6 Transport

Introduction and Methodology

6.1 This chapter of the ES assesses the likely significant effects of the project in terms of Traffic and Transportation and is accompanied by a Transport Assessment (TA) dealing with a number of access, transport and highways issues relating to the proposed development.

6.2 The chapter describes the assessment methodology; the baseline conditions currently existing at the application site and surroundings; and the likely significant environmental effects, taking into account measures proposed to avoid, reduce or offset adverse effects.

Assessment Methodology

Relevant Guidance

6.3 As a matter of best practice, this assessment has been undertaken based on relevant guidance on traffic and transportation assessment. This includes:

- Guidance Notes No. 1. Guidelines for the Environmental Assessment of Road Traffic. The Institute of Environmental Assessment, March 1993 (IEA, March 1993)
- The Design Manual for Roads and Bridges. Volume 11 – Environmental Assessment. Department of Transport et.al. June 1993 (and updates) (DoT, June 1993)

Consultations

6.4 The scope of the Transport Assessment has been discussed with Cheshire West and Chester Highway Authority. The discussions included the extent of the network to be assessed and agreement on consented developments to be taken into account in assessing effects in future years. Comments on transport matters have also been received in the Department for Energy and Climate Change's scoping response (see Appendix 5.1).

Methodology

6.5 This assessment has taken account of the Guidelines for the Environmental Assessment of Road Traffic (Guidance Note No. 1) prepared by The Institute of Environmental Assessment (IEA) (now The Institute of Environmental Management & Assessment). The IEMA guidelines recommend two rules to be considered when assessing the impact of development traffic on a highway link:

"Rule 1: 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%);

Rule 2: include any other specifically sensitive areas where traffic flows have increased by 10% or more."

6.6 The above guidance is based upon knowledge and experience of the environmental effects of traffic and also acknowledges that traffic forecasting is not an exact science. The 30% threshold is based upon research and experience of the environmental effects of traffic, with less than a 30% increase generally resulting in imperceptible changes in the environmental effects of traffic. The guidance considers that projected changes in traffic flow of less than 10% create no discernible environmental effect, hence the second threshold for sensitive areas as set out in Rule 2.

6.7 In cases where the thresholds are exceeded, Column 3 in Table 2.1 of the IEMA guidelines set out a list of environmental effects which should be assessed for their significance.

6.8 Definitions of each of the potential effects identified in the IEMA guidelines are summarised below along with explanatory text relating to assessment criteria. It is on this basis that the assessment in this Chapter has been undertaken. It is acknowledged at paragraph 2.4 of the IEMA guidelines that not all the effects listed in Column 3 of Table 2.1 would be applicable to every development. A detailed site inspection of the surrounding road network incorporating the current geometric layout of the highway, traffic management and regulation orders and general observations of existing road user movements has been undertaken to assist with the assessments.

Noise and Vibration

6.9 The environmental implications of noise and vibration arising from changes in traffic flow have been separately assessed at Chapter 12.

Visual Effects

6.10 The visual effect of traffic is complex and subjective and includes both visual obstruction and visual intrusion. The IEMA guidelines acknowledge that in the majority of situations the changes in traffic resulting from a development will have little effect. Where relevant, the visual effects of traffic are considered within this chapter. The visual effects of the scheme as a whole are considered in Chapter 8.

Severance

6.11 Severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery. The term is used to describe a complex series of factors that separate people from places and other people. Severance can also result from difficulty in crossing a heavily trafficked road (IEA, March 1993).

6.12 The guidance indicates that severance effects are considered 'slight' in cases that include:

- Pedestrian at-grade crossings on new roads carrying below 8,000 vehicles per day (AADT) (DoT, June 1993); or
- Changes of traffic flow of less than 30% (IEA, March 1993).

6.13 Where relevant, effects on severance are considered within this chapter.

Driver Delay

6.14 Where highways affected by new development are at or near capacity, the traffic associated with new development can cause or add to vehicle delays. Other sources of delay for non-development traffic can include:

- At the site entrance where there will be additional turning movements;
- On the highways passing the site where there is likely to be additional traffic and the flow might be affected by additional parked cars;
- At other key intersections along the highway which might be affected by increased traffic; and
- At junctions where the ability to find gaps in the traffic may be reduced, thereby lengthening delays.

6.15 Where relevant, the effects on driver delay are considered within this chapter.

Pedestrian Delay

6.16 Highly trafficked roads and changes to the volume or speed of traffic may affect the ability of people to cross roads. Research has shown a two-way vehicle flow of 1400 vehicles per day (AADT) equates to a 10 second delay in pedestrians crossing a road with no crossing facilities (IEA, March 1993).

6.17 Where relevant, the effects on pedestrian delay are considered within this chapter.

Pedestrian Amenity

6.18 This term is defined as the relative 'pleasantness' of journeys and can be affected by traffic flow, composition, noise and air pollution and includes pedestrian fear and intimidation. The guidance suggests a threshold for significance where traffic flow, or its lorry component, is halved or doubled (IEA, March 1993).

6.19 Pedestrian amenity also covers what is referred to as fear and intimidation within the IEA guidelines. There are no commonly agreed thresholds for estimating levels of fear and intimidation but this impact is considered dependent on the volume of traffic, its HGV component, its proximity to people, or the lack of protection or segregation from traffic influenced by factors such as footway width.

6.20 Where relevant, the effects on pedestrian amenity are considered within this chapter.

Accidents and Safety

6.21 It is possible to estimate the effects of increased traffic on accidents and safety from existing accident records, national statistics, the type and quantity of traffic generated, journey lengths and the characteristics of the routes in question.

6.22 Where relevant, the effects on accidents and safety are considered within this chapter.

Hazardous Loads

6.23 Some developments may involve transporting hazardous loads by road such as special wastes, toxic materials and chemicals. Where appropriate, the risks associated with accidents on such movements are identified or quantified.

6.24 Where relevant, the effects of hazardous loads are considered within this chapter.

Dust and Dirt

6.25 Certain types of development, notably quarrying and the transport of quarried materials, can give rise to deposition of dust and dirt on surrounding roads. The overall impact of this phenomenon normally depends to a large extent on the management practices adopted at the site in question, such as vehicle sheeting and wheel washing. Problems with dust and dirt are unlikely to occur at distances greater than 50m from the road (IEA, March 1993).

6.26 Where relevant, the effects relating to dust and dirt are considered within this chapter. Other environmental effects in relation to air quality and dust are considered in Chapter 7 of the ES.

Assessment of Significance

6.27 The approach to the assessment of significance of effects is summarised in Table 6.1 below, adapted from DMRB HA 205/08. This takes into account the duration, magnitude, direction and location of each effect as well as the sensitivity of the receptor.

Table 6.1: Assessment of Significance

Significance	Definition
Negligible	Very minor loss or detrimental alteration to one or more characteristics, features or elements (Adverse). Very minor benefit to or positive addition of one or more characteristics, features or elements (Beneficial).
Minor	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements (Adverse). Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring (Beneficial).

Significance	Definition
Moderate	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements (Adverse). Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality (Beneficial).
Major	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements (Adverse). Large scale or major improvement of resource quality; extensive restoration or enhancement; major improvement of attribute quality (Beneficial).

6.28 In exceptional circumstances, a further category of 'substantial' may be used.

Construction Assessment

6.29 It is anticipated that the number of HGV movements per day during construction would be significantly lower than the number of HGV movements during the operational phase of development. In accordance with standard construction practice light vehicle movements associated with construction would be largely outside of the peak hours and thus would not lead to any increased queues or delays during these periods.

6.30 It is considered that the construction phase would have a lower effect on the local highway network than the operational phase of the project and therefore the effects of construction have not been assessed within this report.

Decommissioning

6.31 It is expected that future decommissioning of the project would generate levels of vehicle movements on the surrounding highway network that would not exceed those during construction. It is considered that the decommissioning phase would have a lower effect on the local highway network than the operational phase of the project and therefore the effects of decommissioning have not been assessed within this report.

