

6.0 TRANSPORTATION

6.1 Introduction

6.1.1 The formal Transport Statement considers the highways and traffic issues associated with the development of a new Renewable Energy Plant near Brigg, North Lincolnshire. The proposal involves the development of an electricity generating facility with an installed capacity of 40MW. Electricity would 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 designated local catchment. The site's proposed operating capacity is 240,000 tonnes per annum (tpa) of delivered biomass material, with the process resulting in approximately 25,000 tpa (by weight including moisture) of ash material.

6.2 Site location and existing available highway connections

6.2.1 The Brigg REP proposal site comprises circa 5.26 hectares of previously developed land, formerly occupied by British Sugar's Brigg works. The Brigg REP site lies within a defined development area boundary within the North Lincolnshire Local Plan. This land is identified as being suitable for industrial / commercial development of a B1 / B2 / B8 nature. Development policy at the site is effectively set out in Local Plan policies IN1 and IN8.

6.2.2 The proposal site lies approximately 800 metres east of the B1206 Scawby Road (from which the site is accessed) and 500 metres west of the River Ancholme. To the immediate south of the site is Glanford Brigg gas fired power station. This facility is currently operational, providing 'on demand' electricity to the National Grid. The Glanford Brigg Power Station shares the main access road to the Brigg REP proposal site from the B1206, however, existing levels of vehicle movements to / from the existing Power Station facility are limited.

6.2.3 The existing site access road connects to B1206 Scawby Road at an off-set cross-roads layout, the other side road access arm to the junction being Brigg Road, which provides local access to the village of Scawby. This cross-roads

junction is of a ghost island layout design to allow for the storage of right turn vehicles 'off-line' from main through movements on the B1206, thereby assisting in managing both highway capacity and safety. The site access road connection and the Scawby Road connection are off-set by approximately 100m (measured centre to centre).

- 6.2.4 At the connection to B1206 Scawby Road, the existing site access route is of the order of 6.5 – 7.0m in width and is bounded on its immediate northern side by buildings and land associated with an animal kennels business. The existing junction connection provides left turn entry / exit radii of the order of 8.5m. Existing lateral visibility in the critical leading direction is considered to be entirely suitable for observed approach traffic speeds on the B1206 Scawby Road. Available sightlines of 150m in this direction exceed maximum visibility requirements, even including for snow covered road conditions. Existing visibility provision in the non-leading direction is considered suitable for 50-60 mph operation based on typical road surface conditions when measured to the outside of the main approach road. The current good visibility provision at the junction is considered to be reflected by the excellent highway safety record, which has seen no accident incidents at the site access over the past 5 year period.
- 6.2.5 The B1206 Scawby Road acts as the main local distributor route for the Scawby Brook area and would accommodate all traffic movements to / from the Brigg REP proposal site. B1026 Scawby Road to the north serves the immediate local settlement of Scawby Brook and onward connections to the town of Brigg and the A18 / M180. Connections to the south and west are not considered to provide practical opportunities for regular HGV movements to / from the site, particularly the local route corridor through the village of Scawby via Brigg Road.
- 6.2.6 The B1026 to the north of the site terminates at a mini-roundabout junction with the A18. This junction has been designed to incorporate larger HGV service vehicles and includes for significant hatching / narrowing of approach lanes to the junction to promote safe operation. To the east of this junction the A18 provides local connections to Brigg town centre. To the north / west the A18 route provides district distributor road connections to the A15 main roundabout connection some 3.3km to the west. The A15 provides immediate

connections to M180 junction 4 and onward southern links to Lincoln and surrounding settlements. The A18 continues westwards to provide connections to the town of Scunthorpe.

