ScottishPower Renewables

Harestanes West Windfarm

Environmental Impact Assessment Report

Volume 2

Chapter 12: Access, Traffic and Transport

December 2024

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Abbreviations

AIL	Abnormal Indivisible Load
ATMP	Abnormal Load Transport Management Plan
AADT	Annual Average Daily Traffic
ATC	Automatic Traffic Counter/Count
CTMP	Construction Traffic Management Plan
DfT	Department for Transport
DMRB	Design Manual for Roads and Bridges
DGC	Dumfries and Galloway Council
F&I	Fear & Intimidation
HGV	Heavy Goods Vehicle
IEMA	Institute of Environmental Management and Assessment
LGV	Light Goods Vehicle
MPH	Miles Per Hour
NRTF	National Road Traffic Forecasts
OS	Ordnance Survey
TS	Transport Scotland
(T)	Trunk Road

12. Traffic and Movement

12.4. Executive Summary

1. Harestanes West Windfarm (the 'proposed Development') would lead to increased traffic volumes on the A75 and A701 in the vicinity of the Site (the area within the Application Boundary) during the construction phase. These would be of a temporary nature only.

2. An assessment of the potential effects using Institute of Environmental Management and Assessment ('IEMA') guidelines has been undertaken. This determined that, prior to the implementation of mitigation, a '**Moderate**' adverse effect could be expected on non-motorised amenity for residents in Locharbriggs and Heathhall, relating to the temporary increase in Heavy Goods Vehicle ('HGV') traffic operating on the route. All other indicators indicated a '**Minor**' effect on receptors in the Study Area.

3. A range of mitigation measures are proposed, including the implementation of a Construction Traffic Management Plan and Abnormal Load Transport Management Plan which would be agreed in advance with Dumfries and Galloway Council. The proposed mitigation would reduce the effects of abnormal loads and general construction traffic on the study network to '**Minor**'; the effects would be temporary and reversible. All effects can be effectively managed and residual effects remaining are '**not Significant'**.

12.5. Introduction

4. This Chapter considers the likely significant effects on receptors along the transport routes as a result of vehicle movements associated with the construction, operation and decommissioning of the proposed Harestanes West Windfarm (the 'proposed Development').

5. The specific objectives of the Chapter are to:

- describe the assessment methodology and significance criteria used in completing the impact assessment;
- describe the traffic and movement baseline conditions (including future baseline);
- describe any likely impacts and effects of the proposed Development on the receptors identified through the baseline assessment;
- describe the mitigation measures proposed to address any likely significant adverse effects;
- assess the residual effects remaining following the implementation of mitigation; and
- describe any likely cumulative effects of the proposed Development combining and interacting with the residual environmental effects of committed development/s.

6. This Chapter is supported by **Technical Appendix 12.1: Outline Construction Traffic Management Plan** and the following figures:

- **Figure 12.1**: Traffic Study Area;
- **Figure 12.2**: Traffic Count Sites;
- **Figure 12.3**: Abnormal Indivisible Load Delivery Route;
- **Figure 12.4**: Personal Injury Accident Locations;
- **Figure 12.5**: Construction Traffic Distribution; and
- **Figure 12.6**: Indicative Wind Farm Access Junction Modifications.

7. The assessment has been informed by the embedded mitigation measures which form part of the proposed Development. Please refer to **Chapter 3: Proposed Development** for further details.

12.6. Legislation and Policy Context

8. This Chapter has been prepared taking cognisance of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (EIA Regulations).

6.12.1. Legislation

9. There is no legislation, which is specific to transport assessments, which is required to be considered as part of this assessment.

6.12.2. Planning Policy

10. This assessment has been undertaken in accordance with policies outlined in the Scottish Government, National Planning Framework 4 (2023).

6.12.3. Local Policy

11. This assessment has been undertaken in accordance with local policies outlined in the Dumfries and Galloway Council, Local Development Plan 2 (2019).

6.12.4. Guidance

12. The following guidelines have been used to inform this assessment:

- Institute of Environmental Management and Assessment, Guidelines for the Environmental Assessment of Traffic and Movement (2023);
- LA104, Environmental assessment and monitoring, Design Manual for Roads and Bridges (DMRB) (Standards for Highways, 2020);
- Scottish Government, Transport Assessment Guidance (2012); and
- Dumfries and Galloway Council, Local Development Plan 2, Wind Energy Development: Development Management Considerations (2020).

12.7. Consultation

13. Table 12.1 summarises the consultation responses regarding traffic and movement and provides information on where and/or how they have been addressed in this assessment. The following regulatory bodies made comment on traffic and movement matters during Scoping discussions held in 2023. Where relevant, the issues raised by each of the consultees has been used to develop the scope of the assessment and identify any specific matters that warrant more detailed analysis.

Table 12.1: Consultation Summary

Consultee and Date	Summary of Key Issues	Action Taken
Dumfries & Galloway Council (Roads and Infrastructure 23 June 2023)	"It appears that access and egress to this site is to be via the existing upgraded forest access at Burrance Bridge on the A701 Trunk Road, as was the agreed access for the existing Harestanes Wind Farm site. Since access is to be via the Trunk Road network it would be appropriate that Transport Scotland be consulted regarding access considerations." "In order to regulate traffic movements during the whole construction period a traffic management plan should be submitted and agreed in writing with the Council, Transport Scotland and the Police, prior to any works commencing." The memo provides further detail as to the requested content and scope of the Construction Traffic Management Plan (CTMP), as well as suggested wording of a planning condition.	Transport Scotland has been consulted on the proposed Development via the Environmental Impact Assessment ('EIA') scoping process. This Chapter will identify the mitigation to be adopted during construction, including a CTMP provided in **Technical Appendix 12.1**.
Transport Scotland (Energy Consents Unit Scoping Opinion November 2023)	The Scottish Government's Energy Consents Unit consulted with Transport Scotland (TS). A response was not provided by TS or consultants/agents acting on their behalf.	The nearby trunk road network, specifically the A75(T), will have sufficient capacity to cater for the temporary construction traffic related impacts generated by the proposed Development as demonstrated by this EIA Report Chapter findings.

12.8. Approach to Assessment and Methodology

8.12.1. Scope of Assessment

14. The scope of this assessment has been established through an ongoing scoping process. Further information can be found in **Chapter 5: Environmental Impact Assessment Process and Methodology**.

15. This section provides an update to the scope of the assessment and re-iterates/updates the evidence base for scoping out matters following further iterative assessment.

8.12.1.1. Receptor/Matters Scoped Out of Further Assessment

16. **Table 12.2** presents the receptors/matters that are scoped out of further assessment, together with appropriate justification. Where a change has occurred since EIA scoping, this is clearly stated and justified.

