

# A1 Birtley to Coal House

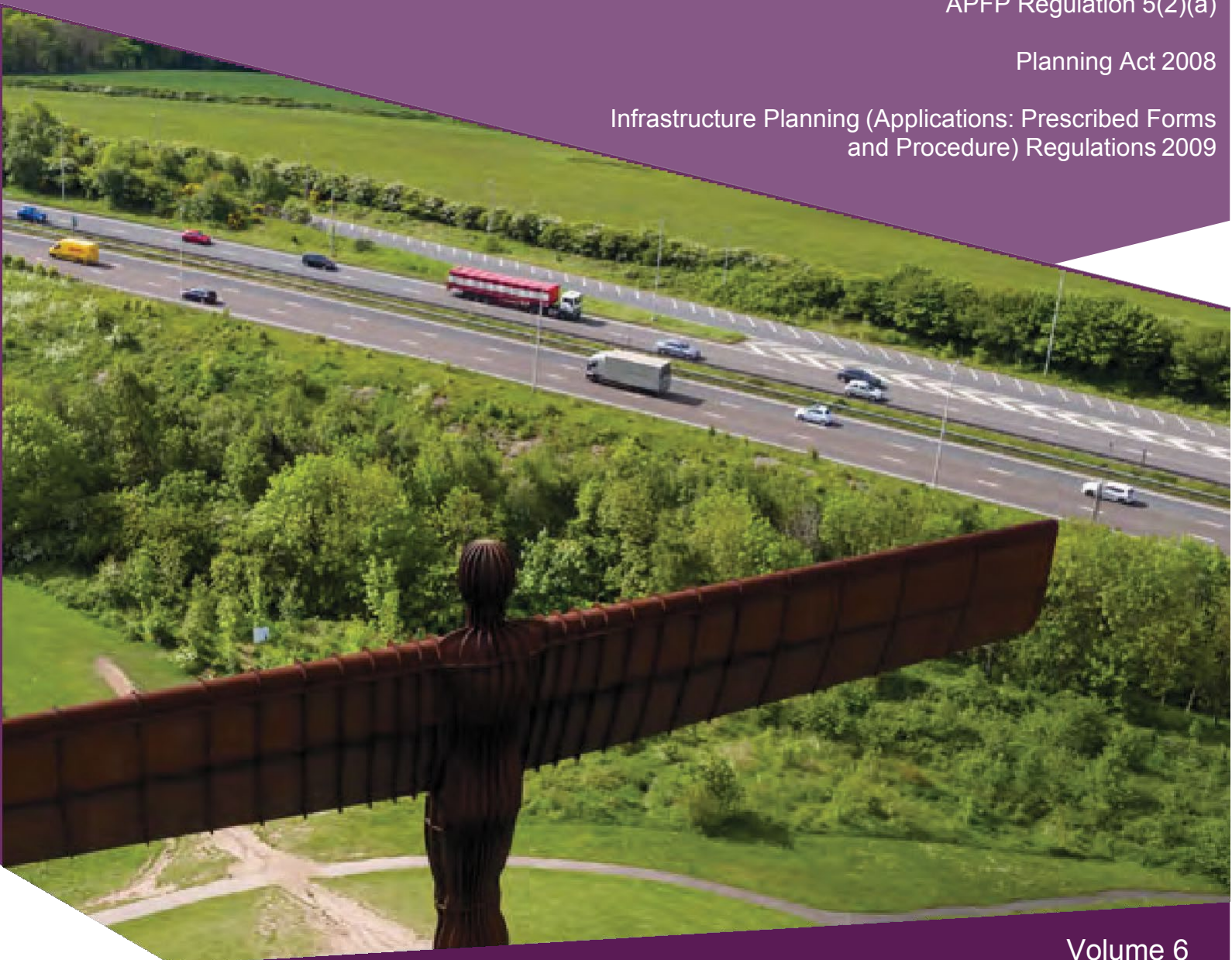
## Scheme Number: TR010031

### 6.1 Environmental Statement Chapter 12 Population and Human Health

APFP Regulation 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms  
and Procedure) Regulations 2009



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## 12. POPULATION AND HUMAN HEALTH

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### 12.1. INTRODUCTION

- 12.1.1. This chapter reports the outcome of the Population and Human Health assessment of the Scheme. This assessment has been carried out following the methodology set out within Interim Advice Note (IAN) 125/15 Environmental Assessment Update (**Ref.12.1**). This combines published guidance in the Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 6 Land Use, Part 8 Pedestrians, Cyclists, Equestrians and Community Effects and Part 9 Vehicle Travellers, into one assessment of Population and Human Health. This section also incorporates assessment of effects upon human health as required in the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. As covered in more detail in **paragraph 12.4.1** below the following aspects have been assessed in this chapter: motorised travellers, walking, cycling and horse-riding (WCH), rail travellers, assessment of community severance during construction, community land, private land (non-agricultural land), local economy and employment, tourism and recreation, and human health.
- 12.1.2. This chapter summarises the legislative and policy framework and describes the methodology followed for the assessment along with the assessment assumptions and limitations. The chapter identifies the potential impacts as a result of the Scheme, details the design, mitigation and enhancement measures that have been identified and reports the assessment of the significant effects of the Scheme. Details of monitoring that should be carried out for the Scheme are also provided. This chapter is intended to be read as part of the Environmental Statement (ES) and in conjunction with its associated figures and appendices.
- 12.1.3. A full description of the Scheme is described in **Chapter 2 The Scheme** in this ES.
- Allerdene Bridge Options**
- 12.1.4. In the Population and Human Health assessment, the differences between the Allerdene embankment option and Allerdene viaduct option, as detailed in **paragraphs 2.7.11 to 2.7.18** of this ES, do not affect the assessment. While generally a viaduct option might present more permeability for communities on either side, the land surrounding these specific options is inaccessible to the public, with no public rights of way (PRoW) crossed. Both the Allerdene embankment option and Allerdene viaduct option have the same construction programme, road layout (in terms of number of lanes and merge/diverge arrangements) and forecast traffic flows. For the purpose of the Population and Human Health assessment, there is therefore no difference between the two options.

### 12.2. COMPETENT EXPERT EVIDENCE

- 12.2.1. As detailed in **Table 12-1**, the professionals contributing to the production of this ES chapter have sufficient expertise to ensure the completeness and quality of this assessment.



**Table 12-1 - Population and human health professional competence**

Name	Role	Qualifications and Professional Membership	Experience
Jonny Dawson	Author	<ul style="list-style-type: none"> <li>– BSc (Hons) Marine Biology</li> <li>– MSc Environmental Consultancy</li> <li>– IEMA Practitioner</li> </ul>	<p><u>EIA Experience:</u></p> <ul style="list-style-type: none"> <li>– 3 years of experience preparing and coordinating ESs</li> </ul> <p>Relevant Population and Human Health Experience:</p> <ul style="list-style-type: none"> <li>– Preparation of the EqIA Screening Report for the Hereford Bypass</li> </ul>
Claire Beard	Reviewer	<ul style="list-style-type: none"> <li>– BSc Biology</li> <li>– MSc Sustainability, Planning and Environmental Policy</li> <li>– IEMA Practitioner</li> </ul>	<p><u>EIA Experience:</u></p> <ul style="list-style-type: none"> <li>– 12 years of undertaking environmental and health assessments.</li> </ul> <p>Relevant Population and Health Experience:</p> <ul style="list-style-type: none"> <li>– A27 East of Lewes Stage 3, Population &amp; Health chapter</li> <li>– A27 Worthing Lancing Stage 3, Health input into Population &amp; Health chapter</li> <li>– A27 Arundel PCF Stage 2 &amp; 3, health assessment, and Stage 3 health input into Population &amp; Health chapter</li> </ul>

## 12.3. LEGISLATIVE AND POLICY FRAMEWORK

### LEGISLATIVE FRAMEWORK

12.3.1. The legislative framework relevant to the scope of the Population and Human Health assessment is summarised as follows:

- a. The Localism Act (2011) (**Ref 12.2**) which sets out a series of measures with the potential to achieve a substantial shift in power away from central government and towards local people, such as the Gateshead community.
- b. The Countryside and Rights of Way (CROW) Act 2000 (**Ref 12.3**) and the Highways Act 1980 (**Ref 12.4**) which is the principal legislation governing the registration and protection of public footpaths, bridleways, byways open to all traffic and restricted byways. The

CRoW Act also provides measures to improve public access to the open countryside and registered common land. The Scheme seeks to protect and improve local Public Rights of way.

- c. The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (**Ref 12.5**) following the transposition of the 2014/52/EU EIA Directive into UK legislation, health is now to be considered as one of the topics of Environmental Impact Assessment (EIA) and is within this Scheme’s assessment.

## NATIONAL POLICY BACKGROUND

- 12.3.2. National policy relevant to the scope of the Population and Human Health assessment is outlined in **Table 12-2**.

**Table 12-2 - Relevant national policies**

Policy	Relevant Policy Objectives	Significance of impact of the Scheme on policy objective
<p>National Policy Statement for National Networks (NPS NN) (Designated January 2015) (<b>Ref 12.6</b>)</p>	<p>Population and Human Health are not covered as a specific generic impact in the NPS NN. Population and Human Health are referred to in the following sections of the NPS NN:</p> <p>Land use including open space, green infrastructure and Green Belt: paragraphs 5.162 to 5.185. It states that: <i>“The applicant should identify existing and proposed land uses near the project, any effects of replacing an existing development or use of the site with the proposed project or preventing a development or use on a neighbouring site from continuing.”</i></p> <p>Noise: paragraphs 5.186 to 5.200. The NPS NN refers to excessive noise caused by a Scheme’s implementation as having the potential to cause wide-ranging impacts on the quality of human life and health and use and enjoyment of areas of value (such as quiet places).</p>	<ul style="list-style-type: none"> <li>– Land use: The outcome of the assessment on Effects on Communities (insert para numbers) identifies that temporary or permanent land take associated with the Scheme would not result in significant effects on proposed or existing land uses near the Scheme or prevent any developments or users on a neighbouring site from continuing. It is therefore not considered that there would be a significant impact on this policy objective.</li> <li>– Noise: During construction there would be significant effects due to night time construction works associated with the construction of Allerdene Bridge. This work would be carried out during railway possessions and cannot be mitigated. During operation it has been concluded that a net benefit would arise from the introduction the Scheme.</li> </ul>

<b>Policy</b>	<b>Relevant Policy Objectives</b>	<b>Significance of impact of the Scheme on policy objective</b>
	<p>Health: Impacts relating to health are covered within the assessment principles of the NPS NN (Paragraphs 4.79 to 4.82). This is due to national road networks having the potential to affect the health, well-being and quality of life of the population. Direct impacts on health can arise through traffic, noise, vibration, air quality and community severance.</p>	<p>Significant benefits would result in particular in those areas which would be screened by the proposed Birtley acoustic barrier. As such, it is considered that there would be a slight impact on this policy objective due to night time works but this would be temporary. Once operational there would be an overall beneficial impact on this policy.</p> <ul style="list-style-type: none"> <li>– Health: The Population and Human Health assessment covers health and well-being throughout the relevant ‘Health’ sub sections, as well as impacts to community severance. The ‘Assessment of Likely Significant Effects’ (section 12.10) notes that the Scheme would be beneficial in relation to Paragraphs 4.79 and 4.82 of the NPS NN, with the local population health benefiting from improved journey times, improvements for WCHs, reduced noise during operation, decreased driver stress due to a reduction in congestion, and by improving community connectivity. It is therefore considered that there would be a slight beneficial impact on this policy objective.</li> </ul>
<p>National Planning Policy Framework (NPPF) (2019) (Ref 12.7)</p>	<p>The NPPF sets out that the purpose of planning is to help achieve sustainable development.</p> <p>Paragraphs 7 and 8 of the NPPF assert that there are three dimensions to sustainable development - economic, social</p>	<p>The Scheme is part of the A1 Newcastle Gateshead Western By-pass (A1 NGWB). The A1 NGWB is important to the economy of the north-east, supporting both regional and local connectivity. The route has some of the most congested highway links in the region and it needs to perform well to</p>

Policy	Relevant Policy Objectives	Significance of impact of the Scheme on policy objective
	<p>and environmental and identify the roles that a planning system should perform.</p> <p>Paragraph 17 of the NPPF sets out the core planning principles of the NPPF, which relate to sustainable economic development, active management of growth to make use of sustainable modes of travel, and local strategies to deliver health, social and cultural wellbeing.</p> <p>Paragraph 18 of Section 1 of the NPPF (Building a strong, competitive economy) covers the Government’s commitments to delivering economic growth to create jobs and prosperity, while meeting the challenges of global competition and a low carbon future.</p> <p>Paragraph 19 of the NPPF states that <i>“planning should operate to encourage and not act as an impediment to sustainable growth.”</i></p> <p>Section 7 of the NPPF covers the requirement for good design in the planning process.</p> <p>Paragraph 70 of Section 8 of the NPPF (Promoting Healthy Communities) requires planning policies and decisions to <i>“deliver the social, recreational and cultural facilities and services the community needs”</i>.</p> <p>Paragraph 75 asserts that <i>“planning policies should protect and enhance public rights of way and access. Local authorities should seek opportunities to</i></p>	<p>support the ambitions for local growth. The Scheme aims to support the Government’s commitments to delivering economic growth by improving the road to the Newcastle and Tyneside area.</p> <p>Some minor beneficial economic effects have also been identified from the creation of construction related jobs and support to local businesses through expenditure from direct spend on materials for the Scheme, although these effects would not be significant.</p> <p>The traffic model used to design the Scheme predicts that road users travelling through the Scheme will benefit significantly from reduced journey times as a result of the Scheme.</p> <p><b>Section 12.10</b> ‘Assessment of Likely Significant Effects’ details that WCHs would experience a long-term, beneficial effect because of improved connectivity, improved safety and improved amenity on the network of Public Rights of Ways, cycle routes and roads. This would contribute to improving health, social and cultural wellbeing for all users. Improved WCH facilities and improvements to public transportation would improve access to community facilities and services and contribute positively to making places better for people.</p> <p>With regards to noise, during operation there would be a net benefit as a result of the Scheme with significant benefits for dwellings in North Dene and Crathie, which would be screened by the proposed Birtley acoustic barrier.</p>



<b>Policy</b>	<b>Relevant Policy Objectives</b>	<b>Significance of impact of the Scheme on policy objective</b>
	<i>provide better facilities for users, for example by adding links to existing rights of way networks including National Trails”.</i>	It is therefore considered that the Scheme supports these objectives of the NPPF.
Planning Practice Guidance (PPG)	Planning Practice Guidance relating to relevant NPPF policies are included under ‘Noise’ (July 2019) ( <b>Ref 12.8</b> ), ‘Health and wellbeing’ (July 2019) ( <b>Ref 12.9</b> ), ‘Open space, sports and recreation facilities, public rights of way and local green space’ (March 2014) ( <b>Ref 12.10</b> ).	

## LOCAL PLANNING POLICY

- 12.3.3. Gateshead Council and Newcastle City Council have been working together since 2009 in order to prepare a shared planning framework for Gateshead and Newcastle. The decision to prepare a joint Plan is in recognition of the economic advantage to both Local Authority areas. This Plan contains the overall joint spatial vision, objectives, strategy and policies for the region. The Plan began as two separate plans within Gateshead’s and Newcastle’s respective Local Development Frameworks (LDFs).
- 12.3.4. Local Planning policy relevant to the scope of the Population and Human Health assessment is outlined in **Table 12-3**.

