

Chapter 11

Traffic and Transport

Issue	Date	Revision Details
1235608A	12/02/2021	Released

Contents

11.1	STATEMENT OF COMPETENCE	2
11.2	INTRODUCTION	2
11.3	METHOD OF ASSESSMENT	2
	<i>Consultation</i>	3
	<i>Potential Effects Scoped Out</i>	3
	<i>Criteria for Assessing the Sensitivity of Receptors</i>	3
	<i>Criteria for Assessing the Magnitude of Change</i>	4
	<i>Criteria for Assessing Significance</i>	4
	<i>Limitations and Assumptions</i>	4
	<i>Criteria for Assessing Cumulative Effects</i>	4
	<i>Study Area Definition</i>	5
	<i>Summary of Sensitive Receptors</i>	5
11.4	BASELINE	5
	<i>Pedestrian & Cyclist Network</i>	5
	<i>Road Traffic</i>	5
	<i>Future Baseline</i>	6
11.5	ASSESSMENT OF POTENTIAL EFFECTS	6
	<i>Construction Traffic Estimates</i>	6
	<i>Potential Construction Traffic Effects</i>	7
	<i>Potential Operational Effects</i>	7
	<i>Potential Decommissioning Effects</i>	7
11.6	CUMULATIVE EFFECTS	7
11.7	MITIGATION	7
	<i>Mitigation During Construction</i>	7
	<i>Draft Construction Traffic Management Plan</i>	7
	<i>Wear & Tear Agreement</i>	8
	<i>Framework Traffic Management Plan</i>	8
11.8	ASSESSMENT OF RESIDUAL EFFECTS	8
11.9	CONCLUSIONS	8

List of Abbreviations

Abbreviation	Description
ATC	Automatic Traffic Counter
AIL	Abnormal Indivisible Load
CTMP	Construction Traffic Management Plan
D&GC	Dumfries & Galloway Council
DfT	Department for Transport
IEMA	Institute of Environmental Management and Assessment
HGV	Heavy Goods Vehicle
LGV	Light goods vehicles
NCR	National Cycle Route
NRTF	National Road Traffic Forecast
OS	Ordnance Survey
POI	Point of Interest
SLC	South Lanarkshire Council
VMS	Variable Message Signage

11.1 STATEMENT OF COMPETENCE

11.1.1 The traffic and transport assessment was undertaken by Pell Frischmann Consultants Limited. The lead author is Gordon Buchan BEng (Hons), MSc, CMILT, MCIHT, Divisional Director in our Transport Planning team. Gordon has over 24 years' experience and has worked on over 500 wind farm sites across the UK, Ireland and Scandinavia.

11.2 INTRODUCTION

11.2.1 This chapter considers the likely significant effects on transport and access associated with the construction, operation and decommissioning of the Proposed Development. The specific objectives of the chapter are to:

- Describe the existing access network and transport baseline;
- Describe the assessment methodology and significance criteria used in completing the impact assessment;
- Describe the potential effects, including direct, indirect and any potential cumulative effects;
- Describe the mitigation measures proposed to address likely significant effects; and
- Assess the residual effects remaining following the implementation of mitigation.

11.2.2 This chapter is supported by the following technical appendix:

- Technical Appendix 11.1: Transport Assessment.

11.2.3 Figures and technical appendices are referenced in the text where relevant.

11.3 METHOD OF ASSESSMENT

11.3.1 An overview of the effects of the traffic movements has been considered in accordance with Institute of Environmental Assessment (now Institute of Environmental Management and Assessment (IEMA)) Guidelines for the Environmental Assessment of Road Traffic. The document is referred to as the IEMA Guidelines in this chapter.

The methodology adopted in this assessment involved the following key stages:

- Determine baselines;
- Review development for impacts;
- Evaluate significance of effects on receptors;
- Identify mitigation; and
- Assess residual effects.

11.3.2 This chapter considers effects on the following:

- The existing baseline transport conditions of the study area surrounding the Proposed Development site;
- The likely infrastructure requirements necessary to enable the Proposed Development;
- The likely effects and changes associated with the imposition of construction traffic on the local road network;
- What measures would be required to mitigate against any potential significant effects of the temporary construction traffic;
- The likely traffic conditions during the operational phase of the Proposed Development; and
- The likely traffic conditions during the decommissioning phase of the Proposed Development.

