



# Technical Appendix 12.3

## Traffic and Access Scenario Assessments



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## 12.1 Introduction

1. This report provides the assessment for each potential scenario associated with the construction vehicles for the proposed Development, taking into account the worst and likely case scenarios for sourcing aggregate and concrete, and the access Routes A and B, as described in **Chapter 12: Traffic and Transport**.
2. For clarity, these are:
  - **Worst case:** All construction materials are assumed to be sourced from offsite locations, including all aggregate required for track construction and upgrade and concrete sourced from a local batching plant, thus ensuring that the estimated level of trip generation is considered as a worst case; and
  - **Likely case:** 100% of aggregate is assumed to be sourced from the proposed seven onsite borrow pits and a concrete batching plant onsite, with all remaining construction materials assumed to be sourced from offsite locations

Therefore, the following scenarios have been assessed:

- Scenario 1a: Access A only, worst case;
  - Scenario 1b: Access A only, likely case;
  - Scenario 2a: Access B only, worst case;
  - Scenario 2b: Access B only, likely case;
  - Scenario 3a: Access A and B, worst case; and
  - Scenario 3b: Access A and B, likely case.
3. Based on the assessments presented in this report, a summary of the scenarios with the lowest and greatest vehicular impact, have been set out in **Chapter 12: Traffic and Transport**. These are as follows:
    - Greatest vehicular impacts – Scenario 2a: Access B only, worst case; and
    - Lowest vehicular impacts – Scenario 1b: Access A only, likely case

## 12.2 Trip generation

### 12.2.1 HGV Trip Generation Calculations

4. The total number of HGV trips predicted to rise during the construction phase of the proposed Development has been calculated based on the estimated material quantities provided in **Tables 12.10 and 12.11 in Chapter 12: Traffic and Transport**. These have then been doubled to provide the two-way movements that would occur from delivery and then returning vehicles. The total two-way trip generation has been divided by the anticipated duration (number of months) of each construction activity and the number of operational days which are assumed to be:
  - Access A – 7 days per week (LGVs and HGVs); and
  - Access B – 5.5 days per week (no HGVs on Saturday afternoon and Sunday)
5. The HGV trip generation for Scenario 1a and 3a (Access A only and Access A and B, worst case) is shown in **Table 12.1**.

Table 12.1: Total Number of HGV movements (Conventional HGVs, Scenario 1a and 3a)

Construction Activity	Total Movements (2-way)	Duration (Months)	Total Movements per Month (2-Way)	Total Movements per Day (2-Way)
Forestry felling and export, including construction of access routes for timber harvesting	3,600	3	1,200	40
Site establishment and construction compounds	8,750	2	4,376	146
Construction of haul road & site access to borrow pits	11,850	4	2,962	99
Construction of access tracks and crane pad	37,172	6	6,195	207
Turbine foundation construction	19,598	6	3,266	109
Substation/storage - civil and electrical works	1,762	6	294	10
Cable trenching, installation and backfilling	300	5	60	2
Cranes	20	1	20	10
Turbine delivery, erection and commissioning	230	8	21	3
Reinstatement and restoration works	50	5	10	2

6. The HGV trip generation for Scenario 2a (Access B only, worst case) is shown in **Table 12.2**. The difference in the trip generation with this scenario relates to the aggregate that would not be required to upgrade Access A and also the reduced number of days available for HGV deliveries.

Table 12.2: Total Number of HGV movements (Conventional HGVs, Scenario 2a)

Construction Activity	Total Movements (2-way)	Duration (Months)	Total Movements per Month (2-Way)	Total Movements per Day (2-Way)
Forestry felling and export, including construction of access routes for timber harvesting	3,600	3	1,200	40
Site establishment and construction compounds	8,750	2	4,376	199
Construction of haul road & site access to borrow pits	11,850	4	2,962	135
Construction of access tracks and crane pad	28,668	6	4,828	219
Turbine foundation construction	19,598	6	3,266	148
Substation/storage - civil and electrical works	1,762	6	294	13
Cable trenching, installation and backfilling	300	5	60	3
Cranes	20	1	20	10
Turbine delivery, erection and commissioning	230	8	21	3
Reinstatement and restoration works	50	5	10	1

7. **Table 12.3** shows the anticipated trip generation for Scenario 1b and 3b (Access A only and Access A and B, likely case). The difference in the trip generation with these scenarios is the removal of all vehicle movements associated with aggregates and concrete being brought onto site from the external road network.

Table 12.3 Total Number of HGV Trips (Conventional HGVs, Scenarios 1b and 3b)

Construction Activity	Total Movements (2-way)	Duration (Months)	Total Movements per Month (2-Way)	Total Movements per Day (2-Way)
Forestry felling and export, including construction of access routes for timber harvesting	3,600	3	1,200	40
Site establishment and construction compounds	5,126	2	2,563	85
Construction of access tracks and crane pad	8,000	6	1,333	44
Turbine foundation construction	1,516	6	253	8
Substation/storage - civil and electrical works	262	6	44	1
Cable trenching, installation and backfilling	300	5	60	2
Cranes	20	1	20	10
Turbine delivery, erection and commissioning	230	8	21	2
Reinstatement and restoration works	50	5	10	1

8. Table 12.4 shows the anticipated trip generation for Scenario 1b and 3b (Access B only, likely case). The difference in the trip generation with this scenario is the reduced number of days available for HGV deliveries.

Table 12.4 Total Number of HGV Trips (Conventional HGVs, Scenario 2b)

Construction Activity	Total Movements (2-way)	Duration (Months)	Total Movements per Month (2-Way)	Total Movements per Day (2-Way)
Forestry felling and export, including construction of access routes for timber harvesting	3,600	3	1,200	40
Site establishment and construction compounds	5,126	2	2,563	117
Construction of access tracks and crane pad	8,000	6	1,333	61
Turbine foundation construction	1,516	6	253	11
Substation/storage - civil and electrical works	262	6	44	1
Cable trenching, installation and backfilling	300	5	60	2
Cranes	20	1	20	10
Turbine delivery, erection and commissioning	230	8	21	2
Reinstatement and restoration works	50	5	10	1

12.2.2 Programme

9. The two-way daily movements for HGVs are shown over the anticipated 22-month construction programme according to the relevant activity in Table 12.5 to Table 12.10 for each Scenario.

Table 12.5: Two-Way HGV movements per Construction Month: Scenario 1a: Access A only, worst case

Indicative Construction Activity	Months																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
Forestry felling and tree crop export including construction of access routes for timber harvesting	40	40	40																				
Site establishment		182	182																				
Access B road improvements			0	0	0	0																	
Construction of haul road & site access to borrow pits					99	99	99	99															
Construction of access tracks, crane pad and building compounds						207	207	207	207	207	207												
Turbine foundation construction							109	109	109	109	109	109											
Substation/storage - civil and electrical works								10	10	10	10	10	10										
Cable trenching, installation and backfilling									2	2	2	2	2										
Crane delivery													10										
Turbine delivery, erection and commissioning														20	20	20	20	20	20	20	20		
Reinstatement and restoration works																				5	5	5	5
Daily Total	40	182	182	0	99	306	415	425	328	328	328	121	22	20	20	20	20	20	25	25	5	5	



Table 12.6: Two-Way HGV movements per Construction Month: Scenario 2a: Access B only, worst case

