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Chapter 11.

Traffic and Transport

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Glossary

Term	Definition
Environmental Impact Assessment	Environmental Impact Assessment (EIA) is a means of carrying out, in a systematic way, an assessment of the likely significant environmental effects from a development.
Environmental Impact Assessment Regulations	The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (EIA Regulations)
Environmental Impact Assessment Report	A document reporting the findings of the EIA and produced in accordance with the EIA Regulations
Proposed Development	The South Kyle II Wind Farm development
Proposed Development Area	The area within the “Site boundary” as illustrated on Figure 11.1 within which the Proposed Development will be located
Primary Mitigation	Modifications to the design of the development made during the pre-application phase that are an inherent part of the project and do not require further action to be taken. Sometimes referred to as ‘embedded mitigation’.
Secondary Mitigation	Mitigation that will require further action to be implemented. In the context of this assessment, this means mitigation which is required to mitigate any likely significant effects which are identified in this assessment.
Tertiary Mitigation	Mitigation that will occur with or without input from the EIA process, this includes actions which are required to comply with law, or standard practices observed during construction.

List of Abbreviations

Abbreviation	Description
IEMA Guidelines	The IEMA (2023) Guidelines for the Environmental Assessment of Traffic and Movement (see Table 11.1)
HGV	Heavy goods vehicle
AIL	Abnormal indivisible load
ALV	Abnormal load vehicle
LGV	Light goods vehicle (van)
ADT	Average daily traffic
ADF	Average daily flow (in traffic). Interchangeable with ADT
EAC	East Ayrshire Council
ARA	Ayrshire Roads Alliance
EIAR	Environmental Impact Assessment Report
TMP	Traffic Management Plan
NMU	Non-Motorised User
CTMP	Construction Traffic Management Plan

11.1. Statement of Competence

11.1.1. Natural Power's Design and Advisory Services (DAS) team have over 20 years' experience in undertaking access assessments, traffic impact assessment, transport studies and traffic management plans for the renewable industry. As well as undertaking these assessments, the DAS team regularly undertake due diligence reviews of third party access studies for project financial closure. The team works closely with developers, turbine suppliers and haulage contractors to keep abreast of the latest developments in turbine component transport.

11.1.2. The DAS team is involved in all stages of wind farm developments from conception, through planning, planning condition discharge, construction, asset management/maintenance and decommissioning. This range provides the team with detailed experience of the various stages and how the traffic related issues follow and influence these stages. This experience is particularly valuable in ensuring that a comprehensive consideration of the traffic and transport impacts of the Proposed Development is provided in this chapter of the Environmental Impact Assessment Report (EIAR).

11.2. Introduction

11.2.1. This chapter of the EIAR considers the impacts and potential effects on traffic and transport as a result of the construction of the Proposed Development.

11.2.2. The Proposed Development is located East of Dalmellington, in East Ayrshire adjacent to the existing South Kyle Wind Farm. The Proposed Development will be accessed through two entrances, the existing South Kyle Wind Farm access onto the A713 and the North entrance off the B741. Construction traffic except for Abnormal Indivisible Loads (AILs) will be able to enter either entrance. AILs will enter the Site through the existing South Kyle Wind Farm onto the B741.

11.2.3. The following appendices and figure accompany this chapter of the EIAR:

- Appendices:
  - Appendix 11.1: Baseline Traffic Data
  - Appendix 11.2: Outline Construction Traffic Management Plan;
  - Appendix 11.3: AIL Route Survey
- Figures:
  - Figure 11.1: Traffic Count Locations
  - Figure 11.2: RTC Locations

11.2.4. This chapter includes the following elements:

- Legislation, Policy and Guidance;
- Consultation;
- Traffic and Transport Methodology;
- Baseline Conditions;
- Quantification of Impact;
- Assessment of Potential Effects;
- Mitigation;
- Residual Effects; and
- Conclusion.

11.2.5. An Outline Construction Traffic Management Plan (CTMP) has been prepared, additionally an Abnormal Indivisible Load (AIL) TMP has been prepared. This assessment has been based on a number of conservative assumptions that can only be clarified post consent and once a Principal Contractor is engaged. Hence it is expected a planning condition will be applied to the decision notice ,if consented, for a Detailed CTMP to be prepared and approved by the Local Planning Authority (LPA) in consultation with the Ayrshire Roads Alliance (ARA) post consent and prior to construction works commencing.

11.3. Legislation, Policy and Guidance

11.3.1. This section outlines the legislation, policy and guidance that has been reviewed. The traffic and transport issues described in the following planning advice and guidance documents have been taken into account in this assessment.

Table 11.1 - Legislation Policy and Guidance

Author	Title	Policy
The Scottish Government	The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017[1]	These regulations set out what is to be considered as part of an EIA when evaluating the effects of a development, which include effects on the transport network.
The Scottish Government	National Planning Framework 4 (NPF4) (2023)[2]	This document provides a statement by the Scottish Government on a nationwide land use policy direction. NPF4 identifies a number of nationally important developments, including renewable energy proposals over 50 MW. NPF4 highlights proposals for onshore wind farms should include an assessment of the impact of renewable developments on road traffic and on adjacent roads.
The Scottish Government	Planning Advice Note 75 (PAN 75) – Planning for Transport (2005)[3]	This note provides advice on sustainable transport planning in the context of new and existing development. The note also indicates that all "*applications which involve the generation of person trips should provide information which covers the transport implications of the development. The level of detail is to be proportionate to the complexity and scale of impact*" of the development.
Transport Scotland	National Transport Strategy 2 (2020)[4]	This document provides details of Scotland's national transport strategy and in particular strategies for achieving sustainable transportation of goods and freight.

[1] The Scottish Government (2017), The electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 [Online] Available from: https://www.legislation.gov.uk/ssi/2017/101/introduction/made (Accessed 28/03/25)

[2] The Scottish Government (2023), National Planning Framework 4 [Online] Available from: https://www.gov.scot/publications/national-planning-framework-4/pages/3/ (Accessed 28/03/25)

[3] The Scottish Government (2005), Planning Advice Note: PAN 75 – Planning for Transport [Online] Available from: https://www.gov.scot/publications/planning-advice-note-pan-75-planning-transport/ (Accessed 28/03/25)

[4] Transport Scotland (2020), National Transport Strategy 2 [Online] Available from: https://www.transport.gov.scot/publication/national-transport-strategy-2/ (Accessed 28/03/25)

Author	Title	Policy
Institute of Environmental Management and Assessment (IEMA)	Environmental Assessment of Traffic and Movement (2023)[5] Hereafter referred to as the 'IEMA Guidelines'	Sets out guidelines for assessing the significance of traffic effects because of a development. The document focuses on the assessment of potential environmental effects associated with road traffic.
Transport Scotland	Transport Assessment Guidance (2012)[6]	Provides guidance on the preparation of Transport Assessments in Scotland.
Department for Transport (DfT)	Design Manual for Roads and Bridges (DMRB) – Volume 15[7]	This guidance has been used to assist in the technical review of existing roads. Volume 15 – Economic Assessment of Road Schemes in Scotland has been used to derive the theoretical capacities of roads within the study.
Department for Transport (DfT)	Design Manual for Roads and Bridges (DMRB) LA112[8]	This guidance has been used for the categorisation of sensitivity in relation to severance. Specifically the criteria contained within Table 3.11 of the guidance has been used within this assessment.
Department for Transport (DfT)	TAG Unit A4.1 Social Impact Appraisal[9]	This guidance has been used to categorise the magnitude of change in severance, specifically using the matrix in Table 5.1 of the guidance.

11.3.2. This Chapter has been prepared based on the IEMA Guidelines, but we have also taken cognisance of the Transport Assessment Guidance (2012), Transport Scotland, during the assessment process.

Much of the above policy and guidance deals principally with developments which generate significant increases in travel as a direct consequence of their function (e.g. retail parks, housing) and measures to implement a more sustainable transport solution.

11.3.3. The traffic generated by the Proposed Development will almost entirely be limited to vehicle movements during the construction phase. As such, the effects of traffic from the Proposed Development will be temporary and of a short-term duration as opposed to developments such as retail parks where the traffic effects can be permanent and for a long duration of typically a 60-year design span. In addition, given the nature of the construction phase traffic there is little or no scope for changing to alternative modes of transport.

11.4. Consultation

11.4.1. A Scoping Report was prepared by Natural Power was submitted to consultees in February 2022. Table 11.2 below summarises the scoping opinions which were received in relation to Traffic and Transportation.

Table 11.2 - Scoping Responses

Consultee	Ref.	Comment	Response to Consultee
EAC	Scoping Opinion	Early contact with the Ayrshire Roads Alliance is advised.	Natural Power has sought to engage in consultation with ARA during the process of undertaking this assessment however no response was provided.
EAC	Scoping Opinion	The Planning Authority welcomes the intention to base the traffic assessment on a worst-case scenario which, for the avoidance of doubt, the Planning Authority assumes 100% of construction materials such as stone requiring to be imported to site. Any expected reduction in stone importation due to the use of borrow pits can be reported within the EIA Report, along with the consequent effect this would have on traffic volumes. A worst-case scenario should nevertheless be presented in case any proposed borrow pits fail to provide the anticipated volume of stone to ensure a robust assessment of impacts.	Noted. The assessment considers both 100% import of all materials (the 'worst case scenario') and a case in which borrow pits are used (the 'realistic worst-case scenario'), which is in keeping with the IEMA Guidelines.
EAC	Scoping Opinion	Request to identify potential sources of materials and consider the impacts of those routes to site, including communities along those routes. Such assessment should also include cumulative impacts with other developments.	Noted. Potential sources of materials have been identified. Routes are included in the cumulative assessment.
EAC	Scoping Opinion	It would be expected that the traffic assessment would consider routes to site on the A76, and the B741 from New Cumnock to the proposed site entrance.	Noted, these routes have been included in the assessment.
EAC	Scoping Opinion	The proposed cumulative assessment should consider any consented / under construction developments likely to generate large volumes of traffic, and	The assessment considers all projects presented on the cumulative list.

[5] Institute of Environmental Management and Assessment (IEMA) (2023), Guidelines: Environmental Assessment of Traffic and Movement

[6] Transport Scotland (2012) – Transport Assessment Guidance (Online) Available at: https://www.transport.gov.scot/media/4591/planning_reform_-_dpmtag_-_development_management__dpmtag_ref__17_-_transport_assessment_guidance_final_-_june_2012_1.pdf [Accessed 28/03/25]

[7] Department for Transport (2005) – Economic Assessment of Road Schemes in Scotland. The NESA Manual

[8] Department for Transport (2020) – LA 112 Population and Human Health (Online) Available at: https://www.standardsforhighways.co.uk/search/1e13d6ac-755e-4d60-9735-f976bf64580a [Accessed 28/03/25]

[9] Department for Transport (2022) – TAG Unit A4.1 Social Impact Appraisal (Online) Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1126362/TAG_Unit_A4.1_-_Social-impact-appraisal_Nov_2022_Accessible_v1.0.pdf.pdf [Accessed 28/03/25]

Consultee	Ref.	Comment	Response to Consultee
		should not necessarily be limited to other wind farm developments.	
EAC		Requested to detail the port of entry and the delivery route for turbines to components to site. The Applicant is also encouraged to discuss traffic matters with the Council's Ayrshire Roads Alliance.	Port of Entry has been included in the AIL Route Survey which is included in Appendix 11.3. Natural Power has sought to engage in consultation with ARA during the process of undertaking this assessment however no response was provided.
EAC		The Planning Authority would agree that operational and decommissioning phases of the development can be scoped out of the traffic assessment.	Noted. These have been removed from the assessment.
ARA		The scope of the Traffic and Transportation Assessment, including baseline traffic requirements, will be agreed with the Ayrshire Roads Alliance on behalf of East Ayrshire Council. This is acceptable to the ARA.	Natural Power has sought to engage in consultation with ARA during the process of undertaking this assessment however no response was provided.
ARA		The proposed Access Point of Site Traffic to the Public Road must be accompanied by detailed plans submitted with all relevant information provided with regards to road widths, proposed and existing radii, swept path movements and sight lined details.	The Proposed Development has taken the approach to use the existing South Kyle Wind Farm access point, therefore no further works are proposed at the access point to the public road.
ARA		The assessment requires to demonstrate if instances of localised road widening continue to be appropriate for abnormal loads, or if further mitigation is required.	Refer to Appendix 11.3 for details.
ARA		Swept path analysis of abnormal load movements on all East Ayrshire Council roads forming part of the delivery route will be required by the ARA, to be undertaken on Ordnance Survey base mapping. These will require either confirmation of wind turbine component dimensions, or presentation of a "worst case" scenario. The swept path assessments shall be required to identify areas of over-sail and over-run and street furniture modifications.	Refer to Appendix 11.3 for details.
ARA		Whilst the ARA would welcome an approach which made use of borrow pits in order to reduce construction traffic levels, nonetheless we require that a "worse case" scenario be explored within the Traffic and Transportation Assessment working on the basis that 100% of materials require to be imported.	Noted. The assessment considers both 100% import of all materials and a 'realistic worst-case' scenario where borrow pits are used, which is in keeping with the IEMA Guidelines.
ARA		As part of the Traffic and Transportation Assessment the ARA also expect that construction traffic estimates are broken down to give a clear indication of how vehicle numbers/ classifications are anticipated to vary over the programme.	Noted. Table 11.18 shows the breakdown of traffic movements anticipated.
ARA		The ARA will require consideration to be given for the traffic routes for any timber extraction from the site – in particular the B741 has seen significant investment in the road surface in recent years, however remains a road with a substandard makeup which could easily be destroyed by excessive HGV movements.	During preparation of the Detailed CTMP the Applicant and Principal Contractor will engage in consultation with ARA to establish the Section 96 requirements
ARA		The ARA agree that the operational phase can be scoped out, however we were of the opinion that a degree of consideration should also be given to the impacts of the decommissioning stage.	Refer to Paragraphs 11.5.14 and 11.5.15

11.5. Traffic and Transport Methodology

Potential Effects

11.5.1. Potential effects considered within this assessment are those defined within Section 3.3 of the IEMA Guidelines.

11.5.2. The impact of the construction phase of the Proposed Development considered in this Chapter will be an increase in traffic and movements on roads (hereafter referred to as links) within the vicinity of the site. The following effects resulting from this impact, have been assessed within this Chapter:

- Severance of communities;
- Road vehicle driver and passenger delay;
- Non-motorised user delay;
- Non-motorised user amenity;

- Fear and intimidation on and by road users; and
- Road user and pedestrian safety.

