

KYPE MUIR

Wind Farm Proposals

ENVIRONMENTAL STATEMENT

10. TRAFFIC AND TRANSPORTATION

INTRODUCTION

10.1 This chapter considers the potential impacts of the proposed Kype Muir wind Farm on the surrounding road network. It summaries the key findings of the Transport Assessment (Appendix 9.1) of the transport issues associated with the proposed development which has been undertaken by Halcrow Group Limited.

CONSULTATION

10.2 In order to develop the assessment in a proper and efficient manner, Halcrow undertook scoping discussions with South Lanarkshire Council (SLC) to ascertain their requirements for the Transport Assessment (TA). Halcrow also invited Transport Scotland (TS) to comment as trunk roads authority through their term agents, JMP Consultants.

METHODOLOGY

10.3 There are three stages that this assessment needs to consider:

- The construction phase of the project;
- The operational phase of the project; and
- The decommissioning phase of the project (typically undertaken 25 years following completion).

10.4 Of these phases, the project construction phase has the most traffic associated with it. The operational phases are restricted to occasional maintenance operations which generate much lower volumes of traffic, which are not considered to be in excess of daily traffic variation levels on the road network.

10.5 The decommissioning phase involves fewer trips on the network (than the construction phase) as elements of infrastructure such as access tracks, electrical connections are often left in place, adding to local infrastructure.

10.6 The worst case transport scenario is the construction phase and this assessment concentrates on that element of the projects life. It should be borne in mind however that the construction impacts are short lived and temporary in nature.

10.7 A review of the traffic impact and the feasibility of transporting turbines to the development site has been undertaken. The results of both assessments are contained within this report for review and consideration.

BASELINE CONDITIONS

10.8 With the scoping discussions, Halcrow identified four survey sites that would allow an accurate estimation of the potential impact of the construction phase to be made. To gauge the existing usage, Halcrow commissioned Automatic Traffic Count (ATC) surveys for sites at the following locations:

- A71 to the east of Strathaven;
- A723 to the north of Strathaven;
- A726 to the north of Strathaven;
- A71 to the west of Strathaven;
- B743 to the southwest of Strathaven;
- A70 to the west of Muirkirk;
- A70 to the east of Muirkirk; and
- The Lambhill road providing access to the development site

10.9 The count data was collected for one week from 18 March 2011 during what is considered a neutral period within the calendar year.

Baseline Traffic Conditions

10.10 The traffic counters used allowed the traffic flows to be split into vehicle classes as well as into an overall directional traffic volume. The survey classes of vehicles reported in the survey are as follows:

- Car and lights – this classification covers cars, light goods vehicles (up to 3.5 tonne), cars with trailers/caravans;
- Other Goods Vehicles – Class 1 (OGV1) & Buses: this classification generally covers smaller commercial vehicles between 3.5 and 7.5tonnes and includes rigid 2 and 3 axle trucks and articulated trucks up to 3 axles as well as buses and coaches;
- Other Goods Vehicles – Class 2 (OGV2): this classification covers all heavy goods vehicles with four or more axles.

10.11 Table 4.1 of the TA (Appendix 9.1) summarises the traffic flow data at the sites.

Future Traffic Conditions

10.12 Construction of the project is due to commence in 2014 if consent is granted by the Scottish Ministers. The construction period is expected to last for 15 months.

10.13 To assess the likely impacts during the construction phase, base year traffic flows have been assessed by applying the National Road Traffic Forecast (NRTF) high growth factors to the 2011 surveyed traffic flows. Applying high-growth factors provides a robust assessment as they represent a higher than average traffic growth.

10.14 The NRTF high growth factor is 1.073. This factor has been applied to the 2011 survey data to estimate the 2015 traffic flows as shown in Table 4.2 of the TA (Appendix 9.1).

Speed Survey

- 10.15 The ATC sites used to collect the traffic volume and composition data were also used to collect speed statistics for each of the sites. The average and 85th percentile speeds observed at the count locations are summarised below in Table 10.1.

Table 10.1: Speed Statistics

	Average Speed (MPH)	85th Percentile Speed (MPH)	Speed Limit (MPH)
A70 West of Muirkirk	32.8	26.8	30
A70 East of Muirkirk	40.4	47.5	60
Lambhill Road	22.5	-	60
B743 South of Strathaven	53.2	61.5	60
A71 West of Strathaven	51	57.7	60
A726 North of Strathaven	41.5	46.4	60
A723 North of Strathaven	43.8	54.1	60
A71 East of Strathaven	45.6	55.8	60

Accident History

- 10.16 Halcrow has requested recorded road traffic accidents for the study area for the last five years from South Lanarkshire Council. The Council provided accident data for the period covering April 2008 through to February 2011 for the whole route from the M74 junctions through to the site access.
- 10.17 An analysis of the data is presented in Table 10.2 to 10.5.