Indicative Construction Activity	Months																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
Forestry felling and tree crop export including construction of access routes for timber harvesting	40	40	40																				
Site establishment		199	199																				
Access B road improvements			10	10	10	10																	
Construction of haul road & site access to borrow pits					135	135	135	135															
Construction of access tracks, crane pad and building compounds						219	219	219	219	219	219												
Turbine foundation construction							148	148	148	148	148	148											
Substation/storage - civil and electrical works								13	13	13	13	13	13										
Cable trenching, installation and backfilling									3	3	3	3	3										
Crane delivery													10										
Turbine delivery, erection and commissioning														20	20	20	20	20	20	20	20		
Reinstatement and restoration works																				5	5	5	5
<b>Daily Total</b>	<b>40</b>	<b>239</b>	<b>249</b>	<b>10</b>	<b>145</b>	<b>364</b>	<b>502</b>	<b>515</b>	<b>383</b>	<b>383</b>	<b>383</b>	<b>164</b>	<b>26</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>25</b>	<b>25</b>	<b>5</b>	<b>5</b>	

Table 12.7: Two-Way HGV movements per Construction Month: Scenario 3a: Access A and B, worst case

Indicative Construction Activity	Months																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
Forestry felling and tree crop export including construction of access routes for timber harvesting	40	40	40																				
Site establishment		182	182																				
Access B road improvements			10	10	10	10																	
Construction of haul road & site access to borrow pits					99	99	99	99															
Construction of access tracks, crane pad and building compounds						207	207	207	207	207	207												
Turbine foundation construction							109	109	109	109	109	109											
Substation/storage - civil and electrical works								10	10	10	10	10	10										
Cable trenching, installation and backfilling									2	2	2	2	2										
Crane delivery													10										
Turbine delivery, erection and commissioning														20	20	20	20	20	20	20	20		
Reinstatement and restoration works																			5	5	5	5	
<b>Daily Total</b>	<b>40</b>	<b>222</b>	<b>232</b>	<b>10</b>	<b>109</b>	<b>316</b>	<b>415</b>	<b>425</b>	<b>328</b>	<b>328</b>	<b>328</b>	<b>121</b>	<b>22</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>25</b>	<b>25</b>	<b>5</b>	<b>5</b>

Table 12.8: Two-Way HGV movements per Construction Month: Scenario 1b: Access A only, likely case

Indicative Construction Activity	Months																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
Forestry felling and tree crop export including construction of access routes for timber harvesting	40	40	40																				
Site establishment		85	85																				
Access B road improvements			0	0	0	0																	
Construction of haul road & site access to borrow pits					0	0	0	0															
Construction of access tracks, crane pad and building compounds						44	44	44	44	44	44												
Turbine foundation construction							8	8	8	8	8	8											
Substation/storage - civil and electrical works								1	1	1	1	1	1										
Cable trenching, installation and backfilling									2	2	2	2	2										
Crane delivery													10										
Turbine delivery, erection and commissioning														20	20	20	20	20	20	20			
Reinstatement and restoration works																				5	5	5	5
<b>Daily Total</b>	<b>40</b>	<b>125</b>	<b>125</b>	<b>0</b>	<b>0</b>	<b>44</b>	<b>53</b>	<b>54</b>	<b>56</b>	<b>56</b>	<b>56</b>	<b>11</b>	<b>13</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>25</b>	<b>25</b>	<b>5</b>	<b>5</b>

Table 12.9 Two-Way HGV movements per Construction Month: Scenario 2b: Access B only, likely case

Indicative Construction Activity	Months																					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Forestry felling and tree crop export including construction of access routes for timber harvesting	40	40	40																			
Site establishment		117	117																			
Access B road improvements			10	10	10	10																
Construction of haul road & site access to borrow pits					0	0	0	0														
Construction of access tracks, crane pad and building compounds						61	61	61	61	61	61											
Turbine foundation construction							11	11	11	11	11	11										
Substation/storage - civil and electrical works								2	2	2	2	2	2									
Cable trenching, installation and backfilling									3	3	3	3	3									
Crane delivery													10									
Turbine delivery, erection and commissioning														20	20	20	20	20	20	20	20	
Reinstatement and restoration works																			5	5	5	5
Daily Total	40	157	167	10	10	71	72	74	77	77	77	16	15	20	20	20	20	20	25	25	5	5

Table 12.10: Two-Way HGV movements per Construction Month: Scenarios 3b: Access A and B, likely case

Indicative Construction Activity	Months																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
Forestry felling and tree crop export including construction of access routes for timber harvesting	40	40	40																				
Site establishment		85	85																				
Access B road improvements			10	10	10	10																	
Construction of haul road & site access to borrow pits					0	0	0	0															
Construction of access tracks, crane pad and building compounds						44	44	44	44	44	44												
Turbine foundation construction							8	8	8	8	8	8											
Substation/storage - civil and electrical works								1	1	1	1	1	1										
Cable trenching, installation and backfilling									2	2	2	2	2										
Crane delivery													10										
Turbine delivery, erection and commissioning														20	20	20	20	20	20	20	20		
Reinstatement and restoration works																			5	5	5	5	
<b>Daily Total</b>	<b>40</b>	<b>125</b>	<b>135</b>	<b>10</b>	<b>10</b>	<b>54</b>	<b>52</b>	<b>53</b>	<b>55</b>	<b>55</b>	<b>55</b>	<b>11</b>	<b>13</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>25</b>	<b>25</b>	<b>5</b>	<b>5</b>

### 12.2.3 HGV Trip Generation Summary

10. The maximum level of two-way HGV trip generation for each scenario is forecast to be:

- Scenarios 1a / 3a – 425 (month 8);
- Scenario 2a – 515 (month 8);
- Scenario 1b - 125 (months 2 and 3)
- Scenario 2b – 167 (month 3); and
- Scenario 3b – 135 (month 3)

### 12.2.4 Light Vehicle Trip Generation

11. Light vehicles trips (smaller vehicles such as cars and vans, which would typically be associated with the workforce) have also been calculated to provide total two-way vehicle movements predicted to arise from the proposed Development.
12. Light vehicle trips would be generated by the approximately 150 workers who would be working on the Site during the construction phase. As an absolute worst case, there would be a maximum of 300 two-way movements daily; however, it is more likely that the majority of the workforce will car share with 2 or more arriving and leaving together, and therefore 50% has been applied to the trip generation.

### 12.2.5 Total Trip Generation

13. For the total trip generation (HGVs and LGVs), the peak months are:
  - Worst case: Months 7 and 8; and
  - Likely case: Months 9, 10 and 11
14. The total trip generation (maximum daily and average) for a 22-month construction programme is set out in **Table 12.11**:

Table 12.11: Maximum and Average Daily Two-Way Vehicle Movements

	Scenarios 1a/3a (Worst Case)			Scenario 2a (Worst Case)			Scenarios 1b (Likely Case)			Scenario 2b (Likely Case)			Scenario 3b (Likely Case)		
	HGV	LGV	Total	HGV	LGV	Total	HGV	LGV	Total	HGV	LGV	Total	HGV	LGV	Total
Maximum in peak month	425	100	525	515	100	615	125	150	275	167	150	317	135	150	285
Average	139	79	218	162	79	241	36	79	115	47	79	126	38	79	117

### 12.2.6 Abnormal Loads

15. The number of AILs would be:
  - 63 (3 per turbine) for the blades; and
  - 147 to 168 (7 or 8 per turbine) for the tower sections and nacelle

### 12.2.7 Distribution

16. It is assumed that all construction vehicles (HGVs and personnel) would enter the Site from either Access Route A or B having travelled the length of the A76 either from the north or south and return to the A76 north or south. Therefore, for the purposes of the assessment:
  - Scenario 1a/b (Access A only) - 50% A76 north / 50% A76 south;
  - Scenario 2a/b (Access B only) - 50% A76 north / 50% A76 south;
  - Scenario 3a/b (Access A and B);
    - 25% - A76 north to Access A, 25% to Access B; and
    - 25% - A76 south to Access A; 25% to Access B
17. For the worst case scenarios (1a/2a/3a), it is assumed the aggregate would be sourced from local quarries such as Barr Quarries on A70 near Cumnock or Barburgh Mill Quarry to the south of Sanquhar and the concrete would be sourced from Bredon Killoch Depot, west of Ochiltree, accessed from the A70.
18. Therefore, for the purposes of the assessment:
  - Aggregate - 50% from Barr Quarries / 50% from Barburgh Mill Quarry; and
  - Concrete – 100% from Bredon Killoch Depot

## 12.3 Assessment of effects

19. The proposed Development has been designed to include a range of measures to mitigate potential effects. All such measures are described fully in **Chapter 3: Description of the proposed Development**.