Operational Assessment

6.32 The transport movements generated by the operation of the proposed development have been derived from the proposed staff numbers and shift patterns and the need to transport raw materials and by-products to and from the site.

Cumulative Effects

6.33 A review of proposed or possible future third party projects that may have a cumulative effect with the project has been undertaken and used to inform this ES.

6.34 Details of consented developments within the vicinity of the site were obtained in order to establish a baseline position against which to assess the development proposals. Planning and transport officers at Cheshire West and Chester Council (CWCC) were contacted with regards to consented developments within the area that should be considered. The list of developments set out at Appendix 5.2 was reviewed to identify those that would be relevant to the transport assessment. In addition to the developments identified in Appendix 5.2, transport officers recommended the inclusion of the existing development Gadbrook Park Business Park as a consented development for inclusion within the assessments. Full details of the traffic flows and assumptions for all committed developments are contained within Appendix 6.1. The developments considered as committed developments for the purposes of the transport assessment are described below. This would represent a worst case assessment as not all of these developments are currently consented.

Lostock Triangle Business Park

6.35 Lostock Triangle (APP/2001/0223) is a Business Park located to the east of Lostock Gralam and to the south of the A559 Manchester Road. The application received planning permission in June 2006. The proposals consisted of 45,461 m² B1 office use, 995 m² Retail Units, 974 m² Pub Use, 120 bed hotel and 80 bed hotel (Taken from the Design and Access Statement – Commercial Development Projects Ltd – App No: APP/2001/0553). The estimated traffic flows and distribution generated by the Lostock Triangle Business Park have been taken from the Wincham Waste Treatment Plant Transport Assessment (09/02430/WAS).

Gadbrook Park Business Park

6.36 Gadbrook Park is an existing Business Park located to the south of Rudheath and is accessed via the A556. The Business Park first opened in 1984 but is currently not fully occupied. There is 20,649 square feet (1,918m²) of unoccupied B1 office space at the site. To ascertain the likely number of trips generated by the available units, trip generation work has been carried out using TRICs 2009b for all B1 office sites in England (excluding London). For the purposes of this assessment and based on the population 'distribution' around the site the traffic has been distributed based on the following assumptions:

- 40% - A556 West
- 20% - A556 East
- 20% - Gadbrook Road North
- 20% - A530 South

Viridor Waste Management Plant

6.37 Viridor Waste Management Plant (09/02047/WAS) is located on the former chlorine works within the Brunner Mond site. The proposals are to build a Waste Treatment Plant (WTP)

which would deal with the mechanical and biological treatment of waste. The site would treat household residual waste and residual municipal waste from the areas of Cheshire West and Chester and Cheshire East. This in turn will produce recyclates, solid recovered fuel and some waste for landfill. The site is pending determination and is competing with an alternative proposal located to the north off Wincham Lane. The Viridor WTP application has been included as it adjoins the proposed development site.

6.38 The trip generation and distribution of the proposed Viridor Site are set out within Appendix 6.1 and are taken from Section 7 of the TA for the Viridor planning application.

Bedminster Organic Waste Management Plant

6.39 Bedminster Organic Waste Management bio-energy plant (4/08/0034/FZ5) is a consented development located on part of the former Lostock Works adjacent to the site. The site is for a bio-energy plant with the capacity for up to 3,000 tonnes of waste a week and 1,000 tonnes of biomass. All trip generation estimates have been obtained from the Transport Chapter of the Environmental Statement accompanying the planning application. The trips have been distributed across the network using the same distribution percentages as the aforementioned Viridor application.

Brunner Mond Site – Metal Recovery Plant

6.40 A further consented development is entitled precious and semi-precious metal recovery plant with fertiliser manufacture (4/07/3384/FZ5). This is located within the Brunner Mond site. This will act as waste transfer station for the recovery of precious and semi-precious metals as well as a plant for the production of fertiliser. All details with regards to trips generated by the site are taken from the Highways chapter of the ES accompanying the planning application. The site is anticipated to deal with 12,000 tonnes of waste per year. Again, the trips have been distributed across the network using the distribution percentages for the Viridor site.

Broadthorn Recycling Centre

6.41 The remaining consented development is entitled Broadthorn Storage and Recycling of Waste Centre (09/10799/CPO). This is a recently approved development located off the A530 Griffiths Road and accessed via the site access to Brunner Mond. The proposed use of the site is as a non-hazardous household, commercial and industrial waste recycling centre and will involve the erection of a mixed waste transfer building and ancillary works. The site is anticipated to generate up to 100 two-way trips on a weekday and up to 70 two-way trips on a Saturday or Sunday. Details of the likely trip generation are taken from the Planning Statement for the site. Again, the trips have been distributed across the network using the distribution percentages for the Viridor site.

Limitations of the Assessment

6.42 The methodology for assessing the environmental impact of the transport associated with the construction and operation of the project is based on the most recent and robust information available. It is therefore considered that the assessment methodology contains no significant limitations.

Baseline Conditions

Legislation and Planning Context

6.43 The key national, regional and local planning documents relevant to the project are summarised in Appendix 6.2.

Existing Site

6.44 The site is located to the west of Lostock Gralam and to the east of Northwich adjacent to the A530 Griffiths Road, as shown in Figure 1 of Appendix 6.1. The site is located on land owned by Brunner Mond within the area formerly occupied by the Lostock Power Station; which was decommissioned in 2000. The site is bounded by land operated by Brunner Mond, Solvay and a proposed metals recovery and fertiliser operation. The Trent and Mersey Canal also runs to the east of the main SEP site (between the SEP site and the proposed construction laydown area) as shown in Figure 2 of Appendix 6.1.

6.45 The site lies adjacent to the Manchester to Chester main line and has its own dedicated connection from the site to the rail network. The track is currently used for daily deliveries of Limestone from Buxton.

6.46 The site accesses onto the A530 which connects with the A559 to the north, the A556 approximately 800 metres south of the site and further afield the A54 approximately 8.0 kilometres south of the site. The A54 in turn connects with the M6 at junction 18 and the A556 connects with the M6 at junction 19. Access via the A530 to and from the A559 is restricted due to the low bridge under the railway preventing this route being usable by typical HGV traffic.

6.47 Vehicular access to the site is taken via an unnamed access road that adjoins the A530 to the east of the site through a simple priority junction.

Pedestrian Routes

6.48 There is a footway on the western side of Griffiths Road which provides a link to Lostock Gralam to the north and Rudheath to the south. The footway is approximately 1.7 metres in width. The Trent Mersey Canal towpath also runs north to south and can be used by pedestrians and cyclists.

6.49 Furthermore, the site is surrounded by an extensive network of Public Right of Way footpaths, which run to the east of the site and connect Griffiths Road with Lostock Hollow.

Cycle Routes

6.50 Figure 3 of Appendix 6.1 identifies the existing network of cycle routes in the vicinity of the site. There are three cycle routes within close proximity to the site linking Northwich with the surrounding area. These comprise both on-road and traffic free routes. A traffic free cycle route runs parallel to the Trent and Mersey Canal linking to Middlewich, Wincham, Winnington and Barnton.

6.51 National Cycle Network Route 73 routes from Congleton to Davenham through the centre of Northwich via the A559 Chester Way and Middlewich Road. A traffic free route, Whitegate Way / Weaver Parkway, also routes through the centre of Northwich within close proximity to the site.

Public Transport Provision

6.52 A summary of the bus services in the vicinity of the site is shown on Figure 4 of the appended Transport Assessment. This also shows the location of bus stops within close proximity to the site and the railway stations at Lostock Gralam and Northwich.