Table 12.2: Receptors/matters scoped out of further assessment

Receptor /Matter	Phase	Justification	Change Since EIA Scoping?
Traffic	Operational Phase	Once operational, it is envisaged that the level of traffic associated with the proposed Development will be minimal. Regular monthly or weekly visits would be made to the windfarm for maintenance checks. The vehicles used for the visits are likely to be 4x4 vehicles and there may also need to be the occasional need for an HGV to access the windfarm for specific maintenance and/or repairs. It is considered that the effects of operational traffic would be negligible and therefore no detailed assessment of the operational phase of the development is proposed.	No. The Scoping Opinion agreed that this receptor/matter should be scoped out of further assessment.
Traffic	Decommissioning Phase	The traffic generation levels associated with the decommissioning phase will be less than those associated with the development phase as some elements such as access roads will be left in place on the site. As such, the construction phase is considered the worst-case assessment to review the impact on the study area. An assessment of the decommissioning phase will therefore not be undertaken, although a commitment to reviewing the impact of this phase will be made immediately prior to decommissioning works proceeding.	No. The Scoping Opinion agreed that this receptor/matter should be scoped out of further assessment.

8.12.1.2. Receptor/Matters Scoped In to Further Assessment

17. **Table 12.3** presents the receptors/matters that are scoped into further assessment, together with appropriate justification. Where a change has occurred since EIA scoping, this is clearly stated and justified.

Table 12.3: Receptors/matters scoped into further assessment

Receptor/Matter	Phase	Justification	Change Since EIA Scoping?
Local road users and local residents	Construction Phase	Once operational, it is envisaged that the level of traffic associated with the Proposed Development will be minimal. Regular monthly or weekly visits would be made to the energy park for maintenance checks. The vehicles used for the visits are likely to be 4x4 vehicles and there may also need to be the occasional need for an HGV to access the energy park for specific maintenance and/or repairs. It is considered that the effects of operational traffic would be negligible and therefore no detailed assessment of the operational phase of the development is proposed.	No. The Scoping Opinion agreed that this receptor/matter should be scoped into further assessment.

8.12.2. Study Area

18. The Site (as defined by the Application Boundary) is located within Dumfries and Galloway Council administrative boundary.

19. The Study Area includes those roads that are expected to experience increased traffic flows associated with the construction of the proposed Development. The geographic scope was determined through a review of the other developments in the area, OS plans and an assessment of the potential origin locations of construction staff and supply locations for construction materials.

20. Roads forming the Study Area are shown in **Figure 12.1** and summarised below:

- A75 between the M74 junction at Gretna and the A76 in Dumfries; and
- A701 between the A75 in Dumfries and the M74 at Beattock.

21. The following rules, also taken from the 2023 IEMA Guidelines, were used to determine which links within the Study Area should be considered for detailed assessment:

- Rule 1 – Include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles (HGV) will increase by more than 30%); and
- Rule 2 – Include highway links of high sensitivity where traffic flows have increased by 10% or more.

22. In terms of traffic and movement impacts, the receptors are the users of the roads within the Study Area and the locations through which those roads pass.

8.12.3. Assessment Methodology

23. A high-level overview of the effects of the traffic movements has been considered in accordance with the Institute of Environmental Management and Assessment (IEMA)

Guidelines for the Environmental Assessment of Traffic and Movement (2023). This document is referred to as the 'IEMA Guidelines' in this Chapter.

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

- determine baseline conditions;
- review the proposed Development to identify potential effects including any cumulative effects;
- evaluate significance of effects on sensitive receptors;
- identify mitigation; and
- assess residual effects.

25. The use of Low National Road Transport Forecast (NRTF) growth assumptions has 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.

26. The assessment is based on the proposed Development as described in **Chapter 3: Proposed Development**.

8.12.4. Baseline Methodology

27. The desk study, supplemented by a site visit and drive-through, included reviews and identification of the following:

- relevant transport planning policy;
- personal injury accident data;
- sensitive locations;
- any other traffic sensitive receptors in the area (core paths, routes, communities, etc.);
- Ordnance Survey (OS) plans;
- potential origin locations of construction staff and supply locations for construction materials to inform extent of local area roads network to be included in the assessment; and
- constraints to the movement of abnormal indivisible loads (AILs) through a route survey including swept path assessments.

8.12.5. Potential Cumulative Effects

28. The cumulative assessment of traffic and movement effects only considers wind farms and other major development that are consented but not yet under construction and submitted but pending decision or at appeal. There is no potential for significant cumulative effects to occur from those wind farms which are operational due to the minimal vehicle trips attributed to the operational phase of a development.

29. In relation to potential cumulative impacts, these will be assessed if other developments are constructed concurrently. If the construction of the proposed Development coincided with another, using the same transport routes, then engagement will be undertaken with the other developers with the common aim to mitigate effects to a non-significant level. This would be delivered through the CTMP in **Technical Appendix 12.1**.

8.12.6. Identification of and Evaluation of Impacts

8.12.6.1. Sensitivity of Receptors

30. 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 12.4.**

Table 12.4: Classification of Receptor Sensitivity

	Sensitivity			
Receptor	**High**	**Medium**	**Low**	**Negligible**
Users of Roads	Where the road is a minor rural road, not structed 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-road 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 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.

31. Where a road passes through a location, users are considered subject to the highest level of sensitivity defined by either the road or location characteristics.

8.12.6.2. Magnitude of Impact

32. The IEMA Guidelines identity 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.

33. Based on the IEMA guidance, the following factors have been identified as being the most discernible potential environmental impacts likely to arise from changes in traffic movements. Therefore, these are considered in the assessment which may arise from changes in traffic flows resulting from the proposed Development:

- **Severance of communities** – The perceived division that can occur within a community when it becomes separated by major transport infrastructure. The term is used to describe a complex series of factors that separate people from places and other people;
- **Road vehicle driver and passenger delay** – Traffic delays impacting non-development traffic can occur at points on the road network surrounding a development site including: Site entrance, highways passing development site, key intersections along highway and side roads where availability of gaps to circumvent delay are reduced;
- **Non-motorised user delay** – Changes in volume, composition or speed of traffic may affect the ability of people to cross roads. In general, increases in traffic levels are likely to lead to greater increases in delay. This is also dependent on existing level of activity, visibility and conditions;
- **Non-motorised amenity** – Defined as the relative pleasantness of a journey, and is considered to be affect by traffic flow, traffic composition and pavement width/separation from traffic;
- **Fear and intimidation on and by road users** – IEMA guidance states that measuring the extent of fear and intimidation as a result of development traffic is dependent on the following factors:
    - The total volume of traffic;
    - The heavy vehicle composition;
    - The speed these vehicles are passing; and
    - The proximity of traffic to people – and/or the feeling of the inherent lack of protection created by factors such as a narrow pavement median, a narrow path or a constraint (such as a wall or fence) preventing people stepping further away from moving vehicles.

34. IEMA suggests defining the degree of hazard to pedestrians in 3 stages:

- Fear & Intimidation (F&I) Degree of Hazard - By calculating average (a) 18hr total traffic flow, (b) 18hr heavy vehicle flow and (c) average speed (Mph). Each with suggested thresholds of traffic number flows and average vehicle speeds. These thresholds in-turn sort the assessment results into a 'degree of hazard' score of 0-30. This is calculated for baseline traffic flows and baseline + development traffic flows.
- Levels of F&I – Levels of F&I are categorized as: 'Extreme', 'Great', 'Moderate' or 'Small' according to a total hazard score provided by combining the elements of stage 1 - (a)+(b)+(c).