### 12.3.1 Construction Effects

20. The impact of the proposed Development has been assessed over 24-hour AADT. The increase in traffic flow has been calculated for all scenarios for the peak month of construction activity to identify the total vehicle flow and HGV percentage increases.

#### Worst Case (Scenarios 1a/2a and 3a)

#### Impact Screening

21. **Table 12.12** to **Table 12.14** show the predicted daily total and HGV traffic increases for each worst case scenario and in accordance with the IEMA guidance (Rule 1 and Rule 2), a screening process has been undertaken for each link to identify routes that are likely to have sufficient changes in traffic flows and therefore require further impact assessment.

Table 12.12: Predicted Increases in Traffic – 24 Hour Flows (Scenario 1a – Access A only, worst case)

Link	Baseline		Development		Baseline + Development		Increase (%)		Sensitivity	Threshold (%)	Assess Further?
	Total	HGVs	Total	HGVs	Total	HGVs	Total	HGVs			
<b>A76</b>											
Hurlford	11,229	639	87	49	11,316	688	0.8	7.7	Low	30.0	No
Mauchline	12,305	669	87	49	12,392	718	0.7	7.4	High	10.0	No
Cumnock	10,572	518	87	49	10,659	567	0.8	9.5	Low	30.0	No
New Cumnock (W)	6,116	894	276	226	6,392	1120	4.5	25.2	High	10.0	Yes
New Cumnock (E)	2,695	506	276	226	2,971	732	10.2	44.6	High	10.0	Yes
Hare Hill Windfarm access	2,323	535	276	226	2,598	761	11.9	42.1	Low	30.0	Yes
Kirkconnel	3,942	739	239	189	4,181	928	6.1	25.5	High	10.0	Yes
South of Sanquhar	3,064	667	239	189	3,303	856	7.8	28.3	High	10.0	Yes
Thornhill	4,155	468	239	189	4,394	657	5.7	40.3	High	10.0	Yes
<b>A70</b>											
West of Ochiltree	7043	1032	199	199	7242	1231	2.8	19.3	Medium	30.0	No

Table 12.13: Predicted Increases in Traffic – 24 Hour Flows (Scenario 2a – Access B only, worst case)

Link	Baseline		Development		Baseline + Development		Increase (%)		Sensitivity	Threshold (%)	Assess Further?
	Total	HGVs	Total	HGVs	Total	HGVs	Total	HGVs			
<b>A76</b>											
Hurlford	11,229	639	86	36	11,315	675	0.8	5.6	Low	30.0	No
Mauchline	12,305	669	86	36	12,391	705	0.7	5.4	High	10.0	No
Cumnock	10,572	518	86	36	10,658	554	0.8	7.0	Low	30.0	No
New Cumnock (W)	6,116	894	327	277	6,443	1171	5.3	30.9	High	10.0	Yes
New Cumnock (E)	2,695	506	327	277	3,022	783	12.1	54.7	High	10.0	Yes
Hare Hill Windfarm access	2,323	535	327	277	2,649	812	14.1	51.7	Low	30.0	Yes
Kirkconnel	3,942	739	327	277	4,269	1016	8.3	37.4	High	30.0	Yes
South of Sanquhar	3,064	667	276	226	3,340	893	9.0	33.9	High	10.0	Yes
Thornhill	4,155	468	276	226	4,431	694	6.6	48.3	High	10.0	Yes
<b>A70</b>											
West of Ochiltree	7,043	1,032	290	240	7,333	1,272	4.1	23.3	Medium	30.0	No
<b>Local Roads</b>											
C128n Blackaddie Road	300	7	603	503	903	510	200.9		High	10.0	Yes
U432n Euchan Water	100	2	603	503	703	505	602.6		High	10.0	Yes



12.14: Predicted Increases in Traffic – 24 Hour Flows (Scenario 3a – Access A and B, worst case)

Link	Baseline		Development		Baseline + Development		Increase (%)		Sensitivity	Threshold (%)	Assess Further?
	Total	HGVs	Total	HGVs	Total	HGVs	Total	HGVs			
<b>A76</b>											
Hurlford	11,229	639	76	26	11,305	665	0.7	4.1	Low	30.0	No
Mauchline	12,305	669	76	26	12,381	695	0.6	4.0	High	10.0	Yes
Cumnock	10,572	518	76	26	10,648	544	0.7	5.1	Low	30.0	No
New Cumnock (W)	6,116	894	276	226	6,392	1120	4.5	25.2	High	10.0	Yes
New Cumnock (E)	2,695	506	276	226	2,971	732	10.2	44.6	High	10.0	Yes
Hare Hill Windfarm access	2,323	535	276	226	2,598	761	11.9	42.1	Low	30.0	Yes
Kirkconnel	3,942	739	257	207	4,199	946	6.5	28.0	High	10.0	Yes
South of Sanquhar	3,064	667	239	189	3,303	856	7.8	28.3	High	10.0	Yes
Thornhill	4,155	468	239	189	4,394	657	5.7	40.3	High	10.0	Yes
<b>A70</b>											
West of Ochiltree	7,043	1,032	249	199	7,292	1231	3.5	19.3	Medium	30.0	No
<b>Local Roads</b>											
C128n Blackaddie Road	300	7	257	207	557	214	85.7		High	10.0	Yes
U432n Euchan Water	100	2	257	207	357	209	257.1		High	10.0	Yes

**Worst Case (Scenarios 1a/2a and 3a) Assessment Screening Summary**

22. The results above identify the following locations to be taken forward for assessment in each worst scenario as shown in **Table 12.15**:

12.15: Worst Case Scenarios Assessment Screening

Location	Scenario		
	1a (Access A Only)	2a (Access B Only)	3a (Access A and B)
A76 (at Hurlford)	No	No	No
A76 (at Mauchline)	No	No	No
A76 (north of Cumnock)	No	No	No
A76 (west of New Cumnock)	Yes	Yes	Yes
A76 (east of New Cumnock)	Yes	Yes	Yes
A76 (at the Hare Hill Windfarm access)	Yes	Yes	Yes
A76 (at Kirkconnel)	Yes	Yes	Yes
A70 (west of Ochiltree)	No	No	No
C128n Blackaddie Road	n/a	Yes	Yes
U432n Euchan Water	n/a	Yes	Yes

23. With the exception of the very high increases on the C128n Blackaddie Road and U432n Euchan Water due to the very low baseline flows, the largest increase would be where the traffic flows increase by around 10 to 12% (total) and 42 to 45% (HGV) between New Cumnock and the Hare Hill Windfarm site access.

24. A summary of the impact assessment screening for the worst case scenarios is:

- the A76 to the north of New Cumnock and the A70 west of Ochiltree do not require further assessment in any worst-case scenario;
- the A70 to the west of Ochiltree requires assessment in all worst-case scenarios;
- the A76 between west of New Cumnock and at the Hare Hill Windfarm access require assessment in all worst-case scenarios;
- and
- the C128n Blackaddie Road and U432n Euchan Water require assessment in the Scenarios 2a and 3a.

