



# Chapter 12

## Access, Traffic and Transport

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Appendix 12.1 Transport Assessment

# Chapter 12

## Access, Traffic & Transport

### 12.1 Introduction

- This Chapter considers the likely significant effects on receptors along the transport routes resulting from vehicle movements associated with the construction and operation of the proposed Development. The specific objectives of the chapter are to:
  - Review the relevant policy and legislative framework;
  - Describe the baseline transport conditions;
  - Describe the assessment methodology and significance criteria used in undertaking the assessment;
  - Describe the potential effects, including direct, indirect and cumulative effects;
  - Describe the mitigation measures proposed to address likely significant effects; and
  - Assess the residual effects remaining following the implementation of mitigation.
- A high-level 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 assessment was carried out by Pell Frischmann Consultants Limited.
- The chapter should be read in conjunction with **Appendix 12.1: Transport Assessment**.

### 12.2 Legislation, Policy and Guidelines

#### 12.2.1 National Policy Guidance

- Scotland's National Planning Framework (NPF3) sets the context for development planning in Scotland and provides a framework for the spatial development of Scotland as a whole. It defines the Government's development priorities over the next 20-30 years and identifies national developments which support the development strategy. Scotland's third NPF was laid in the Scottish Parliament on June 23, 2014.
- PAN 75 – Planning for Transport (17 August 2005) aims to create greater awareness of how linkages between planning and transport can be managed. It provides good practice guidance which planning authorities, developers and others should carry out in their policy development, proposal assessment and project delivery.
- Onshore Wind Turbines – Online Renewables Planning Advice (May 2014) - The Scottish Government introduced online renewables advice in February 2011 which has been updated several times since then. The most recent specific advice note regarding onshore wind turbines was published in May 2014. The advice note identifies the typical planning considerations in determining applications for onshore wind turbines including landscape impact, impacts on wildlife and ecology, shadow flicker, noise, ice throw, aviation, road traffic impacts, cumulative impacts and decommissioning. In terms of road traffic impacts, the guidance notes that in siting wind turbines close to major roads, pre-application discussions are advisable. This is particularly important for the movement of large components (abnormal load routing) during the construction period, periodic maintenance and for decommissioning.
- Transport Assessment Guidance (July 2012) published by Transport Scotland also provides information relevant to the preparation of Transport Assessments for development proposals in Scotland. The guidance is intended to

ensure that mechanisms are in place to specify, assess, revise, implement, monitor and review the impacts that development will have on the transport system.

#### 12.2.2 Local Policy

- Dumfries and Galloway Council Local Development Plan - The Local Development Plan (LDP) was adopted by the Council on 29<sup>th</sup> September 2014 and is the established planning policy for Dumfries and Galloway. It sets out a settlement strategy and spatial framework for how the Council foresees development occurring in the forthcoming twenty-year period.
- The LDP does not contain any specific policy guidance for windfarm developments, however it does reference a Supplementary Guidance 'Part 1 Wind Energy Development: Development Management Considerations'. The relevant transport elements from this policy are:
  - "Where wind energy developments will involve abnormal load impact on public roads, developers and their contractors will be required, in consultation with the Council as roads authority, to produce an appropriate Traffic Management Plan. Developers will also be required to enter into a Section 75 or other legal agreement requiring any damage to the public roads to be made good at the developer's expense (the said agreement will require a 'before' and 'after' photographic survey of all public roads to be used by the developer and their contractors). Developers should also demonstrate how they have taken into consideration the impact on amenity for residents in close proximity to the transport routes used during the construction phase";
  - "Developers should also carry out early consultation with the local roads and/or trunk roads officials and the Police in respect of abnormal load deliveries to the application site. Due to the size of the components being transported there can be issues in relation to the capacity of rural roads to cope with these loads"; and
  - "The route of new access roads/tracks should be carefully selected and be as sensitive to the existing contours as is practical in relation to the use it will receive".

### 12.3 Consultation

- A request for a Scoping Opinion has been issued to the various transport agencies that have an interest in the surrounding road network, namely Transport Scotland as trunk road agency and Dumfries & Galloway Council as local roads agency.
- The results of the Scoping Opinion are summarised in **Table 12.3.1**.