6.53 Bus stops are located approximately 700m north of the site on the A559 Manchester Road which are served by bus service numbers 45 and 289. These provide direct links to Northwich town centre, Warrington, Knutsford and Altrincham throughout the day. The journey time from Manchester Road to Northwich is approximately 9 minutes with a frequency of one bus per hour to Northwich. Further bus stops are located on the B5082 Middlewich Road approximately 1.2km south of the site. These bus stops are served by the number 1 service operated by Arriva which provides a link to Northwich and Weaverham. This operates with a frequency of four services per hour throughout the day. The bus services are summarised in Table 6.2.

Table 6.2: Summary of Bus Services

No.	Route	Weekday				
		Frequency (per hour)			Time	
		AM Peak	Off Peak	PM Peak	First Service	Last Service
45	Northwich - Lostock Gralam - Antrobus - Warrington	No Service	Every 2 Hours	One Service	0754	1907
45	Warrington - Antrobus - Lostock Gralam - Northwich	One Service	Every 2 Hours	One Service	0713	1844

No.	Route	Weekday				
		Frequency (per hour)			Time	
		AM Peak	Off Peak	PM Peak	First Service	Last Service
289	Altrincham - Knutsford - Northwich	No Service	Every 2 and a Half Hours	One Service	0921	1951
289	Northwich - Knutsford - Altrincham	No Service	Every 2 and a Half Hours	One Service	0714	1749
1	Rudheath-Northwich-Weaverham	4 per hour	4 per hour	3 per hour	0552	2308

*taken from Traveline and Cheshire East websites

6.54 Lostock Gralam Railway Station is located approximately 2.1km east of the site on Station Road. Northwich Railway Station is located approximately 2.2km west of the site on Manchester Road.

6.55 Northern Rail Services operate a train service between Manchester Piccadilly, Altrincham and Chester every hour Monday to Friday, via Northwich and Lostock Gralam. The journey time from Northwich and Lostock Gralam is approximately 30 minutes to Chester and 60 minutes to Manchester Piccadilly. A summary of the rail services from both stations can be found in Table 6.3. Manchester Piccadilly acts as a focus for Greater Manchester Metrolink Light Rail Train services, which operate between Bury, Altrincham and Eccles.

Table 6.3: Summary of Rail Services

Operator	Route	Service Frequencies (per hour)			
		AM Peak	Off Peak	PM Peak	Evening
Northern*	Chester-Knutsford-Northwich-Altrincham-Stockport-Manchester	2 per hour	1 per hour	1 per hour	1 per hour
Northern*	Manchester-Stockport-Altrincham-Northwich-Knutsford-Chester	1 per hour	1 per hour	2 per hour	1 per hour

*valid from 13/12/09 taken from Northern Trains timetable

Existing Highway Network

6.56 The site is located approximately 3 km east of Northwich Town Centre and approximately 1.8km to the south-west of Lostock Gralam. The local transport network surrounding the site is shown in Figure 2 of the Transport Assessment.

6.57 The site is accessed via an existing road that provides access to Brunner Mond, Solvay and a proposed metals recovery and fertiliser operation. The site access road is approximately 7.5 metres in width. The main site vehicle entrance is controlled by as permanently manned gate house and the light vehicles entrance to the north of the site is controlled by card key access. A pedestrian footpath is present on the southern side of the access road and routes from the A530 to the site. The maximum speed limit on site is 15mph.

6.58 The site access adjoins the A530 via a simple priority junction. The A530 routes north to south connecting the A559 with the A556 and the A54 providing a route to Middlewich and Crewe to the south and Lostock Gralam to the north. The majority of the A530 is subject to national speed restrictions of 60 mph. This section of the A530 between the Broken Cross junction and the A556 roundabout is subject to a 40mph speed restriction. The A530 is a single carriageway road with an approximate road width of 7 metres. Approximately 180 metres south of Manchester Road there is a low railway bridge over the A530 with a height restriction of 3.5 metres. The road narrows to approximately 5.8 metres for a short stretch approximately 240 metres south of the railway bridge. There are footways along the western side of the A530 with an approximate width of 1.7 metres.

6.59 Middlewich Road adjoins the A530 at a priority crossroad junction known as the Broken Cross junction. Middlewich Road is a single carriageway road which routes east to west providing a link from the A530 into Northwich. Middlewich Road is subject to a 30mph speed restriction and is approximately 7 metres wide. There are footways on both sides of the carriageway providing pedestrian routes into the centre of Northwich.

6.60 The A530 adjoins the A556 to the south of the site at a four armed roundabout with the A556 forming two arms of the roundabout and the A530 the remaining two arms. The A556 routes east to west providing access to the M6, A56, Altrincham and Manchester to the east and the A54, A51, Chester and North Wales to the west. The A556 is a dual carriageway road with an approximate width of 7.5 metres in each direction. It is subject to national speed restrictions of 70mph and has streetlights along much of its length. There are footways along both sides of the A556 to the west of the A530 and there is a shared cycle footway on the approach to the roundabout. To the east of the A530 the A556 has a footway on the northern side of the carriageway.

6.61 The site is strategically placed between Junction 18 and Junction 19 of the M6. The M6 routes north to south connecting Carlisle with Birmingham as well as providing a link to other motorways including the M1, M40, M5, M62 and the M56.

6.62 Junction 18 is accessed via the A530 which adjoins the A54 to the south. The B5309 Middlewich bypass provides a link between the A530 and the A54 avoiding Middlewich town centre. The A54 is a single carriageway road in nature with an approximate width of 7 metres. Junction 18 is approximately 11.3 kilometres south-east of the site.

6.63 Junction 19 is accessed via the A556 which is a two lane dual carriageway road west of its junction with the A559 and a four laned single carriageway east of its junction with the A559. It has an approximate carriageway width of 7.5 metres in each direction. Junction 19 is approximately 9.3 kilometres to the north east of the site.

Road Safety

6.64 Personal Injury Accident (PIA) data has been obtained from CWCC for the surrounding local road network for the most recently available three year period (01/01/2006 to 31/12/2008). The study area includes the A530 between Manchester Road and the Morrison's roundabout and the A556 between Gadbrook Road and Linnards Lane. A summary of the location and severity of these accidents is shown in Figure 5 of the Transport Assessment.

6.65 During the three year period there were a total of 51 personal injury accidents in the study area; of which seven resulted in serious injury and 44 resulted in slight injury. There were no fatal injury accidents in the study area during the three year period.

6.66 Of the 51 injury accidents eight involved HGVs/buses, three involved pedal cycles, three involved motorcycles and one involved a pedestrian.

6.67 During the three year period there were no personal injury road traffic accidents at the site access or within close proximity to the site. The closest injury accident occurred approximately 650 metres north of the site.

6.68 Of the seven serious injury accidents, four were the result of vehicles losing control and either colliding with other road users or leaving the carriageway. Two of the serious injury accidents were the result of vehicles failing to giveway at crossings to either pedestrians or cyclists. The remaining serious injury accident was the result of a rear end shunt.

6.69 On the northern arm of the A530/A556 roundabout a total of six injury accidents have occurred. All of these were slight injury accidents and one involved a HGV/bus. Three of the injury accidents at the junction were the result of rear end shunts. The remaining accidents were the result of a vehicle losing control and leaving the carriageway, a vehicle cutting in front of another vehicle which was exiting the roundabout and a vehicle reversing onto the carriageway and colliding with an oncoming vehicle.

6.70 A cluster of four slight injury accidents occurred on the southern arm of the A530/A556 roundabout two of which were the result of rear end shunts. Another PIA at this junction was the result of a vehicle changing lanes and colliding with another vehicle. The remaining injury accident at this location was the result of a vehicle entering the roundabout and being struck on the near side by a vehicle negotiating the roundabout.

6.71 It is concluded from the review of PIAs that there are no specific road safety issues in close proximity to the site that might be exacerbated as a result of the proposed development. There were no personal injury road traffic accidents in the assessed 3 year period at the site access and there were no fatal injury accidents across the entire study area.