**Likely Case (Scenarios 1b/2b and 3b)**

**Table 12.16** to **Table 12.18** show the predicted daily total and HGV traffic increases for each likely case scenario and in accordance with the IEMA guidance (Rule 1 and Rule 2), a screening process has been undertaken for each link to identify routes that are likely to have sufficient changes in traffic flows and therefore require further impact assessment

Table 12.16: Predicted Increases in Traffic – 24 Hour Flows (Scenario 1b – Access A only, likely case)

Link	Baseline		Development		Baseline + Development		Increase (%)		Sensitivity	Threshold (%)	Assess Further?
	Total	HGVs	Total	HGVs	Total	HGVs	Total	HGVs			
<b>A76</b>											
Hurlford	11,229	639	104	29	11,333	668	0.9	4.6	Low	30.0	No
Mauchline	12,305	669	104	29	12,409	698	0.8	4.4	High	10.0	No
Cumnock	10,572	518	104	29	10,676	547	1.0	5.6	Low	30.0	No
New Cumnock (W)	6,116	894	104	29	6,220	923	1.7	3.3	High	10.0	No
New Cumnock (E)	2,695	506	104	29	2,799	535	3.9	5.8	High	10.0	No
Hare Hill Windfarm access	2,323	535	104	29	2,427	564	4.5	5.4	Low	30.0	No
Kirkconnel	3,942	676	104	29	4,046	705	2.6	4.3	High	10.0	No
South of Sanquhar	3,064	667	104	29	3,168	696	3.4	4.4	High	10.0	No
Thornhill	4,155	468	104	29	4,259	497	2.5	6.2	High	10.0	No

Table 12.17: Predicted Increases in Traffic – 24 Hour Flows (Scenario 2b – Access B only, likely case)

Link	Baseline		Development		Baseline + Development		Increase (%)		Sensitivity	Threshold (%)	Assess Further?
	Total	HGVs	Total	HGVs	Total	HGVs	Total	HGVs			
<b>A76</b>											
Hurlford	11,229	639	115	40	11,344	679	1.0	6.2	Low	30.0	No
Mauchline	12,305	669	115	40	12,420	709	0.9	5.9	High	10.0	No
Cumnock	10,572	518	115	40	10,687	558	1.1	7.7	Low	30.0	No
New Cumnock (W)	6,116	894	115	40	6,231	934	1.9	4.4	High	10.0	No
New Cumnock (E)	2,695	506	115	40	2,810	546	4.3	7.9	High	10.0	No
Hare Hill Windfarm access	2,323	535	115	40	2,437	575	4.9	7.4	Low	30.0	No
Kirkconnel	3,942	676	115	40	4,057	716	2.9	5.9	High	10.0	No
South of Sanquhar	3,064	667	115	40	3,179	707	3.7	6.0	High	10.0	No
Thornhill	4,155	468	115	40	4,270	508	2.8	8.5	High	10.0	No
<b>Local Roads</b>											
C128n Blackaddie Road	300	7	227	77	527	84	75.6	∞	High	10.0	Yes
U432n Euchan Water	100	2	227	77	327	79	226.8	∞	High	10.0	Yes

12.18: Predicted Increases in Traffic – 24 Hour Flows (Scenario 3b – Access A and B, likely case)

Link	Baseline		Development		Baseline + Development		Increase (%)		Sensitivity	Threshold (%)	Assess Further?
	Total	HGVs	Total	HGVs	Total	HGVs	Total	HGVs			
<b>A76</b>											
Hurlford	11,229	639	104	29	11,333	668	0.9	4.6	Low	30.0	No
Mauchline	12,305	669	104	29	12,409	698	0.8	4.4	High	10.0	No
Cumnock	10,572	518	104	29	10,676	547	1.0	5.6	Low	30.0	No
New Cumnock (W)	6,116	894	104	29	6,220	923	1.7	3.3	High	10.0	No
New Cumnock (E)	2,695	506	104	29	2,799	535	3.9	5.8	High	10.0	No
Hare Hill Windfarm access	2,323	535	104	29	2,427	564	4.5	5.4	Low	30.0	No
Kirkconnel	3,942	676	104	29	4,046	705	2.6	4.3	High	10.0	No
South of Sanquhar	3,064	667	104	29	3,168	696	3.4	4.4	High	10.0	No
Thornhill	4,155	468	104	29	4,259	497	2.5	6.2	High	10.0	No
<b>Local Roads</b>											
C128n Blackaddie Road	300	7	104	29	404	36	34.7	∞	High	10.0	Yes
U432n Euchan Water	100	2	104	29	204	31	104.2	∞	High	10.0	Yes

**Likely Case (Scenarios 1b/2b and 3b) Assessment Screening Summary**

25. The results above identify the locations shown in **Table 12.19** to be taken forward for assessment in each likely scenario as follows:

12.19: Likely Case Scenarios Assessment Screening

Location	Scenario		
	1b (Access A Only)	2b (Access B Only)	3b (Access A and B)
A76 (at Hurlford)	No	No	No
A76 (at Mauchline)	No	No	No
A76 (north of Cumnock)	No	No	No
A76 (west of New Cumnock)	No	No	No
A76 (east of New Cumnock)	No	No	No
A76 (at the Hare Hill Windfarm access)	No	No	No
A76 (at Kirkconnel)	No	No	No
C128n Blackaddie Road	No	Yes	Yes
U432n Euchan Water	No	Yes	Yes

26. With the exception of the very high increases on the C128n Blackaddie Road and U432n Euchan Water due to the very low baseline flows, the largest increase would be where the traffic flows increase by around 4 to 5% (total) and 5 to 6% (HGV) between New Cumnock and the Hare Hill Windfarm site access.

27. A summary of the impact assessment screening for the likely case scenarios is:

- no locations on the A76 require further assessment; and
- the C128n Blackaddie Road and U432n Euchan Water require assessment in the Scenarios 2b and 3b.

**12.3.2 Abnormal Loads**

28. The AIL vehicles are large and will be around 5 m in width for the tower sections and nacelle. By comparison the A76 is a standard two-way road ranging between 6 m and 8 m in width. The vehicles would reduce in size to a typical HGV when leaving the Site.

29. The number of specific vehicle movements associated with the transportation of the turbine components constituting AILs are unknown at this stage, as this would depend on a number of parameters. However, this is a proven technology that has been used around the world successfully and is being proposed at other sites in Scotland and around the UK. The specific arrangements for the vehicle movements would be agreed in detail between the haulier and Police Scotland.

30. The greatest impact is likely to be associated with the use of the lift adapter vehicles given the average speed would be lower than conventional component transportation vehicles due to the blades being required to be raised, lowered and rotated.

31. However, whilst there may be increased effects of the blade lift adapter being used in terms of delays, these would offset potentially larger delays & expense due to extensive highways upgrade works that would be avoided.

### 12.3.3 Potential Effects

#### Effect on Driver Severance and Delay

32. The IEMA guidance states that there are a number of factors which determine driver severance and delay; these include delay caused by additional turning vehicles, delays at junctions due to increased traffic, as well as delays at side roads due to reduced gaps in the oncoming traffic.

33. As no sensitive junctions in terms of capacity constraints have been identified through scoping, and since the A76 (as a single carriageway rural link) is capable of accommodating significantly more than the total traffic with the conventional construction traffic associated with the proposed Development in Scenario 1a (worst case), the magnitude of change is considered negligible with a negligible adverse effect and therefore is not significant.

34. The only potential significant effects that are considered further relate to the transportation of AILs, which is set out in **Paragraphs 67 to 86.**

#### Effect on Community Severance

35. The IEMA guidance identifies severance as “*the perceived division that can occur within a community when it becomes separated by a major traffic artery*”. As an example, a road that passes through a community such as a town or village, where perhaps amenities are located on one side of the road and residential properties are located on the other side, causes severance to the movements between those places. The degree of severance depends on the traffic levels on the road and the presence of adequate crossing opportunities.