Table 12.3.1 Consultation Summary

Organisation	Summary/Concerns Raised	Action Required
Transport Scotland (TS)	TS will require to be satisfied that the size of turbines proposed can negotiate the selected route(s) and that transportation will not have any detrimental effect on structures within the trunk road route path. The Abnormal Loads Assessment report will require to identify key pinch points on the trunk road network. Swept path analysis should be undertaken and details provided with regard to any required changes to street furniture or structures along the route.	Noted.
	- TS satisfied that the EIAR will use IEMA guidelines for assessment and should include: - Determination of the baseline traffic and transportation conditions, and the sensitivity of the site and existence of any receptors likely to be affected in proximity of the trunk road network;	Noted.

Organisation	Summary/Concerns Raised	Action Required
	- Review of the development proposals to determine the predicted construction and operational requirements; and - Assessment of the significance of predicted impacts from these transport requirements, taking into account impact magnitude (before and after mitigation) and baseline environmental sensitivity.	
Ayrshire Road Alliance	No comment to make as access will be via the D&GC road network.	Noted.
Dumfries & Galloway Council (D&GC)	All road improvements should be identified. Where works are proposed, these should be temporary in nature.	A Route Survey has been undertaken and notes all necessary works.
	A Transport Management Plan should be provided as part of the submission.	A framework TMP is included and will be fully developed should the site gain planning consent.
	Provide robust material delivery estimates	Noted and included. Site engineering works have confirmed that rock on site can be used for road construction purposes.
	Consultation with the South of Scotland Timber Transport Officer should be undertaken.	Noted. Detailed discussions will take place with the transport officer should the development be consented so that an accurate picture of transport movements can be provided once timescales can be confirmed.
	A wear and tear agreement may be required via Section 96 of the Roads (Scotland) Act	Noted. The need for an agreement is acknowledged in the submission.
	The grid connection will impact on the road network.	Noted. The grid connection forms part of a separate planning application and will be detailed in that application.
	The crossing of Council owned structures must be consulted upon.	Noted. Consultation with D&GC structures will be undertaken prior to any AIL deliveries being made in line with the AIL permitting process.
South Ayrshire Council (SAC)	No in principle objection to proposed Development	Noted.
	Consultation with Transport Scotland should be undertaken	This has been undertaken.
	All road improvements should be identified. Where works are proposed, these should be temporary in nature.	A Route Survey has been undertaken and notes all necessary works. These however are all located within the D&GC or trunk road network.
	A Transport Management Plan should be provided as part of the submission.	A framework TMP is included and will be fully developed should the site gain planning consent.
	Note the potential for cumulative traffic effects and the need to manage these.	Noted and included.
	Provide robust material delivery estimates	Noted and included. Site engineering reviews have confirmed that rock on site is likely to be used for road construction purposes.

Organisation	Summary/Concerns Raised	Action Required
	Consultation with the South of Scotland Timber Transport Officer should be undertaken.	Noted. Detailed discussions will take place with the Transport Officer should the development be consented so that an accurate picture of transport movements can be provided once timescales can be confirmed.
	A wear and tear agreement may be required via Section 96 of the Roads (Scotland) Act	Noted. The need for an agreement is acknowledged in the submission. This however is likely to be with D&GC as all access arrangements are via their road network.
	The grid connection will impact on the road network.	Noted. The grid connection forms part of a separate planning application and will be detailed in that application.
	The crossing of Council owned structures must be consulted upon.	Noted, however no abnormal loads will be crossing SAC structures as access will be via the D&GC road network.
	All road improvements should be identified. Where works are proposed, these should be temporary in nature.	A Route Survey has been undertaken and notes all necessary works.
	A Transport Management Plan should be provided as part of the submission.	A framework TMP is included and will be fully developed should the site gain planning consent.
	Provide robust material delivery estimates	Noted and included. Site engineering works have confirmed that rock on site can be used for road construction purposes.
	Consultation with the South of Scotland Timber Transport Officer should be undertaken.	Noted. Detailed discussions will take place with the transport officer should the development be consented so that an accurate picture of transport movements can be provided once timescales can be confirmed.
	A wear and tear agreement may be required via Section 96 of the Roads (Scotland) Act	Noted. The need for an agreement is acknowledged in the submission.
	The grid connection will impact on the road network.	Noted. The grid connection forms part of a separate planning application and will be detailed in that application.
	The crossing of Council owned structures must be consulted upon.	Noted. Consultation with D&GC structures will be undertaken prior to any AIL deliveries being made in line with the AIL permitting process.

