

15 Access, Traffic and Transportation

Introduction

15.1 This chapter considers the potential effects of the proposed Solwaybank Wind Farm upon access, traffic and transport. It considers the traffic that will be generated during both the construction and operational phases and assesses the impact on, and measures to minimise disruption to, the local transport network. The access, traffic and transport assessment has been undertaken by Mott MacDonald.

Legislation and Policy Context

National Legislation and Policy

15.2 The following guidance has been used to inform the traffic and transport assessment:

- Institute of Environmental Assessment (now the Institute of Environmental Management and Assessment) (1993) Guidelines for the Environmental Assessment of Road Traffic;
- Guidelines for Traffic Impact Assessment (1994) Institution of Highways and Transportation (IHT);
- The Design Manual for Roads and Bridges, Volume 11, Environmental Assessment (2008) Highways Agency/Scottish Government;
- The Design Manual for Roads and Bridges, Volume 15, Economic Assessment of Road Schemes in Scotland (2005) Scottish Government;
- Transport Assessment & Implementation: A Guide (2005) Scottish Executive; and
- Scottish Planning Policy (2010) Scottish Government;
- Planning Advice Note (PAN) 75: Planning for Transport (2005) the (then) Scottish Executive;
- Web base Renewables Advice (Onshore Wind Turbines) (2011) The Scottish Government¹

Effects Assessed in Full

15.3 The scoping process identified the following potentially significant traffic and transport effects during construction of the proposed development, which have been assessed in full:

- increased traffic flows on the local road network bringing the road temporarily closer to its capacity;
- reduction in the 'physical quality' of the local road network i.e. 'wear and tear' of road surface and adjacent infrastructure;
- delays to traffic on local road network due to abnormal load transportation; and
- cumulative effects considering traffic generated during the construction phase of the project and adjacent developments.

Effects Scoped Out

- 15.4 On the basis of the desk based studies and survey work undertaken, the professional judgement of the EIA team, experience from other relevant projects and policy guidance/standards, the impact of operational vehicles on existing traffic flows and the local road network, considering the scheme both in isolation and cumulatively, is considered unlikely to be significant, and therefore has not been assessed in full.
- 15.5 A scheme such as Solwaybank may add approximately 16 vehicles (32 movements) per month to baseline traffic levels once operational and is therefore not considered likely to result in significant effects and is not included in the detailed assessment.
- 15.6 Abnormal load vehicles will deliver large and/or heavy components (e.g. turbine blade, nacelle, tower sections) to site along the defined abnormal load route (B6357 and turning onto unclassified roads after Chapelknowe, heading north to southern site boundary) as agreed in principle with Dumfries and Galloway Council (DGC). All abnormal load traffic and escort vehicles are expected to use this route and enter the site via the southern site entrance. This route will be upgraded as required to accommodate abnormal load traffic prior to use. Given that this route will not be used by development traffic for any other purpose and it shall only be used for a single month, it has not been included within this assessment. Although the impact of this traffic has not been assessed, traffic generation estimates have been provided for information.

Issues Identified during Consultation

Table 15.1: Issues Identified during Consultation

Consultee	Scoping/Other Consultation	Issue Raised	Response/Action Taken
Dumfries and Galloway Council (DGC), Roads Department	Further Consultation meeting held 16/08/11	1. Concerned about the potential increase in lorry traffic on the B7068 and the potential for resultant 'wear and tear' on infrastructure. This route section should be considered sensitive in ES. On balance however Council confirmed that there would be a preference for construction traffic to use the B7068 as no clearly superior option exists.	1. Noted; B7068 assessed as 'sensitive'.

¹ Replaces PAN45: Renewable Energy Technologies (revised 2002) The (then) Scottish Executive.

Consultee	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		2. There is a general concern about road safety along the abnormal load route. The project should therefore consider how any mitigation measures could also improve road safety for all users.	2. Noted, ES reporting and assessment in accordance and measures identified in paragraphs 15.59 - 15.63.
		3. Requested that an agreement be reached between the developers and DGC to cover any damage that proposed wind farm operations may do to the local road network.	3. A road condition survey before and after construction would be undertaken and any damage to infrastructure agreed as attributable to the proposed wind farm should be made good.
		4. Tree felling calculations should include timber cleared to accommodate development and associated power lines.	4. All known works with potential to be undertaken as part of the construction of the proposed wind farm through defined construction period whether within the development site or adjacent to it have been assessed.
		5. It was suggested that timber traffic could be split between the defined timber and general construction routes.	5. Noted, duly considered in ES reporting and assessment.
		6. Where practical the project should coordinate traffic movements with maintenance programmes at the D&G Council and the Timber Transport Group.	6. Noted, Project is committed to ongoing liaison with all relevant stakeholders.
		7. There is a school at Hotts facing onto on B722 and that traffic bound for the site should avoid school opening and closing times.	7. Noted; commitment to avoid lorry traffic passing school around opening and closing times will be incorporated into Construction Phase Traffic Management Plan.
		8. No road traffic accident blackspots on the defined site access routes.	8. Noted.
		9. No major road projects planned in the local region in the foreseeable future.	9. Noted.

Consultee	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		10. Believe that Ewe Hill Wind Farm has gained approval for 6 turbines and that this development may also have the potential to utilise Solwaybank Wind Farm site access routes.	10. Noted, included in cumulative assessment.
		11. Suggest that HGVs respect a 30mph speed limit in the vicinity of the development site access on the B7068.	11. Noted; detail to be discussed post planning and to be incorporated into Construction Phase Traffic Management Plan.
		12. Only significant local event aware of is the Lockerbie Gala which is held at the beginning of June each year.	12. Noted; commitment to limit construction activities at this time to be incorporated into Construction Phase Traffic Management Plan.
		13. Consider that roads locally could reasonably accommodate up 50 vehicles per day.	13. Noted, comment considered in Potential Effects section of this chapter (see paragraphs 15.31 to 15.58).

