Haweswater Aqueduct Resilience Programme - Proposed Bowland Section

Volume 6

Ribble Crossing

Chapter 16: Transport Planning

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Haweswater Aqueduct Resilience Programme - Proposed Bowland Section

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16.1 Introduction

1) This chapter presents an assessment of the potential for likely significant effects of the Proposed Bowland Section on traffic and transport. This chapter will address:

- Assessment methodology
- Baseline conditions along the Proposed Bowland Section and the immediate environs
- Likely significant environmental effects
- Potential mitigation measures
- Likely residual effects.

2) The methodology is presented in more detail within a separate Transport Assessment (TA) contained within Appendix 16.1 as well as proposed highway improvements in Volume 5.

3) The geographical scope of this chapter is defined by the routes which Heavy Goods Vehicles (HGVs), abnormal loads and employees would use to travel to the identified sites associated with the construction and operation of the Proposed Bowland Section. The geographical scope is illustrated within the figures below which encompasses the location of the traffic data collection surveys.

- Figure 16.1: Traffic count Survey Locations
- Figure 16.2: Proposed Vehicle Routeing.

4) This chapter begins by summarising consultations held with Local Highway Authorities (LHAs) and Highways England as the strategic highway authority, and providing a review of the legislation and planning policies relevant to Transport Planning. The assessment area and methodology are then outlined. The existing baseline environment is then identified before an assessment is made of the potential effects on transport for the Proposed Bowland Section, and the potential for cumulative effects with other proposed major developments. The assessment takes into account the effect of the Construction Traffic Management Plans (CTMPs) for the relevant planning applications, and other good practice measures are proposed.

16.2 Scoping and Consultations

16.2.1 Scoping

5) A Transport Planning chapter was included within the EIA scoping report which was submitted to the relevant planning authorities for comment in October 2019 followed by a Scoping Addendum in February 2021, due to design changes and refinements. Scoping report responses were provided by each of the Local Planning Authorities (LPAs), LHA and Highways England and these have been reviewed and the October 2019 scoping report responses incorporated into the assessment. Scoping comments and responses are outlined in Appendix 4.1.

6) A summary of the principal matters raised in the EIA Scoping Report consultation (October 2019) are provided below:

- TA to be produced
- Key focus of the assessment should be on potential construction / decommissioning phase impacts
- Inclusion of the potential origin / destinations of material supplies and disposal of material off site
- Inclusion of access strategy and highway network operational assessments
- Committed and emerging development to be included in the TA
- Inclusion of the impact on equestrians, pedestrians and cyclists and existing Public Rights of Way

- Must be undertaken fully in accordance with the Department for Transport Circular 02/20131 'The Strategic Road Network and the Delivery of Sustainable Development'
- Reference should be made to 'Planning for the future: A guide to working with Highways England on planning matters' and the relevant chapters in the Planning Practice Guidance
- TA to include spatial and temporal coverage
- Baseline data to inform the TA should include traffic flow and collision data
- Trip generation and distribution assumptions to be adopted in the TA
- Committed development to be factored-into the assessment of the peak hour traffic impacts to M6 Junction 31 needs to be confirmed by the respective local planning authorities where those junctions are to be located, not with Highways England (paragraph 572)
- New accesses to the Strategic Road Network (SRN) associated with a development of this nature are not permitted under the terms of Circular 02/2013 (paragraph 581)
- The TA should reflect all vehicle traffic being generated by the proposals during the weekday peak hours and not be presented in percentage impacts
- Depending on the agreed levels of traffic generated, an analysis under the Design Manual for Roads and Bridges standard TD22 to assess the capacity of the slip roads at M6 Junction 31 and any existing grade separated junctions.

16.2.2 Consultation

7) During the course of this assessment, detailed scoping and pre-application consultation took place with relevant statutory and non-statutory consultees, stakeholders and third parties, through both correspondence, teleconferences and face-to-face meetings. This has been summarised in Table 16.1.

Table 16.1: Pre-Application Transport Planning Scoping and Consultation Summary

Consultee	Type of Engagement	Date(s)	Discussion Points
Lancashire County Council	Traffic pre-application meeting	2 August 2019	▪ Overview of indicative programme of works and planning strategy affecting Lancashire County Council ▪ EIA scoping discussion including access arrangements, potential traffic routes, passing places, Swept Path Analysis (SPA), conflicts between pedestrians / cyclists / equestrians and construction traffic, accident data coverage, numbers and types of estimated construction trips, Staff Travel Plan and seasonality ▪ Primary interest would be physical practicalities of access arrangements and demonstrate that routes are safe and workable ▪ Scope of accompanying transport documentation should be heavily based on the requirements established for the Cuadrilla fracking sites; however, it was acknowledged that the nature of the Proposed Bowland Section is significantly different from those sites ▪ Discussion regarding surveys to inform transport documents including non-motorised users, pre-survey site walkover and seasonality ▪ Mitigation strategy to include route training, vehicle storage areas and car sharing and / or minibus.

[1] Department for Transport (2013) *The Strategic Road Network and the Delivery of Sustainable Development* [Online] Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/237412/dft-circular-strategic-road.pdf [Accessed: May 2020]

Consultee	Type of Engagement	Date(s)	Discussion Points
Highways England	Traffic pre-application meeting	20 August 2019	▪ Overview of indicative programme of works and planning strategy affecting Highways England ▪ Delivery / movement strategy to avoid peak hours on the Highways England network to be identified ▪ Cumulative impacts were discussed and the potential for detailed assessment / traffic modelling, Environmental Impact Assessment / Transport Assessment standards, capacity and physical manoeuvring implications to be considered, SPA, staff numbers and timings to form part of the assessment and major projects to be considered within the assessment ▪ Direct access from the motorway not permitted, new accesses from the SRN to be avoided.
Lancashire County Council	Bowland and Marl Hill Traffic Route Workshop with Lancashire County Council	23 January 2020	▪ Discussion of proposed traffic routes, proposed vehicles, proposed traffic movements through Wray and Clitheroe and mitigation measures such as holding areas.
Lancashire County Council	Haweswater Aqueduct/ use of Bradford Bridge email liaison	24 March 2020	▪ Queries raised by West Bradford Parish Council and local residents in relation to proposed traffic routes.
Lancashire County Council	Bowland, Marl Hill, Haslingden and Walmersley Traffic Route Workshop with Lancashire County Council	12 May 2020	▪ Update on progress in relation to the Proposed Programme of Works, public engagement, proposed traffic routes and indicative traffic numbers ▪ Requirement to consider private equestrian provision and formal / informal cycle routes such as cycle club routes were raised ▪ Mitigation measures including lower speed limits to reduce noise and vibration, passing places, parking restrictions, avoiding school hours and satellite compounds ▪ Safety audits were discussed.
Lancashire County Council	Bowland and Marl Hill Traffic Route Workshop with Lancashire County Council	10 June 2020	▪ Clarification of proposed working hours by activity and type of vehicle, taking into account local restrictions and potential noise issues ▪ Discussion of proposed Bowland and Marl Hill Traffic routes which included clarification of proposed accesses, traffic volumes, mitigation measures including parking restriction requirements, satellite sites and potential road widening and SPA.
Lancashire County Council	Traffic and Transport Technical Group	19 June 2020	▪ Discussion to obtain agreement on traffic routes in the Bowland and Marl Hill Sections to be taken forward for Environmental Impact Assessment and possible mitigation.

Consultee	Type of Engagement	Date(s)	Discussion Points
	Central and Southern Sections - Lancashire County Council		
North Yorkshire County Council	Traffic pre-application meeting	23 July 2020	▪ Overview of indicative programme of works, focusing on highway modification works proposed in Craven District (covered in Volume 5 of the ES).
Highways England	Traffic pre-application meeting update	8 September 2020	▪ Discussion of the proposed Haweswater Aqueduct Resilience Programme including the current proposals and indicative vehicle numbers and access to compounds ▪ TA methodology, including the use of a link capacity assessment against the baseline situation was discussed as well as assumptions associated with this.
Lancashire County Council	Bowland and Marl Hill – Traffic and Transport Technical Group	1 October 2020	▪ Update on progress in relation to public consultations ▪ Discussion about updates for the proposed Newton-in-Bowland Compound and Lower Houses Compound including proposed haulage routes, site accesses, vehicle movements and highways mitigation proposals ▪ Radar speed checks and peak traffic flows should be taken into consideration when proposing mitigation measures ▪ Other mitigation measures being considered such as road widening, Park and Ride facilities, by-passes, use of local quarries, restriction on use of routes at certain times or advanced notification systems.
Lancashire County Council	Traffic and Transport Technical Group Central - Lancashire County Council	6 November 2020	▪ Introduction to high level route options to be considered as part of feasibility study and high level discussion around possible advantages and disadvantages of each option to be considered for the Proposed River Ribble Crossing.
Highways England	Traffic pre-application meeting update	26 November 2020	▪ Discussion of the proposed surplus materials management strategy ▪ Discussion that for the purpose of transport modelling, it has been assumed a 40 % north – 80 % south split; based on a reasonable assumption of possible supplier locations ▪ Scope of the TA was discussed and the potential requirement of modelling of SRN junctions as well as the inclusion of SPA in reporting.
Lancashire County Council	Traffic and Transport Technical Group Central - Lancashire	6 January 2021	▪ Progress update on feasibility study / appraisal of route alignment options for the Proposed River Ribble Crossing. Consultation regarding potential vehicular access and egress points on public highway.

Consultee	Type of Engagement	Date(s)	Discussion Points
	County Council		
Lancashire County Council	Traffic and Transport Technical Group Central - Lancashire County Council	10 February 2021	▪ Discussion around traffic management considerations for the Proposed River Ribble Crossing.
Lancashire County Council	Traffic and Transport Technical Group Central - Lancashire County Council	17 February 2021	▪ Update on progress in relation to the Construction Traffic Management Plans (CTMPs), discussion of content and further details to be included such as duration of peak traffic movement, daily / hourly HGV limits to help control movements or how weather conditions would be managed ▪ Peak traffic diagrams at specific locations on routes where the public would be interested to be included in the CTMPs ▪ Progress update and discussion around traffic management requirements for the Proposed River Ribble Crossing route.

16.3 Key Legislation and Guidance

8) This section discusses the key legislation and guidance that has been reviewed to assess the Proposed Bowland Section. The key legislation and guidance include the National Planning Policy Framework (NPPF) and the Department for Transport Circular 02/2013.[2] Further transport policy and guidance is provided in the TA (Appendix 16.1). Environmental, national and local planning policies are also covered in Volume 2 Chapter 5: Planning Policy and Context.

***National Planning Policy Framework,* Ministry of Housing, Communities & Local Government, February 2019[3]**

9) The NPPF seeks to encourage development which accords with the sustainable objectives of minimising the need for travel particularly road journeys, and promoting the efficient delivery of goods and supplies. It notes that:

'Transport issues should be considered from the earliest stages of plan-making and development proposals, so that:

a) the potential impacts of development on transport networks can be addressed

b) opportunities from existing or proposed transport infrastructure, and changing transport technology and usage, are realised – for example in relation to the scale, location or density of development that can be accommodated

c) opportunities to promote walking, cycling and public transport use are identified and pursued

[2] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/237412/dft-circular-strategic-road.pdf [Accessed May 2021]

[3] Ministry of Housing, Communities & Local Government (2019) *National Planning Policy Framework* [Online] Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/810197/NPPF_Feb_2019_revised.pdf [Accessed May 2021]

d) the environmental impacts of traffic and transport infrastructure can be identified, assessed and taken into account – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains

e) patterns of movement, streets, parking and other transport considerations are integral to the design of schemes and contribute to making high quality places' (Paragraph 102).

'In assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:

a) appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location

b) safe and suitable access to the site can be achieved for all users

c) *any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree.'* (Paragraph 108)

10) Additionally, from a highway perspective, the NPPF works on a presumption in favour of development as it demonstrates that:

'Development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe' (Paragraph 109)

11) The NPPF notes that if significant amounts of traffic are produced that:

'All developments that will generate significant amounts of movement should be required to provide a travel plan, and the application should be supported by a transport statement or transport assessment so that the likely impacts of the proposal can be assessed' (Paragraph 111)

***Circular 02/2013, The Strategic Road Network and the Delivery of Sustainable Development,* Department for Transport (DfT), 2013**[4]

12) Circular 02/2013 addresses development proposals on Highways England's SRN for the Proposed Bowland Section which relates to the M6. The circular states the following key principles:

'Development proposals are likely to be acceptable if they can be accommodated within the existing capacity of a section (link or junction) of the strategic road network, or they do not increase demand for use of a section that is already operating at over-capacity levels, taking account of any travel plan, traffic management and/or capacity enhancement measures that may be agreed. However, development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe' (Paragraph 9).