**Table 12-3 - Relevant policies within the Core Strategy and Urban Core Plan for Gateshead and Newcastle upon Tyne 2010-2030 and the Tyne and Wear Local Transport Plan**

<b>Local Policy</b>	<b>Relevant Policy Objectives</b>	<b>Significance of impact of the Scheme on policy objective</b>
<p>Policy CS5 - Employment and Economic Growth Priorities</p>	<p>Gateshead and Newcastle will play a major role in the economic growth of the north-east. They will continue to develop a diverse economy with accessible employment and deliver significant increases in the number of businesses and jobs.</p>	<p>The Population and Human Health chapter covers potential impacts in relation to economy and employment including potential impacts on the local economy during construction and operation including effects on the local supply chain, and both disruption and reduced delays to commuters and business travel. The Scheme therefore supports the aims of Policy CS5 by:</p> <ul style="list-style-type: none"> <li>– Enhancing local labour opportunities.</li> <li>– Supporting local businesses through expenditure from direct spend on materials for the Scheme.</li> <li>– The carriageway would require continuous monitoring and maintenance work which would contribute to local employment opportunities during operation.</li> </ul>
<p>Policy CS9 – Existing Communities</p>	<p>Existing communities will be sustainable places of quality and choice. This will be achieved by:</p> <ul style="list-style-type: none"> <li>– Maintaining a range of housing types and sizes throughout the plan area.</li> <li>– Maintaining and improving facilities, services and the local environment.</li> <li>– Bringing empty properties back into use, demolition of housing which is no longer</li> </ul>	<p>The Population and Human Health chapter covers potential impacts in relation to the surrounding local communities by considering the effects to Community Severance, Private Assets and Demolition of Private Property and Community Land. The Scheme supports the aims of Policy CS9 by:</p> <ul style="list-style-type: none"> <li>– Proposed new WCH routes providing greater</li> </ul>

Local Policy	Relevant Policy Objectives	Significance of impact of the Scheme on policy objective
	<p>viable or in demand, supporting programmes of improvement and renewal and the replacement of housing.</p> <ul style="list-style-type: none"> <li>– Preventing the loss of family homes, through sub-division, change of use or redevelopment.</li> <li>– Preventing an over concentration of shared accommodation.</li> </ul>	<p>connectivity between communities</p>
<p>Policy CS14 – Wellbeing and Health</p>	<p>The wellbeing and health of communities will be maintained and improved by:</p> <ul style="list-style-type: none"> <li>– Requiring development to contribute to creating an age friendly, healthy and equitable living environment.</li> <li>– Promoting allotments and gardens for exercise, recreation and for healthy locally produced food.</li> <li>– Controlling the location of, and access to, unhealthy eating outlets.</li> </ul> <p>This policy is linked to other policies that address the wider determinants of health including access to community facilities, encouragement of walking and cycling, provision of employment opportunities, creation of sustainable communities and ensuring access to green and open space.</p>	<p>The Population and Human Health chapter covers potential impacts in relation to community health and wellbeing throughout the throughout the relevant ‘Health’ sub sections. The Scheme supports the aims of Policy CS14 by:</p> <ul style="list-style-type: none"> <li>– Improved driver journey times</li> <li>– A reduction in driver stress due to reduced congestion</li> <li>– Improve the noise environment along the whole Scheme during operation</li> <li>– Community connectivity would improve due to improvements to WCH routes</li> </ul>
<p>Local Transport Plan</p>	<p>The Tyne and Wear Local Transport Plans vision is to:</p> <p><i>“have a fully integrated and sustainable transport network, allowing everyone the opportunity to achieve their full potential and have a</i></p>	<p>The Scheme supports the aims of the Tyne and Wear Local Transport Plan vision through the following Scheme objectives (see <b>Section 2.2 of Chapter 2 The Scheme</b> of this ES (<b>Application</b></p>

<b>Local Policy</b>	<b>Relevant Policy Objectives</b>	<b>Significance of impact of the Scheme on policy objective</b>
	<p><i>high quality of life. Our strategic networks will support the efficient movement of people and goods within and beyond Tyne and Wear, and a comprehensive network of pedestrian, cycle and passenger transport links will ensure that everyone has access to employment, training, community services and facilities.”</i></p> <p>The aims of the transport strategy are as follows:</p> <ul style="list-style-type: none"> <li>– To support the economic development, regeneration and competitiveness of Tyne and Wear, improving the efficiency, reliability and integration of transport networks across all modes.</li> <li>– To reduce carbon emissions produced by local transport movements, and to strengthen our networks against the effects of climate change and extreme weather events.</li> <li>– To contribute to healthier and safer communities in Tyne and Wear, with higher levels of physical activity and personal security.</li> <li>– To create a fairer Tyne and Wear, providing everyone with the opportunity to achieve their full potential and access a wide range of employment, training, facilities and services.</li> <li>– To protect, preserve and enhance our natural and built environments, improving quality of life and creating high quality public places.</li> </ul>	<p><b>Document Reference:</b> <b>TR010031/APP/6.1)):</b></p> <ul style="list-style-type: none"> <li>– Supporting economic growth: The Scheme forms part of a wider government initiative for growth in the north-east and aims to support economic growth by improving the road to the Newcastle and Tyneside area.</li> <li>– A safe and serviceable network: The Scheme aims to reduce accidents and improve journey time reliability which will lead to a reduction in driver stress and delays.</li> <li>– A more free-flowing network: The traffic model used to design the Scheme predicts that road users travelling through the Scheme will benefit significantly from reduced journey times as a result of the proposal.</li> <li>– Improved environment: The environmental effects resulting from the Scheme have been considered during previous stages of development. Measures to mitigate potential effects on the local environment have been identified and will be further refined as the Scheme design is finalised. Opportunities to improve the local environment are also being sought as part of the final Scheme design.</li> </ul>

Local Policy	Relevant Policy Objectives	Significance of impact of the Scheme on policy objective
		<p>An accessible and integrated network: The Scheme will provide improved connectivity with the local road network. Access and safety for pedestrians, cyclists and horse riders will be considered as part of the Scheme. We are upgrading the road to accommodate abnormal loads which will future proof the route and reduce the impact on the local road network.</p>

## 12.4. ASSESSMENT METHODOLOGY

### SCOPE OF ASSESSMENT

12.4.1. The following elements of DMRB Volume 11 Section 3, Part 6 Land Use (**Ref 12.11**) (except Agricultural land-use which has been addressed in **Chapter 9 Geology and Soils** of this ES (**Application Document Reference: TR010031/APP/6.1**), Part 8 Pedestrians, Cyclists, Equestrians and Community Effects (**Ref 12.12**), and Part 9 Vehicle Travellers (**Ref 12.13**), have been assessed:

- a. Motorised Travellers – detailed assessment
- b. WCH – detailed assessment
- c. Rail travellers – simple assessment
- d. Assessment of community severance during construction – simple assessment
- e. Community land – simple assessment
- f. Private Land – simple assessment of non-agricultural private land. A detailed assessment of the impact on agricultural land has been undertaken in **Chapter 9 Geology and Soils** of this ES (**Application Document Reference: TR010031/APP/6.1**), in accordance with guidance from the Overseeing Organisation
- g. Local Economy and Employment – simple assessment
- h. Tourism and Recreation – simple assessment
- i. Human Health – simple assessment

12.4.2. This level of assessment is in line with that proposed in the Scoping Report and subsequently agreed through the Scoping Opinion Response Table presented in **Appendix 4.1** of this ES (**Application Document Reference: TR010031/APP/6.3**).



## DATA SOURCES

12.4.3. The following list of data sources have been consulted to inform this assessment:

- a. Public Health England (PHE) Gateshead Health Profile 2017 (**Ref 12.14**).
- b. Local Authority Labour Market Profiles - NOMIS. The profiles bring together data from several sources, such as annual survey data from the Office for National Statistics (ONS).
- c. Publicly available GIS and mapping information.
- d. Stage 3 - Walking, Cycling and Horse Riding Assessment Report (WCHAR) **Appendix 12.1** of this ES (**Application Document Reference: TR010031/APP/6.3**).
- e. Baseline information for the assessment of vehicle travellers was derived entirely from the output of the traffic model, which included traffic flow and speed scenarios for the baseline year 2017, construction year 2023 and design year 2038.
- f. Findings of other relevant chapters, namely: **Chapter 5 Air Quality, Chapter 11 Noise and Vibration** and **Chapter 7 Landscape and Visual** of this ES (**Application Document Reference: TR010031/APP/6.1**).
- g. Local authority policies and reports including the Gateshead Council Joint Strategic Needs Assessment (JSNA) (**Ref 12.15**).

## CONSULTATION

### Consultation with Key Stakeholders

- 12.4.4. A meeting between Gateshead Council, Highways England and WSP was held on 5 September 2017 at the Gateshead Council office to discuss WCHs in the area of the Scheme. Additionally, a discussion on non-motorised users was held with Sunderland City Council on 6 September 2017. Details of consultation which has taken place during the production of the ES can be found in **Appendix 4.4** of this ES (**Application Document Reference: TR010031/APP/6.3**).
- 12.4.5. The stakeholder meetings were also used as an opportunity to discuss planned and aspirational routes, connections, facilities, infrastructure, etc. that the Local Authorities have previously identified to improve pedestrian, cycle and equestrian routes within the area.
- 12.4.6. The information gathered during the stakeholder meetings has been incorporated into the WCH Assessment report.
- 12.4.7. A number of early engagements were undertaken with various private land owners regarding the temporary or permanent land takes required by the Scheme.

### Consultation with Local User Groups and Wider Public

- 12.4.8. A series of public consultation and exhibition events were held for a six-week period, starting on 8 February 2018 and ending on 29 March 2018, during which consultation information on various issues was provided, including:
- a. Junction Layouts
  - b. Works to the existing road and slip roads
  - c. Environmental assessments and potential environmental impacts
  - d. Environmental mitigation measures

**e. Arrangements during construction**

12.4.9. Due to adverse weather conditions, the event scheduled to take place on 1 March 2018 at Kibblesworth was postponed. The event was rescheduled to take place at the same venue on 22 March 2018 and as a consequence, the statutory consultation period was extended by 7 days to 29 March 2018.

**METHODOLOGY**

**Effects on all Travellers**

**Motorised Travellers: Views from the Road**

12.4.10. DMRB Volume 11, Section 3, Part 9 Vehicle Travellers (**Ref 12.13**) describes 'Views from the Road' as "...the extent to which travellers, including drivers are exposed to the different types of scenery through which a route passes." Aspects that have been considered are:

- a.** The types of scenery or the landscape character as described and assessed for the baseline studies
- b.** The extent to which travellers may be able to view the scene
- c.** The quality of the landscape as assessed for the baseline studies
- d.** Features of particular interest or prominence in the view

12.4.11. Views from the road have been assessed by the four categories defined in DMRB Volume 11, Section 3 Part 9. The magnitude of impact on views from the road has been determined using professional judgement of the change in travellers' ability to see the surrounding landscape expected as a result of the Scheme. The criteria for determining the magnitude of impact is set out in **Table 12-4** below.

**Table 12-4 - Magnitude of impact criteria for the views from the road**

<b>Magnitude of Impact</b>	<b>Beneficial</b>	<b>Adverse</b>
No Change	Views remain the same	
Minor	No view – Restricted	Restricted – No view
	Restricted - Intermittent	Intermittent – Restricted
	Intermittent – Open	Open – Intermittent
Moderate	No View – Intermittent	Intermittent – No View
	Restricted – Open	Open - Restricted
Major	No View – Open	Open – No View

## Motorised Travellers: Driver Stress

- 12.4.12. Driver Stress is the adverse mental and psychological effects experienced by a driver traversing a road network. Stress can induce in driver's feelings of discomfort, annoyance, frustration, or fear culminating in physical or emotional tension that detracts from the value and safety of the journey. DMRB Volume 11 Section 3, Part 9 Vehicle Travellers (**Ref 12.13**) indicates that with increased driver stress, a drop in driving standards occurs, which may be expressed as an increase in aggression towards other road users, or a diminished response to visual and other stimuli.
- 12.4.13. The level of stress experienced by a driver may be affected by a number of factors including: road layout and geometry; surface riding characteristics; junction frequency and speed; and flow per lane. There are three main components of driver stress as follows:
- a. Driver frustration - caused by an inability to drive at a speed consistent with the standard of the road, and increases as speed falls in relation to expectations.
  - b. Driver fear - the main factors are the presence of other vehicles, inadequate sight distances and the likelihood of pedestrians, particularly children, stepping into the road. Fear is highest when speeds, flows and the proportion of heavy vehicles are all high, becoming more important in adverse weather conditions.
  - c. Driver uncertainty - caused primarily by signing that is inadequate for the individual's purposes.
- 12.4.14. The measurable aspect of Driver Stress has been determined in accordance with DMRB Volume 11 Section 3, Part 9, which provides advice on categorising the magnitude of impact of stress as high, moderate or low based upon speeds and flows during peak hour flows over at least 1km of a route. All links with traffic travelling at less than 60km/hr. are considered as high stress.
- 12.4.15. Driver stress has been calculated by comparing average hourly flow per lane and average vehicle speed during morning (AM) and evening (PM) peak hours against thresholds for both motorways and dual carriageways provided in DMRB Volume 11 Section 3, Part 9. The Scheme consists of dual carriageways (including slip roads) and three and four lane carriageways at the operational stage. Therefore, the Scheme has been assessed using the stress ratings in both Table 1: Motorways and Table 2: Dual-Carriageway Roads in the DMRB Volume 11 Section 3 Part 9 Vehicle Travellers (**Ref 12.13**) which are reproduced below in **Tables 12-5** and **12-6** respectively.

**Table 12-5 – Motorways**

Average peak hourly flow per lane, in flow Units/1 hour	Average Journey Speed Km/hr		
	Under 75	75-95	Over 95
Under 1200	High	Moderate	Low
1200-1600	High	Moderate	Moderate

Average peak hourly flow per lane, in flow Units/1 hour	Average Journey Speed Km/hr		
	Under 75	75-95	Over 95
Over 1600	High	High	High

**Table 12-6 – Dual-carriageway roads**

Average peak hourly flow per lane, in flow Units/1 hour	Average Journey Speed Km/hr		
	Under 60	60-80	Over 80
Under 1200	High	Moderate	Low
1200-1600	High	Moderate	Moderate
Over 1600	High	High	High

- 12.4.16. The traffic model splits the road network into different links, principally where a change in the road occurs i.e. at a junction between two main roads.
- 12.4.17. The different road link traffic movements have been identified as different sections of the carriageway which have been assessed for driver stress and are described in detail in **Table 12-7**.

**Table 12-7 - Road sections assessed for driver stress**

Road Section Number	Description
<b>Southbound</b>	
1	A1 southbound, approaching junction 67 (Coal House)
2	Junction 67 (Coal House) southbound slip road off the A1
3	A1 southbound junction 67 (Coal House)
4	Junction 67 (Coal House) southbound slip road onto the A1
5	A1 southbound, approaching junction 66 (Eighton Lodge)

<b>Road Section Number</b>	<b>Description</b>
6	Junction 66 (Eighton Lodge) southbound slip road off the A1
7	A1 southbound junction 66 (Eighton Lodge)
8	Junction 66 (Eighton Lodge) southbound slip road onto the A1
9	A1 southbound, approaching junction 65 (Birtley)
10	Junction 65 (Birtley) southbound slip road off the A1
11	A1 southbound junction 65 (Birtley)
<b>Northbound</b>	
1	A1 northbound junction 65 (Birtley)
2	Junction 65 (Birtley) northbound slip road onto the A1
3	A1 northbound, approaching junction 66 (Eighton Lodge)
4	Junction 66 (Eighton Lodge) northbound slip road off the A1
5	A1 northbound Junction 66 (Eighton Lodge)
6	Junction 66 (Eighton Lodge) northbound slip road onto the A1
7	A1 northbound, approaching junction 67 (Coal House)
8	Junction 67 (Coal House) northbound slip road off the A1
9	A1 northbound junction 67 (Coal House)
10	Junction 67 (Coal House) northbound slip road onto the A1
11	A1 northbound

12.4.18. The driver stress has been calculated for each of the following years to determine the level of impact:

- a. The baseline year (2017)
- b. The Scheme's construction year (2023)
- c. The Scheme's design year (2038)



- 12.4.19. The traffic data available only provided the percentage of Heavy Goods Vehicles (HGVs) from the total lane traffic flows. DMRB Volume 11 Section 3, Part 9 states that a HGV is equivalent to 3 flow units (normal vehicle is one flow unit). Using the percentage, the number of HGVs has been calculated from the modelled carriageway lanes data and have been factored up accordingly to gauge the correct peak flows per lane.
- 12.4.20. The number of construction vehicles required for construction for both the Allerdene embankment option and Allerdene viaduct option are 718 and 470, respectively. However, it is anticipated that these will be negligible in the context of vehicles already using the A1 carriageway.