Assessment Methodology

Baseline Characterisation

Study Area

- 15.7 The study area for the traffic and transport assessment has been defined as the public road network in the vicinity of the proposed Solwaybank Wind Farm development which will be used during its construction. This includes the B7068 between Langholm and the A74(M) Junction 17 at Lockerbie and the B722 between the A74(M) and the B7068.
- 15.8 The B7068 Langholm to Lockerbie road passes adjacent to the most northerly point of the site and the B722 runs in a north easterly direction west of the site, between Junction 20 of the A74(M) and the B7068. The A74(M) runs between Carlisle in the south and Glasgow to the north.
- 15.9 For further information please see Figure 15.1.

Method of Assessment (including Significance Criteria)

- 15.10 This assessment has been undertaken as a combination of desk-top study, field survey and consultation with statutory agencies in line with current good practice and policy advice. Consultation with relevant roads authorities has provided essential guidance and background information to assist in the progression of the assessment.
- 15.11 Predicted volumes of vehicle movements generated during the construction phase have been compared with baseline traffic flows recorded on the existing road network (growthed to anticipated construction year levels), to identify if there are likely to be periods where the increase in general traffic (or specifically Heavy Goods Vehicle (HGV) traffic) will exceed route capacity

thresholds and therefore standard significance (IEMA Guidelines, see Table 13.2). Potential effects arising as a result of the additional traffic have been identified and their significance assessed.

- 15.12 Cumulative effects that might arise through traffic generated during construction of Ewe Hill Wind Farm have been included in the cumulative assessment as requested by Dumfries and Galloway Council Roads Department. The cumulative effects of construction of the Ewe Hill and Newfield Wind Farms overhead power line have not been considered in this assessment as it is not anticipated that the construction of the line would overlap with the construction of Solwaybank Wind Farm or generate significant vehicular movements.
- 15.13 A formal Transport Assessment (TA) has not been carried out for this development as TAs are not considered to be required for temporary construction works, the traffic movements associated with the operational phase will not be significant (i.e. notably less than 10% increase in traffic flows) and the development road access will not be located within 67 m of a trunk road. This is consistent with current guidance from both the Institution of Highways & Transportation (IHT) and Transport Scotland. Furthermore statutory and non-statutory consultees did not request a formal TA at scoping stage or during follow up consultation meetings.

Data Sources

- 15.14 The following data sources have been used in this assessment:
- Road traffic count data for two locations on the B7068 (west and east of the site) taken in May 2011 (received from RES);
 - Road traffic count data for B722 (south of B7068) taken in May 2011 (received from RES);
 - Traffic movements predicted to be generated by the construction of the Ewe Hill Wind Farm included within the cumulative assessment. Figures obtained from The Ewe Hill Environmental Statement dated October 2009.
 - Traffic movements predicted to be generated by the construction of the Gretna Substation to Ewe Hill and Newfield Windfarms 132 kV Transmission Line included within the cumulative assessment. Figures obtained from Environmental Statement dated April 2011.
 - Volume 15 Section 1, Part 5 Traffic Modelling in NESAs, NESAs Manual, 2005
 - AADT figures based on sample traffic counts undertaken by Mott MacDonald dated August 2011. Counts were taken on B7068 within Lockerbie.

Significance Criteria

- 15.15 Sensitivity has been determined on the basis of the IEMA Guidelines. The IEMA Guidelines² suggest that two broad rules can be used as a screening process to delimit the scale and extent of the assessment. These are:
- Rule 1 - Include highway links where traffic flows would increase by more than 30% (or the number of HGVs would increase by more than 30%).
 - Rule 2 - Include any other specifically sensitive areas where traffic flows would increase by 10% or more (also consistent with IHT guidelines).
- Note: In respect of Rule 2 above, only 'B' class, 'C' class and unclassified roads are defined as sensitive locations under this assessment. A-class roads situated locally, generally operate within their respective capacities and as the main function of A-class roads is to facilitate regional*

distribution of traffic, these route sections have not been classed as sensitive in respect of this assessment.

- 15.16 The IEMA guidelines are intended for the assessment of the environmental impact of road traffic associated with major new developments (it is established practice that they are applied to energy related developments). These guidelines are defined as suitable to assess the short term construction phase of a development.
- 15.17 Where the predicted increase in traffic volume, general traffic or HGV traffic (including abnormal loads) only, is lower than these thresholds, effects can be stated to be not significant, meaning that further detailed assessments are not warranted.
- 15.18 The transport routes that are to be used locally by the Solwaybank Wind Farm generated traffic have been identified. Quantitative and qualitative assessments have been undertaken to determine whether or not the effects are considered to be of significance. The predicted significance of the impact was determined through a standard method of assessment based on professional judgement, considering both sensitivity and magnitude of change. As a guide to inform the assessment, criteria for determining the significance of traffic related effects have been adopted, with separate criteria for an increase in; 1. General traffic (all traffic; HGV + Light Goods Vehicles (LGV)) and 2. HGV traffic defined. These are set out in Table 15.2.

Table 15.2: Significance Criteria

Significance of Impact	1. % Increase in general traffic (HGV + LGV) volume 2. Change in Modal Composition (re. % HGVs)
Major	Greater than or equal to 60%
Moderate	Greater than or equal to 30% and less than 60% (10% to 60% for defined sensitive areas)
Minor	Greater than or equal to 10% and less than 30% (5% to 10% for defined sensitive areas)
Negligible	Under 10% (5% for defined sensitive areas)

- 15.19 Major and moderate effects are considered significant in accordance with the EIA Regulations.