## 12.4 Assessment Methodology and Significance Criteria

13. The baseline review focused on the nature of the surrounding road infrastructure and the current level of traffic use and was informed by desktop studies and field surveys.

**12.4.1 Desk Study**

14. The desk study included reviews and identification of the following

- Relevant transport planning policy;
- Accident data;
- Sensitive location;
- 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.

**12.4.1 Field Survey**

15. Field surveys were also undertaken and comprised:

- A detailed site visit to the site to review the potential access routes and potential constraints was undertaken; and
- Collection of traffic flow and speed data.

**12.4.2 Impact Assessment Methodology**

16. 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.

**12.4.3 Sensitivity/Importance/Value**

17. The Institution of Environmental Management and Assessment (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.

18. 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.

19. 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 12.4.1**.

Table 12.4.1 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	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	Where the road is Trunk or A-class, constructed to accommodate significant HGV composition.  Includes roads with little or no traffic calming or traffic	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

Receptor	Sensitivity			
	High	Medium	Low	Negligible
	restrictions, traffic calming measures	traffic management measures	management measures	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

20. 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.

**12.4.4 Significance of Effect**

21. 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 Table 2.4 of Volume 11, Section 2, Part 5 of the Design Manual for Roads and Bridges (DMRB) and summarised in **Table 12.4.2**.

22. The DMRB defines the potential changes in effect as follows:

- Large: These effects are considered to be material in the decision-making process;
- Moderate: These effects may be important but are not likely to be material factors in decision making. The cumulative effects of such factors may influence decision-making if they lead to an increase in the overall adverse effect on a receptor;
- Slight: These effects may be raised as local factors. They are unlikely to be critical in the decision-making process, but are important in improving the subsequent design of the project; and
- Neutral: No effects or those that are imperceptible.

Table 12.4.2 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

23. In terms of the EIA Regulations, effects would be considered of significance where they are assessed to be large or moderate. Where an effect could be one of Large/Moderate or Moderate/Slight, professional judgement would be used to determine which option should be applicable.

**12.4.5 Magnitude of Impact**

24. 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.



25. 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 3%, 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”. (Para 4.28);
- 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.” (Para 4.32);
- 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 (Para 4.39). 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.

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

## 12.5 Baseline Conditions

27. The proposed Development would be accessed directly from an improved forest access junction on the A714 near Cairnderry Cairn. The existing access junction would be widened to accommodate the proposed turbines and construction traffic.

28. Discussions with ScottishPower Renewables were held to review the transport experiences of the nearby Kilgallioch windfarm site. These discussions centred around likely points of origin for materials to assist in developing a suitable study area.

29. Strategic access to the A714 is available from the A75 trunk road network to the south. Access between the A75 can be made either through the town of Newton Stewart or via a bypass of the town to the west. Recent experience has diverted all construction traffic along this bypass to reduce the impact on the local population as far as possible.

30. The study area for this assessment is therefore as follows:

- The A75 trunk road (east and west of Newton Stewart);
- The bypass of Newton Stewart (U52W); and
- The A714 between Newton Stewart and Barrhill to the north.

31. In order to assess the impact of construction traffic on the study area, a series of Automatic Traffic Count (ATC) sites were established in September 2019. These were deployed during a neutral period to record average traffic flows. The counts sites used were as follows:

- The A75 (between the Newton Stewart Bypass and A714 junction);
- The Newton Stewart Bypass;
- The A714 to the north of Bargrennan Bridge;
- The A714 to the east of the Site Access Junction; and
- The A714 in Barrhill village centre.

32. The traffic counters allowed the traffic flows to be split into vehicle classes. The data was summarised into Cars/Light good vehicles (LGVs) and Heavy goods vehicles (HGVs) (all goods vehicles >3.5tonnes gross maximum weight). A summary of the results for the average 24 hour weekday period is provided in **Table 12.5.1**.

Table 12.5.1 Existing Traffic Conditions (Weekday Average Two Way Flows)

Survey Location	Cars & LGV's	HGV	Total
A75	4469	614	5083
Newton Stewart Bypass	746	48	794
A714 Bargrennan	868	40	908
A714 Site Access	581	32	613
A714 Barrhill	809	30	839

### 12.5.1 Speed Data

33. The ATC sites used to provide traffic volume data were also used to collect speed statistics. The two-way five-day average and 85th percentile speeds observed at the count locations are summarised below in **Table 12.5.2**.