Table 10.2: Accident Severity Summary

Year	Slight	Serious	Fatality
2008	6	3	0
2009	5	1	0
2010	3	4	0
2011	0	1	0

Table 10.1: Accident Causes

Cause	Incidents
Careless / Poor Driving	6
Driver Inexperience	1
Too Fast for Conditions	1
Failed to Look	5
Weather / Road Conditions	6
Illness	1
Other	3

Table 10.2: Accident Location

Location	Incidents
Strathaven Area	6
Stonehouse Area	14
M74 Junction Area	2
B743	1

Table 10.3: Vehicles Involved

Vehicles Involved	Number
Car / Car	9
Car / 3.5t - 7.5t Goods Vehicle	2
Car / Agricultural Vehicle	1
Car Only	7
Minibus or Coach Only	2
3.5t - 7.5t / 3.5t - 7.5t Goods Vehicles	1
3.5t Goods Vehicle / Cyclist	1

- 10.18 Analysis of the statistics indicates that driver error accounted for the vast majority of incidents and that the majority were slight in nature. Incidents involving poor road conditions were very limited, with only one incident having mud on the road noted as a secondary cause.
- 10.19 It is worth noting that no HGVs over 7.5t were involved in any recorded accidents during the review period. This is important as the majority of construction trips for material delivery will be heavier HGVs.
- 10.20 It is also worth noting that no fatal accidents were noted or recorded and that the majority of incidents are clustered around Stonehouse. The clustering around Stonehouse will allow the contractor constructing the site and the haulier

delivering the turbine components to advise deliveries to extra care at this locale during deliveries. This notice will be advised through the detailed Traffic Management Plan to be produced following the granting of planning approval.

Derivation of Development Traffic

10.21 During the 22 month construction period, the following traffic will require access to the site:

- Staff transport, either cars or staff minibuses;
- Construction equipment and materials, deliveries of machinery and supplies such as cement; and
- Abnormal loads consisting of the wind turbine sections and also a heavy lift crane.

10.22 Average monthly traffic flow data has been used to establish the construction trips associated with the site. The following assumptions have also been made by Halcrow:

Staff Traffic

10.23 Staff will arrive in non-HGV vehicles and where possible will be encouraged to car share. The workforce on-site will depend on activities being undertaken, but, based on the assumption that there would be three construction staff per turbine, then the average number of construction staff present on site per day would be 78.

10.24 For the purposes of estimating traffic movements, it has been assumed 66% of staff would be transported by minibus carrying up to 16 people and 33% would arrive by car (single car occupancy has been assumed as the worst case at this stage with potentially fewer movements through car sharing).

10.25 Based on these assumptions, cars and light vehicles would account for 52 vehicles movements per day and OGV1 movements would increase to 6 per day during the peak of construction.

Construction Traffic

10.26 At the start of the project, up to 127, 695t of timber will require to be felled and extracted. A review by Bidwells suggests that this will equate to 10,216 vehicle trips (5,108 trips inbound and 5,108 outbound) within a 12 month extraction period. On a daily average, this equates to 49 trips (25 inbound and 24 outbound) per day.

10.27 Concrete and steel reinforcement for the turbine foundations has been based on a worst case scenario in which the concrete is batched off-site and arrives in mixers for immediate pouring. Therefore, the total estimated trips required for the delivery of the concrete and reinforcement is summarised in Tables 10.6 and 10.7 respectively.

Table 10.6: Ready Mix Deliveries

Foundation Volume (m ³)	No. Turbines	Total Volume (m ³)	Lorry Capacity (m ³)	No. Lorries	No. of Movements
550	26	14300	6	2383	4766

Table 10.7: Steel Reinforcement Deliveries

Reinforcement per Base (t)	No. Turbines	Total Weight	Lorry Capacity (m ³)	No. Lorries	No. of Movements
42	26	1092	30	33	66

10.28 Electrical cables will be laid in trenches. The total estimated number of trips required to deliver the cabling is present in Table 10.8.

Table 10.8: Cabling Movements

Length of Cable Run (m)	Length per drum (m)	No. of drums	Drums per lorry	No. lorries	No. of Movements
13673	500	27.346	9	3	6

10.29 The cables will be buried in sand to protect them from damage. Cabling sand would be imported to the site. The total estimated number of trips required to deliver the cabling is present in Table 10.9.

Table 10.9: Cabling Trench Movements

Length of Cable Run (m)	Trench X-Section (m ²)	Volume (m ³)	Density (te/m ³)	Lorry Capacity (m ³)	No. Lorries	No. of Movements
13673	0.3375	4615	1.6	20	369	738

10.30 Borrow pits on site will provide material to produce road foundations; however additional imported material will be required to construct the wearing courses of the access tracks. Halcrow's geotechnical and highways design teams have estimated that 3600 HGV movements would be associated with the import of this material. In addition, geotechnical separators will also need to be brought in to enable the completion of the access tracks. Table 10.10 details the movements associated with the delivery of geotextile separators.