Baseline Conditions

Current Baseline

- 15.20 This section details:
- geographical context;
 - public transport provision;
 - route access study findings; and
 - road capacities and baseline traffic flows

Geographical Context

- 15.21 The proposed site is located within the Dumfries and Galloway Council area approximately 20 km east of Lockerbie.

¹ Guidelines for the Environmental Assessment of Road Traffic, (IEMA Guidelines), 1993 Guidance Notes No. 1.

15.22 To the north of the site, the B7068 road runs west to east from Lockerbie to Langholm. The main access to the site itself is from the B7068 (via A74(M) and B722). Abnormal loads only will access the site from the south via the B6357.

Public Transport

15.23 The nearest bus stops to the Solwaybank Wind Farm site are located on the B7068, approximately 4 km from the site and on the Solwaybank - Barnglieshead unclassified road, adjacent to the south access.

15.24 The West Coast main line lies to the east of the study area, providing passenger services from Edinburgh to London. The nearest station to Solwaybank Wind Farm is Lockerbie, approximately 20 km to the west.

15.25 Given the remote location of the proposed wind farm, bus and rail are not considered viable options for the regular transportation of people or goods to site and therefore only road based private transport has been assessed further.

Road Capacities and Baseline Traffic Flows

15.26 Typical capacities for a variety of road types are provided within the Design Manual for Roads and Bridges (DMRB), Volume 15, Part 5, Table 5/3/1. These capacities, which are quoted as two-way flows in vehicles per hour (vph), have been extracted for the roads which will be utilised by development related traffic associated with the proposed Solwaybank Wind Farm, and are summarised in Table 15.3.

15.27 The table also includes current (baseline) traffic flow, with the source of this data referenced. Please see Figure 15.1 for an indication of site access routes and traffic count locations.

Table 15.3: Existing Traffic Flows and Route Capacities

Traffic Count Point [Usage]	Description [Speed limit (mph)]	Width	Baseline Volume (Average Annual Daily Traffic): 2-way flow per weekday [Source]	Baseline Percentage HGV Traffic [Source]	Baseline HGV Volume: 2-way flow per weekday [Source]	Capacity vph (two way flow per hour) [e]	Typical peak flow vph (2-way flow 0800-0900 per weekday) [Source]
B7068 (in Lockerbie) [General Traffic (GT)]	Urban Typical Single Carriageway [60 typical]	7.3m (typically)	7406 [c]	3% [c]	198 [c]	1600 [d]	655 [c]
B7068 (Lockerbie to Site) (GT)	Rural Typical Single Carriageway [60 typical]	7.3m (typically)	316 [a]	33% [a]	105 [a]	2400 [d]	30 [a]
B7068 (Site to Langholm) (GT)	Rural Typical Single Carriageway [60 typical]	7.3m (typically)	321 [a]	29% [a]	94 [a]	2400 [d]	40 [a]
B722 (A74(M) to B7068) (GT)	Rural Typical Single Carriageway [60 typical]	7.3m (typically)	179 [b]	35% [b]	63 [b]	2400 [d]	21 [b]

[a] Based on road traffic count data for two locations on the B7068 (west and east of the site) taken May 2011 (received from RES):

[b] Based on road traffic count data for B722 (south of B7068) taken May 2011 (received from RES):

[c] AADT figures based on sample traffic counts undertaken by Mott MacDonald dated August 2011. Counts were taken on B7068 within Lockerbie.

[d] Volume 15 Section 1, Part 5 Traffic Modelling in NESAs, NESAs Manual, 2005.

Road Capacities and Baseline Traffic Flows (cont'd)

15.28 It can be seen from Table 15.3 that roads within the study area generally operate significantly below capacity.

Road Traffic Accidents

15.29 Dumfries and Galloway Council did not highlight any known accident 'blackspots' or request analysis of road traffic accidents in the vicinity of Solwaybank Wind Farm during consultation.

Future Baseline ('Do-nothing Scenario')

15.30 It has been assumed that traffic flows on the local road network are likely to increase broadly in line with TEMPRO adjusted National Road Traffic Forecasts (NRTF). The level of increase within the local road network is predicted to be "Low". Low growth is predicted as the study area is a sparsely populated area. High or medium levels of traffic growth would only be possible if there is to be a significant increase in population and car ownership in the area, which is not foreseen in the NRTF. On this basis, the growth factor assumed for this assessment, from 2011 to 2015, is predicted at 2.4%. Beyond 2015, road traffic is envisaged to continue to increase in line with NRTF low forecasts adjusted with TEMPRO factors as appropriate to the Dumfries and Galloway area.

Potential Effects

Potential Construction Effects

Assessment Assumptions

- 15.31 The construction of the proposed wind farm is programmed to take 18 months. Construction will take place six days a week (Monday-Saturday), 26 days a month unless otherwise agreed (see Chapter 4: Development Description). No work will be conducted on Sundays or public holidays. With the potential exception of the delivery of abnormal loads, this restriction will also apply to the delivery of materials to site. Deliveries of abnormal loads will be subject to separate permits and restrictions placed by DGC and the police.
- 15.32 Construction related activities for the proposed wind farm will comprise all activities relating to site preparation, construction/upgrading of access tracks, construction of turbine bases and erection of turbines, cabling installation, commissioning and associated activities.
- 15.33 The proposed wind farm will require approximately 5,647 m³ of concrete in its construction (5,250 m³ of which will be used in turbine foundations and the remainder in general construction activities). Concrete will be delivered by lorry from a local concrete batching plant.
- 15.34 Although there is a stone quarry nearby there is no certainty stone will be sourced from there. In order to assess the worst case scenario the assessment will assume stone will be brought in from further afield.
- 15.35 Felling will commence six months prior to the construction phase and continue during the first 6 months of the construction phase. For the purposes of this assessment it is assumed that all timber traffic will travel to and from the site via the B7068 and then onto the B722 towards the A74(M) as this is the agreed timber extraction route. It should be noted however that consultation from DGC has highlighted that some forestry traffic may travel along the B7068.
- 15.36 The proposed wind farm will generate a maximum of eight abnormal load deliveries per turbine unit:

- turbine tower sections (three per turbine, each transported individually);
- nacelles (one per turbine);
- blades (three per turbine, each transported individually).
- Transformer (one per turbine)

- 15.37 All other lorry traffic will be classified as standard loads Heavy Goods Vehicles (HGV).
- 15.38 Each single delivery to site is considered to generate two movements, i.e. one movement to site and one movement returning from site to point of origin. For robustness no 'backfilling' has been assumed and so this represents a maximum case scenario, i.e. once the load has been delivered the vehicle returns to its place of origin empty.
- 15.39 For the purposes of this assessment, it is assumed that two members of staff will travel in each vehicle and that there will be between 4 and 36 employees on site at any one time. It is not considered necessary that these vehicles are restricted to specific site access routes.
- 15.40 The traffic routes used to access the site during the construction phase will vary depending on the origin of the journey. For the purposes of this assessment, it has been assumed that general (non-abnormal load) lorry traffic bound for Solwaybank Wind Farm will travel along the B7068 and B722 and enter the site via the northern entrance.
- 15.41 As B class roads and following guidance from DGC Roads Department consultation both the B7068 and B722 have been classified as 'sensitive' in terms of this assessment.

Predicted Effects

- 15.42 Estimates of traffic generation during the construction phase were developed based on estimates of the quantity of materials and equipment required.
- 15.43 The total quantity of loads and associated traffic generation, to the north site entrance, estimated during the 18 month construction period is set out by activity in Table 15.4.
- 15.44 The total quantity of loads and associated traffic generation, to the south site entrance, estimated during the 18 month construction period is set out by activity in Table 15.5.

Table 15.4: Estimated Vehicle Movements across Construction Programme - North Site Access

Construction Phase	Vehicle Type	Month																	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Site Preparation and Mobilisation <i>Construction of temporary construction compound</i>	HGV							30					2	2	2	2	2	2	30
Forestry <i>Timber removal from site</i>	HGV	296	298	298	296	306	304	306	304	298	296	298	298						
Road and Hardstandings <i>Stone for access tracks and hardstanding works</i>	HGV	854	1,282	1,280	1,114	1,114	1,114	1,114	1,114	742	742	742	748	378	10	10	8		
Foundation Construction <i>Concrete for bases, steel for bases, foundation reinforcement</i>	HGV							30	30	496	488	488	368	8	6	6	4		
Turbine Erection <i>Non-abnormal load deliveries associated with turbine erection</i>	HGV							10	10	10						6			
Installation of Cabling <i>Electrical cabling</i>	HGV												18						
Substation and Control Building <i>Construction of substation and control building</i>	HGV													66	16				
Reinstatement <i>Removal of temporary works</i>	HGV																	236	236
Miscellaneous <i>Plant fuel, small loads & refuse</i>	HGV	24	24	24	24	24	24	64	62	62	62	62	62	32	32	32	32	32	30
	LGV							50	50	50	50	50	50	50	50	50	30	30	10
Site Personnel <i>LGV transit</i>	LGV	104	104	104	104	104	104	884	884	884	884	884	884	780	780	780	780	780	780
Total No. Traffic Movements (LGV+HGV) per month		1,278	1,708	1,706	1,538	1,548	1,546	2,488	2,454	2,542	2,522	2,524	2,430	1,316	896	886	856	1,080	1,086
Total No. HGV Movements per month		1,174	1,604	1,602	1,434	1,444	1,442	1,554	1,520	1,608	1,588	1,590	1,496	486	66	56	46	270	296
Average No. Traffic Movements Per Day (HGV+LGV)		50	66	66	60	60	60	96	94	98	98	98	94	50	35	34	32	42	42
Average No. HGV Movements Per Day		46	62	62	56	56	56	60	58	62	62	62	58	18	2	2	2	10	12

Table 15.5: Estimated Vehicle Movements across Construction Programme - South Site Access*

Construction Phase	Vehicle Type	Month																	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Turbine Erection <i>Abnormal load delivery & associated escort vehicles</i>	Abnormal Load Vehicle (laden)															135			
	HGV (unladen abnormal load vehicle)															135			
	LGV															540			
Total No. Traffic Movements (LGV+HGV) per month		0	0	0	0	0	0	0	0	0	0	0	0	0	0	810	0	0	0
Average No. Traffic Movements (LGV+HGV) per day		0	0	0	0	0	0	0	0	0	0	0	0	0	0	32	0	0	0
Average No. Abnormal Load Movements Per Day		0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0
Average No. HGV Traffic Movements Per Day		0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0
Average No. LGV Movements Per Day		0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0	0	0

15.45 *As was noted in paragraph 15.6, only low levels of traffic will be added to the abnormal load route / will utilise the south site access. Traffic effects resultant from traffic utilising the abnormal load route / south site access has not been considered in this assessment. The above information is provided for information only.