Traffic Flows

6.72 CWCC were contacted in order to establish traffic data availability within the area. A search revealed that there were no manual counts at either the Site Access/A530 junction, the Broken Cross junction or the A556 / A530 roundabout.

6.73 Due to roadwork's being undertaken on the A556 roundabout it was agreed with Cheshire West and Chester Highways Authority (CWCHA) that carrying out manual traffic surveys on the three junctions would not give a true representation of the base situation.

6.74 However, in March 2009 the three junctions were surveyed as part of the Virridor planning application (09/02047/WAS). It was agreed with CWCHA that these traffic surveys could be used to determine base flows at the junctions for use within this assessment. The two-way traffic flows for the local network in the peak periods are summarised below in Table 6.4.

Table 6.4 - 2009 Two Way Flows

	AM Peak (0800-0900)		PM Peak (1645-1745)		24 Hour Flows	
	Total	**HGVs**	**Total**	**HGVs**	**Total**	**HGVs**
Site Access	50	9	13	5	331	120
Manchester Road west of Griffiths Road	1019	51	1121	10	11115	479
Manchester Road east of Griffiths Road	1071	54	1179	19	11527	599
A530 north of Site Access	632	29	798	19	7318	324
A530 south of Site Access	640	33	775	19	7449	441
A530 North of Middlewich Road	685	31	769	19	7566	388
Middlewich Road	694	31	759	13	7690	356
Penny's Lane	19	2	11	0	172	26
A530 South of Middlewich Road	1196	58	1305	26	13066	664
A530 North of A556	1183	57	1291	24	12752	652
A556 west of A530	2984	164	2780	84	30350	1821
A556 east of A530	2971	200	2768	106	30070	2284
A530 south of A556	972	111	1083	62	10504	1399

Future Baseline

Committed Developments and Future Year Traffic Flows

Future Year Traffic Flows

6.75 It is anticipated that the development could be completed and operational in 2015. The base traffic flows have been growthed to the proposed first full year of operation of 2015 using the National Road Traffic Forecasts (NRTF) low growth rates adjusted with local and national TEMPRO rates. Consistent with the DfT Guidance on Transport Assessment the years of assessment within the Transport Assessment are as follows:

- 2009 – Base position;
- 2015 – Proposed year of opening;
- 2020 – 10 Years after submission of application.

6.76 The growth rates from 2009 to each of the assessment years have been established through the following calculation:

- (NRTF Low Growth x Tempro Local Peak Factor) / Tempro National Daily Factor

6.77 The following definitions have been used:

- The Tempro Local Peak Factor is a growth factor relating to the increase in car travel in the specific area of Vale Royal
- The Tempro National Daily Factor is a growth factor relating to the increase in car travel for the whole of Great Britain
- The NRTF growth rates are based on growth rates for all vehicle types as a detailed classification of each vehicle type was not available for all links.

6.78 The subsequent growth factors for each future assessment year have been summarised below.

- 2009 - 2015 – 1.059;
- 2009 - 2020 – 1.110.

Total Consented Development Flows

6.79 Details of the consented developments and developments likely to be consented are included within this assessment have been set out above. The total number of vehicle trips generated in the peak periods by all the consented developments are shown within Figure 9 of Appendix 6.1. The total number of vehicle trips generated by the consented developments across each link of the network over a daily period has been summarised within Table 6.5 below.

Table 6.5 – Consented Development Traffic Flows

	AM Peak		PM Peak		24 Hour Flows	
	Total	HGVs	Total	HGVs	Total	HGVs
Site Access	46	24	44	22	548	388
Manchester Road west of Griffiths Road	375	19	307	15	2843	142
Manchester Road east of Griffiths Road	483	24	395	17	3655	183
A530 north of Site Access	107	5	88	2	812	41
A530 south of Site Access	153	29	132	24	1360	429
A530 North of Middlewich Road	153	29	132	24	1360	429
Middlewich Road	5	2	4	2	55	39
Pennys Lane	0	0	0	0	0	0
A530 South of Middlewich Road	149	27	127	21	1305	390
A530 North of A556	149	26	127	20	1305	390
A556 west of A530	27	8	24	8	175	124
A556 east of A530	288	21	237	18	2227	214
A530 south of A556	395	25	325	18	3039	255

Baseline Flows

6.80 The traffic flows from 2009 have been growthed to 2015 and 2020 using the growth rates of 1.059 and 1.110 as shown above. To establish a baseline position against which to assess the project the total committed development flows have been added to the 2015 growthed flows and the 2020 growthed flows. As a worst case, the effects of the project have been assessed against the 2015 baseline scenario. The resultant 2015 baseline traffic flows are set out within Table 6.6 below. These flows consider both the background growth in traffic flows and assume that all consented developments are completed and fully operational. It is considered that this represents a worst case as some of the assumed committed developments may not be operational in 2015.

Table 6.6 - 2015 Baseline (including consented) Two-Way Flows

	AM Peak		PM Peak		24 Hour Flows	
	Total	HGVs	Total	HGVs	Total	HGVs
Site Access	98	33	57	27	899	515
Manchester Road west of Griffiths Road	1449	72	1497	25	14614	649
Manchester Road east of Griffiths Road	1613	80	1647	36	15862	817
A530 north of Site Access	773	34	936	21	8562	384
A530 south of Site Access	827	64	954	44	9249	896

	AM Peak		PM Peak		24 Hour Flows	
	Total	HGVs	Total	HGVs	Total	HGVs
A530 North of Middlewich Road	875	62	948	44	9373	840
Middlewich Road	736	35	810	15	8199	416
Pennys Lane	19	2	11	0	182	28
A530 South of Middlewich Road	1409	89	1512	48	15142	1093
A530 North of A556	1396	85	1498	44	14810	1080
A556 west of A530	3172	181	2977	97	32316	2053
A556 east of A530	3420	233	3177	130	34071	2633
A530 south of A556	1419	143	1475	83	14163	1736

6.81 In the 2015 baseline scenario, traffic flows on the surrounding network are highest on the A556 west of the A530 with two-way flows of 34,071 vehicles over a 24 hour period, 3,420 during the AM peak and 3,177 during the PM Peak. The A556 west of the A530 also experiences the highest number of HGV use with 2,633 two-way HGV movements over a 24 hour period. Pennys Lane has the lowest number of two-way vehicle movements with just 182 vehicles during a 24 hour period. The site access has 515 two-way vehicle movements over a 24 hour period with 98 vehicle movements in the AM peak and 57 vehicle movements in the PM peak.

Proposed Development

Proposed Development Traffic Flows

6.82 The SEP would have the capacity to receive approximately 600,000 tonnes per annum (tpa). In addition, the site is likely to generate up to 120,000 tonnes of boiler ash per annum as well as other vehicle movements associated with the transport of fly ash and flue gas treatment residues and ammonia solution.

6.83 It is expected that the SEP would receive pre-treated waste derived fuel originating from the North West of England, North Wales and the North Midlands. The plant would operate 24 hours a day, 7 days a week with occasional closures for routine maintenance. However, it is assumed for the purposes of this assessment that the majority of the fuel deliveries would be undertaken during the daytime Monday to Friday and on Saturday mornings (286 days per year, 5.5 days per week).

6.84 The site would employ 50 full-time staff operating on a combination of daytime and shift working. Eight of these 50 employees would be office staff working a typical 0900 – 1700 shift with the remainder covering four shifts with one of these shifts being a rest day. The three working shifts are likely to be 07:00-15:00, 15:00-23:00 and 23:00-07:00 and 32

employees are likely to cover these three shifts per day. The traffic flows generated by the proposed development have been set out below.

Staff Trips

Trip Generation

6.85 Over a 24 hour period there would be a maximum of 40 inbound and 40 outbound person movements at the project site equating to 80 two-way movements. This number is based on three shifts of ten or eleven staff plus up to eight staff working office hours.