36. There are local amenities directly fronting the A76 in all of the settlements along the route. HGVs will be travelling at low speeds through the settlements, which have 30 mph speed limits and there are both formal and informal crossing facilities available.

#### A76 (west of New Cumnock)

##### Scenario 1a/2a/3a (worst case)

37. The increase in total vehicles would be less than 30% and therefore a negligible magnitude of change. Since the A76 at this location is classed as having high sensitivity, this equates to a slight adverse effect and is therefore not significant;

##### Scenario 1b/2b/3b (likely case)

38. No assessment required.

#### A76 (east of New Cumnock)

##### Scenario 1a/2a/3a (worst case)

39. The increase in total vehicles would be less than 30% and therefore a negligible magnitude of change. Since the A76 at this location is classed as having high sensitivity, this equates to a slight adverse effect and is therefore not significant;

##### Scenario 1b/2b/3b (likely case)

40. No assessment required.

#### A76 (at the Hare Hill Windfarm access)

##### Scenario 1a/2a/3a (worst case)

41. The increase in total vehicles would be less than 30% and therefore a negligible magnitude of change. Since the A76 at this location is classed as having high sensitivity, this equates to a slight adverse effect and is therefore not significant;

##### Scenario 1b/2b/3b (likely case)

No assessment required.

### **A76 (at Kirkconnel)**

#### *Scenario 1a/2a/3a (worst case)*

42. The increase in total vehicles would be less than 30% and therefore a negligible magnitude of change. Since the A76 at this location is classed as having high sensitivity, this equates to a slight adverse effect and is therefore not significant.

#### *Scenario 1b/2b/3b (likely case)*

43. No assessment required.

### **C128n Blackaddie Road**

#### *Scenario 1a (Access A only, worst case)*

44. Not applicable.

#### *Scenario 2a (Access B only, worst case)*

45. The increase in total vehicles would be more than 90% and therefore a major magnitude of change. Since the C128n Blackaddie Road is classed as having high sensitivity, this equates to a major adverse effect and is therefore significant.

#### *Scenario 3a (Access A and B, worst case)*

46. The increase in total vehicles would be more than 60% and therefore a moderate magnitude of change. Since the C128n Blackaddie Road is classed as having high sensitivity, this equates to a major adverse effect and is therefore not significant.

#### *Scenario 1b (Access A only, likely case)*

47. Not applicable.

#### *Scenario 2b (Access B only, likely case)*

48. The increase in total vehicles would be more than 60% and therefore a moderate magnitude of change. Since the C128n Blackaddie Roads is classed as having high sensitivity, this equates to a major adverse effect and is therefore significant.

#### *Scenario 3b (Access A and B, likely case)*

49. The increase in total vehicles would be more than 30% and therefore a minor magnitude of change. Since the C128n Blackaddie Road location is classed as having high sensitivity, this equates to a moderate adverse effect and is therefore significant.

50. It is worth noting that C128n Blackaddie Road would operate well within its theoretical link capacity with the additional vehicle movements associated with the likely or worst case scenarios for the construction phase and this would therefore reduce the magnitude of change to negligible and the effect to minor adverse and therefore is not significant.

### **U432n Euchan Water**

#### *Scenario 1a (Access A only, worst case)*

51. Not applicable.

#### *Scenarios 2a/3a (worst case)*

52. The increase in total vehicles would be more than 90% and therefore a major magnitude of change. Since the U432n Euchan Water is classed as having high sensitivity, this equates to a major adverse effect and is therefore significant.

#### *Scenario 1b (Access A only, likely case)*

53. Not applicable.

#### *Scenarios 2b/3b (likely case)*

54. The increase in total vehicles would be more than 90% and therefore a major magnitude of change. Since the U432n Euchan Water is classed as having high sensitivity, this equates to a major adverse effect and is therefore significant.

55. It is worth noting that the U432n Euchan Water would operate well within its theoretical link capacity with the additional vehicle movements associated with the likely or worst case scenarios for the construction phase and given there are no local



facilities that need to be accessed in the vicinity, would therefore reduce the magnitude of change to negligible and the effect to minor adverse and therefore is not significant.

### Effect on Pedestrian Amenity

The IEMA guidelines broadly define pedestrian amenity as the 'relative pleasantness of a journey'. It is affected by traffic flow, traffic composition, footway width and separation from traffic. A common threshold for changes in pedestrian use is where traffic flow is either halved or doubled.

56. Traffic conditions may cause pedestrians to be hesitant to walk adjacent to, or crossing, the carriageway. This potential impact is dependent on the speed and volume of traffic, the HGV composition and the proximity to people or the lack of protection caused by factors such as narrow footway widths.

### A76

#### Scenario 1a/2a/3a (worst case)

57. The increase in total vehicles or HGVs would be less than 100% at any location on the A76 and therefore a negligible magnitude of change. Since the locations on the A76 classed as having either low or high sensitivity, this equates to none or slight adverse effect and is therefore not significant.

#### Scenarios 1b/2b/3b (likely case)

58. No assessment required.

### C128n Blackaddie Road / U432n Euchan Water

#### Scenarios 1a/1b (Access A only, worst and likely case)

59. Not applicable.

#### Scenarios 2a/2b/3a/3b (Access B only, Access A and B, worst and likely case)

60. The increase in total vehicles or HGVs would be more than 100% and therefore a major magnitude of change. Since the C128n Blackaddie Road is classed as having high sensitivity, this equates to a major adverse effect and is therefore significant.

61. However, the actual number of daily HGVs per hour (two-way) for each scenario would be:

- Scenario 2a, Access B only, worst case (50 total vehicles, 42 HGVs);
- Scenario 2b, Access B only, likely case (19 total vehicles, 6 HGVs);
- Scenario 3a, Access A and B, worst case (21 total vehicles, 17 HGVs); or
- Scenario 3b, Access A and B, likely case (9 total vehicles, 2 HGVs)

62. For both likely cases and the worst case of using Access A and B, there would be between five total vehicles (1 HGV) and 10 total vehicles (9 HGVs) in each direction per hour using the C128n Blackaddie Road and U432n Euchan Water, which is between 1 vehicle every six to 12 minutes. To the north of Blackaddie Bridge, there is suitable pedestrian infrastructure and whilst there are no footways on Blackaddie Bridge (which carries the Southern Upland Way) or along the remaining section or the C1258 Blackaddie Road and the U432n Euchan Water, pedestrians walking along the road will already be aware of the need to take into account of vehicles using these roads. Given the very low base flows on these roads, the slow speeds of vehicles due to the geometry, for Scenarios 2b,3a and 3b, the magnitude of change can be reduced to negligible, which equates to a minor adverse effect and is therefore not significant.

For Scenario 2a, 25 vehicles (21 HGVs) in each direction per hour using the C128n Blackaddie Road and U432n Euchan Water, which is between 1 vehicle every 2.4 minutes. Given in this scenario the number of vehicles is fairly frequent, the magnitude of change can be reduced to minor, which equates to a moderate adverse effect and is therefore significant.

### Effect on Road Safety

63. **Table 12.2** and **12.3** define road safety as a high sensitivity receptor with an increase of traffic levels greater than 10% requiring a quantitative assessment of existing accident records.

## A76

### *Scenario 1a/2a/3a (worst case)*

64. The increase in total vehicles or HGVs would be slightly over 10% at the count locations to the west and east of New Cumnock, which would be classed as a minor magnitude of change. Since New Cumnock is classed as having high sensitivity, this equates to a moderate adverse effect and is therefore significant. On the A76, the section between New Cumnock and the Hare Hill Access has the lowest accident rate (significantly less than the Scotland average) and since there are formal crossing facilities in New Cumnock and HGVs will be subject to low speed, the magnitude of effect can be reduced to negligible, which equates to a slight effect and therefore is not significant.