11.5.3. Assessment of Hazardous and Large Loads has been undertaken in Appendix 11.3.

11.5.4. As described in the IEMA Guidelines the impact of traffic has linkages to other disciplines. Information established in the preparation of this Chapter has been shared with other relevant disciplines to enable them to consider the impact of increased traffic during the construction phase of the Proposed Development.

Approach to Significance

11.5.5. As described in the IIEMA Guidelines (referred to in Table 11.1) broadly speaking, significance is a function of the following:

- The value of the resource (i.e. its international, national, regional and local importance);
- The magnitude of the effect(s);
- The duration of effect(s);
- The reversibility of effect(s); and
- The number and sensitivity of receptors.

11.5.6. The methodology used in the preparation of this chapter has considered the above criteria to arrive at an assessment of the significance of road traffic during construction of the Proposed Development on human and other resources.

Approach to Mitigation

11.5.7. This assessment has considered the effects of the Proposed Development with Primary and Tertiary Mitigation in place (see Glossary for definition).

11.5.8. Primary Mitigation in relation to the Proposed Development is primarily due to the proposed on-site borrow pits which will significantly reduce delivery vehicle traffic. However, as a result of consultation responses the assessment has considered two scenarios: one with and one without Primary Mitigation in place. This is further described in the section 'Assessment Scenarios' below.

11.5.9. Secondary Mitigation consists of mitigation which will require further actions to be taken, in this case during the planning or construction phases of the Proposed Development, in order to achieve the desired outcome. Specifically, Secondary Mitigation measures are those which may be identified within this assessment, or further assessments of traffic and transportation (e.g. the Construction and Traffic Management Plan (CTMP)), which are required to mitigate potentially significant effects which have been identified.

11.5.10. Tertiary Mitigation in relation to the Proposed Development assumes for example that all construction vehicles will comply with the relevant road traffic regulations and that a Detailed CTMP will be developed by the Principal Contractor prior to the commencement of construction.

Items Scoped Out of Assessment.

11.5.11. In alignment with the methodology set out in the Scoping Report (as described in Section 11.4) the following items have been scoped out of this assessment:

- Operational traffic; and
- Decommissioning traffic.

11.5.12. This approach was agreed with EAC and for operational traffic was also agreed with ARA in their scoping response. These responses are summarised in Table 11.2.

Note on Scoped Out Items

11.5.13. When considering the magnitude of the impact it should be recognised that the traffic generated by the Proposed Development would be short term due primarily to vehicle movements during the construction phase of the Proposed Development. Following completion of the construction phase, traffic levels will return very close to the existing baseline conditions. The impact of vehicle movements during the operational phase, largely Light Goods Vehicles (LGV's), will be negligible.

11.5.14. The method of decommissioning would be agreed with the ARA prior to decommissioning being undertaken. In line with current practice all turbine components, including blades, nacelles and towers would be removed from the site. If not to be re-used, turbine components would likely be cut to manageable sizes on site to allow use of heavy goods vehicles (HGVs) as opposed to abnormal load vehicles (ALVs) which will be required during construction.

11.5.15. Above-ground infrastructure would be removed with foundations generally removed to around 1m below ground level, with the remainder left in situ. Therefore, the HGV movements would be considerably less than during the construction period. The decommissioning would be likely to take place over a shorter duration than the construction phase. Baseline traffic flows on all of the affected roads may have altered by the end of the up to 40-year lifetime of the wind farm leading to the possibility of a different effect on the roads for HGV traffic. It is envisaged that the decommissioning would result in lesser effects than those identified for this assessment. Therefore, no further assessment has been undertaken. Decommissioning would be managed in accordance with a decommissioning plan to be agreed with relevant authorities at the time.

Study Area

11.5.16. The study area consists of links which may be affected by construction traffic and considers routes which are used in both scenarios (scenarios are detailed in the following sub-section). The precise origin of all equipment and materials is not currently known, however assumptions have been made as to the approach routes. Two site entrance locations have been proposed, one off the B741 and one off the A713. These locations are shown on Figure 11.1.

11.5.17. A review of nearby quarries was made for the supply of aggregates in the worst-case scenario. This review identified that Sorn Quarry would be the most likely supplier of such aggregates. Thus, the study area encompasses the approach route from Sorn Quarry to the site as detailed below. It should be noted that links within the immediate vicinity of the quarry have not been assessed as the quarry will have undertaken a Transport Assessment as part of its extraction licence and as such only routes which are on the approach to the Proposed Development and would not typically be used by quarry traffic (the A76 through New Cumnock and the B741) have been assessed.

11.5.18. The worst-case scenario route for aggregates, sand and concrete is presented in Figure 11.1 and is as follows:

- Approach from A76 south-east bound;
- Turn right at New Cumnock to join B741 towards Dalmellington;
- If northern site entrance is used vehicles will turn left into this entrance, otherwise vehicles will continue along the B741;

- Turn left onto A713 in Dalmellington; and
- Turn left into southern site entrance junction.

11.5.19. The Study Area is hereafter defined as comprising the links described above, namely the A76, B741 and A713.

11.5.20. The 'realistic worst-case scenario' route will see sand and cement come via the above 'worst-case scenario' route. For the remaining materials (i.e. those other than sand and cement) the source is not currently known, however due to the relative location of the nearest centres of population (North-West) it is reasonable to assume that such materials will predominantly be transported via the A713 from the direction of Ayr and may enter the site via either entrance.

11.5.21. For materials other than sand and cement, deliveries to the southern entrance will approach directly via the A713. Alternatively, for such vehicles to use the northern site entrance the following route would be used:

- Vehicles approach from the direction of Ayr via the A713;
- Turn left in Dalmellington onto the B741; and
- Turn right into northern site entrance junction.

Assessment Scenarios

Realistic Worst-Case Scenario

The IEMA Guidelines (Paragraph 1.25) state that the 'realistic worst-case scenario' should be assessed. In relation to the Proposed Development the principal consideration for scenario planning is the source of aggregates for the formation of access tracks and hardstands, and for on-site batching of concrete. As it is intended to source the majority of aggregates from on-site borrow pits, which will require no movements on the public road, the 'realistic worst-case scenario' would be represented by the following:

- Aggregates for tracks and hardstands sourced from on-site borrow pits;
- Concrete batched on-site; and
- Sand and cement for concrete imported from local quarry and will use A76 and B741 and will access the site via either of the two entrances.

11.5.22. The above represents the Applicant's intended approach for construction of the Proposed Development. Nonetheless due to specific consultation feedback received from EAC and ARA (as described in Table 11.2) a 'worst-case scenario' has also been considered.

Worst-Case Scenario

11.5.23. In response to consultation feedback from EAC and ARA a 'worst-case scenario' has been considered in which all aggregates are sourced from off-site and approach the Proposed Development via the A76 and B741 roads. In this scenario ready-mix concrete would be imported from Kilmarnock and approach the site via the A76 and B741.

11.5.24. In the 'worst-case scenario' the following assumptions have been made:

- All aggregates for tracks and hardstands will be imported via the A76 and B741;
- Concrete will be imported as ready-mix from Kilmarnock via the A76 and B741; and
- All other construction materials will arrive via either the A713 to the southern entrance or via the A76 and B741 route to the northern entrance.

[10] Department for Transport – Trip End Model Presentation Program Version 8.1 (December 2023) (online) Available at https://www.gov.uk/government/publications/tempro-downloads

Assessment Methodology

11.5.25. The methodology employed in this assessment is developed from the IEMA Guidelines. This has taken the steps detailed in the following sub-sections.

Baseline Assessment

11.5.26. Baseline conditions within the study area were established, including the following:

- Baseline traffic flow (further detail provided in Paragraph 11.5.27);
- Qualitative assessment of route(s) including identification of major junctions, crossing points and road width/classification and a resultant assessment of the 'value of the resource' in terms of the international, national, regional and local level importance of each link assessed;
- Review of theoretical link capacity;
- Road traffic collision (RTC) assessment; and
- Identification of sensitive receptors and assignment of sensitivity to route(s). A detailed criteria for the assignment of sensitivity is given in Table 11.3.

Baseline Traffic Flow Survey Methodology

11.5.27. Baseline traffic flow surveys were undertaken at three locations on links within the vicinity of the Proposed Development. At each location a 7-day Automatic Traffic Count (ATC) was undertaken commencing on the 15th of May 2024.

11.5.28. The traffic data collected was 'classified', i.e. it counted vehicles according to their classification as they passed the counter. The data has been presented within this assessment as the Average Daily Flow (ADF) on each link, i.e. the average number of vehicles which passed the counter within each 24-hour period (00:00 to 23:59) of the traffic survey. In some instances (e.g. when quoting guidance) the term average daily traffic (ADT) has been used, ADF and ADT are interchangeable.

11.5.29. The locations where traffic data was collected (traffic count locations) are shown on EIAR Volume 2a, Figure 11.1.

Future Baseline Scenarios

11.5.30. Future traffic has been estimated by applying traffic growth factors between the year in which traffic data was collected (2024) and the anticipated year of construction (2027). Traffic growth factors were determined using the TEMPro software published by the Department for Transport[10]. This software develops traffic growth factors using National Road Traffic Forecast (NRTF) growth factors for specific regions over specific time periods.

11.5.31. The TEMPro growth factor was 1.006, meaning 0.6% growth in baseline traffic is predicted during the period 2024-2027. This growth factor was applied to 2024 baseline traffic flows.

Construction Traffic Estimate

11.5.32. An estimate of the construction traffic expected for each construction activity has been established. This estimate has been developed by quantifying the number of vehicle deliveries for each activity during construction. This traffic has been distributed across the predicted construction programme to establish the peak increase in traffic.

11.5.33. In line with scoping responses received from EAC and ARA (presented in Table 11.2) the 'worst case scenario' in which all stone is imported to the site has been presented. An additional assessment of the 'realistic worst-case scenario' has been made in which borrow pits are used to source the majority of on-site aggregates.

Screening Exercise

11.5.34. A screening exercise has been undertaken in line with Section 2 of the IEMA Guidelines. This was used to evaluate which links should be considered for further assessment. Links have been taken forward where:

- Traffic is predicted to increase by more than 30%, or HGVs by more than 30%; or
- On high sensitivity routes where traffic is predicted to increase by more than 10% or HGVs by more than 10%.

11.5.35. For links which exceed the thresholds further assessment has been undertaken to establish the significance of the effect on each link.

11.5.36. In accordance with the IEMA Guidelines the thresholds in Paragraph 11.5.34 have not been applied to potential effects on the following:

- Road Safety; and
- Driver Delay.

11.5.37. A cumulative assessment has been undertaken which has established the possible traffic flow increase in the event of other developments which share the same links for construction whilst the Proposed Development is being constructed.

11.5.38. Following the above steps an assessment of the significance of predicted cumulative effects has been made. Where likely significant effects have been identified Secondary Mitigation measures in relation to those effects have been proposed.

11.5.39. Finally, once Secondary Mitigation measures have been considered an assessment of residual effects will be undertaken and a statement of overall significance made.

11.5.40. An assessment of operational and decommissioning traffic has been scoped out of this assessment as described in Paragraphs 11.5.11 and 11.5.12, as such this assessment has considered the effects during the construction phase only.