- 15.46 At present the B722 and B7068 typically operate within their respective capacities (see Table 15.3) and it is expected that they shall continue to do so during the construction period. Under this assessment, the peak period is considered to be the most intense period of traffic generation for the construction of Solwaybank Wind Farm. This period is considered to be months where all traffic movements exceed 2000 per month and HGV movements exceed 1400 per month which relates to months 7-12 inclusive.
- 15.47 Construction of the development (excluding abnormal load delivery) is estimated to generate an average of 66 vehicle movements per day over the entire construction period with an average of 96 movements per day during the peak construction period (months 7-12 inclusive in terms of traffic generation).
- 15.48 Construction generated HGV traffic is estimated at an average of 42 vehicle movements per day over the entire construction period with an average of 60 movements per day during the peak construction period.
- 15.49 Changes in traffic volumes by route section can be calculated by comparing anticipated traffic generation with forecast construction year baseline traffic flow on the respective routes and considering the maximum percentage increase of all traffic and specifically HGV traffic. On this basis, the predicted increases in the two-way traffic flows on each road are shown in Table 15.6.

Table 15.6: Summary of Predicted Traffic Increases during Construction Phase

Traffic Count Point*	Increase in daily average vehicle movements over project	Increase in daily average vehicle movements during peak period (months 9 to 11 inclusive)	Increase in daily average HGV movements over project	Increase in daily average HGV movements during peak period (months 9 to 11 inclusive)
B7068 (Lockerbie)	46 (<1%)	68 (<1%)	32 (16%)	46 (23%)
B7068 (Lockerbie to site)	60 (19%)	86 (27%)	40 (38%)	58 (55%)
B7068 (Site to Langholm)	6 (2%)	10 (3%)	2 (2%)	4 (3%)
B722 (A74(M) to B7068)	12 (7%)	18 (10%)	8 (12%)	12 (19%)

Note: Emboldened % figures highlight periods in which significance thresholds associated with volume of general traffic or the change in the modal composition of traffic (re HGVs) as defined in Table 15.2 have been exceeded.

* All traffic count points represent a sensitive location

Effect on Traffic Flow and Other Road Users

- 15.50 The increase in general traffic (HGV + LGV) volume on the B7068 within Lockerbie during the construction phase is predicted to be less than 5% for the full duration of the construction period (not significant). The likely effect is therefore considered to be negligible.
- 15.51 The increase in HGV traffic volumes on the B7068 in Lockerbie during the construction phase is predicted to be greater than 10% but less than 30% during the peak period. The likely effect during these months is therefore considered to be moderate.
- 15.52 The increase in general traffic (HGV + LGV) volume on the B7068 between Lockerbie and the site during the peak period is predicted to be more than 10% but less than 30%. The likely effect during these months is therefore considered to be moderate.

- 15.53 The increase in HGV traffic volume on the B7068 (Lockerbie to site) during the construction phase is predicted to be more than 30% but less than 60% during the peak period. The likely effect during these months is therefore considered to be moderate.
- 15.54 The increase in general traffic (HGV + LGV) volume and specifically HGV traffic volume on the B7068 (site to Langholm) is predicted to be less than 5% for the full duration of the construction period. The likely effect during these months is therefore considered to be negligible.
- 15.55 The increase in general traffic (HGV + LGV) volume and specifically HGV traffic on the B722 between the A74(M) and B7068 during the construction phase is predicted to be approximately 10% during the peak period. Due to the classification of the B722 as sensitive the likely effect during these months is therefore considered to be moderate.
- 15.56 The increase in HGV traffic volume on the B722 (A74(M) to B7068) during the construction phase is predicted to be more than 10% but less than 20% for the full duration of the construction phase. Due to the classification of the B722 as sensitive the likely effect is therefore expected to be at worst moderate.
- 15.57 In summary, increases in traffic volumes will be most pronounced during months 7 to 12 inclusive on the western section of the B7068 between Lockerbie and the site.

Effect on Physical Quality of Road Network

- 15.58 HGV construction traffic may cause damage to road infrastructure following the intensification of use of site access routes through 'wear and tear'. Such effects are difficult to forecast given the variable road conditions; however professional judgement suggests the effect pre-mitigation is interpreted as being at worst of moderate significance. The current standard of infrastructure on all classified sections of the route is considered adequate to withstand the predicted construction traffic.

Mitigation

Proposed Mitigation during Construction

- 15.59 Pre-construction and post-construction road surveys will be undertaken and any material change in infrastructure condition recorded. Deterioration that is agreed as attributable to the wind farm construction will be restored to at least the same standard upon completion of construction; funded by the project.
- 15.60 Temporary effects relating to an increase in general construction traffic will be minimised through an appropriate locally focused Traffic Management Plan (TMP), which will seek to promote the efficient transportation of components and materials to site and minimise congestion and disruption.
- 15.61 The TMP will be agreed with the local roads authority in consultation (as required) with Transport Scotland (or agents thereof), the Timber Transport Group and the Police.
- 15.62 The TMP will include but not be limited to:
- a statement of which public roads are not to be used by construction traffic;
 - a statement of which local settlements and schools etc. are to be avoided and when;
 - a statement of Lockerbie Gala and local event days on which construction deliveries will not be carried out;

- a commitment to undertaking a ‘road condition survey’ jointly with relevant roads authorities both prior and post construction;
- a commitment to monitor and ensure that damage to walkways, driveways, accesses, bridges, walls, verges and private property does not occur;
- if appropriate, details of additional speed restrictions through sensitive areas i.e. 30 mph speed restriction for HGVs in the vicinity of the site access on B7068;
- a commitment to providing temporary signage at notified locations;
- proposed arrangements for ongoing liaison with stakeholders including the local community;
- speed restrictions necessary due to works associated with any underground services; and
- procedures to ensure pedestrian easement and safety adjacent to worksites and construction routes

15.63 The TMP measures will apply on all public road sections, enhanced with locally specific measures as appropriate. These measures may include the following:

- The timing and frequency of vehicle movements will be managed to minimise local disruption. i.e. to avoid local events such as the Lockerbie Gala, Langholm Walking Festival and start / finish times at Hotts and Eaglesfield Primary Schools.
- Proposals to enter into consultation with the Timber Transport Group and other large generators of traffic on the B7068 with the aim of scheduling vehicle movements such that periods of peak traffic generation do not conflict.
- Any requirement for works to culverts and bridges over watercourses will be agreed with the Scottish Environment Protection Agency (SEPA) and the contractor will be required to adhere to SEPA’s Special Requirements.