11.3.3 A review of the planning portals of Dumfries & Galloway and South Lanarkshire Councils indicates that there are no significant traffic generating developments proposed with planning approval within immediate proximity to the

Proposed Development that would be either under construction or complete prior to the expected date of the Proposed Development being constructed.

11.3.4 There are several wind farm proposals located nearby that have entered or are about to enter the planning process. These sites do not have planning consent and as such cannot be classed as committed development. As such, it is not possible to include their development traffic estimates to the assessment.

11.3.5 Should other wind farm application be consented, any crossover of traffic with the Proposed Development flows would be addressed via a Traffic Management Plan. The inclusion of further traffic flows in the base line (i.e. including non-consented traffic) will dilute the potential impact that the Daer Wind farm proposals will have. As such, the approach taken is considered to be an overly robust assessment. This could be addressed as part of the detailed Traffic Management Plan that would be produced prior to the start of construction activities and secured by planning condition.

11.3.6 The use of Low National Road Traffic Forecasts (NRTF) traffic growth assumptions have provided a robust future year assessment scenario to account for the level of trip generation that can occur as a result of the types of local development that may occur within the study area and the effects of tourist traffic on the network.

11.3.7 The assessment is based on the Proposed Development as described in Chapter 2: Development Description.

Consultation

11.3.8 The scope of the assessment has been informed by consultation responses summarised in Table 11.1 and the following guidelines/policies:

- Institute of Environmental Assessment, Guidelines for the Environmental Assessment of Road Traffic (1993);
- Institution of Environmental Management and Assessment (IEMA) 'Guidelines for Environmental Impact Assessment' (2005); and
- The Design Manual for Roads and Bridges (DMRB) (Highways Agency and others 2020).

11.3.9 Table 11.1 summarises the scoping consultation responses received regarding transport and access matters and provides information on where and/or how they have been addressed in this assessment. The following organisations made comment on transport matters:

- Dumfries & Galloway Council (as local roads agency)
- South Lanarkshire Council (as a neighbouring local road agency); and
- Transport Scotland (as trunk roads agency).

Table 11.1: Consultation Responses

Consultee	Issue Raised	Response / Action take
Dumfries & Galloway Council Roads Department	Routing of traffic in the scoping study was via a route from the north via roads with South Lanarkshire Council's area.	The access route for all construction traffic is now via the A701 trunk road. A full assessment has been undertaken to review and identify potential impacts and associated mitigation.
Dumfries & Galloway Council Access Officer	There are two core paths within the site boundary. These should not be restricted and details of any diversions during	The Core Paths have been identified. Enhanced signage and traffic management measures will be provided to ensure safety for all users during

Consultee	Issue Raised	Response / Action take
	construction must be forwarded on.	construction. Further details are in Chapter 13.
South Lanarkshire Council Roads Department	The application should include full swept path assessments to ensure that deliveries can be accommodated.	A detailed Route Survey Report is appended in Technical Appendix 11.1.
Transport Scotland	The application must include an abnormal load assessment	A detailed Route Survey Report is appended in Technical Appendix 11.1.
Transport Scotland	A review of the environmental impacts should be undertaken	This chapter includes an environmental impact assessment in accordance with the IEMA Guidelines.
Transport Scotland	A Traffic Management Plan should be prepared	A Framework Traffic Management plan is provided in the Transport Assessment (Technical Appendix 11.1)

Potential Effects Scoped Out

11.3.10 The traffic effects during the operational phase of the Proposed Development are likely to be insignificant as traffic flows will be circa two vehicle movements per week, far below the recognised thresholds for triggering a formal Transport Assessment (see Transport Assessment Guidance, Scottish Government). As such, the effects during the operational phase have been scoped out of the assessment.

11.3.11 No cumulative assessment has been undertaken as there are no significant committed traffic generating sites that would have an impact on the study network.

Criteria for Assessing the Sensitivity of Receptors

11.3.12 The IEMA 'Guidelines for Environmental Impact Assessment' (2005) notes that the separate 'Guidelines for the Environmental Assessment of Road Traffic' (1993) document should be used to characterise the environmental traffic and transport effects (off-site effects) and the assessment of significance of major new developments. The guidelines intend to complement professional judgement and the experience of trained assessors.

11.3.13 In terms of traffic and transport impacts, the receptors are the users of the roads within the study area and the locations through which those roads pass.

11.3.14 The IEMA Guidelines includes guidance on how the sensitivity of receptors should be assessed. Using that as a base, professional judgement was used to develop a classification of sensitivity for users based on the characteristics of roads and locations. This is summarised in Table 11.2.