Table 12.5.2 Speed Summary (Weekday Average Two Way Flows) MPH

Survey Location	Mean Speed	85%ile Speed	Speed Limit
A75	48.65	57.65	60
Newton Stewart Bypass	44.75	53.50	60
A714 Bargrennan	33.10	38.80	60
A714 Site Access	55.65	63.45	60
A714 Barrhill	24.45	29.50	30

34. The speed survey data indicates that there is compliance with current speed limits on the study area with the exception of the area of the site access junction. This indicates that traffic management measures will be required at this location and that Police Scotland may wish to consider enforcement spot checks in this very rural area.

### 12.5.2 Accident Review

35. Road traffic accident data for the three year period commencing 01 January 2016 through to the 31st December 2018 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.

36. Accident data for the A75 in the vicinity of Newton Stewart, the Newtown Stewart bypass and The A714 between Newton Stewart and Barrhill was reviewed. The summary statistics indicate that:

- There was a total of 11 accidents within the study area over the three year period. Of those, eight were classified as "Slight", two "Serious" and one as "Fatal";
- In the immediate three year period, two recorded accidents were noted as being "Slight", one as "Serious" and one fatality was recorded;
- The fatal accident occurred on the A714 between Bargrennan and Newton Stewart. The "Serious" accidents were noted on the A75 to the east of Newton Stewart;
- Three "Slight" accidents were noted in the vicinity, one at Bargrennan and the rest occurring on the A75. No accidents were recorded at the A75 / Newton Stewart bypass road junction;
- There are three recorded accidents involving HGV traffic, all on the A75. Two were "Slight", with one noted as being "Serious";
- There was one "Serious" accident involving a motorcycle (on the A75). There were no Bus, cyclist or pedestrian accidents noted and no children were recorded as casualties; and

- Young drivers were involved in two slight accidents (at Bargrennan and on the A75) and one "Serious" accident on the A75.

37. The statistics indicate that the majority of accidents are "Slight" in nature and that there are a limited number of HGV incidents that occurred on the strategic A75 trunk road. With the exception of the one fatal accident, there has been a significant reduction in accidents in the study area over the last three years.

### 12.5.3 Cycle and Pedestrian Network

38. There are no Core Paths recorded by Dumfries and Galloway Council in close proximity to the proposed site access. The A714 does not have any pedestrian or cyclist infrastructure near the site access junction and as such, active travel activity is considered to be very low at this location.

39. Pedestrian facilities throughout the study area are limited and reflect the rural nature of the road network within the study area.

40. A review of the Sustrans cycle network plan of the United Kingdom indicates that there are no National Cycle Routes on the A714 or within the vicinity of the site. The Dumfries and Galloway Council cycle map indicates that the nearest cycle network interaction with the proposed delivery route is located at the junction between the A75 and Newton Stewart bypass.

### 12.5.4 Future Year Baseline

41. Construction of the project could commence during 2022 if consent is granted and is anticipated to take up to 18 months.

42. 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 factor to the surveyed traffic flows.

43. The NRTF low growth factor for 2019 to 2022 is 1.022. These factors were applied to the 2019 survey data to estimate the 2022 Base traffic flows shown in **Table 12.5.3**.

Table 12.5.3 Baseline 2022 24hour Average Weekday Traffic Data

Survey Location	Cars & LGVs	HGV	Total
A75	4568	627	5195
Newton Stewart Bypass	762	49	811
A714 Bargrennan	887	41	928
A714 Site Access	594	33	627
A714 Barrhill	827	31	858

44. Based on the classifications set out in **Table 12.4.1** the following receptors have been classified as being:

- Users of the A75: Low sensitivity;
- Users of and residents living alongside the Newtown Stewart Bypass: Negligible sensitivity;
- Users of and residents living along the A714 at Bargrennan: Negligible sensitivity;
- Road users of the A714 at the site access junction: Negligible sensitivity; and
- Users of and residents living alongside the A714 at Barrhill: Low / Medium sensitivity.

45. These classifications are then used throughout the following assessment.

## 12.6 Potential Effects

### 12.6.1 Construction

46. During the 18 month construction period, the following traffic will require access to the Site:

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

47. Average monthly traffic flow data were used to establish the construction trips associated with the proposed Development and are detailed in the Transport Assessment contained in **Technical Appendix 12.1**. The trip estimates have been based upon first principle estimates of traffic movements to and from the site, having established the likely volumes of construction materials, resources and components.