Proposed Mitigation during Operational Phase

15.64 Traffic numbers associated with the operational phase of the wind farm are low and as such no mitigation is required.

Residual Effects

Residual Construction Effects

15.65 It is appreciated that the B7068 is already well used by local HGV traffic but it is also important to note that effects relating to traffic generated by Solwaybank Wind Farm construction are expected to be temporary in nature, and that TMP measures should significantly aid road safety and scheduling. Also, 2011 traffic surveys indicate that the B7068 operates well below capacity in this area. It is therefore anticipated that the adverse effects of the construction of Solwaybank Wind Farm will be reduced through the mitigation measures outlined above. These effects are assessed to have at worst a minor effect upon other road users and infrastructure following the application of mitigation measures and as such the effects are not expected to be significant.

Cumulative Effects

Potential Cumulative Construction Effects

15.66 This section considers the possibility of cumulative effects resulting from the simultaneous construction of Solwaybank Wind Farm plus other local wind farm developments (at application

stage or beyond) which have the potential to utilise Solwaybank Wind Farm construction traffic routes at the same time as Solwaybank construction traffic.

15.67 There are two developments which appear to have the potential to use the same access routes as Solwaybank Wind Farm at the same time: Ewe Hill Wind Farm (6 consented turbines) and the associated Ewe Hill and Newfield Wind Farm’s 132 kV Overhead Line and Substation (referred to hereafter as the Ewe Hill OHL Connection).

15.68 This cumulative assessment considers the construction of Ewe Hill Windfarm (six turbines) and also the Ewe Hill OHL Connection. Start dates for construction of these developments are unknown and so it has been assumed that the construction phases of the developments run parallel (i.e. the same construction phase start date).

15.69 Information relating to Ewe Hill Wind Farm was taken from the ES produced in 2009³. Construction traffic for Ewe Hill Windfarm (six turbines) will use the B7068 (between the A74(M) and site access near Grange Fell) and the B722. Abnormal loads will be transported along the B7076, onto an unclassified road east of Eaglesfield then the C61 and finally the B7068 to the site access.

15.70 Information relating to Ewe Hill OHL Connection was taken from the ES produced in 2011. Construction traffic associated with the Ewe Hill OHL Connection substation will utilise the B7068. It is unknown how this traffic shall approach the site access (280 m to west of Grange Quarry Access) and so for the purposes of a worst case assessment, it has been assumed that all traffic bound for this development shall approach from the west.

15.71 The Ewe Hill OHL Connection ES⁴ scoped out the traffic movements associated with construction of the transmission line itself. Paragraph 13.1.4 states:

‘Due to the nature and design of the OHLs, and the rate of construction, it is anticipated that vehicle movements at any one pole location would be limited to three or four visits over the course of the construction period. Therefore it is unlikely to yield any significant effects arising from traffic and transport on the local road network.

As such we have also not included this aspect in our assessment.

15.72 Effects upon the local road network are assessed through considering the average percentage increase in all traffic (HGV + LGV) and specifically HGV traffic. Average increases in the two-way traffic flows on each local road are shown, for the duration and peak period of Solwaybank Wind Farm construction, in Table 15.7. Considering the combined traffic generation capacity of all three developments and assuming a simultaneous start to construction, the peak period (most intense period of traffic generation) will occur between month 1 and month 4 inclusive.

Table 15.7: Summary of Predicted Traffic Increases under Cumulative Assessment Scenario

³ Ewe Hill Windfarm Volume 1: Environmental Statement, October 2009, ScottishPower Renewables.

⁴ Gretna Substation to Ewe Hill and Newfield Windfarms 132kV Transmission Line, ScottishPower Transmission, 2011.

Traffic Count Point*	Increase in daily average vehicle movements over project	Increase in daily average vehicle movements during peak period (months 1 to 4)	Increase in daily average HGV movements over project	Increase in daily average HGV movements during peak period (months 1 to 4)
B7068 (Lockerbie)	98 (1%)	216 (3%)	66 (34%)	168 (86%)
B7068 (Lockerbie to site)	118 (38%)	240 (77%)	74 (72%)	180 (173%)
B7068 (Site to Langholm)	14 (4%)	14 (4%)	2 (2%)	2 (2%)
B722 (A74(M) to B7068)	20 (11%)	24 (14%)	8 (12%)	12 (18%)

Note: Emboldened % figures highlight periods in which moderate or major significance thresholds associated with volume of general (HGV+LGV) or specifically HGV traffic or the change in the modal composition of traffic (re HGVs) as defined in Table 15.2 have been exceeded.

* denotes sensitive location.

15.73 Cumulatively, all three developments are expected to generate an average of 254 vehicles movements per month during the peak period; approximately 180 of these are likely to be HGV movements. It is important to note that the Solwaybank development will only generate an average of 60 vehicle movements per month during the peak period (56 of these movements will relate to HGV traffic). Therefore under this cumulative scenario less than 25% of the traffic, generated by these developments during the peak period, is attributable to the construction of Solwaybank Wind Farm

Effect on Traffic Flow and Other Road Users

15.74 The increase in general traffic (HGV + LGV) volume on the B7068 within Lockerbie, should this cumulative scenario occur, is predicted to be less than 5% for the duration of the construction period. The likely effect during the 18 month construction phase is therefore considered to be negligible. During peak times of construction activity HGV traffic volumes are forecast to increase by more than 60% on the B7068 within Lockerbie and the likely effect will be at worst major.