Table 10.10: Geotextile Import

Length Required (m)	Length per roll (m)	No. of rolls	Rolls per lorry	No. lorries	No. of Movements
12600	75	168	20	8	17

10.31 It is assumed that there will be one service delivery (food/drink) per working day throughout the 15 month programme. This equates to 44 vehicle movements per month. A 22 day working month has been assumed.

10.32 In addition, further items are required to be transported to the site during the construction phase. These items are detailed in the main delivery schedule which can be found in table 5.7 of the TA (Appendix 9.1).

Abnormal loads

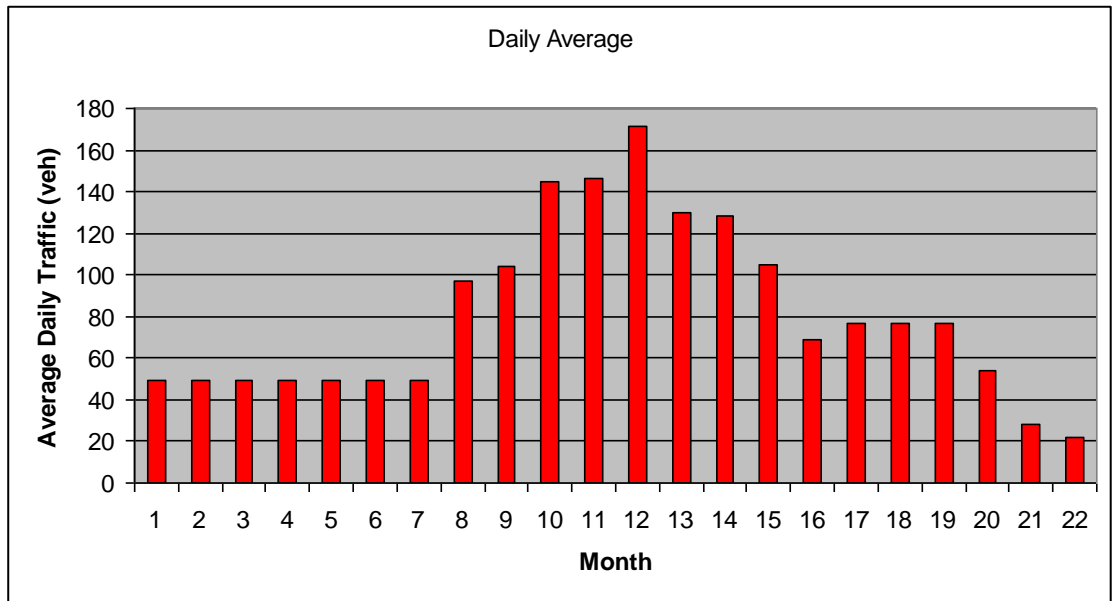
- 10.33 For the purposes of the report, the worst case numbers of components requiring transport are illustrated below. It should be noted that the actual turbine installed on the site may have fewer tower sections, resulting in fewer loads being transported to the site.

Table 10.11: Turbine Components

Component	No. per Turbine
Rotor Blades	3
Tower Top	1
Tower 1	1
Tower 2	1
Tower Base	1
Tower Can	1
Nacelle	1
Hub	1
Transformer	1
Container	1
Nose Cone	1
Footings	1
Site Parts (Shared containers)	0.2
Total movements	14.20
Number of turbines	26
Total vehicle trips	369.2
Total vehicle movements	739

- 10.34 The total estimated construction traffic movements are presented in Table 10.11. To enable comparison of the ATC survey data with the predicted construction traffic, the monthly data has been converted to average daily flows for each month of the construction period as shown in Figure 10.1.

Figure 10.1: Monthly Profile



10.35 The results illustrated above indicate that Month 12 is likely to be the peak period for the construction period with an average of 173 movements per day (87 trips to and 86 trips from the development site).

10.36 The subsequent traffic impact assessments will therefore focus on the peak period traffic flows to illustrate the potential impacts on the study network.

Trip Distribution

10.37 The distribution of development trips on the network will vary depending on the types of loads being transported.

10.38 General deliveries and staff are assumed to be distributed in line with the combined traffic flows on the main routes as collected during the traffic surveys. The proposed distribution of these trips is provided in Table 10.12.