6.3 Existing local highway conditions

- 6.3.1 Review of 2006 traffic flow data for the B1206 route through the village of Scawby Brook demonstrates a generally low level of hourly traffic demand, being of the order of just 350-500 vehicles per hour (2-way). Traffic demand is noted to rise during the traditional weekday AM & PM peak periods, with maximum two-way demand recorded for the hour 16:00 - 17:00, when 607 vehicle movements were recorded.
- 6.3.2 Traffic movements on the immediate local network to the proposal site have been noted to be generally free flowing, even during the traditional AM & PM peak periods. Some localised queuing has, however, been observed during peak background demand periods on approaches to the B1206 / A18 mini roundabout at Scawby Brook. On-site observations of local link operation and the generally free flow nature of the immediate network to the site are supported by a review of formal link capacity assessment via reference to DfT guidance. This analysis demonstrates that the highest recorded hourly vehicle directional demand flow on B1206 Scawby Road during the July 2006 surveys was of the order of only 30% of relevant link capacity thresholds.
- 6.3.3 An audit of recorded Personal Injury Accident data for the local network to the Brigg REP proposal site was undertaken. This review noted that no recorded accidents took place at the proposed site access connection. Indeed only 8 accidents were recorded over the full survey area, with none involving operational HGV movements. Three accidents were recorded at the B1206 / A18 mini-roundabout junction, however, two of these incidents took place on the A18 Brigg Town approach, which would be unaffected by proposed development traffic movements. It is considered that that there are no existing highway safety issues which would call the Brigg REP proposal scheme into question.

6.4 Development Scheme

- 6.4.1 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 would process of the order of 240,000 tonnes per annum (tpa) of primarily straw and would have an electrical generating capacity of 40MW. Physical waste arisings from the Brigg 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 10.6% of biomass input by weight after wetting.
- 6.4.2 Vehicular access to the proposal site would be taken from Scawby Road via the existing private access road to the former British Sugar facility (now shared with Glanford Brigg Power Station). This access is part of a staggered ghost island cross-roads layout and provides considerable spare operating capacity to cater for development traffic movements.
- 6.4.3 Input vehicles to the site would be operated under an appropriate transport logistics contract working to routeing agreements, with materials transported using large HGV vehicles specifically modified in order to maximise each straw load. 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 four grab cranes – which operate with a typical crane unloading time of the order of 30 minutes per vehicle.

6.5 Site Operating Parameters

- 6.5.1 The site will operate for 50 weeks of the year (94% - 95% availability during this period) with a 2 week shutdown / maintenance period during the summer. The plant requires an hourly throughput of the order of 30 tonnes per hour of straw, with a further 0.2tph of lime reagent. 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.

- 6.5.2 It is proposed that the combustion process at the Brigg 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 Sundays or on public holidays.
- 6.5.3 Operational HGV movements to / from the site will be subject to a routeing agreement, restricting traffic to agreed route corridors. This route corridor approach would restrict traffic to roads suitable to accommodate regular HGV movements and would avoid operational traffic impact on the villages of Scawby and Brigg town centre.
- 6.5.4 It is anticipated that virtually all REP operational straw delivery traffic would access the site via the key strategic routes of M180 / A15, with the only exceptions being those limited trips from any straw that originates from within the immediate locality. HGV delivery movements would therefore access the site from Scawby Road to the north, with operational movements utilising the B1206 / A18 corridor to access the A15 / M180 junction.
- 6.5.5 A routeing agreement would be rigorously enforced by the site operator who would have direct control over nearly all HGV movements to / from the site. Delivery trips would be managed via the use of:
- HGV units directly owned and operated by the site operator, or;
 - Contracted material providers whose terms of contract would include routeing agreements;
 - Disciplinary procedures for HGV drivers that deliver to / from the site
 - A suitable signing strategy on local links and at key junctions.
- 6.5.6 All vehicles used to deliver straw would be obliged to carry route tracking equipment that would be used to demonstrate compliance with the routeing agreement.

6.6 Anticipated Development Trip Demand

- 6.6.1 Anticipated demand estimates for trip movements to / from the proposed Brigg 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.

- 6.6.2 On the basis of a 50 week operational year, it can be anticipated that site average weekly operating capacity will be of the order of 4800t of input material (based on 94% - 95% availability during operational weeks). 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).
- 6.6.3 Assuming no back-loading of operational vehicles, day to day operation of the Brigg 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
- 6.6.4 In order to provide comfort to North Lincolnshire Council & Highways Agency officers regarding traffic impact levels for the Brigg REP scheme, a sensitivity test has been carried out assuming for 'absolute worst case' theoretical maximum site input capacity. 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 204 movements (in + out) including ash export. Such operating levels are considered highly unlikely to occur in practice, as the operation of the Brigg REP facility is ultimately limited by its capacity to burn fuel, not unload it. To illustrate, assuming the worst possible case where the barns begin empty and lorries come in at the maximum rate possible, the barns would be full after less than 18 hours of such intensive activity. Moreover, thereafter deliveries would have to slow to less than two deliveries per hour until such a time as space became available again for storage.

