

**A66 Northern Trans-Pennine Project  
TR010062**

**3.2 Environmental Statement  
Chapter 13 Population and Human  
Health**

**APFP Regulations 5(2)(a)**

**Planning Act 2008**

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

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**3.2 ENVIRONMENTAL STATEMENT  
CHAPTER 13 POPULATION AND HUMAN HEALTH**

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## 13 Population and Human Health

### 13.1 Introduction

- 13.1.1 This chapter assesses the likely significant Population effects and the likely Human Health effects of the construction and operation of the Project, following the methodology set out in *the DMRB LA 112 Population and Human Health* (Highways England, 2020)<sup>1</sup>. It details the methodology followed, summarises the legislation and policy framework relevant to the Population and Human Health assessment and describes the existing environment in the area surrounding the Project. It then considers the design, mitigation and residual effects of the Project, including taking account of relevant characteristics of the future baseline environment. Any key assumptions and limitations applicable to the assessment are also identified.
- 13.1.2 Any predicted significant Population and Human Health effects are identified in section 13.10: Assessment of likely significant effects. Population effects identified in the course of the assessment but not predicted to be significant are presented in ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4). As described in Section 13.4 Methodology, the human health assessment does not consider significance so there are no non-significant health effects to report in ES Appendix 13.1.
- 13.1.3 The Population and Human Health assessment is supported by a number of figures (Application Document 3.3) and Technical Appendices (Application Document 3.4) as listed on the contents page.
- 13.1.4 This chapter of the ES has been undertaken by competent experts with the relevant and appropriate experience in their respective topics. The lead authors of this chapter have the following qualifications and experience:
- Population lead:
    - Seven years' experience in population assessment
    - Honours Degree in Geography and Post Graduate Masters in Environmental Consultancy
    - Chartered Environmentalist
  - Health lead:
    - 16 years' experience in health impact assessment across a wide range of projects and sectors
    - Honours Degree and Post Graduate Diploma in Environmental Sciences
    - Chartered Environmentalist.

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<sup>1</sup> Highways England (2020) Design Manual for Road and Bridges LA 112 Population and human health

## 13.2 Key assessment parameters

- 13.2.1 The following key assessment parameters have been used in order to enable flexibility in the assessment and to ensure that a reasonable worst case has been assessed.

Table 13-1: Key Assessment Parameters

Key Assessment Parameters
<ul style="list-style-type: none"><li>• In order to assess the worst case scenario the Order Limits have been utilised throughout the Population and Human Health assessment (i.e. it is assumed that all receptors within the Order Limits will be impacted by the construction of the Project, either directly or indirectly). This ensures that the maximum amount of land take is considered.</li><li>• Receptors outside of the Order Limits have also been assessed within the defined study area as described Section 13.6.</li><li>• The assessment has assumed that any land not utilised for the final scheme (engineering works) will either be utilised for ecological or landscape mitigation or returned to its previous use following construction.</li><li>• Where the Population and Human Health assessment considers the effects from other topics, it has used residual effects (taking account of committed mitigation measures).</li></ul>

## 13.3 Legislation and policy framework

### Legislation

- 13.3.1 The following key legislation is applicable to the assessment:
- The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 introduced the requirement for EIA to assess effects on 'population and human health'.
  - The Localism Act 2011 gives powers and controls to local councils and communities to act on local priorities.
  - The Commons Registration Act 1965 concerns the registration of rights to Common Land, town greens, and village greens in England and Wales.
  - The Countryside and Rights of Way Act 2000 improves rights of way legislation by encouraging the creation of new routes and clarifying uncertainties about existing rights, whilst obliging the highway authority to recognise the needs of the mobility impaired when undertaking improvements.
  - The National Parks and Access to the Countryside Act 1949 sets out the protection for national trails (including the Pennine Way) and the mechanism by which they can be diverted.
  - The Health and Social Care Act 2012 introduced a legal duty on healthcare providers to reduce health inequalities, provided for the creation of Public Health England to drive improvements in the public's health, and introduced new public health functions within local authorities.

### National level policy

#### National Policy Statement for National Networks

- 13.3.2 The primary basis for the Secretary of State deciding whether or not to grant a Development Consent Order (DCO) for the Project is the

*National Policy Statement for National Networks (NPSNN)* (Department for Transport, 2014)<sup>2</sup>.

13.3.3 Table 13-2: Relevant *NPSNN* policies identifies the *NPSNN* policies relevant to the Population and Human Health assessment and a reference to where in this ES information is provided to address each policy.