### **Walking, Cycling and Horse-riding**

- 12.4.21. The methodology has been based on the procedures set out in DMRB Volume 11, Section 3, Part 8 and 9 and DMRB Volume 5, Section 2, Part 5 Non-Motorised User Audits, HD42/05, (**Ref 12.16**) and has considered:
- a. The impact of the Scheme on the journeys that WCH make in its locality.
  - b. The impact on existing usage of the community facilities and routes by pedestrians and others.
  - c. Changes in safety and amenity value of routes which may be affected by the Scheme route.
  - d. The effects of the junction options on community severance.
- 12.4.22. The assessment has comprised a desk study to identify likely WCH activity during construction, as well as how local community facilities are likely to be affected by the Scheme and the potential adverse and beneficial effects.
- 12.4.23. A qualitative assessment of PRoW amenity and journey length has been undertaken. The assessment has been informed by other topic assessments including **Chapter 7 Landscape and Visual** and **Chapter 11 Noise and Vibration** in this ES (**Application Document Reference: TR010031/APP/6.1**). In the absence of overall significance criteria within DMRB Volume 11, Section 3: Part 8 and 9 professional judgement has been used and effects related to PRoW amenity and journey length are described as: beneficial, negligible, or adverse; permanent or temporary; and of slight, moderate, or severe significance.

### **Rail travellers**

- 12.4.24. There is no guidance providing a methodology for the assessment of potential impacts on rail travellers. Using professional judgement, a qualitative, desk based assessment has been carried out, establishing a baseline of the current usage of the East Coast Main Line (ECML), specifically the stretch between Chester-le-Street Station and Newcastle Station, and assessing the likely effects of the Scheme on rail travellers. The effects related to rail travellers are described as: beneficial, negligible, or adverse; permanent or temporary; and of minor, moderate, or major significance.

## Effects on Communities

### Community Severance

- 12.4.25. The level of community severance has used the criteria in DMRB Volume 11, Section 3, Part 8, Pedestrians, Cyclists, Equestrians and Community Effects (Chapter 5 – Community Severance) where it is defined as;
- “the separation of residents from facilities and services they use within their community caused by new or improved roads or by changes in traffic flows.”
- 12.4.26. A qualitative assessment of community amenity and severance has been undertaken. In the absence of overall significance criteria within DMRB Volume 11, Section 3: Part 8, professional judgement has been used and effects related to community severance are described as: beneficial, negligible, or adverse; permanent or temporary; and of slight, moderate, or severe significance.
- 12.4.27. The key community facilities have been identified through a combination of aerial imagery and information from local authority websites.

### Private and Community Land Take

- 12.4.28. A qualitative high-level desk based assessment has been carried out in accordance with DMRB Volume 11, Section 3, Part 6 for each of the following elements:
- a. Confirm the exact number of properties which would need to be demolished in each of the following categories; residential, commercial, industrial and other properties at risk of demolition or land take (excluding community facilities).
  - b. Assess the Scheme’s impact on land used by the public, including community assets likely to be affected by land take.
- 12.4.29. A qualitative assessment has been carried out for each of these elements. In the absence of overall significance criteria within DMRB Volume 11, Section 3: Part 6, professional judgement has been used and the effects related to physical assets are described as: beneficial, negligible, or adverse; permanent or temporary; and of slight, moderate, or severe significance.

## Effects on People

### Local Economy

- 12.4.30. A desk based assessment has been carried out to understand the baseline conditions in relation to the local and regional economy, using publicly available data including NOMIS (**Ref 12.17**) and Census 2011 from the ONS.
- 12.4.31. A qualitative high-level desk based assessment has been carried out for the local economy using publicly available data. There is no formal guidance on the assessment of the local economy. In the absence of specific guidance, applying professional judgement, the effects related to employment and the economy during the construction phase are described as: beneficial, negligible, or adverse; permanent or temporary; and of minor, moderate, or major significance.

## Tourism and Recreation

- 12.4.32. There is no formal guidance for the assessment of tourism and recreation. In the absence of specific guidance, a qualitative, desk based assessment using professional judgement has been undertaken to assess the impact of the Scheme on access to tourism and recreational facilities. Baseline information has been obtained using publicly available information about local tourism and recreational facilities and the effects are described as beneficial, negligible, or adverse; permanent or temporary; and of minor, moderate, or major significance.

## Health

- 12.4.33. A qualitative, desk-based assessment of human health has been carried out using professional judgement in the absence of any formal methodology. The assessment has been informed by other topic assessments including **Chapter 5 Air Quality** and **Chapter 11 Noise and Vibration** of this ES (**Application Document Reference: TR010031/APP/6.1**).
- 12.4.34. Human health receptors have been assigned a sensitivity of high, medium, low, or negligible using professional judgement. A health receptor's sensitivity is based on their ability to experience a potential impact without incurring a substantial change to their health status. Information used to determine receptor value includes the following;
- a. Level of deprivation and/or isolation
  - b. Accessibility
  - c. Availability of local services and/or assets, and availability of alternatives
  - d. Use of routes by NMU, particularly vulnerable travellers, for journeys (either utility or recreational)
  - e. Importance of land for business or employment uses
- 12.4.35. A baseline using publicly available information gathered from PHE, the local authority, and NOMIS has been developed, and health effects are described as beneficial, negligible, or adverse; permanent or temporary; and of minor, moderate, or major significance.

## SIGNIFICANCE OF EFFECTS

- 12.4.36. DMRB guidance (Volume 11, Section 3, Parts 6, Part 8 and Part 9) does not specifically include methods for determining the magnitude of impacts or for measuring the sensitivity of the receptors to these impacts. Where there is no DMRB assessment method then professional judgement has been used to determine whether the impacts are:
- a. Adverse or beneficial
  - b. Long-term or short-term
  - c. Construction or operational
  - d. Whether the effect is significant or not significant in terms of the EIA Regulations 2017
- 12.4.37. The following sections describe the process that has been adopted to determine the sensitivity, magnitude and overall significance of the likely significant environmental effects.

## Sensitivity

- 12.4.38. The sensitivity of receptors for Population and Human Health has been judged on their perceived capacity to absorb any proposed changes. This approach has been developed based on professional judgement and DMRB Volume 11, Section 2, Part 5 Assessment and Management of Environmental Effects, HA205/08 (**Ref 12.18**), with the criteria describing the sensitivity of receptors identified in **Table 12-8**.

**Table 12-8 - Population and Human Health sensitivity criteria**

Sensitivity	Criteria
Very High	<ul style="list-style-type: none"> <li>– A vulnerable receptor with no capacity or means to absorb changes.</li> <li>– No alternative facilities, access arrangements or opportunities are available.</li> <li>– A very highly or frequently accessed resource.</li> </ul>
High	<ul style="list-style-type: none"> <li>– An already vulnerable receptor with very little capacity and means to absorb changes.</li> <li>– No alternative facilities, access arrangements or opportunities are available within an easily accessible distance.</li> <li>– A highly or frequently accessed resource.</li> <li>– National importance.</li> </ul>
Medium	<ul style="list-style-type: none"> <li>– A non-vulnerable receptor with limited capacity to change.</li> <li>– A limited range of alternatives facilities, access arrangements or opportunities are available within an easily accessible distance.</li> <li>– A moderately, or semi frequently accessed resource.</li> <li>– Regional importance.</li> </ul>
Low	<ul style="list-style-type: none"> <li>– A non-vulnerable receptor with sufficient capacity and means to change.</li> <li>– A wide range of alternative facilities, access arrangements or opportunities are available within an easily accessible distance.</li> <li>– An infrequently accessed resource.</li> <li>– Local importance</li> </ul>
Negligible	<ul style="list-style-type: none"> <li>– No vulnerable receptors, facilities or public access routes identified.</li> </ul>

## Magnitude of Impact

- 12.4.39. DMRB guidance Volume 11, Section 3, Part 9 has been followed to define the magnitude of impact on driver stress and views from the road using the criteria outlined above in **Table 12-4**. Where there is no available DMRB guidance to define or categorise the magnitude of

impact for Population and Human Health, typical descriptors as detailed in HA 205/08 in combination with professional judgement have been used, shown below in **Table 12-9**.

**Table 12-9 – Magnitude of impact and typical descriptors**

Magnitude of Impact	Typical criteria descriptors
Major	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements (Adverse).
	Large scale or major improvement of resource quality; extensive restoration or enhancement; major improvement of attribute quality (Beneficial).
Moderate	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements (Adverse).
	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality (Beneficial).
Minor	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements (Adverse).
	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring (Beneficial).
Negligible	Very minor loss or detrimental alteration to one or more characteristics, features or elements (Adverse).
	Very minor benefit to or positive addition of one or more characteristics, features or elements (Beneficial).
No change	No loss or alteration of characteristics, features or elements; no observable impact in either direction.

### Significance of Effects

- 12.4.40. The significance of effects has been assessed using a combination of the magnitude of impact and the sensitivity of the receptor. Each type of effect has then been determined to be significant or not significant using **Table 12-10**, which is based on the guidance in DMRB Volume 11, Section 2, Part 5 Assessment and Management of Environmental Effects (**Ref 12.18**).



12.4.41. It should be noted that effects, whether adverse or beneficial, assessed as “moderate” or above significance are deemed to be significant. Effects determined to be slight or neutral are deemed to be not significant.

**Table 12-10 - Matrix for determining the significance of effect**

		Magnitude of Impact (Degree of Change)				
		No change	Negligible	Minor	Moderate	Major
Environmental Value (Sensitivity)	Very High	Neutral	Slight	Moderate or Large	Large or Very Large	Very Large
	High	Neutral	Slight	Slight or Moderate	Moderate or Large	Large or Very Large
	Medium	Neutral	Neutral or Slight	Slight	Moderate	Moderate or Large
	Low	Neutral	Neutral or Slight	Neutral or Slight	Slight	Slight or Moderate
	Negligible	Neutral	Neutral	Neutral or Slight	Neutral or Slight	Slight

12.4.42. In accordance with the DMRB, the assessment will cover the likely significant effects arising from the permanent and temporary, direct, indirect, secondary, short, medium and long-term, beneficial and adverse impacts of the Scheme.

### **POLICY AND GUIDANCE**

12.4.43. The methodology was developed with reference to guidance from the following parts of DMRB Volume, Section 3:

- a. Part 6 Land Use
- b. Part 8 Pedestrians, Cyclists, Equestrians & Community Effects
- c. Part 9 Vehicle Travellers

12.4.44. In addition, IAN 125/15 Environmental Assessment (**Ref 12.1**) sets out the requirement to combine the current DMRB Volume 11, Section 3, Parts 6, 8 and 9 into one chapter titled People & Communities.

12.4.45. The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 includes guidance on the assessment of human health, and the reporting of population and health effects under ‘People & Communities’ (where this topic has already been agreed through a

Scoping Opinion). There is no formal consolidated methodology or practice for the population and human health topic.

- 12.4.46. Impacts on Agricultural Land Classification grade and soils are addressed in **Chapter 9 Geology and Soils** of this ES (**Application Document Reference: TR010031/APP/6.1**) in accordance with guidance from the Overseeing Organisation.

## **12.5. ASSESSMENT ASSUMPTIONS AND LIMITATIONS**

- 12.5.1. The assessment of the WCH route amenity relies on qualitative descriptions by the assessor which is subjective. There is also a degree of subjectivity in the assessment of views. Where subjective assessments are presented, attempts to reconcile against evidence has been made throughout.
- 12.5.2. DMRB Volume 11, Section 3, Part 8 methodology is over 20 years old (published in 1993) and some aspects may not be as relevant to the assessment of road schemes today. The guidance is currently being revised.
- 12.5.3. The assessment relies on data provided by third parties (e.g. OS Mapping, local authorities, ONS and PHE) which are the most up-to-date, available at the time of the assessment. However, no significant changes or limitations in these datasets have been identified that would affect the robustness of the assessment for EIA purposes.
- 12.5.4. Vulnerable groups have been assumed to be present throughout the Study Area.
- 12.5.5. The environment is one of the largest influences upon a population's health, and has direct impacts through various media including air, land and water quality, as well as indirect impacts, such as interaction of demographics, education and access to open spaces. However, methodology for the assessment of health in EIA is yet to be prepared or adopted.
- 12.5.6. It is important to note that for the assessment on driver stress during construction regarding the Allerdene viaduct option, no additional traffic remodelling or updated information was available. This was due to both the Allerdene embankment and the Allerdene viaduct option having the same road layout, in terms of number of lanes and merge/diverge arrangements. Therefore, as there is no difference between the considered Scheme options, there is no difference expected in terms of the forecast traffic flows.
- 12.5.7. The draft Development Consent Order (DCO) contains powers of lateral and vertical deviation. The EIA has taken the Limits of Deviation (LoD) into account and the approach taken is described in **Chapter 4 Environmental Assessment Methodology, paragraph 4.5.4** of this ES (**Application Document Reference: TR010031/APP/6.1**). The outputs of the assessment are not considered likely to change materially as a result of the power of deviation.

## 12.6. STUDY AREA

### EFFECTS ON ALL TRAVELLERS

#### Motorised Travellers

- 12.6.1. In accordance with DMRB Volume 11, Section 3, Part 9 Vehicle Travellers (**Ref 12.13**), the Study Area for both views from the road and driver stress is the extent of the road network within the Scheme Footprint (specific land detailed in **Section 12.7**). In addition to the A1 carriageway, the Study Area includes the slip roads from the connected road network.

#### Walking, Cycling and Horse-riding

- 12.6.2. The assessment of effects on WCH considers the impact of the Scheme on local journeys made by people on the local (within 1km of the Scheme Footprint) PRow network. The identified local PRow network is displayed in **Figure 12.1** of this ES (**Application Document Reference: TR010031/APP/6.2**).
- 12.6.3. The Study Area for the assessment of impact on WCH includes those PRow and WCH routes directly affected by the Scheme and any feeder PRow between likely destinations. This is in accordance with DMRB Volume 11, Section 3, Part 8, which details that consideration should be given to travel patterns within the locality of the Scheme. The following have been considered to inform the Study Area:
- a. Journey lengths, times and local travel plans.
  - b. Amenity.
- 12.6.4. Based on the above, the Study Area for WCH consists of the following PRow:
- a. Footpath Gateshead 6 and 7, heading south from Salcombe Gardens.
  - b. Footpath 40#2, crossing Durham Road/A167.
  - c. Footpath Lamesley 40#1, crossing Long Bank/B1296.
  - d. Footpath Lamesley 63, located to the west of the A167 and B1296 junction.
  - e. National Cycle Network: Route 725 uses the A167 and Durham Road, and therefore crosses under the A1 on the Durham Road/A167/B1296 junction.
  - f. Bridleway Lamesley 72, which crosses underneath the A1. This is also forms part of Regional Cycle Route 11.
  - g. Footpath Lamesley 43, which appears from aerial photography to join with the A1, but there is no safe crossing, and therefore is assumed to end at this location.
  - h. Footpath Birtley 16, which crosses the A1 via a footbridge (North Dene Footbridge).
  - i. Footpath Birtley 5, located to the east of junction 65 (Birtley).