6.7 Development Traffic Distribution & Assignment

- 6.7.1 The distribution and assignment of traffic over the immediate local highway network to the development site has been predicted via reference to the proposed local routing agreements for the B1206 Scawby Road and the A18. It is anticipated that virtually all Brigg REP operational movements will utilise this proposed route corridor.

6.8 Assessment of development traffic operational impact

- 6.8.1 The assessment of development traffic impact has been carried out through the consideration of a link / flow assessment for the proposed operational route corridor and key junction capacity assessments.

Link Flow Impact

- 6.8.2 Analysis of link flow impact on the main B1206 and A18 local route corridors identifies that typical day-to-day development traffic movements would not exceed 8 HGV movements per hour during off peak periods and a maximum of 18 vehicle movements (in + out) during the traditional rush hour periods (including for both operational HGV movements and staff car traffic).
- 6.8.3 When considered over the 12hr core weekday delivery period, link flow impact on the immediate B1206 corridor is anticipated to be less than 4.5% (despite the generally low level of base flow) - even including for the 'absolute worst case' development scenario based on theoretical maximum site operation. Link flow impact on the busier A18 corridor between M180 junction 4 and Brigg Town is anticipated to be very low, being of the order of 1-2% of background flow demand for both the typical day-to-day and absolute worst case demand scenarios. Impact levels on both route corridors are therefore well below traditional IHT guideline thresholds and demonstrate a very low level of impact. It is therefore concluded that development of the Brigg REP facility is unlikely to result in a material change in operating conditions over the local highway network.
- 6.8.4 Review of the immediate sections of the trunk road network identifies that even assuming for the full assignment of 'absolute worst case' development

traffic demand movements to each of the M180 approach links, link flow impact would still be negligible. Maximum percentage change identified would be less than 1% of existing baseline demand on key motorway sections. Given these results and the worst case methodology on which they have been derived, it is considered that the Brigg REP proposals will not result in a material impact on trunk road operating conditions. No supporting trunk road improvement works would therefore be required to accommodate these strictly minimal percentage traffic increases.

Junction Capacity Assessment

6.8.5 Notwithstanding the results of the link / flow assessment of anticipated network impact, which demonstrates that local access routes are not anticipated to experience traffic flow increases above 4.5% of background traffic demand, detailed junction operational capacity assessments have been undertaken at the request of the LHA. Junction capacity modelling work has been undertaken at three main locations on the immediate local highway network:

- B1206 Scawby Road / Site Access Junction / Brigg Road: PICADY
- B1206 Scawby Road / A18 mini roundabout: ARCADY
- B1208 / A18 ghost island junction: PICADY

6.8.6 Review of the PICADY modelling for the site access road junction and the A18 / B1208 junction demonstrates that both layouts would operate with substantial levels of spare capacity at the 2022 future design year for both day-to-day and 'absolute worst case' development traffic estimates. All key turning movement RFC's (Reference Flow to Capacity) would be at well below critical 0.85 values and with negligible queuing or delay impact on through movements. There is sufficient spare capacity demonstrated within these assessment results to suggest that both junctions could accommodate further increases in background traffic movements on the main road links without any material impact in operation.

6.8.7 ARCADY assessments were carried out for the current mini-roundabout layout of A18 / B1206 at Scawby Brook. These assessments were undertaken based on the existing white line arrangements, which results in restricted junction

entry widths and thus slightly reduced capacity operation. Baseline models were created that evaluated the performance of the current highway situation before the addition of traffic associated with the proposed Brigg REP development. 2022 future design year baseline model runs illustrate that during the traditional AM & PM peak periods, the current mini-roundabout layout would suffer from substantial over-capacity with RFC's of in excess of 1.0 experienced on the A18 (M180) and B1206 junction arms, with significant predicted queuing levels. Improved results are predicted for the lunchtime 'off-peak' period, however, over-capacity conditions are still in evidence on the A18 (M180) approach for 2022 baseline flows at this time.