6.86 Since the shifts do not start or end during the peak hours it is likely that the number of staff movements during the peak hours would be 8 arrivals during the AM peak hour and 8 departures during the PM peak hour.

Modal Split

6.87 Information relating to the existing mode of travel for workplace journeys in the Northwich Witton ward has been derived from 2001 census journey to work data and is summarised in the table below.

Table 6.7:Modal Share (Northwich Witton Journey to Work)

Mode	% Modal Share*	Two-Way Trips		
		AM Peak	PM Peak	Daily
Car driver	70.0%	6	6	56
Car passenger	8.0%	1	1	7
Bus	5.0%	0	0	4
Train	0.0%	0	0	0
Motorcycle	1.0%	0	0	1
Pedal Cycle	4.0%	0	0	4
Walk	10.0%	1	1	8
Other	0.0%	0	0	0
Total	100.0%	8	8	80

* Based on existing mode share for work trips within Northwich Witton ward.

Distribution

6.88 The 2001 Census data has also been used to derive the distribution of staff trips associated with the proposed development. This is based on the origins of all workplace trips into the Northwich Witton ward. The distribution percentages are shown within the TA and summarised in the following table:

Table 6.8:Distribution of Staff Traffic

Link	All People	% Journey to Work Distribution
A530 North	6	0.1%
A530 South	1145	17.1%
A556 East / A537 East	595	8.9%
A530 North / A559 West / A553 North	178	2.7%
A530 South / A556 East	1123	16.7%
A530 South / A556 West	183	2.7%
A530 North / A559 North	796	11.9%
A530 North / A559 West	23	0.3%
A530 North / M6 North	161	2.4%
A530 South / M6 South	122	1.8%
A530 South / A54 East	2381	35.5%
Total	6713	100.0%

6.89 It can be seen that the highest percentage of people would travel to the site via the A530 south/A54 East from locations such as Middlewich, Crewe and Congleton. Only a small amount of staff would travel to the site via the M6. Approximately 11.9% of people would travel to the site via the A559 north from areas such as Runcorn, Ellesmere Port and North Chester.

Assignment

6.90 Daily staff vehicle movements have been assigned to the highway network in accordance with the distribution set out in Table 6.8 above and are shown in Figure 13 of Appendix 6.1. It is understood that it may be possible for staff to use an access to the site on the A559 Manchester Road. This would reduce the overall impact of traffic on the A530. However, as a worst case it has been assumed that all SEP staff enter and exit the site via the Brunner Mond site access off Griffiths Road.

HGV Trips – Likely Scenario

6.91 It is anticipated that the most likely scenario for fuel deliveries to the site would involve two thirds of fuel being imported by rail and the remaining one third by road. This equates to approximately 400,000 tonnes per annum (tpa) imported by rail and 200,000 tpa by road. The resultant trip generation for this likely scenario is set out below.

Import of Fuel by Rail

- Annual import of fuel: 400,000 tonnes;
- Average container load of 15 tonnes;

- Assuming 57 containers per train;
- 286 days of operational deliveries per year; and
- Equates to 1-2 trains per day

Import of Fuel by Road

- Maximum annual import of fuel: 200,000 tonnes;
- Average container load of 20 tonnes;
- 286 days of operational deliveries per year; and
- Equates to 35 deliveries per day by road or 70 two-way trips per day.

Export of Bottom Ash (assuming exported by road as a worst case)

- Annual export of ash/ aggregate: 120,000 tonnes;
- Average HGV load of 20 tonnes;
- 286 days of operational deliveries per year;
- 420 tonnes per day;
- Average container load of 20 tonnes; and
- Equates to 21 deliveries per day by road or 42 two-way trips per day.

Other Export (assuming exported by road as a worst case)

- 4 tankers a day of Fly Ash and Flue Gas Treatment Residues; and
- 1 tanker every 2-3 days day of Ammonia solution
- 5 total deliveries per day by road or 10 two-way trips per day (as a worst case)

Total Daily HGV Movements - Likely Scenario

6.92 On the basis of the above, the likely average number of new HGV movements would equate to 122 two-way movements per day.

HGV Trips – Worst Case Scenario

6.93 In order to present a worst case, the same calculations as within the likely scenario have been made with the assumption that no fuel is transported by rail and therefore all fuel is imported by road. This is very much a worst case as it is likely that the majority of fuel would be transported by rail as set out above.

Import of Fuel by Road

- Maximum annual import of fuel: 600,000 tonnes;
- Average Container load of 20 tonnes;
- 286 days of operational deliveries per year;
- Amounts to 2,098 tonnes per day; and
- Equates to 105 deliveries per day by road or 210 two-way trips per day.

6.94 Based on the same calculations for export waste used within the likely scenario, the trips generated by the site as a worst case would equate to 262 two-way HGV movements per day.

Temporal Distribution

6.95 Although the site would be operational for 24 hours a day, the majority of road deliveries are likely to occur during day time hours in order to undertake a worst case assessment the HGV movements have been distributed evenly across each hour of a 12 hour day (0700 - 1900).

Summary of Proposed Development Vehicle Generation

6.96 Table 6.9 summarises the peak hour and daily vehicle trip generation of the proposed development in both the likely and worst case scenarios.

Table 6.9: Proposed Development Staff Vehicle and HGV Movements

Scenario	Vehicle Type	AM Peak Period			PM Peak Period			24 hour		
		Arrive	Depart	Total	Arrive	Depart	Total	Arrive	Depart	Total
Likely	Staff Cars	8	0	8	0	8	8	40	40	80
	HGVs	5	5	10	5	5	10	60*	60*	120*
Worst Case	Staff Cars	8	0	8	0	8	8	40	40	80
	HGVs	11	11	22	11	11	22	132*	132*	264*

*differences to text above due to rounding

6.97 As can be seen there would be 18 two-way movements during each peak period in the likely scenario and 30 two-way movements in each peak in the worst case scenario. Over a daily period the project is likely to generate 202 two-way vehicle movements and 342 two-way vehicle movements as a worst case.

Construction Assessment

SEP

6.98 The likely start date for site preparation is 2011 and construction is expected to last approximately 3.5 years, including demolition of the existing power station. It is expected that the level of heavy vehicles during the site preparation and construction phases of

development would be lower than the level of heavy vehicles generated during the operational phase of the development. The assessment of the effect during site operation therefore represents a worst case.

Grid Connection

6.99 It is possible that temporary highways effects would be associated with the construction of the grid connection comprising the laying of an underground cable to the existing substation at Hartford to the south-west of Northwich. This is likely to require works adjacent to the highway with possible temporary obstruction to parts of certain sections of carriageway or footway. It is expected that the highways effects, including delays to vehicles and pedestrians would be minimised through suitable traffic management measures such that any effects would be minimal and short term. This represents a worst case scenario. Alternative connection points have been discussed with Scottish Power and are being evaluated. These are potentially much closer to the site and the point of generation and would significantly reduce the effects and likely disruption.

Operational Assessment: SEP

Distribution and Assignment of HGV Movements

6.100 The distribution of HGVs has been estimated on the basis of information received from the client regarding possible routes to the site. Fuel is likely to be sourced from the North West of England, North Wales and the North Midlands. Based on this the likely distribution is shown in Table 6.10.

Table 6.10: Distribution and Assignment of HGV Movements

Source of Fuel	Estimated %	Daily 2 Way HGV Movements (likely)	Daily 2 Way HGV Movements (worst case)	Route to/from Site
North Wales	35%	42	92	M6 North
North West of England	35%	42	92	A556 East
North Midlands	30%	36	80	M6 South
Total	100%	120	264	

6.101 The distribution of development traffic across the local highway network has been summarised within Table 6.11 for the likely scenario and Table 6.12 for the worst case scenario.

6.102 Table 6.11 shows that within the likely scenario whereby two-thirds of fuel is imported via rail, the site is predicted to generate approximately 200 two-way trips over a typical day. Of these

trips, 44 would travel northbound on the M6 via Junction 19 and 38 would travel southbound on the M6 via Junction 18.