- F&I Magnitude of Impact – The level of impact is then approximated with reference to the changes in the level of fear and intimidation from baseline conditions. Magnitude of impact is categorized according to 'change in step/traffic flows from baseline conditions as:
    - 'high' (two step changes in level);
    - 'medium' (One step change in level with >400 vehicle increase in average 18hr all traffic flow and/or >500 increase in total 18hr HGV flow);
    - 'low' (one step change in level with <400 vehicle increase in average 18hr total vehicle flow and/or <500 HGV flow increase in total 18hr HGV flow); and
    - 'negligible' (no change in step changes).
- **Road user and pedestrian safety** – Consists of an approximation of the potential for road safety impacts through the calculation of collision rates (slight, serious and fatal). Collision clusters are identified by a detailed review of the baseline characteristics to determine the road safety sensitivity of discrete areas of the highway network; and
- **Hazardous/large loads** – Some developments may involve the transportation of dangerous or hazardous loads by road. Such movements may involve specialist loads that might be involved in the construction or decommissioning phases of the development (e.g. wind turbine generator components).

35. The magnitude of impact or change has been considered according to the criteria defined in Table 12.5.

Table 12.5: Magnitude of Impact Assessment Criteria

Impact	Negligible	Minor	Moderate	Major
Road Vehicle Driver and Passenger Delay	< 10 % Increase in traffic	Quantitative assessment of road capacity based on existing traffic flows and predicted future levels		
Severance of Communities	0 % to <30 % Increase in traffic	30 % to <60 % Increase in traffic	60 % to <90 % Increase in traffic	90 % or greater Increase in traffic
Non-Motorised User Delay	< 10 % Increase in traffic	An increase in total hourly traffic of approximately 30% can double the delay experienced by pedestrians attempting to cross a road. Whether or not the increase in traffic results in a significant effect should be determined using professional judgement.		
Non-Motorised Amenity	< 10 % Increase in traffic	>10 % and <30 % Increase in traffic	30 % - 60 % Increase in traffic	> 90 % Increase in traffic
Fear and Intimidation on and by road users	Negligible - No change in step changes.	Low - One step change in level, with • <400 vehicle increase in	Medium - One step change in level, but with • >400 vehicle increase in	High - Two step changes in level.

Impact	Negligible	Minor	Moderate	Major
		average 18hr AV two-way all vehicle flow; and/or • <500 HV increase in total 18hr HV flow	average 18hr AV two-way all vehicle flow; and/or • >500 HV increase in total 18hr HV flow	
Road User and Pedestrian Safety	< 10 % Increase in traffic	Quantitative assessment of road capacity based on existing traffic flows and predicted future levels		
Hazardous/Large Loads	< 30 % increase in traffic	Quantitative assessment of road capacity based on existing traffic flows and predicted future levels		

8.12.6.3. Determination of Significance

36. The approach to determine the significance of effects has been as follows:

- identify relevant receptors;
- derive their value (sensitivity) based on the criteria set out in **Table 12.4;**
- identify and consider the likely impacts from each activity as set out in **Section 8.12.4**;
- determine the magnitude of impact (change) based on the criteria identified in **Table 12.5**;
- assess the significance of any effects. Where likely significant effects are identified, develop secondary mitigation measures to reduce effects such that they are no longer significant; and
- assess the significance of any residual effects following the implementation of secondary mitigation measures.

37. 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 LA 104 Revision 1 of the Design Manual for Roads and Bridges (DMRB) and summarised in **Table 12.6**.

Table 12.6: Significance of Effect Matrix

	Magnitude of Impact			
Sensitivity	Major	Moderate	Minor	Negligible
High	**Major**	**Major / Moderate**	**Moderate / Minor**	Minor
Medium	**Major / Moderate**	**Moderate**	Minor	Minor / Negligible
Low	**Moderate / Minor**	Minor	Minor	Minor / Negligible
Negligible	Minor	Minor	Minor / Negligible	Negligible

38. In terms of EIA Regulations, effects would be considered '**Significant**' where they are assessed to be '**Major**', '**Major / Moderate'** or '**Moderate**'. Where an effect could be one of '**Major / Moderate'** or '**Moderate / Minor'**, professional judgement would be used to determine which classification should be applicable.

8.12.6.4. Difficulties and Uncertainties

39. The assessment is based upon average traffic flows during the peak month of construction. 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 Contractor has been appointed. Furthermore, external factors can impact upon activities on a day-by-day basis, such as the weather conditions, availability of materials, time of year, etc.

12.9. Baseline Conditions

9.12.1. Access

40. Construction traffic would access the Site via the existing access junction on the A701 used for the existing Harestanes Windfarm. It is proposed that all vehicular traffic would use this access, including AILs. During construction, no heavy goods vehicle access is anticipated to be taken through the village of Ae.

41. The existing onsite track network will be reused where possible, with upgraded sections of tracks required to access certain infrastructure locations.

42. Modification will be required to the existing junction layout to allow abnormal load vehicles to access and egress safely / unobstructed. A preliminary junction layout has been prepared. The indicative Wind Farm Access Junction Modifications are illustrated in **Figure 12.6**.

9.12.2. Traffic Conditions

43. The distribution of general construction traffic from potential material sources to the Site is considered throughout the Study Area. Beyond these routes, general construction traffic would be more dispersed.

44. Annual traffic statistics for the Study Area have been extracted from the Department for Transport (DfT) traffic count point database which uses either estimations using previous year's Annual Average Daily Traffic flows (AADT), manual counts or permanent Automatic Traffic Counters (ATCs). These are all maintained by the local and Trunk Road authorities.

45. The locations of the DfT traffic count sites used in this assessment are illustrated in **Figure 12.2**. The extracted data allows the traffic flows to be split into vehicle classes and has been summarised into light goods vehicles (LGVs) and heavy goods vehicles (HGVs).

46. To assess the likely effects during the construction period, the construction year baseline traffic flows were determined by applying a NRTF growth factor to the 2023 flows assuming low growth.

47. Construction of the proposed Development is anticipated to commence at the earliest in 2029 if consent is granted and is anticipated to take approximately 24 months to complete, depending on weather conditions and ecological considerations. An indicative construction programme is provided in **Table 3.4** in **Chapter 3: Proposed Development**.

48. **Table 12.7** summarises the AADT flows for the baseline 2023, and year of construction 2029, for the Study Area.