48. With regards to abnormal loads associated with turbine deliveries, ScottishPower Renewables have used their recent experience from Kilgallioch Windfarm to consider load routing. In line with their past experience, it is proposed that a dual port strategy is considered for the delivery of the wind turbine components. It is proposed that the primary port used for the deliveries of wind turbines components would be King George V Dock in Glasgow. This port has ample adequate facilities for accommodating the proposed loads and the access route from the dock to the A714 has been the subject of upgrade works for these loads and has been agreed by Transport Scotland already.

49. Access from King George V docks would be via the M8, M74, M6, A75 and A714. Loads would undertake a U-turn at Carlisle at M6 Junction 42 or Junction 44 to allow direct access onto the A75.

50. A secondary port option using the port of Cairnryan is also considered. This port is significantly smaller and improvement works to the road network from the port gate to the A714 access junction will be required. In addition, the Port of Cairnryan has some restrictions including limited water depth and port handling facilities/component storage and may limit the use of this facility.

51. Access from Cairnryan would be via the A77, A751, A75 and A714.

52. If consented, ScottishPower Renewables would engage in detailed discussions with the turbine suppliers, haulage contractors, Transport Scotland, Police Scotland and road authorities in regard to an agreed port of entry strategy and AIL delivery route.

53. The trip estimates have been assigned to the proposed construction programme to allow the identification of the peak of construction traffic to be established. The construction programme is also provided in the Transport Assessment.

54. The peak of construction traffic activity was identified as being Month 5 of the programme. The traffic associated with this month was then assigned to the study area network using the distribution of traffic described within the Transport Assessment.

55. The peak traffic flows associated with the proposed Development's construction phase results in an average of 102 movements per day (51 trips in and 51 trips out), of which 48 would be made by light vehicles (24 inbound and 24 outbound) and 54 by HGV (27 inbound and 27 outbound).

56. The construction traffic was compared against the future baseline traffic to estimate the increase in traffic associated with this phase of the proposed Development. **Table 12.6.1** illustrates the potential traffic impact at the peak of construction activity.

Table 12.6.1 Traffic Impact Summary

Survey Location	Cars & LGVs	HGV	Total	Cars & LGV % Increase	HGV % Increase	Total Traffic % Increase
A75	4592	679	5271	0.53%	8.29%	1.46%
Newton Stewart Bypass	786	101	887	3.15%	105.56%	9.37%
A714 Bargrennan	911	93	1004	2.70%	127.20%	8.19%
A714 Site Access	642	87	729	8.08%	165.12%	16.28%
A714 Barrhill	851	33	884	2.90%	6.52%	3.03%

57. The total traffic movements are not predicted to increase by more than 10% on all of the study area, with the sole exception of the A714 in the vicinity of the site access junction.
58. The total HGV traffic movements will increase between 105% and 165% on the Newton Stewart Bypass and on the A714. Whilst this increase is statistically significant, it is generally caused by the relatively low HGV flows on these two roads which will see an additional 54 HGV journeys per day (27 Inbound and 27 Outbound). This represents nearly 4 inbound HGV journeys every hour during construction activities, which is not considered significant in operational terms.
59. 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 that makes up the study area. The results are summarised in **Table 12.6.2**.

Table 12.6.2: 2022 Daily Traffic (24hr) Capacity Review Summary

Survey Location	2022 Baseline Flow	Theoretical Road Capacity	2022 Base + Development Flows	2022 Base + Development Used Capacity %	Spare Road Capacity %
A75	5195	57600	5271	9.15%	90.85%
Newton Stewart Bypass	811	43200	887	2.05%	97.95%
A714 Bargrennan	928	43200	1004	2.32%	97.68%
A714 Site Access	627	43200	729	1.69%	98.31%
A714 Barrhill	858	38400	884	2.30%	97.70%

60. The results indicate that there are no road capacity issues with the proposed Development and that ample spare capacity exists within the trunk and local road network.
61. With regards to Rule 1 of the IEMA Guidelines (see **Table 12.4.1**), the impact will exceed 30% increases in HGV flows on the A714 at the site access, Bargrennan and the Newton Stewart Bypass and as such should therefore be assessed. All three locations are defined as being negligible sensitivity receptors to HGV traffic and at worst, using the significance of the likely effects, would be classified as being "slight" in nature.
62. The assessment of the significance of the potential impact on the three areas is summarised in **Table 12.6.3**.