'However, even where proposals would not result in capacity issues, the Highways Agency's prime consideration will be the continued safe operation of its network' (Paragraph 10).

16.4 Assessment Methodology and Assessment Criteria

16.4.1 Assessment Methodology

13) Reference has been made to national and local policy documents, relevant British Standards, national guidance and other relevant information in determining the assessment methodology and criteria to be used.

[4] Department for Transport (2013) *The Strategic Road Network and the Delivery of Sustainable Development* [Online] Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/237412/dft-circular-strategic-road.pdf [Accessed: May 2020]

14) A detailed assessment is provided within Section 5 of the TA (Appendix 16.1) and is summarised within this ES chapter. It has been identified within the TA that the potential transport-related environmental effects would occur during the construction period and to a lesser degree during the decommission and operational period. Within this context, it was noted that activity could vary across the construction programme, and would be generally temporary in nature at a given location, especially where it relates to the forward progression of a pipeline component.

15) For the purpose of quantifying the effects within the Proposed Bowland Section, the assessment focused on the busiest construction concurrent period within the Proposed Programme of Works, which, dependent on gaining planning consent, would commence in 2023 and conclude in 2030 for the Proposed Bowland Section. Following scoping discussions with the relevant LHA and frequent discussions with United Utilities and the Early Contractor Involvement (ECI) team in relation to the construction programme, it was considered that August 2024 represented the period of greatest concurrent construction activity, and, therefore, the greatest potential effect on the highway network. Any seasonal differences which occur in the area have been considered to depict the best representative construction scenario. The full construction programme is presented within Chapter 3: Design Evolution and Development Description.

16) The assessment of potential effects was based upon traffic surveys collected by Tracsis (on behalf of United Utilities) during October and November 2019 at 12 locations on the local highway network. Further to this, additional data was also obtained through DfT counts[5], as well as traffic count information from Lancashire County Council. The survey data conducted by Tracsis included fully classified turning counts at junctions over a 12-hour period; this was to obtain the adjacent two-way traffic flows on each adjacent arm approaching the junction. Additional traffic counts to obtain speed data and traffic were also conducted. The traffic count type and locations are identified in Table 16.2 and illustrated in Figure 16.1.

Table 16.2: Traffic Count Site Locations

Traffic Count Type / ID	Traffic Count Sites	Easting	Northing
ATC 10	A683 Lancaster Road	352936	464681
ATC 11	Unnamed road west of Newton-in-Bowland (west)	369205	450083
ATC 12	B6478 Clitheroe Road	372932	443736
MCC 13	B6480 / Eskew Lane	364612	469336
MCC 14	Long Lane / Fairheath Road	363698	467971
MCC 15	Main Street / Unnamed road	360607	467448
MCC 16	B6480 / Wennington Road / Hornby Road	357794	467623
MCC 17	A683 / B6480	357794	467622
MCC 21	Unnamed road / Back Lane	369569	450364
MCC 22	A671 / Waddington Road / York Street / Waterloo Road	374630	442148
MCC 23	B6478 / Moor Lane / Queensway	374283	441372
MCC 24	A59 / A671	374367	438986
LCC ATC_27278	A671 (Pimlico Link Road)	376094	442613
LCC ATC_27267	B6478 (Slaidburn Road, north)	372662	444020
LCC ATC_27712	A59 (east of Clitheroe) (northern section)	376330	441990
LCC ATC_27310	A59 (east of Pimlico Link Road)	376688	442899
LCC ATC_28935	Crow Trees Brow	375845	443296

[5] Department for Transport (2020) *Road Traffic Statistics* [Online] Available from: https://roadtraffic.dft.gov.uk/downloads [Accessed: June 2020]

Traffic Count Type / ID	Traffic Count Sites	Easting	Northing
LCC ATC_27436	Ribble Lane	376653	444390
LCC ATC_27582	West Bradford Road south of Cement Plant	374718	443553
DfT Manual count 16566	A59 between M6 Junction 31 and A667	360000	430190
DfT Manual count 36608	A59 between A667 and Mellor Brook roundabout	365040	432000
DfT Manual count 6582	A59 between B6245 and A666	370000	434560
DfT Manual count 46603	A59 between A666 and A671 (south)	372000	435940
DfT Manual count 36607	A59 between A671 (south) and A671 (north)	374200	438000
DfT Manual count 941447	West Bradford Road (west)	373226	444056

17) The potential environmental impacts of the Proposed Bowland Section have been assessed using the following scenarios:

- 2024 Background ('Do Nothing') Scenario – traffic growth within the network
- 2024 Background + Cumulative ('Do Minimum') Scenario – traffic growth within the network and quantifiable cumulative schemes
- 2024 Construction ('Do Something') Scenario – parallel activities taking place in August 2024, using the parameters agreed in paragraph 14 above.

18) The details associated with the identified assumptions are addressed in detail within the TA (Appendix 16.1) and CTMPs (LCC-BO-APP-007, RVBC-BO-APP-007_01 and RVBC-BO-APP-007_02 within the Planning Documents).

16.4.2 Assessment Criteria

19) The assessment criteria outlined below has been used to determine whether likely environmental effects are considered significant or not. For the purposes of this ES, anything with a moderate or above significance of effect is considered to be significant.

20) The assessment will use a quantitative analysis through the 12-hour traffic model outputs during the peak of each road link as well as a qualitative analysis based on sensitivity. Sensitivity is determined by, among other things, its level of designation or protection, its susceptibility to or ability to accommodate change, the timescale of the change, and professional judgement. Table 16.3 provides an illustration of how the significance of effects can be assessed by forecasting the magnitude of change and a receptor's sensitivity to that change.

21) The potential highways and transport-related environmental effects of delivering the Proposed Bowland Section have been assessed with reference to good practice guidance outlined within '*Guidelines for the Environmental Assessment of Road Traffic' (IEMA, 1993)*[6] which will be used as a basis to develop appropriate thresholds. These guidelines inform the environmental assessment of road traffic associated with major new developments and are designed to be applied to off-site traffic impacts.

22) The guidance also demonstrates that there is a requirement to consider *'particular groups or locations which may be sensitive to changes in traffic conditions*'; those identified for consideration are summarised below. The guidance also notes that other groups / interests can be added if the assessor considers this as appropriate:

- 'People at home
- People in work places
- Sensitive groups including children, elderly and disabled

[6] Institute of Environment Management and Assessment (1993) Guidelines for the Environmental Assessment of Road Traffic.

- Sensitive locations, e.g. hospitals, churches, schools, historical buildings
- People walking
- People cycling
- Open spaces, recreational sites, shopping areas
- Sites of ecological / nature conservation value
- Sites of tourist / visitor attraction'.

23) For the avoidance of doubt, environmental effects associated with traffic are quantified against the following rules of thumb, denoting where a more detailed analysis would be required:

- Rule 1: 'Include highway links where traffic flows will increase by more than 30 % (or the number of heavy goods vehicles will increase by more than 30 %)
- Rule 2: *'Include any other specifically sensitive areas where traffic flows have increased by 10 % or more.'*

24) With respect to Rule 1 (30 % threshold), the IEMA guidance states that traffic forecasting is not an exact science and that it is generally accepted that accuracies greater than 10 % are not achievable. Day-to-day variation of traffic on a route corridor is frequently at least + or – 10 % of data recorded on a single survey date. The IEMA guidelines suggest that projected changes in traffic of less than 10 % would create no discernible environmental impact.

25) However, with respect to IEMA Rule 2, a 10 % change in traffic is considered significant in environmentally 'sensitive' areas. The IEMA guidelines highlight places which could be considered to represent a 'sensitive' receptor, including but not limited to accident *blackspot* locations, conservation areas, hospitals and links with high pedestrian flows. The IEMA guidance notes that it would not normally be appropriate to consider links where traffic flows have changed by less than 10 %, unless there are significant changes in the composition of traffic, such as a large increase in the number of HGVs. It is up to the professional judgement of the assessor to determine the level of sensitivity of any location, and consequently whether further assessment of the environmental effects is necessary.

26) The assessment of potential impacts has taken into consideration primarily the site preparation and construction activities. It is acknowledged that the operation of the pipeline would have a negligible impact on the operation of the highway network. There are 13 quantifiable environmental effects identified within the IEMA guidance; however, a number are covered in separate sections of this ES document which are summarised below:

- Noise and Vibration (Chapter 17)
- Visual Impact (Chapter 6)
- Air Pollution, Dust and Dirt (Chapter 18)
- Ecological Impact (Chapter 9)
- Cultural Heritage and Conservation Areas (Chapter 10).

27) Table 16.3 outlines the criteria that will be used in the evaluation of core impacts.

Table 16.3: Analysed Impact Definitions and IEMA Guidance

Core Impacts	Criteria
Severance	This impact is the perceived division which could occur within a community if it becomes separated by a major traffic artery. Severance could be due to: ▪ The difficulty of crossing a heavily trafficked road ▪ The road itself (as it creates a physical barrier) ▪ Pedestrian access to essential facilities impeded by minor traffic flows.

Core Impacts	Criteria
	Severance could also be experienced by residents, motorists or pedestrians. Factors which should be analysed to determine the level of severance include '*road width, traffic flow and composition, traffic speeds, the availability of crossing facilities and the number of movements that are likely to cross the affected route*'. It is also identified that certain groups may be more affected than others such as old people or young children as they may be more sensitive to traffic conditions than other groups. According to the IEMA guidelines, changes in traffic flow of 30 %, 60 % and 90 % are regarded as producing 'slight', 'moderate' and 'substantial' changes in severance respectively.
Driver delay	Driver delay generally occurs where vehicles are required to either give way or receive priority at junctions where there are opposing movements. There is no quantitative standard for assessing driver delay; however, it is likely to be significant when demand exceeds or is approaching capacity. IEMA guidance suggests four main areas where a project is likely to cause driver delay; these are: ▪ Key intersections along the network ▪ Side roads where finding a gap in the traffic may become harder ▪ Site entrances where additional turning movements would occur ▪ Where additional parked cars on roads would reduce the width of the road.
Pedestrian delay	Pedestrian delay generally occurs when traffic demand impacts on the ability for pedestrians to cross a carriageway. The provision of crossing facilities, the geometric characteristics of the road and the traffic volume, speed and composition are all factors that can determine pedestrian delay. It is advised within IEMA guidelines that quantitative thresholds should be avoided, with professional judgement to be used instead due to the number of local factors that need considering.
Pedestrian amenity	Pedestrian amenity relates broadly to the relative pleasantness of a journey which can be affected by speed, composition and traffic flow in addition to footway width and the separation / protection from traffic. Pedestrian fear and intimidation is incorporated within pedestrian amenity. Fluctuations are common between projects and areas, so there is no fixed specification; however, IEMA guidance suggests a *'tentative threshold'* of a significant impact if the traffic flow or HGV flow is doubled.
Accidents and safety	Accidents and safety can be obtained through accident data on the road network which provides the location, number of accidents and their associated severity. Additionally, this data can also identify any accident blackspots. A certain extent of qualitative professional judgement is involved in assessing any potential changes in accidents and safety which will also be based on local information such as junction types, road widths, average speeds and traffic flows.
Hazardous loads	An assessment of the chance of an accident involving any hazardous loads should be determined, along with the chance of a spillage occurring in an accident. The resulting chance of a spillage would hopefully be low although, in cases where there are numerous hazardous loads being transported, discussions with the local emergency services and the Health and Safety Executive should be conducted. The environmental impact of a hazardous load spillage should also be assessed if the chance of a spillage is deemed significant.

28) The magnitude attributed to each impact identified reflects the magnitude of change as a result of the Proposed Bowland Section and the sensitivity of the affected receptor. A scale of major, moderate, slight and negligible in accordance with the IEMA guidance of the magnitude of change to the affected receptor has been applied.

16.4.3 Embedded Mitigation and Good Practice

29) Embedded mitigation is inherent to the design, and good practice measures are standard industry methods and approaches used to manage commonly occurring environmental effects. The assessment presented in Section 6 of this chapter are made taking into account embedded mitigation and the implementation of good practice measures.

30) The need for any topic-specific essential mitigation (generally for effects likely to be significant in the context of the EIA Regulations) is considered in Section 7 of this chapter.

Embedded Mitigation

31) Chapter 3: Design Evolution and Development Description explains the evolution of the design with input from the environmental team, including mitigation workshops and the use of GIS based constraints data.

32) Construction Traffic Management Plans (CTMPs) have been prepared, which outlines mitigation embedded in the design of the Proposed Bowland Section to ensure that construction of the Proposed Bowland Section does not give rise to undue adverse impacts on the highway network. The CTMPs provide the framework for the management of construction traffic to the proposed compounds. The CTMPs cover the following aspects:

- Proposed vehicle routeing
- Proposed peak traffic flows
- Other road users
- Traffic management.