15.75 The increase in general traffic (HGV + LGV) and specifically HGV traffic volume on the B7068 (Lockerbie to site), should this cumulative scenario occur, is predicted to be greater than 60% during peak periods of construction activity and so the likely effects will be major.

15.76 The increase in general traffic (HGV + LGV) and specifically HGV traffic volume on the B7068 (site to Langholm), should this cumulative scenario occur, is predicted to be less than 5% for the duration of construction activity and so the likely effects will be negligible.

15.77 The increase in general traffic (HGV + LGV) and specifically HGV traffic volume on the B722 (A74(M) to B7068), should this cumulative scenario occur, is predicted to be less than 20% at all times. The likely effect during the 18 month construction phase is therefore considered to be at worst moderate in terms of general traffic and specifically HGV traffic.

Effect on Physical Quality of Road Network

15.78 HGV construction traffic may cause damage to road infrastructure following the intensification of use of site access routes through 'wear and tear'. Such effects are difficult to forecast given the variable road conditions; however professional judgement suggests that the effect pre-mitigation is likely to be moderate at worst. The current standard of infrastructure on all classified sections of the route is considered adequate to withstand the predicted construction traffic.

Proposed Mitigation

15.79 There is the possibility that the Solwaybank Wind Farm construction phase will run parallel with the construction of the Ewe Hill Windfarm and/or the Ewe Hill Line Connection.

15.80 If the construction of Solwaybank Wind Farm was to run in parallel with the construction of Ewe Hill Wind Farm and OHL Connection timing and frequency of vehicle movements would be managed through liaison with DGC Roads Department to ensure wherever possible that vehicle movements were spaced adequately to minimise disruption and coincide (if/where applicable) with adjacent construction operations. It is also proposed, that should the scenario occur where two or more of these developments are constructed simultaneously, then discussion would be undertaken with the other developers (ScottishPower Renewables and ScottishPower Transmission) with the aim of scheduling traffic from affected developments which would ensure that the road network is not placed under undue strain.

15.81 Mitigation measures as set out in paragraphs 15.59 to 15.63 would also be appropriate in a cumulative scenario.

Residual Cumulative Effects

15.82 Residual effects associated with construction traffic are envisaged, these include temporary delay and disruption to traffic flow on the B7068 in Lockerbie and also between Lockerbie and the site access due to increased volumes of traffic.

15.83 Given that part of the Ewe Hill Wind Farm has received planning consent and the OHL connection has been in the planning process for some months, it is likely that these developments will begin construction prior to the construction of Solwaybank Wind Farm and so the cumulative scenario detailed in paragraph 15.68 will not occur.

Summary

15.84 Table 15.8 summarises the predicted maximum effects by route section of the wind farm on access, traffic and transport.

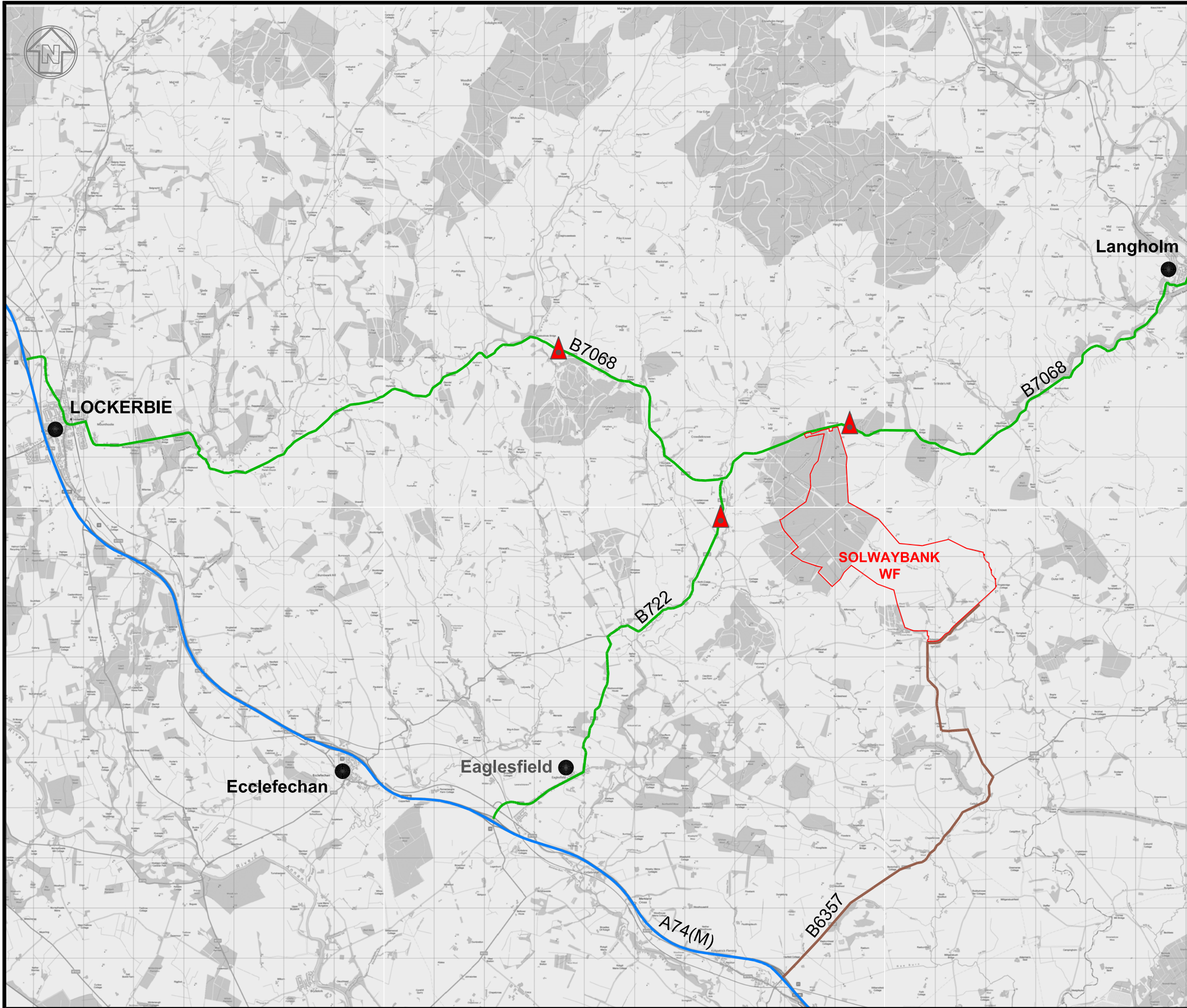
Table 15.8: Summary of Predicted Effects