Table 12.6.3 Assessment of Impact Significance

Receptor	Potential Effect	Magnitude of Impact	Significance of Impact	Comment
Residents and users of the Newton Stewart Bypass and A714	Severance	Minor	Slight / Neutral	Whilst HGV flows will increase between 81% to 128% on the affected links, the increase in HGV numbers are considered to be low. There are no pedestrian facilities of note along the affected route and as such it is unlikely that there is a high demand to cross these links.
	Driver Delay	Minor	Slight / Neutral	There are no current or predicted capacity constraints on the network and as such, the impact of the increase in HGV traffic is not considered to cause a significant impact on the operation of the network.
	Pedestrian Delay	Minor	Slight / Neutral	Total traffic volumes are not predicted to increase over 30%. Given the lack of pedestrian facilities, no significant impact is predicted.
	Pedestrian Amenity	Minor	Slight / Neutral	Whilst HGV flows increase over 30%, the lack of pedestrian infrastructure indicates that any impacts will be slight at most.
	Fear and Intimidation	Minor	Slight / Neutral	Total traffic volumes are not anticipated to increase by more than 30%.
	Accidents and Safety	Moderate	Slight	The increase in HGV traffic may have an impact on safety due to driver frustration and an increase turning movements on and off the A714

63. Before the introduction of mitigations, it is considered that the only slight impacts would arise from the construction phase traffic.

### 12.6.2 Operation

64. It is predicted that during the operation of the Site there would be up to 2 vehicle movements per week for maintenance purposes. Also, there may be occasional abnormal load movements to deliver replacement components in the unlikely event of a major failure. Given the low traffic generation, further assessment has been scoped out of the assessment.

### 12.6.3 Limits to the Assessment

65. The assessment is based upon an assumed construction programme for the proposed Development. Alterations in this programme may increase or decrease traffic flows per month.
66. This assessment is based upon average daily traffic flows within the peak month of site deliveries to provide a worst case assessment scenario. There may be localised peaks with construction days where flows can be higher for a specific hour, such as a shift change on Site.



## 12.7 Mitigation

### 12.7.1 Physical Measures to Design Out Issues

67. The assessment has assumed the use of ready mix concrete delivered in separate cement mixer vehicles in order to assess the worst case scenario. This proposal is considered to be robust in reviewing the potential traffic impact associated with the proposed Development and could be reduced by the provision of an onsite batching plant with the construction site.
68. The number of HGV movements would be reduced with an onsite batching plant as bulk deliveries of cement can be made via a 20 tonne powder tanker and aggregate can be delivered via a 35 tonne tipper HGV. Water can be extracted on Site.
69. SPR has confirmed that it would consider the use of an onsite batching plant during the construction phase of the Site to help reduce HGV numbers on the A714.
70. Advance warning signs and clear visibility splays will be used at the Site access to help advise road users of the increased numbers of turning traffic at the Site access junction.

### 12.7.2 General Construction Traffic

71. A Construction Traffic Management Plan (CTMP) would be prepared and agreed with the Council and Transport Scotland prior to construction works commencing. The CTMP will be developed using experience gathered during the construction of recent projects including Kilgallioch Windfarm:
72. The following measures could be included within CTMP during the construction phase.
  - 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 the highest 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;
  - Requirement for all drivers to attend an induction to include a safety briefing, the need for appropriate care and speed control, particularly in sensitive areas, identification of specific sensitive areas, identification of the specified route, and the requirement not to deviate from the specified route; and
  - A Travel Plan to encourage lift sharing /crew bus access to site for construction staff.

### 12.7.3 Abnormal Loads

73. The route assessment was based upon the use of Vestas V150 turbine. The worst case loads were used in the assessment, with a 74m long by 4.03m wide turbine blade and a 33.88m long by 4.5m wide turbine tower section being assessed.
74. The assessment reviews access to the proposed Development from King George V Docks in Glasgow via the M8, M74, M7, A75 and A714. The works to accommodate these loads comprises of adjustments to street furniture and the provision of over-run surfacing at various junctions along the A75.
75. A number of the necessary works identified are similar to those already in place for previous windfarm developments. These have been improved to suit the proposed larger turbine loads and will be made permanent with the agreement of the road authorities. In general, the works are of low intrusion and can be delivered without significant civil engineering works.
76. The existing access junction off the A714 will be widened to accommodate the proposed loads. From this point onwards, loads will proceed to the turbine locations using existing and new access tracks.