Table 10.12: General Trip Distribution

Origin Point	Percentage Distribution
A70 West of Muirkirk	16.2%
A70 East of Muirkirk	8.9%
A71 West of Strathaven	19.0%
A726 North of Strathaven	31.0%
A723 North of Strathaven	7.8%
A71 East of Strathaven	17.1%

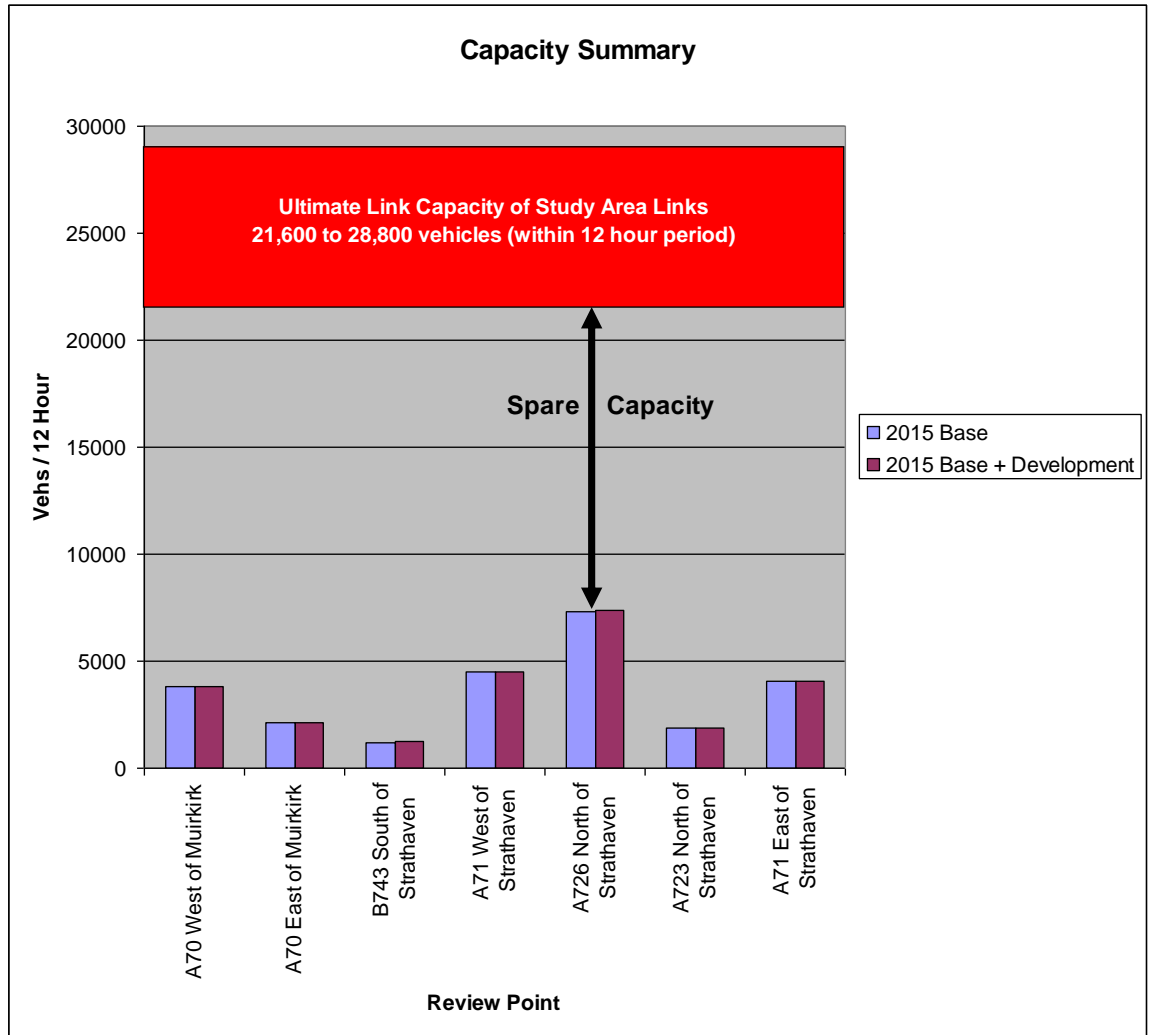
10.39 More specialist deliveries have different distributions on the network. The distributions for these trips have been based on the following assumptions:

- All imported stone is sourced from Dunduff Quarry at Kirkmuirhill, Boghead and access the site from the A70 (east) and B743 (south);
- All abnormal turbine loads come from the M74, via Strathaven and the B743 (see justification in the AIL section of this report); a
- All timber trips access and egress the site via the B743 and access the M74 via Strathaven; and
- All concrete deliveries are sourced from local ready mix sites. A review of suitable facilities has revealed 2 in Uddingston, 1 in Motherwell, 1 in East Kilbride and 1 to the west of Lanark. Concrete deliveries would not be sourced to just one site, so the distribution has assumed that all would contribute to the project. Route for the Uddingston and Motherwell sites assumed that 3/5 of the deliveries would transit via the M74 and Strathaven, 1/5 from East Kilbride via the A726 and 1/5 via the A70 (east).