11.3.15 Where a road passes through a location, road users (pedestrian, cyclists, drivers, etc.) are considered subject to the highest level of sensitivity defined by either the road or location characteristics.

Table 11.2: Classification of Receptor Sensitivity

Receptor	Sensitivity			
	High	Medium	Low	Negligible
Users of Roads	Where the road is a minor rural road, not constructed to accommodate frequent use by HGVs. Includes roads with traffic control signals, waiting and loading restrictions, traffic calming measures	Where the road is a local A or B class road, capable of regular use by HGV traffic. Includes roads where there is some traffic calming or traffic management measures	Where the road is Trunk or A-class, constructed to accommodate significant HGV composition. Includes roads with little or no traffic calming or traffic management measures	Where roads have no adjacent settlements. Includes new strategic trunk roads that would be little affected by additional traffic and suitable for Abnormal Loads and new strategic trunk road junctions capable of accommodating Abnormal Loads
Users/ Residents of Locations	Where a location is a large rural settlement containing a high number of community and public services and facilities	Where a location is an intermediate sized rural settlement, containing some community or public facilities and services	Where a location is a small rural settlement, few community or public facilities or services	Where a location includes individual dwellings or scattered settlements with no facilities

Criteria for Assessing the Magnitude of Change

- 11.3.16 The following rules, also taken from the IEMA Guidelines are used to determine which links within the study area should be considered for detailed assessment:
- Rule 1 – include highway 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
 - Rule 2 – include any other specifically sensitive areas where traffic flows are predicted to increase by 10% or more.
- 11.3.17 The IEMA Guidelines identify the key impacts that are most important when assessing the magnitude of traffic impacts from an individual development: the impacts and levels of magnitude are discussed below:
- Severance – the IEMA Guidance states that, “severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery.” Further, “Changes in traffic of 30%, 60% and 90% are regarded as producing ‘slight’, ‘moderate’ and ‘substantial’ [or minor, moderate and major] changes in severance respectively”. However, the Guidelines acknowledge that “the measurement and prediction of severance is extremely difficult”.
 - Driver delay – the IEMA Guidelines note that these delays are only likely to be “significant [or major] when the traffic on the network surrounding the development is already at, or close to, the capacity of the system.”;

- Pedestrian delay – the delay to pedestrians, as with driver delay, is likely only to be major when the traffic on the network surrounding the development is already at, or close to, the capacity of the system. An increase in total traffic of approximately 30% can double the delay experienced by pedestrians attempting to cross the road and would be considered major;
- Pedestrian amenity – the IEMA Guidelines suggests that a tentative threshold for judging the significance of changes in pedestrian amenity would be where the traffic flow (or its lorry component) is halved or doubled. It is therefore considered that a change in the traffic flow of -50% or +100% would produce a major change in pedestrian amenity;
- Fear and intimidation – there are no commonly agreed thresholds for estimating levels of fear and intimidation, from known traffic and physical conditions. However, as the impact is considered to be sensitive to traffic flow, changes in traffic flow of 30%, 60% and 90% are regarded as producing minor, moderate and major changes respectively; and
- Accidents and safety – professional judgement would be used to assess the implications of local circumstances, or factors which may elevate or lessen risks of accidents.

11.3.18 While not specifically identified, as more vulnerable road user, cyclists are considered in similar terms to pedestrians.

Criteria for Assessing Significance

11.3.19 To determine the overall significance of effects, the results from the receptor sensitivity and magnitude of change assessments are correlated and classified using a scale set out in the Design Manual for Roads and Bridges (DMRB) and summarised in Table 11.3.

Table 11.3: Significance of Effects

Receptor Sensitivity	Magnitude of Impacts			
	Major	Moderate	Minor	Negligible
High	Large	Large/Moderate	Moderate/Slight	Slight
Medium	Large/Moderate	Moderate	Slight	Slight/Neutral
Low	Moderate/Slight	Slight	Slight	Slight/Neutral
Negligible	Slight	Slight	Slight/Neutral	Neutral

11.3.20 Effects are considered significant for the purposes of the EIA Regulations where they are assessed to be Large or Large/Moderate. Where an effect could be one of Moderate or Moderate/Slight, professional judgement would be used to determine which option should be applicable.