Good Practice Measures

33) The CTMPs also include good practice measures and includes the creation of an Interim Travel Plan, a Highway Stakeholder Group being convened between the construction contractor(s) and the key stakeholders and highways improvements.

34) An Interim Travel Plan has been developed to mitigate against the potential effects of vehicle access to the compounds on the surrounding highway network. Although some locations are classed as urban, it is recognised that limited options exist to promote sustainable travel alternatives (such as public transport, walking and cycling) due to the nature of the Proposed Programme of Works and the transient nature of the works. The emphasis is therefore placed on the consolidation of movements within multi-occupancy vehicles and the management of vehicles within the site compounds so that they do not have a wider impact upon the surrounding highway network, especially within residential areas and close to schools / community facilities. The following good practice measures are proposed in the Interim Travel Plan to limit the impacts that employee travel may have on the local highway network and the immediate environs of the construction compound areas:

- Encouraging staff involvement in a car-sharing scheme. Employees would be encouraged to car share with other staff members; this could be by a staff matching scheme operated on recruitment or via external car-sharing options such as car-share websites like Liftshare.com
- Management and utilisation of Park and Ride facilities to reduce the use of private car and local parking does not become problematic within surrounding residential areas. Where demand exceeds supply, steps would be taken to ensure that staff travel in multi-occupancy vehicles
- No living accommodation would be provided within any construction working areas. It is anticipated that workers would be accommodated in the general area
- Welfare facilities would be provided within the working area to minimise the need for off-site trips by staff during the working day
- Implementation of the Proposed River Ribble Crossing to minimise impacts on populated settlements
- Implementation of the Proposed Hodder Crossing to minimise impacts on Newton-in-Bowland

35) A Highways Stakeholder Group would be convened between the construction contractor(s) and the following groups on a bi-monthly basis or as agreed by the group, dependent on the progress of work:

- Lancashire County Council
- Highways England
- Other developers progressing major schemes within the area.

36) This Stakeholder Group would facilitate the successful operation of both the local and strategic highway networks during the construction period, particularly in regard to the following:

- Understanding the coincidence of other construction programmes
- Understanding the potential for coincidence of construction works in the highway associated with the Proposed Bowland Section and other construction projects, e.g. any requirements for closure
- Understanding the planned maintenance programmes of the LHA, Highways England and other undertakers that may have a bearing on the Proposed Bowland Section construction programme.

37) Transport routes to and from the proposed compounds have been identified, and highway improvements would be required to improve safety for general road users along these routes. Further detail is provided in Volume 5. These comprise:

- Construction of new passing places classed as temporary and to be reinstated on completion of the works
- Road widening within highways limits of deviation which would be retained following completion of the works. All road widening works which encroach onto third party land would be reinstated back to pre-works alignment and condition on completion of the HARP construction programme. Please refer to Volume 5 for a further explanation of the off-site highways works.

38) Following the completion of the HARP construction programme, some reinstatement works would be carried out. However, discussions between United Utilities, the LHA and landowners is on-going to confirm reinstatement requirements.

16.4.4 Assumptions and Limitations

39) Discussions were undertaken to confirm parameters for the assessment which included a number of key assumptions to accord with scoping requirements of the LHA and United Utilities, these assumptions included:

- The duration of construction programme – assumed to be from April 2023 to September 2030 with a peak in activity for the Proposed Bowland Section of August 2024
- The location of construction compounds and Park and Ride / satellite compounds – as identified in Volume 3 Figure 3.1 and described in Chapter 3: Design Evolution and Development Description.
- Origin / destination of material, tunnel ring deliveries and other material deliveries – assumed to be via the SRN using the M6, unless operating from a specific supplier. A similar strategy would apply to the destination of exported material for the Lower Houses Compound, however for the Newton-in-Bowland Compound it has been determined that a surplus material transfer strategy would be to use the Waddington Fell Quarry. This approach reflects the aspirations of Lancashire County Council as LHA and the acceptance of all parties that construction activity should be concentrated on the principal routes best equipped to accommodate it
- Origin of employee trips to construction areas – assumed that workers would be accommodated in the employee catchment area and travel to the Park and Ride areas by minibus / vans / private car, then use a shuttle bus service to the compounds
- Duration of working hours – underground tunnelling and surface works to support tunnelling works would likely be undertaken on a 24/7 basis. The remaining construction activities would be limited to daylight hours Monday to Friday (07:00 to 19:00) and Saturday mornings (07:00 to 13:00) unless there is a requirement to work longer days using artificial lighting. Exceptions for weekends and bank

holidays can be agreed. In order to be robust, commuting trips would be conducted outside of the peak hours. For the Newton-In-Bowland Compound, traffic would be restricted between 08:00 and 09:00 and 14:45 and 16:00 to avoid traffic impact during school drop-off periods. These times would be reviewed and agreed with the relevant LHA near the commencement of construction activities to consider the most up-to-date school schedules. The high level coordination of the construction programme is addressed within the CTMPs (LCC-BO-APP-007, RVBC-BO-APP-007_01 and RVBC-BO-APP-007_02 within the Planning Documents).

16.5 Baseline Conditions

40) This section details the Transport Planning baseline for the assessment area and identifies receptors where there is potential for significant effects to arise. The Proposed Bowland Section is located within Lancaster City Council and Ribble Valley Borough Council approximately 14 km east of Lancaster and extends from approximately 4 km south of the village of Wray to approximately 500 m west of Newton-in-Bowland. The existing aqueduct between the Lunesdale multi-line siphon and the Hodder multi-line siphon would be replaced with a single tunnel. The new tunnel would be bored from south to north, with a launch portal at Newton-in-Bowland compound (south) and reception shaft at Lower Houses Compound (north).

41) Baseline data were collated from a variety of sources in compiling this assessment, including:

- Desk based assessment
- Traffic counts
- Site visits
- Dash camera footage
- Road safety information
- Ordnance Survey mapping
- ECI contractor vehicle dimensions for anticipated construction traffic.

16.5.1 Information Sources

42) The assessment was undertaken with reference to the sources detailed in Table 16.4.

Table 16.4: Key Information Sources

Data Source	Reference
Existing highway networks, operating conditions and development components	▪ Ordnance Survey Open Roads[7] ▪ Open Street Map[8] ▪ Google Maps and Street View[9] ▪ Dash camera footage ▪ Site visits ▪ Advice from LHAs and Highways England.
Traffic counts	▪ Surveys undertaken in October and November 2019, Department for Transport traffic counts[10] and Lancashire County Council traffic counts.

[7] Ordnance Survey Open Roads [Online] Available from: https://www.ordnancesurvey.co.uk/business-government/products/open-map-roads [Accessed: 2019-2020].
[8] Open Street Map [Online] Available from: https://www.openstreetmap.org [Accessed: 2019-2020].
[9] Google Maps [Online] Available from: https://www.google.com/maps [Accessed: 2019-2020].
[10] Department for Transport (2020) *Road Traffic Statistics* [Online] Available from: https://roadtraffic.dft.gov.uk/downloads [Accessed: June 2020].

Data Source	Reference
Road accident data	▪ Department for Transport Road Accidents and Safety Data (2015 – 2019)[11]

16.5.2 Existing Highways Networks and Operating Conditions

43) The local and strategic network is a mixture of rural and urban and is characterised by three main access routes from the M6 motorway network, with an additional surplus material transfer access route for the Newton-in-Bowland Compound. For the Lower Houses Compound two routes have been proposed depending on the type of construction vehicles:

- Route 1 – Abnormal loads and HGVs over 9.5 m long via the M6 Junction 34, along the A683 and B6480, then through the village of Wray via Main Street to continue via Helks Brow for approximately 3 km. This route is approximately 17 km and consists of A-roads, B-roads and single track lanes
- Route 2 – General construction traffic (HGVs less than 9.5 m long and light vehicles) via the M6 Junction 34, along the A683 and B6480 through Wennington and towards Low Bentham. Vehicles would then follow Eskew Lane and Long Lane before turning onto Fairheath Road, Spen Brow, Furnessford Road reaching Park House Lane. Access from the Lower Houses Compound would then follow a one-way system with vehicles travelling along Helks Brow towards Wray before re-joining Long Lane towards Low Bentham, and turning onto the B6480 towards Wennington and Wray. This route is approximately 30 km and consists of A-roads, B-roads and single track lanes.

44) For the Newton-in-Bowland Compound two routes have been proposed depending on the type of construction vehicles:

- Route for all construction traffic (except surplus material transfer to Waddington Fell Quarry) via the M6 Junction 31, along the A59, then Pimlico Link Road and West Bradford Road to continue via a dedicated haulage route, the Proposed Ribble Crossing. To then continue along West Bradford Road and along the B6478 Slaidburn Road / Hallgate Hill then via the Proposed Hodder Crossing accessed to the south of Newton-in-Bowland. This route is approximately 39 km and consists of A-roads and B-roads
- Surplus material transfer to Waddington Fell Quarry – via the Proposed Hodder Crossing to the south of Newton-in-Bowland, then along the B6478 Hallgate Hill / Slaidburn Road.

45) All roads sections of the access routes for the Proposed Bowland Section are further detailed in Table 16.5 below.

Table 16.5: Existing Highway Network Proposed Traffic Routes

Proposed Compound	Delivery Routes
Lower Houses Compound **Route 1** for abnormal loads and HGVs over 9.5 m	**Inbound** M6 from north (40 %) and south (80 %) via Junction 34, A683, B6480, then through Main Street (Wray) and Helks Brow. **Outbound** Helks Brow, Main Street (Wray), B6480, A683 then M6 to north (40 %) and south (80 %) via Junction 34.
Lower Houses Compound **Route 2** for general construction traffic (HGVs less than 9.5 m long and light vehicles)	**Inbound** M6 from north (40 %) and south (80 %) via Junction 34, A683, B6480, then Eskew Lane, Long Lane, Fairheath Road, Spen Brow, Furnessford Road and Park House Lane. **Outbound**

[11] Department for Transport (2019) *Road Safety Data* [Online] Available from: https://data.gov.uk/dataset/cb7ae6f0-4be6-4935-9277-47e5ce24a11f/road-safety-data [Accessed: November 2020].

Proposed Compound	Delivery Routes
	Helks Brow, Long Lane, B6480, A683 then M6 to north (40 %) and south (80 %) via Junction 34.
Newton-in-Bowland Compound Route for all construction traffic except surplus material transfer to Waddington Fell Quarry	**Inbound** M6 from north (40 %) and south (80 %) via Junction 31, A59, Pimlico Link Road, West Bradford Road, Proposed Ribble Crossing, West Bradford Road, B6478, then the Proposed Hodder Crossing to the south of Newton-in-Bowland. **Outbound** Proposed Hodder Crossing to the south of Newton-in-Bowland, B6478, West Bradford Road, Proposed Ribble Crossing, West Bradford Road, Pimlico Link Road, A59 then M6 to north (40 %) and south (80 %) via Junction 31.
Newton- in- Bowland Compound Surplus material transfer to Waddington Fell Quarry	**Inbound** Proposed Hodder Crossing to the south of Newton-in-Bowland, then B6478 Hallgate Hill / Slaidburn Road. **Outbound** B6478 Slaidburn Road / Hallgate Hill then the Proposed Hodder Crossing to the south of Newton-in-Bowland.

46) There are settlements located along the proposed traffic routes, some of which include residential, agricultural and commercial property which fronts directly onto the proposed construction traffic routes. The population alongside the three main traffic routes lives in settlements of varying sizes including Caton, Claughton, Farleton, Wray, Mill Houses, Wennington, Mellor Brook, Copster Green, Clitheroe, West Bradford and Waddington.

16.5.3 Road Safety Review

47) Road collisions and safety statistics for a five-year period were obtained from the DfT Road Accidents and Safety Data (2015 – 2019)[12]. This dataset comprises road collision statistics collected from information about personal injury road collisions, and their consequent casualties in Great Britain to a common national standard. To establish a baseline position, a 200 m buffer around the proposed traffic routes within the Proposed Bowland Section, including junctions off the SRN, have been analysed.

48) DfT Accidents and Road Safety Data have been used to identify any accidents which have occurred along the three main routes within the Proposed Bowland Section.

49) To access the Lower Houses Compound and Newton-in-Bowland Compound, the traffic routes would travel along certain sections of the SRN and local road network which are identified within Table 16.5.

50) Analysis of any clustering of collisions has also been undertaken and it is noted that where collision clusters occur around the proposed accesses to the compound sites, further investigation and highways design would be required to ensure that sufficient safety requirements are in place.