Assessment of Sensitivity

11.5.41. In relation to the impact of the Proposed Development (an increase in traffic) the receptors are human; they are the people who live, work, play, travel on, or otherwise rely upon traffic and transport resources (in this case roads) within the study area. The following criteria presented in Table 11.3 define the level of sensitivity which receptors may have in relation to each of the potential effects which were defined in Paragraph 11.5.2.

Table 11.3 - Definitions of Sensitivity Criteria

Sensitivity	Criteria
High	The receptor has little ability to absorb change without fundamentally altering its present character, is of high strategic value, or of national importance. For example: • Where there is substantial severance between community assets, with limited accessibility provision, where alternative facilities are only available in the wider local planning authority area, where the level of use is frequent (weekly), where the land and assets are used by the majority (>=50%) of the community, where regional trails and walking routes used for recreation/commuting are bisected by a link with limited potential for substitution, rights of way for at grade pedestrian crossings with average daily traffic (ADT) >8,000. • Links with existing high traffic levels which have little additional traffic flow capacity; • Links for non-motorised users (NMUs) which have high traffic levels and have little residual capacity, or where changes in road traffic could result in significant delays to NMUs; • A link with poor NMU facilities and a high traffic flow level where an increase in traffic is likely to significantly impact upon NMU amenity; • A link which due to the nature of its design could experience a significant increase in fear and intimidation on/by road users due to increased traffic; • At severe/fatal accident hotspots where an increase in traffic flow may increase the likelihood or severity of accidents; or • At a location where pedestrian crossing facilities are informal and where a significant change in traffic flow level might induce significant safety impacts on pedestrians or where for example children/elderly people might regularly cross using an informal crossing.
Medium	Areas where the transport network has moderate capacity to change, without significantly altering its state. For example: • Where there is severance between community assets, with existing accessibility provision, where alternative facilities are available at a local level, where the level of use is frequent (monthly), where the land and assets are used by the majority (>=50%) of the community, where public rights of way and walking routes used for recreation/commuting are bisected by a link where alternative routes can be taken, rights of way for at grade pedestrian crossings with ADT >4,000 – 8,000. • Links with moderate traffic levels which have some additional traffic flow capacity; • Links for NMUs which have moderate traffic levels and have some residual capacity or where changes in road traffic could result in some delays to NMUs; • A link which due to the nature of its design could experience some increase in fear and intimidation on/by road users due to increased traffic; • At a slight accident hotspot where an increase in traffic flow may increase the likelihood or severity of accidents; or • At a location where pedestrian crossing facilities are informal or substandard and where a significant change in traffic flow level might induce a moderate pedestrian crossing delay.

Sensitivity	Criteria
Low	Areas where the transport network is tolerant to change without detriment to its state, for example: • Where there is limited severance between community assets, with existing good quality accessibility provision, where alternative facilities are available at a local level, where the level of use is infrequent (monthly), where the land and assets are used by a minority (<50%) of the community, where public rights of way and walking routes which are scarcely used for recreation/commuting are bisected by a link or where alternative routes can be taken, rights of way for at grade pedestrian crossings with ADT <4,000. • Links with low traffic levels which have significant additional traffic flow capacity; • Links for NMUs which have low traffic levels and significant residual capacity of where changes to traffic flow are unlikely to result in NMU delay; • A link which does not experience notable fear and intimidation effects or where an increase in traffic is unlikely to increase fear and intimidation; • Where no trends or hotspots in accident data have been identified; • At a location which has good pedestrian crossing facilities where a change in traffic flow is unlikely to increase pedestrian crossing delay.
Negligible	Areas where the transport network is highly tolerant to change without detriment to its state, for example: • Where there is no severance between community assets, where alternative facilities are available within the same community, where the level of use is very infrequent (a few occasions yearly), where the land and assets are used by a minority (<50%) of the community; • Links with very low traffic levels which have significant additional traffic flow capacity; • Links for NMUs which have very low traffic levels and significant residual capacity of where changes to traffic flow are highly unlikely to result in NMU delay; • A link which does not experience notable fear and intimidation effects or where an increase in traffic is highly unlikely to increase fear and intimidation; • Where very few road traffic collisions (RTCs) in accident data have been identified; • At a location which has very good pedestrian crossing facilities where a change in traffic flow is highly unlikely to increase pedestrian crossing delay.

Source: NPC

11.5.42. This assessment has identified individual sensitive receptors; however, categorisation has been applied to each individual link within the assessment. Each link thus has a sensitivity level defined for each of the potential effects. Generally, the sensitivity level which has been applied to each link is the most sensitive of all of the individual receptors located on (or near) that link for the effect in question.

Magnitude of Change

11.5.43. The magnitude of traffic impact is a function of the existing traffic volumes, the percentage increase due to the proposed development and changes in type of traffic. The magnitude of effects arising from the increase in traffic volumes (taken as being either the traffic flow including all vehicles or the HGV traffic flow, whichever is higher) is categorised in Table 11.4.

Table 11.4: Definitions of magnitude of change criteria

Magnitude	Criteria
High	• In relation to severance, a substantial increase in traffic flow (>90%); • Change in traffic delay to drivers and passengers which may result in changes to existing traffic routes or activities such that delays or rescheduling are required which results in hardship; • Change in delay to NMUs which may result in an appreciable change in terms of length and/or duration to present routes or the scheduling of activities which results in hardship; • In relation to fear and intimidation, two step changes in level due to degree of hazard score; or • High likelihood of increased RTCs or a large increase in the severity of possible RTCs.

Medium	• In relation to severance, a moderate increase in traffic flow (60%-90%);
	• Change in traffic delay to drivers and passengers which may result in changes to existing traffic routes or activities such that some delays or rescheduling could be required which results in inconvenience;
	• Change in delay to NMUs which may result in a change to the length and/or duration of existing routes such that some delays or rescheduling could be required which results in inconvenience;
	• In relation to fear and intimidation, one step change in level due to degree of hazard score with:
	  ○ >400 ADT increase; and/or
	  ○ >500 HGV ADT increase;
	• Moderate likelihood of increased RTCs or a moderate increase in the severity of possible RTCs.

Low	• In relation to severance, a slight increase in traffic flow (30%-60%);
	• Change in traffic delay to drivers and passengers which may result in minor modification to routes or a minor delay;
	• Change to delay to NMUs which may result in a minor modification to routes or minor delay;
	• In relation to fear and intimidation, one step change in level due to degree of hazard score with:
	  ○ <400 ADT increase; and/or
	  ○ <500 HGV ADT increase;
	• Low likelihood of increased RTCs or a low increase in the severity of possible RTCs.

Negligible	• In relation to severance, a negligible increase in traffic flow (<30%); • Barely perceptible change in traffic delay to drivers and passengers; • In relation to fear and intimidation, no step change in level; or

Magnitude	Criteria
	• Negligible likelihood of increased RTCs or a negligible increase in the severity of possible RTCs.

Source: NPC

11.5.44. It should be noted that in Table 11.4 the traffic flow criteria given in relation to severance only apply to that possible effect and cannot necessarily be applied to others.

11.5.45. In relation to effect of fear and intimidation a degree of hazard score for each link was developed for the baseline and with Proposed Development scenarios, in accordance with the IEMA Guidelines Tables 3.1, 3.2 and 3.3. This degree of hazard score will then be used to assign a magnitude level to each link and the step changes in level used to define the magnitude of change as defined in Table 11.4 above.

11.5.46. The determination of the magnitude of the impacts is undertaken by reviewing the Proposed Development, establishing the parameters of the additional road traffic that may cause an impact, and quantifying these impacts. In establishing the magnitude of change there is a need for interpretation and judgement on the part of the assessing engineer, this fact is recognised in Paragraph 3.12 of the IEMA Guidelines.

Significance of Effect

11.5.47. The significance of effect is a combination of the sensitivity of receptor and the magnitude of change. For each effect the significance of effect will be determined using the matrix presented in Table 11.5 below.

Table 11.5 - Significance Matrix

Magnitude of Change	Sensitivity of Receptor			
	High	Medium	Low	Negligible
High	Major	Major	Moderate	Minor
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Minor	Negligible
Negligible	Minor	Negligible	Negligible	Negligible

11.5.48. Effects predicted to be of major or moderate significance are considered to be 'significant' in the context of the EIA regulations; these are shaded grey in the above table.

11.6. Baseline Conditions

Baseline Traffic Flow

11.6.1. Table 11.6 presents the baseline traffic flow data collected at each of the three traffic count locations. The below data presents the Average Daily Flow (ADF) at each count location for total traffic and HGV traffic.

Table 11.6 - Baseline Traffic Flow

Ref.	Road	Location	ADF	HGV ADF	%HGV
1	A76	Between Cumnock and Mansfield	4,204	353	8.4%
2	B741	Between New Cumnock and Clawfin	1,470	226	15.3%
3	A713	Between Dalmellington and Site Entrance	1,515	230	15.2%

Future Baseline Scenario

11.6.2. As discussed in Paragraph 11.5.30 traffic growth factors have been applied to the baseline traffic flow to forecast the traffic flow in the year of construction 2027. Table 11.7 presents the forecast traffic flow at each of the count locations in 2027.

Table 11.7 - Future Baseline Scenario

Ref.	Road	Location	ADF	HGV ADF	%HGV
1	A76	Between Cumnock and Mansfield	4,230	355	8.4%
2	B741	Between New Cumnock and Clawfin	1,479	227	15.3%
3	A713	Between Dalmellington and Site Entrance	1,524	231	15.2%

18-hour ADF

11.6.3. For the fear and intimidation assessment 18-hour flows are needed, including an average hourly flow at each count location over an 18-hour period (i.e. 0600-0000) for total traffic. This data was extracted from the traffic count data and is presented below. Table 11.8 below presents the results of this calculation.

Table 11.8 - 18-Hour ADF Baseline

Ref.	18-hr ADF	18-hr ADF/hr	HGV 18-hr ADF
1	4,113	228	346
2	1,445	80	219
3	1,490	83	223

11.6.4. The traffic growth factor was also applied to give the future baseline scenario as an 18-hour ADF. This is shown in Table 11.9 below.

Table 11.9 - 18-Hour ADF Future Baseline

Ref.	18-hr ADF	18-hr ADF/hr	HGV 18-hr ADF
1	4,137	230	348
2	1,454	81	220
3	1,499	83	225

Qualitative Assessment of Links

11.6.5. The A713 is a single-carriageway road linking Ayr in the north-west with Castle Douglas in the south-east. It is a regionally significant link within Dumfries and Galloway and East Ayrshire as it provides the primary route for several small and medium sized settlements (e.g. Dalmellington and Carsphairn) to access their nearest major town (Ayr) and for onward journeys to the rest of Scotland.

11.6.6. The B741 is a single-carriageway road linking New Cumnock with Dalmellington. This road is important locally, providing one of the very few north-south links within the area.

11.6.7. The A76 is single-carriageway nationally significant trunk road which links Kilmarnock with Dumfries. The A76 is a major road within both the Ayrshire and Dumfries & Galloway regions and is a critical link for a number of towns and villages on and near to the route.

Theoretical Link Capacity

11.6.8. Typical capacity values for a variety of road types are provided within the Design Manual for Roads and Bridges (DMRB) – Volume 15. It is acknowledged that this document has been withdrawn, however, the quoted traffic flow capacities remain the most up to date available reference source and are useful within the framework of this assessment. Capacity is defined as the maximum sustainable flow of traffic passing in one hour under favourable road and traffic conditions and depends on the road type, speed limit, and width. Table 11.10 gives the estimated capacity of each of the roads within the Study Area noting that within Volume 15 of the DMRB speed limits are defined in kilometres per hour (kph).

11.6.9. It should be noted that where a given link has multiple sections with differing characteristics within the Study Area, the section with the lowest capacity will be used in this assessment.

Table 11.10 - Theoretical Link Capacity

Road	Type	Speed Limit (kph)	Capacity (Veh/hour/direction)	Two-Way Daily Capacity (veh/day)
A76 - Mauchline	Urban – Typical Single Carriageway (6 m)	48	800	38,400
B741 – New Cumnock	Urban – Typical Single Carriageway (6 m)	48	800	38,400
A713 - Dalmelington	Urban – Typical Single Carriageway (6 m)	48	800	38,400

Road Traffic Collision Assessment

11.6.10. A ‘collision cluster’ analysis of all ‘slight’, ‘serious’ and ‘fatal’ Road Traffic Collisions (RTCs) on the ‘worst case scenario’ route between New Cumnock and the site entrance, and on the A713 between the site entrance and Ayr within the last full five years of information (1st January 2018- 31st December 2022) was carried out using CrashMap[11]. The study area for this analysis and the results are presented in Figure 11.2.