Limitations and Assumptions

11.3.21 The assessment is based upon average traffic flows in one month periods. During the month, activities at the site may fluctuate between one day and another and it is not possible to fully develop a day by day traffic flow estimate as no BoP contractor has been appointed and external factors can impact upon activities on a day by day basis (weather conditions, availability of materials, time of year, etc.).

Criteria for Assessing Cumulative Effects

11.3.22 No cumulative assessment has been undertaken in transport terms, as previously indicated.

Study Area Definition

- 11.3.23 The Proposed Development would be accessed directly from the existing strategic timber haul road junction on the A701 to the south of Beattock. This junction has been previously used for the transport of loads associated with the Harestanes and Minnygap wind farm developments. The existing junction would be widened to accommodate the proposed abnormal loads and the visibility splays would be cleared to ensure safe access for all users at the junction (see Technical Appendix 11.1 for further details).
- 11.3.24 A review of likely points of origin for materials has been undertaken along with a review of construction methodology to assist in developing a suitable study area.
- 11.3.25 Access to the site for all construction traffic will be taken from the A701. Likely quarry locations are located on the A701 to the south of the development site, whilst access for other construction materials can be taken from the M74 via the A701 at Junction 15.
- 11.3.26 Access for turbine components will arrive via the B7076 and A701, whilst staff access will be taken from the M74 and A701 at Moffat. The study area for this assessment is as follows:
 - The M74 to the north and south of Junction 15;
 - The A701 between Moffat and Dumfries; and
 - The B7076 between Junctions 14 and 15 of the M74.

Summary of Sensitive Receptors

- 11.3.27 A review of receptors within the study area has been undertaken using the criteria described in this chapter. Table 11.4 summarises the receptors with their estimated sensitivities and justifications.

Table 11.4: Receptor Summary

Receptor	Sensitivity	Justification
A701 Road Users	Low	A class trunk road that can accommodate HGV traffic with no traffic calming facilities present
B7076 Users	Medium	B class road, capable of regular use by HGV traffic.
M74 Users	Negligible	Trunk road that is little affected by additional traffic.
Moffat Users / Residents	Medium	Medium sized settlement with some community facilities
Beattock Users / Residents on the A701 corridor	Low	Small settlement with no community facilities on the A701 corridor

11.4 BASELINE

Pedestrian & Cyclist Network

- 11.4.1 There are two Core Paths recorded by Dumfries and Galloway Council that cross potential access routes to the Proposed Development. These are:
 - The Annandale Way; and
 - The Southern Upland Way.
- 11.4.2 Both routes cross the construction access route on the off-road section of the route. They cross the public road network on the A701 near Beattock, however the crossing is grade separated and no physical interaction at this location between users is possible.

- 11.4.3 On the private off-road access track network, specific traffic management measures will be provided to improve the safety of the crossing locations for non-motorised users of both Core Paths.
- 11.4.4 Pedestrian facilities throughout the study area are limited and reflect the rural nature of the road network within the study area.
- 11.4.5 A review of the Sustrans cycle network plan of the United Kingdom has been undertaken and indicates that National Cycle Route (NCR) 74 Gretna – Glasgow runs along the A701 between the junction of the A701 / B7076 to the south of Beattock, through to the B7076 to the north of Junction 15 of the M74. The route is segregated from the A701 to the south of Beattock, however it continues as a painted cycle lane on the B7076 to the north of the Junction 15 roundabout.
- 11.4.6 The Dumfries and Galloway Council cycle map indicates that the A701 between Beattock and Moffat is a recognised cycle and pedestrian link. A separate shared footway / cycleway is provided between the two settlements.

Road Traffic

- 11.4.7 Access to the site is currently taken from the A701 via a priority junction that provides access to the wider forestry estate and to the existing Harestanes and Minnygap Wind Farms.
- 11.4.8 The A701 is part of the trunk road network and forms an important regional distributor function between the Dumfries and the M74. The road is maintained by Amey on behalf of Scottish Ministers.
- 11.4.9 Due to travel restrictions associated with the COVID 19 lockdown, it has not been possible to collect accurate traffic data specifically for this assessment. In order to assess the impact of construction traffic on the study area, traffic count data for 2019 was obtained from the UK Department for Transport (DfT) traffic count database.
- 11.4.10 The counts sites used were as follows:
 - The A701 near the site access junction;
 - The B7076 between Junctions 14 and 15 of the M74;
 - The A701 to the south of Moffat;
 - The M74 to the south of Junction 15; and
 - The M74 to the north of Junction 15.
- 11.4.11 The locations of the ATC sites are illustrated in the Technical Appendix 11.1, Transport Assessment.
- 11.4.12 The traffic counters allowed the traffic flows to be split into vehicle classes. The data was summarised into Cars/Light Goods Vehicles (LGV) and HGVs (all goods vehicles >3.5 tonnes gross maximum weight). Table 11.5 summarises the 24 hour average weekday traffic data collected at the count sites.