51) Accident analysis of the 200 m buffered traffic routes, which includes SRN junctions, within the Proposed Bowland Section has identified that a total of 287 accidents occurred over the five-year data period. A total of 85 accidents occurred along the route to the Lower Houses Compound and 202 accidents occurred along the route to the Newton-in-Bowland Compound. One fatal accident occurred along the route to the proposed Lower Houses Compound. The accident occurred near to Junction 34 of the M6 and three fatal accidents occurred along the route to the Newton-in-Bowland Compound along the A59 near the junction with the A677, Copster Green and near Langho. A total of 60 serious accidents and a

[12] Department for Transport (2019) *Road Safety Data* [Online] Available from: https://data.gov.uk/dataset/cb7ae6f0-4be6-4935-9277-47e5ce24a11f/road-safety-data [Accessed June 2020]

total of 223 slight accidents occurred across both routes. Of the 85 accidents that occurred along the route to the Lower Houses Compound, nine accidents involved HGVs, however these did not occur in close proximity to the compound. Nine of the 202 accidents which happened along the route to the Newton-in-Bowland also involved HGVs. None of the accidents occurred in close proximity to the compound, however two of the accidents were classed as fatal. Table 16.6 shows the number of accidents and severity classification for the traffic routes within the Proposed Bowland Section.

Table 16.6: Collisions by Severity on Proposed Traffic Routes

Severity	Lower Houses Compound	Newton-in-Bowland Compound
Total number of accidents on the proposed traffic routes	85	202
Fatal	1	3
Serious	33	27
Slight	51	172

52) Collision clusters within a 200 m buffer of the proposed traffic routes were also identified, the majority of which occurred at highway junctions, roundabout junctions and motorway slip roads, including:

- A683 / Bay Gateway / M6 northbound slip road / Halton Road junction
- A589 / Caton Road junction
- A683 / Station Road / Brookhouse Road junction
- A59 / Preston New Road / M6 on slip (northbound)
- A59 / Preston New Road / M6 on slip (southbound)
- A59 / Vicarage Lane junction
- A59 / A677 roundabout
- A59 / B6245 / Ribchester Road junction
- A59 / A666 / Whalley Road roundabout
- A59 /A671 roundabout
- A59 / Holm Road roundabout
- A59 / A671 / Whalley Road roundabout
- A59 / Pendle Road roundabout
- A671 / Pimlico Link Road junction
- Chatburn Road / Pimlico Link Road roundabout.

16.5.4 Screening of Development Components

53) The study area was defined by the location of the compounds and the main access routes that would serve them for the purpose of delivering materials, removing waste and transferring the workforce to the site. As such, the screening of development components was potentially wider than the immediate environs of the Proposed Bowland Section, and covered the wider local highway network where no construction activity would take place. To that end, the effects associated with a single development component, could be identified on strategic routes that are remote from the site. Further details can be seen in Figure 16.2. The period of assessment covers the full construction period for the Proposed

Bowland Section (April 2023 to September 2030) and the operational phase. Elements related to the cessation of abstraction and decommissioning of existing assets have been screened out. Further details of the development components are identified in the TA (Appendix 16.1).

16.6 Assessment of Likely Significant Effects

54) The following section describes the effects of the Proposed Bowland Section on Transport Planning during the construction and operational phases.

16.6.1 Construction Phase

55) A review of daily (12-hour) link flows across the highway network demonstrated that increases in total two-way traffic flows as a consequence of construction activities would exceed 10 % in five locations (links 60, 63, 65, 113 and 140) and exceed 30 % in two locations (links 50 and 51), with a maximum of 36.3 %. As these changes would occur on links that present low levels of background traffic, and encompass rural settlement, these links were regarded as 'sensitive' receptors, and were therefore considered for assessment in further detail against the IEMA criteria. It should be noted that the overall 12-hour increase in two-way traffic flow would be modest in real terms, and would be of a temporary duration for the peak period of construction; however, within the existing rural context, it may represent a perceptible increase.

56) With respect to changes in HGV demand within the assessment area, it was noted that 19 links would experience daily increases in excess of the Rule 1 (30 %) threshold and were therefore considered for further assessment. As with total traffic, there would be a number of instances where existing HGV levels are low, so local receptors would be sensitive to a small (in real terms) increase in short term activity during the construction period. Conversely, and as a means to limit the overall effects of construction activity in sensitive areas, there would be a number of key strategic links where the level of daily HGV activity would exceed 30 % against a higher level of background flow. At these locations, it was considered that the increase would be less perceptible to receptors; however, the increase may contribute to issues of congestion that could be present on the network. As a result, the TA provides a more detailed commentary on highway capacity, and the changes that would result from the addition of construction traffic. The TA also explores cumulative impacts with other identified schemes during the identified period of 'peak' construction, as agreed with the relevant LHA on the basis of being robust and suitably representative of network conditions.

57) The links which exceed the thresholds identified within the IEMA guidance are summarised in Table 16.7. The individual 'receptors' for each link in exceedance of the thresholds are considered in further detail within Table 16.8 to Table 16.13 against the following categories:

- Severance (Table 16.8)
- Driver Delay (Table 16.9)
- Pedestrian Delay (Table 16.10)
- Pedestrian Amenity (Table 16.11)
- Accidents and Safety (Table 16.12)
- Hazardous Loads (Table 16.13).

Table 16.7: 12-Hour Traffic Flows

			Background			Construction			Background + Construction			% Impact	
Development Component	Link	Link Name	Total Traffic	HGVs	% HGV	Total Traffic	HGVs	% HGV	Total Traffic	HGVs	% HGV	Total Traffic	HGVs
Lower Houses Compound access route 1	48	B6480 Hornby Road west of Park and Ride facility	2,654	125	4.7 %	84	64	76.1 %	2,737	188	6.9 %	3.2 %	51.1 %
	132	B6480 Hornby Road east of Park and Ride facility	3,015	136	4.5 %	119	81	68.3 %	3,133	217	6.9 %	3.9 %	59.7 %
	50	Helks Brow	159	23	14.4 %	58	41	71.2 %	216	64	29.5 %	36.3 %	179.6 %
	51	Helks Brow (south)	159	23	14.4 %	58	41	71.2 %	216	64	29.5 %	36.3 %	179.6 %
Lower Houses Compound access route 2	48	B6480 Hornby Road west of Park and Ride facility	2,654	125	4.7 %	84	64	76.1 %	2,737	188	6.9 %	3.2 %	51.1 %
	132	B6480 Hornby Road east of Park and Ride facility	3,015	136	4.5 %	119	81	68.3 %	3,133	217	6.9 %	3.9 %	59.7 %
	110	B6480 Wennington Road	2,385	103	4.3 %	114	76	66.9 %	2,498	179	7.2 %	4.8 %	74.0 %
	111	B6480 east of Wennington	2,205	88	4.0 %	114	76	66.9 %	2,319	164	7.1 %	5.2 %	86.2 %
	113	Long Lane / Eskew Crescent / Eskew Lane	452	11	2.5 %	105	72	68.3 %	557	83	14.9 %	23.2 %	627.2 %
	115	Fairheath Road	538	45	8.3 %	52	36	68.3 %	590	80	13.6 %	9.7 %	80.2 %
	116	Spen Brow	538	45	8.3 %	52	36	68.3 %	590	80	13.6 %	9.7 %	80.2 %

			Background			Construction			Background + Construction			% Impact	
Development Component	Link	Link Name	Total Traffic	HGVs	% HGV	Total Traffic	HGVs	% HGV	Total Traffic	HGVs	% HGV	Total Traffic	HGVs
	117	Furnessford Road	538	45	8.3 %	52	36	68.3 %	590	80	13.6 %	9.7 %	80.2 %
	118	Park House Lane	538	45	8.3 %	52	36	68.3 %	590	80	13.6 %	9.7 %	80.2 %
	51	Helks Brow (south)	159	23	14.4 %	58	41	71.2 %	216	64	29.5 %	36.3 %	179.6 %
	50	Helks Brow	159	23	14.4 %	58	41	71.2 %	216	64	29.5 %	36.3 %	179.6 %
	112	Long Lane	582	25	4.3 %	43	27	61.8 %	626	52	8.3 %	7.5 %	107.6 %
Newton-in-Bowland Compound access route for all construction traffic except surplus material transfer to Waddington Fell Quarry	125	Pimlico Link Road / West Bradford Road	2,741	294	10.7 %	220	141	64.2 %	2,961	435	14.7 %	8.0 %	47.9 %
	126	West Bradford Road / Clitheroe Road	2,741	294	10.7 %	169	141	83.2 %	2,910	435	14.9 %	6.2 %	47.8 %
	60	West Bradford Road	1,629	54	3.3 %	169	141	83.2 %	1,799	195	10.9 %	10.4 %	260.2 %
	61	B6478 Slaidburn Road (north)	1,899	210	11.1 %	181	141	78.1 %	2,080	351	16.9 %	9.5 %	67.0 %
	63	B6478 Slaidburn Road (south)	1,913	212	11.1 %	219	184	84.0 %	2,132	396	18.6 %	11.5 %	86.8 %
	140	B6478 Slaidburn Road (north)	1,913	212	11.1 %	286	242	84.7 %	2,199	454	20.7 %	14.9 %	114.2 %
	65	B6478 Hallgate Hill	1,913	212	11.1 %	260	227	87.4 %	2,173	439	20.2 %	13.6 %	107.1 %
	65	B6478 Hallgate Hill	1,913	212	11.1 %	260	227	87.4 %	2,173	439	20.2 %	13.6 %	107.1 %

			Background			Construction			Background + Construction			% Impact	
Development Component	Link	Link Name	Total Traffic	HGVs	% HGV	Total Traffic	HGVs	% HGV	Total Traffic	HGVs	% HGV	Total Traffic	HGVs
Newton-in-Bowland Compound surplus material transfer to Waddington Fell Quarry	140	B6478 Slaidburn Road (north)	1,913	212	11.1 %	286	242	84.7 %	2,199	454	20.7 %	14.9 %	114.2 %

Table 16.8: Severance

Link	Link Name	IEMA Rule	Severance	Effect
48	B6480 Hornby Road west of Park and Ride facility	Rule 1 – >30 % HGV	The volume of additional vehicle movements is unlikely to contribute to severance; however, negative perceptions could be further avoided by managing site operations during school opening / closure times to reduce coincidence with activity.	Negligible
50	Helks Brow	Rule 1 – >30 % Total & HGV Rule 2 – >10 % Total	The volume of additional vehicle movements is unlikely to contribute to severance; however, negative perceptions, such as constrained width of highway, could be further avoided by managing site operations during school opening / closure times to reduce coincidence with activity.	Negligible
51	Helks Brow (south)	Rule 1 – >30 % Total & HGV Rule 2 – >10 % Total	The volume of additional vehicle movements is unlikely to contribute to severance; however, negative perceptions, such as constrained width of highway, could be further avoided by managing site operations during school opening / closure times to reduce coincidence with activity.	Negligible
60	West Bradford Road	Rule 1 – >30 % HGV Rule 2 – >10 % Total	Frontages of residential and commercial properties with limited footway are situated on both sides within Waddington. It was noted that Waddington and West Bradford C of E Voluntary Aided Primary School is located between West Bradford and Waddington; however, there are some sections of West Bradford with limited footway provision and the proximity of car parking on site, it was considered unlikely that additional traffic would contribute to severance.	Slight
61	B6478 Slaidburn Road (north)	Rule 1 – >30 % HGV	Frontages of residential and commercial properties with limited footway are situated on both sides within Waddington.	Slight
63	B6478 Slaidburn Road (south)	Rule 1 – >30 % HGV Rule 2 – >10 % Total	The volume of additional vehicle movements is unlikely to contribute to severance; however, negative perceptions could be further avoided by managing site operations during school opening / closure times to reduce coincidence with activity.	Negligible
65	B6478 Hallgate Hill	Rule 1 – >30 % HGV Rule 2 – >10 % Total	The volume of additional vehicle movements is unlikely to contribute to severance; however, negative perceptions could be further avoided by managing site operations during school opening / closure times to reduce coincidence with activity.	Negligible
110	B6480 Wennington Road	Rule 1 – >30 % HGV	Frontages of residential and commercial properties with limited footway are situated on both sides within Wennington.	Slight
111	B6480 east of Wennington	Rule 1 – >30 % HGV	Frontages of residential and commercial properties with limited footway are located on both sides within Wennington and Low Bentham. It was noted that Cedar House School is located in Low	Negligible