### *Scenarios 1b/2b/3b (likely case)*

65. No assessment required.

## **C128n Blackaddie Road / U432n Euchan Water**

### *Scenarios 1a/1b (Access A only, worst and likely case)*

66. Not applicable.

### *Scenarios 2a/2b/3a/3b (Access B only, Access A and B, worst and likely case)*

The traffic flows would increase significantly more than 10% on the C128n Blackaddie Road and U432 Euchan Water in worst and likely case scenarios. There has only been one accident recorded on the C128n Blackaddie Road and U432n Euchan Water in the last five years and given HGVs will be subject to low speed and therefore the magnitude of effect is considered minor. Given these roads are classed as having high sensitivity, this equates to a moderate adverse effect and is therefore significant.

## **Effects due to the delivery of AILs**

67. Transportation of the turbine components would lead to the following effects:

- the rolling closures of roads and footways causing temporary driver and pedestrian delay; and
- the perceived effect to pedestrians and vulnerable road users caused by the movement of large turbine components in close proximity to property and infrastructure.

68. An assessment of these potential effects of each turbine component is set out below:

### **Tower Sections and Nacelle**

69. The route is considered suitable and proven for such movements using conventional turbine component transportation vehicles, subject to the potential need for bridge structural assessments and any localised temporary works at junctions to facilitate movements.
70. Any modifications to junction layouts would be confirmed through a trial run and further surveys, and any modifications or works required to accommodate abnormal loads would be discussed with Transport Scotland, ARA and DGC and the necessary consents and permits would be obtained in advance of any works or delivery periods.
71. The residential properties, B&Bs, local shops and other facilities along the A76 on this section of the route are classed as receptors with high sensitivity associated with this potential effect.
72. The potential impacts are considered as follows:
- delays to drivers due to short term, temporary road closures would be inevitable, though abnormal loads would be timed to avoid the peak hours (overnight where possible) and, therefore, abnormal load movements occurring outside of the peak traffic hours; and
  - the perceived effect to residents is subjective and it is likely that the transport of abnormal loads close to properties could give rise to local public concern in the various settlements along the route (Mauchline, New Cumnock, Kirkconnel and Sanquhar to the west of the junction with Blackaddie Road).

- 
73. The movement of AILs has the potential to create a general hazard on the highway. The AILs must be delivered to the Site under controlled conditions and under a suitable escort. The manner in which AILs are transported along the public highway/trunk road network would be subject to the approval of Transport Scotland, ALA, D&GC and Police Scotland in advance and would be planned to ensure road safety is not compromised.
74. The magnitude of change of transporting the tower sections and nacelles during the day would be minor given the number of vehicles would be less than 30% of baseline flows. Due to the importance of the A76 to local residents and taking account of potential impacts on driver delays and the community, the A76 during daytime can be considered high sensitivity, resulting in a moderate level of effect during the day which is significant.
75. However, it would be SPR's preference to undertake the AIL movements using the conventional turbine transportation vehicles during the night-time to reduce the potential for disruption and delay. As the A76 could be considered low sensitivity at night, and the magnitude of impact of transporting the abnormal loads during the night would be minor, the level of effect during the night would be slight and therefore not significant.

#### **Blades – Access Route A**

76. The route from laydown area 1 (a suitable location off the A76 to the north west of New Cumnock) to Access Route A requires the use of a lift adapter to transport the blades through New Cumnock.
77. Any modifications or works required to accommodate the lift adapter vehicles would be discussed with Transport Scotland and the necessary consents and permits would be obtained in advance of any works or delivery periods.
78. The potential impacts are considered as follows:
- delays to drivers due to temporary road closures would be inevitable, though they would be timed to avoid the peak hours. The temporary road closures are estimated for up to 4 hours per day (to be confirmed once the speed of the blade lifter is verified) on the A76 (assuming 2 convoys per day); and
  - the perceived effect to residents is subjective and it is likely that the transport of abnormal loads close to properties could give rise to local concern in New Cumnock. Equally, the delivery of the blades using the lift adapters might be of interest to some residents, who may see it as 'an event'.
79. The residential properties, school and other facilities in New Cumnock are classed as high sensitivity associated with this potential effect during daytime.
80. The magnitude of change of transporting the abnormal loads would be minor given the number of vehicles would be less than 30% of baseline flows. Given the high sensitivity of the receptor, the level of effect would be major, and therefore significant.

#### **Blades – Access Route B**

81. The route from laydown area 1 to Access Route B requires the use of a blade lift adapter to transport the blades through New Cumnock (as set out above) and then the blades would need to be raised and lowered to navigate through various locations. However, a review of these locations indicates that the blades would likely only be raised and lowered at the following locations:
- raised on the approach to Kirkconnel and lowered within the village;
  - raised on the entry to Sanquhar and lowered immediately after the junction with Blackaddie Road; and
  - raised on the U432n Euchan Water and lowered at the laydown area within the Site.
82. Any modifications or works required to accommodate the lift adapter vehicles would be discussed with Transport Scotland and DGC. The necessary consents and permits would be obtained in advance of any works or delivery periods.
83. The potential impacts are considered as follows:
- delays to drivers due to temporary road closures would be inevitable, though they would be timed to avoid the peak hours. The temporary road closures are estimated for up to 4 hours per day (to be confirmed once the speed of the blade lifter is verified) on the A76 (assuming 1 convoy per day); and

- the perceived effect to residents is subjective and it is likely that the transport of the blades using the lift adapters close to properties could lead to give rise to local concern being experienced in New Cumnock, Kirkconnel and Sanquhar. Equally, the delivery of the blades using the lift adapters is likely to be of interest to some residents, who will see it as 'an event'.

84. The residential properties, school and other facilities in New Cumnock, Kirkconnel and Sanquhar are classed as high sensitivity associated with this potential effect during daytime.

85. Also, there may be a short delay to vehicles and non-motorised users crossing Blackaddie Bridge (which carries the C128n Blackaddie Road), including those using the Southern Uplands Way; however due to the straight alignment on the approach and exit across the bridge, a convoy of AILs should not cause a significant delay.

86. The magnitude of change of transporting the abnormal loads would be minor given the number of vehicles would be less than 30% of baseline flows. Given the high sensitivity of the receptor, the level of effect would be major, and therefore significant.

#### 12.3.4 Mitigation

87. Prior to construction commencing, a Construction Traffic Management Plan (CTMP) would be put in place to actively mitigate the effects as discussed above and an Outline CTMP has been prepared and is provided as **Technical Appendix 12.4: Outline CTMP** at this stage and submitted as part of the planning application to outline the mitigation measures recommended during the construction stage. The purpose of the Outline CTMP is to provide preliminary details of proposed traffic management measures and associated interventions that would be implemented during the construction phase of the proposed Development in order to minimise disruption and ensure safety. The Outline CTMP would be supplemented with additional information as appropriate by SPR's appointed contractor(s), prior to commencement of construction activities. Should consent be granted, the Outline CTMP would be updated to a CTMP, the content of which would be agreed with D&GC and EAC through consultation and enforced via a planning condition. The CTMP would be used during the construction phase of the proposed Development to ensure traffic to, from and on the Site is properly managed.

88. Potential types of measures would be:

- temporary road closures;
- temporary traffic management at pinch-points;
- temporary reduction in speed limit;
- signage; and
- advance information, to enable users of the highway network, or pedestrians walking in the area (including on the Southern Upland Way), to avoid the sections affected by any temporary delays or closures

89. In addition, an Abnormal Load Assessment and Abnormal Load Traffic Management Plan (ALTMP) would be prepared to secure permissions for the movement of abnormal loads and would include details of any required temporary widening and other road improvement measures, together with detailed consideration of vehicle swept paths, loadings, structural assessments (where required) and temporary street furniture removal details. It would also provide details of potential passing places to assist in minimising the delay experienced by vehicles on the A76.