#### Rail Travellers

- 12.6.5. The Study Area for the assessment of effects on rail travellers considers the impact of the Scheme on rail journeys between Newcastle Central Station and Chester-le-Street Station.

## EFFECTS ON COMMUNITIES

### Community Severance

- 12.6.6. Community severance is defined as the separation of residents from facilities and services that they use within their community, in this case as a result of the Scheme. The identified local communities and facilities are displayed on **Figure 12.2** of this ES (**Application Document Reference: TR010031/APP/6.2**) and detailed in **Section 12.7**.
- 12.6.7. The Study Area for community severance includes those communities where residents would potentially be directly affected by the Scheme through changes in journey times and amenity when accessing facilities and services within their communities, as described in DMRB Volume 11, Section 3, Part 8.

### Private and Community Land Take

- 12.6.8. Community land is any area of public open space and other facilities such as schools, hospitals, libraries and recreation facilities relied upon for community health and well-being. The Study Area for identified community land is the Scheme Footprint (specific land detailed in **Section 12.7**). This is in accordance with DMRB Volume 11, Section 3, Part 6 which sets out that impacts should be assessed where land is lost in order for a Scheme to be built.

## EFFECTS ON PEOPLE

### Local Economy

- 12.6.9. The Study Area for the local economy is the Gateshead Council administrative area, in the metropolitan county of Tyne and Wear. Publicly available data has been gathered for the local authority, Gateshead, within the available ONS data sets.

### Tourism and Recreation

- 12.6.10. The Study Area for the assessment of the Scheme on access to tourism and recreation is limited to those facilities within 1km of the Scheme, shown in **Figure 12.2** of this ES (**Application Document Reference: TR010031/APP/6.2**). The 1km study area encompasses those facilities that are most likely to experience impacts during the construction and operational phases.

### Health

- 12.6.11. The Study Area for human health includes those communities that are closest to the Scheme, and whose populations are most likely to experience changes to their health outcomes. These communities are shown on **Figure 12.2** of this ES (**Application Document Reference: TR010031/APP/6.2**) and are detailed in **Section 12-7** below. These communities fall within the Local Authorities of Gateshead (Lamesley, Harlow Green, Chowdene, Birtley, and Low Eighton) and Sunderland (Crowther). The baseline for human health has therefore been informed by data from the administrative areas of both Gateshead and Sunderland.

## 12.7. BASELINE CONDITIONS

### ALL TRAVELLERS

#### Motorised Travellers: Views from the Road

- 12.7.1. There are elevated points along the Scheme that provide wide, open panoramas at junction 67 (Coal House) southbound and at the Allerdene Bridge over the ECML. These open views are of the Team Valley Trading Estate (heavily industrialised area) to the north and east and of open farmland to the west and south of the existing carriageway. To the north of junction 66 (Eighton Lodge) is the iconic sculpture of the Angel of the North. The sculpture is surrounded by open space; however, views towards it from the carriageway are largely screened by vegetation. Many of the views for motorised users along the A1 carriageway are either intermittent, restricted or completely obstructed.
- 12.7.2. Views from the road within the Study Area are categorised according to the categories within DMRB Volume 11, Section 3, Part 9 as outlined in **Table 12-11**.



**Table 12-11 - Views from the road within the Scheme Footprint**

Approximate Location	Description of View	Category
<b>Views Heading Southbound</b>		
<p>Grid ref NZ238601 to NZ243586 Northern extent of the Scheme, from south of junction 68 (Lobley Hill) to junction 67 (Coal House)</p>	<p>From the northern extent of the Scheme, heading southbound on the A1, there are few views to the right (west) due to vegetation screening lining the carriageway. To the left (east), there are restricted views of the Team Valley Estate, with the road screened by intermittent vegetation.</p>	<p>Restricted View</p>
<p>Grid ref NZ243586 to NZ246585 Western extent of the Scheme, to junction 67 (Coal House) southbound exit</p>	<p>From the western extent of the Scheme, heading southbound on the A1, there are no views to the right (south) due to erected screening lining the carriageway. To the left (north), there are restricted views of the Team Valley Estate, with the road screened by intermittent vegetation.</p>	<p>No view  Restricted View</p>
<p>Grid ref NZ246585 to NZ252585 Junction 67 (Coal House) southbound exit to junction 67 (Coal House) southbound entry</p>	<p>Past the southbound exit at junction 67 (Coal House), the A1 rises in elevation and views on both sides (north and south) are open and extend out over the wider landscape until junction 67 (Coal House) southbound entry slip road joins with the A1. There are very distant views of the Angel of the North.</p>	<p>Open views</p>
<p>Grid ref NZ252585 to NZ254585 Junction 67 (Coal House) southbound entry to bridge over the ECML</p>	<p>Views to the left (north) become restricted by vegetation screening. Views to the south-west remain open over the wider landscape, with some intermittent vegetation screening in the near view.</p>	<p>Restricted view</p>

Approximate Location	Description of View	Category
<p>Grid ref NZ254585 to NZ263576 Bridge over the ECML to southbound exit for junction 66 (Eighton Lodge)</p>	<p>From the ECML, the A1 is bordered to the left (north-east) by an embankment and dense vegetation and to the right (south-west) by dense vegetation, providing no view.</p>	<p>No view</p>
<p>Grid ref NZ263576 to NZ266575 Southbound exit for junction 66 (Eighton Lodge) to junction 66 (Eighton Lodge) underbridge</p>	<p>Past the southbound exit for junction 66 (Eighton Lodge), views remain restricted on the left (north-east) by dense vegetation. The elevation of the surrounding land to the right (south-west) drops to allow more extended intermittent views, with some vegetation screening.</p>	<p>Restricted views Intermittent views</p>
<p>Grid ref NZ266575 to NZ270573 Junction 66 (Eighton Lodge underbridge) towards junction 65 (Birtley) southbound entry to A1</p>	<p>Vegetation becomes denser on the left (north-east) so that there is no view. Views on the right (south-west) are a mixture of open extended views, and intermittent with some vegetation screening.</p>	<p>No view Open/Intermittent views</p>
<p>Grid ref NZ270573 to NZ279568 Junction 66 (Eighton Lodge) southbound entry to A1 to junction 65 (Birtley) southbound exit</p>	<p>Views on both sides are restricted by vegetation screening.</p>	<p>Restricted views</p>
<p>Grid ref NZ279568 to NZ283562</p>	<p>On the approach to where the A1 crosses under the A1231, the A1 goes into a cutting and views are screened on both sides (no view). This continues until the A1 merges with the A194.</p>	<p>No view</p>

Approximate Location	Description of View	Category
Junction 65 (Birtley) southbound exit to merge with A194 (southern extent of the Scheme)		
Views Heading Northbound		
Grid ref NZ283563 to NZ278569 Northbound on the A1, from the departure from the A194 (southern extent of the Scheme) to northbound entry slip road for junction 65 (Birtley).	Dense vegetation screening and embankments on either side result in no views.	No view
Grid ref NZ278569 to NZ268574 From the junction 65 (Birtley) northbound entry slip road to the approach to junction 66 (Eighton Lodge).	Views on both sides are restricted by vegetation screening.	Restricted views
Grid ref NZ268574 to NZ266575 From the approach to junction 66 (Eighton Lodge) to the northern side of junction 66 (Eighton Lodge).	Vegetation becomes denser on the right (north-east) so that there are restricted views.  Views on the left (south-west) are a mixture of open extended views, and intermittent with some vegetation screening, as the topography drops.	Restricted view  Open/intermittent views

Approximate Location	Description of View	Category
<p>Grid ref NZ266575 to NZ263576</p> <p>Northern side of junction 66 (Eighton Lodge) to crest of the hill between junction 66 (Eighton Lodge) and junction 67 (Coal House).</p>	<p>Past the southbound exit for junction 66 (Eighton Lodge), views are restricted on both sides by dense vegetation. At the crest of the hill to the right, the Angel of the North is visible above the tree tops.</p>	<p>Restricted views</p>
<p>Grid ref NZ263576 to NZ254584</p> <p>North of the crest of the hill between junction 66 (Eighton Lodge) and junction 67 (Coal House) to the overbridge over the ECML.</p>	<p>Views either side of the road are blocked by vegetation (no view).</p>	<p>No view</p>
<p>Grid ref NZ254584 to NZ251585</p> <p>Overbridge over ECML to the approach to the Team Valley Estate and junction 67 (Coal House).</p>	<p>Views to the left (south) are open over the wider landscape.</p> <p>Views to the right (north) are intermittent with some vegetation screening.</p>	<p>Open views</p> <p>Intermittent views</p>
<p>Grid ref NZ251585 to NZ243586</p> <p>From the northbound exit road for junction 67 (Coal House) to the western extent of the Scheme.</p>	<p>Heading towards the western extent of the Scheme, there are no views to the left (south) due to erected timber screening lining the carriageway.</p> <p>To the right (north), there are restricted views of the Team Valley Estate, with the road screened by intermittent vegetation.</p>	<p>No view</p> <p>Restricted views</p>

<b>Approximate Location</b>	<b>Description of View</b>	<b>Category</b>
Grid ref NZ243586 to NZ238601 Northern extent of the Scheme, from junction 67 (Coal House) to south of junction 68 (Lobley Hill).	From the western extent of the Scheme, heading northbound on the A1, there are few views to the left (west) due to vegetation screening lining the carriageway.  To the right (east), there are restricted views of the Team Valley Estate, with the road screened by the southbound carriageway and intermittent vegetation.	Restricted views

12.7.3. Considering that the majority of views from the road are considered to be either restricted or have no view at all, views from the road are considered to have a sufficient capacity and means to change. Furthermore, the focus of the travelling public is the road ahead and their expectation is somewhat lower than individuals using footpaths or associated with residential development, therefore associated sensitivity is considered to be at the lower end of the scale and is typically low.

12.7.4. Therefore, existing views from the road are judged to be of **low** sensitivity to change.

**Motorised Travellers: Driver Stress**

12.7.5. The Newcastle Gateshead Western Bypass (NGWB), running from north to south along the west of Tyne and Wear acts a bottleneck, where substantial congestion is experienced during some periods of the day.

12.7.6. Main routes connecting to the A1 in the vicinity of the Scheme are:

- a. A194(M)
- b. A1231 which connects to Sunderland
- c. A167 Durham Road
- d. B1296 Old Durham Road
- e. Lamesley Road/Chowdene Bank/Kingsway South/Banesley Lane

12.7.7. Smaller roads link the A1 into Birtley from Newcastle Bank to the south of the A1 and access to the Team Valley Trading Estate is located to the north of the Scheme Footprint.

12.7.8. The current road network experiences substantial congestion throughout various periods of the day. Therefore, existing motorised travellers using the carriageway are anticipated to be already subjected to high levels of frustration, fear of accidents and route uncertainty particularly at periods of peak demand.

12.7.9. Driver stress for sections of carriageway are shown in the tables below for the 2017 baseline year (**Table 12-12**), 2023 opening year (**Table 12-13**) and the 2038 design year (**Table 12-15**). These specifically compare AM and PM peak flows rather than daily traffic flows for the A1 modelled years. The baseline in 2023 and 2028 presented in **Table 12-14** and **Table 12-16** below outlines the driver stress likely to occur during a ‘do minimum scenario’.

**Table 12-12 - Driver stress – baseline year (2017)**

Road Section	Baseline year (2017) AM				Baseline Year (2017) PM			
	Flow per lane (Veh)	Speed km/hr	Number of Lanes	Stress level	Flow per lane (Veh)	Speed km/hr	Number of Lanes	Stress level
<b>Southbound</b>								



Road Section	Baseline year (2017) AM				Baseline Year (2017) PM			
	Flow per lane (Veh)	Speed km/hr	Number of Lanes	Stress level	Flow per lane (Veh)	Speed km/hr	Number of Lanes	Stress level
1	1432	70.00	3	High	1284	71.00	3	High
2	336	53.00	2	High	209	73.00	2	Moderate
3	1797	66.00	2	High	1736	44.00	2	High
4	177	56.00	2	High	301	10.00	2	High
5	1322	99.00	3	Moderate	1331	98.00	3	Moderate
6	269	85.00	2	Low	204	80.00	2	Moderate
7	1701	62.00	2	High	1813	80.00	2	High
8	487	87.00	2	Low	516	86.00	2	Low
9	1463	81.00	3	Moderate	1537	78.00	3	Moderate
10	831	80.00	2	Moderate	752	81.00	2	Low
11	902	109.00	3	Low	1045	107.00	3	Low
<b>Northbound</b>								
1	1439	69.00	2	Moderate	1215	72.00	2	Moderate
2	799	76.00	2	Moderate	715	80.00	2	Moderate
3	1489	64.00	3	High	1287	68.00	3	High
4	543	39.00	2	High	459	41.00	2	High
5	1696	42.00	2	High	1472	69.00	2	Moderate
6	470	21.00	2	High	213	75.00	2	Moderate
7	2179	62.00	2	High	1685	69.00	2	High
8	479	42.00	2	High	138	49.00	2	High
9	1663	85.00	2	High	1547	89.00	2	Moderate
10	561	97.00	2	Low	430	97.00	2	Low

Road Section	Baseline year (2017) AM				Baseline Year (2017) PM			
	Flow per lane (Veh)	Speed km/hr	Number of Lanes	Stress level	Flow per lane (Veh)	Speed km/hr	Number of Lanes	Stress level
11	1502	54.00	3	High	1318	73.00	3	High

**Table 12-13 - Driver stress – opening (2023)**

Road Section	Opening Year (2023) AM				Opening Year (2023) PM			
	Flow per lane (Veh)	Speed km/hr	Number of Lanes	Stress level	Flow per lane (Veh)	Speed km/hr	Number of Lanes	Stress level
<b>Southbound</b>								
1	1433	32.00	3	High	1343	71.00	3	High
2	378	50.00	2	High	249	73.00	2	Moderate
3	1779	53.00	2	High	1910	39.00	2	High
4	215	58.00	2	High	311	46.00	2	High
5	1323	65.00	3	High	1343	70.00	3	High
6	285	66.00	2	Moderate	220	63.00	2	Moderate
7	1690	56.00	2	High	1775	60.00	2	High
8	515	86.00	2	Low	555	85.00	2	Low
9	1476	58.00	3	High	1567	59.00	3	High
10	807	80.00	2	Moderate	741	81.00	2	Low
11	928	109.00	3	Low	1064	107.00	3	Low
<b>Northbound</b>								
1	1465	69.00	2	Moderate	1318	71.00	2	Moderate
2	791	77.00	2	Moderate	733	79.00	2	Moderate

3	1516	62.00	3	High	1361	66.00	3	High
4	603	38.00	2	High	509	40.00	2	High
5	1655	43.00	2	High	1546	68.00	2	Moderate
6	498	38.00	2	High	225	74.00	2	Moderate
7	2171	26.00	2	High	1776	68.00	2	High
8	451	42.00	2	High	172	48.00	2	High
9	1590	68.00	2	High	1587	69.00	2	Moderate
10	593	97.00	2	Low	493	97.00	2	Low
11	1457	36.00	3	High	1380	72.00	3	High

**Table 12-14 - Driver stress – opening (2023) ‘Do Minimum’**

Road Section	Opening Year (2023) AM				Opening Year (2023) PM			
	Flow per lane (Veh)	Speed km/hr	Number of Lanes	Stress level	Flow per lane (Veh)	Speed km/hr	Number of Lanes	Stress level
<b>Southbound</b>								
1	1460	69.53	3	High	1406	71.00	3	High
2	378	47.56	2	High	235	73.00	2	Moderate
3	1822	49.00	2	High	1860	39.00	2	High
4	462	56.29	2	High	342	46.00	2	High
5	2042	64.11	3	High	2016	70.00	3	High
6	269	58.32	2	High	219	63.00	2	High
7	1767	82.89	2	High	1816	60.00	2	High
8	988	86.39	2	Low	1219	85.00	2	Moderate
9	1511	68.83	3	High	1611	59.00	3	High

