution, therefore, has been simply been included to provide an absolute ‘worst case’ indication of traffic demand on this eastern section of route.

4.2.5 Daily traffic volumes over the immediate highway network to the proposal site under these assignment scenarios and the two demand scenarios outlined in section 4.1 are illustrated in Figures 12 & 13 to this report.

5.0 **ASSESSMENT OF ANTICIPATED DEVELOPMENT TRAFFIC IMPACT**

5.1 **Introduction**

5.1.1 This section of the report considers the assessment of the operation of the local highway network to the proposed Sleaford REP facility and the ability of this network to accommodate the additional development traffic flow movements predicted in Section 4. Impact assessment has been carried out through the consideration of link / flow assessment for the key distributor road link of the A17, which will effectively accommodate all Sleaford REP operational movements.

5.1.2 Detailed link / flow assessment has not been carried out for the immediate site frontage route of Boston Road, as LHA officers have indicated that this route currently enjoys significant levels of spare operating capacity and will not experience any material reduction in operating conditions as a result of the proposed Sleaford REP development. In addition, as noted in Section 3.2 to this report, the proposed site access junction layout has been demonstrated to provide sufficient capacity to accommodate all site operational traffic demand scenarios.

5.2 **Link Flow Impact Assessment**

5.2.1 Operational assessments have been carried out for the immediate sections of the A17 close to the Kirkby La Thorpe interchange, through reference the background link flow data collected in 2006. This data has been used as a proxy for the assessment of general traffic conditions both to the immediate east and west of the interchange.

5.2.2 Assessment has been undertaken for both development 'opening year' of 2012 (allowing for the planning and construction for the Sleaford REP facility)

and a 5 year future design horizon of 2017. Such an approach reflects recent guidance set out by the Department for Transport re: the assessment of development traffic impact. To ensure the most robust assessment of network operation, it is assumed that the Sleaford REP facility would be operating at full capacity (240,000 tpa straw input) at both year of opening and the future design year.

5.2.3 Future background traffic demand estimates have been calculated via reference to TEMPRO local growth factors (car driver trips – average weekday) for North Kesteven District as illustrated below and summarised in Appendix G to this report:

- Opening Year 2012 (Factor 2006-2012): 1.077
- Opening Year 2017 (Factor 2006-2017): 1.136

5.2.4 1994 Institution of Highways and Transportation ‘Guidelines for Traffic Impact Assessment’ suggested that more detailed analysis of highway impact and / or capacity improvements was only likely to be required for situations when either:

- Traffic to / from the development exceeds 10% of existing two way traffic on the adjoining highway; or,
- Where traffic to / from the development exceeds 5% of the existing two way traffic flow on the adjoining highways at locations where traffic congestion exists within the assessment period or in other sensitive locations.

This position has been recently reviewed and updated in March 2007 DfT document “Guidelines for Transport Assessment” which notes:

“If the TA confirms that a development will have material impact on the highway network, the level of impact at all

critical locations on the network should be established. A particular example of material impact would be a worsening of congestion. In congested areas, the percentage traffic impact that is considered significant or detrimental to the network may be relatively low (possibly below the average daily variation in flow), and should have been determined in discussions with the relevant highway authorities. For the avoidance of doubt, the 1994 guidance regarding the assessment thresholds of 10 per cent and 5 per cent levels of development traffic relative to background traffic is no longer deemed an acceptable mechanism, since it creates an incentive in favour of locating development where high levels of background traffic already exist.”

Notwithstanding these observations, in the case of the local highway network to the Sleaford REP site (which has been demonstrated to be operating with significant spare capacity and with little or no congestion - see para's 2.2.10 – 2.1.12 to this report) it is considered that the traditional 5% and 10% thresholds still represent a reasonable 'guide' as to the level / extent of development traffic impact on immediate local routes.