Table 12.7: Baseline Traffic Data

Link Description	Count Point ID	Cars & LGVs		HGVs		Total Baseline Vehicles		% HGV
		2023	2029	2023	2029	2023	2029	
A75 between B6357 and A74(M)	80199	8,804	9,077	1,499	1,545	10,303	1,880	14.5%
A75 between B721 and B6357	80285	6,951	7,166	1,594	1,643	8,545	1,036	18.7%
A75 between B8020 and B721	80286	10,040	10,351	1,572	1,621	11,612	1,729	13.5%
A75 between B724 and B7020	50746	9,341	9,631	1,435	1,479	10,776	1,802	13.3%
A75 between A780 and B724	80287	11,371	11,724	1,660	1,711	13,031	665	12.7%
A75 between A709 and A780	80288	9,702	10,003	1,640	1,691	11,342	554	14.5%
A75 between A701 and A709	80289	13,743	14,169	2076	2,140	15,819	235	13.1%
A701 between A75 and Quarry Road, Locharbiggs	78560	6,852	7,064	605	624	7,457	841	8.1%
A701 between Quarry Road, Locharbiggs and C-Road St Ann's	80359	5,148	5,308	664	685	5,812	239	11.4%

Link Description	Count Point ID	Cars & LGVs		HGVs		Total Baseline Vehicles		% HGV
		2023	2029	2023	2029	2023	2029	
A701 between C-Road St Ann's and A74(M)	788	3,933	4,055	605	624	4,538	4,259	13.3%

9.12.3. Abnormal Loads

49. The route from King George V Dock in Glasgow to the Site is considered most likely for the movement of assumed abnormal loads (wind turbine generator components – nacelles, tower sections, blades etc.), subject to the potential need for localised temporary works at junctions to facilitate movements. Any modifications to junction layouts would be confirmed through trial run and further surveys, and any modifications or works required to accommodate abnormal loads would be discussed with the respective road authority and the necessary consents and permits would be obtained in advance of any works or delivery periods.

50. For the purpose of assessment, AILs associated with the wind turbines are likely to be delivered from the Port of Entry (PoE) at King George V Dock and will access the site via the M8, M74 / A74(M), M6 Junction 44 (Greymoorhill Interchange) Carlisle, A74(M) Junction 22 Gretna, A75(T), joining the A701 at the A75(T) Bloomfield Roundabout Dumfries, then the A701 via Heathhall and Locharbriggs on towards the existing site entrance 14.5 km northeast near Burrance Bridge. This route is shown in **Figure 12.3a** and **Figure 12.3b**. It should be noted that alteration of the route to use an alternative return point on the M6 may be required following detailed assessment (post planning application) in consultation with the relevant authorities, other stakeholders and police.

9.12.4. Accident History

51. The time period for the accident analysis includes the five-year data between 2018 and 2022 (inclusive) and is applicable to the current publicly available data from the DfT accident statistics website. The locations of recorded accidents and their severity are shown on **Figure 12.4**.

52. The accident analysis is used to inform the review of the proposed route where any deficiencies in the road layout and condition are identified.

53. Injuries are classed under the following categories:

- 'Slight' injury – e.g. slight shock with occurrences of sprains or bruises;
- 'Serious' injury – e.g. breakages, lacerations, concussion, or hospital admittance; and
- 'Fatal' injury – e.g. resulted in a mortality / death within 30 days after the accident.

54. The number and severity of accidents recorded in the Study Area is provided in **Table 12.8.**

Table 12.8: Number and Severity of Accidents Summary

Link	Slight	Serious	Fatal
A75 between the M74 Junction at Gretna and the A76 in Dumfries	30	16	2
A701 between A75 in Dumfries and site access	9	5	1
A701 between site access and Beattock	7	5	1

9.12.5. Pedestrian and Cyclist Network

55. The area of Forest of Ae within which the turbine area is located, is managed by Forestry and Land Scotland as a commercial forestry and has recreational facilities including car parking facilities and the Forest of Ae Café and Bike Shop located on the outskirts of the village of Ae. There are several waymarked walking routes and mountain bike trails within the Forest of Ae. Several core paths extend through the turbine area including one in the southern area which provides a circular walking path around Windy Hill. There is also an outer bend of a mountain bike path called Andy Hopkins in the north-eastern section of the Site going around Morins Hill.

56. The access track to the turbine area leads from the A701 4.6 km east of the village of Ae, largely following a network of existing access tracks built for the operational Harestanes Windfarm and forestry tracks forming part of the Forestry and Land Scotland estate, including sections of the Ae Forest Large Circular and Dalswinton to Ae Core Paths. It follows the "Romans and Reivers Route", one of Scotland's Great Trails, for a distance of 5.2 km, partly through the operational Harestanes Windfarm before crossing the Water of Ae.

57. Outwith the Site, there are limited pedestrian and cycling facilities in the immediate vicinity of the Proposed development, reflecting its rural nature.

9.12.6. Summary of Existing Network Performance

58. The Sections above provide an assessment of the existing baseline situation. The following may be concluded:

- the existing road network has a high level of HGVs (generally 8 - 19%, averaging at 13% in 2023,
- a maximum HGV proportion was measured as 18.7% on the A75 between B721 and B6357 based on short period count data and is therefore not a maximum average);
- a total of 4 fatal accidents have occurred within the study area over the five-year study period, along with 46 slight and 26 serious accidents. This number of accidents is consistent with trunk and busy roads of this nature carrying high volumes of traffic, and the accidents are spread out across the road network. Further consideration of accident locations is undertaken within the assessment of effects in this Chapter; and
- there are no further capacity improvement works that have been proposed to the roads by the Roads Authorities within the Study Area.

12.10. Assessment of Effects

10.12.1. Initial Screening Assessment

59. Vehicles and equipment will be delivered to the Site at the commencement of the construction phase and will remain on the Site until works relating to that stage are completed. Such equipment will include excavators, dump trucks, bulldozers and cranes for erecting the turbines.

60. Each vehicle travelling to the site will generate two 'vehicle movements': one movement to the proposed Development and one movement away from the proposed Development.

61. Whilst preliminary investigations indicate that the necessary aggregate material for the construction of new access tracks, upgrading of existing tracks, crane hardstandings, etc. can be obtained from excavated / blasting material from the Site, an assessment of a worst-case scenario has been included in the environmental assessment of traffic and movement effects, whereby it is assumed that 100% of the required aggregate is sourced from off-site locations.

10.12.2. Sensitive Receptors

62. A review of the potential receptors has been undertaken and a summary of receptor sensitivities based upon various criteria noted in **Table 12.4**. This summary is shown in **Table 12.9.**

Table 12.9: Summary of Sensitive Receptors in the Study Area

Receptor	Sensitivity
Users of A75	Low
Users of A701	Low
Residents in Heathhall	Medium
Residents in Locharbiggs	Medium
Residents in Parkgate	Negligible
Residents in Amisfield	Negligible

10.12.3. Potential Effects

10.12.3.1. Potential Construction Impacts

63. During the construction phase, 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 concrete raw materials;

- components relating to the substation components and associated infrastructure;
- AILs consisting of the wind turbines sections and a heavy lift crane(s); and
- escort vehicles for AIL deliveries.

64. Except for the turbine components, most traffic would be normal construction plant and would include graders, excavators, high-capacity cranes, forklifts and dumper trucks. Most would arrive at the site as a load on an articulated HGV – low loader.