11.6.11. The RTC assessment identified six ‘fatal’ RTCs, sixteen ‘serious’ RTCs and thirty one ‘slight’ RTCs within the study area. Two ‘clusters’, where 3 or more RTCs have occurred in the same location, were identified. These clusters are discussed below. Additionally, two ‘fatal’ RTCs have been considered in detail below.

[11] www.crashmap.co.uk (Accessed 06/06/24)

Cluster 1 – Ailsa Hospital Signal Controlled Junction

11.6.12. The first cluster is located on the A713 by Ailsa Hospital at the junction between Dalmellington Road (the vehicular entrance to the hospital) and the A713. Three ‘slight’ RTCs were recorded at this location.

11.6.13. All three RTCs at this location are similar and involve a collision between two cars, one in the act of turning right into the hospital the other proceeding along the carriageway. No HGVs were involved in any of the RTCs.

11.6.14. The junction is a staggered crossroad, although as one arm is a minor private access it effectively operates as a three-arm signal-controlled junction. The signals control traffic movements on the main through carriageway (the A713) and the minor arm (the hospital entrance). A dedicated right turn lane, and right turn arrow, is available for traffic turning right from the A713 entering the hospital.

11.6.15. A 40 miles per hour (mph) speed limit is in force approaching this junction. North-west bound traffic approaches the junction down a long steep hill towards the traffic signals and it appears that there is a tendency for vehicles to speed down this hill to get through the lights.

11.6.16. In the context of this assessment, this location has been assessed as having a ‘medium’ sensitivity for safety. This is due to the low severity of RTCs at this location, and the fact that construction traffic will not turn right at the junction. The speed limit on the north-west downhill approach should be noted for drivers, particularly with the risk of HGVs exceeding this limit without braking input from the driver.

Cluster 2 – A713/B742 Staggered Crossroad

11.6.17. The second cluster is located on the A713 by the junction with the B742. Two ‘serious’ and one ‘slight’ RTCs were recorded at this location.

11.6.18. All three RTCs at this location are similar and involve a car colliding with the rear of a car waiting to turn right onto the B742 southbound. No HGVs were involved in any of the RTCs.

11.6.19. The junction is a simple priority junction and is under national speed limit in this location. Automatic ‘right turning vehicle’ warning signs have been erected on the A713 south-east bound approach. The forward stopping sight distance for south-east bound vehicles may be somewhat restricted by the banking on the inside of the bend and by the large directional signboard immediately before the junction.

11.6.20. This location is assessed as having a ‘medium’ sensitivity for safety. Construction traffic will not turn right at this junction. The speed limit for HGVs on this road is 40 mph and there is a vehicle actuated sign on the approach to the crossroads.

Fatal RTC 1

11.6.21. This RTC occurred on the A713 at a bend west of the settlement of Waterside. The location is indicated on Figure 11.2. One ‘Fatal’ RTC was located at this location.

11.6.22. The RTC involved four cars, two of which collided head on resulting in two fatalities. No HGVs were involved in the RTC.

11.6.23. This area of the A713 is under national speed limit. There is a bend at this location marked with chevron signposts. The bend is positively cambered and has good sightlines throughout.

11.6.24. Based upon the geometry of the road this location is assessed as having ‘low’ sensitivity for safety. No deficiencies in the road layout can be identified and the fact that only one single RTC is recorded here results in no factors which would contribute towards a recurrence being identified.

Fatal RTC 2

11.6.25. This RTC occurred on the A76 within New Cumnock approximately 127 metres (m) south of the junction with Castle Place.

11.6.26. The RTC involved a pedestrian being struck by an HGV.

11.6.27. This area of the A76 has a 30 mph speed limit. Pedestrian crossing facilities of this busy road are limited within New Cumnock. There is a pedestrian refuge within the carriageway near to where the RTC took place, the nearest signalised crossing within the town is far from this location and provides the only protected crossing of this road.

11.6.28. This location is assessed as having a 'high' sensitivity to safety. Pedestrian crossings within the town are limited and the Proposed Development will result in an increase in HGVs here.

Sensitivity Assessment

11.6.29. Sensitive receptors which have the potential to be affected by construction traffic have been within the Study Area. Table 11.11 below presents each of the sensitive receptors identified. These receptors were identified following a review of online mapping and selected based upon the judgement of the assessing engineer as to the most sensitive locations located on, or adjacent to the Study Area. The relevant traffic count points which apply to each of the identified receptors has also been presented.

11.6.30. Identification of these specific receptors has been used in the following section to inform the assessment of the sensitivity of each route within the study against each of the assessment criteria.

Table 11.11 - Sensitive Receptors

Receptor	Route	Counts
Doon Academy – Dalmellington	A713 and B741	2 and 3
The Dalmellington Care Centre	A713 and B741	2 and 3
Commercial and residential properties which front directly onto Main High Street and Bellsbank Road within Dalmellington	A713 and B741	2 and 3
Kirk of the Covenant – Dalmellington	B741	2
New Cumnock Primary School	A76	1
New Cumnock Evangelical Church	A76	1
New Cumnock Early Childhood Centre	A76	1
New Cumnock Outdoor Swimming Pool	A76	1
New Cumnock Town Hall	A76	1
New Cumnock Parish Church	A76	1
Commercial and Residential Properties within New Cumnock which front directly onto the delivery route	A76 and B741	1 and 2
New Cumnock Railway Station	A76	1

11.6.31. Whilst the above list is not comprehensive, it highlights the key receptors on each of the routes. With these locations in mind engineering judgement has been used to assign sensitivity levels for each route for each potential effect. The assignment of sensitivity is in line with the criteria defined in Table 11.3.

11.6.32. The sensitivity of each route in relation to safety has been categorised according to the worst classification assigned to each route in the RTC assessment, and according to engineering judgement where such a classification was not made (in the case of the B741).

11.6.33. Note that a sensitivity has not been assigned to the effect 'Hazardous and Large Loads' (refer to Paragraph 11.5.3). An AIL assessment has been undertaken and is presented in Appendix 11.2. That assessment considers the suitability of the proposed AIL route for the transportation of the proposed components.

Table 11.12 - Link Sensitivity Assignment

Link	Effect	Sensitivity	Rationale
A76	Severance	Medium	New Cumnock is bisected by the link. ADT = 4,230. One high quality crossing is available which is accessible to all parts of the community but which is inconvenient from some locations.
	Vehicle Delay	Low	There is a low baseline traffic flow level on this route in comparison with its theoretical capacity.
	NMU Delay	Low	There is one formal signalised crossing facility in New Cumnock which is not likely to experience any delay. Some crossings of the A76 are anticipated to be made informally and may be subject to delay by increased traffic.
	NMU Amenity	Low	Within New Cumnock pedestrian footways are located adjacent to this link, however these footways are generally wide and in good condition.
	Fear and Intimidation	Medium	The speed limit in New Cumnock is 30mph. Footways are wide and the width of the running carriageway is sufficient for separation between traffic and pedestrians.
	Safety	High	Refer to RTC assessment above.
B741	Severance	Medium	Dalmellington is bisected by the link. ADT = 1,479. There are no high quality crossing facilities on this link.
	Vehicle Delay	Low	There is a low baseline traffic flow level on this route in comparison with its theoretical capacity.
	NMU Delay	Medium	There are no formal crossing facilities on this link in Dalmellington, therefore all crossings are informal and may be subject to delay. However vehicle speeds and volumes are low and due to the single lane running when passing parked cars natural gaps form in traffic.
	NMU Amenity	Medium	The pedestrian footway within New Cumnock is narrow in places and there is no separation to the running carriageway.

Link	Effect	Sensitivity	Rationale
	Fear and Intimidation	Medium	As above.
	Safety	High	Lack of crossing facilities and narrow pavements within New Cumnock. Located near to recorded fatal RTC on A76.
A713	Severance	Medium	Dalmellington and Patna are bisected by the link. ADT = 1,524. Poor crossing facilities on this link.
	Vehicle Delay	Low	There is a low baseline traffic flow level on this route in comparison with its theoretical capacity.
	NMU Delay	Medium	There are no formal crossing facilities in Patna or Dalmellington, therefore all crossings are informal and may be subject to delay. However vehicle speeds and volumes are low and due to the single lane running when passing parked cars natural gaps form in traffic.
	NMU Amenity	Medium	There are several narrow footways within Dalmellington where separation from the carriageway is low
	Fear and Intimidation	Medium	As above.
	Safety	Medium	Refer to RTC assessment.

Baseline Assessment of Fear and Intimidation Degree of Hazard Level

11.6.34. The degree of hazard level in the baseline situation on each link was determined using the process detailed in the IEMA Guidelines, Tables 3.1 and 3.2. The average vehicle speed was established from the baseline traffic data and used to calculate the associated degree of hazard score as presented in Table 11.13 below.

Table 11.13 - Vehicle Speed Degree of Hazard Score

Link	Average Speed (mph)	Degree of Hazard Score
1	32	20
2	32	20
3	41	30

11.6.35. The degree of hazard score was then calculated for total traffic and HGV traffic using the future baseline traffic flows as shown in Table 11.14 below.

Table 11.14 - Total Traffic and HGV Traffic Degree of Hazard Score

Link	Total Traffic 18-hr ADF/hr	Degree of Hazard Score	18-hr HGV ADF	Degree of Hazard Score
1	230	0	348	0
2	81	0	220	0
3	83	0	225	0

11.6.36. The total hazard score is a summation of the above three hazard scores for each link. The total hazard score then determines the level of fear and intimidation, in accordance with Table 3.2 of the IEMA Guidelines. Table 11.15 below presents the outcome of this.

Table 11.15 - Baseline Level of Fear and Intimidation

Link	Total Hazard Score	Level of Fear and Intimidation
1	20	Small
2	20	Small
3	30	Moderate

11.7. Quantification of Impact

11.7.1. The ‘impact’ in the case of the Proposed Development is the increase in traffic, focussing on construction traffic which is the principal impact. The following sub-sections provide an estimate of the traffic associated with each element of works. A summary is provided in Table 11.17. The estimated programme of works is given in Table 11.18.

11.7.2. It should be noted that below vehicle estimates represent the ‘worst case scenario’ as described in Paragraph 11.5.23 except where noted.

Forestry

11.7.3. Forestry work will be undertaken during months 1 and 2, prior to commencement of the main construction activities. It is estimated that 3,165 loads will be removed from site, resulting in 6,330 HGV movements over the two months of felling activity.

11.7.4. The anticipated number of vehicle movements associated with the forestry phase is provided in Table 11.17.

Mobilisation and Site Establishment inc. Construction Compound Set Up

11.7.5. HGV and other vehicle movements will be required during mobilisation. This will comprise the delivery of a construction site office and welfare facilities, on-site vehicles and importation of plant and equipment. Most of these movements will be as HGVs and low loaders which will deliver and then depart the site empty. It is estimated that 64 deliveries will be required, resulting in 128 HGV movements.

11.7.6. It should be noted that the existing construction compound area used for construction of the existing South Kyle Wind Farm will be used. Therefore, no additional compound construction is anticipated to be required.

11.7.7. The anticipated number of vehicle movements associated with site mobilisation and establishment is provided in Table 11.17.

Bulk Upfill

11.7.8. Bulk upfill is required to raise existing ground levels in a number of locations across the Proposed Development Area before access tracks and hardstands will be constructed. It is anticipated that this material will be won on-site, which would be part of the assumptions used for a ‘realistic worst case’ scenario required to be assessed under IEMA. However, due to the requirement resulting from consultation to assess a ‘worst case scenario’ this assessment has estimated the number of vehicle movements which would be required if the upfill material was to be imported.

11.7.9. The volume of material estimated to be required for bulk upfill has been developed in consultation with the appointed Balance of Plant (BoP) Contractor and is estimated to be 168,218 m^3. This is expected to result in 18,504 HGV deliveries being required during this phase of works which is equal to 37,008 HGV vehicle movements in the worst-case scenario. By contrast, in the 'realistic worst case' scenario, there would be no HGV movements on the public road network associated with this stage of the development works.

11.7.10. The number of vehicle movements associated with import of bulk upfill in the worst-case scenario is provided in Table 11.17.

Access Tracks

11.7.11. The 'worst case scenario' considers a case where all aggregate required for the formation of access tracks is imported to the Proposed Development Area. The below estimate presents the number of vehicle deliveries and movements estimated to be required for this. Aggregate will be delivered by HGV tippers.

11.7.12. The total length of new access tracks to be constructed is 7,310 m, with an additional 4,223 m of existing tracks which are to be widened/improved. Tracks are to be constructed to a width of 5.5 m, with an additional allowance made for widening at bends.

11.7.13. The total volume of stone required for new and improved access tracks is estimated to be 43,996 m^3. This will result in 4,841 HGV deliveries over the course of access track construction, resulting in 9,682 HGV vehicle movements. For the 'realistic worst-case' this stone would be site won and there would therefore be no HGV movements on the public road for the delivery of this material.