77. Provision for an alternative access route from Cairnryan has also been considered as noted in Section 12.6.1. As with the route from Glasgow, the mitigation works are small scale in nature and do not require significant civil engineering works to deliver them.
78. An agreed access strategy for turbine loads will be confirmed post consent once the turbine supplier has been confirmed and the turbine details confirmed.
79. 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.
80. 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.
81. The times in which the convoys would travel would be agreed with Police Scotland who have sole discretion on when loads can be moved.
82. A Traffic Management Plan detailing the operation of the convoy management would be prepared post consent. This 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;
  - Discussion with Transport Scotland on the potential for using the existing Variable Message Signage (VMS) network to provide additional information to users of the A75 between Stranraer and the M74. This would be helpful for ferry users along the A75 and other trunk and distributor roads in the area; and
  - A communication dialogue between the various stakeholders.
83. It is not yet possible to fully detail the convoy management measures required as the turbine supplier has yet to be identified and there is no haulier appointed to the project. Should the proposed Development be approved, SPR will undertake a turbine supply tender exercise and will select a suitable turbine for use on the Site. The turbine supplier will then appoint a haulier. At this later stage a detailed convoy plan can be prepared once the exact specification of the turbine is known.
84. To address any concerns expressed by the local community, it is proposed that a detailed convoy management plan is developed with Transport Scotland and DGC. This will include measures to provide hold points for convoys to ensure that inconvenience to other road users can be minimised.
85. Hold point locations along the delivery route may include the following locations where traffic can overtake loads under Police control. Please note that these are proposed areas and would use existing road space, rather than new construction:
  - An overtaking / passing area to pass convoys on the dual carriageway section of the A75 at Collin;
  - An overtaking / passing area to pass convoys on the A75 at Rhonehouse;
  - An overtaking / passing area to pass convoys on the Newton Stewart bypass road; and
  - The use of a layby area on the A714 near Knockville.
86. The potential for using these areas will be developed in detail with Police Scotland and the roads authorities and a detailed convoy management plan will be established prior to loads commencing.

### 12.7.4 Information and General Measures

87. Information on the turbine convoys would be provided to local media outlets to help assist the public. These could include:

- Local Newspapers;
- Community Councils; and
- DGC website.

88. Information would 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.
89. Advance warning signs could be installed on the approaches to the affected road network, subject to the agreement of the road authorities.
90. Site direction signage could also be provided to direct construction traffic to the proposed Development Site and to ensure that traffic remains on approved routes and would not operate on minor road links that have not been assessed. The Balance of Plant (BoP) contract would specify the routes that suppliers must take during construction activities. This will be enforced by the site agent.
91. In line with the scoping request by the Council, an agreement on wear and tear on road infrastructure caused directly by construction traffic would be established prior to construction commencing. The agreement will set out the area of review, scope and response requirement of any dilapidations that can be proven to be linked to construction traffic.
92. Any street furniture that is removed on a temporary basis to enable AIL movements would be fully reinstated following the delivery period.
93. An inspection of any traffic management measures and road signage around the site access junction would be undertaken by the site manager on a regular basis. During the access junction construction works, there would be a daily road inspection and the public road will be kept clear of debris and mud.

## 12.8 Residual Effects

94. This section considers the assessment of traffic impacts following the incorporation of the identified mitigation measures. An evaluation of the potential effects of the increase in traffic on the study area roads used for construction traffic was undertaken. The summary of this assessment is provided in **Table 12.10.1**.
95. The assessment confirms that the effects will be minor in nature and that the significance will be slight in nature. The traffic effects are transitory in nature and are confined to the construction period only. No long lasting detrimental transport or access issues are associated with the proposed Development.

## 12.9 Cumulative Assessment

96. The use of Low NRTF growth assumptions has provided a basis for general local development growth within the study area.
97. There are two further windfarm developments planned in the immediate vicinity of the site. Both have entered the planning system but have yet to be determined. As such neither can be classified as being a committed development. The two windfarms are:
- Arecleoch Windfarm Extension, proposed by ScottishPower Renewables; and
  - Kilgallioch Windfarm Extension, also proposed by ScottishPower Renewables.
98. A detailed cumulative assessment has not been performed as neither of the two sites are committed developments (i.e. sites that have planning permissions secured). To inform the planning authorities of possible issues if all three sites were consented concurrently, a combined sensitivity review has been undertaken instead.