Road Section	Opening Year (2023) AM				Opening Year (2023) PM			
	Flow per lane (Veh)	Speed km/hr	Number of Lanes	Stress level	Flow per lane (Veh)	Speed km/hr	Number of Lanes	Stress level
10	818	80.41	2	Moderate	757	81.00	2	Low
11	954	108.44	3	Low	1097	107.00	3	Low
<b>Northbound</b>								
1	1471	69.00	2	Moderate	1310	71.00	2	Moderate
2	789	77.00	2	High	733	79.00	2	Moderate
3	1507	62.00	3	High	1362	66.00	3	High
4	602	38.00	2	High	507	40.00	2	High
5	1659	43.00	2	High	1536	68.00	2	Moderate
6	496	38.00	2	High	227	74.00	2	Moderate
7	2154	26.00	2	High	1763	68.00	2	High
8	448	42.00	2	High	171	48.00	2	High
9	1601	68.00	2	High	1591	69.00	2	High
10	594	97.00	2	Low	494	97.00	2	Low
11	1463	36.00	3	High	1390	72.00	3	High

**Table 12-15 - Driver stress – design year (2038)**

Road Section	Design Year (2038) AM				Design Year (2038) PM			
	Flow per lane (Veh)	Speed km/hr	Number of Lanes	Stress level	Flow per lane (Veh)	Speed km/hr	Number of Lanes	Stress level
<b>Southbound</b>								
1	1648	57.20	3	High	1568	62.00	3	High

2	327	44.20	2	High	268	70.00	2	Moderate
3	1429	70.20	3	High	1379	71.00	3	High
4	358	85.30	2	Low	669	77.00	2	Moderate
5	1251	103.10	4	Moderate	1381	100.00	4	Moderate
6	289	104.40	2	Low	290	102.00	2	Low
7	1109	69.80	4	High	1228	46.00	4	High
8	504	73.20	2	Moderate	415	74.00	2	Moderate
9	1356	108.50	4	Moderate	1444	107.00	4	Moderate
10	936	80.70	2	Low	880	81.00	2	Low
11	1183	102.60	3	Low	1338	99.00	3	Moderate
<b>Northbound</b>								
1	1780	68.50	2	High	1529	72.00	2	Moderate
2	1041	80.90	2	Low	862	83.00	2	Low
3	1409	71.90	4	High	1203	74.00	4	High
4	587	29.30	2	High	542	80.00	2	Moderate
5	1501	69.80	3	High	1236	73.00	3	High
6	639	86.60	2	Low	284	92.00	2	Low
7	1456	71.70	4	High	1070	75.00	4	Moderate
8	694	33.00	2	High	295	46.00	2	High
9	1460	68.50	3	High	1229	72.00	3	High
10	590	98.00	2	Low	516	65.00	2	Moderate
11	1858	58.00	3	High	1564	54.00	3	High

**Table 12-16 - Driver stress – design year (2038) ‘Do minimum’**

Road Section	Design Year (2038) AM				Design Year (2038) PM			
	Flow per lane (Veh)	Speed km/hr	Number of Lanes	Stress level	Flow per lane (Veh)	Speed km/hr	Number of Lanes	Stress level
<b>Southbound</b>								
1	1652	64.15	3	High	1517	64.20	3	High
2	398	42.09	2	High	227	72.04	2	Moderate
3	2060	38.19	2	High	2036	31.49	2	High
4	15	98.00	2	High	35	3.00	2	Moderate
5	2058	63.66	3	High	2022	63.66	3	Moderate
6	233	52.80	2	High	250	52.23	2	Low
7	1830	80.24	2	High	1789	80.94	2	High
8	1297	82.09	2	Low	1435	77.85	2	Moderate
9	1647	59.06	3	High	1668	39.02	3	Moderate
10	796	80.48	2	Moderate	747	80.56	2	Low
11	1119	106.62	3	Low	1165	105.75	3	Moderate
<b>Northbound</b>								
1	1682	65.76	2	High	1474	68.02	2	Moderate
2	1871	53.01	2	Low	1611	73.87	2	Low
3	1736	31.09	1	High	1530	61.88	1	High
4	583	37.80	3	High	561	38.43	3	Moderate
5	1966	42.13	2	High	1750	61.26	2	High
6	533	8.34	1	Low	516	70.53	1	Low
7	2215	62.00	2	High	2013	64.33	2	Moderate



Road Section	Design Year (2038) AM				Design Year (2038) PM			
	Flow per lane (Veh)	Speed km/hr	Number of Lanes	Stress level	Flow per lane (Veh)	Speed km/hr	Number of Lanes	Stress level
8	431	43.03	2	High	209	47.49	2	High
9	1736	83.67	2	High	1782	79.73	2	High
10	1283	78.90	1	Low	1120	81.62	1	Moderate
11	1568	36.93	3	High	1554	34.62	3	High

- 12.7.10. The A1 will remain open for the duration of the construction works, with current plans to preserve a speed limit of 50mph across the carriageway. However, Motorised Travellers are still expected to experience an increase in driver stress because of delays occurring due to speed restrictions from traffic management. This would be exacerbated by potential additional traffic associated with construction vehicles and the slower journey times created by temporary traffic control works.
- 12.7.11. During current baseline operation (2017) (**Table 12-12**), driver stress along many of the road sections of the A1 are considered to be 'moderate' or 'high'. Driver stress along road sections that are 'low' to 'moderate' are mainly associated with the slip roads at junctions 65, 66 and 67, although these vehicles joining the A1 along are largely the cause of the interruption in traffic flows and the cause of higher levels of driver stress.
- 12.7.12. Considering that driver stress along many of the road sections of the A1 for current operational use (2017) is considered to be 'moderate' or 'high', the limited alternative access arrangements available and the route's high frequency of use, driver stress is judged to be of **high** sensitivity to change.

#### **Walking, Cycling and Horse-riding:**

- 12.7.13. The main PRoW and non-designated public routes (i.e. footpaths which are used by the local community but are not formally designated as a PRoW) near the Scheme are shown on **Figure 12.1** of this ES (**Application Document Reference: TR010031/APP/6.2**).
- 12.7.14. The PRoWs and non-designated public routes that fall within the Scheme Footprint are as follows:
- a. Footpath Gateshead 6 and 7 (GA/6/1 and GA/7/1), heading south from Salcombe Gardens.
  - b. Footpath 40#2, crossing Durham Road/A167.
  - c. Footpath Lamesley 40#1, crossing Long Bank/B1296.
  - d. Footpath Lamesley 63, located to the west of the A167 and B1296 junction.

- e. National Cycle Network: Route 725 uses the A167 and Durham Road, and therefore crosses under the A1 on the Durham Road/A167/B1296 junction.
- f. Bridleway Lamesley 72 (LA/72a), which crosses underneath the A1. This is also forms part of Regional Cycle Route 11.
- g. Footpath Lamesley 43 (LA/43/1), which appears from aerial photography to join with the A1, but there is no safe crossing, and therefore is assumed to end at this location.
- h. Footpath Birtley 16 (BI/16/1), which crosses the A1 via a footbridge (North Dene Footbridge).
- i. Footpath Birtley 5 (BI/6/1), located to the east of junction 65 (Birtley).
- j. Unnamed footpath, located parallel to A167 Durham Road from Angel of the North to junction 66 (Eighton Lodge).

12.7.15. A summary of the PRoW network to be temporarily stopped and for which a substitute will be provided is presented in **Table 12-17**.

**Table 12-17 - PRoW network to be temporarily stopped and provided substitute routes**

PRoW to be stopped	New public right of way to be substituted
Temporary stopping up of Public Right of Way BI/16/1 leading to North Dene Footbridge (including crossing facilities over the A1 Northbound and Southbound carriageway).	To be substituted temporarily whilst the Footbridge is being demolished by a diversion route to the Bridleway Lamesley 72.  The replacement Footbridge will be provided in the same location as the existing North Dene Footbridge structure.
Temporary stopping up of Public Right of Way LA/72a (referred to as Longbank Bridleway).	To be substituted temporarily by a diversion route that runs towards the B1296 Long Bank, across Junction 66 – Eighton Lodge and back down the other side of the A1 via a unnamed path.
Temporary stopping up of PRoW GA/7/1 to provide construction works access with a controlled crossing point.	To include a controlled crossing point at the proposed works access road.
Temporary stopping up of PRoW GA/6/1 to provide construction works access.	To include a controlled crossing point at the proposed works access road.
Temporary stopping of unnamed footpath that runs parallel to A167 Durham Road from Angel of the North to junction 66 (Eighton Lodge).	To be substituted temporarily by a diversion route that runs to the north of the existing footpath, around and back to the southern point of the existing footpath. This route remains in parallel to the A1.

PRoW to be stopped	New public right of way to be substituted
Temporary stopping up of unnamed footpath that runs adjacent to the southbound off slip at junction 65 (Birtley).	To be substituted temporarily by a diversion route that runs to the north of the existing footpath.

12.7.16. To establish the surrounding affected PRoW networks current level of use, a Walking, Cycling and Horse Riding Assessment and Review (WCHAR) was undertaken in March 2018 (**Appendix 12.1** of this ES (**Application Document Reference: TR010031/APP/6.3**)). The following PRoWs were considered within the WCHAR:

- a. Northside Overbridge (BI/16/1):
  - i. Located at junction 65 (Birtley) of the A1 (the Bowes Incline Interchange) to the southern extent of the A1 and facilitates the crossing of A1231 over the trunk road network between the Armstrong area of Washington (to the east) and Birtley (to the west).
- b. North Dene Footbridge (BI/16/1):
  - i. The footway is an informal pedestrian route and follows an alignment adjacent to the A1 for 425m between the Northside residential street and the North Dene Footbridge. The footbridge is located between junction 66 (Eighton Lodge) and junction 65 (Birtley) of the A1, providing a formal public right of way footpath route.
- c. Longbank Bridleway Underpass (Part of LA/72a):
  - i. Longbank Bridleway Underpass runs beneath the A1 on a skewed north-east to south-west alignment, between junction 66 (Eighton Lodge) and junction 65 (Birtley), providing a bridleway function and forming part of the Great North Forest Heritage Trail.
- d. Longbank to Eighton Lodge Footway and Eighton Lodge Slip Road (Part of LA/72a):
  - i. To the north of the Longbank Bridleway Underpass, the footway continues to the Eighton Lodge Interchange (junction 66) and is a formal pedestrian route.

12.7.17. A summary of the level of use for the PRoW network is provided respectively in **Table 12-18** to **Table 12-21**.

**Table 12-18 - Total WCH usage levels at the Northside Overbridge**

Travel Mode	Thursday 9th November 2017			Saturday 11th November 2017		
	AM Peak (09:00-10:00)	PM Peak (16:00-17:00)	Daily (00:00-24:00)	AM Peak (08:00-09:00)	AM Peak (14:00-15:00)	Daily (00:00-24:00)
Pedestrians	4	5	45	4	6	30
Cycles	3	6	24	0	2	11
Electric Cycles	0	0	1	0	0	0
Non-motorised Scooters	0	0	0	0	0	0
Equestrians	0	0	0	0	0	0
Powered Wheelchairs	0	0	0	0	0	0
<b>Total</b>	<b>7</b>	<b>11</b>	<b>70</b>	<b>4</b>	<b>8</b>	<b>41</b>

**Table 12-19 - Total WCH usage levels at the North Dene Footbridge**

Travel Mode	Thursday 9th November 2017			Saturday 11th November 2017		
	AM Peak (08:00-09:00)	PM Peak (17:00-18:00)	Daily (00:00-24:00)	AM Peak (11:00-12:00)	PM Peak (12:00-13:00)	Daily (00:00-24:00)
Pedestrians	5	2	38	10	8	49
Cycles	2	4	21	0	0	3
Electric Cycles	0	0	0	0	0	0
Non-motorised Scooters	0	0	0	0	0	0
Equestrians	0	0	0	0	0	0
Powered Wheelchairs	0	0	0	0	0	0
<b>Total</b>	<b>7</b>	<b>6</b>	<b>59</b>	<b>10</b>	<b>8</b>	<b>52</b>

**Table 12-20 - Total WCH usage levels at the Longbank Bridleway Underpass**

Travel Mode	Thursday 9th November 2017			Saturday 11th November 2017		
	AM Peak (11:00-12:00)	PM Peak (12:00-13:00)	Daily (00:00-24:00)	AM Peak (11:00-12:00)	PM Peak (12:00-13:00)	Daily (00:00-24:00)
Pedestrians	4	5	24	5	5	40
Cycles	0	1	2	0	2	6
Electric Cycles	0	0	0	0	0	0
Non-motorised Scooters	0	0	0	0	0	0
Equestrians	0	0	0	2	0	2
Powered Wheelchairs	0	0	0	0	0	0
<b>Total</b>	<b>4</b>	<b>6</b>	<b>26</b>	<b>7</b>	<b>7</b>	<b>48</b>

**Table 12-21 - Total WCH usage levels at the Eighton Lodge interchange**

Travel Mode	Thursday 9th November 2017			Saturday 11th November 2017		
	AM Peak (11:00-12:00)	PM Peak (12:00-13:00)	Daily (00:00-24:00)	AM Peak (11:00-12:00)	PM Peak (12:00-13:00)	Daily (00:00-24:00)
Pedestrians	4	44	167	11	12	136
Cycles	11	1	82	3	7	44
Electric Cycles	0	0	0	0	0	0
Non-motorised Scooters	0	0	0	0	0	0
Equestrians	0	0	0	0	0	0
Powered Wheelchairs	0	0	0	0	0	0
<b>Total</b>	<b>15</b>	<b>45</b>	<b>249</b>	<b>14</b>	<b>19</b>	<b>180</b>

12.7.18. As shown in **Figure 12.1** of this ES (**Application Document Reference: TR010031/APP/6.2**), the PRoWs provide key crossing points across the A1. As shown above in **Table 12-18** to **Table 12-21** there is a high level of use of PRoWs by WCH. WCH are therefore considered as a vulnerable receptor and are considered to be of high sensitivity to the Scheme.

### Rail Travellers

12.7.19. The ECML is located to the west of the A1, until it crosses underneath Allerdene Bridge, located to the east of junction 67 (Coal House). The ECML route carries long distance passenger services linking London to destinations in the north-east and Scotland alongside freight traffic. It also handles, cross-country services, commuter and local passenger services. The route is a key transport artery on the eastern side of Great Britain and broadly paralleled by the A1 road.

12.7.20. The railway station directly north of the Scheme is Newcastle Central Station; to the south of the Scheme is Chester-le-Street, with Durham and York further south along the line. There are approximately five passenger trains per hour during the day between York and Newcastle, running alongside one to two hourly freight services (**Ref 12.19**).

12.7.21. Passenger train operators running between Chester-le-Street and Newcastle include London North Eastern Railway, Great Northern, CrossCountry and Transpennine Express. London North Eastern Railway services between Durham and Newcastle all pass through Chester-le-Street Station, though do not stop. An estimation of these stations usage, based on information from the Office of Road and Rail, 2018 (**Ref 12.20**) is presented below in **Table 12-22**.

**Table 12-22 - Estimates of station usage (total number of entries and exits)**

<b>Station</b>	<b>2016-17</b>	<b>2015-16</b>
Chester-le-Street	230,972	223,326
Durham	2,623,676	2,595,016
Newcastle	8,426,644	8,189,528

12.7.22. As shown in **Table 12-22** above, large numbers of passengers use this stretch of rail line. The ECML is an important rail route for the region, and a key link between London and Edinburgh, therefore rail travellers have been assessed as having a **medium** sensitivity value.