Link	Link Name	IEMA Rule	Severance	Effect
			Bentham; however, due to the limitations of footway provision and the proximity of car parking on site, it was considered unlikely that additional traffic would contribute to severance.	
112	Long Lane	Rule 1 – >30 % HGV	The volume of additional vehicle movements is unlikely to contribute to severance; however, negative perceptions, such as constrained width of highway, could be further avoided by managing site operations during school opening / closure times to reduce coincidence with activity.	Negligible
113	Long Lane / Eskew Crescent / Eskew Lane	Rule 1 – >30 % HGV Rule 2 – >10 % Total	The volume of additional vehicle movements is unlikely to contribute to severance; however, negative perceptions, such as constrained width of highway, could be further avoided by managing site operations during school opening / closure times to reduce coincidence with activity.	Negligible
115	Fairheath Road	Rule 1 – >30 % HGV	The volume of additional vehicle movements is unlikely to contribute to severance; however, negative perceptions, such as constrained width of highway, could be further avoided by managing site operations during school opening / closure times to reduce coincidence with activity.	Negligible
116	Spen Brow	Rule 1 – >30 % HGV	The volume of additional vehicle movements is unlikely to contribute to severance; however, negative perceptions, such as constrained width of highway, could be further avoided by managing site operations during school opening / closure times to reduce coincidence with activity.	Negligible
117	Furnessford Road	Rule 1 – >30 % HGV	The volume of additional vehicle movements is unlikely to contribute to severance; however, negative perceptions, such as constrained width of highway, could be further avoided by managing site operations during school opening / closure times to reduce coincidence with activity.	Negligible
118	Park House Lane	Rule 1 – >30 % HGV	The volume of additional vehicle movements is unlikely to contribute to severance; however, negative perceptions, such as constrained width of highway, could be further avoided by managing site operations during school opening / closure times to reduce coincidence with activity.	Negligible
125	Pimlico Link Road / West Bradford Road	Rule 1 – >30 % HGV	The volume of additional vehicle movements is unlikely to contribute to severance; however, negative perceptions could be further avoided by managing site operations during school opening / closure times to reduce coincidence with activity.	Negligible
126	West Bradford Road / Clitheroe Road	Rule 1 – >30 % HGV	The volume of additional vehicle movements is unlikely to contribute to severance; however, negative perceptions could be further avoided by managing site operations during school opening / closure times to reduce coincidence with activity.	Negligible

Link	Link Name	IEMA Rule	Severance	Effect
132	B6480 Hornby Road east of Park and Ride facility	Rule 1 – >30 % HGV	Frontages of residential and commercial properties with limited footway on both sides are situated along this link within Wray and Wennington.	Slight
140	B6478 Slaidburn Road (north)	Rule 1 – >30 % HGV Rule 2 – >10 % Total	The volume of additional vehicle movements is unlikely to contribute to severance; however, negative perceptions could be further avoided by managing site operations during school opening / closure times to reduce coincidence with activity.	Slight

Table 16.9: Driver Delay

Link	Link Name	IEMA Rule	Driver Delay	Effect
48	B6480 Hornby Road west of Park and Ride facility	Rule 1 – >30 % HGV	The total vehicles on the link would increase from 2,654 to 2,737 per 12 hours. HGVs per 12 hours would increase from 125 to 188. The link is a principal part of the network, however, turns from side roads are unlikely to be affected, and additional roadside parking is unlikely, though additional site entrance turns would occur.	Negligible
50	Helks Brow	Rule 1 – >30 % Total & HGV Rule 2 – >10 % Total	The total vehicles on the link would increase from 159 to 216 per 12 hours. HGVs per 12 hours would increase from 23 to 64. The link is not a key section on the network, so there would be little impact on vehicles approaching from side roads, and no additional roadside parking is likely. However, this section is narrow and there would be a slight impact when two vehicles would pass each other.	Slight
51	Helks Brow (south)	Rule 1 – >30 % Total & HGV Rule 2 – >10 % Total	The total vehicles on the link would increase from 159 to 216 per 12 hours. HGVs per 12 hours would increase from 23 to 64. The link is not a key section on the network, so there would be little impact on vehicles approaching from side roads, and no additional roadside parking is likely. However, this section is narrow and there would be a slight impact when two vehicles would pass each other. Also, additional turns would occur to access the nearby compound.	Slight
60	West Bradford Road	Rule 1 – >30 % HGV Rule 2 – >10 % Total	The total vehicles on the link would increase from 1,629 to 1,799 per 12 hours. HGVs per 12 hours would increase from 54 to 195. The link is not a key section on the network, so there would be little impact on vehicles approaching from side roads, and no additional roadside parking is likely. However, this section is narrow and there would be a slight impact when two vehicles would pass each other. Potential delays may occur due to the proposed traffic controls required on junction between West Bradford Road and B6478 Slaidburn Road.	Slight to Moderate
61	B6478 Slaidburn Road (north)	Rule 1 – >30 % HGV	The total vehicles on the link would increase from 1,899 to 2,080 per 12 hours. HGVs per 12 hours would increase from 210 to 351. The link is a principal part of the network, however, turns from side roads are unlikely to be affected, and additional roadside parking is unlikely, though additional site entrance turns would occur. Potential delays may occur due to the proposed traffic controls required on junction between West Bradford Road and B6478 Slaidburn Road.	Slight to Moderate
63	B6478 Slaidburn Road (south)	Rule 1 – >30 % HGV	The total vehicles on the link would increase from 1,913 to 2,132 per 12 hours. HGVs per 12 hours would increase from 212 to 396. The link is a principal part of the network, however, turns from	Slight

Link	Link Name	IEMA Rule	Driver Delay	Effect
		Rule 2 – >10 % Total	side roads are unlikely to be affected, and additional roadside parking is unlikely, though additional site entrance turns would occur.	
65	B6478 Hallgate Hill	Rule 1 – >30 % HGV Rule 2 – >10 % Total	The total vehicles on the link would increase from 1,913 to 2,173 per 12 hours. HGVs per 12 hours would increase from 212 to 439. The link is a principal part of the network, however, turns from side roads are unlikely to be affected, and additional roadside parking is unlikely, though additional site entrance turns would occur.	Slight
110	B6480 Wennington Road	Rule 1 – >30 % HGV	The total vehicles on the link would increase from 2,385 to 2,498 per 12 hours. HGVs per 12 hours would increase from 103 to 179. The link is a principal part of the network, however, turns from side roads are unlikely to be affected, and additional roadside parking is unlikely, though additional site entrance turns would occur.	Slight
111	B6480 east of Wennington	Rule 1 – >30 % HGV	The total vehicles on the link would increase from 2,205 to 2,319 per 12 hours. HGVs per 12 hours would increase from 88 to 164. The link is a principal part of the network, however, turns from side roads are unlikely to be affected, and additional roadside parking is unlikely, though additional site entrance turns would occur.	Slight
112	Long Lane	Rule 1 – >30 % HGV	The total vehicles on the link would increase from 582 to 626 per 12 hours. HGVs per 12 hours would increase from 25 to 52. The link is not a key section on the network, so there would be little impact on vehicles approaching from side roads, and additional roadside parking is unlikely. However, this section is narrow and there would be a slight impact when two vehicles would pass each other.	Slight
113	Long Lane / Eskew Crescent / Eskew Lane	Rule 1 – >30 % HGV Rule 2 – >10 % Total	The total vehicles on the link would increase from 452 to 557 per 12 hours. HGVs per 12 hours would increase from 11 to 83. The link is not a key section on the network, so there would be little impact on vehicles approaching from side roads, and additional roadside parking is unlikely. However, this section is narrow and there would be a slight impact when two vehicles would pass each other.	Slight
115	Fairheath Road	Rule 1 – >30 % HGV	The total vehicles on the link would increase from 538 to 590 per 12 hours. HGVs per 12 hours would increase from 45 to 80. The link is not a key section on the network, so there would be little impact on vehicles approaching from side roads, and additional roadside parking is unlikely.	Slight

Link	Link Name	IEMA Rule	Driver Delay	Effect
			However, this section is narrow and there would be a slight impact when two vehicles would pass each other.	
116	Spen Brow	Rule 1 – >30 % HGV	The total vehicles on the link would increase from 538 to 590 per 12 hours. HGVs per 12 hours would increase from 45 to 80. The link is not a key section on the network, so there would be little impact on vehicles approaching from side roads, and additional roadside parking is unlikely. However, this section is narrow and there would be a slight impact when two vehicles would pass each other.	Slight
117	Furnessford Road	Rule 1 – >30 % HGV	The total vehicles on the link would increase from 538 to 590 per 12 hours. HGVs per 12 hours would increase from 45 to 80. The link is not a key section on the network, so there would be little impact on vehicles approaching from side roads, and additional roadside parking is unlikely. However, this section is narrow and there would be a slight impact when two vehicles would pass each other.	Slight
118	Park House Lane	Rule 1 – >30 % HGV	The total vehicles on the link would increase from 538 to 590 per 12 hours. HGVs per 12 hours would increase from 45 to 80. The link is not a key section on the network, so there would be little impact on vehicles approaching from side roads, and additional roadside parking is unlikely. However, this section is narrow and there would be a slight impact when two vehicles would pass each other. Also, additional turns would occur to access the nearby compound.	Slight
125	Pimlico Link Road / West Bradford Road	Rule 1 – >30 % HGV	The total vehicles on the link would increase from 2,741 to 2,961 per 12 hours. HGVs per 12 hours would increase from 294 to 435. The link is not a key section on the network, so there would be little impact on vehicles approaching from side roads, and additional roadside parking is unlikely.	Slight to Moderate
126	West Bradford Road / Clitheroe Road	Rule 1 – >30 % HGV	The total vehicles on the link would increase from 2,741 to 2,910 per 12 hours. HGVs per 12 hours would increase from 294 to 435. The link is not a key section on the network, so there would be little impact on vehicles approaching from side roads, and additional roadside parking is unlikely. However, this section is narrow and there would be a slight impact when two vehicles would pass each other.	Slight to Moderate
132	B6480 Hornby Road east of Park and Ride facility	Rule 1 – >30 % HGV	The total vehicles on the link would increase from 3,015 to 3,133 per 12 hours. HGVs per 12 hours would increase from 136 to 217. The link is a principal part of the network. Additional roadside parking is unlikely, however turns from side roads would likely be affected and additional site entrance turns would occur.	Slight

Link	Link Name	IEMA Rule	Driver Delay	Effect
140	B6478 Slaidburn Road (north)	Rule 1 – >30 % HGV Rule 2 – >10 % Total	The total vehicles on the link would increase from 1,913 to 2,199 per 12 hours. HGVs per 12 hours would increase from 212 to 454. The link is a principal part of the network, however, turns from side roads are unlikely to be affected, and additional roadside parking is unlikely, though additional site entrance turns would occur.	Slight

Table 16.10: Pedestrian Delay

Link	Link Name	IEMA Rule	Pedestrian Delay	Effect
48	B6480 Hornby Road west of Park and Ride facility	Rule 1 – >30 % HGV	Limited frontage and footway on this section of route. A 51.1 % increase in HGVs represents an additional 64 against a background flow of 125 over a 12-hour period. Aggregated out this represents an additional vehicle every 9.4 minutes.	Negligible
50	Helks Brow	Rule 1 – >30 % Total & HGV Rule 2 – >10 % Total	There is no footway at this location and the location is remote and rural, therefore limited pedestrian activity permissible. A 179.6 % increase in HGVs represents an additional 41 against a background flow of 23 over a 12-hour period. Aggregated out this represents an additional vehicle every 14.6 minutes. Low background flow limits the potential for delay.	Negligible
51	Helks Brow (south)	Rule 1 – >30 % Total & HGV Rule 2 – >10 % Total	There is no footway at this location and the location is remote and rural, therefore limited pedestrian activity permissible. A 179.6 % increase in HGVs represents an additional 41 against a background flow of 23 over a 12-hour period. Aggregated out this represents an additional vehicle every 14.6 minutes. Low background flow limits the potential for delay.	Negligible
60	West Bradford Road	Rule 1 – >30 % HGV Rule 2 – >10 % Total	There is no footway for most of this link and the location rural, however residential frontages and footways are present on both sides within West Bradford and Waddington. A 260.2 % increase in HGVs represents an additional 141 against a background flow of 54 over a 12-hour period. Aggregated out this represents an additional vehicle every 4.3 minutes.	Slight
61	B6478 Slaidburn Road (north)	Rule 1 – >30 % HGV	There is no footway for most of this link and the location is rural, however residential frontages and footways are present on both sides at Waddington. A 67.0 % increase in HGVs represents an additional 141 against a background flow of 210 over a 12-hour period. Aggregated out this represents an additional vehicle every 4.3 minutes.	Slight
63	B6478 Slaidburn Road (south)	Rule 1 – >30 % HGV Rule 2 – >10 % Total	There is no footway at this location and the location is remote and rural, therefore limited pedestrian activity permissible. A 86.8 % increase in HGVs represents an additional 184 against a background flow of 212 over a 12-hour period. Aggregated out this represents an additional vehicle every 3.3 minutes.	Negligible
65	B6478 Hallgate Hill	Rule 1 – >30 % HGV Rule 2 – >10 % Total	There is no footway at this location and the location is remote and rural, therefore limited pedestrian activity permissible. A 107.1 % increase in HGVs represents an additional 227 against a background flow of 212 over a 12-hour period. Aggregated out this represents an additional vehicle every 2.6 minutes.	Slight