11.7.14. In additional to the delivery of aggregates, geogrids, culverts and other miscellaneous items relating to drainage will be delivered during this phase of works. Approximately 16 HGV deliveries are anticipated for these materials, resulting in 32 HGV movements. This would be the same for both the 'worst-case' and the 'realistic worst-case' scenarios.

11.7.15. Electrical cabling for wind farm power distribution will be installed alongside access tracks. This will be delivered by HGV low loaders with 9 loads anticipated to be required, resulting in 18 vehicle movements. The cable trenches will be backfilled with sand, which will be imported. This will require approximately 297 HGV loads, resulting in 594 vehicle movements. This would be the same for both the 'worst-case' and the 'realistic worst-case' scenarios.

11.7.16. The number of vehicle movements associated with access track construction is provided in Table 11.17..

Hardstands and Platforms

11.7.17. As above, the 'worst case scenario' considers full import of all aggregates required for the formation of hardstands and platforms. Hardstands consist of 11 no. crane pads and associated boom assembly areas and blade fingers. The estimated material volumes for hardstands and platforms have been developed in conjunction with the BoP Contractor.

11.7.18. These crane pads and their associated infrastructure have a total surface area of 66,385 m^2 and are estimated to require 49,805 m^3 of stone to construct. This will require 5,480 HGV deliveries or 10,960 HGV movements over the course of this phase of works. For the 'realistic worst-case' this stone would be site won and there would therefore be no HGV movements on the public road for the delivery of this material.

11.7.19. The number of vehicle movements associated with hardstands and platforms for the worst-case scenario is provided in Table 11.17.

Turbine Foundations – Worst-Case Scenario

11.7.20. In the 'worst case scenario' it is assumed that all concrete required for turbine foundations will be imported to the site as ready-mix. Each turbine foundation will require approximately 830 m^3 of concrete, assuming each mixer has a capacity of 6 m^3 this will result in 139 ready-mix deliveries being required per turbine or a total of 1,529 deliveries being required for all turbines resulting in 3,058 vehicle movements associated with concrete. Concrete will be poured over 11 non-consecutive days with 278 HGV movements per turbine. Six turbines will be poured in month 12 and five turbines in month 13.

11.7.21. Rebar will be required in addition to the concrete, although this will be delivered several months prior to the commencement of foundation pouring to enable time for placing and tying. Each turbine foundation requires approximately 109 T of steel reinforcement resulting in 1,199 T being required for all turbines. This will require approximately 88 HGV deliveries or 176 HGV movements.

11.7.22. The number of vehicle movements associated with turbine foundations in the worst-case scenario is provided in Table 11.17.

Turbine Foundations – Realistic Worst-Case Scenario

11.7.23. In the 'realistic worst-case scenario' concrete will be batched on site. A batching plant will be delivered to the site at the commencement of this phase of works and cement and sand will be delivered throughout foundation construction to form the concrete.

11.7.24. Delivery of the batching plant is anticipated to require six HGV deliveries, resulting in 12 HGV movements. A further 12 movements are anticipated following foundation pouring for the removal of the batching plant.

11.7.25. For the delivery of cement and sand 686 deliveries are estimated, resulting in 1,372 HGV movements.

11.7.26. Rebar will be required in addition to the concrete. Each turbine foundation requires approximately 109 tonnes (T) of steel reinforcement resulting in 1,199 T being required for all turbines. This will require approximately 88 HGV deliveries or 176 HGV movements.

11.7.27. Table 11.16 summarises the number of vehicle movements associated with turbine foundations. As can be seen, the realistic worst-case scenario would have approximately 50% fewer movements than the worst-case scenario.

Table 11.16 - Vehicle Movements - Turbine Foundations (Realistic Worst Case)

Activity	Vehicle Type	Month(s)	Total Movements	Max Monthly Movements
Batching Plant	HGV – Low Loader	12-13	24	12
Cement/Sand	HGV – Tipper	12-13	1,372	686
Rebar	HGV – Low Loader	12-13	176	88
Overall			**1,572**	**786**

Substation Compound, Control Building and Miscellaneous Electrical Equipment

11.7.28. The substation platform, which includes the BESS platform, will be constructed from aggregate. In the worst-case scenario this will all be imported to site, however in the realistic worst-case scenario this will be won from on-site borrow pits.

11.7.29. The substation and BESS platform has a surface area of 18,000 m^2 and is estimated to require 9,000 m^3 of stone resulting in 990 HGV deliveries or 1,980 HGV movements associated with this activity. For the 'realistic worst case' this stone would be site won and there would therefore be no HGV movements on the public road for the delivery of this material.

11.7.30. Construction of the substation compound and control building will comprise the import of materials to construct the control building, electrical equipment for the substation and control building, the transformer which constitutes an abnormal load vehicle (ALV), oil for the transformer and concrete which will be used to construct the transformer bund.

11.7.31. Construction of the control building will require the delivery of a variety of materials, including concrete for foundations, stone for walls, timber or steel for roof trusses, and various materials/equipment for the internal fit-out. It is estimated that 60 HGV deliveries will be required for the above, resulting in 120 vehicle movements for this phase of works.

11.7.32. Delivery of the electrical equipment will be undertaken by a variety of HGVs depending on the equipment, this will include low loaders and containerised deliveries. A total of 100 HGV deliveries are expected to be required resulting in 200 HGV movements.

11.7.33. The 132 kilovolt (kV) transformer will be delivered as an ALV, this will constitute a single delivery resulting in two ALV movements. In addition to the ALV up to two escort vans will accompany the delivery, this will result in four light vehicle movements.

11.7.34. The 132 kV transformer will be delivered 'dry' and therefore the oil will be delivered separately. 80,000 litres (l) of oil is estimated to be required which will require 20 deliveries or 40 HGV movements.

11.7.35. Additionally smaller turbine transformers will be delivered for each turbine with their associated housing. These smaller transformers will not require ALVs.

11.7.36. A concrete bund will be constructed around the 132 kV transformer, this is estimated to require 300 m^3 of concrete which will be delivered as ready-mix. Fifty deliveries are estimated to be required, resulting in 100 HGV movements.

11.7.37. The number of vehicle movements associated with the substation compound and control building is provided in Table 11.17.

Cranes

11.7.38. Two cranes will be required to erect the turbines, a main crane and pilot crane. The main crane will be transported to Site in several loads which will include three ALVs and a further ten HGVs for the delivery of ballast and ancillary equipment. These HGVs will depart Site and return prior to the crane being removed, resulting in a total of 40 HGV movements.

11.7.39. The ALVs will require a further two escort vehicles to accompany them on their journey to and from the site. It has been assumed that the escort vehicles will depart the site and return prior to the crane departing, therefore the number of escort vehicle movements is eight.

11.7.40. In addition to the main crane, a smaller pilot crane will be required. This will be a mobile crane which will be self-propelled to site although would constitute an ALV due to its weight. The ALV will require two escort vehicles, resulting an in additional eight car/van movements. An additional HGV delivery will be required for the pilot crane to transport ballast. It has been assumed that this HGV will depart Site and then return prior to the crane departing therefore this will result in four HGV movements for delivery and removal of the counterweights.

11.7.41. The number of vehicle movements associated with crane delivery is provided in Table 11.17.

Turbine Deliveries

11.7.42. Turbines will be delivered as separate components, the majority of which will require transportation via ALVs. The towers will be transported in three separate sections and each blade will be transported individually. Four further abnormal load vehicles will be required to transport the nacelle, hub, drive train and other equipment. Each turbine will therefore require 10 ALV deliveries or 20 ALV movements resulting in 220 ALV movements for the delivery of all turbine components.

11.7.43. The blade vehicles are likely to retract to the size of a standard HGV after unloading, therefore they would constitute an HGV for departure. However, for the purposes of the below vehicle estimate it has been assumed that all ALVs which arrive at the site will depart as ALVs.

11.7.44. Each ALV is assumed to be accompanied by 2 escort vehicles, although it should be noted that some limited convoy running of ALVs is likely to be permitted which would result in fewer escort vehicles per ALV. The total number of escort vehicle movements is therefore up to 440 movements.

11.7.45. In addition to the above, 40 HGV vehicle movements will be required for the delivery of turbine accessories and ancillary equipment for each turbine. Therefore. 440 HGV movements are expected for delivery of the above.

11.7.46. The number of vehicles associated with delivery of the turbines is provided in Table 11.17.

BESS

11.7.47. Construction of the BESS area will require the delivery of various pieces of equipment including battery units, inverters, and concrete for foundation pads. The BESS compound is contained within the substation area, therefore stone for the BESS compound has been included in Table 11.16.

11.7.48. Battery units and inverters will be delivered by HGV low loader with 48 deliveries expected, resulting in 96 HGV movements. It is assumed that concrete for the BESS foundations will be delivered as ready-mix with 6 loads anticipated to be required resulting in 12 HGV movements. Rebar will be delivered for the foundations which is expected to result in 4 additional HGV movements. Both concrete and rebar are anticipated to be delivered within the first month of the BESS construction (Month 15). Additional vehicles will be required for the delivery of fencing for the BESS compound. This is expected to require 7 HGV deliveries or 14 HGV movements.

11.7.49. Additionally, a mobile crane will be used for off-loading and positioning of battery units and inverters. This crane will be self-propelled, but would constitute an ALV due to its weight, therefore two escort vehicles will accompany it on its journey to and from the site. It is assumed that these escorts will depart the site after the crane arrives and will return prior to its departure, resulting in 8 vehicle movements.

11.7.50. Ballast and ancillary equipment for the crane will be delivered by HGV. This will require 10 deliveries. It is assumed that these HGVs will depart the site following delivery of the ballast and will return prior to demobilisation of the crane, therefore 40 HGV movements associated with the delivery of ballast and ancillary equipment are anticipated.

11.7.51. The number of vehicles associated with construction of the BESS is provided in Table 11.17.

Site Restoration and Demobilisation

11.7.52. During site restoration and demobilisation all plant and construction equipment will be removed from the site, additionally the site office and welfare facilities will be removed. Vehicle movements during this phase will result

from empty HGVs travelling to the site, loading plant and equipment and then departing the site. It is assumed that the number of vehicle movements during this phase will be similar to that experienced during the mobilisation phase, i.e. 64 deliveries will be required resulting in 128 vehicle movements.

11.7.53. The number of vehicles associated with site restoration and demobilisation is provided in Table 11.17.

Construction Personnel

11.7.54. It is anticipated that during the peak period of construction, 60 staff will be required onsite per day. A worst-case assumption has been made that this number remains constant throughout the construction period of month 3-18.

11.7.55. For the purposes of this assessment a worst-case scenario has been assumed in which each member of staff travels to work in a sole occupancy vehicle, therefore up to 120 car/van movements per day are expected. Some level of car sharing is likely to reduce the traffic numbers below what is estimated below.

11.7.56. Assuming 22 workdays per month, the total number of staff movements per month is anticipated to be 2,640 per month. This will result in a total of 47,520 vehicle movements associated with staff over the construction phase.

11.7.57. The number of vehicle movements associated with construction personnel is provided in Table 11.17.

Summary

11.7.58. A summary of the above traffic estimates for each part of the estimated construction programme (months)are provided in Table 11.17 below. For the purposes of calculating the overall total the summary presents the worst-case scenario (unless otherwise indicated).

Table 11.17 - Summary of Traffic Movements – Worst Case

Activity	Vehicle Type	Months	Total Movements	Max Monthly Movements
Forestry				
Forestry	HGV	1-2	6,330	3,166
Subtotal			**6,330**	**3,166**
Mobilisation and Site Establishment				
Mobilisation	HGV – Low Loader	3-4	128	64
Subtotal			128	64
Bulk Upfill				
Bulk Upfill	HGV – Tipper	5-9	37,008	7,402
Subtotal			**37,008**	**7,402**
Access Tracks				
Track Aggregate	HGV - Tipper	5-9	9,682	1,938
Geogrids and Culverts	HGV – Low Loader	5-9	32	8
Electrical Cabling – Cables	HGV – Low Loader	5-9	18	4
Electrical Cabling – Sand	HGV – Tipper	5-9	594	120
Subtotal (worst case)			**10,326**	**2,070**
Subtotal (realistic worst-case)			**644**	**132**
Hardstands and Platforms				
Crane Pads	HGV - Tipper	9-14	10,960	2,192
Subtotal			**11,554**	**2,310**
Turbine Foundations – Worst Case				
Concrete	HGV - Mixer	12-13	3,058	1,668
Rebar	HGV – Low Loader	10	176	176
Subtotal			**3,234**	**1,668**[12]
Substation Compound, Control Building and Miscellaneous Electrical Equipment				
Substation Platform	HGV – Tipper	5-9	1,980	118
Control Building	HGV	5-11	120	18
Electrical Equipment	HGV – Low Loader and Containers	5-11	180	26
Turbine Transformers	HGV – Low Loader	11	22	22
132 kV Transformer	ALV	11	2	2
Transformer Escort	Van	11	4	4
Transformer Oil	HGV	11	40	40
Concrete for Bund	HGV – Mixer	9-10	100	50
Subtotal			**2,488**	**164**[12]
Cranes				
Main Crane	ALV	12 and 14	6	3
Main Crane	HGV	12 and 14	40	20
Pilot Crane	ALV	12 and 14	2	1
Pilot Crane Ballast	HGV	12 and 14	4	2
Escort Vehicles	Car/Van	12 and 14	16	8
Subtotal			**68**	**34**
Turbine Deliveries				

[12] Max movements in peak month for this phase.