- 6.8.8 Having established the baseline performance of the A18/B1206 junction, the changes that would result from the additional traffic created by the proposals has been evaluated. The modelling of the addition of Brigg REP development traffic to such baseline conditions demonstrates only marginal changes in predicted future junction operation at future year 2022. Such results reflect the conclusions of the link / flow impact assessment, which identified that typical day-to-day operational demand associated with the Brigg REP scheme would only result in a 1-2% increase in traffic movements on the key junction approach arms. It is not considered that such changes represent a material impact that would require the delivery of comprehensive highway capacity improvements at this junction in order to accommodate development traffic - particularly as any operational problems have been demonstrated to be directly associated with baseline traffic demand levels and would occur in the 'do nothing' scenario.

Traffic Related Environmental Impact

- 6.8.9 Reference to Institute of Environmental Assessment (IEA) guidelines for the assessment of road traffic, suggests the inclusion of highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%) as a 'general rule of thumb' when assessing the need for detailed analysis of environmental effects.
- 6.8.10 Analysis of the 12hr link flow demand on the closest route corridors to the Brigg REP proposal site demonstrates that, in general traffic terms, the development of the REP facility would 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 4.5% of general background traffic levels on the lightly trafficked B1206 corridor and less than 2.5% on the busier A18 corridor between Brigg and the M180. Such levels are substantially below IEA 30% guideline threshold levels.

6.8.11 In order to ensure the most robust appraisal of environmental impact, however, additional tests have been undertaken to review changes in HGV link flow demand. These results demonstrate that predicted additional development HGV levels on the main A18 corridor would generally be less than the minimum IEA 30% guideline threshold. Review of the results for the B1206 Scawby Road corridor in Scawby Brook, however, identifies that the development of the Brigg REP scheme would result in an increase in HGV movements which exceeds the 30% threshold requiring further examination of environmental issues.

6.8.12 Additional assessment of the key traffic related environmental issues of noise / vibration and air quality is considered in detail in Chapters 11 and 12 of the formal Environmental Statement respectively. The conclusions of these detailed assessments are as follows:

- The dwelling positions off the B1206 would be the most sensitive receptors to any direct traffic flow noise increases along the B1206 and the A18 roads. The highest likely impact (for 'typical' peak hour traffic movements) with and without the proposed development shows a small increase of noise level of +0.1dB(A) to +1.4dB(A) on the most sensitive properties. Even if the highest possible development traffic flows are considered (i.e. the worst case 'sensitivity' scenario), the results of the noise prediction calculations show that the maximum increase in noise level associated with road traffic movements would only be +1.7dB(A). This increase is not deemed to be significant according to Government guidelines which note that only those properties experiencing changes greater than 3dB(A) should be considered further.
- The general movement of HGV's on relatively smooth access roads (even at close distance) does not typically give rise to excessive ground

borne vibration. No material vibration effects are predicted as a consequence of the Brigg REP scheme.

- Development traffic demand is very small in the context of local traffic flow. Predicted development traffic emissions are not therefore predicted to lead to any breaches of air quality standard thresholds.
- No material impact associated with dust is predicted.

6.9 Construction Traffic

6.9.1 Traffic associated with the construction of the Brigg REP project is proposed to be managed via the implementation of a Construction Traffic Management Plan, agreed following consultation with local planning and highway authority officers and the Highways Agency. This would cover a range of issues such as the operational hours of construction, the anticipated levels of staffing and parking provision and the management of construction materials delivery vehicles.

6.9.2 Peak construction traffic demand is anticipated to take place from 2010 through to the final year of completion. Due to the nature of the proposed buildings to be constructed on site (mainly steel framed traditional large industrial units), the limited requirement for construction of heavy masonry / concrete construction and the fact that the site is already predominately cleared and ready for development (thus limiting demolition traffic) it is not anticipated that the construction of the site would generate substantial levels of HGV traffic over the local highway network. Certainly it is not anticipated that construction traffic demand would regularly exceed those predicted traffic movements associated with the typical day to day operation of the REP site.

6.10 Conclusions

6.10.1 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 Brigg 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 significant development related off-site highway improvement works to support the scheme.