Link	Link Name	IEMA Rule	Pedestrian Delay	Effect
110	B6480 Wennington Road	Rule 1 – >30 % HGV	Residential frontages and footways are present on both sides within Wray and Wennington. A 74.0 % increase in HGVs represents an additional 76 against a background flow of 103 over a 12-hour period. Aggregated out this represents an additional vehicle every 7.9 minutes.	Slight
111	B6480 east of Wennington	Rule 1 – >30 % HGV	Residential frontages and footways are present on both sides within Wennington. An 86.2 % increase in HGVs represents an additional 76 against a background flow of 88 over a 12-hour period. Aggregated out this represents an additional vehicle every 7.9 minutes.	Slight
112	Long Lane	Rule 1 – >30 % HGV	There is no footway at this location and the location is remote and rural, therefore limited pedestrian activity permissible. A 107.6 % increase in HGVs represents an additional 27 against a background flow of 25 over a 12-hour period. Aggregated out this represents an additional vehicle every 22.4 minutes. Low background flow limits the potential for delay.	Negligible
113	Long Lane / Eskew Crescent / Eskew Lane	Rule 1 – >30 % HGV Rule 2 – >10 % Total	There is no footway at this location and the location is remote and rural, therefore limited pedestrian activity permissible. A 627.2 % increase in HGVs represents an additional 72 against a background flow of 11 over a 12-hour period. Aggregated out this represents an additional vehicle every 8.4 minutes. Low background flow limits the potential for delay.	Negligible
115	Fairheath Road	Rule 1 – >30 % HGV	There is no footway at this location and the location is remote and rural, therefore limited pedestrian activity permissible. An 80.2 % increase in HGVs represents an additional 36 against a background flow of 45 over a 12-hour period. Aggregated out this represents an additional vehicle every 16.8 minutes. Low background flow limits the potential for delay.	Negligible
116	Spen Brow	Rule 1 – >30 % HGV	There is no footway at this location and the location is remote and rural, therefore limited pedestrian activity permissible. An 80.2 % increase in HGVs represents an additional 36 against a background flow of 45 over a 12-hour period. Aggregated out this represents an additional vehicle every 16.8 minutes. Low background flow limits the potential for delay.	Negligible
117	Furnessford Road	Rule 1 – >30 % HGV	There is no footway at this location and the location is remote and rural, therefore limited pedestrian activity permissible. An 80.2 % increase in HGVs represents an additional 36 against a background flow of 45 over a 12-hour period. Aggregated out this represents an additional vehicle every 16.8 minutes. Low background flow limits the potential for delay.	Negligible
118	Park House Lane	Rule 1 – >30 % HGV	There is no footway at this location and the location is remote and rural, therefore limited pedestrian activity permissible. An 80.2 % increase in HGVs represents an additional 36 against a	Negligible

Link	Link Name	IEMA Rule	Pedestrian Delay	Effect
			background flow of 45 over a 12-hour period. Aggregated out this represents an additional vehicle every 16.8 minutes. Low background flow limits the potential for delay.	
125	Pimlico Link Road / West Bradford Road	Rule 1 – >30 % HGV	There is no footway for most of this link and the location is rural, therefore limited pedestrian activity permissible. A 47.9 % increase in HGVs represents an additional 141 against a background flow of 294 over a 12-hour period. Aggregated out this represents an additional vehicle every 4.3 minutes.	Slight
126	West Bradford Road / Clitheroe Road	Rule 1 – >30 % HGV	There is no footway for most of this link and the location is rural, therefore limited pedestrian activity permissible. A 47.8 % increase in HGVs represents an additional 141 against a background flow of 294 over a 12-hour period. Aggregated out this represents an additional vehicle every 4.3 minutes.	Slight
132	B6480 Hornby Road east of Park and Ride facility	Rule 1 – >30 % HGV	Residential frontages and footways are present on both sides within Wray. A 59.7 % increase in HGVs represents an additional 81 against a background flow of 136 over a 12-hour period. Aggregated out this represents an additional vehicle every 7.4 minutes.	Slight
140	B6478 Slaidburn Road (north)	Rule 1 – >30 % HGV Rule 2 – >10 % Total	There is no footway at this location and the location is remote and rural, therefore limited pedestrian activity permissible. A 114.2 % increase in HGVs represents an additional 242 against a background flow of 212 over a 12-hour period. Aggregated out this represents an additional vehicle every 2.5 minutes.	Slight

Table 16.11: Pedestrian Amenity

Link	Link Name	IEMA Rule	Pedestrian Amenity	Effect
48	B6480 Hornby Road west of Park and Ride facility	Rule 1 – >30 % HGV	HGVs per 12 hours would increase from 125 to 188 at the peak of the project's construction. An additional HGV every 9.4 minutes. There is little or no pedestrian demand on this link and no footway exists.	Negligible
50	Helks Brow	Rule 1 – >30 % Total & HGV Rule 2 – >10 % Total	HGVs per 12 hours would increase from 23 to 64 at the peak of the project's construction. An additional HGV every 14.6 minutes. There is little or no pedestrian demand on this link and no footway exists.	Negligible
51	Helks Brow (south)	Rule 1 – >30 % Total & HGV Rule 2 – >10 % Total	HGVs per 12 hours would increase from 23 to 64 at the peak of the project's construction. An additional HGV every 14.6 minutes. There is little or no pedestrian demand on this link and no footway exists.	Negligible
60	West Bradford Road	Rule 1 – >30 % HGV Rule 2 – >10 % Total	Vehicles per 12 hours would increase from 1,629 to 1,799 at the peak of construction. HGVs per 12 hours would increase from 54 to 195, equalling an additional HGV every 4.3 minutes. Footways and residential properties exist on both sides within Waddington. A level of pedestrian demand is likely for the western section of the link, with low pedestrian demand for the eastern and middle sections of the link.	Slight
61	B6478 Slaidburn Road (north)	Rule 1 – >30 % HGV	Vehicles per 12 hours would increase from 1,899 to 2,080 at the peak of construction. HGVs per 12 hours would increase from 210 to 351, equalling an additional HGV every 4.3 minutes. Footways and residential properties exist on both sides of the link within Waddington. A level of pedestrian demand is likely for the southern section of the link, with low pedestrian demand for the northern and middle sections of the link.	Slight
63	B6478 Slaidburn Road (south)	Rule 1 – >30 % HGV Rule 2 – >10 % Total	HGVs per 12 hours would increase from 212 to 396 at the peak of the project's construction. An additional HGV every 3.3 minutes. There is little or no pedestrian demand on this link and no footway exists.	Negligible

Link	Link Name	IEMA Rule	Pedestrian Amenity	Effect
65	B6478 Hallgate Hill	Rule 1 – >30 % HGV Rule 2 – >10 % Total	HGVs per 12 hours would increase from 212 to 439 at the peak of the project's construction. An additional HGV every 2.6 minutes. There is little or no pedestrian demand on this link and no footway exists.	Negligible
110	B6480 Wennington Road	Rule 1 – >30 % HGV	Vehicles per 12 hours would increase from 2,385 to 2,498 at the peak of construction. HGVs per 12 hours would increase from 103 to 179, equalling an additional HGV every 7.9 minutes. Footways and residential properties exist on both sides of the link at Wray and Wennington. A level of pedestrian demand is likely for the eastern and western sections of the link, with low pedestrian demand for the middle section of the link.	Slight
111	B6480 east of Wennington	Rule 1 – >30 % HGV	Vehicles per 12 hours would increase from 2,205 to 2,319 at the peak of construction. HGVs per 12 hours would increase from 88 to 164, equalling an additional HGV every 7.9 minutes. Footways and residential properties exist on both sides of the link at Wennington. A level of pedestrian demand is likely for the western section of the link, with low pedestrian demand for the eastern and middle sections of the link.	Slight
112	Long Lane	Rule 1 – >30 % HGV	HGVs per 12 hours would increase from 25 to 52 at the peak of the project's construction. An additional HGV every 22.4 minutes. There is little or no pedestrian demand on this link and no footway exists.	Negligible
113	Long Lane / Eskew Crescent / Eskew Lane	Rule 1 – >30 % HGV Rule 2 – >10 % Total	HGVs per 12 hours would increase from 11 to 83 at the peak of the project's construction. An additional HGV every 8.4 minutes. There is little or no pedestrian demand on this link and no footway exists.	Negligible
115	Fairheath Road	Rule 1 – >30 % HGV	HGVs per 12 hours would increase from 45 to 80 at the peak of the project's construction. An additional HGV every 16.8 minutes. There is little or no pedestrian demand on this link and no footway exists.	Negligible
116	Spen Brow	Rule 1 – >30 % HGV	HGVs per 12 hours would increase from 45 to 80 at the peak of the project's construction. An additional HGV every 16.8 minutes. There is little or no pedestrian demand on this link and no footway exists.	Negligible

Link	Link Name	IEMA Rule	Pedestrian Amenity	Effect
117	Furnessford Road	Rule 1 – >30 % HGV	HGVs per 12 hours would increase from 45 to 80 at the peak of the project's construction. An additional HGV every 16.8 minutes. There is little or no pedestrian demand on this link and no footway exists.	Negligible
118	Park House Lane	Rule 1 – >30 % HGV	HGVs per 12 hours would increase from 45 to 80 at the peak of the project's construction. An additional HGV every 16.8 minutes. There is little or no pedestrian demand on this link and no footway exists.	Negligible
125	Pimlico Link Road / West Bradford Road	Rule 1 – >30 % HGV	Vehicles per 12 hours would increase from 2,741 to 2,961 at the peak of construction. HGVs per 12 hours would increase from 294 to 435, equalling an additional HGV every 4.3 minutes. There is little or no pedestrian demand on this link and no footway exists for most of the link.	Slight
126	West Bradford Road / Clitheroe Road	Rule 1 – >30 % HGV	Vehicles per 12 hours would increase from 2,741 to 2,910 at the peak of construction. HGVs per 12 hours would increase from 294 to 435, equalling an additional HGV every 4.3 minutes. There is little or no pedestrian demand on this link and no footway exists for most of the link.	Slight
132	B6480 Hornby Road east of Park and Ride facility	Rule 1 – >30 % HGV	Vehicles per 12 hours would increase from 3,015 to 3,133 at the peak of construction. HGVs per 12 hours would increase from 136 to 217, equalling an additional HGV every 7.4 minutes. Footways and residential properties exist on both sides of the link at Wray. A level of pedestrian demand is likely for the eastern section of the link, with low pedestrian demand for the western and middle sections of the link.	Slight
140	B6478 Slaidburn Road (north)	Rule 1 – >30 % HGV Rule 2 – >10 % Total	HGVs per 12 hours would increase from 212 to 454 at the peak of the project's construction. An additional HGV every 2.5 minutes. There is little or no pedestrian demand on this link and no footway exists.	Negligible

Table 16.12: Accident and Safety

Link	Link Name	IEMA Rule	Accident and Safety	Effect
48	B6480 Hornby Road west of Park and Ride facility	Rule 1 – >30 % HGV Accidents – 5 Slight – 3 Moderate – 2 Serious – 0	A 51.1 % increase in HGVs would occur over a 12-hour period, an additional HGV every 9.4 minutes. All the reported accidents occurred during times when additional vehicles would be on the road. The current accident rate is one every 12 months. Peak hour traffic when HGVs would be on the link would be 14.2 % of hourly capacity. Therefore, additional accidents are unlikely to occur.	Negligible
50	Helks Brow	Rule 1 – >30 % Total & HGV Rule 2 – >10 % Total Accidents – 0 Slight – 0 Moderate – 0 Serious – 0	A 179.6 % increase in HGVs would occur over a 12-hour period, an additional HGV every 14.6 minutes. No accidents were reported along this link; therefore, the current accident rate is 0. Peak hour traffic when HGVs would be on the link would be 1.5 % of hourly capacity. Therefore, additional accidents are unlikely to occur.	Negligible
51	Helks Brow (south)	Rule 1 – >30 % Total & HGV Rule 2 – >10 % Total Accidents – 0 Slight – 0 Moderate – 0 Serious – 0	A 179.6 % increase in HGVs would occur over a 12-hour period, an additional HGV every 14.6 minutes. No accidents were reported along this link; therefore, the current accident rate is 0. Peak hour traffic when HGVs would be on the link would be 1.5 % of hourly capacity. Therefore, additional accidents are unlikely to occur.	Negligible
60	West Bradford Road	Rule 1 – >30 % HGV Rule 2 – >10 % Total Accidents – 1 Slight – 0 Moderate – 1 Serious – 0	A 260.2 % increase in HGVs would occur over a 12-hour period, an additional HGV every 4.3 minutes. The reported accident occurred during times when additional vehicles would be on the road. The current accident rate is one every 60 months. Peak hour traffic when HGVs would be on the link would be 11.9 % of hourly capacity. Therefore, additional accidents are unlikely to occur.	Slight
61	B6478 Slaidburn Road (north)	Rule 1 – >30 % HGV Accidents – 2 Slight – 1	A 67.0 % increase in HGVs would occur over a 12-hour period, an additional HGV every 4.3 minutes. All the reported accidents occurred during times when additional vehicles would be on the road. The current accident rate is one every 30 months. Peak hour traffic when HGVs would	Slight