Table 11.5: Existing Traffic Conditions (2019)

Survey Location	Cars & LGV	HGV	Total
A701 Site Access	3257	609	3866
B7076 Between Junctions 14 and 15	263	84	347
A701 South of Moffat	4744	228	4972
M74 South of Junction 15	27561	7165	34726
M74 North of Junction 15	23136	7893	31029

11.4.13 Road traffic accident data for the three year period commencing 01 January 2017 through to the 31st December 2019 was obtained from the online resource crashmap.co.uk which uses data collected by the police about road traffic crashes occurring on British roads where someone is injured. Accidents are categorised as:

- “Slight” where there is damage only to vehicles or property;
- “Serious” where the accident results in a physical injury; and
- “Fatal” where a death is recorded.

11.4.14 Accident data for the B7076, A701 and M74 Junction 15 was reviewed. The summary statistics indicate that:

- There was one “slight” accident recorded on the B7076 (between Junctions 14 and 15) and one “slight” accident noted on the A701 between Junction 15 and Moffat;
- There were five accidents noted on the A701 between the site access junction and the roundabout at Junction 15. Of these, three were categorised as “Serious” and two as “slight”. No fatal accidents were recorded on either the B7076 or A701;
 - None of the accidents on the A701 between the site and Junction 15 involved a casualty who was a pedestrian, child, cyclist or motorcyclist;
 - Of the five A701 accidents between Junction 15 and the site access junction, all involved cars, with only one “slight” accident involving a collision between a car and an HGV;
- A driver was involved in a “serious” accident at the junction of the A701 and B7076. Other incidents on the A701 appear to occur at existing road junctions;
 - The “slight” accident noted on the A701 to the south of Moffat involved a pedestrian and car collision;
 - The “slight” accident recorded on the B7076 between Junctions 14 and 15 involved a car and an HGV on a straight section of road and occurred in 2019;
 - Other than the accident noted on the B7076, no accidents were recorded in 2019;
- Two accidents were recorded on the M74 at Junction 15, one being a “fatal” accident at the diverge lane of the northbound carriageway and one a “slight” accident on the merge lane of the southbound on-slip. Neither involved HGV traffic.

11.4.15 The statistics indicate that that over half of accidents recorded are “Slight” in nature and that only one involved an HGV.

Future Baseline

- 11.4.16 Construction of the project is expected to commence during 2026 if consent is granted.
- 11.4.17 To assess the likely effects during the construction phase, base year traffic flows were determined by applying a National Road Traffic Forecast (NRTF) low growth factors to the surveyed and obtained traffic flows.
- 11.4.18 The NRTF low growth factor for 2019 to 2026 is 1.043. This factor was applied to the 2019 survey data to estimate the 2026 Base traffic flows shown in Table 11.6.

Table 11.6: Future Baseline Traffic Conditions (2026)

Survey Location	Cars & LGV	HGV	Total
A701 Site Access	3397	635	4032
B7076 Between Junctions 14 and 15	274	88	362
A701 South of Moffat	4948	238	5186
M74 South of Junction 15	28746	7473	36219

M74 North of Junction 15	24131	8232	32363
--------------------------	-------	------	-------

11.4.19 If the development did not proceed, traffic growth will occur and the links within the study network will experience increased traffic flows resulting from other development pressures, tourism traffic and population flows.

11.5 ASSESSMENT OF POTENTIAL EFFECTS

Construction Traffic Estimates

11.5.1 The assessment is based upon the construction effects that may occur within the study area. In order to assess the effects, it is necessary to determine the likely traffic generation associated with the Proposed Development.

11.5.2 During the assumed 18 months construction period, the following traffic would require access to the site:

- Staff transport, either cars or staff minibuses;
- Construction equipment and materials, deliveries of machinery and supplies such as concrete raw materials;
- AILs consisting of the wind turbine components and heavy lift crane(s); and
- Escort vehicles for AIL deliveries.