5.2.5 The table below demonstrates changes in 2012 Opening Year background 12 hour two way link flows on the A17 adjacent to Kirkby La Thorpe Interchange as a result of the Sleaford REP proposal. This table includes summary results for both the typical site operation demand position identified in this report and the sensitivity scenario based on theoretical maximum operation based on grab crane unloading capacity. Details of the calculation of these impact assessments is illustrated in Appendix H to this report.

	A17(W) Kirkby La Thorpe			A17(E) Kirkby La Thorpe		
	Devel trips	B'ground flows	%'tage Increase	Devel. trips	B'ground flows	%'tage Increase
2012 Typical Demand (Base Distribution)	136	17589	0.77%	0	17589	0.0%
2012 Typical Demand (Sensitivity Distribution)	128	17589	0.73%	28	17589	0.16%

2 way flow totals

	A17(W) Kirkby La Thorpe			A17(E) Kirkby La Thorpe		
	Devel trips	B'ground flows	%'tage Increase	Devel. trips	B'ground flows	%'tage Increase
2012 Worst Case Demand (Base Distribution)	228	17589	1.29%	0	17589	0.0%
2012 Worst Case Demand (Sensitivity Distribution)	220	17589	1.25%	46	17589	0.26%

2 way flow totals

5.2.6 The above analysis identifies that typical development traffic movements on Boston Road / A17 are unlikely to be in excess of 8-10 vehicles per hour and that 12 hour link flow impact is anticipated to be less than 1.5%, even including for the 'absolute worst case' sensitivity scenario based on theoretical maximum site operation. Such impact levels are well below traditional IHT guideline thresholds and it is therefore concluded that development of the Sleaford REP facility is unlikely to result in a material change in operating conditions on the main A17 route.

5.3 Review of Traffic Related Environmental Impact

5.3.1 Reference to Institute of Environmental Assessment (IEA) guidelines for the assessment of road traffic, suggests the following general rule of thumb when considering the need for detailed analysis of environmental effects:

“Include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%)”

5.3.2 IEA guidance notes that the most discernable environmental impacts of road traffic are considered to be noise, severance and pedestrian delay & intimidation. In terms of these potential impacts, IEA guidance notes the following:

- In general, people are unable to perceive a change in noise nuisance for changes in noise levels of less than 3dB(A), such changes requires a “doubling or halving in the level of traffic”.
- At low flows, increases in traffic of around 30% can double the delay experienced by pedestrians attempting to cross a road.
- Severance and intimidation are much more sensitive to traffic flow and DoT suggest 30%, 60% and 90% changes in traffic levels should be considered as ‘sight’, ‘moderate’ and ‘substantial’ impacts respectively;
- Other environmental impacts (e.g.: pollution, ecology, etc) are less sensitive to traffic flow changes, and it is recommended that, as a starting point, a 30% change in traffic would represent a reasonable threshold for undertaking a detailed highway link assessment.

5.3.3 As noted in section 5.2 to this report, analysis of the 12hr link flow demand on the closest main road corridor to the proposal site demonstrates that, in general traffic terms, the development of the Sleaford REP facility will not result in a material change in traffic volumes. Even including for ‘worst case’ sensitivity test scenarios, development traffic impact during key site operating periods (12 hour daytime period) is not anticipated to exceed 1.5% of general background traffic. Such levels are substantially below IEA 30% guideline threshold levels.

5.3.4 In order to ensure the most robust appraisal of environmental impact, however, additional tests have been undertaken to review changes in HGV link flows demand. This appraisal has been carried out on the same basis as that for the assessment of general traffic movements – i.e. based on existing classified background traffic movements, as taken from the base 12 hour 2006 surveys. The tables below illustrate the results of the two HGV tests undertaken, these are as follows:

- Review of changes in all OGV1 / OGV2 / PSV traffic demand;
- Review of changes in OG2 / PSV traffic demand (i.e. larger vehicles)

Base data associated with these tests are provided in Appendix H to this report.