ASSESSMENT OF EFFECTS

- 10.40 The future year traffic survey data was combined with the peak daily traffic flows to estimate the total trips on the study network during the construction phase (2015 flows plus construction traffic flows). Table 10.12 illustrates the increase in average traffic flows along with the percentage increase in total traffic for both the 12 and 24 hour periods.
- 10.41 The greatest impact of the construction traffic associated with the project is on the B743 and the Lambhill Road leading to the site access. This reflects the current lower number of trips on these elements of the road network.
- 10.42 On the wider road network, the increase in traffic will lead to a slight increase in vehicle delay (escorted loads expected). The level of delay is unlikely to be highly significant as the links on the approach to Strathaven (the B743 and Lambhill Road excepted) are A class distributor roads.
- 10.43 It is possible to calculate average link capacities for the various links within the study area from the Design Manual for Roads and Bridges (DMRB) Volume 15 Part 5: Traffic Modelling in NESAs, Chapter 3. The A class roads are theoretically capable of accommodating between 900 and 1200 vehicles per hour per direction.
- 10.44 A comparison of the theoretical capacity versus the estimated '2015 Future Year Traffic Flows + Construction Traffic' 12-hour flows for each of the A Class road links is illustrated in Figure 10.2. This indicates that there is significant spare capacity and therefore there are no link capacity issues associated with the project construction traffic.

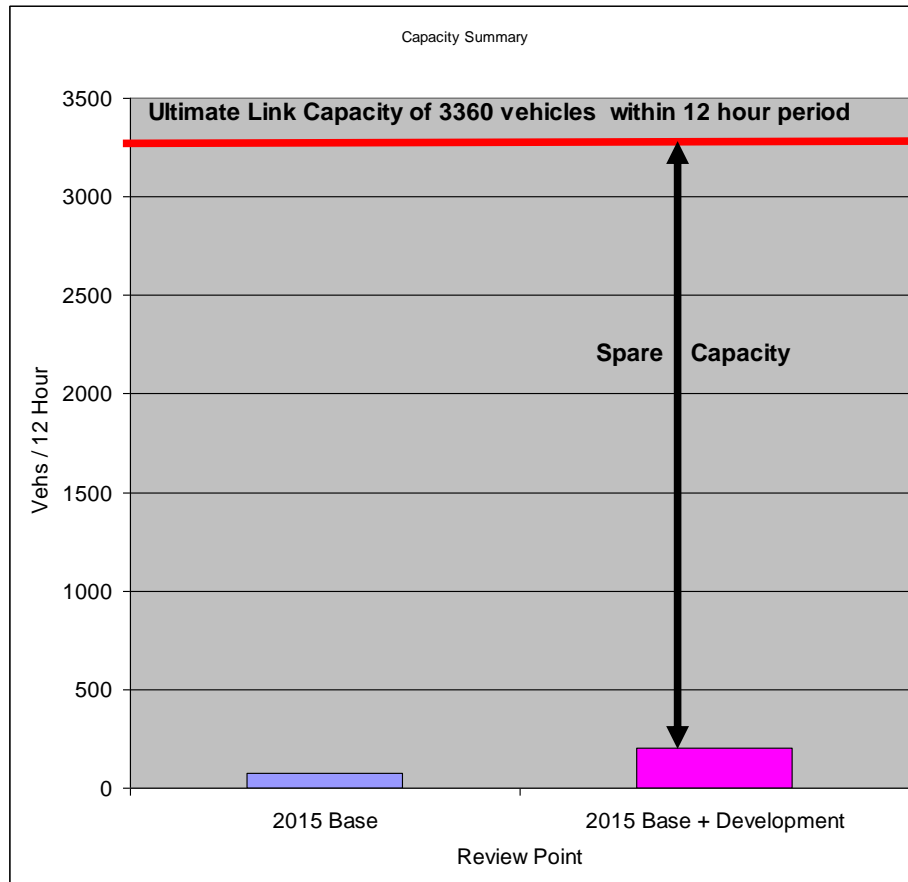
Figure 10.2: A862 & A833 Capacity Review



10.45

A similar exercise was undertaken for the Lambhill Road providing access to the site. The theoretical capacity of the link is illustrated against the actual and predicted traffic movements over a 12 hour period in Figure 10.3.

Figure 10.3: A862 & A833 Capacity Review



10.46 The impact review has been undertaken for weekday conditions as this represents the worst case in load movements.

Impact Statistical Significance

10.47 It should be noted that the percentage increase in traffic flows can be misleading if not read in the correct context. A large percentage increase can be recorded on links where base traffic volumes are low and development trip volumes small.

10.48 The development trips predicted for the busiest month are 171 movements per day. This equates to 86 in bound and 85 outbound trips per day. This converts to an average flow of less than 7 vehicles per hour in either direction.

10.49 When reviewing the percentage impact, the reviewer must always consider the actual number of vehicle movements as well as the base flows.

Impact Review – Construction Phase

10.50 In accordance with the Institute of Environmental Management Assessment (IEMA) Guidelines for the Environmental Assessment of Road Traffic, an assessment should be undertaken where:

- On road links where traffic flows are predicted to increase by more than 30% (or where the number of heavy goods vehicles is predicted to increase by more than 30%); and

- Traffic flows are predicted to increase by 10% or more in any other specifically sensitive areas.