90. The document would be prepared in consultation with the Roads Authority, Transport Scotland and the emergency services, including Police Scotland. Information, with regards to abnormal loads, would be provided to local residents and users of amenities to alleviate any potential stress and anxiety, and allow them to plan their journeys to avoid disruption.

91. The potential for identifying alternative routes to avoid the A76 whilst the lift adapter is used to transport the blades to the Site would be discussed with Transport Scotland, DGC and ARA as part of the ALTMP

92. The mitigation described above, which will be developed by the contractor and haulage firm in discussions with the Roads Authority, Transport Scotland and the emergency services, including Police Scotland, would be beneficial to all potential effects set out in the assessment in this chapter (regardless of significance); however in particular, it would have the following effect on the significant effects identified in this assessment on the C1258n Blackaddie Road and U432n Euchan Water:

- **Pedestrian Amenity** – for Scenario 2a (Access B only, worst case), the magnitude of change can be reduced to negligible, which equates to a slight effect and is therefore not significant;

- **Road Safety** - Scenarios 2a/2b/3a/3b (Access B only, Access A and B, worst and likely case), the magnitude of change can be reduced to negligible, which equates to a slight effect and is therefore not significant; and
- **Effects due to the delivery of AILs** – whilst the magnitude of change cannot be reduced to negligible according to IEMA guidance (this would be a 0% increase in vehicles), given there will not be any other vehicles permitted to use these roads whilst the AILs are delivered, this can be considered negligible, which equates to a slight effect and is therefore not significant.

**Residual Effects**

93. There would be no residual effects with the implementation of the CTMP and ALTMP.

**12.3.5 Cumulative Effects**

94. **Chapter 5: Environmental Impact Assessment Report, Table 5.2** provides further information on the cumulative Sites.

95. There are a number of consented windfarm developments in the vicinity of the proposed Development, which may have overlapping construction periods; however, it is likely that the construction of these will commence prior to the planned start date of the construction of the proposed Development (2025). No other development projects have been identified which could have a potential for a cumulative impact.

96. The following windfarm projects considered in this cumulative assessment are as follows:

- Pencloe, a variation of condition was submitted last year;
- Sandy Knowe; which has recently been approved; and
- Glenmuckloch, which was determined last year;
- Sanquhar II, currently awaiting determination by Scottish ministers.

**Cumulative Impact**

97. The maximum cumulative impact of construction traffic (excluding AILs) from the above four windfarms with the proposed Development on the A76 (the vehicle movements associated with these windfarms will not affect C128n Blackaddie Road or U432n Euchan Water) within the study area is shown in **Table 12.20 to Table 12.27** for total vehicles in all scenarios and **Table 12.28 to Table 12.31** for HGVs in all scenarios.

Table 12.20: Maximum Cumulative Effects Assessment (Total vehicles – Scenario 1a, Access A only, worst case)

A76 Location	Baseline	Windfarms				Proposed Development	Cumulative	Increase (%)
		Sanquhar II	Sandy Knowe	Glenmuckloch	Pencloe			
Hurlford	11,229	100	186	59	105	87	537	4.8
Mauchline	12,305	100	186	29	40	87	442	3.6
Cumnock	10,572	100	186	29	40	87	442	4.2
New Cumnock (W)	6,116	100	186	29	40	276	631	10.3
New Cumnock (E)	2,695	100	186	29	40	276	631	23.4
Hare Hill Access	2,323	100	186	29	40	276	631	27.2
Kirkconnel	3,942	100	186	29		239	554	14.0
South of Sanquhar	3,064		186			239	425	13.9
Thornhill	4,155		186			239	425	10.2

Table 12.21: Maximum Cumulative Effects Assessment (Total vehicles – Scenario 2a, Access B only, worst case)

A76 Location	Baseline	Windfarms					Proposed Development	Cumulative	Increase (%)
		Sanquhar II	Sandy Knowe	Glenmuckloch	Pencloe				
Hurlford	11,229	100	186	59	105	86	536	4.8	
Mauchline	12,305	100	186	29	40	86	441	3.6	
Cumnock	10,572	100	186	29	40	86	441	4.2	
New Cumnock (W)	6,116	100	186	29	40	327	682	11.1	
New Cumnock (E)	2,695	100	186	29	40	327	682	25.3	
Hare Hill Access	2,323	100	186	29	40	327	682	29.3	
Kirkconnel	3,942	100	186	29		327	642	16.3	
South of Sanquhar	3,064		186			276	462	15.1	
Thornhill	4,155		186			276	462	11.1	

Table 12.22: Maximum Cumulative Effects Assessment (Total vehicles – Scenario 3a, Access A and B, worst case)

A76 Location	Baseline	Windfarms					Proposed Development	Cumulative	Increase (%)
		Sanquhar II	Sandy Knowe	Glenmuckloch	Pencloe				
Hurlford	11,229	100	186	59	105	76	526	4.7	
Mauchline	12,305	100	186	29	40	76	431	3.5	
Cumnock	10,572	100	186	29	40	76	431	4.1	
New Cumnock (W)	6,116	100	186	29	40	276	631	10.3	
New Cumnock (E)	2,695	100	186	29	40	276	631	23.4	
Hare Hill Access	2,323	100	186	29	40	276	631	27.2	
Kirkconnel	3,942	100	186	29		257	572	14.5	
South of Sanquhar	3,064		186			239	425	13.9	
Thornhill	4,155		186			239	425	10.2	

Table 12.23: Maximum Cumulative Effects Assessment (HGVs – Scenario 1a, Access A only, worst case)

A76 Location	Baseline	Windfarms					Proposed Development	Cumulative	Increase (%)
		Sanquhar II	Sandy Knowe	Glenmuckloch	Pencloe				
Hurlford	639	55	136	29	40	49	309	48.4	
Mauchline	669	55	136	29	40	49	309	46.2	
Cumnock	518	55	136	29	40	49	309	59.7	
New Cumnock (W)	894	55	136	29	40	226	486	54.3	
New Cumnock (E)	506	55	136	29	40	226	486	96.0	
Hare Hill Access	535	55	136	29	40	226	486	90.7	
Kirkconnel	739	55	136	29		189	409	55.3	

A76 Location	Baseline	Windfarms					Proposed Development	Cumulative	Increase (%)
		Sanquhar II	Sandy Knowe	Glenmuckloch	Pencloe				
South of Sanquhar	667		136				189	325	48.7
Thornhill	468		136				189	325	69.3

Table 12.24: Maximum Cumulative Effects Assessment (HGVs – Scenario 2a, Access B only, worst case)

A76 Location	Baseline	Windfarms					Proposed Development	Cumulative	Increase (%)
		Sanquhar II	Sandy Knowe	Glenmuckloch	Pencloe				
Hurlford	639	55	136	29	40	36	296	46.3	
Mauchline	669	55	136	29	40	36	296	44.3	
Cumnock	518	55	136	29	40	36	296	57.2	
New Cumnock (W)	894	55	136	29	40	277	537	60.0	
New Cumnock (E)	506	55	136	29	40	277	537	106.0	
Hare Hill Access	535	55	136	29	40	277	537	100.2	
Kirkconnel	739	55	136	29		277	497	67.2	
South of Sanquhar	667		136			226	362	54.3	
Thornhill	468		136			226	362	77.4	

Table 12.25: Maximum Cumulative Effects Assessment (HGVs – Scenario 3a, Access A and B, worst case)