OGV1 / OGV2 / PSV Traffic

	A17(W) Kirkby La Thorpe			A17(E) Kirkby La Thorpe		
	Devel trips	B'ground flows	%'tage Increase	Devel. trips	B'ground flows	%'tage Increase
2012 Typical Demand (Base Distribution)	100	3032	3.30%	0	3032	0.0%
2012 Typical Demand (Sensitivity Distribution)	100	3032	3.30%	20	3032	0.66%
2012 Worst Case Demand (Base Distribution)	192	3032	6.33%	0	3032	0.0%
2012 Worst Case Demand (Sensitivity Distribution)	192	3032	6.33%	38	3032	1.25%

2 way flow totals

OGV2 / PSV Traffic Only

	A17(W) Kirkby La Thorpe			A17(E) Kirkby La Thorpe		
	Devel trips	B'ground flows	%'tage Increase	Devel. trips	B'ground flows	%'tage Increase
2012 Typical Demand (Base Distribution)	100	1963	5.09%	0	1963	0.0%
2012 Typical Demand (Sensitivity Distribution)	100	1963	5.09%	20	1963	1.02%
2012 Worst Case Demand (Base Distribution)	192	1963	9.78%	0	1963	0.0%
2012 Worst Case Demand (Sensitivity Distribution)	192	1963	9.78%	38	1963	1.94%

2 way flow totals

5.3.5 The results are summarised in the above tables demonstrate that predicted additional development HGV levels on the key A17 corridor will be substantially less than the minimum IEA 30% guideline threshold. Indeed,

increases in large HGV movements associated with the typical operation of the Sleaford REP facility are anticipated to only reach levels of the order of 5%. Sensitivity assessments assuming for 'absolute worst case' development traffic demand and 100% western approach distribution, notes that even for this extreme theoretical operating scenario, HGV increases will still be less than 10% of background traffic demand on the A17 mainline over a 12 hour period.

- 5.3.6 Given the above review of anticipated link flow impact and reference to IEA guidelines, it can be concluded that the development of the Sleaford REP facility will not result in a material change in operational or environmental capacity conditions over the immediate key local highway network. It is therefore concluded that there is no requirement for supporting highway improvement works over and above those works to deliver the site new access junction off Boston Road.

6.0 **SUMMARY & CONCLUSIONS**

6.1 This Transport Statement has considered the highways and traffic issues associated with the development of a new Renewable Energy Plant at Boston Road, Sleaford. The proposal would involve the development of an electricity generating facility with an installed capacity of 40MW. Electricity will be generated via a steam turbine which would be driven through the combustion of biomass material (primarily straw) supplied via contracts from farms within a local catchment. The site is proposed to operate with an operating capacity of 240,000 tonnes per annum (tpa) of delivered biomass material, with the energy generating process resulting in approximately 25,000 tpa (by weight) of ash waste material.

Existing Network Conditions

6.2 The proposal site is currently utilised for agricultural land use, with existing vehicular access limited to field access points from the southern boundary route of Boston Road. No formal hard surfaced access is currently available. Boston Road provides local distributor road standard access to the town of Sleaford to the west and connections to the A17 at the Kirkby La Thorpe interchange to the east. The section of route to the frontage of the proposal site is currently the subject of a general weight restriction relating to larger goods vehicles over 7.5t (except for access to frontage fields / properties). This weight restriction is associated with the low railway bridge located to the west, the operational impact of which is to effectively limit movements to / from Sleaford town centre on this route to cars, light vans, pedal cycles and motorcycles.

6.3 To the east of the proposal site Boston Road connects to the A17 Sleaford Bypass at a local grade separated all movements junction at the village of Kirkby La Thorpe. The A17 is of dual carriageway nature at this location,

although the route narrows to a single carriageway layout approximately 400m to the east of the main slip road connections to Boston Road. The Boston Road connections to the A17 mainline route are of a limited layout standard, with the merge / diverge provision currently being of a simple give way arrangement, with no acceleration lane. This level of provision reflects the existing low level of demand for side road traffic.