65. The turbines would be delivered to the proposed Development in component sections and assembled on-site. The nacelle, hub, drive train, blade sections and tower sections are classified as AILs due to their weight and/or length, width and height when loaded.

66. In addition to the turbine deliveries, two or more high-capacity erection cranes will be needed to offload some components and erect the turbines. The cranes are likely to be mobile cranes with a capacity up to 1,000 tonnes that would be escorted by boom and ballast trucks to allow full mobilisation on-site. Smaller erector cranes would also be present to allow the assembly of the main cranes and to facilitate overall erection of the turbines.

10.12.3.2. Construction Traffic Movements

67. The greatest number of vehicle movements are associated with the import of materials associated with construction of new access tracks and crane hardstandings.

68. No new borrow pits are anticipated. Aggregate will be won from existing Forestry and Land Scotland quarries located within the Site. These are known as Branrigg (located along the access track east of the Bran Burn watercourse crossing), Mitchellslacks (located along the north-west edge of the turbine area, adjacent to the public road leading to Loch Ettrick), and Quarriebraes (located west of Turbine 07).

69. Based on the information available from an initial assessment of available stone, it is therefore likely that the majority of stone material will be obtained from the on-site borrow pits. However, an assessment of a worst-case scenario has been included in the environmental assessment of traffic and movement effects, where it is assumed that 100% of the required aggregate and concrete for turbine bases and other permanent structures on the site forming part of the proposed Development are sourced from off-site locations.

70. To enable comparison of the estimated future year baseline traffic movements with total volumes including predicted construction traffic, average daily two-way movements for each month assuming a 22-day working month for deliveries were determine. Traffic movements were also split by vehicle type, in line with the baseline data and the peak period determined for construction traffic. The final daily construction profile is shown in Table 12.10.

Table 12.10: Daily Construction Traffic Movements (Weekday Average Two-Way Flows)

Activity	**Months**																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Site establishment	500	500	500																					
Forestry felling		394	394	394	394	394	394																	
Access road upgrades		2234	2234	2234	2234	2234	2234	2234	2234	2234	2234													
Construction of new access tracks and crane hardstanding			3193	3193	3193	3193	3193	3193	3193	3193	3193	3193	3193	3193	3193	3193								
Turbine foundation construction						353	353	353	353	353	353	353	353											
Substation civil and electrical works					213	213	213	213	213	213	213	213	213											
Cable trenching and installation														226	226	226	226	226						
Crane delivery																		12						
Turbine delivery, erection and commissioning																		34	34	34	34	34	34	34
Site reinstatement and restoration works																					10	10	10	22
General Site Traffic (Personnel)	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100
Monthly ALL Total	1600	4229	7422	6922	7134	7487	7487	7093	7093	7093	7093	4858	4858	4519	4519	4519	1326	1372	1134	1134	1144	1144	1144	1156
Daily ALL Total	74	194	338	316	326	342	342	324	324	324	324	222	222	206	206	206	62	64	52	52	54	54	54	54
Monthly HGV Total	500	3129	6322	5822	6034	6387	6387	5993	5993	5993	5993	3758	3758	3419	3419	3419	226	272	34	34	44	44	44	56
Daily HGV Total	24	144	288	266	276	292	292	274	274	274	274	172	172	156	156	156	12	14	2	2	4	4	4	4

71. The maximum traffic movements associated with construction of the proposed Development are predicted to occur in the highlighted month in . The average daily movements during the peak month are summarised for both HGV, LGV and AIL movements in **Table 12.11.**

Table 12.11: Peak Daily Construction Traffic Movements

Cars/LGVs (two-way)	HGVs (two-way)	AIL	
		To the Site as AILs	Away from the Site as HGVs
50	292	0	0
Assumptions Turbine components will be delivered on AILs. After delivery, when the AIL vehicle leaves the Site, it is classed as an HGV. Calculations take this into account. However, no AILs are anticipated during the peak month of construction. Cars/LGV movements assume single car occupancy as a worst-case scenario.			

10.12.3.3. Construction Traffic Distribution

72. The origin of vehicle traffic would depend on the location of staff accommodation and the source of materials being imported.

73. The highest volume of traffic would be generated by the requirement for concrete source materials for the turbine foundations and other permanent structures, and aggregate associated with the access track construction, elements of which would be imported. Details of the volume of aggregates required for the proposed Development can be found in **Chapter 3: Proposed Development**. Information on the potential sources of suitable materials near the proposed Development is provided in **Table 12.12.**

74. Whilst it is proposed to utilise the existing 'Branrigg', 'Mitchellslacks and 'Quarriesbraes' borrow pits on Site, a robust assessment of a worst-case scenario has been used to assess a greater volume of material to be imported to Site. Therefore, to accurately assess the potential impact of the transportation of construction materials to the Site, all construction materials are assumed to be sourced from offsite locations, including all aggregate required for track construction and upgrade, thus ensuring that the estimated level of trip generation is considered as a worst-case.

Table 12.12: Offsite Quarries

Quarry	Location	Distance from proposed Development by Road (km)	Materials
Grange Quarry Ltd – Kelhead Quarry	Kelhead, access via the A75	34	Aggregates
Tarmac Jericho Bridge Quarry	Locharbriggs, access via the A701	11.3	Aggregates
Grange Quarry Ltd – Lockerbie Plant	Lockerbie, access via the A74(M)	37	Concrete

Quarry	Location	Distance from proposed Development by Road (km)	Materials
Note The traffic and movement assessment assumes a worst-case scenario where all construction materials are to be imported to the Site from off-site locations. The more likely scenario is that aggregate will be won from the existing FLS quarries located within the Site. The three proposed quarries are known as "Branrig", located along the access track east of the Bran Burn watercourse crossing, "Mitchellslacks" located along the north west edge of the turbine area and "Quarriebraes". This would reduce the number of deliveries required for the import of aggregate.			

75. The choice of HGV route was based upon identifying the most suitable route between the access to the proposed Development and the primary Trunk or A-class road network. The choice of LGV route (staff origins) has been based on the locations of population centres outside the study area. The assumed distribution of construction traffic is summarised in **Table 12.13** and illustrated in **Figure 12.5**.

Table 12.13: Distribution of Construction Traffic

No.	Link Description	Count Point ID	Cars/LGVs	HGVs
1	A75 between B6357 and A74(M)	80199	90%	50%
2	A75 between B721 and B6357	80285	90%	50%
3	A75 between B8020 and B721	80286	90%	50%
4	A75 between B724 and B7020	50746	90%	50%
5	A75 between A780 and B724	80287	90%	50%
6	A75 between A709 and A780	80288	90%	50%
7	A75 between A701 and A709	80289	90%	50%
8	A701 between A75 and Quarry Road, Locharbiggs	78560	90%	50%
9	A701 between Quarry Road, Locharbiggs and C-Road St Ann's	80359	90%	50%
10	A701 between C-Road St Ann's and A74(M)	788	10%	50%

No.	Link Description	Count Point ID	Cars/LGVs	HGVs
Assumptions Distribution of HGVs assumes that the majority of material (particularly aggregates) will arrive from the south. A small proportion of HGVs will be required to approach from the north of the A701, particularly for concrete deliveries. No AIL deliveries are anticipated during the peak month of construction. Distribution of Cars/LGVs assumes that the majority of staff will arrive from Dumfries to the south.				