Link	Link Name	IEMA Rule	Accident and Safety	Effect
		Moderate – 1 Serious – 0	be on the link would be 12.1 % of hourly capacity. Therefore, additional accidents are unlikely to occur.	
63	B6478 Slaidburn Road (south)	Rule 1 – >30 % HGV Rule 2 – >10 % Total Accidents – 1 Slight – 1 Moderate – 0 Serious – 0	A 86.8 % increase in HGVs would occur over a 12-hour period, an additional HGV every 3.3 minutes. The reported accident occurred during times when additional vehicles would be on the road. The current accident rate is one every 60 months. Peak hour traffic when HGVs would be on the link would be 11.6 % of hourly capacity. Therefore, additional accidents are unlikely to occur.	Slight
65	B6478 Hallgate Hill	Rule 1 – >30 % HGV Rule 2 – >10 % Total Accidents – 0 Slight – 0 Moderate – 0 Serious – 0	A 107.1 % increase in HGVs would occur over a 12-hour period, an additional HGV every 2.6 minutes. No accidents were reported along this link; therefore, the current accident rate is 0. Peak hour traffic when HGVs would be on the link would be 13.0 % of hourly capacity. Therefore, additional accidents are unlikely to occur.	Slight
110	B6480 Wennington Road	Rule 1 – >30 % HGV Accidents – 2 Slight – 0 Moderate – 2 Serious – 0	A 74.0 % increase in HGVs would occur over a 12-hour period, an additional HGV every 7.9 minutes. All the reported accidents occurred during times when additional vehicles would be on the road. The current accident rate is one every 30 months. Peak hour traffic when HGVs would be on the link would be 13.2 % of hourly capacity. Therefore, additional accidents are unlikely to occur.	Negligible
111	B6480 east of Wennington	Rule 1 – >30 % HGV Accidents – 6 Slight – 3 Moderate – 3 Serious – 0	An 86.2 % increase in HGVs would occur over a 12-hour period, an additional HGV every 7.9 minutes. All the reported accidents occurred during times when additional vehicles would be on the road. The current accident rate is one every 10 months. Peak hour traffic when HGVs would be on the link would be 12.1 % of hourly capacity. Therefore, additional accidents are unlikely to occur.	Negligible
112	Long Lane	Rule 1 – >30 % HGV Accidents – 2 Slight – 1 Moderate – 1 Serious – 0	A 107.6 % increase in HGVs would occur over a 12-hour period, an additional HGV every 22.4 minutes. All the reported accidents occurred during times when additional vehicles would be on the road. The current accident rate is one every 30 months. Peak hour traffic when HGVs would be on the link would be 3.6 % of hourly capacity. Therefore, additional accidents are unlikely to occur.	Negligible

Link	Link Name	IEMA Rule	Accident and Safety	Effect
113	Long Lane / Eskew Crescent / Eskew Lane	Rule 1 – >30 % HGV Rule 2 – >10 % Total Accidents – 0 Slight – 0 Moderate – 0 Serious – 0	A 627.2 % increase in HGVs would occur over a 12-hour period, an additional HGV every 8.4 minutes. No accidents were reported along this link; therefore, the current accident rate is 0. Peak hour traffic when HGVs would be on the link would be 3.4 % of hourly capacity. Therefore, additional accidents are unlikely to occur.	Negligible
115	Fairheath Road	Rule 1 – >30 % HGV Accidents – 0 Slight – 0 Moderate – 0 Serious – 0	An 80.2 % increase in HGVs would occur over a 12-hour period, an additional HGV every 16.8 minutes. No accidents were reported along this link; therefore, the current accident rate is 0. Peak hour traffic when HGVs would be on the link would be 4.3 % of hourly capacity. Therefore, additional accidents are unlikely to occur.	Negligible
116	Spen Brow	Rule 1 – >30 % HGV Accidents – 0 Slight – 0 Moderate – 0 Serious – 0	An 80.2 % increase in HGVs would occur over a 12-hour period, an additional HGV every 16.8 minutes. No accidents were reported along this link; therefore, the current accident rate is 0. Peak hour traffic when HGVs would be on the link would be 4.3 % of hourly capacity. Therefore, additional accidents are unlikely to occur.	Negligible
117	Furnessford Road	Rule 1 – >30 % HGV Accidents – 0 Slight – 0 Moderate – 0 Serious – 0	An 80.2 % increase in HGVs would occur over a 12-hour period, an additional HGV every 16.8 minutes. No accidents were reported along this link; therefore, the current accident rate is 0. Peak hour traffic when HGVs would be on the link would be 4.3 % of hourly capacity. Therefore, additional accidents are unlikely to occur.	Negligible
118	Park House Lane	Rule 1 – >30 % HGV Accidents – 0 Slight – 0 Moderate – 0 Serious – 0	An 80.2 % increase in HGVs would occur over a 12-hour period, an additional HGV every 16.8 minutes. No accidents were reported along this link; therefore, the current accident rate is 0. Peak hour traffic when HGVs would be on the link would be 4.3 % of hourly capacity. Therefore, additional accidents are unlikely to occur.	Negligible
125	Pimlico Link Road / West Bradford Road	Rule 1 – >30 % HGV Accidents – 1	A 47.9 % increase in HGVs would occur over a 12-hour period, an additional HGV every 4.3 minutes. The reported accident occurred during times when additional vehicles would be on the	Slight

Link	Link Name	IEMA Rule	Accident and Safety	Effect
		Slight – 1 Moderate – 0 Serious – 0	road. The current accident rate is one every 60 months. Peak hour traffic when HGVs would be on the link would be 13.0 % of hourly capacity. Therefore, additional accidents are unlikely to occur.	
126	West Bradford Road / Clitheroe Road	Rule 1 – >30 % HGV Accidents – 1 Slight – 0 Moderate – 1 Serious – 0	A 47.8 % increase in HGVs would occur over a 12-hour period, an additional HGV every 4.3 minutes. The reported accident occurred during times when additional vehicles would be on the road. The current accident rate is one every 60 months. Peak hour traffic when HGVs would be on the link would be 18.0 % of hourly capacity. Therefore, additional accidents are unlikely to occur.	Slight
132	B6480 Hornby Road east of Park and Ride facility	Rule 1 – >30 % HGV Accidents – 1 Slight – 1 Moderate – 0 Serious – 0	A 59.7 % increase in HGVs would occur over a 12-hour period, an additional HGV every 7.4 minutes. The reported accident occurred during times when additional vehicles would be on the road. The current accident rate is one every 60 months. Peak hour traffic when HGVs would be on the link would be 16.2 % of hourly capacity. Therefore, additional accidents are unlikely to occur.	Negligible
140	B6478 Slaidburn Road (north)	Rule 1 – >30 % HGV Rule 2 – >10 % Total Accidents – 1 Slight – 1 Moderate – 0 Serious – 0	A 114.2 % increase in HGVs would occur over a 12-hour period, an additional HGV every 2.5 minutes. The reported accident occurred during times when additional vehicles would be on the road. The current accident rate is one every 60 months. Peak hour traffic when HGVs would be on the link would be 13.4 % of hourly capacity. Therefore, additional accidents are unlikely to occur.	Slight

58) It is not anticipated that any hazardous loads associated with the Proposed Programme of Works would include toxic material; however, it is understood that there could be spillages associated with it which could result in accidents.

Table 16.13: Hazardous Loads

Development Component	Hazard and Origin	Nature of Hazardous Load	Impact
Lower Houses Compound access route 1	Operation of fuel stations and manufacturers deliveries	It is noted that there are some fuel stations located within the city of Lancaster as well as the village of Caton which should be taken into consideration. Additionally, there is also presence of manufacturers within Lancaster, Claughton, Low Bentham and Bentham who may receive hazardous goods. Further to this, there is a nuclear power station located in Heysham (which is to the west of the proposed traffic route) and therefore is not anticipated to impact on the Proposed Programme of Works.	N/A
Lower Houses Compound access route 2	Operation of fuel stations and manufacturers deliveries	It is noted that there are some fuel stations located within the city of Lancaster as well as the village of Caton which should be taken into consideration. Additionally, there is also presence of manufacturers within Lancaster, Claughton, Low Bentham and Bentham who may receive hazardous goods. Further to this, there is a nuclear power station located in Heysham (which is to the west of the proposed traffic route) and therefore is not anticipated to impact on the Proposed Programme of Works.	N/A
Newton-in-Bowland Compound access route for all construction traffic except surplus material transfer to Waddington Fell Quarry	Operation of fuel stations and manufacturers deliveries	It is noted that there are some fuel stations located within Preston, Mellor Brook and Clitheroe which should be taken into consideration. Additionally, there is also presence of waste and recycling centres in Preston and Clitheroe as well as manufacturers who may receive hazardous goods. It is also noted that there are two quarries located along the proposed traffic route.	N/A
Newton-in-Bowland Compound surplus material transfer to Waddington Fell Quarry	Operation of deliveries to Quarry	It is not anticipated that any hazardous loads associated with the Proposed Programme of Works would include toxic material however, it is understood that there could be spillages associated with it which could result in accidents.	N/A

16.6.2 Operational Phase

59) The operational phase of the Proposed Bowland Section has been reviewed in respect of the potential level of vehicle activity which would be required to operate the Proposed Bowland Section post construction, with the limited staff who would be employed there. It was considered that the potential additional traffic would be infrequent within a 12-hour period, and due to the limited number, the operational phase would not exceed the levels identified during the construction period. It is therefore considered that a detailed assessment of these effects would not be necessary in this instance.

16.7 Essential Mitigation and Residual Effects

60) Mitigation is most effective if considered as an integral part of the Proposed Bowland Section design in order to avoid, reduce or offset any adverse effects on the Transport Planning or wider environment. As set out in Section 4 of this chapter, the proposals include the following embedded mitigation and good practice:

- CTMPs
- Interim Travel Plan
- Highways Stakeholder Group
- Highway improvements.

61) The measures above relate to the construction works, as it is considered that the effects of any additional traffic during operation would be imperceptible against that of background levels. Maintenance and operation would be in accordance with environmental legislation and good practice. During the construction period, there would be a number of locations where impacts could be considered as 'slight' prior to mitigation. This was generally identified in areas where the existing level of background traffic is low, and the local receptors (schools, shops, residential) can be considered to be 'sensitive'. It was acknowledged that whilst the duration of construction activities within individual work areas would be generally short term, and returned to the 'Do Nothing' scenario baseline on completion, there would still be impacts requiring mitigation. To this end, CTMPs would serve to limit the impacts of HGV activity within sensitive areas through the delivery of a routeing strategy to be agreed between the construction contractor(s), Lancashire County Council and Highways England.

62) On sections of highway where interaction with receptors was considered to be unavoidable (e.g. on an access route to a compound) the CTMPs would be used to identify which periods are considered to be most sensitive, and appropriate measures put in place so that HGV activity, where possible, does not coincide. It is likely that this measure would be required in Wray, Wennington, Clitheroe, West Bradford, Waddington, and Newton-in-Bowland.

63) An Interim Travel Plan has been developed to mitigate against the potential effects of vehicle access to the compounds on the surrounding highway network. It was acknowledged that limited options exist to promote sustainable travel alternatives (such as public transport, walking and cycling) due to the rural nature of the Proposed Programme of Works and the transient nature of the works. The emphasis is therefore placed upon the consolidation of movements within multi-occupancy vehicles and the management of vehicles within the site compounds so that they do not have a wider impact upon the surrounding highway network, especially within residential areas and close to schools / community facilities.

64) Highway improvements would also be implemented along the proposed routes to and from the proposed compounds to improve safety for general road users.

65) Taking the above into account, there is no further essential mitigation requirement identified as part of the ES process.

66) A summary of the mitigation and residual impacts are identified within Table 16.14.