11.5.3 Except for the turbine components, most traffic would be normal construction plant and would include grading tractors, excavators, high capacity cranes, forklifts and dumper trucks. Most would arrive at the site on low loaders.

11.5.4 The turbines are delivered in component sections for transport and would be assembled at the site. The nacelle, hub, drive train, blade, tower sections are classified as AIL due to their weight and/or length, width and height when loaded.

11.5.5 The components can be delivered on a variety of transport platforms with typical examples illustrated in the appendices.

11.5.6 The resulting traffic generation profile is presented in Technical Appendix 11.1: Transport Assessment for review. The peak of construction occurs in Month 8 with 44 HGV movements per day (22 inbound and 22 outbound) and 48 Car / LGV movements (24 inbound trips and 24 outbound trips). These figures on average indicate approximately an additional 5 HGV movements per hour on the network at the peak of construction activities.

11.5.7 The distribution of development traffic on the network would vary depending on the types of loads being transported. The assumptions for the distribution of construction traffic during the peak months would be as follows:

- Staff trips are assumed to originate from local places of residence, with 50% of staff estimated to be resident in and around Moffat. The remaining 50% have been assumed to access the site from the M74 to the north and south in equal numbers;
- General site deliveries are assumed to access the site from the Central Belt of Scotland and will access from the north via the M74;
- Material imported to site for the initial access tracks works is predicted to originate from the south of the site and will be delivered via the A701 or M74. For the purposes of the assessment, a 50 / 50 split has been assumed; and
- Deliveries of materials to supply the on-site batching plant will access the site from further afield where supply chains are likely to offer more competitive commercial terms. It has been assumed that a 50/50 split between the M74 north and south is adopted for the assessment.

11.5.8 The final decision on material sources will be made by the Balance of Plant (BoP) contractor.

- 11.5.9 It is proposed that the port used for the deliveries of wind turbine components would be King George V Dock in Glasgow. This port has ample adequate facilities for accommodating the proposed loads and complies with the UK Government's "Water Preferred" access strategy as being the closest, most suitable port for this site.
- 11.5.10 Access from King George V docks would be via the M8, M74, A702, B7076 and A701. Sections of this route have already been used by the nearby Clyde Wind Farm. A detailed Route Survey Report for the Proposed Development is appended to Appendix 11.1, Transport Assessment.

Potential Construction Traffic Effects

- 11.5.11 To estimate the total trips through the study area during the peak of the construction phase, traffic was distributed through the network and combined with the 2026 Baseline traffic data. The resulting figures were compared with the weekday 2026 Baseline traffic to provide a percentage change in movements. This is illustrated in Table 11.7.

Table 11.7: Future Baseline Traffic + Construction Traffic Flows and Impact Review

Survey Location	Cars & LGV	HGV	Total	% Increase Car & LGV	% Increase HGV	% Increase Total Traffic
A701 Site Access	3445	679	4124	1.41%	6.93%	2.28%
B7076 Between Junctions 14 and 15	274	88	362	0.00%	0.00%	0.00%
A701 South of Moffat	4972	238	5210	0.49%	0.00%	0.46%
M74 South of Junction 15	28758	7493	36251	0.04%	0.27%	0.09%
M74 North of Junction 15	24143	8240	32383	0.05%	0.10%	0.06%

- 11.5.12 With reference to the IEMA Guidelines, total traffic movements are not predicted to increase by more than 30% on all roads within the study area. HGV flows are also not expected to exceed the 10% threshold in any sensitive areas. As such, no further environmental assessment of the Proposed Development is required, and no significant effects are predicted on the study area road links or receptors.
- 11.5.13 A review of existing road capacity has been undertaken using the Design Manual for Roads and Bridges, Volume 15, Part 5 "The NESAs Manual". The theoretical road capacity has been estimated for each of the road links for a 12-hour period. The assessment presented in Technical Appendix 11.1: Transport Assessment and indicates that none of the study area road links are over or at capacity.

Potential Operational Effects

- 11.5.14 It is predicted that during the operation of the site there would be up to two vehicle movements per week for maintenance purposes. Also, there may be very occasional abnormal load movements to deliver replacement components in the unlikely event of a significant component failure.
- 11.5.15 No significant effects are predicted as part of this phase of the life cycle of the Proposed Development.

Potential Decommissioning Effects

- 11.5.16 Prior to decommissioning of the site, anticipated to be 35 years from commissioning, a traffic assessment would be undertaken and appropriate traffic management procedures followed.