## COMMUNITIES

### Community Severance

- 12.7.23. There are a number of communities on either side of the Scheme, accessed by the local road network and PRow. The local communities within the Study Area and those community facilities and services are shown in **Figure 12.1** of this ES (**Application Document Reference: TR010031/APP/6.2**) which serve the local communities and are likely to be trip generators are described below.

### Team Valley Trading Estate & Retail Park

- 12.7.24. This is a large trading estate with many business premises and large international companies. It is rapidly developing into a business park rather than a heavily industrialised area. Within this area are a number of retail centres, Gateshead engineering college, fast food shops, a pharmacy and convenience stores including the following businesses (this list is not exhaustive):

- a. Sainsbury's
- b. Screwfix
- c. Cyberpower UK
- d. Team Valley Retail World
- e. Hobbycraft Gateshead
- f. Mothercare
- g. Halfords
- h. Tool Station Gateshead
- i. Henry Colbeck Limited
- j. International Decorative Surfaces, Gateshead
- k. Woleseley

- 12.7.25. Due to the large number of car parking spaces the Team Valley Trading Estate & Retail Park provide, it is considered that the majority of customers and employees drive to the trading estate, and access it from the A1 at junction 67 (Coal House). Chowdene Bank from the north and Lamesley Road from the south act as the main pedestrian access points to the Trading Estate & Retail Park. There are pedestrian footways on both of these feeder roads.

### Lamesley

- 12.7.26. Lamesley is a small area of housing south of the A1. There are no community facilities within Lamesley apart from a public house.
- 12.7.27. The majority of services required by residents of Lamesley are sought in either Birtley (via Greenford Lane) or Harlow Green (via Smithy Lane). For WCH access, the Smithy Lane overbridge is located between junction 66 (Eighton Lodge) and junction 67 (Coal House) of the A1, and provides a crossing point over the carriageway between the Harlow Green area of Gateshead (to the east) and Lamesley.

## Harlow Green

12.7.28. Harlow Green is a residential area located east of Durham Road, and north of the A1 junction 66 (Eighton Lodge). There are the following facilities in the locality:

- a. Two primary schools (Harlow Green Primary School and St Anne's Catholic Primary School)
- b. One children's nursery (Chowdene Children's Centre)
- c. An academy (Cedars Academy)
- d. One doctor's surgery
- e. One dentistry practice
- f. One pharmacy
- g. Two convenience stores
- h. Two public houses

12.7.29. These services are likely to serve most of the requirements for the residents of Harlow Green, and any not catered for by those facilities present are likely to be served by facilities nearer to Gateshead, via Durham Road, or Springwell Village to the east.

## Chowdene

12.7.30. Chowdene is a residential area located between Durham Road and the Team Valley Trading Estate. It has one secondary school (Joseph Swan Academy) and two primary schools (Oakfield Junior School and Oakfield Infant School).

12.7.31. The majority of educational, health and leisure community services can be accessed from Harlow Green (via local roads) and the Team Valley Trading Estate (via Chowdene Bank or Eastern Avenue, both of which have pedestrian footways).

## Birtley

12.7.32. Birtley is a residential area situated south of the A1, either side of Durham Road. It has the following community facilities:

- a. Six primary schools (Birtley East Community Primary School, St Joseph's Catholic Infant School, St Joseph's Catholic Junior School, Portobello Primary School, Barley Mow Primary School, and Ravensworth Terrace Primary School).
- b. Four convenience stores
- c. Two opticians
- d. Two dentistry practices
- e. A secondary school (Lord Lawson of Beamish Academy)
- f. Six churches
- g. Numerous pubs and restaurants

12.7.33. The majority of services within Birtley listed above can be accessed on foot or by vehicle.

## Crowther

12.7.34. Crowther is a residential area east of Birtley and the A1. Within the area are the following community facilities:

- a. Four primary schools (Lambton Primary School, Holley Park Academy, St John Boste Roman Catholic Primary School and Oxclose Primary Academy)

- b. One secondary school (Oxclose Community Academy)
- c. Two churches
- d. A convenience store

12.7.35. Further services may be accessed in Washington, to the east via Castle Road, which has a pedestrian footway. It is likely that the majority of journeys outside of Crowther will be made via vehicle.

### **Armstrong**

12.7.36. Armstrong is an area of land between the Washington Highway, the Sunderland Highway and the A194. Within this area there is a primary school (Blackfell Primary School) and a convenience store. It is reasonable to suppose that the majority of services are sought in Washington and Crowther to the south, Great Usworth to the north-east or Birtley to the south-east. Due to Armstrong being enclosed by the motorway, A182 and A1231 carriageways, it is reasonable to suppose that the majority of journeys outside Armstrong will be made via vehicle.

### **Low Eighton**

12.7.37. Low Eighton is a small, sparsely populated area north of the A1 and east of junction 66 (Eighton Lodge). There are no community facilities in this area for residents. It is reasonable to suppose that local services are sought from Birtley, Springwell Village or Harlow Green by vehicle via Long Bank or Newcastle Bank.

### **Community Severance Sensitivity**

12.7.38. There are a number of residential settlements, local community facilities and industrial areas connected by PRow used to cross the current road network (refer to **Figure 12.1** of this ES (**Application Document Reference: TR010031/APP/6.2**)) that it is reasonable to suppose will be affected by the Scheme. Alternative facilities are available to the PRow network within the area (e.g. local bus facilities). In addition, the PRow network is considered to be a moderately accessed resource. The existing community links crossing the Scheme are therefore of **medium** sensitivity.

### **Private and Community Land Take**

12.7.39. There is an area of woodland south of Smithy Lane, known as Longacre Wood owned by Gateshead Council which is listed under their countryside sites and country parks, and falls under Policy ENV51 as Wildlife Corridor in the Gateshead Local Plan. Longacre Wood and parts to the south of Smithy Lane are also listed under Policy CFR26 Accessible Natural Green Space and to the north-east under Policy CFR23 as Public Open Space Protection.

12.7.40. There is a sports field located to the east of Longacre Wood and to the north of the A1, which is listed under Policy CFR17 'Retention of Facilities' of the Gateshead Local Plan (**Ref 12.21**).

12.7.41. There are no allotments, including fuel or field garden allotments, within the Study Area.

- 12.7.42. Another Public Open Space to the north west of Smithy Lane and to the west of Woodford will be required temporarily during construction. This would be required for the construction of a replacement of Allerdene Bridge and a temporary access/haul road which would run from the Allerdene Bridge working compound eastwards to Woodford.
- 12.7.43. The Scheme would require a small-scale permanent loss of community land for the widening of the current A1 highway. This will include land adjacent to the southbound carriageway, running from Smithy Lane to the Angel of the North. In addition, a further area of Public Open Space will be required for a newly proposed footbridge at Crathie, North Birtley.
- 12.7.44. An area of Longacre Wood and further areas of Public Open Space fall directly within areas of temporary land take for construction. Furthermore, small-scale permanent land loss will be required as a result of the Scheme. With these areas of land being locally classified as a 'Public Open Space Protection'. There is a limited range of alternative facilities available within an easily accessible distance. Considering it is also of regional importance, private and community land take has been assessed as having a **medium** sensitivity.

## PEOPLE

### Local Economy

- 12.7.45. According to the latest available data from the ONS labour market statistics website, known as NOMIS, Gateshead had a resident population of 202,500 in 2018 (**Ref 12.22**). The latest population projections estimate the population of Gateshead will continue to grow, increasing by approximately 8,000 by 2030. 63.2% of Gateshead's population is aged between 16 and 64, which is on par with the averages across the north-east (62.7%) and England (62.8%).
- 12.7.46. The Labour Market Profiles hosted on the NOMIS website for each local authority area compare the indicators of a number of economic and education statistics for each area with the national average. The profile brings together data from several sources. The information for Gateshead is presented as follows.

### Qualifications

**Table 12-23 - Comparison of proportion of adults obtaining recognised qualifications (2017)**

<b>Qualification</b>	<b>Gateshead (%)</b>	<b>England (%)</b>
NVQ 4 and above	29.5	38.6
NVQ 3 and above	49.8	57.2
NVQ 2 and above	72.1	74.7
NVQ 1 and above	83.2	85.4

12.7.47. The adult population of Gateshead holds a lower proportion of all levels of professional qualifications than the average adult population in England (**Table 12-23**).

### Earnings

12.7.48. Earnings statistics for Gateshead provide information on the average weekly wage of the population currently employed (thus providing an indication of the local economy).

**Table 12-24 - Comparison of gross weekly pay (Pounds) in Gateshead with England (2017)**

	<b>Gateshead</b>	<b>England</b>
Male Full-time Workers	521.7	594.2
Female Full-time Workers	453.7	494.4

12.7.49. Average weekly wages in Gateshead are lower than the national average. Average weekly wages indicate that full-time male workers in Gateshead earn approximately £70 less than the national average. Full-time female workers in Gateshead earn approximately £40 less than the national average. This data in **Table 12-24** indicates that the local economy in Gateshead is performing poorly compared to the national average.

12.7.50. Between January 2017 and December 2017, 73.4% of Gateshead population aged 16-64 were in employment. This compares to 70.6% in the north-east as a region, and 74.9% nationally.

### Employment

12.7.51. Historically, Gateshead's economy was reliant on traditional heavy industries, including shipbuilding and coal mining. Over recent decades, there has been a shift towards service sectors, but industrial areas remain an important contributor to economic diversity. Team Valley Trading Estate lies to the north of the Scheme and is home to a variety of businesses, as described in **paragraph 12.7.24**.

12.7.52. Employment statistics for the Gateshead District provide information on the percentage of the population aged 16-64 currently employed (thus providing an indication of the local economy).

**Table 12-25 - Comparison of employment status in Gateshead with England (2017)**

<b>Employment Status</b>	<b>Gateshead (%)</b>	<b>England (%)</b>
In Employment	73.4	74.9
Employees	66.2	64
Self Employed	7.2	10.6
Unemployed	5.7	4.4

12.7.53. The data indicates that in comparison to the national average, a smaller percentage of the population of Gateshead is in employment. Also, a higher percentage of the population of Gateshead is unemployed, compared to the national average.

12.7.54. **Table 12-25** further indicates that the local economy in Gateshead is performing poorly compared to the national average.

12.7.55. The Team Valley Trading Estate area is identified as a primary employment site under Saved Policy JE1 of the Core Strategy and Urban Core Plan for Gateshead and Newcastle upon Tyne 2010-2030.

12.7.56. Given that the Team Valley Trading Estate is identified as a primary employment site of regional importance, economy has been assessed as having a **medium** sensitivity value.

### **Tourism and Recreation**

12.7.57. The following tourism and recreation facilities have been identified within the 1km Study Area:

- a.** Angel of the North: An iconic piece of public art by Antony Gormley, produced to become a landmark for the Gateshead region. It is located on a hilltop near the A1 and rises 20M with a wingspan of 54m.
- b.** Angel of the North Fishing Lakes and Livery Yard: Comprised of Lookout Lake, Bowes Lake and Bassett's Pond as well as a Livery Yard for horses.
- c.** Bowes Incline Hotel: A traditional countryside hotel with restaurant and bar.
- d.** Bowes Manor Equestrian Centre: a riding school and livery facilities.

12.7.58. In order to access these facilities, it is reasonable to suppose that visitors will need to use, or cross, the Scheme. There are a limited range of alternative routes available to access these facilities, and limited availability of alternatives locally. Considering this, as well as the regional importance of the Angel of the North, Tourism and Recreation has been assessed as having a **medium** sensitivity value.



## Health

- 12.7.59. This section sets out the baseline conditions in relation to health, comprising local population information, and indicators of the status of local health, social and economic factors.
- 12.7.60. The PHE Health Profiles for each local authority area compare the indicators of a number of population health statistics for each area with the national average. In Gateshead, health is varied when compared to the national average, whereas in Sunderland health is generally worse than the national average.
- 12.7.61. A selection of Indicators from the 2018 Public Health Profiles for Gateshead and Sunderland for population health (**Ref 12.23**) are provided in **Table 12-26**.

**Table 12-26 - Population health**

Indicator	Period	Gateshead	Sunderland	England
Obese children (aged 10-11)	2016/17	24.6%	24.1%	20.0%
Excess Weight in Adults	2016/17	69.1%	67.7%	61.3%
Life Expectancy at birth – Males	2014-16	77.5 years	77.2	79.5 years
Life Expectancy at birth – Females	2014-16	81.3 years	81.1	83.1 years
Under 75 Mortality: all causes	2014-16	421.3	416.3	333.8

Indicators taken from the 2018 Public Health Profiles which uses the most recent data available.

- 12.7.62. The profile indicates that obese children and excess weight adults for both Gateshead and Sunderland are significantly worse than the national average. Life expectancy at birth for both males and females in Gateshead and Sunderland is significantly worse than the national average. Mortality rates for under 75 year olds (all causes) are also significantly worse than the national average in both Gateshead and Sunderland.
- 12.7.63. The health profile indicates that the difference in life expectancy between the most and least deprived areas is high. If there was no inequality in life expectancy, the difference would be zero.
- 12.7.64. The PHE health profile data indicate that there is health inequality in both Gateshead and Sunderland, shown below in **Table 12-27**.

**Table 12-27 - Life expectancy gap between most and least deprived areas 2018**

<b>Indicator</b>	<b>Male</b>	<b>Female</b>
Gateshead	9.6 years	8.8 years
Sunderland	11.5 years	8.7 years

- 12.7.65. The English Indices of Deprivation 2015 (**Ref 12.24**) are a collection of several separate indices measuring deprivation within all local authorities in England. Gateshead is ranked 73rd out of 326 local authorities, where 1 is the most deprived. Approximately 12% of Gateshead residents live within the most deprived 10% Lower Layer Super Output Areas (LSOAs) in England. LSOAs are a geographic area used for reporting statistics for smaller areas, there are 32,844 LSOA in England following the 2011 Census, which are each made up of a maximum population of 3,000 people, or 1,200 households (**Ref 12.25**).
- 12.7.66. There are 29 LSOAs within 1km of the Scheme, which are detailed below in **Table 12-28** and shown in **Figure 12.3** of this ES (**Application Document Reference: TR010031/APP/6.2**). There are two LSOAs which are within the most deprived 10% (Decile 1); these are Gateshead 007D which incorporates the Team Valley Trading Estate, and Gateshead 025B which is to the north of Birtley. There is one LSOA which is within the least deprived 10% (Decile 10) which is Gateshead 019E and located to the west of the northern extent of the Scheme. These figures indicate that Gateshead as a whole is a more deprived area when compared to the national average, although there are a range of deprivation levels adjacent to the Scheme.

**Table 12-28 – Index of multiple deprivation deciles for LSOA within 1km**

<b>LSOA Code</b>	<b>LSOA Name</b>	<b>IMD Rank</b>	<b>IMD Decile</b>
E01008193	Gateshead 020A	20,591	7
E01008206	Gateshead 013A	17,492	6
E01008207	Gateshead 013B	26,599	9
E01008261	Gateshead 019C	4,333	2
E01008272	Gateshead 019E	30,063	10
E01008260	Gateshead 019B	26,586	9
E01008190	Gateshead 023B	19,818	7
E01008175	Gateshead 026D	10,043	4

<b>LSOA Code</b>	<b>LSOA Name</b>	<b>IMD Rank</b>	<b>IMD Decile</b>
E01008174	Gateshead 026C	11,070	4
E01008870	Sunderland 020D	24,383	8
E01008226	Gateshead 025D	10,228	4
E01008176	Gateshead 026E	19,307	6
E01008259	Gateshead 007D	1,300	1
E01008224	Gateshead 025C	14,608	5
E01008191	Gateshead 023C	4,508	2
E01008217	Gateshead 023E	7,487	3
E01008192	Gateshead 023D	8,567	3
E01008222	Gateshead 025A	8,767	3
E01008867	Sunderland 020A	3,473	2
E01008869	Sunderland 020C	17,802	6
E01008225	Gateshead 021D	14,176	5
E01008189	Gateshead 023A	4,630	2
E01008868	Sunderland 020B	25232	8
E01008194	Gateshead 020B	28405	9
E01008234	Gateshead 020C	28301	9
E01008223	Gateshead 025B	2337	1
E01008874	Sunderland 010B	6447	2
E01008256	Gateshead 019A	17339	6
E01008875	Sunderland 010C	11748	4
E01008873	Sunderland 010A	21942	7
E01008872	Sunderland 020F	17804	6

12.7.67. Behavioural risk factors provide an indication of how healthy an lifestyle adults in the region have.

12.7.68. **Table 12-29** includes indicators demonstrating the prevalence of smoking and physical activity in Gateshead compared to England.