A76 Location	Baseline	Windfarms					Proposed Development	Cumulative	Increase (%)
		Sanquhar II	Sandy Knowe	Glenmuckloch	Pencloe				
Hurlford	639	55	136	29	40	26	286	44.8	
Mauchline	669	55	136	29	40	26	286	42.8	
Cumnock	518	55	136	29	40	26	286	55.3	
New Cumnock (W)	894	55	136	29	40	226	486	54.3	
New Cumnock (E)	506	55	136	29	40	226	486	96.0	
Hare Hill Access	535	55	136	29	40	226	486	90.7	
Kirkconnel	739	55	136	29		207	427	57.8	
South of Sanquhar	667		136			189	325	48.7	
Thornhill	468		136			189	325	69.3	



Table 12.26: Maximum Cumulative Effects Assessment (Total vehicles – Scenario 1a, Access A only, likely case)

A76 Location	Baseline	Windfarms				Proposed Development	Cumulative	Increase (%)
		Sanquhar II	Sandy Knowe	Glenmuckloch	Pencloe			
Hurlford	11,229	100	112	59	105	104	480	4.3
Mauchline	12,305	100	112	29	40	104	385	3.1
Cumnock	10,572	100	112	29	40	104	385	3.6
New Cumnock (W)	6,116	100	112	29	40	104	385	6.3
New Cumnock (E)	2,695	100	112	29	40	104	385	14.3
Hare Hill Access	2,323	100	112	29	40	104	385	16.6
Kirkconnel	3,942	100	112	29		104	345	8.8
South of Sanquhar	3,064		112			104	216	7.1
Thornhill	4,155		112			104	216	5.2

Table 12.27: Maximum Cumulative Effects Assessment (Total vehicles – Scenario 2a, Access B only, likely case)

A76 Location	Baseline	Windfarms				Proposed Development	Cumulative	Increase (%)
		Sanquhar II	Sandy Knowe	Glenmuckloch	Pencloe			
Hurlford	11,229	100	112	59	105	115	491	4.4
Mauchline	12,305	100	112	29	40	115	396	3.2
Cumnock	10,572	100	112	29	40	115	396	3.7
New Cumnock (W)	6,116	100	112	29	40	115	396	6.5
New Cumnock (E)	2,695	100	112	29	40	115	396	14.7
Hare Hill Access	2,323	100	112	29	40	115	396	17.0
Kirkconnel	3,942	100	112	29		115	356	9.0
South of Sanquhar	3,064		112			115	227	7.4
Thornhill	4,155		112			115	227	5.5

Table 12.28: Maximum Cumulative Effects Assessment (Total vehicles – Scenario 3a, Access A and B, likely case)

A76 Location	Baseline	Windfarms				Proposed Development	Cumulative	Increase (%)
		Sanquhar II	Sandy Knowe	Glenmuckloch	Pencloe			
Hurlford	11,229	100	112	59	105	104	480	4.3
Mauchline	12,305	100	112	29	40	104	385	3.1
Cumnock	10,572	100	112	29	40	104	385	3.6
New Cumnock (W)	6,116	100	112	29	40	104	385	6.3
New Cumnock (E)	2,695	100	112	29	40	104	385	14.3
Hare Hill Access	2,323	100	112	29	40	104	385	16.6
Kirkconnel	3,942	100	112	29		104	345	8.8



A76 Location	Baseline	Windfarms					Proposed Development	Cumulative	Increase (%)
		Sanquhar II	Sandy Knowe	Glenmuckloch	Pencloe				
South of Sanquhar	3,064		112			104	216	7.1	
Thornhill	4,155		112			104	216	5.2	

Table 12.29: Maximum Cumulative Effects Assessment (HGVs – Scenario 1a, Access A only, likely case)

A76 Location	Baseline	Windfarms					Proposed Development	Cumulative	Increase (%)
		Sanquhar II	Sandy Knowe	Glenmuckloch	Pencloe				
Hurlford	639	100	112	59	105	29	227	35.5	
Mauchline	669	100	112	29	40	29	227	34.0	
Cumnock	518	100	112	29	40	29	227	43.9	
New Cumnock (W)	894	100	112	29	40	29	227	25.4	
New Cumnock (E)	506	100	112	29	40	29	227	44.9	
Hare Hill Access	535	100	112	29	40	29	227	42.4	
Kirkconnel	739	100	112	29		29	187	27.7	
South of Sanquhar	667		112			29	103	15.5	
Thornhill	468		112			29	103	22.0	

Table 12.30: Maximum Cumulative Effects Assessment (HGVs – Scenario 2a, Access B only, likely case)

A76 Location	Baseline	Windfarms					Proposed Development	Cumulative	Increase (%)
		Sanquhar II	Sandy Knowe	Glenmuckloch	Pencloe				
Hurlford	639	55	74	29	40	40	238	37.2	
Mauchline	669	55	74	29	40	40	238	35.5	
Cumnock	518	55	74	29	40	40	238	45.9	
New Cumnock (W)	894	55	74	29	40	40	238	26.6	
New Cumnock (E)	506	55	74	29	40	40	238	47.0	
Hare Hill Access	535	55	74	29	40	40	238	44.4	
Kirkconnel	676	55	74	29		40	198	29.3	
South of Sanquhar	667		74			40	114	17.1	
Thornhill	468		74			40	114	24.3	

Table 12.31: Maximum Cumulative Effects Assessment (HGVs – Scenario 3a, Access A and B, likely case)

A76 Location	Baseline	Windfarms				Proposed Development	Cumulative	Increase (%)
		Sanquhar II	Sandy Knowe	Glenmuckloch	Pencloe			
Hurlford	639	55	74	29	40	29	227	35.5
Mauchline	669	55	74	29	40	29	227	34.0
Cumnock	518	55	74	29	40	29	227	43.9
New Cumnock (W)	894	55	74	29	40	29	227	25.4
New Cumnock (E)	506	55	74	29	40	29	227	44.9
Hare Hill Access	535	55	74	29	40	29	227	42.4
Kirkconnel	676	55	74	29		29	187	27.7
South of Sanquhar	667		74			29	103	15.5
Thornhill	468		74			29	103	22.0

98. As **Table 12.20** to **Table 12.22** show, even with the absolute worst case (and highly unlikely scenario) of the maximum vehicular traffic associated with the construction of the proposed Development and four additional windfarms occurring simultaneously, the maximum impact on baseline traffic flows on the A76 would be around 30%.
99. The worst case cumulative impacts of HGVs on baseline HGV flows, the maximum impact would be around 100%, as shown in **Table 12.24**.
100. For the likely scenario, the maximum cumulative impact of total construction vehicles on total base flows would only be around 17%, as shown in **Table 12.27** with the maximum cumulative impacts of HGVs on baseline HGV flows around 47% as shown in **Table 12.30** and would be considered significant; however it is very unlikely that the peak period of construction of all cumulative windfarm sites would occur simultaneously and therefore the likely cumulative impact would be significantly less.
101. The assessment of the cumulative impact of abnormal loads has not been undertaken as these specific vehicle movements would not ever occur at the same time due to TS and police restrictions and would be planned fully in an Abnormal Load Traffic Management Plan (ALTMP) for each development.

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## 12.4 Summary

### Summary of Significant Effects

102. A summary of the likely significant effects resulting from the assessment of the various scenarios is as follows:

- there would be no significant driver severance and delay effects in any scenario;
- there would be no significant community severance effects in any scenario;
- there would be a significant pedestrian amenity effect on the C128n Blackaddie Road and U432n Euchan Water if Access B only is utilised and aggregate and concrete are brought in from off-site locations i.e. worst case;
- there would be a significant road safety effect on the C128n Blackaddie Road and U432n Euchan Water if Access B, or Access A and B are utilised (worst or likely cases); and
- there would be significant effects with the AIL deliveries during the day

103. Based on above a summary of the scenarios with the lowest and greatest vehicular impact, have been set out in **Chapter 12: Traffic and Transport**. These are as follows:

- Greatest vehicular impacts – Scenario 2a: Access B only; and
- Lowest vehicular impacts – Scenario 1b: Access A only.

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