Predicted Effect	Significance	Mitigation	Significance of Residual Effect
Construction Phase Assessment			
Increase in general traffic causing delays on the B7068 (Lockerbie)	Negligible	Traffic Management Plan	Negligible
Increase in HGV traffic volumes causing delays on the B7068 (Lockerbie)	Moderate	Traffic Management Plan	Minor
Increase in general traffic causing delays on the B7068 (Lockerbie to site)	Moderate	Traffic Management Plan	Minor
Increase in HGV traffic volumes causing delays on the B7068(Lockerbie to site)	Moderate	Traffic Management Plan	Minor
Increase in general traffic causing delays on the B7068 (site to Langholm)	Negligible	None required. (Note: construction traffic will still operate under Traffic Management Plan)	Negligible

Predicted Effect	Significance	Mitigation	Significance of Residual Effect
Increase in HGV traffic causing delays on the B7068 (site to Langholm)	Negligible	None required. (Note: construction traffic will still operate under Traffic Management Plan)	Negligible
Increase in general traffic causing delays on the B722 (A74(M) to B7068)	Moderate	Traffic Management Plan	Minor
Increase in HGV traffic causing delays on the B722 (A74(M) to B7068)	Moderate	Traffic Management Plan	Minor
The physical effects (wear and tear) of additional traffic within the study area on B7068 and B722.	Moderate	<ul style="list-style-type: none"> Traffic Management Plan Pre- & post-construction road survey. Infrastructure works to make good damage attributable to Solwaybank Wind Farm construction. 	Negligible
Cumulative Assessment			
Increase in general traffic causing delays on the B7068 (Lockerbie)	Negligible	Traffic Management Plan	Negligible
Increase in HGV traffic volumes causing delays on the B7068 (Lockerbie)	Major	Traffic Management Plan	Moderate
Increase in general traffic causing delays on the B7068 (Lockerbie to site)	Major	Traffic Management Plan	Moderate
Increase in HGV traffic volumes causing delays on the B7068(Lockerbie to site)	Major	Traffic Management Plan	Moderate
Increase in general traffic causing delays on the B7068 (site to Langholm)	Negligible	None required. (Note: construction traffic will still operate under Traffic Management Plan)	Negligible
Increase in HGV traffic causing delays on the B7068 (site to Langholm)	Negligible	None required. (Note: construction traffic will still operate under Traffic Management Plan)	Negligible
Increase in general traffic causing delays on the B722 (A74(M) to B7068)	Moderate	Traffic Management Plan	Minor
Increase in HGV traffic causing delays on the B722 (A74(M) to B7068)	Moderate	Traffic Management Plan	Minor

Predicted Effect	Significance	Mitigation	Significance of Residual Effect
The physical effects (wear and tear) of additional traffic within the study area on B7068 and B722.	Moderate	<ul style="list-style-type: none"> Traffic Management Plan Pre- & post-construction road survey. Infrastructure works to make good damage attributable to Solwaybank Wind Farm construction. 	Negligible

- 15.85 This assessment has considered the worst case in terms of traffic generation, using robust estimates and a conservative approach in the consideration of potential traffic effects, given local concerns about HGV traffic levels on the B7068.
- 15.86 The traffic and transport effects resultant from the construction of Solwaybank Wind Farm will be lessened through carefully executed traffic management and remedial infrastructure accommodation works. Implementation of the mitigations measures contained in the TMP should significantly aid road safety and scheduling.
- 15.87 It is appreciated that the B7068 is already well used by local HGV traffic but it is important to consider that any Solwaybank Wind Farm construction effects will be temporary in nature and also that traffic surveys carried out in 2011 indicate that the B7068 operates well below capacity.
- 15.88 Following the implementation of proposed mitigation measures, it is expected that traffic generated by the construction of the Solwaybank Wind Farm shall not have a significant effect upon roads within the Study Area.
- 15.89 If the defined cumulative scenario were to occur, then it is expected that moderate and significant environmental effects will be felt on the B7068 to the west of the site access. However, given the initial phase of the Ewe Hill Wind Farm has already received planning consent and the OHL connection has been in the planning process for some months, it is likely that these developments will begin construction prior to the construction of Solwaybank Wind Farm and so the cumulative scenario detailed in paragraph 15.68 will not actually occur.








SOLWAYBANK WIND FARM

FIGURE 15.1

TRANSPORT ACCESS ROUTES

Legend

-  Site Boundary
-  Construction Traffic Route
-  Abnormal Load Route
-  A74 Trunk Road
-  Approximate location for automatic traffic counter

NOTE: THIS DRAWING IS A SKETCH AND DIMENSIONS / EXTENTS / LOCATIONS GIVEN ARE INDICATIVE ONLY.

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LAYOUT DWG	N/A	T-LAYOUT NO.	N/A
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SCALE - Not to scale

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