**Table 12-29 - Indicators of lifestyle for adults**

Indicator	Period	Gateshead	Sunderland	England
Smoking prevalence in adults (aged 18+) (%)	2017	16.5	22.7	14.9
Physically active adults (aged 19+)	2016/17	63.2	61.5	66.0
Excess weight in adults (aged 18+) (%)	2016/17	69.1	67.7	61.3

12.7.69. The profile indicates that smoking prevalence in Gateshead is not significantly different to the national average, while it is significantly worse than the national average in Sunderland. Similarly, the proportion of physically active adults in Gateshead is not significantly different to the national average, while in Sunderland the proportion of physically active adults is significantly worse than the national average. In both Gateshead and Sunderland, the proportion of adults with excess weight is significantly worse than the national average.

12.7.70. Indicators for children's health relate to their family circumstances, weight and educational attainments. Poverty is a particularly important indicator, as children in low-income families are more likely to die suddenly in infancy, to suffer acute infections, and to experience mental ill-health (**Ref 12.26**).

**Table 12-30 - Indicators of lifestyle for children**

Indicator	Period	Gateshead	Sunderland	England
Children in low income families (under 16s) (%)	2015	19.8	22.8	16.8
Obese children (aged 10-11) (%)	2016/17	24.6	24.1	20.0
GCSEs achieved (%)	2015/16	56.9	53.9	57.8

12.7.71. The proportion of children in low income families and obese children in both Gateshead and Sunderland is significantly worse than the national average (**Table 12-30**). In Gateshead the

proportion of students achieving 5 A\*-C (Including English and Maths) GCSEs is not significantly different to the national average, but significantly worse in Sunderland.

**Table 12-31 - Numbers of fatalities and injuries on roads**

Indicator	Period	Gateshead	Sunderland	England Value
Killed and seriously injured on roads	2014-2016	31.2	28.0	39.7

12.7.72. The populations of Gateshead and Sunderland appears to experience a fewer number of fatalities or instances of being seriously injured on roads than the national average. The PHE health profile data indicates that the number of people killed and seriously injured on roads in both Gateshead and Sunderland is significantly better than the national average (**Table 12-31**).

12.7.73. The Study Area for human health in this assessment covers the administrative area of Gateshead and Sunderland, though specific human receptors likely to be affected by the Scheme are listed above under the “Communities” heading, specifically the Community severance and Community land sub-headings.

12.7.74. The Scheme is located in an area which experiences an inequality in health, has areas of deprivation and where overall, the population’s health is worse than the national average. As such, Health receptors are expected to have a **medium** sensitivity to the Scheme.

### FUTURE BASELINE

12.7.75. According to the ONS National Population Projections: 2016-based statistical bulletin (**Ref 12.27**), the UK population is projected to grow to 69.2 million by mid-2026, with England growing more quickly than other UK nations. Population projections for Gateshead Local Authority show an expected increase from 202,600 people in 2016 to 211,000 people in 2041 (**Ref 12.28**). According to an ONS statistical bulletin (**Ref 12.28**) on the future size and age structure of the population, in 2016 there were 90,688 households in Gateshead, which is set to rise to 99,995 by 2039.

12.7.76. The population will be comprised of a growing proportion of older people, with the Gateshead JSNA stating that by 2039 there will be an increase of 38% of people aged 65 or older in the region.

12.7.77. An increase in population size, with a greater proportion of older people, will lead to a corresponding increase in people living with a limiting long-term illness (10.12% increase predicted by 2020) (**Ref 12.29**). A larger population requiring more care, will lead to increased demand for community facilities, particularly those associated with an older population, such as medical facilities and care homes.

- 12.7.78. Gateshead Council is promoting an initiative called "Go Smarter" to encourage healthy forms of travel including infrastructure funding, travel plans for new developments and organisations, and advice/support/promotional activity.
- 12.7.79. The "Go Smarter" Network provides a forum for businesses across Tyne and Wear, Northumberland and County Durham, encouraging them to work together to develop and deliver sustainable travel initiatives on how to travel sustainably with a wide variety of resources.

## **12.8. POTENTIAL IMPACTS**

### **EFFECTS ON TRAVELLERS**

#### **Motorised Travellers**

##### **Construction**

- 12.8.1. There would be some temporary disruption to Motorised Travellers on the A1 and the surrounding local road network during construction which would cause a temporary increase in driver stress.
- 12.8.2. The construction programme for the Allerdene viaduct option would be the same for both the Allerdene embankment option. As such the traffic data used to assess driver stress is assumed to be applicable to both options (see **Section 12.5**). It is therefore considered that driver stress would be comparable for both options during construction.
- 12.8.3. In the short term, vegetation screening would be reduced until mitigation planting reaches maturity. This may enhance the views in some locations, such as both north and southbound views of the Angel of the North to the west of Coal House roundabout. However, it may also result in a less pleasant road user experience in some carriageway locations travelling adjacent to the Team Valley Trading Estate.

##### **Operation**

- 12.8.4. Once in operation, it is anticipated that driver stress would be reduced due to the additional capacity provided by the Scheme to alleviate congestion and improve journey times.
- 12.8.5. Views from the road are anticipated to be mostly unchanged. However, views from the road will become slightly more restricted towards the Angel of the North heading northbound of junction 66 (Eighton Lodge) due to the installation of gantries on the carriageway.

#### **Walking, Cycling and Horse-riding**

##### **Construction**

- 12.8.6. During construction there would be temporary diversions or closures required for PRow affected by the Scheme which would result in increases in journey length. The PRow that would be impacted directly by the construction works and the following diversions or WCH route closures are anticipated is provided in **Table 12-17**.

12.8.7. There are many key trip generators and local amenities which have been identified near the Scheme that would attract WCH. These include:

- a. Bowes Incline Hotel
- b. Bowes Lake and Bassetts Pond
- c. Bowes Manor Equestrian Centre
- d. Angel of the North Livery Yard
- e. Birtley Neighbourhood Retail Facilities on A167 Newcastle Bank
- f. Birtley East Primary School

12.8.8. Full details of the WCHAR is provided in the stand-alone report (**Appendix 12.1** of this ES (**Application Document Reference: TR010031/APP/6.3**)).

#### Operation

12.8.9. There would not be any diversions required during operation and it is intended that WCH facilities and connectivity would be improved as a result of the Scheme.

12.8.10. There will be some temporarily reduced amenity for WCH when using PRowS and non-designated footpaths near construction works.

#### Rail Travellers

##### Construction

12.8.11. During construction there may be some disruption to rail travel between Chester-le-Street and Newcastle due to night time track closures for works around Allerdene Bridge (see **Section 2.9 of Chapter 2 The Scheme** of this ES (**Application Document Reference: TR010031/APP/6.1**) for further details on construction phasing). These have been discussed with Network Rail and would be limited to overnight weekend possessions which would minimise disruptions to rail travellers.

##### Operation

12.8.12. It is unlikely that rail travellers would be impacted by the Scheme once operational.

#### EFFECTS ON COMMUNITIES

##### Community Severance

##### Construction

12.8.13. There may be some temporary disruption to local Motorised Travellers and WCHs accessing local community facilities during construction as traffic management measures are implemented and PRowS are diverted.

12.8.14. Details of the PRow networks that are anticipated to be affected are described above in **Table 12-17**.

##### Operation

12.8.15. Once the Scheme is operational, it is anticipated that there will be no further impacts on community severance.



## Private and Community Land Take

### Construction

- 12.8.16. As indicated on the Land Plan (**Application Document Reference: TR010031/APP/2.2**), it is anticipated that approximately 47 plots of land would be directly affected (their land would fall within the Scheme Footprint) by the Scheme. It should be noted that this figure only relates to the acquisition of private or community land and does not include land owned by Highways England, Gateshead Council, Network Rail or NGN. There would be a total of 4.5 hectares of temporary land loss during the construction period for the proposed two main site compounds as well as two working compounds. This land would be returned to the existing use after construction is complete.
- 12.8.17. The earthworks design has been revised from 1:3 to 1:2 slope to avoid land take from Longacre Woods. In the area of Longacre Woods, the proposed earthworks are now all within Highways England land and no permanent land acquisition is required.
- 12.8.18. It is not anticipated at this stage that there would be any demolition of private property or associated land take.

### Operation

- 12.8.19. As shown in **Table 2-2 in Chapter 2 The Scheme** of this ES (**Application Document Reference: TR010031/APP/6.1**), there would be a total of 56.66 hectares of permanent land loss for works during operation.
- 12.8.20. Public Open Space will be required for the replacement of North Dene Footbridge at Crathie, North Birtley as shown indicated by the Special Category Land Plans Key Plan (**Application Document Reference: TR010031/APP/2.8**). A total area of 3.3 hectares of community land will be permanently required for the widening of the current A1 highway. This will include small sections of land adjacent to the southbound carriageway, running from Smithy Lane to the Angel of the North and Public Open Space will be required for the new footbridge mentioned above.

## EFFECTS ON PEOPLE

### Local Economy

#### Construction

- 12.8.21. There is potential for a beneficial impact during construction on the local economy as expenditure within the local supply chain is anticipated to increase during the construction works.
- 12.8.22. There is potential that traffic management measures during the construction works could cause disruption to commuters and business travel on the local road network.

#### Operation

- 12.8.23. During operation, reduced delays on the road network have the potential to provide beneficial impacts to the local economy with improved commuter and delivery journey times.

## Tourism and Recreation

### Construction

- 12.8.24. Local tourism and recreation facilities may experience some temporary impacts due to the disruption to the road network and diversions to PRoW during construction. These include:
- a. Angel of the North, located on a hilltop near the A1 and rises 20 metres with a wingspan of 54 metres.
  - b. Angel of the North Fishing Lakes and Livery Yard.
  - c. Bowes Incline Hotel.
  - d. Bowes Manor Equestrian Centre.
- 12.8.25. Construction works might limit access to such facilities, or increase journey time for visitors to reach such facilities.

### Operation

- 12.8.26. During operation, there is the potential for beneficial impacts through improved access to the Angel of the North Fishing Lakes, Bowes Incline Hotel and the Bowes Manor Equestrian Centre.

## Health

### Construction

- 12.8.27. During the construction phase there is the potential for a number of determinants of health to be impacted adversely, including driver stress, community severance, accessibility, route safety, amenity value, air quality (from construction dust, see **Chapter 5 Air Quality**) and **Chapter 11 Noise and Vibration** (resulting from night-time works) of this ES (**Application Document Reference: TR010031/APP/6.1**). However, there would be beneficial impacts on local economy and employment.

### Operation

- 12.8.28. Once operational, the Scheme is expected to have a beneficial impact on accessibility. As set out in **Chapter 5 Air Quality** of this ES (**Application Document Reference: TR010031/APP/6.1**), there are no properties that are expected to experience a worsening or improvement in air quality. The assessment of Noise and Vibration (**Chapter 11 Noise and Vibration**) of this ES (**Application Document Reference: TR010031/APP/6.1**) concludes that the Scheme would provide an overall net benefit in terms of reducing road traffic noise.
- 12.8.29. The Scheme is located in an area which experiences an inequality in health, has areas of deprivation and where overall, the population health is worse than the national average.

## 12.9. DESIGN MEASURES, MITIGATION MEASURES AND ENHANCEMENT MEASURES

### EFFECTS ON ALL TRAVELLERS

#### Motorised Travellers

##### Design

- 12.9.1. Ways to minimise the visual impact of gantries which could impact on views to the Angel of the North would be investigated during detailed design. This would include designing gantries as far as possible to have a reduced visual impact, and sympathetic placement of gantries within the design envelope.

##### Construction

- 12.9.2. The Scheme aims to improve the experience of Motorised Travellers using the route and connecting roads. The following mitigation and enhancement measures would contribute to an improved experience for Motor Travellers.
- 12.9.3. The main construction works would take three years starting in Winter 2020/21 with completion in Winter 2023/24. During the construction phase, traffic management strategies would be implemented to enable the works to be constructed whilst minimising the interface between public and site traffic. Traffic would be managed using speed restrictions, and some overnight working would be required to place bridge beams, for concrete deck pours and for removal of temporary works. Further details regarding the construction works are provided in **Section 2.9 of Chapter 2 The Scheme** of this ES (**Application Document Reference: TR010031/APP/6.1**).
- 12.9.4. Where overriding landscape or design constraints do not restrict this, the view from the road for Motorised Travellers would not be further obstructed by new structure(s) (for example roadside screening), and open views of the surrounding countryside should be retained.
- 12.9.5. Signage and layout would be clear to understand and avoid creating route uncertainty. Any diversions or closures undertaken during construction would be clearly advertised, and any diversionary routes would be clearly signposted and not lead to uncertainty. Details of the traffic management measures have been listed within the draft Construction Traffic Management Plan which is included in Appendix B of the Outline Construction Environmental Management Plan (CEMP) (**Application Document Reference: TR010031/APP/7.4**).

##### Operation

- 12.9.6. No mitigation during operation is considered necessary.

## Walking, Cycling and Horse-riding

### Construction

- 12.9.7. Temporary diversionary works in response to the closure of WCH routes (North Dene Footbridge, Longbank Bridleway, Lamesley Bridleway 72 and access to footways in the vicinity of junction 65 (Birtley) and junction 66 (Eighton Lodge)) would be put in place to enable continued access for users. These temporary diversion routes are detailed in the Streets, Rights of Way and Access Plans (**Application Document Reference: TR010031/APP/2.4**).
- 12.9.8. Works would be programmed so that North Dene Footbridge and Longbank Bridleway Underpass are not closed at the same time. This ensures that there is a route across the A1 at all times.
- 12.9.9. Effects from construction dust would be minimised or avoided through measures detailed in the CEMP.

### Operation

- 12.9.10. The Scheme would accommodate WCHs, and either retain or improve the existing access arrangements. Existing footpaths would be retained and, where crossed by the Scheme, provide proper means of access to prevent severance (for example the North Dene Footbridge). Opportunities for design enhancements for the directly affected PRowWs are given below and in **Appendix 12.1** of this ES (**Application Document Reference: TR010031/APP/6.3**).
- 12.9.11. The design of routes for WCH would incorporate good practice with regards to the safety, including lighting. Landscape design would be used as screening of the road where possible (such as an acoustic barrier provided on the northern edge of Birtley and reduce noise levels (noise barrier would also be provided, see **Chapter 11 Noise and Vibration** of this ES (**Application Document Reference: TR010031/APP/6.1**)) for the wider network of PRowW.
- 12.9.12. The following enhancement measures for PRowW are proposed:
- a. North Dene Footbridge would have a 3.5m (unsegregated) pedestrian/cycle path over the bridge deck and ramp and would have a 1 in 12 (minimum) gradient ramp. Corduroy tactile paving to aid the movement of partially sighted WCH users.
  - b. Improvements at both Eighton Lodge and Coal House interchanges to ensure pedestrian facilities (dropped kerbs and tactile paving) are consistent around the junctions.