10.12.3.4. Predicted Construction Impacts

76. To estimate the total trips on the road network within the Study Area during the construction phase, daily construction traffic flows were combined with the future year baseline traffic data. The resulting figures were compared with the weekday future year baseline traffic.

77. **Table 12.14** shows the increase in total traffic over future year baseline traffic, as a result of construction traffic.

Table 12.14: Increase in Total Traffic Generation (Daily Average Two-Way Flows)

Link Description			2029 Baseline + Development Traffic		Percentage Increase	
No.	**Link Description**	**Count Point ID**	**HGVs**	**Total**	**HGVs**	**Total**
1	A75 between B6357 and A74(M)	80199	1808	10910	17.00%	2.71%
2	A75 between B721 and B6357	80285	1906	9098	15.99%	3.27%
3	A75 between B8020 and B721	80286	1884	12260	16.21%	2.40%
4	A75 between B724 and B7020	50746	1742	11398	17.76%	2.59%
5	A75 between A780 and B724	80287	1974	13723	15.36%	2.14%
6	A75 between A709 and A780	80288	1954	11981	15.54%	2.46%
7	A75 between A701 and A709	80289	2403	16597	12.28%	1.76%
8	A701 between A75 and Quarry Road, Locharbiggs	78560	887	7976	42.13%	3.74%
9	A701 between Quarry Road, Locharbiggs and C-Road St Ann's	80359	947	6280	38.39%	4.80%

10	A701 between C-Road St Ann's and A74(M)	788	653	4733	4.68%	1.16%

78. Any results in **Table 12.14** that are subject to 'Rule 1' or 'Rule 2' of the IEMA Guidelines, which requires a full assessment of effects if the locations breach these rules, are highlighted.

79. Whilst the predicted increase in construction traffic would be temporary and short-term in duration, the following receptors, summarised in **Table** 12.15 have been taken forward to an assessment of the effect of significance.

Table 12.15: Receptors for Further Assessment

No.	Receptor	Sensitivity
8 and 9	Users of A701	Low
8	Residents in Heathhall	Medium
8	Residents in Locharbiggs	Medium
9	Residents in Parkgate	Negligible
9	Residents in Amisfield	Negligible

80. The significance of the predicted effects on the above receptors has been determined using the rules and thresholds previously outlined in **Section 8.12.4.**

81. **Table 12.16** summarises the significance on the receptors for the construction phase.

Table 12.16: Construction Phase Effects Assessment

Receptor	Receptor Sensitivity	Potential Impact	Magnitude	Significance of Effect	Notes
Users of A701	Low	Severance	Minor	**Minor (not Significant)**	Percentage change in HGVs is between 30 and 60%.
		Driver Delay	Minor	**Minor (not Significant)**	The IEMA Guidelines note that delays are only likely to be significant when the traffic on the network surrounding the development is already at, or close to, the capacity of the system. No existing capacity issues. Between Dumfries and Beattock, the route Is largely a high-quality single carriageway with no immediate large settlements.
		Pedestrian Delay	Minor	**Minor (not Significant)**	The majority of the A701 has no footpaths and no dedicated cycling infrastructure. Relatively wide pedestrian footpaths are present along both sides of the carriageway within Dumfries, Heathhall and Locharbriggs. Pedestrian refuge islands are located throughout this section of the A701. Formal signalised pedestrian crossings are present at significant junctions.
		Non-motorised User Amenity	Moderate	**Minor (not Significant)**	Percentage change in HGVs is between 30 and 60%.
		Fear and Intimidation	Negligible - No change in step changes.	**Minor (not Significant)**	No change in F&I level from baseline
		Road Safety	Minor	**Minor (not Significant)**	No clusters identified as per the criteria. A total of 15 accident have occurred on the A701 between Dumfries and the site access between 2018-2022. Whilst any accident is regrettable, no causal factors have been identified.
Residents in Heathhall	Medium	Severance	Minor	**Minor (not Significant)**	Percentage change in HGVs is between 30 and 60%.
		Driver Delay	Minor	**Minor (not Significant)**	No existing capacity issues.
		Pedestrian Delay	Minor	**Minor (not Significant)**	Relatively wide pedestrian footpaths are present along both sides of the carriageway within Heathhall. Pedestrian refuge islands are located

Receptor	Receptor Sensitivity	Potential Impact	Magnitude	Significance of Effect	Notes
					throughout this section of the A701. Formal signalised pedestrian crossings are present at significant junctions.
		Non-motorised User Amenity	Moderate	**Moderate (Significant, mitigation required)**	Percentage change in HGVs is between 30 and 60%.
		Fear and Intimidation	Negligible - No change in step changes.	**Minor (not Significant)**	No change in F&I level from baseline
		Road Safety	Minor	**Minor (not Significant)**	No clusters identified as per the criteria. 1 'serious' accident occurred between Heathhall and Lochbriggs (2018). This accident did not involve any HGVs, only cars.
Residents in Locharbiggs	Medium	Severance	Minor	**Minor (not Significant)**	Percentage change in HGVs is between 30 and 60%.
		Driver Delay	Minor	**Minor (not Significant)**	No existing capacity issues
		Pedestrian Delay	Minor	**Minor (not Significant)**	Relatively wide pedestrian footpaths are present along both sides of the carriageway within Locharbriggs. Pedestrian refuge islands are located throughout this section of the A701. Formal signalised pedestrian crossings are present at significant junctions.
		Non-motorised User Amenity	Moderate	**Moderate (Significant, mitigation required)**	Percentage change in HGVs is between 30 and 60%.
		Fear and Intimidation	Negligible - No change in step changes.	**Minor (not Significant)**	No change in F&I level from baseline

Receptor	Receptor Sensitivity	Potential Impact	Magnitude	Significance of Effect	Notes
		Road Safety	Minor	**Minor (not Significant)**	No clusters identified as per the criteria. 1 'serious' accident occurred between Heathhall and Lochbriggs (2018). This accident did not involve any HGVs, only cars.
Residents in Parkgate	Negligible	Severance	Minor	**Minor (not Significant)**	Percentage change in HGVs is between 30 and 60%.
		Driver Delay	Minor	**Minor (not Significant)**	No existing capacity issues
		Pedestrian Delay	Minor	**Minor (not Significant)**	No pedestrian footpaths or dedicated cycling infrastructure is present, as only scattered settlements are present.
		Non-motorised User Amenity	Moderate	**Minor (not Significant)**	Percentage change in HGVs is between 30 and 60%.
		Fear and Intimidation	Negligible - No change in step changes.	**Negligible**	No change in F&I level from baseline
		Road Safety	Minor	**Minor (not Significant)**	No clusters identified as per the criteria. 2 'slight' accidents occurred outside Kirkmichael Mains (one in 2021 and one in 2019). 1 'serious' accident occurred at the A701 / C19n junction (2018)
Residents in Amisfield	Negligible	Severance	Minor	**Minor (not Significant)**	Percentage change in HGVs is between 30 and 60%.
		Driver Delay	Minor	**Minor (not Significant)**	No existing capacity issues
		Pedestrian Delay	Minor	**Minor (not Significant)**	Relatively wide pedestrian footpath along one side of the carriageway as the A701 passes through Amisfield. The A701 only passes through scattered settlements with no facilities, as it does not pass through the main area of Amisfield. No dedicated cycling infrastructure.
		Non-motorised User Amenity	Moderate	**Minor (not Significant)**	Percentage change in HGVs is between 30 and 60%.