- 10.51 HGV traffic levels are projected to increase on all the roads within the study network in the weekday, although the actual number per day is considered low.
- 10.52 Under the IEMA guidelines, the critical areas are the B743 to the southwest of Strathaven and the Lambhill Road leading to the site access.
- 10.53 The weekday impact on the network is the focus of the environmental assessment. A route evaluation has been carried out for this location against a number of environmental criteria.
- 10.54 Tables 10.3 and 10.14 summarise the potential impact of the increase in traffic on different environmental receptors identified in the IEMA Guidance.
- 10.55 The impacts of statistical significance are restricted to the local road network. No impacts on the trunk road network is considered significant enough to warrant further assessment.
- 10.56 Blanket bog and heathland habitats will be restored in felled areas of coniferous plantation, to increase connectivity between the unfragmented but isolated blanket bog habitats at Kype Muir and Araburn Rig and other open habitats in the area.

Table 10.13: B743 Link Review

Receptor	Potential Effect	Magnitude of effect	Comment
Humans	Traffic noise	Low/Medium	Increase in traffic could result in additional noise impacts, although this would only be temporary during the construction period and on properties abutting the road. Properties at Brown's Bridge and Junction of A71 / B743 most impacted.
	Vibration	Low/Medium	Increase in traffic could result in additional vibration impacts, although this would only be temporary in nature and localised to properties immediately abutting the road. Properties at Brown's Bridge and Junction of A71 / B743 most impacted.
	Visual impact	Low/Medium	The increase in movements by high-sided vehicles could result in visual intrusion, although this would be limited to the construction period only.
	Severance	Low/Medium	Increase in HGVs through residential frontage areas could result in small additional delays where pedestrians wish to cross the road carriageway, for example at the junction of the A71 / B743.

	Driver delay	Low/Medium	Driver delay would largely occur during the movement of the abnormal loads.
	Pedestrian delay	Low/Medium	The increase in pedestrian delay is considered to be small and localised to specific periods during the construction process and focussed at the Strathaven end of the section.
	Pedestrian amenity	Low	There will be temporary reduction in amenity due to the higher volumes of HGV traffic. This is however limited due to the low numbers of HGVs associated with the construction phase.
	Accidents and safety	Low	There is the potential for impact on safety due to driver frustration, particularly with regards to the transport of the abnormal loads.
	Hazardous loads	Low	Highly unlikely that any abnormally hazardous materials would be transported to / from site.
	Air pollution	Low	An increase in traffic is often associated with an increase in air pollution; however it is unlikely the volume of movements and temporary nature would pose a significant impact.
	Dust and dirt	Low/Medium	There is limited potential for dust and dirt to be distributed on the public road by vehicles exiting the site, particular in proximity to the junction with the Lambhill Road providing access to the site. Measures outlined in the EMP will be put in place to minimise any potential impact.
Ecology		Low/Medium	The side vegetation may be needed to be removed from the roads. To avoid any impact upon nesting birds this should be removed outside of the breeding season (March to August).
Material assets	Heritage and conservation areas	Low	No significant impacts are considered likely at this location.

Table 10.14: Lambhill Road Link Review

Receptor	Potential Effect	Magnitude of effect	Comment
Humans	Traffic noise	Low/Medium	Increase in traffic could result in additional noise impacts, although this would only be temporary during the construction period and on properties abutting the Lambhill road.
	Vibration	Low/Medium	Increase in traffic could result in additional vibration impacts, although this would only be temporary in nature and localised to properties immediately abutting the road.
	Visual impact	Low/Medium	The increase in movements by high-sided vehicles could result in visual intrusion, although this would be limited to the construction period only.
	Severance	Low/Medium	Increase in HGVs through Lambhill could result in additional delays where pedestrians wish to cross the road carriageway. The pedestrian demand to cross the road at this location however is considered low.
	Driver delay	Low/Medium	Driver delay would largely occur during the movement of the abnormal loads.
	Pedestrian delay	Low	The increase in pedestrian delay is considered to be small and localised to specific periods during the construction process.
	Pedestrian amenity	Low	There will be temporary reduction in amenity due to the higher volumes of HGV traffic. This is however limited due to the low numbers of HGVs associated with the construction phase.
	Accidents and safety	Low/Medium	There is the potential for impact on safety due to driver frustration, particularly with regards to the transport of the abnormal loads.
	Hazardous loads	Low	Highly unlikely that any abnormally hazardous materials would be transported to / from site.
	Air pollution	Low	An increase in traffic is often associated with an increase in air pollution; however it is unlikely the volume of movements and temporary nature would pose a significant impact.