Table 16.14: Summary of Mitigation and Residual Effects

Development Component			Severance	Driver Delay	Pedestrian Delay	Pedestrian Amenity	Accidents and Safety	Hazardous Loads	Mitigation (Embedded / good practice)	Potential Effect / Magnitude	Residual Effect / Significance
Link	Development Section	Name									
48	Lower Houses Compound access route 1 and route 2	B6480 Hornby Road west of Park and Ride facility	Negligible	Negligible	Negligible	Negligible	Negligible	N/A	Construction Traffic Management Plan, Travel Plans, Stakeholder Group, highway improvements	Negligible	Negligible
50	Lower Houses Compound access route 1 and route 2	Helks Brow	Negligible	Slight	Negligible	Negligible	Negligible	N/A	Construction Traffic Management Plans, Travel Plan, Stakeholder Group, highway improvements	Negligible	Negligible
51	Lower Houses Compound access route 1 and route 2	Helks Brow (south)	Negligible	Slight	Negligible	Negligible	Negligible	N/A	Construction Traffic Management Plans, Travel Plan, Stakeholder Group, highway improvements	Negligible	Negligible

Development Component			Severance	Driver Delay	Pedestrian Delay	Pedestrian Amenity	Accidents and Safety	Hazardous Loads	Mitigation (Embedded / good practice)	Potential Effect / Magnitude	Residual Effect / Significance
Link	Development Section	Name									
60	Newton-in-Bowland Compound access route for all construction traffic except surplus material transfer to Waddington Fell Quarry	West Bradford Road	Slight	Slight to Moderate	Slight	Slight	Slight	N/A	Construction Traffic Management Plans, Travel Plan, Stakeholder Group	Slight	Slight
61	Newton-in-Bowland Compound access route for all construction traffic except surplus material transfer to Waddington Fell Quarry	B6478 Slaidburn Road (north)	Slight	Slight to Moderate	Slight	Slight	Slight	N/A	Construction Traffic Management Plans, Travel Plan, Stakeholder Group, highway improvements	Slight	Negligible
63	Newton-in-Bowland Compound access route for	B6478 Slaidburn Road (south)	Negligible	Slight	Negligible	Negligible	Slight	N/A	Construction Traffic Management Plans, Travel Plan,	Slight	Negligible

Development Component			Severance	Driver Delay	Pedestrian Delay	Pedestrian Amenity	Accidents and Safety	Hazardous Loads	Mitigation (Embedded / good practice)	Potential Effect / Magnitude	Residual Effect / Significance
Link	Development Section	Name									
	all construction traffic except surplus material transfer to Waddington Fell Quarry								Stakeholder Group, highway improvements		
65	Newton-in-Bowland Compound access route for all construction traffic and surplus material transfer to Waddington Fell Quarry	B6478 Hallgate Hill	Negligible	Slight	Slight	Negligible	Slight	N/A	Construction Traffic Management Plan, Travel Plans, Stakeholder Group, highway improvements	Slight	Negligible
110	Lower Houses Compound access route 2	B6480 Wennington Road	Slight	Slight	Slight	Slight	Negligible	N/A	Construction Traffic Management Plans, Travel Plan, Stakeholder Group, highway improvements	Slight	Negligible

Development Component			Severance	Driver Delay	Pedestrian Delay	Pedestrian Amenity	Accidents and Safety	Hazardous Loads	Mitigation (Embedded / good practice)	Potential Effect / Magnitude	Residual Effect / Significance
Link	Development Section	Name									
111	Lower Houses Compound access route 2	B6480 east of Wennington	Negligible	Slight	Slight	Slight	Negligible	N/A	Construction Traffic Management Plans, Travel Plan, Stakeholder Group, highway improvements	Slight	Negligible
112	Lower Houses Compound access route 2	Long Lane	Negligible	Slight	Negligible	Negligible	Negligible	N/A	Construction Traffic Management Plans, Travel Plan, Stakeholder Group, highway improvements	Negligible	Negligible
113	Lower Houses Compound access route 2	Long Lane / Eskew Crescent / Eskew Lane	Negligible	Slight	Negligible	Negligible	Negligible	N/A	Construction Traffic Management Plans, Travel Plan, Stakeholder Group, highway improvements	Negligible	Negligible

Development Component			Severance	Driver Delay	Pedestrian Delay	Pedestrian Amenity	Accidents and Safety	Hazardous Loads	Mitigation (Embedded / good practice)	Potential Effect / Magnitude	Residual Effect / Significance
Link	Development Section	Name									
115	Lower Houses Compound access route 2	Fairheath Road	Negligible	Slight	Negligible	Negligible	Negligible	N/A	Construction Traffic Management Plans, Travel Plan, Stakeholder Group, highway improvements	Negligible	Negligible
116	Lower Houses Compound access route 2	Spen Brow	Negligible	Slight	Negligible	Negligible	Negligible	N/A	Construction Traffic Management Plans, Travel Plan, Stakeholder Group	Negligible	Negligible
117	Lower Houses Compound access route 2	Furnessford Road	Negligible	Slight	Negligible	Negligible	Negligible	N/A	Construction Traffic Management Plans, Travel Plan, Stakeholder Group	Negligible	Negligible
118	Lower Houses Compound access route 2	Park House Lane	Negligible	Slight	Negligible	Negligible	Negligible	N/A	Construction Traffic Management	Negligible	Negligible

Development Component			Severance	Driver Delay	Pedestrian Delay	Pedestrian Amenity	Accidents and Safety	Hazardous Loads	Mitigation (Embedded / good practice)	Potential Effect / Magnitude	Residual Effect / Significance
Link	Development Section	Name									
									Plans, Travel Plan, Stakeholder Group		
125	Newton-in-Bowland Compound access route for all construction traffic except surplus material transfer to Waddington Fell Quarry	Pimlico Link Road / West Bradford Road	Negligible	Slight to Moderate	Slight	Slight	Slight	N/A	Construction Traffic Management Plans, Travel Plan, Stakeholder Group	Slight	Slight
126	Newton-in-Bowland Compound access route for all construction traffic except surplus material transfer to Waddington Fell Quarry	West Bradford Road / Clitheroe Road	Negligible	Slight to Moderate	Slight	Slight	Slight	N/A	Construction Traffic Management Plans, Travel Plan, Stakeholder Group	Slight	Slight

Development Component			Severance	Driver Delay	Pedestrian Delay	Pedestrian Amenity	Accidents and Safety	Hazardous Loads	Mitigation (Embedded / good practice)	Potential Effect / Magnitude	Residual Effect / Significance
Link	Development Section	Name									
132	Lower Houses Compound access route 1 and route 2	B6480 Hornby Road east of Park and Ride facility	Slight	Slight	Slight	Slight	Negligible	N/A	Construction Traffic Management Plans, Travel Plan, Stakeholder Group, highway improvements	Slight	Negligible
140	Newton-in-Bowland Compound access route for all construction traffic and surplus material transfer to Waddington Fell Quarry	B6478 Slaidburn Road (north)	Slight	Slight	Slight	Negligible	Slight	N/A	Construction Traffic Management Plans, Travel Plan, Stakeholder Group, highway improvements	Slight	Negligible

16.8 Cumulative Effects

67) The following section provides an overview of the potential cumulative effects from different proposed developments and land allocations, in combination with the Proposed Bowland Section (i.e. inter-project cumulative assessment). Data on proposed third party developments and land allocations contained in development plan documents were obtained from various sources, including local planning authority websites, online searches, and consultations with planning officers. Proposed development data were then reviewed with a view to identifying schemes or land allocations whose nature, scale and scope could potentially give rise to significant environmental effects when considered in combination with the likely effects arising from the Proposed Bowland Section.

68) Intra-project cumulative impacts, i.e. two or more types of impact acting in combination on a given environmental receptor, property or community resource, are considered in Chapter 14: Communities and Health.

69) It is important to note that future growth on the local road network was taken into account in the traffic modelling described in Chapter 16: Transport Planning. For this reason, the potential cumulative effects of future traffic growth between the Proposed Bowland Section and other proposed developments are embedded into predicted road traffic-related impacts on highways capacity, air quality and noise.

70) The over-arching cumulative effects of the Proposed Programme of Works i.e. the five proposed replacement tunnel sections in combination, are considered in Volume 2 Chapter 19: Cumulative Effects. In addition, Volume 2 Chapter 19 examines the cumulative effects associated with the outcomes from Volume 2 (delivery and operation of the main construction compounds, tunnel, and construction traffic routes), Volume 5 (proposed off-site highways works and satellite compounds), and Volume 6 (Proposed Ribble Crossing).

71) Based on professional judgement, it was concluded that there is potential for the Proposed Bowland Section to act cumulatively with developments listed in Table 16.15. Further detail is provided in Appendix 16.1.

Table 16.15: Summary of Cumulative Effects

Proposed Development	Nature / Scope of Effects	Commentary on Cumulative Effects
3/2018/0914	Residential	As part of the mitigation identified within Section 4 of this ES, it is proposed that a Highway Stakeholder Group be set up to manage the potentially negative effects of concurrent construction operations across the SRN resulting from identified schemes within Lancashire. Of particular interest is the M6 corridor between Junction 30 and Junction 35. The Highway Stakeholder Group would need to collate the following elements associated with each scheme to ensure that a combination of factors do not create unacceptable levels of additional traffic generation on the highway network, or concurrent road closures do not serve to restrict access to the Proposed Bowland Section. It would require attendance from the following stakeholders: ▪ Highways England and their managing agent ▪ Lancashire County Council and their managing agent ▪ The Police ▪ National Grid ▪ United Utilities (with respect to planned maintenance) ▪ United Utilities' contractors for the Proposed Programme of Works
LCC/2019/0008	Education	

Proposed Development	Nature / Scope of Effects	Commentary on Cumulative Effects
		▪ LPAs of Craven, Ribble Valley, South Ribble and Lancaster with regard to committed and proposed schemes within the planning process. The discussion would surround the following activities that may have a bearing on the operation of the highway network ▪ Planned highway maintenance works ▪ Planned highway improvements ▪ Planned utility works ▪ Detailed construction programmes (of each major project) ▪ Anticipated road closures ▪ Anticipated periods of abnormal loads accessing the network ▪ Specified diversionary routes (of Lancashire County Council and Highways England) ▪ Major seasonal events resulting in additional traffic / temporary traffic management.

16.9 Conclusion

72) This chapter of Volume 6 considered the potential Transport Planning impacts associated with construction and operation along the route of the Proposed Bowland Section. Traffic and transport impacts were assessed for the highest period of activity within the anticipated construction programme. Furthermore, caution was applied to the principles for traffic generation and daily / weekly working periods so that they did not under-estimate the traffic movements associated with construction on a representative day within that period. It therefore represents a robust assessment of combined effects on the highway network that is unlikely to occur beyond the identified period.

73) The assessment considered the local and strategic highways networks within the full construction period (April 2023 to September 2030), over an extensive area which extends beyond the pipeline and its immediate environs to ensure that the strategic routes would convey materials to / from the construction compound area. A total of 44 traffic 'links' were quantified for the Proposed Bowland Section, based on surveys undertaken in October / November 2019, DfT traffic counts and Lancashire County Council traffic counts.

74) Each link provides two-way flows over a 12-hour period. The effects of additional traffic have been assessed against criteria identified in IEMA guidance. A total of 19 locations within this section have been identified for further assessment of which two locations exceed a 30 % increase in total traffic at Helks Brow and Helks Brow (south) on route 1 and route 2 to the Lower Houses Compound proposed access, set against low background flows. The remaining 17 links for further assessment exceed a 30 % increase in HGVs, of which the majority are set against low background flows. There are also increases in movements focused upon the B6478 and B6480; however, these routes are well equipped to accommodate additional loading.

75) A mitigation strategy is proposed to reduce potentially slight impacts over a short period of time in locations which are most sensitive to an increase in traffic. They aim to ensure that effects on local receptors are limited, noting that the works are progressive and of mainly short term duration at a single location. The mitigation strategy includes:

- CTMPs, which would be agreed with Lancashire County Council and Highways England, with a view to defining the most suitable access routes to / from locations chosen by the contractor(s) for the import of materials and export of waste

- An Interim Travel Plan would help manage vehicle trips to / from the compound areas, which would ensure that car parking demand does not exceed beyond the limits of the compound onto neighbouring streets
- The need of a Highway Stakeholder Group has been identified to ensure that concurrent construction operations associated with other major sites do not create significant cumulative impacts during any periods where parts of the local highway network may be closed due to the Proposed Bowland Section
- To improve the safety for general road users, highway improvements would be implemented along some sections of the proposed routes.

76) These mitigation measures should ensure that effects upon local receptors are limited, noting that the works are progressive and of mainly long term duration, except for specific locations with short term activities.

16.10 Glossary and Key Terms

77) Key phrases and terms used within this technical chapter relating to Transport Planning are defined within Appendix 1.2: Glossary and Key Terms.