6.103 Table 6.12 shows that within the worst case scenario, whereby all fuel is imported by road, on a typical day the site is predicted to generate approximately 344 two-way trips on a typical day. Of these trips, 92 would travel northbound on the M6 via Junction 19 and 81 would travel southbound on the M6 via Junction 18.

Table 6.11: Development Generated Traffic on Local Network – Likely Case (Two-Way Flows)

	AM Peak		PM Peak		24 Hour Flows	
	Total	HGVs	Total	HGVs	Total	HGVs
Site Access	18	10	18	10	200	120
Manchester Road west of Griffiths Road	0	0	0	0	2	0
Manchester Road east of Griffiths Road	3	0	3	0	32	0
A530 north of Site Access	3	0	4	0	34	0
A530 south of Site Access	15	10	15	10	166	120
A530 North of Middlewich Road	15	10	15	10	166	120
Middlewich Road	0	0	0	0	0	0
Pennys Lane	0	0	0	0	0	0
A530 South of Middlewich Road	15	10	15	10	166	120
A530 North of A556	17	12	17	12	166	120
A556 west of A530	1	0	1	0	2	0
A556 east of A530	8	8	8	8	84	84
A530 south of A556	8	4	8	4	79	36

Table 6.12: Development Generated Traffic on Local Network – Worst Case (Two-Way Flows)

	AM Peak		PM Peak		24 Hour Flows	
	Total	HGVs	Total	HGVs	Total	HGVs
Site Access	30	22	30	22	344	264
Manchester Road west of Griffiths Road	0	0	0	0	2	0
Manchester Road east of Griffiths Road	3	0	3	0	32	0
A530 north of Site Access	3	0	4	0	34	0
A530 south of Site Access	27	22	27	22	310	264
A530 North of Middlewich Road	27	22	27	22	310	264
Middlewich Road	0	0	0	0	0	0
Pennys Lane	0	0	0	0	0	0

	AM Peak		PM Peak		24 Hour Flows	
	Total	HGVs	Total	HGVs	Total	HGVs
A530 South of Middlewich Road	27	22	27	22	310	264
A530 North of A556	27	22	27	22	310	264
A556 west of A530	1	0	1	0	2	0
A556 east of A530	16	16	16	16	185	185
A530 south of A556	10	6	10	6	123	79

Assessment of Effects

Likely Scenario

6.104 The percentage increases in two-way traffic flow resulting from the likely traffic generated by project are summarised within Table 6.13 below.

Table 6.13: 2015 Effects of the Project - Likely Case

	AM Peak (0800-0900)		PM Peak (1645-1745)		24 Hour Flows	
	Total	HGVs	Total	HGVs	Total	HGVs
Site Access	18.4%	30.3%	31.6%	37.0%	22.2%	23.3%
Manchester Road west of Griffiths Road	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Manchester Road east of Griffiths Road	0.2%	0.0%	0.2%	0.0%	0.2%	0.0%
A530 north of Site Access	0.4%	0.0%	0.4%	0.0%	0.4%	0.0%
A530 south of Site Access	1.8%	15.6%	1.5%	22.7%	1.8%	13.4%
A530 North of Middlewich Road	1.7%	16.1%	1.5%	22.7%	1.8%	14.3%
Middlewich Road	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Penny's Lane	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
A530 South of Middlewich Road	1.0%	11.2%	1.0%	20.8%	1.1%	11.0%
A530 North of A556	1.2%	14.1%	1.2%	27.3%	1.1%	11.1%
A556 west of A530	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
A556 east of A530	0.2%	3.4%	0.3%	6.2%	0.2%	3.2%
A530 south of A556	0.6%	2.8%	0.6%	4.8%	0.6%	2.1%

6.105 The maximum effect on total traffic flows generated by the likely project traffic over a daily period (excluding the site access) would be 1.8% on the A530 south of the site access. The maximum impact on two-way HGV traffic flows occurs on the A530 north of Middlewich Road

with an increase of 14.3%. During the peak hours total flows on the A530 south of the site access are predicted to increase by between 1.5% and 1.8%. HGV flows on this link are predicted to increase by between 15.6% and 22.7%.

6.106 The majority of development generated traffic would route via the A556 east of the A530. The development traffic would increase total traffic flows on this link by 0.2% over a daily period. The development traffic would increase daily two-way HGV flows on this link by 3.2%.

6.107 The highest effects occur on the site access with an increase in two-way total vehicle flows of 22.2% over a daily period. However, this is due to the base flows being at low levels, therefore increases in vehicle numbers result in a high percentage increase. The lack of sensitive receptors on the site access link would mean that the increases in vehicle movements would be imperceptible.

6.108 With the addition of the likely development generated traffic, other than the site access, no links experience an increase in total two-way traffic flows of greater than 10% over a daily period. No links other than the site access had increases in HGV traffic flows of greater than 30% during any assessed time period. Rule 1 from the IEMA guidelines states that highway links should be included where traffic flows would increase more than 30% (or HGVs increase more than 30%). This does not occur on any link other than the site access during either an hourly or daily period. The assessments indicate that HGV traffic increases by over 10% on the A530 between the site access and Middlewich Road during peak hours and over a daily period and also on the A530 between Middlewich Road and the A556 during the PM peak period. A number of residential properties are located along King Street (A530) between Middlewich Road and the A556. It is therefore possible that the proposed development could adversely impact on these properties during the PM peak period. This point is therefore discussed further below.

Worst Case

6.109 The percentage increases in two-way traffic flows resulting from the worst case traffic generated by project are summarised within Table 6.14 below.

Table 6.14: 2015 Effects of the Project - Worst Case

	AM Peak (0800-0900)		PM Peak (1645-1745)		24 Hour Flows	
	Total	**HGVs**	**Total**	**HGVs**	**Total**	**HGVs**
Site Access	30.6%	66.7%	52.6%	81.5%	38.3%	51.3%
Manchester Road west of Griffiths Road	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Manchester Road east of Griffiths Road	0.2%	0.0%	0.2%	0.0%	0.2%	0.0%
A530 north of Site Access	0.4%	0.0%	0.4%	0.0%	0.4%	0.0%

	AM Peak (0800-0900)		PM Peak (1645-1745)		24 Hour Flows	
	Total	**HGVs**	**Total**	**HGVs**	**Total**	**HGVs**
A530 south of Site Access	3.2%	34.4%	2.8%	50.0%	3.3%	29.5%
A530 North of Middlewich Road	3.0%	35.5%	2.8%	50.0%	3.3%	31.4%
Middlewich Road	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Penny's Lane	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
A530 South of Middlewich Road	1.9%	24.7%	1.8%	45.8%	2.0%	24.2%
A530 North of A556	2.0%	25.9%	1.8%	50.0%	2.1%	24.4%
A556 west of A530	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
A556 east of A530	0.5%	6.9%	0.5%	12.3%	0.5%	7.0%
A530 south of A556	0.7%	4.2%	0.7%	7.2%	0.9%	4.6%

6.110 The maximum effect on total traffic flows generated by the worst case project traffic over a daily period (excluding the site access) would be 3.3% on the A530 south of the site access/north of Middlewich Road links. The maximum daily effect on two-way HGV traffic flows also occurs on the A530 but on the north of Middlewich Road link with an increase of 31.4%. During the peak hours total flows on the A530 south of the site access are predicted to increase by between 2.8% and 3.2%. Peak hour HGV flows on this link are predicted to increase by between 34.4% and 50.0%.

6.111 The majority of development generated traffic would route via the A556 east of the A530. The development traffic would increase total traffic flows on this link by 0.5% over a daily period. The development traffic would increase daily two-way HGV flows on this link by 7.0%.