Receptor	Receptor Sensitivity	Potential Impact	Magnitude	Significance of Effect	Notes
		Fear and Intimidation	Negligible - No change in step changes.	**Negligible**	No change in F&I level from baseline
		Road Safety	Moderate	**Minor (not Significant)**	No clusters identified as per the criteria. 2 'slight' accident occurred to the north of Amisfield (one in 2018 and one in 2022) 1 'fatal' accident occurred to the south of Amisfield in 2018 involving a van / goods vehicle.
See notes	See notes	Hazardous/large loads	See notes	See notes	The route from Clydeport in Glasgow to the proposed Development site is considered suitable for the movement of assumed abnormal loads (wind turbine generator components - nacelles, tower sections, blades etc.), subject to the potential need for localised temporary works at junctions to facilitate movements. Any modifications to junction layouts would be confirmed through trial run and further surveys, and any modifications or works required to accommodate abnormal loads would be discussed with the respective road authority and the necessary consents and permits would be obtained in advance of any works or delivery periods. AILs associated with the wind turbines are likely to be delivered from the Port of Entry (PoE) at King George V Dock and would likely access the site via the M8, M74 / A74(M), M6 Junction 44 (Greymoorhill Interchange) Carlisle, A74(M) Junction 22 Gretna, A75(T), joining the A701 at the A75(T) Bloomfield Roundabout Dumfries, then the A701 via Heahhall and Locharbriggs on towards the existing site entrance 14.5 km northeast near Burrance Bridge. Transportation of wind turbine generator components would lead to the following effects: · The rolling closures of roads and footways causing temporary driver and pedestrian delay;

Receptor	Receptor Sensitivity	Potential Impact	Magnitude	Significance of Effect	Notes
					· The perceived effect to pedestrians and vulnerable road users caused by the movement of large turbine components in proximity to property and infrastructure. The severity of these impacts is considered as follows: · Delays due to lane/road closures would be inevitable, although abnormal loads would be timed to avoid peak hours and, therefore, abnormal loads would have a temporary minor adverse effect; and · The perceived effect to residents is subjective and it is possible that the transport of abnormal loads close to properties could lead to local objection, fear and intimidation. The delivery of turbines will not occur during the peak month of construction. It is estimated that the delivery of wind turbine components would generate a total of 120 AIL deliveries, which would then leave the site as HGVs post-delivery, across a period of 7 months. When split across the construction period, these AIL deliveries would be equal to less than a 30 percent increase in traffic. Consideration should be given to abnormal load deliveries being undertaken overnight to reduce the potential for disruption and delay, subject to approval by Transport Scotland, DGC and local police. However, this would depend on the type of transport vehicle used and only by agreement with the relevant authorities. At night, the impact of transporting the abnormal loads would not be significant. An Abnormal Loads Route Assessment has been carried out in conjunction with this traffic and movement chapter. Details of the Abnormal Load transportation route are illustrated in **Figure 12.3**. The sensitivity of users of links used for AIL delivery is high, and the magnitude of impact, following the additional mitigation considerations

Receptor	Receptor Sensitivity	Potential Impact	Magnitude	Significance of Effect	Notes
					above, is negligible. Therefore, in terms of hazardous and large loads, the significance of effect is minor, which is considered to be not significant.

10.12.4. Cumulative Effects Assessment

82. The cumulative assessment of traffic and movement effects only considers wind farms and other major developments that are consented but not yet under construction and submitted but pending decision or at appeal. There is no potential for significant cumulative effects to occur from those wind farms which are operational due to the minimal vehicle trips attributed to the operational phase of a development.

83. This assessment has identified the following potential cumulative developments located within approximately 10 km of the proposed Development, summarised in **Table 12.17.**

84. A review of the Council's planning portal and Scottish Government's Energy Consents Unit (ECU) portal was undertaken to identify any developments within the vicinity of the proposed Development which would likely generate significant traffic. Details of the estimated construction vehicle trip generation, the affected road links and construction programmes were extracted for each development from the relevant EIA Report chapter.

85. Only developments which would impact on the same Study Area (road network) as the proposed Development have been included in the cumulative assessment.

86. Details of the estimated peak construction vehicle trip generation and affected road links were extracted for the cumulative developments from the relevant EIA Report chapter from the ECU online portal.

87. Combining these with the respective link flows from the Assessment of Effects provides the following cumulative assessment, summarised in **Table 12.18.**

Table 12.17: Cumulative Developments

Cumulative Development	Planning Reference	Development Details	Location	Application Stage	Comments
Developments that are in planning / consented and are included in the Cumulative Assessment					
Harestanes South Windfarm Extension	ECU00002185	Up to 8 turbines, with a blade tip height of up to 200m and associated infrastructure	National Forest of Ae, to the south of the operational Harestanes Wind Farm	Application	Chapter 11 of the EIA Report, submitted in December 2020, estimated that construction was expected to begin in 2022 and last for 12 months. SPR then submitted an Addendum to the Section 36 Application to the ECU in June 2022. As the development is yet to receive consent, it has been included in the cumulative assessment.
Developments that are in planning / consented and are not included in the Cumulative Assessment					
Rivox Wind Energy Hub	ECU00003293	Up to 29 turbines and energy storage, with a maximum blade tip height of 200 – 230m and a combined installed capacity of greater than 50 MW.	Beattock Composite, a component of the larger Forest of Ae, approximately 5km West of Moffat	Application	Construction is expected to begin in 2026 and last for 12 months. Construction of this development is therefore likely to commence before the timescales of the proposed Development and therefore cumulative effects are unlikely.
Daer Wind Farm	ECU00000740	17 wind turbines at up to 180m in height to blade tip	Approximately 8 km west of Moffat and directly adjacent to the southeast of the Dear Reservoir	Application	Construction is expected to begin in 2026 and last for 18 months. Construction of this development is therefore likely to commence before the timescales of the proposed Development and therefore cumulative effects are unlikely.
Developments in Screening/Scoping that are not included in the Cumulative Assessment					
Installation of a grid battery energy storage facility (up to 50MW) with associated development at land c.400m to the south of Lochar Moss household recycling centre, Dumfries – 23/2531/SCR					