	Dust and dirt	Low/Medium	There is limited potential for dust and dirt to be distributed on the public road by vehicles exiting the site, particular in proximity to access point. . Measures outlined in the EMP will be put in place to minimise any potential impact.
Ecology		Low/Medium	The side vegetation may be needed to be removed from the roads. To avoid any impact upon nesting birds this should be removed outside of the breeding season (March to August).
Material assets	Heritage and conservation areas	Low	No significant impacts are considered likely at this location.

Operational Traffic

- 10.57 It is predicted that during the operation of the project there will be up to 4 vehicle movements per week for maintenance purposes. Also, there may be occasional abnormal load movements to deliver replacement components in the event of a major failure.

Decommissioning Traffic

- 10.58 Prior to decommissioning of the project, anticipated to be 25 years from the opening year, a traffic assessment will be undertaken and appropriate traffic management procedures followed. It is anticipated the number of associated vehicle movements will be less than during the construction phase and that the number of abnormal loads will be drastically reduced.

General Construction Traffic Mitigation

- 10.59 During the construction period the developer and contractor will maintain a website which will contain the latest information relating to traffic movements associated with traffic accessing the development site, all of which will be agreed with the local roads authority.

- 10.60 The following measures are recommended in terms of site operation and maintenance during the construction phase: -

- All materials delivery lorries (dry materials) should be sheeted to reduce dust and stop spillage on public roads; and
- Specific training and disciplinary measures should be established to ensure the highest standards are maintained to prevent construction vehicles from carrying mud and debris onto the carriageway, wheel wash facilities will be established at the site entrance.

- 10.61 The Construction Method Statement and EMP addresses measures to be put in place to reduce the impact of noise, dust and excessive speed.

10.62 Table 10.15 indicates the proposed mitigation measures that the developer intends to use to mitigate or reduce the impact of the suspected impacts.

Operational Phase Mitigation

10.63 Site entrance roads will be well maintained and monitored and road cleaners will be available to remove material carried onto public roads by any maintenance traffic travelling to the site when operational.

Decommissioning Phase Mitigation

10.64 Similar to the construction phase, a Traffic Management Plan will be prepared for the decommissioning phase.

Residual Impacts

10.65 With mitigation measures in place no significant residual impacts are anticipated.

Table 10.15: Mitigation Proposals

Potential Effect	Proposed Mitigation
Traffic noise and vibration	At sensitive locations such as Strathaven town centre, the junction of the A71 / B743, Brown's Bridge and the Lambhill road, construction traffic will slow down to a maximum speed of 15mph to reduce engine noise and vibration issues. Vehicles will also be fitted with identification numbers to allow the public to identify any vehicles that may be speeding or causing specific issues.
Visual impact	All mitigation works to accommodate abnormal load traffic will be designed to be temporary in nature and will be restored to their original condition (with the exception of the turn onto the Lambhill Road and its associated widening).
Severance	The Traffic Management Plan will set out measures to reduce severance issues such as access control for construction traffic. The works to enable the abnormal loads to turn onto the B743 from the A71 will only be used by abnormal loads and temporary barriers will be used to close it off to other traffic. This measure will reduce specific severance issues at this location.
Driver delay	General construction traffic is unlikely to create significant levels of driver delay. The Traffic Management Plan will set out measures to help reduce delays encountered with abnormal load transport. This will include measures such as timing deliveries during off-peak periods. Other measures such as advance warning signs will help drivers consider non-impacted routes as alternatives for their journeys.
Pedestrian delay	Pedestrian delay is only likely with abnormal load deliveries through Strathaven. The timings of the load transits will be outwith peak pedestrian times to reduce likely impacts.
Pedestrian amenity	Pedestrian amenity will be protected through the Traffic Management Plan through measures such as low traffic speeds in Strathaven town centre.
Accidents and safety	The abnormal loads will be escorted by the Police and operated in accordance with a Traffic Management Plan that reviews all risks for all road users. Advance warning signs will be used to provide advice and warnings to road users and a wheel wash facility will be provided to ensure that no mud and debris will be brought onto the public highway.

Air pollution	Wherever possible, contractors will be encouraged to use low emission vehicles through the Construction Management Statement.
Dust and dirt	A wheel wash facility is to be provided on site and contractors will be required to sheet over all loose material deliveries. A road sweeper will also be deployed on the Lambhill Road to ensure that the road is kept clean and free running
Ecology	The trimming back of tree canopy cover and side vegetation is unlikely to have a significant long lasting adverse impact. The widening of the Lambhill Road will result in the loss of a number of trees which could be replaced or in some cases relocated, to maintain the current ecology of the area.

ABNORMAL LOAD ACCESS OVERVIEW

10.66 The turbines are broken down into components for transport to the site. The nacelle, blade and tower sections are classified as Abnormal Indivisible Loads (AIL) due to their weight, length, width and height when loaded. The vehicles all feature independent rear wheel steering and would be provided with both Police and civilian escorts. Illustrations of example turbine transportation are included in section 7 of the TA (Appendix 9.1).