6.112 The highest effects occur on the site access with an increase in two-way total vehicle flows of 38.3% over a daily period. However, this is due to the base flows being at low levels, therefore small absolute increases in vehicle numbers result in a relatively high percentage increase. The lack of sensitive receptors on the site access link would mean that the increases in vehicle movements would be imperceptible.

6.113 With the addition of the worst case development generated traffic, other than the site access, no links had an increase in total two-way traffic flows of greater than 10% over a daily period. No links other than the site access and the A530 North of Middlewich Road had increases in HGV traffic flows of greater than 30% over a daily period. However, the A530 between the site access and the A556 has increases of up to 50.0% in two-way HGV traffic flows during the PM peak period. Rule 1 from the IEMA guidelines states that highway links should be included where traffic flows would increase more than 30% (or HGVs increase more than

30%) and as such it was decided appropriate to undertake a further, more detailed, appraisal of environmental effects along the A530 between the site access and the A556.

6.114 The section of the A530 between the site access and the A556 is predicted to experience increases in the HGV content of traffic flows in excess of 10% during peak hours and over a daily period as a result of the proposed development. The section of the A530 between Middlewich Road and the A556 runs between residential properties. It is therefore appropriate to consider this section of road in terms of the potential transport environmental effects of HGVs associated with the worst case development scenario.

Assessment of Environmental Effects of Traffic for A530

Noise and Vibration

6.115 The noise and vibration effects of road traffic are assessed in detail in Chapter 12.

Visual Effects

6.116 The worst case traffic scenario would generate a maximum of 22 HGV movements per hour on the section of the A530 between the site access and the A556. This equates to one additional HGV movement every 2 minutes 44 seconds. For the likely case there would be one additional HGV movement every 6 minutes. In either case the change in visual impact is considered imperceptible.

6.117 The significance of visual effects would be negligible.

Severance

6.118 Severance is only likely to occur on highly trafficked roads and result from the perceived division the road and traffic creates between either side. The PM peak two-way traffic flow on the A530 between the site access and the A556 is 948 vehicles. This equates to an average of one vehicle every 3.80 seconds.

6.119 With the addition of the worst case development generated traffic, the two-way traffic flow during the PM peak period is predicted to increase to 975 vehicles. This equates to an average of one vehicle every 3.69 seconds. This represents a change in average vehicle rates of 0.11 vehicles per second or 2.9% which would be imperceptible and would not significantly impact upon severance.

6.120 According to the IEMA Guidelines, traffic flows would need to increase by more than 30% in order for a 'slight' change in severance to occur. Total traffic flows over a daily period and in the peak hours are not predicted to increase by more than 3%.

6.121 It is considered that the significance of the effect on severance would be negligible.

Driver Delay

6.122 Operational assessments have been undertaken at the proposed site access, Broken Cross junction and at the A530 / A556 roundabout, full details of which are set out in the Transport Assessment and in Appendix 6.1.

6.123 The assessments show that the site access is predicted to operate well within its operational capacity with no noticeable delay incurred to drivers on the site access road or the A530.

6.124 The right and ahead turn out of the A530 / Middlewich Road / Pennys Lane junction operates over its maximum capacity during the 2015 baseline period without the addition of the project traffic and delay to drivers already occurs. Under 2015 baseline conditions, it is predicted that there would be a total inclusive delay through the junction (all movements) of 4,481 minutes during the AM peak hour and 556 minutes during the PM peak hour. With the addition of the likely development traffic, this is predicted to increase to 4,757 minutes and 608 minutes respectively. This represents increases in driver delay of 6.2% during the AM peak period and 9.4% during the PM peak period.

6.125 With the addition of the worst case development traffic, the total delay is predicted to increase to 5,019 minutes in the AM peak and 664 minutes in the PM peak hour. This represents increases in driver delay of between 12.0% in the AM peak hour and 19.4% in the PM peak hour.

6.126 The increases in driver delay are largely attributable to increases in queues on the Middlewich Road arm for those vehicles travelling straight or right. The project adds no additional traffic to these movements. However, the small increase in flows passing the junction associated with the project cause queues that are predicted to be already present in 2015 to increase. As stated in the Transport Assessment, the results of this modelling exercise should be treated with some caution since the model is very sensitive to changes in flows when demand for a movement exceeds capacity and in reality the impact of the project would be significantly less than this.

6.127 The A530/A556 roundabout is also shown to operate over its maximum capacity during the 2015 baseline period without the addition of the project traffic. Under 2015 baseline conditions, it is predicted that there would be a total inclusive delay at the junction (all movements) of 716 minutes in the AM peak hour and 862 minutes during the PM peak hour. With the addition of the likely development traffic, this is predicted to increase to 740 minutes during the AM peak hour and 916 minutes during the PM peak hour. This represents increases in driver delay of 3.3% during the AM peak hour and 6.3% during the PM peak hour.

6.128 With the addition of the worst case development traffic, the total delay is predicted to increase to 757 minutes in the AM peak and 957 minutes in the PM peak hour. This represents

increases in driver delay of 5.7% during the AM peak hour and 11.0% during the PM peak hour.

6.129 Given that the above figures are total delays for all vehicle movements across the junction during the hourly assessment period, the increases in delays experienced by individual drivers would be slight and become imperceptible in the context of drivers' overall journey. It should also be noted that the increases in delays, although small, are associated with worst case assumptions in terms of plant operation and staff travel. It is likely in this situation that fuel deliveries will tend to avoid the peak hours to reduce overall transport delays so the above assessments again represent worst cases.

6.130 It is considered that the significance of the effect of project traffic on driver delay would be negligible.

Pedestrian Delay and Amenity

6.131 Delay to pedestrians in terms of road traffic is generally a function of being able to cross the road. Studies have shown that pedestrian delay is perceptible or considered significant beyond a lower delay threshold of 10 seconds, for a link with no crossing facilities. A 10 second pedestrian delay in crossing a road broadly equates to a two-way link flow of approximately 1,400 vehicles per hour.

6.132 The maximum 2015 baseline maximum two-way traffic flow along the A530 south of the site access is 948 vehicles and is therefore significantly below the lower delay threshold of 10 seconds. However, as set out above, the change in vehicle rates during peak periods is predicted to be only 0.09 vehicles per second. This would not be noticeable and would not impact upon the ability for a pedestrian to cross the section of A530 between the site access and the A556.

6.133 Indeed, on the basis that 1,400 vehicles per hour equates to a pedestrian crossing delay of 10 seconds, 948 vehicles per hour (2015 base conditions) equates to an approximate crossing delay of 6.77 seconds and 975 vehicles per hour (2015 base plus worst case development) equates to an approximate crossing delay of 6.96 seconds. This represents an increase of 0.19 seconds or 2.81%. This magnitude of increase in delay would not be noticeable.

6.134 There is a footway along the western side of the A530 of approximately 1.7m in width. Pedestrian activity is not excessive and 1.7m wide represents an acceptable width for a footway in this location.

6.135 It is therefore considered that there would be no noticeable effect for pedestrians along the A530. Pedestrian amenity is not impacted upon by existing traffic flows and is not likely to be affected by the proposals.

6.136 It is considered that the significance of the effect would be negligible.

Accidents and Safety

6.137 The personal injury accident (PIA) data obtained between 01 January 2006 and 31 December 2008 has been used to assess the level of injury accidents occurring on the A530 between the site access and the A556 roundabout. The number of injury accidents has been cross referenced with the number of vehicle kilometres to ascertain accident rates. This observed injury accident rate has been used to estimate the number of injury accidents that could occur involving the proposed development (worst case) traffic over a three year period.

6.138 During the three year period there were 12 PIA's on the A530 between the site access and the A556. 9 PIA's occurred on the A530 north of A556 link, 2 PIA's occurred on the A530 north of Middlewich Road link, 1 injury accident occurred on the A530 south of Middlewich Road link and no injury accidents occurred on the A530 south of site access link. The observed two-way traffic flows from 2009, the resultant vehicle kilometres and injury accident rate per million vehicle kilometres (pmvk) are shown within Table 6.15.