## Rail Travellers

### Construction

- 12.9.13. The works would be programmed in consultation with Network Rail and rail operators to ensure effects on rail travellers are minimised through the use of weekend and night-time route closures, and alternative transport methods provided where necessary.

## Operation

- 12.9.14. No mitigation during operation is considered necessary.

## EFFECTS ON COMMUNITIES

### Community Severance

- 12.9.15. Existing footpaths and WCH routes would be retained, and where crossed by the Scheme, provided with proper means of access to prevent severance.
- 12.9.16. The Smithy Lane crossing point, located along the A1, would remain open and unaffected during the construction period. The existing roads that would be incorporated into the temporary diversion routes during construction are detailed within the Streets, Rights of Way and Access Plans (**Application Document Reference: TR010031/APP/2.4**).

### Private and Community Land Take

- 12.9.17. The land identified as Public Open Space (at Longacre Wood and to the west of Woodford) would not be required permanently. Whilst Special Category Land is affected by the Scheme, in accordance with Section 131 (3) (a) and 131 (5) (a) of the Planning Act 2008, no replacement land is required and therefore, no compensatory land is anticipated to be necessary.
- 12.9.18. All areas temporarily required for construction would be reinstated to reflect their former vegetation cover, unless otherwise stated on **Figure 7.6** (Landscape Mitigation Design) of this ES (**Application Document Reference: TR010031/APP/6.2**).
- 12.9.19. There would be a permanent loss of 3.3 hectares of community land. As it is outlined within Chapter 7 of the Statement of Reasons (**Application Document Reference: TR010031/APP/4.1**). No replacement land is required for the loss of Public Open Space and therefore no mitigation is proposed.

## EFFECTS ON PEOPLE

### Local Economy

- 12.9.20. Measures to maximise the potential for the workforce and project supply chain to be sourced locally will include:
- a. Working with local people and local businesses to ensure that, wherever possible, investment in the north-east, stays in the north-east.
  - b. Engaging with Jobcentre Plus to advertise job opportunities to local people seeking employment, and identifying opportunities for work placements, further education and skills training.
  - c. Opportunities for everybody working on the Scheme to upskill through experience, training and development programmes.
- 12.9.21. A Construction Traffic Management Plan would be put in place during construction works to minimise disruption to road network users. A draft Construction Traffic Management Plan (Appendix B of the Outline CEMP (**Application Document Reference:**

TR010031/APP/7.4)) has been produced and will be further updated by the appointed contractor.

### Tourism and Recreation

- 12.9.22. Signage will be put in place to ensure local tourism and recreational facilities remain accessible and do not suffer due to users being unable to reach them.

### Health

- 12.9.23. Measures mentioned above to assist route certainty (paragraph 12.9.5), maintain access for WCH (paragraph 12.9.7), and encourage use of the local supply chain (paragraph 12.8.21), as well as those mentioned in Chapter 11 Noise and Vibration of this ES (Application Document Reference: TR010031/APP/6.1) would all contribute to mitigating impacts on human health.

## 12.10. ASSESSMENT OF LIKELY SIGNIFICANT EFFECTS

- 12.10.1. The potential impacts detailed in Section 12.8 have been reviewed based on the implementation of the mitigation measures to provide an assessment of the residual effects of the Scheme on Population and Human Health.
- 12.10.2. Both the Allerdene embankment option and the Allerdene viaduct option have been considered, and unless otherwise specified, this assessment is valid for both options.

### EFFECTS ON ALL TRAVELLERS

#### Motorised Travellers: Views from the Road

##### Construction

- 12.10.3. Based upon the baseline information presented in Section 12.7, the existing views from the road are judged to be of **low** sensitivity to change.
- 12.10.4. The construction phase would result in localised temporary reduction of roadside vegetation. Construction activities would be visible from the road which would include features of a major construction site and traffic management works. However, due to the Scheme largely retaining its original visual appearance, aesthetically no long-term effects are predicted.
- 12.10.5. The temporary reduction in roadside vegetation screening would extend beyond the construction period, into the Scheme's operational period, as it is anticipated that mitigation planting would take 15 years to reach maturity (further details are provided in Chapter 7 Landscape and Visual of this ES (Application Document Reference: TR010031/APP/6.1)).
- 12.10.6. These effects are all considered to be temporary and the magnitude of impact following mitigation is **minor**.



12.10.7. Therefore, it is anticipated to be a temporary effect of **slight adverse** significance (not significant) during the construction period following the implementation of the mitigation measures.

### Operation

12.10.8. Based upon the baseline information presented in **Section 12.7**, the views from the road are judged to be of **low** sensitivity to change.

12.10.9. Once works associated have finished and the Scheme is operational, views from the road towards the Angel of the North would be slightly more restricted due to the installation of gantries. The Angel of the North is a feature of interest, however, there will only be a slightly reduced extent to which travellers may be able to view the feature from the road. Furthermore, planting around the Angel will be less dense than existing, which is anticipated to slightly improve visibility to the Angel of the North southbound. Therefore, the magnitude of impact is considered to be **minor**.

12.10.10. Therefore, there is likely to be a permanent **slight adverse** effect during operation (not significant).

### Motorised Travellers: Driver Stress

#### Construction

12.10.11. Based on **Section 12.7**, driver stress is judged to be of **high** sensitivity to change.

12.10.12. The effects during construction are considered to be temporary. However, increases in driver stress are noticeably higher across the different road sections during construction in comparison to the baseline year (2017). Therefore, the magnitude of impact following mitigation is **moderate**.

12.10.13. It is anticipated that during construction there would be a temporary **major adverse** effect (significant) following the implementation of the mitigation measures. This assessment is applicable for both Allerdene embankment option and Allerdene viaduct option, where a worst-case approach has been taken for construction traffic.

#### Operation

12.10.14. Once operational, it is expected that the Scheme would reduce driver stress due to the additional lanes along the main trunk of the A1. However, as usage of the route increases, the peak hourly flow is expected to have a higher level of negative impact on driver stress over time.

12.10.15. Whilst the beneficial effect on Motorised Travellers' driver stress is primarily due to the decrease in frustration resulting from reductions in the peak hourly flow, Motorised Travellers would also benefit from a reduction in the fear of potential accidents and route uncertainty. Therefore, the magnitude of impact, once operational, is **minor**.

12.10.16. Overall, the significance of the effect of the Scheme on driver stress is expected to be **slight beneficial** (not significant).



## Rail Travellers

### Construction

- 12.10.17. As stated within **Section 12.7**, due to the large number of passengers who travel on this stretch of rail line, rail travellers have been assessed as having a **medium** sensitivity.
- 12.10.18. The construction of the new Allerdene Bridge and demolition of the existing Allerdene Bridge will require some night time track closures. These have been discussed with Network Rail and would be limited to overnight weekend possessions which would minimise disruptions to rail travellers. As such, the magnitude of impact on rail travellers will be **minor**. During construction it is anticipated that there will be a temporary, **slight adverse** effect (not significant) on rail travellers.

### Operation

- 12.10.19. Once works associated with the railway bridge have finished, and the Scheme is operational, it is anticipated that there will be no further impacts. Overall the significance of the effect of the Scheme on rail travellers is expected to be **neutral** (not significant).

## WALKING, CYCLING AND HORSE-RIDING

### Journey Length and Amenity

#### Construction

- 12.10.20. The high level of WCH use of the surrounding PRoWs would result in high sensitivity to the Scheme. The use of the surrounding PRoWs is shown in Table 12-18 to Table 12-21.
- 12.10.21. The introduction of construction works as part of the Scheme and within the vicinity of the WCH facilities is anticipated to result in a temporary reduction of visual amenity and therefore journey pleasantness (**Chapter 7 Landscape and Visual** of this ES (**Application Document Reference: TR010031/APP/6.1**)). It is anticipated that all routes are susceptible to visual intrusion of variable magnitude. Construction activities are also anticipated to cause higher levels of noise temporarily (**Chapter 11 Noise and Vibration** of this ES (**Application Document Reference: TR010031/APP/6.1**)).
- 12.10.22. During the construction phase, there would be disruption to some of the existing WCH routes because of the works to the Longbank Bridleway Underpass and North Dene Footbridge. Both routes attract a modest level of pedestrian, cycle and equestrian movements during both peak periods and across the daily total. Diversions would be provided to maintain access during construction, but would increase user journey length. The diversion provided may not be as desirable for users, for example equestrians may not want to cross traffic.
- 12.10.23. Temporary closures of the Longbank Bridleway Underpass and North Dene Footbridge would cause disruption to journeys made between community facilities, residential properties and industrial zones. These journeys are anticipated to increase in length during such closures, particularly for residents of Birtley who usually cross the A1 to access the

Bowes Incline Hotel, Bowes Lake and Bassetts Pond, Bowes Manor Equestrian Centre and the Angel of the North Livery Yard. If the underpass and footbridge were to be shut at the same time this would cause even greater disruption. However, the works would be programmed so that North Dene Footbridge and Longbank Bridleway Underpass are not closed at the same time. This would ensure that there is a route across the A1 at all times.

12.10.24. These effects are all considered to be temporary during the construction period with journey length being most impacted. It is anticipated that the magnitude of impact following mitigation is **moderate**.

12.10.25. Therefore, it is anticipated to be a temporary **moderate** adverse (significant) effect on WCHs during the construction period following the implementation of the mitigation measures.

### Operation

12.10.26. Proposed changes to the PRoW once the Scheme is operational are described in **Chapter 2 The Scheme** of this ES (**Application Document Reference: TR010031/APP/6.1**). During operation, the newly proposed WCH routes would improve user safety, enhance access and improve community connectivity to the wider footpath network.

12.10.27. The reduction in traffic congestion along the carriageway (as a result of the Scheme) would improve safety for WCHs using the adjacent footways and cycleways.

12.10.28. Therefore, there is likely to be a long-term **moderate** (significant) beneficial effect during the operation period.

## EFFECTS ON COMMUNITIES

### Community Severance

#### Construction

12.10.29. Due to the number of residential settlements, local community facilities and industrial areas within the vicinity and either side of the Scheme, there will be a need for existing Motorised Travellers and WCH to access or cross the A1. Disruption to the communities' ability to access or cross the A1 would likely have a **moderate** magnitude of impact on community severance.

12.10.30. As highlighted previously there are a number of PRoW that can be utilised to cross the current road network and are likely to be affected by the Scheme. The existing community links crossing the Scheme are of **medium** sensitivity.

12.10.31. During construction, the closure of the North Dene Footbridge and Longbank Bridleway Underpass is likely to have a temporary **moderate** adverse (significant) effect due to increased journey times.

#### Operation

12.10.32. It is anticipated that there will not be any new severance during operation, with the proposed WCH routes providing greater connectivity between communities.

## Community Land

### Construction

- 12.10.33. As stated within **Section 12.7**, a parcel of Longacre Wood and Public Open Space to the west of Woodford fall directly within the Scheme Footprint, Community Land has therefore been assessed as having a **medium** sensitivity.
- 12.10.34. There would be temporary land take during construction. Therefore, the magnitude of impact for this temporary loss, following the proposed mitigation, is **minor**.
- 12.10.35. Therefore, there is likely to be a **temporary, slight** adverse effect during construction and there is likely to be a **neutral** significance of effect during operation (not significant).

### Operation

- 12.10.36. As stated within **Section 12.7**, the Community Land has been assessed as having a **medium** sensitivity.
- 12.10.37. The 0.03 hectares of permanent land take at Crathie, North Birtley will be to facilitate a newly proposed footbridge. This is largely expected to be beneficial due to the improved access provided by the Scheme.
- 12.10.38. Given the scale of the Scheme (6.5km in length) and considering that the 3.3 hectares of permanent land lost is accumulated by slightly infringing upon small areas of 'Open Space' along the length of the southbound carriageway, the magnitude of impact has been classified as **minor**.
- 12.10.39. It is considered that the land take would not impact the current use of the areas of community land.
- 12.10.40. Therefore, there is likely to be a permanent, **slight** adverse effect during operation (not significant).

## EFFECTS ON PEOPLE

### Economy

#### Construction

- 12.10.41. Any economic and employment effects within the wider Gateshead and South Tyneside local authorities caused by disruption to road commuter times are likely to be minimal with respect to this regional scale.
- 12.10.42. The construction phase would have a beneficial, though temporary effect on the local economy through enhancing local labour and supporting local businesses through expenditure from direct spend on materials for the Scheme. There may also be beneficial effects from any construction labour employed from outside of the region who would need to use local hotels and/or restaurants.

### Operation

- 12.10.43. The operational phase of the A1 carriageway would require continuous monitoring and maintenance work which would contribute to local employment opportunities. However, increased employment is unlikely to be significant, as the work would be improvements to an existing road and not a new substantial section of infrastructure.
- 12.10.44. Overall, it is expected that the economic and employment effects of the Scheme would be of **slight** beneficial significance (not significant).

### Tourism and Recreation

#### Construction

- 12.10.45. Delays caused during construction would impact tourism and recreation facilities (**paragraph 12.8.26**) by increasing visitor journey length, and potentially discouraging tourists from making the journey to visit.
- 12.10.46. Disruption to PRowS during construction (**paragraph 12.8.6**) is likely to have a **minor** magnitude of impact on tourism and recreation, specifically equestrians who might normally use the Longbank Bridleway Underpass. The North Dene Footbridge is also a popular route for residents travelling on foot from Birtley to the Bowes Incline Hotel. Therefore, during construction there would be a temporary **slight** adverse effect on tourism and recreation (not significant).

#### Operation

- 12.10.47. During the operation of the Scheme, tourism and recreation facilities may see a **minor** magnitude of impact due to the increase in road users and reduced congestion, and a possible increase in visitors to the facilities available. Reduced road traffic noise as a result of the Scheme, as detailed in **Chapters 11 Noise and Vibration** of this ES (**Application Document Reference: TR010031/APP/6.1**) would also improve the amenity of tourism and recreation facilities in the vicinity.
- 12.10.48. Overall, it is expected that there would be a permanent **slight** beneficial effect on tourism and recreation as a result of the Scheme (not significant).

### Health

- 12.10.49. As stated in **Section 12.7**, Health receptors are expected to have a **medium** sensitivity to the Scheme.

#### Construction

- 12.10.50. Delays to road traffic, and diversions to PRowS, caused during the construction period would impact on local resident's accessibility to employment, healthcare and other social infrastructure.
- 12.10.51. During construction, increases in driver stress (**paragraph 12.8.1**), community severance (**paragraph 12.8.13**) and reductions in accessibility (**paragraph 12.8.6**), amenity value (**paragraph 12.8.27**), and noise from night-time works (**Chapter 11 Noise and Vibration** of

this ES (**Application Document Reference: TR010031/APP/6.1**) are likely to have resulted in a temporary **moderate** (significant) effect on human health.

### **Operation**

- 12.10.52. Once the Scheme is operational, improvements to journey times (**paragraph 12.8.4**), reduced road traffic noise (**Chapter 11 Noise and Vibration** of this ES (**Application Document Reference: TR010031/APP/6.1**)), and improvements to community connectivity due to improvements to WCH routes are all likely to have a permanent, **slight** beneficial effect (not significant) on the local population health.

## **12.11. MONITORING**

- 12.11.1. The construction monitoring regime and reporting requirements been set out in the Outline CEMP (**Application Document Reference: TR010031/APP/7.4**) for the Scheme.
- 12.11.2. No adverse significant effects have been identified for the operational phase of the Scheme. It is not anticipated that any specific monitoring would be carried out. Monitoring in relation to air quality, landscape and noise and vibration are detailed in **Chapter 5 Air Quality**, **Chapter 7 Landscape and Visual** and **Chapter 11 Noise and Vibration** of this ES (**Application Document Reference: TR010031/APP/6.1**).

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