10.67 A review of all possible access routes for the site was undertaken. As illustrated on Drawing PA07 the most technically feasible route for accessing the site is as follows:

Depart KGV Docks via Abnormal Load Gate – Proceed west on Kings Inch Road – Turn onto Mayo Avenue and head south – Join M8 eastbound – Proceed M8 eastbound through Glasgow to M73 interchange – Depart M8 onto M73 southbound – Depart M73 for M74 southbound – Proceed M74 to Junction 8 – Proceed A71 westbound – Bypass Stonehouse via A71 – Proceed A71 westbound through Strathaven – Depart A71 at junction with B743 and continue southwest – cross Brown’s Bridge – Turn Left onto Lambhill Road and proceed to site access.

10.68 Whilst the above route is current at present, it may be possible for the loads to join the M74 directly using the new M74 extension currently under construction.

10.69 Access to the development site from the A70 and B743 was assessed but the study concluded that it is not feasible for the size of turbines under consideration.

General Comments

10.70 Halcrow has undertaken a review of the access route from the Port of Entry (POE) to the site.

10.71 Before the abnormal loads traverse the route, Halcrow would strongly suggest that a further detailed review for the selected turbine components of the following is undertaken to ensure load and road user safety:

- No weight restrictions were noted at the time of the survey. A detailed review of maximum axle loading on structures along the access route is being undertaken and will be agreed with the transport authorities prior to the loads being transported;

- The maximum height of the loads is 4.9 metres and should pass under any overhead services. However given the potential time delay from the survey to the actual transport, Halcrow suggest it prudent that a further utility review is undertaken prior to the loads being transported;
- Any vegetation which may foul the loads is trimmed back to allow passage (this is of concern once the load is on the local road network and should be assessed for summer conditions);
- No roadwork's or closures that could affect the passage of the loads;
- No new or diverted underground services on the access route that are at risk from the abnormal loads;
- A conditions survey is undertaken to ascertain the extents of any road defects and that this is agreed in advance of any load movements with the roads agencies to protect the client group from unrelated damage claims; and
- Strathclyde Police is satisfied with the route being used and that the local roads authorities have been further contacted regarding the proposed loads and suggested route.

Constraint Assessment

10.72 The route survey identified a number of potential constraints associated with the proposed delivery route. These were:

- A71/Lockhart Street roundabout;
- A71/Strathaven Road roundabout;
- A71/A726 mini-roundabout (Strathaven crossroads);
- A71/B743 junction;
- Bend to the north of Brown's Bridge;
- Brown's Bridge; and
- The left turn from the B743 onto the Lambhill Road

10.73 The constraint points have been assessed to determine the need for remedial measures to allow transit of the proposed loads.

10.74 In order to assess the transit of the load at the various constraint points, a worst case load has been assumed for the key components for both the candidate turbines. The key loads are:

- The REpower turbine blade;
- The Siemens turbine blade; and
- The Siemens base tower section.

10.75 An assessment of each of the three components has been undertaken at each of the key points, further details of which can be found in the TA (appendix 9.1). Table 7.1 of the TA (Appendix 9.1) summaries the results of the swept path assessment along with details of minor road space works at other points on the delivery route.

SUMMARY OF ASSESSMENT

- 10.76 Existing traffic data has established a base point for determining the impact during the construction phase and factored to future levels to reflect the impact of construction traffic on the local road network. The maximum traffic impact associated with the construction of the wind farm is predicted to occur in month 12 of the construction programme. During this month, an average of 107HGV movements are predicted per day and it is estimated that there will be a further 66 car and light van movements per day to transport construction workers to and from the site.
- 10.77 In addition, the impact of the development on overall road capacity (and any future) has been examined. The construction traffic will result in a temporary increase of traffic flows within the study area. During construction of the wind farm the traffic is predicted to be greatest on the B743 and Lambhill Road providing access to the site, a reflection of the lower number of existing traffic movements on the road network at this site.
- 10.78 A review of the local road network was undertaken to assess the feasibility of transporting turbines to the development site. The route is feasible and all structures on it have been reviewed and approved for use Appendix 9.2).
- 10.79 No significant capacity issues are expected on the any of the roads within the study network due to the additional construction traffic movements associated with the development.
- 10.80 The assessment has clearly identified the following:
- The impact of construction traffic on the surrounding road network is short lived and not significant;
 - That the surrounding road network has sufficient capacity to accommodate the temporary construction traffic;
 - That the construction phase of the project will generate the highest level of traffic;
 - That the route from the port of entry at KGV is suitable for turbine delivery subject to a small number of minor improvements; and
 - That a traffic management plan is required to control construction traffic in the interests of road safety and efficiency.
- 10.81 The impact of the proposed development on the surrounding road network is slight and short in duration. There are no substantial matters relating to transport that would preclude the granting of planning approval.