Table 6.15: Observed Injury Accident Rates

Link	Injury Accidents on Link (3 year Period)	Two Way Traffic - 2009 AADT	3 Year Traffic Flows	Length of Link (Km)	Observed vehicle kms (Over 36 months)	Observed million vehicle kms (Over 36 months)	Observed Injury Accident Rate (Per million vehicle kms)
A530 south of Site Access	0	7449	8156655	0.265	2161513.6	2.162	0.00
A530 North of Middlewich Road	2	7566	8284770	0.380	3148212.6	3.148	0.64
A530 south of Middlewich Road	1	13066	14307270	0.261	3148212.6	3.148	0.32
A530 north of A556	9	12752	13963440	0.195	2722870.8	2.723	3.31

Source: Personal injury accident (PIA) data obtained between 01 January 2006 and 31 December 2008

6.139 Through applying the observed injury accident rates to the development generated traffic flows across a yearly period the estimated number of injury accidents which could result from the project per year is shown within Table 6.16 below.

Table 6.16: Estimated Number of Injury Accidents

Link	Two Way Dev Traffic 2009 AADT	1 Year Dev Traffic Flows (286 Days)	Length of Link (Km)	Dev Vehicle KMs (Over 1 year)	Dev Million Vehicle KMs (Over 1 year)	Observed Injury Accident Rate (Per million vehicle kms)	Predicted Number of Injury Accidents (1 year period)
A530 south of Site Access	310	88561	0.265	23468.7	0.023	0	0.000
A530 North of Middlewich Road	310	88561	0.38	33653.2	0.034	0.64	0.021
A530 south of Middlewich Road	310	88561	0.261	23114.4	0.023	0.32	0.007
A530 north of A556	310	88561	0.195	17269.4	0.017	3.31	0.057
TOTAL – A530- Site Access to A556							0.085

* Assumes a 365 day operation

6.140 Table 6.16 shows that the project could generate a maximum of 0.085 injury accidents per year along the A530 between the site access and the A556.

6.141 It is considered that the significance of the effect would be negligible.

Hazardous Loads

6.142 The Guidelines for the Environmental Assessment of Road Traffic acknowledge, in paragraph 2.4, that most developments would not result in an increase in the number of movements of hazardous or dangerous loads. The project would use pre-treated waste derived fuel. The process would, however, generate flue gas residues which are described as a hazardous waste and these will be taken from site in a sealed bulk container. If any hazardous wastes are brought to site then these would be stored separately and be removed in accordance with procedures agreed with the Environment Agency. Any hazardous waste which does arrive at the site would therefore be stored, treated, managed and transported in a safe manner and in accordance with current regulations. Hazardous waste should not therefore represent a safety issue.

6.143 It is considered that the significance of the effect would be negligible.

Air Quality

6.144 The effects of the traffic generated by the proposed development on air quality have been assessed in detail in Chapter 7.

Dust and Dirt

6.145 Dust and dirt arising from traffic is mainly associated with HGV traffic undertaking particular activities. The extent of any impact of dust and dirt arising from the proposed operations would be dependent upon the management practices adopted on site. Specifically procedures such as washing down of wheels and sheeting of HGVs likely to shed debris prevents the occurrence of dust and dirt spreading from the site to the adjoining road network. These procedures will be included and set out as part of standard operational procedure at the site.

6.146 All vehicular routes within the site would be surfaced and it is therefore unlikely that any significant dust or dirt would arise from traffic during the operational phase. The measures outlined above will ensure that any dust and dirt that may be generated is controlled. During the construction phase on-site wheel washing will be implemented to ensure that dust and dirt is not carried onto the external highway network.

6.147 It is considered that the significance of the effect would be negligible.

Summary of Effects

6.148 As set out above, the effect of road traffic as a result of the construction and operation of the proposed SEP is not predicted to result in significant effects based on the assessment guidelines set out by the IEMA in their 'Guidance Note No. 1: Guidelines for the Assessment of Road Traffic'.

6.149 In the worst case scenario, the project traffic increases the HGV content by more than 30% on the A550 south of the site therefore more detailed environmental assessments were undertaken. This established that there is unlikely to be any significant environmental effect. Notwithstanding this, this does not obviate the need for the on site management of HGV traffic.

Table 6.17: Summary of Effects

Phase	Nature of Effect	Magnitude of Impact	Duration	Nature	Significance of Effect	Geographical Level of Importance of Issue				
						I	N	R	D	L
Preparation / Construction	Severance	Minor	Temporary	Adverse	Negligible					✓
	Driver Delay	Minor	Temporary	Adverse	Negligible					✓
	Pedestrian Delay	Minor	Temporary	Adverse	Negligible					✓
	Pedestrian Amenity	Minor	Temporary	Adverse	Negligible					✓
	Accidents and Safety	Minor	Temporary	Adverse	Negligible					✓

Phase	Nature of Effect	Magnitude of Impact	Duration	Nature	Significance of Effect	Geographical Level of Importance of Issue				
						I	N	R	D	L
	Hazardous Loads	Minor	Temporary	Adverse	Negligible					✓
	Dust and Dirt	Minor	Temporary	Adverse	Negligible					✓
Operation	Severance	Minor	Permanent	Adverse	Negligible					✓
	Driver Delay	Minor	Permanent	Adverse	Negligible					✓
	Pedestrian Delay	Minor	Permanent	Adverse	Negligible					✓
	Pedestrian Amenity	Minor	Permanent	Adverse	Negligible					✓
	Accidents and Safety	Minor	Permanent	Adverse	Negligible					✓
	Hazardous Loads	Minor	Permanent	Adverse	Negligible					✓
	Dust and Dirt	Minor	Permanent	Adverse	Negligible					✓

Key: I: International N: National R: Regional D: District L: Local

Grid Connection

6.150 No operational traffic effects are likely to be associated with the grid connection.

Recommendations for Further Mitigation

6.151 The above assessments indicate that the project would not have any significant adverse environmental effects on the basis of either the likely case where two thirds of fuel imports arrive by rail or on the worst case where all fuel is imported by road. However, the absolute number of HGV movements on the external network reduces as the amount of fuel transported by rail increases. It is therefore the intention to seek to maximise the amount of fuel transported by rail.

6.152 Although the assessment indicates that the effects would not be significant, the applicants would consider measures to minimise further the effects of the project or support enhancements to the local road network, such as contributions towards the overcapacity junctions or routing agreements.

Cumulative Effects

6.153 The cumulative effects of committed developments within the vicinity of the site have been incorporated within the above assessment.

6.154 It is concluded from the above table that the residual transport environmental impacts associated with the site preparation, construction and operation are, at worst negligible.

Summary

6.155 The transport effects of the project have been assessed in accordance with the guidance set out in the IEMA publication Guidelines for the Environmental Assessment of Road Traffic, Guidance Note No. 1 for site preparation, construction and operation.

6.156 The assessments undertaken have demonstrated that as a worst case the project would increase daily traffic flows by approximately 3% on the A530 south of the site access, compared with a 2015 baseline. In the worst case scenario, the project traffic would increase the HGV content by more than 30% on the A550 south of the site.

6.157 In accordance with the IEMA guidelines, further more detailed assessments were undertaken and established that such increases are unlikely to create any significant effect upon the road network. The environmental assessments undertaken have demonstrated there would be no significant impact with respect to visual effects, noise or vibration, severance, driver delay, pedestrian delay, pedestrian amenity, accidents and safety, hazardous loads, air pollution or dust and dirt.

References

Guidance Notes No. 1. Guidelines for the Environmental Assessment of Road Traffic. The Institute of Environmental Assessment, March 1993.

The Design Manual for Roads and Bridges. Volume 11 – Environmental Assessment. Department of Transport et.al. June 1993 (and updates).