Activity	Vehicle Type	Months	Total Movements	Max Monthly Movements
Turbine Components	ALV	12-14	220	74
Turbine Escort	Car/Van	12-14	440	148
Turbine Accessories	HGV	12-14	440	148
Subtotal			**1,100**	**370**
BESS				
BESS Units and Inverters	HGV – Low Loader	15-16	96	48
Crane	ALV	15-16	2	1
Crane	Car/Van	15-16	8	4
Crane Ballast	HGV	15-16	40	20
Foundations	HGV – Concrete Mixer	15	12	12
Rebar	HGV – Low Loader	15	4	4
Fencing	HGV – Low Loader	15-16	14	7
Subtotal			**176**	96
Site Restoration and Demolition				
Site Restoration and Demobilisation	HGV – Low Loader	17-18	128	64
Subtotal			**128**	64
Construction Personnel (excluding forestry)				
Construction Personnel	Car/Van	1-18	47,520	2,640
Totals			**Total**	**Max Monthly**
Total HGV and Abnormal Load Movements			**72,036**	**11,864**
Total Car and Van Movements			**47,988**	**2,792**
Overall Total			**120,024**	**14,504**

Estimated Construction Programme – Worst Case Scenario

Table 11.18 - Estimated Construction Programme – Worst-Case Scenario

Activity	Month of Estimated Construction Programme																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Total
																		HGVs and ALVs	
Forestry	3,166	3,164																	6,330
Mobilisation			64																64
Construction Compound				64															64
Bulk Upfill					7,402	7,402	7,402	7,402	7,400										37,008
Tracks					2,070	2,070	2,062	2,062	2,062										10,326
Hardstands and Platforms									2,192	2,150	2,150	2,150	2,150	2,148					12,940
Turbine foundations										176		0	0						176
Substation Compound					164	164	164	162	210	92	106								1,062
Crane												26		26					52
Turbine Deliveries												222	222	216					660
BESS															92	76			168
Demobilisation																	64	64	128
Subtotal (Excluding Concrete)	3,166	3,164	64	64	9,636	9,636	9,628	9,626	11,864	2,418	2,256	2,398	2,372	2,390	92	76	64	64	68,978
Concrete Deliveries												1,668	1,390						3,058
Subtotal (With Concrete)	3,166	3,164	64	64	9,636	9,636	9,628	9,626	11,864	2,418	2,256	4,066	3,762	2,390	92	76	64	64	72,036
																		LGVs and Cars	
Transformer ALV Escort											4								4
Crane Escort												8		8					16
Turbine Escort												148	148	144					440
BESS Crane Escort															4	4			8
Construction Personnel	2,640	2,640	2,640	2,640	2,640	2,640	2,640	2,640	2,640	2,640	2,640	2,640	2,640	2,640	2,640	2,640	2,640	2,640	47,520
Subtotal	2,640	2,640	2,640	2,640	2,640	2,640	2,640	2,640	2,640	2,640	2,644	2,796	2,788	2,792	2,644	2,644	2,640	2,640	47,988
Total Monthly Movements – Excluding Concrete	5,806	5,804	2,704	2,704	12,276	12,276	12,268	12,266	14,504	5,058	4,900	5,194	5,160	5,182	2,736	2,720	2,704	2,704	116,966
Daily Average LGVs	120	120	120	120	120	120	120	120	120	120	120	128	128	128	120	120	120	120	
Daily Average HGVs & ALVs Excluding Concrete	144	144	4	4	438	438	438	438	540	110	104	180	178	110	4	4	4	4	
Daily Average All Vehicles – Excluding Concrete	264	264	124	124	558	558	558	558	660	230	224	238	236	236	126	124	124	124	
Daily Average Concrete Delivery Day HGVs & ALVs	144	144	4	4	438	438	438	438	540	110	104	388	386	110	6	4	4	4	
Daily Average Concrete Delivery Day Total Traffic	264	264	124	124	558	558	558	558	660	230	224	306	304	236	124	124	124	124	

Source: NPC

Estimated Construction Programme – Realistic Worst-Case Scenario

Table 11.19 - Estimated Construction Programme – Realistic Worst-Case Scenario

Activity	Month of Estimated Construction Programme																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Total
	HGVs and ALVs																		
Forestry	3,166	3,164																	6,330
Mobilisation			64																64
Construction Compound				64															64
Bulk Upfill					0	0	0	0	0										0
Tracks					132	130	130	130	122										644
Hardstands and Platforms									0	0	0	0	0	0					0
Turbine foundations										176		786	786						1,748
Substation Compound					164	164	164	162	210	92	106								1,062
Crane												26		26					52
Turbine Deliveries												222	222	216					660
BESS															92	76			168
Demobilisation																	64	64	128
Subtotal	**3,166**	**3,164**	**64**	**64**	**296**	**294**	**294**	**292**	**332**	**268**	**106**	**1,034**	**1,008**	**242**	**92**	**76**	**64**	**64**	**10,920**
	LGVs and Cars																		
Transformer ALV Escort											4								4
Crane Escort												8		8					16
Turbine Escort												148	148	144					440
BESS Crane Escort															4	4			8
Construction Personnel	2,640	2,640	2,640	2,640	2,640	2,640	2,640	2,640	2,640	2,640	2,640	2,640	2,640	2,640	2,640	2,640	2,640	2,640	47,520
Subtotal	**2,640**	**2,640**	**2,640**	**2,640**	**2,640**	**2,640**	**2,640**	**2,640**	**2,640**	**2,640**	**2,644**	**2,796**	**2,788**	**2,792**	**2,644**	**2,644**	**2,640**	**2,640**	**47,988**
Total Movements	**5,806**	**5,804**	**2,704**	**2,704**	**2,936**	**2,934**	**2,934**	**2,932**	**2,972**	**2,908**	**2,750**	**3,830**	**3,796**	**3,034**	**2,736**	**2,720**	**2,704**	**2,704**	**58,908**
Daily Average LGVs	**120**	**120**	**120**	**120**	**120**	**120**	**120**	**120**	**120**	**120**	**120**	**120**	**120**	**120**	**120**	**120**	**120**	**120**	
Daily Average HGVs & ALVs	**144**	**144**	**4**	**4**	**14**	**14**	**14**	**14**	**16**	**12**	**6**	**48**	**46**	**12**	**4**	**4**	**4**	**4**	
Daily Average All Vehicles	**264**	**264**	**124**	**124**	**134**	**134**	**134**	**134**	**136**	**132**	**126**	**174**	**174**	**138**	**124**	**124**	**124**	**124**	

Traffic Distribution

11.7.59. There are two entrances to the Proposed Development. Apart from AILs (which it is assumed can only use the southern entrance) deliveries and construction personnel could use either of the two entrances. This assessment has considered 100% of traffic passes each traffic count location. In reality the amount of traffic at each location will be less than 100% as both routes will be used by a certain proportion of traffic, however this is a conservative approach for the purposes of this assessment.

11.7.60. Table 11.20 shows the number of each vehicle type expected to pass each traffic count location in each scenario on the peak day of construction for each scenario. The peak month for the worst-case scenario is month 9 and for the realistic worst-case scenario is month 1.

Table 11.20 - Traffic Distribution (Average Daily Development Traffic During Peak Month)

Location	Road	Worst Case Scenario		Realistic Worst-Case Scenario	
		Total	HGV	Total	HGV
1	A76	660	540	264	144
2	B741	660	540	264	144
3	A713	660	540	264	144

Estimated Traffic Increase

11.7.61. Applying the above daily peak month traffic increases to the 'future baseline traffic' flow at each count location the percentage increase in traffic levels during the peak month could be estimated. This is presented in Table 11.21 and Table 11.22 below.

Table 11.21 - Estimated Traffic Increase (ADF) – Worst Case Scenario

Ref	Road	Future Baseline Traffic		With Development Traffic		% Increase	
		Total	HGV	Total	HGV	Total	HGV
1	A76	4,230	355	4,890	895	16%	152%
2	B741	1,479	227	2,139	767	45%	238%
3	A713	1,524	231	2,184	771	43%	234%

Table 11.1 - Estimated Traffic Increase (ADF) – Realistic Worst-Case Scenario

Ref	Road	Future Baseline Traffic		With Development Traffic		% Increase	
		Total	HGV	Total	HGV	Total	HGV
1	A76	4,230	355	4,494	499	6%	41%
2	B741	1,479	227	1,743	371	18%	63%
3	A713	1,524	231	1,788	375	17%	62%

11.8. Assessment of Potential Effects

Screening Exercise

11.8.1. An initial screening exercise was undertaken on the predicted traffic increases in accordance with the methodology described in Paragraph 11.5.34. As each link within the assessment has been judged to contain high sensitivity receptors, the lower (10%) threshold of significance was applied.

11.8.2. From inspection it is noted that the threshold will be exceeded in the following cases:

- On all links for total and HGV traffic in the worst-case scenario;
- On links 2 and 3 for total traffic in the realistic worst case scenario; and
- For HGVs on all links in the worst case scenario and realistic worst-case scenario.

11.8.3. Based on the above, in accordance with the IEMA Guidelines further assessment has been undertaken on all links.

11.8.4. As noted in Paragraph 11.5.36 the screening thresholds have not been applied to driver delay and road safety. In both cases these effects will undergo further assessment below.

Further Assessment – Worst-Case Scenario

Fear and Intimidation Assessment

11.8.5. Average vehicle speeds are not predicted to increase as a result of the Proposed Development. Therefore, the vehicle speed degree of hazard score remains as presented in Table 11.13.

11.8.6. The future baseline plus Proposed Development 18-hour ADF was calculated for the peak month to determine the relevant degree of hazard scores, using Table 3.1 of the IEMA Guidelines. It has been assumed that 100% of traffic associated with the Proposed Development will travel during the 18-hour period (0600-0000). Table 11.23 below presents the degree of hazard scores.

Table 11.23 - Total Traffic and HGV Traffic Degree of Hazard Score – Peak Month Worst-Case Scenario

Link	18-hr ADF/hr	Degree of Hazard Score	18-hr HGV ADF	Degree of Hazard Score
1	265	0	886	0
2	117	0	759	0
3	119	0	763	0

11.8.7. The total hazard score is a summation of the three hazard scores (average vehicle speed, total traffic 18-hour ADF/hour, 18-hour HGV ADF) for each link. The total hazard score then determines the level of fear and intimidation, in accordance with Table 3.2 of the IEMA Guidelines. Table 11.15 below presents the outcome of this assessment.

Table 11.24 – Worst Case Scenario Level of Fear and Intimidation

Link	Total Hazard Score	Level of Fear and Intimidation
1	20	Small
2	20	Small
3	30	Moderate

11.8.8. From inspection, it can be seen that the level of fear and intimidation has not changed between the future baseline scenario and the worst-case scenario, therefore in accordance with Table 3.3 of the IEMA Guidelines the magnitude of impact is negligible.

Assessment of All Potential Effects

11.8.9. The magnitude of change for each potential effect has been categorised in Table 11.25, in accordance with the criteria described in Table 11.4 and using engineering judgement.

Table 11.25 – Magnitude of Change in Effect Assessment – Worst-Case Scenario

Link	Effect	Magnitude	Rationale
A76	Severance	Negligible	Traffic flow change <30%. Change is temporary.
	Vehicle Delay	Low	Significant residual capacity on route even with development traffic
	NMU Delay	Negligible	No effect at signalised crossing. In relation to informal crossings total traffic change is 16% and therefore not likely to result in a significant change in delays.
	NMU Amenity	Low	Significant increase in HGV numbers but pedestrian environment on this link is generally good and this should be seen in the context of the low baseline flow.
	Fear and Intimidation	Negligible	See above assessment
	Safety	High	Significant increase in HGV traffic at the site of historical fatal RTC.
B741	Severance	Low	Traffic flow change between 30% and 60%.
	Vehicle Delay	Low	Significant residual capacity on route even with development traffic
	NMU Delay	Low	Low change in traffic flow. Low baseline flow.
	NMU Amenity	Medium	Whilst there is a significant increase in HGV traffic this has to be seen in the context of the low baseline flow.
	Fear and Intimidation	Negligible	See above assessment
	Safety	High	Significant increase in HGV traffic near the site of historical fatal RTC.
A713	Severance	Low	Traffic flow change between 30% and 60%.
	Vehicle Delay	Low	Significant residual capacity on route even with development traffic
	NMU Delay	Low	Low change in traffic flow. Low baseline flow.
	NMU Amenity	Medium	Significant increase in HGV traffic with poor pedestrian environment
	Fear and Intimidation	Negligible	As above
	Safety	Medium	Significant increase in traffic and HGV composition although less severe historic RTC data than on the other links.