- 11.5.17 The decommissioning phase would result in fewer trips on the road network than the construction phase as it is considered likely that elements of infrastructure such as turbine foundations and electrical connections would be left in place and components may be broken up onsite to allow transport by reduced numbers of standard HGVs. No significant effects are anticipated.

11.6 CUMULATIVE EFFECTS

- 11.6.1 There are no significant cumulative traffic effects. Should any of the Proposed Development schemes be consented and their construction activities coincide with work at the Proposed Development, any adverse cumulative impacts would be addressed by means of a Traffic Management Plan.

11.7 MITIGATION

Mitigation During Construction

- 11.7.1 Whilst no mitigation measures are required to offset the potential impact of the development, a number of operational and physical measures are proposed to assist with the safe and efficient operation of construction activities. These measures are proposed below.

Draft Construction Traffic Management Plan

- 11.7.2 A Construction Traffic Management Plan (CTMP) would be prepared and agreed with the Council and Transport Scotland prior to construction works commencing. The following measures could be included within CTMP during the construction phase:
 - Where possible the detailed design process would minimise the volume of material to be imported to site to help reduce HGV numbers;
 - A site worker transport and travel arrangement plan, including transport modes to and from the worksite (including pick up and drop off times);
 - All materials delivery lorries (dry materials) would be sheeted to reduce dust and stop spillage on public roads;
 - Specific training, audit and disciplinary measures would be established to ensure high standards are maintained to prevent construction vehicles from carrying mud and debris onto the carriageway;
 - Appropriate traffic management measures would also be put in place at the Site access junction to advise drivers to slow down and be aware of turning traffic;
 - Directional signage could be provided to enforce delivery routes;
 - Wheel cleaning facilities will be established at the site entrance if required by the planning authorities
 - Appropriate traffic management measures would be put in place near to the new site access junction on the A701 to avoid conflict with general traffic, subject to the agreement of Transport Scotland. Typical measures would include HGV turning and crossing signs and/ or banksmen at the site access and warning signs;
 - Provide construction updates on the project website and or a newsletter to be distributed to residents within an agreed distance of the site.
 - All drivers would be required to attend an induction to include:
 - A toolbox talk safety briefing;
 - The need for appropriate care and speed control;
 - A briefing on driver speed reduction agreements (to slow site traffic at sensitive locations through the villages); and
 - Identification of the required access routes and the controls to ensure no departure from these routes.

Wear & Tear Agreement

- 11.7.3 A wear and tear agreement may be required in the vicinity of the site access junction between the Applicant and Dumfries & Galloway Council.
- 11.7.4 Video footage of the pre-construction phase condition of the A701 in the vicinity of the access junction would be recorded to provide a baseline of the state of the road prior to any construction work commencing. This baseline would inform any change in the road condition during the construction stage of the Proposed Development. Any necessary repairs would be coordinated with Transport Scotland. Any damage caused by traffic associated with the Proposed Development, during the construction period that would be hazardous to public traffic, would be repaired immediately.
- 11.7.5 Any damage to road infrastructure caused directly by construction traffic would be made good, and street furniture that is removed on a temporary basis would be fully reinstated.
- 11.7.6 A similar agreement will be made with Dumfries & Galloway and South Lanarkshire Councils for areas where mitigation works to accommodate the AIL traffic has been made (detailed in Technical Appendix 11.1).
- 11.7.7 There would be a regular road edge review and any debris and mud would be removed from the public carriageway to keep the road clean and safe during the initial months of construction activity, until the construction junction and immediate access track works are complete.

Framework Traffic Management Plan

- 11.7.8 The following framework measures would be used within a Transport Management Plan. The measures will be confirmed by the BoP contractor and agreed with the road agencies prior to construction works commencing.
- 11.7.9 All deliveries would be undertaken at appropriate times (to be discussed and agreed with the relevant roads authorities and police) with the aim to minimise the effect on the local road network. It is likely that the convoys would travel in the early morning periods, before peak times while general construction traffic would generally avoid the morning and evening peak periods.
- 11.7.10 Traffic to the Site during construction will fall into two categories, namely:
- General construction traffic; and
 - AILs – vehicles for the transport of the largest turbine components.
- 11.7.11 Most potential conflicts between construction traffic and other road users will occur with AIL traffic. General construction traffic is not likely to come into conflict with other road users as the vehicles are smaller and road users are generally more accustomed to them.
- 11.7.12 Potential conflicts between the AIL turbine loads and other road users can occur at a variety of locations and circumstances. The main potential conflicts are likely to occur:
- On the A702, B7076 and A701 where the loads may straddle the centre line, where fast moving oncoming traffic may be encountered, etc.;
 - Where traffic turns at a road junction, requiring other traffic to be restrained on other approach arms; and
 - In locations where high speeds of general traffic are predicted.
- 11.7.13 Advance warning signs would be installed on the approaches to the affected road network. Information signage could be installed to help improve driver information and allow other road users to consider alternative routes or times for their journey (where such options exist).
- 11.7.14 The location and numbers of signs would be agreed post consent and would form part of the wider Traffic Management proposals for the project.
- 11.7.15 The Abnormal Load Transport Management Plan would also include:

- Procedures for liaising with the emergency services to ensure that police, fire and ambulance vehicles are not impeded by the loads. This is normally undertaken by informing the emergency services of delivery times and dates and agreeing communication protocols and lay over areas to allow overtaking;
- A diary of proposed delivery movements to liaise with the communities to avoid key dates such as local events in Moffat and Beattock;
- A protocol for working with local businesses to ensure the construction traffic does not interfere with deliveries or normal business traffic; and
- Proposals to establish a construction liaison committee to ensure the smooth management of the project / public interface with the applicant, the construction contractors, the local community, and if appropriate, the police forming the committee. This committee would form a means of communicating and updating on forthcoming activities and dealing with any potential issues arising.

- 11.7.16 Information on the turbine convoys would be provided to local media outlets such as local papers to help assist the public.
- 11.7.17 Information could relate to expected vehicle movements from the port of entry through to the site access junction. This will assist residents becoming aware of the convoy movements and may help reduce any potential conflicts.
- 11.7.18 A police escort would be required to facilitate the delivery of the predicted loads. The police escort would be further supplemented by a civilian pilot car to assist with the escort duty. It is proposed that an advance escort would warn oncoming vehicles ahead of the convoy, with one escort staying with the convoy at all times. The escorts and convoy would remain in radio contact at all times where possible.
- 11.7.19 The abnormal loads convoys would be no more than three AILs long, or as advised by the police, to permit safe transit along the delivery route and to allow limited overtaking opportunities for following traffic where it is safe to do so.
- 11.7.20 The times in which the convoys would travel will need to be agreed with Police Scotland who have sole discretion on when loads can be moved.
- 11.7.21 The Transport Management Plan will also include, if required:
- Procedures for liaising with the emergency services to ensure that police, fire and ambulance vehicles are not impeded by the loads. This is normally undertaken by informing the emergency services of delivery times and dates and agreeing communication protocols and lay over areas to allow overtaking; and
 - Potential linkages to the Transport Scotland Variable Message Signage (VMS) network to provide additional information to users of the M74.

11.8 ASSESSMENT OF RESIDUAL EFFECTS

- 11.8.1 The effects of construction traffic on the study area are not significant and are restricted to the construction period. There are no significant residual effects to be considered.

11.9 CONCLUSIONS

- 11.9.1 The Proposed Development would lead to a temporary increase in traffic volumes on the study road network during the construction phase. Traffic volumes would fall off considerably outside the peak period of construction.
- 11.9.2 The maximum traffic impact associated with construction is predicted to occur in Month 8 of the programme. The greatest impact would occur at the site access where an additional 92 additional trips are included to the network per day.

- 11.9.3 The development traffic at the peak of construction would result in 44 HGV movements per day (22 inbound and 22 outbound) and 48 Car / LGV movements (24 inbound trips and 24 outbound trips).
- 11.9.4 No significant capacity issues are expected on any of the roads within the study area due to the additional construction traffic movements associated with the Proposed Development as background traffic movements are low, the links are of reasonable standard and appropriate traffic management measures are proposed.
- 11.9.5 A review of the road network has been undertaken to assess the feasibility of transporting the candidate turbines to the site and no significant issues have been noted.
- 11.9.6 Traffic levels during the operational phase of the Proposed Development would be one or two vehicles per week for maintenance purposes. Traffic levels during the decommissioning of the Proposed Development are expected to be lower than during the construction phase as some elements may be left in situ and others broken up onsite.
- 11.9.7 The movement of AIL traffic would require small scale and temporary remedial works at a number of locations along the identified delivery route (see Technical Appendix 11.1).