6.4 Review of 2006 traffic flow data for the A17 route demonstrates a generally low level of hourly demand, with typical daytime flow being less than 1400 vehicles per hour during main daytime hours (two way). Maximum directional demand on the A17 has been noted to be less than 900 vehicles per hour in either direction, with typical weekday daytime demand being 550-750 vehicles per hour. Such flows are well within the 1600 vehicles per lane broad capacity criteria identified for a single running lane on a dual carriageway grade separated route as set out in DfT standards and suggests significant spare background operating capacity at this location.

6.5 An audit of recorded Personal Injury Accident data for the local network to the Sleaford REP has been carried out. This review identified that just five accidents have been recorded within the vicinity of the Kirkby La Thorpe interchange, only two of which were related to access routes which will be utilised by regular Sleaford REP operational traffic demand. In addition, six further incidents were recorded on the section of Boston Road between the proposal site frontage and the A17 junction. The majority of these Boston Rd incidents were not 'vehicle to vehicle' accidents and appear to relate to loss of control factors or driver error. Overall it is considered that the review of accident trends does not identify any existing major road safety concerns across the study area. Accident rates at or near the Kirkby la Thorpe junction are low and there is no evidence to suggest that the existing junction layout suffers from any inherent safety issues for traffic movements entering or leaving the A17.

Development Scheme

- 6.6 The scheme proposals envisage the construction of a Biomass REP to generate electricity via the combustion of biomass material (primarily straw) supplied from within a local catchment. The site is proposed to process of the order of 240,000 tonnes per annum (tpa) and would generate a 40MW supply. Physical waste arisings from the Sleaford REP facility would effectively be limited to ash from the burn process which would be quenched (wetted) and sold as an agricultural soil conditioner. Anticipated quantities of derived ash waste would equate to approximately 5.8% of biomass input by weight.
- 6.7 Vehicular access to the proposal site would be taken from Boston Road via a new industrial standard access junction located to the south eastern corner of the proposal site. At the request of LCC highways officers, the proposed site access junction layout has been modified to discourage large goods vehicle movements associated with the Sleaford REP facility from utilising Boston Road to the west of the site.
- 6.8 All input vehicles to the site would be operated under an appropriate transport logistics contract working to routing agreements, with materials transported using large HGV vehicles specifically modified in order to maximise straw loads. Such an approach ensures high input tonnages per vehicle and would maximise the delivery performance of the site, therefore reducing overall vehicle demand movements to / from the site. Incoming straw loads to the site would be unloaded on-site by two grab cranes – which operate with a typical crane unloading time of the order of 30 minutes per vehicle.

Site Operating Parameters

- 6.9 The site will operate for 50 weeks of the year (allowing for a 2 week shutdown / maintenance period during the summer) requiring an hourly throughput of the order of 30 tonnes per hour of straw to the Sleaford REP facility. The on-site storage barns will cater for the storage of up to 3 days straw input - allowing for both uninterrupted operation of the boiler over weekend periods (when product input movements will be restricted) and some site operational flexibility.
- 6.10 It is proposed that the combustion process at the Sleaford REP facility would operate on a 24 hour basis, 7 days a week basis. Deliveries of straw / exports of ash waste, however, would be restricted to Monday – Friday, over a 12 hour delivery window (07:00-19:00) and a six hour delivery period on a Saturday (08:00-14:00). No deliveries will take place on a Sunday.
- 6.11 Operational HGV movements to / from the site will be subject to a routing agreement, restricting traffic to agreed route corridors. All HGV delivery movements will access the site from Boston Road to the east, with operational movements utilising the Kirkby La Thorpe interchange to access the A17. Exit movements to the A17(E) will be required to utilise the A17 west facing entry slip road only and undertake a safe U-turn at the grade separated A17 / A153 'Sleaford North' Interchange.

Anticipated Development Trip Demand

- 6.12 Anticipated demand estimates for trip movements to / from the proposed Sleaford REP facility have been calculated via a 'first principles' approach, based on main site operating assumptions such as anticipated site processing capacity, site operating / delivery hours and anticipated input / export vehicle tonnages.