11.8.10. The significance for each potential effect was then determined using a combination of the sensitivity and magnitude of change in accordance with the matrix presented in Table 11.5. This results in the assessment of likely significant effects (in the context of the EIA Regulations) and is presented in Table 11.26 below.

Table 11.26 - Significance of Effect – Worst-Case Scenario

Link	Effect	Sensitivity	Magnitude	Significance
A76	Severance	Medium	Negligible	Negligible
	Vehicle Delay	Low	Low	Minor
	NMU Delay	Low	Negligible	Negligible
	NMU Amenity	Low	Medium	Minor
	Fear and Intimidation	Medium	Negligible	Negligible
	Safety	High	High	Major
B741	Severance	Medium	Low	Minor
	Vehicle Delay	Low	Low	Minor
	NMU Delay	Medium	Low	Minor
	NMU Amenity	Medium	Medium	Moderate
	Fear and Intimidation	Medium	Negligible	Negligible
	Safety	High	High	Major
A713	Severance	Medium	Low	Minor
	Vehicle Delay	Low	Low	Minor
	NMU Delay	Medium	Low	Minor
	NMU Amenity	Medium	Medium	Moderate
	Fear and Intimidation	Medium	Negligible	Negligible
	Safety	Medium	Medium	Moderate

11.8.11. From inspection it can be seen that significant effects are predicted in the following cases:

- Safety on all links;
- NMU Amenity on the B741; and
- NMU delay on the A713.

11.8.12. Mitigation measures will be implemented to mitigate the above significant effects. Further details of the mitigation measures are provided in Section 11.9. Broadly this will involve ensuring that the realistic worst-case scenario is implemented rather than the worst-case scenario.

Further Assessment – Realistic Worst-Case Scenario

11.8.13. As the traffic increase in the realistic worst-case scenario is less than the worst-case scenario, the level of fear and intimidation will not change from the future baseline in the realistic worst-case scenario, therefore it is not necessary to repeat the fear and intimidation assessment. The effect on fear and intimidation is negligible in the realistic worst-case scenario.

11.8.14. The magnitude of change in effect in the realistic worst case scenario for each potential effect has been categorised in Table 11.27, in accordance with the criteria described in Table 11.4 and using engineering judgement.

Table 11.27 – Magnitude of Change in Effect Assessment – Realistic Worst-Case

Link	Effect	Magnitude	Rationale
A76	Severance	Negligible	Change in traffic flow is likely to be within existing daily variation.
	Vehicle Delay	Negligible	Significant residual capacity on route even with development traffic
	NMU Delay	Negligible	No effect at signalised crossing. In relation to informal crossings total traffic change is 4% and therefore negligible.
	NMU Amenity	Low	Increase in HGV flow is above 10% threshold of significance, however the pedestrian environment on this link is generally good and this should be seen in the context of the low baseline flow.
	Fear and Intimidation	Negligible	See above assessment
	Safety	Negligible	Increase in HGV traffic is above 10% threshold of significance, however this has to be seen in the context of the low baseline flow. Change in overall traffic is negligible and likely to be within existing daily variation in flow.
B741	Severance	Negligible	Change in traffic flow is likely to be within existing daily variation.
	Vehicle Delay	Negligible	Significant residual capacity on route. Change in traffic flow is likely to be within existing daily variation.
	NMU Delay	Negligible	Change in traffic flow is likely to be within existing daily variation.
	NMU Amenity	Low	Increase in HGV flow is above 10% threshold of significance, however this should be seen in the context of the very low baseline flow.
	Fear and Intimidation	Negligible	See above assessment
	Safety	Negligible	Increase in HGV traffic is above 10% threshold of significance, however this has to be seen in the context of the low baseline flow. Change in overall traffic is negligible and likely to be within existing daily variation in flow.
A713	Severance	Negligible	Change in traffic flow is likely to be within existing daily variation.
	Vehicle Delay	Negligible	Significant residual capacity on route. Change in traffic flow is likely to be within existing daily variation.
	NMU Delay	Negligible	Change in traffic flow is likely to be within existing daily variation.
	NMU Amenity	Low	Increase in HGV flow is above 10% threshold of significance, however this should be seen in the context of the very low baseline flow.
	Fear and Intimidation	Negligible	See above assessment
	Safety	Negligible	Increase in HGV traffic is above 10% threshold of significance, however this has to be seen in the context of the low baseline flow. Change in overall traffic is negligible and likely to be within existing daily variation in flow.

11.8.15. The significance of effect for each potential effect was then determined using a combination of the sensitivity and magnitude of change in accordance with the matrix presented in Table 11.5. This results in the assessment of likely significant effects (in the context of the EIA Regulations) and is presented in Table 11.28 below.

Table 11.28 - Significance of Effect – Realistic Worst-Case Scenario

Link	Effect	Sensitivity	Magnitude	Significance
A76	Severance	Medium	Negligible	Negligible
	Vehicle Delay	Low	Negligible	Negligible
	NMU Delay	Low	Negligible	Negligible
	NMU Amenity	Low	Low	Minor
	Fear and Intimidation	Medium	Negligible	Negligible
	Safety	High	Negligible	Minor
B741	Severance	Medium	Negligible	Negligible
	Vehicle Delay	Low	Negligible	Negligible

Link	Effect	Sensitivity	Magnitude	Significance
	NMU Delay	Medium	Negligible	Negligible
	NMU Amenity	Medium	Low	Minor
	Fear and Intimidation	Medium	Negligible	Negligible
	Safety	High	Negligible	Minor
A713	Severance	Medium	Negligible	Negligible
	Vehicle Delay	Low	Negligible	Negligible
	NMU Delay	Medium	Negligible	Negligible
	NMU Amenity	Medium	Low	Minor
	Fear and Intimidation	Medium	Negligible	Negligible
	Safety	Medium	Negligible	Negligible

11.8.16. Effects are predicted to be at worst Minor and therefore not significant (in the context of the EIA regulations) for the realistic worst-case scenario. No Secondary Mitigation in relation to the realistic worst-case scenario is therefore proposed.

Cumulative Effects Assessment

11.8.17. Cumulative traffic effects may occur where the construction phase of a nearby development, which shares a common route to site for construction traffic, overlaps with that of the Proposed Development.

11.8.18. A review of developments within the vicinity of the site was undertaken. Developments were narrowed down to those which are proposed (scoping report or planning application submitted) and consented. Developments which are currently under construction have been excluded as these will have finished construction by commencement of construction of the Proposed Development and their traffic generation during the operational phase will have a negligible impact on the baseline traffic volumes.

11.8.19. Table 11.29 below identifies which developments have the potential to cause cumulative effects.

Table 11.29 - Cumulative Site Review

Development	Planning Status	Comments
Cornharrow	Consented	8 turbines, uses A713
Knockkippen	Proposed – Submitted	12 turbines, approaches from A713
Lorg	Consented	15 turbines, uses A76
Overhill	Consented	10 turbines, uses A713, A76 and B741
Pencloe	Consented	19 turbines, uses A76
Sanquhar II	Consented	44 turbines, uses A76
Sclenteuch	Proposed - Submitted	9 turbines, uses A713
Shepherd's Rig	Consented	19 turbines, uses A713
Windy Standard I Repower	Proposed - Submitted	36 turbines, uses A713
Windy Standard III	Consented	20 turbines, uses A713

11.8.20. The peak traffic flow levels for each of the above developments have been taken from their respective EIA reports where available. Where EIA data was not available an estimate of the peak traffic has been made using the peak month traffic of the Proposed Development prorated using the number of proposed turbines. Table 11.30 below indicates the daily peak traffic flow in the worst-case scenario used in this cumulative assessment, traffic for each cumulative development has been distributed to each link in the Study Area according to the relevant distribution for that development. Distribution for the Proposed Development was undertaken in Table 11.20.

Table 11.30 - Cumulative Daily Peak Traffic – Worst Case Scenario

Development	A713		B741		A76	
	Total	HGV	Total	HGV	Total	HGV
South Kyle II	660	540	660	540	660	540
Cornharrow	780	730	0	0	0	0
Knockkippen	157	110	0	0	0	0
Lorg	0	0	0	0	22	22
Overhill	108	68	108	68	108	68
Pencloe	105	40	105	40	105	40
Sanquhar II	0	0	0	0	75	50
Sclenteuch	54	40	0	0	0	0
Shepherd's Rig	68	17	0	0	0	0
Windy Standard I Repowering	82	46	0	0	0	0
Windy Standard III	61	40	0	0	0	0
Total	2,075	1,631	873	648	970	720

11.8.21. The cumulative traffic in the realistic worst-case scenario was also calculated. This is presented in Table 11.31 below.

Table 11.31 - Cumulative Daily Peak Traffic - Realistic Worst-Case Scenario

Development	A713		B741		A76	
	Total	HGV	Total	HGV	Total	HGV
South Kyle II	264	144	264	144	264	144
Cornharrow	780	730	0	0	0	0
Knockkippen	157	110	0	0	0	0
Lorg	0	0	0	0	22	22
Overhill	108	68	108	68	108	68
Pencloe	105	40	105	40	105	40
Sanquhar II	0	0	0	0	75	50

Development	A713		B741		A76	
	Total	HGV	Total	HGV	Total	HGV
Sclenteuch	54	40	0	0	0	0
Shepherd's Rig	68	17	0	0	0	0
Windy Standard I Repower	82	46	0	0	0	0
Windy Standard III	61	40	0	0	0	0
Total	1,679	1,235	477	252	574	324

11.8.22. Using the above estimates, the total traffic during the peak month and the corresponding percentage increase in traffic was calculated for each scenario. The results of these calculations are presented in Table 11.32 and Table 11.33 below.

Table 11.32 - Cumulative Peak Month Traffic - Worst-Case Scenario

Ref	Road	Future Baseline Traffic		Increase In Traffic		% Increase	
		Total	HGV	Total	HGV	Total	HGV
1	A76	4,230	355	970	720	23	203
2	B741	1,479	227	873	648	59	286
3	A713	1,524	231	2,075	1,631	136	706

Table 11.33 - Cumulative Peak Month Traffic - Realistic Worst-Case Scenario

Ref	Road	Future Baseline Traffic		Increase in Traffic		% Increase	
		Total	HGV	Total	HGV	Total	HGV
1	A76	4,230	355	574	324	14	91
2	B741	1,479	227	477	252	32	111
3	A713	1,524	231	1,679	1,235	110	534

Cumulative Fear and Intimidation Assessment – Worst-Case Scenario

11.8.23. Average vehicle speeds are not predicted to change as a result of the in the cumulative scenario. Therefore, the vehicle speed degree of hazard score remains as presented in Table 11.13.

11.8.24. The 18-hour ADF was calculated for the peak month to determine the relevant degree of hazard scores. It has been assumed that 100% of traffic associated with the all developments will travel during the 18-hour period (0600-0000). Table 11.34 below presents the calculated degree of hazard scores.

Table 11.34 - Total Traffic and HGV Traffic Degree of Hazard Score –Worst Case Scenario

Link	Total Traffic 18-hr ADF/hr	Degree of Hazard Score	18-hr HGV ADF	Degree of Hazard Score
1	289	0	1,075	10
2	131	0	875	0
3	200	0	1,862	10

11.8.25. The total hazard score is a summation of the above three hazard scores for each link. The total hazard score then determines the level of fear and intimidation, in accordance with Table 3.2 of the IEMA Guidelines. Table 11.35 below presents the outcome of this.

Table 11.35 – Cumulative Worst Case Scenario Level of Fear and Intimidation

Link	Total Hazard Score	Level of Fear and Intimidation
1	30	Moderate
2	20	Small
3	40	Moderate

11.8.26. From inspection, the level of fear and intimidation has not changed between the future baseline scenario and the cumulative worst-case scenario, therefore in accordance with Table 3.3 of the IEMA Guidelines the magnitude of impact is negligible.

11.8.27. As the traffic increase in the cumulative realistic worst-case scenario is less than the cumulative worst-case scenario, the level of fear and intimidation will not change from the future baseline in the cumulative realistic worst-case scenario, therefore it is not necessary to repeat fear and intimidation assessment; and the effect on fear and intimidation remains of negligible significance in the cumulative realistic worst-case scenario.

Cumulative Fear and Intimidation Assessment – Realistic Worst-Case Scenario

11.8.28. The cumulative fear and intimidation assessment was undertaken for the realistic worst case scenario, however no step changes in level were found. Therefore, the magnitude of change in effect is negligible for links.