99. The peak traffic flows for both sites were obtained from their respective planning application documents (see **Table 12.9.1**) and then compared to the future baseline year in **Table 12.9.2**.

Table 12.9.1: Combined Scheme Sensitivity Review Peak Traffic Summary

Survey Location	Clauchrie Car & LGV	Clauchrie HGV	Arecleoch Car & LGV	Arecleoch HGV	Kilgallioch Extension Car & LGV	Kilgallioch Extension HGV
A75	24	52	20	19	24	40
Newton Stewart Bypass	24	52	20	19	24	40
A714 Bargrennan	24	52	20	19	24	40
A714 Site Access	48	54	20	19	48	42
A714 Barrhill	24	2	0	0	24	2

Table 12.9.2 Combined Scheme Sensitivity Traffic Impact Summary

Survey Location	Cars & LGV	HGV	Total	Cars & LGV % Increase	HGV % Increase	Total Traffic % Increase
A75	4636	738	5374	1.49%	17.69%	3.45%
Newton Stewart Bypass	830	160	990	8.92%	225.33%	22.06%
A714 Bargrennan	955	152	1107	7.66%	271.53%	19.29%
A714 Site Access	710	148	858	19.53%	351.64%	36.86%
A714 Barrhill	875	35	910	5.80%	13.05%	6.06%

100. The combined traffic flows indicate a large increase in traffic flows on the A714 for HGV traffic, there however would be more than sufficient spare road capacity to accommodate this in the event of all three sites being constructed at the same time.
101. Any effects of all three sites being constructed at the same time would be mitigated through the use of an overarching Traffic Management and Monitoring Plan for all three sites and by introducing a phased delivery plan which would be agreed with the local council roads department and Police Scotland.
102. Furthermore, it is not predicted that the potential traffic flow increases could ever occur on the study area for the following reasons:
- It is extremely unlikely that the peak traffic conditions would occur at the same time due to differences in construction programmes, material supplies and developer resources; and
  - All abnormal load deliveries cannot occur at three separate sites on the same day due to restrictions on the numbers of loads moving on the network at the same time set by Police Scotland.
103. As neither Arecleoch Extension nor Kilgallioch Extension Windfarms are consented schemes, no further assessment has been undertaken of this sensitivity review.

## 12.10 Summary

104. The proposed Development will lead to increased traffic volumes on a number of roads in the vicinity of the Site during the construction phase. These will be of a temporary timescale and transitory in nature.

105. An assessment of potential effect using IEMA guidelines has been undertaken. This determined that prior to the implementation of mitigation, only a moderate impact could be expected on road safety on the Newton Stewart bypass and A714 relating to the increase in HGV traffic operating on the route. All other indicators indicated a slight or insignificant effect on receptors within the study area.
106. With the implementation of appropriate mitigation, no significant residual effects are anticipated in respect of traffic and transport issues. The residual effects are all assessed to be slight or insignificant but as they will occur during the construction phase only, they are temporary and reversible.

Table 12.10.1 Summary Table

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial / Adverse		Significance	Beneficial / Adverse
<i>During Construction on the Newton Stewart Bypass and A714</i>					
Severance	Minor	Neutral	None Required	Insignificant	Neutral
Driver Delay	Minor	Adverse	Convoy management points, driver information on construction traffic and consider use of onsite batching to reduce HGV trips	Slight	Adverse
Pedestrian Delay	Minor	Neutral	None Required	Insignificant	Neutral
Pedestrian Amenity	Minor	Neutral	None Required	Insignificant	Neutral
Fear and Intimidation	Minor	Neutral	None Required	Insignificant	Neutral
Accidents and Safety	Moderate	Adverse	Improved driver information, traffic management plan, convoy management plan and consider use of onsite batching to reduce HGV trips	Slight	Adverse
<i>During Operation</i>					
No effects present	N/A	N/A	N/A	N/A	N/A
<i>Cumulative Effects</i>					
No effects present	N/A	N/A	N/A	N/A	N/A

## 12.11 References

### Literature

- Institute of Environmental Assessment (1993) Guidelines for the Environmental Assessment of Road Traffic
- Institution of Environmental Management and Assessment (IEMA) (2005) Guidelines for Environmental Impact Assessment
- Highways Agency (2008) Table 2.2 of Volume 11, Section 2, Part 5 of the Design Manual for Roads and Bridges

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