Table 12.18: Cumulative Assessment

Count ID	Link	Baseline		proposed Development		Harestanes South Wind Farm Extension		Cumulative		% Change	
		Total	HGVs	Total	HGVs	Total	HGVs	Total	HGVs	Total	HGVs
80199	A75 between B6357 and A74(M)	10622	1545	288	263	116	38	11026	1846	4%	19.5%
80285	A75 between B721 and B6357	8810	1643	288	263	116	38	9214	1944	5%	18.3%
80286	A75 between B8020 and B721	11972	1621	288	263	116	38	12376	1922	3%	18.6%
50746	A75 between B724 and B7020	11110	1479	288	263	116	38	11514	1780	4%	20.3%
80287	A75 between A780 and B724	13435	1711	288	263	116	38	13839	2012	3%	17.6%
80288	A75 between A709 and A780	11694	1691	288	263	116	38	12097	1992	3%	17.8%
80289	A75 between A701 and A709	16309	2140	288	263	116	38	16713	2441	2%	14.1%
78560	A701 between A75 and Quarry Road, Locharbiggs	7688	624	288	263	116	38	8092	925	5%	48.2%
80359	A701 between Quarry Road, Locharbiggs and C-Road St Ann's	5992	685	288	263	116	38	6396	985	7%	43.9%
788	A701 between C-Road St Ann's and A74(M)	4679	624	54	29	116	38	4849	691	4%	10.8%

88. When considering the cumulative construction phase, both the total traffic and and HGV traffic flows assessment results indicate an increase on all links within the Study Area. However, significant increases (greater than 30%) would only be seen on the A701 between A75 and Quarry Road, Locharbriggs and A701 between C-Road St Ann's and A74(M) for HGV traffic if the peak of construction for the proposed Development and Harestanes South Windfarm Extension occur concurrently. These two links have already been assessed in **Section 10.12.3.4** and the inclusion of this cumulative developments only leads to an additional 5-6% increase in HGV traffic compared to the percentage increase in HGV traffic caused by the proposed Development only.

89. It should be noted that the construction period of a renewable development is transitory in nature and all impacts are short lived and temporary. The inclusion of additional traffic flows in the baseline would dilute the potential impact that the proposed Development would have. The approach taken is therefore considered to be a suitably robust assessment. Should the construction of cumulative developments take place at the same time as the proposed Development, this would be appropriately managed and, if required, co-ordination of high traffic generating site activities may be required to mitigate against potential cumulative traffic impacts. This would be undertaken as part of the Construction Traffic Management Plan (CTMP) and would include all applicable routes.

10.12.5. Mitigation

10.12.5.1. Construction Phase Mitigation

90. A Construction Traffic Management Plan (CTMP) would be in place to actively mitigate the effects as discussed above and an outline CTMP has been prepared at this stage and submitted as part of the Application to outline the mitigation measures recommended during the construction stage. This is provided as **Technical Appendix 12.1**.

91. The following measures would be implemented through a CTMP during the construction phase. The CTMP would be agreed with DGC prior to construction works commencing:

- Where possible, further detailed design processes 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);
- A Traffic Management Plan to control the operation of the access junctions;
- All materials delivery lorries (dry materials) should be sheeted to reduce dust and stop spillage on public roads;
- 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;
- Should there be evidence of this following this commencement of construction, suitable measures would be implemented within the Site to ensure deleterious materials are not transferred onto the highway;

- Road cleaning would take place, if required, to remove any deleterious materials that are carried from the Site;
- Normal site working hours would be limited to between 07:00 - 19:00 Monday to Friday and 08:00 – 13:00 on Saturdays, unless otherwise agreed with THC, though component delivery and turbine erection may take place outside these hours;
- Provide construction updates on the project website and or a newsletter to be distributed to residents within an agreed distance of the site; and
- All drivers would be required to attend a detailed induction prior to undertaking any works on the proposed Development site.

92. 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).

93. The location and numbers of signs would be agreed post-consent and would form part of the wider traffic management proposals for the proposed Development.

94. The Applicant would also ensure information would be distributed through its communication team via project website, local newsletters and social media.

95. Post-consent, the Applicant would establish a Community Liaison Forum, in collaboration with DGC and local Community Councils. The forum would allow the community to be kept up to date with project progress and allow communication on the provision of transport-related mitigation and publicise the timings of turbine component deliveries. The Community Liaison Forum would be maintained until construction is complete and the proposed Development is operational.

96. The Applicant would enter into a Section 96 (wear and tear) Agreement or a suitable alternative for the local adopted roads / routes to be used by construction vehicles. A pre-construction works inspection of the roads would be carried out with both parties in attendance with their condition recorded. Following completion of construction of the proposed Development, a further inspection would be carried out by both parties with repairs being agreed to return the roads to their pre-construction condition, to be carried out in a timely manner for approval by DGC. Notwithstanding, the Applicant would carry out regular monitoring of the carriageway condition during the construction of the proposed Development. Necessary repair works would be carried out in a timely manner to prevent further deterioration of the carriageway during the works. Priority would be given to any damage which would be dangerous to users of the road affected.

10.12.5.2. Abnormal Load Transport Management Plan

97. An Abnormal Load Transport Management Plan (ATMP) would be prepared to cater for all movements to and from the proposed Development site. This would 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 popular local events, etc.;
- 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 Community Liaison Group 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.

98. A police escort would be required to facilitate the delivery of abnormal loads with two police cars usually at the front of the convoy and one at the rear. Each AIL vehicle will have its own private escort vehicle behind it and all vehicles within the convoy would be in constant radio communication.

99. The abnormal load 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.

100. The times in which the convoys would travel would need to be agreed with Police Scotland who have sole discretion on when loads can be moved.

10.12.6. Residual Effects

101. Given the temporary nature of the construction programmes and with the implementation of mitigation measures through a CTMP and ATMP, all effects can be effectively managed and **'no significant'** residual effects remain.

12.8. Summary of Effects

102. **Table 12.19** provides a summary of the significance of effects post-mitigation measures.

Table 12.19 – Summary of Effects

Receptor	Potential Impact	Significance of Effect Post Mitigation	Proposed Mitigation
All	*Severance*	**Minor (not Significant)**	ATMP for the movement of abnormal loads. Trial Run for abnormal loads prior to commencement of construction. Road condition survey (including assessment of existing structures as appropriate) prior to the commencement of construction and a
All	Driver Delay	**Minor (not Significant)**	
All	Pedestrian Delay	**Minor (not Significant)**	

Receptor	Potential Impact	Significance of Effect Post Mitigation	Proposed Mitigation
All	Non-motorised User Amenity	**Minor (not Significant)**	similar assessment following completion of the works. Provision of information to local residents and users of amenities, to involve the community in the safe operation of the CTMP and to alleviate stress and anxiety. Good construction practices including wheel wash and careful loading.
All	Fear and Intimidation	**Minor (not Significant)**	
All	Road Safety	**Minor (not Significant)**	
All	Hazardous/Large Loads	**Minor (not Significant)**	

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