Cumulative Effects Assessment of All Effects – Worst-Case Scenario

11.8.29. The magnitude of change in effect for each potential effect has been categorised in Table 11.36, in accordance with the criteria described in Table 11.4 and using engineering judgement.

Table 11.36 – Magnitude of Change in Effect Assessment – Cumulative Worst Case

Link	Effect	Magnitude	Rationale
A76	Severance	Negligible	Traffic flow change <30%. Change is temporary.
	Vehicle Delay	Low	Significant residual capacity on route even with development traffic
	NMU Delay	Low	No effect at signalised crossing, in relation to informal crossings total traffic change is 55% and therefore will have a slight increase in delay.
	NMU Amenity	Low	Significant increase in HGV numbers although pedestrian environment on this link is generally good and this should be seen in the context of the low baseline flow.
	Fear and Intimidation	Medium	See above assessment

Link	Effect	Magnitude	Rationale
	Safety	High	Significant increase in HGV traffic at the site of historical fatal RTC.
B741	Severance	Low	Traffic flow change between 30% and 60%.
	Vehicle Delay	Low	Significant residual capacity on route even with development traffic
	NMU Delay	Low	Moderate change in traffic flow, however low baseline flow.
	NMU Amenity	Medium	Whilst there is a significant increase in HGV traffic this has to be seen in the context of the low baseline flow.
	Fear and Intimidation	Negligible	See above assessment
	Safety	High	Significant increase in HGV traffic near the site of historical fatal RTC in New Cumnock.
A713	Severance	High	Traffic flow change between 30% and 60%.
	Vehicle Delay	Low	Significant residual capacity on route even with development traffic
	NMU Delay	Medium	Significant change in traffic flow, however low baseline flow.
	NMU Amenity	High	Significant increase in HGV traffic with poor pedestrian environment
	Fear and Intimidation	Negligible	As above
	Safety	Medium	Significant increase in traffic and HGV composition although less severe RTC data than the other links.

11.8.30. The significance of effects was then determined using a combination of the sensitivity and magnitude of change in accordance with the matrix presented in Table 11.5. This results in the assessment of likely significant effects (in the context of the EIA Regulations) and is presented in Table 11.37 below.

Table 11.37 - Significance of Effect – Worst Case Scenario

Link	Effect	Sensitivity	Magnitude	Significance
A76	Severance	Medium	Negligible	Negligible
	Vehicle Delay	Low	Low	Minor
	NMU Delay	Low	Low	Minor
	NMU Amenity	Low	Low	Minor
	Fear and Intimidation	Medium	Medium	Moderate
	Safety	High	High	Major
B741	Severance	Medium	Low	Minor
	Vehicle Delay	Low	Low	Low
	NMU Delay	Medium	Low	Minor
	NMU Amenity	Medium	Medium	Moderate
	Fear and Intimidation	Medium	Negligible	Negligible
	Safety	Medium	Medium	Moderate
A713	Severance	Medium	High	Major
	Vehicle Delay	Low	Low	Low
	NMU Delay	Medium	Medium	Moderate
	NMU Amenity	Medium	High	Major
	Fear and Intimidation	Medium	Negligible	Negligible
	Safety	Medium	Medium	Moderate

11.8.31. From inspection it can be seen that significant effects are predicted in the following cases:

- Safety on all links;
- NMU Amenity on the B741 and A713;
- NMU delay on the B741 and A713;
- Fear and intimidation on the A76.

11.8.32. It should be noted that the above assessment has considered the peak months of all the cumulative developments aligning. It is highly unlikely that this will occur.

11.8.33. Mitigation measures will be implemented to mitigate the above significant effects. Further details of the mitigation measures are provided in Section 11.9.

Cumulative Effect Assessment of All Effects – Realistic Worst-Case Scenario

11.8.34. The magnitude of change in effect has been categorised in Table 11.38, in accordance with the criteria described in Table 11.4 and using engineering judgement.

Table 11.38 – Magnitude of Change in Effect Assessment – Cumulative Realistic Worst-Case

Link	Effect	Magnitude	Rationale
A76	Severance	Negligible	Traffic flow change <30%. Change is temporary.
	Vehicle Delay	Low	Significant residual capacity on route even with development traffic
	NMU Delay	Negligible	No effect at signalised crossing. In relation to informal crossings total traffic change is 11% and therefore will have a negligible effect on delay.
	NMU Amenity	Low	Significant increase in HGV numbers although pedestrian environment on this link is generally good and this should be seen in the context of the low baseline flow.

Link	Effect	Magnitude	Rationale
	Fear and Intimidation	Negligible	See above assessment
	Safety	Low	Increase in HGV traffic is above 10% threshold of significance, however this has to be seen in the context of the low baseline flow. Change in overall traffic is low.
B741	Severance	Negligible	Traffic flow change <30%
	Vehicle Delay	Low	Significant residual capacity on route even with development traffic
	NMU Delay	Low	Low change in traffic flow, and low baseline flow.
	NMU Amenity	Low	Whilst there is a moderate increase in HGV traffic this has to be seen in the context of the low baseline flow.
	Fear and Intimidation	Negligible	See above assessment
	Safety	Low	Increase in HGV traffic is above 10% threshold of significance, however this has to be seen in the context of the low baseline flow. Change in overall traffic is low.
A713	Severance	High	Traffic flow change >90%
	Vehicle Delay	Low	Significant residual capacity on route even with development traffic
	NMU Delay	Medium	Significant change in traffic flow, however low baseline flow.
	NMU Amenity	High	Significant increase in HGV traffic with poor pedestrian environment
	Fear and Intimidation	Negligible	See above assessment
	Safety	High	Significant increase in traffic and HGV composition. Increase in HGVs would increase the severity of RTCs at this location.

11.8.35. The significance of effect was then determined using a combination of the sensitivity and magnitude of change in accordance with the matrix presented in Table 11.5. This results in the assessment of likely significant effects (in the context of the EIA Regulations) and is presented in Table 11.39 below.

Table 11.39 - Significance of Effect – Realistic Worst Case Scenario

Link	Effect	Sensitivity	Magnitude	Significance
A76	Severance	Medium	Negligible	Negligible
	Vehicle Delay	Low	Low	Low
	NMU Delay	Low	Negligible	Negligible
	NMU Amenity	Low	Low	Low
	Fear and Intimidation	Medium	Negligible	Negligible
	Safety	High	Low	Moderate
B741	Severance	Medium	Negligible	Negligible
	Vehicle Delay	Low	Low	Low
	NMU Delay	Medium	Low	Minor
	NMU Amenity	Medium	Low	Minor
	Fear and Intimidation	Medium	Negligible	Negligible
	Safety	High	Low	Moderate
A713	Severance	Medium	High	Major
	Vehicle Delay	Low	Low	Low
	NMU Delay	Medium	Medium	Moderate
	NMU Amenity	Medium	High	Major
	Fear and Intimidation	Medium	Negligible	Negligible
	Safety	Medium	High	Major

11.8.36. From inspection it can be seen that significant effects are predicted in the following cases:

- Safety on all links;
- NMU Amenity on the A713; and
- NMU delay on the A713.

11.8.37. It should be noted that the above assessment has considered the peak months of all the cumulative developments aligning. It is highly unlikely that this will occur.

11.8.38. Mitigation measures will be implemented to mitigate the above likely significant effects. Further details of the mitigation measures are provided in Section 11.9.

11.9. Mitigation

11.9.1. To summarise the conclusions of Section 11.8, significant effects have been identified in the following cases:

- In the worst-case scenario in relation to:
  - Safety on all links;
  - NMU Amenity on the B741
  - NMU delay on the A713
- In the cumulative worst-case scenario in relation to:
  - Safety on all links;
  - NMU Amenity on the B741 and A713;
  - NMU delay on the B741 and A713; and
  - Fear and intimidation on the A76
- In the cumulative realistic worst-case scenario in relation to:
  - Safety on all links;

- NMU Amenity on the A713;
- NMU delay on the A713.

11.9.2. No likely significant effects were identified in the realistic worst-case scenario.

11.9.3. Mitigation measures in relation to these effects have been considered in the context of a typical risk reduction hierarchy, i.e. avoidance should be the first step. In this case avoidance means:

- Reducing the number of vehicle movements as far as practicable; and
- Removing the need for vehicles to travel on the most sensitive routes.

11.9.4. For the Proposed Development the following Primary Mitigation is proposed:

- Use of on-site borrow pits to source the majority of aggregates required for construction;
- Use of on-site batching for concrete; and
- As a result of the above the avoidance of the majority of construction traffic from using the B741 and A76 routes.

11.9.5. In other words, the realistic worst-case scenario will be implemented, thus no Secondary Mitigation measures are required.

11.9.6. In relation to the likely significant effects identified in the cumulative realistic worst-case scenario the following Secondary Mitigation is proposed:

- The Applicant and their appointed Principal Contractor will prepare a Detailed Construction Traffic Management Plan (Detailed CTMP). This Detailed CTMP will incorporate the measures identified in the Outline CTMP (Appendix 11.2) informed by the Principal Contractors detailed understanding of the proposed construction process and collaboration as discussed below;
- The Detailed CTMP will include details of consultation and collaboration which will take place between the Applicant/Principal Contractor and the identified cumulative developments. This consultation will consider the following:
  - Agreement as to the timing of the peak period of construction;
  - Identification of possible risk of significant effects occurring due to cumulative traffic levels;
  - Collaboration on the provision of Secondary Mitigation measures to mitigate such risks. This will consider the following non exhaustive list:
    - Temporary speed reduction measures in affected communities (e.g. Dalmellington and Patna);
    - Temporary controlled crossing facilities (lights or crossing patrol) during affected months; and/or
    - Information service provided to affected communities advising them of upcoming traffic events;

11.9.7. It is anticipated that the requirement for a Detailed CTMP will be secured through an appropriately worded condition of consent. It is anticipated that listed Secondary Mitigation measures would only be required should there be significant overlap of peak construction periods for several of the cumulative developments. This need will be identified by the Applicant and Principal Contractor during preparation of the Detailed CTMP.

11.10. Residual Effects

11.10.1. Section 11.9 provides an overview of the proposed mitigation measures which are required in relation to the identified likely significant effects which occur in the cumulative realistic worst-case scenario. Table 11.41 below details the anticipated residual risk following the implementation of mitigation. This table has been limited to those effects which were identified as significant in Table 11.38.

Table 11.40 - Residual Risk - Magnitude of Change

Link	Effect	Magnitude	Rationale
A76	Safety	Negligible	Implementation of reduced speed limit during peak cumulative construction periods and controlled pedestrian crossings points would mitigate risk.
	Fear and intimidation	Negligible	As above
B741	Safety	Negligible	Implementation of reduced speed limit during peak cumulative construction periods and controlled pedestrian crossings points would mitigate risk.
A713	NMU Delay	Negligible	Pedestrian crossing points would remove impact upon crossing delays.
	NMU Amenity	Negligible	Implementation of reduced speed limit during peak cumulative construction periods would increase amenity. Provision of information to residents would ensure they are aware of the temporary nature of the works.
	Safety	Negligible	Implementation of reduced speed limit during peak cumulative construction periods and controlled pedestrian crossings points would mitigate risk.

11.10.2. The significance of effect for each residual effect was then determined using a combination of the sensitivity and magnitude of change in accordance with the matrix presented in Table 11.5. This results in the assessment of likely significant effects (in the context of the EIA Regulations) and is presented in Table 11.41 below.

Table 11.41 - Significance of Effect – Realistic Worst-Case Scenario

Link	Effect	Sensitivity	Magnitude	Significance
A76	Safety	High	Negligible	Minor
	Fear and Intimidation	Medium	Negligible	Negligible
B741	Safety	High	Negligible	Minor
A713	NMU Delay	Medium	Negligible	Negligible
	NMU Amenity	Medium	Negligible	Negligible
	Safety	Medium	Negligible	Negligible

11.10.3. Thus, with the implementation of mitigation as described in Section 11.9 the significance of effects is at worst Minor, and not significant in the context of EIA Regulations.

11.11. Conclusion

11.11.1. Chapter 11 of the EIAR has assessed the impact of the Proposed Development on the traffic and the transportation network within the area surrounding the Proposed Development. This primarily consists of an assessment of the impact of increased traffic on the local road network.

11.11.2. A detailed assessment of the predicted volume of vehicular traffic during the construction phase of the Proposed Development has been undertaken. This assessment has identified that the peak month of construction will be Month 9. During Month 9 up to 660 vehicle movements per day, including 540 HGV movements, are predicted.

11.11.3. Several likely significant effects were identified in the worst-case scenario and mitigation measures have been proposed in Section 11.9. Mitigation should ensure that the realistic worst-case scenario is implemented for which no likely significant effects were identified (except for the cumulative realistic worst-case scenario, see below).

11.11.4. Several likely significant effects were identified in the cumulative realistic worst-case scenario. Mitigation measures are proposed in Section 11.9 which reduce the residual effect to at worst Minor and not significant in all cases.