6.13 On the basis of a 50 week operational year, it can be anticipated that site operating capacity will be of the order of 4800t per week of input material. Assuming a typical 5.5 day weekly delivery / export window, it can be anticipated that maximum site input demand will be of the order of 867 tonnes per full working day of straw input and 92 tonnes per day ash waste production for export (inc char and moisture content).

6.14 Assuming no back-loading of operational vehicles, day to day operation of the Sleaford REP facility can therefore be anticipated to generate the following total number of daily vehicle movements (in + out):

- HGV operational movements: 100 trips per day;
- Staff (private car) movements: 36 trips per day

6.15 In order to provide comfort to LCC officers re: traffic impact levels for the Sleaford REP scheme, a sensitivity test has been carried out assuming for 'absolute worst case' theoretical maximum operating levels. This sensitivity assessment has been based on the vehicle unloading capacity of the four grab crane facilities (30 minutes per vehicle). Such operation would result in a theoretical maximum site input HGV demand of 96 vehicles per day (assuming 12hr operation at 8 vehicles per hour) or 192 movements (in + out). Such operating levels are considered highly unlikely to occur in practice, as the Sleaford REP facility is designed to allow for on-site storage of straw input materials to provide up to four days operating supply – resulting in little need for such intensive delivery operation.

Development Traffic Distribution & Assignment

6.16 The distribution and assignment of traffic over the immediate local highway network to the development site has been predicted via reference to both proposed local routeing agreements for Boston Road & A17 and details of the

catchment of commercial straw supply contracts. Given the identified distribution of commercial straw supply contract catchment, it is anticipated that the majority of straw delivery vehicles would approach the proposed Sleaford REP facility via the A17 from the west of the Kirkby La Thorpe interchange. In order to ensure a wide ranging appraisal of development traffic demand at the A17 / Boston Road junction, however, two assignment scenarios have been considered:

- All approach traffic (including staff vehicles) via A17(W) – Base Scenario;
- 80% of approach traffic via A17(W), 20% via A17(E) – Sensitivity Scenario.

Assessment of development traffic operational and environmental impact

- 6.17 The assessment of development traffic impact has been carried out through a link / flow appraisal for the key local network link of the A17. Detailed link assessment calculations have not been undertaken for the immediate site frontage route of Boston Road, as it has been accepted by the LHA that this route currently provides significant levels of spare operating capacity and will not experience any material reduction in operating conditions as a result of proposed Sleaford REP development.
- 6.18 Operational assessments have been concentrated on the immediate sections of the A17 close to Kirkby La Thorpe interchange, through reference to the background link flow data collected in 2006. This data has been used as a proxy for the assessment of general traffic conditions both to the immediate east and west of the interchange.
- 6.19 Appraisal of the predicted changes in 2012 Opening Year flows on the A17 associated with the Sleaford REP scheme, demonstrates that development

traffic demand is unlikely to exceed 8-10 vehicles per hour (two way) and 12 hour link flow impact is anticipated to be less than 1.5% of background traffic levels - even including for the assessment of the 'absolute worst case' sensitivity scenario. Such impact is well below traditional IHT guideline thresholds of 5% / 10% and is considered unlikely to represent a material change in operating conditions.

6.20 In order to ensure the most robust appraisal of environmental impact, additional tests have been undertaken to review changes in HGV link flow demand on the A17 following development of the Sleaford REP facility. Review of predicted additional development HGV levels on the key A17 corridor demonstrates that impact will be substantially less than minimum IEA 30% guideline thresholds for material environmental impact. Indeed, typical HGV increases are anticipated to only reach levels of the order of 5% of 2012 background demand. Sensitivity assessments assuming for 'absolute worst case' development traffic demand demonstrate that even for this extreme theoretical operating scenario, HGV increases will still only be less than 10% of background HGV traffic demand.

6.21 Given the above review of anticipated future operational highway conditions and reference to appropriate guideline standards, it can be concluded that the development of the Sleaford REP facility will not result in a material change in operational or environmental capacity conditions over the local highway network. Development 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.