Table 13-2: Relevant *NPSNN* policies

NPSNN paragraph reference	Requirement	Applicant response	Where addressed?
3.17	Applicants should use reasonable endeavours to address the needs of cyclists and pedestrians in the design of new schemes and should identify opportunities to deliver improvements where the national road network severs communities and acts as a barrier to cycling and walking, ensuring that it is easy and safe for cyclists to use junctions.	Enhancement measures have been incorporated into the design to develop an east-west active travel connection which utilises the de-trunked sections of the A66 during operation. The design also seeks to consolidate existing Walkers Cyclists and Horseriders (WCH) provisions and divert them to formal crossing points to increase safety and accessibility across the Project.	Section 13.9: Essential mitigation and enhancement measures; section 13.10: Assessment of likely significant effects
3.22	Where appropriate applicants should seek to deliver improvements that reduce community severance and improve accessibility.		
3.3	In delivering new schemes, the Government expects applicants to avoid and mitigate environmental and social impacts in line with the principles set out in the NPPF and the Government's planning guidance. Applicants should also provide evidence that they have considered reasonable opportunities to deliver environmental and social benefits as part of schemes	Mitigation measures have been incorporated into the assessment to avoid likely significant effects where practicable. The mitigation measures within the Project specific to the Population and Human Health assessment are detailed within Section 13.9.  Opportunities to enhance the local environmental and society have been explored and reported within the enhancements section of the chapter.	Section 13.9: Essential mitigation and enhancement measures; section 13.10: Assessment of likely significant effects
4.64	Applicants should be able to demonstrate that within their schemes they have taken all reasonable steps to contribute to	Enhancement measures have been incorporated into the design to develop an east-west active travel	Section 13.9: Essential mitigation and enhancement

<sup>2</sup> Department for Transport (2014) National Policy Statement for National Networks

NPSNN paragraph reference	Requirement	Applicant response	Where addressed?
	improvements in road safety for walkers and cyclists.	connection which utilises the de-trunked sections of the A66 during operation. The design also seeks to consolidate existing WCH provisions and divert them to formal crossing points to increase safety and accessibility across the Project.	measures; section 13.10: Assessment of likely significant effects
4.82	The applicant should identify measures to avoid, reduce or compensate for adverse health impacts as appropriate.	Avoidance of adverse health outcomes has been an integral part of the design process (e.g. avoiding populated areas and sensitive receptors, mitigating noise and visual impacts). Health outcomes associated with the environmental and social impacts of the Project have been assessed and mitigation measures are identified and secured.	Section 13.9: Essential mitigation and enhancement measures; section 13.10: Assessment of likely significant effects
5.165	The assessment should identify existing and proposed land uses near the Project, including the effects of replacing an existing development or use, or the effects which preclude new development or uses under the development plan of the local authority.	The assessment has taken account of planning applications as part of the cumulative impact assessment. This chapter has also considered the impacts specifically on land allocated for housing or employment.	Section 13.8: Potential impacts; section 13.10: Assessment of likely significant effects. Chapter 15: Cumulative and Combined Effects
5.166	Development upon existing open space, sports and recreational buildings and land should not occur unless the land is surplus to requirements or better provisions in terms of quantity and quality is provided in a suitable location. Applicants considering proposals which would involve developing such land should have regard to any local authority's assessment of	The assessment has identified existing sports and recreational buildings and land within the study area. Where land take results in significant adverse effects, replacement land has been included in the design and agreed with the relevant stakeholders and authorities.	Section 13.8: Potential impacts; section 13.9: Essential mitigation and enhancement measures; section 13.10: Assessment of likely significant effects.

NPSNN paragraph reference	Requirement	Applicant response	Where addressed?
	need for such types of land and buildings		
5.168	<p>Applicants should take into account the economic and other benefits of the best and most versatile agricultural land.</p> <p>Where development is deemed to be necessary Applicants should seek to use lower grade and quality land in preference to that of higher value.</p> <p>Applicants should also seek to minimise impacts on soil quality with appropriate mitigation.</p>	<p>The assessment has included an agricultural land holding impact assessment.</p> <p>The impact on soil quality has been assessed within Chapter 9: Geology and Soils.</p>	<p>Section 13.7: Baseline conditions; section 13.8: Potential impacts; section 13.10: Assessment of likely significant effects.</p>
5.180	<p>Where green infrastructure is affected, applicants should aim to ensure the functionality and connectivity of the green infrastructure network is maintained and any necessary works are undertaken where possible, to mitigate any adverse impact and, where appropriate, to improve that network and other areas of open space, including appropriate access to new coastal access routes, National Trails and other PRoWs.</p>	<p>The assessment has accounted for open spaces and also any green infrastructure such as National Trails or PRoWs, within the study area. Mitigation and enhancement measures have also been included in the design including the provisioning of any common land which is lost as a result of the Project</p>	<p>Section 13.7: Baseline conditions; section 13.8: Potential impacts; section 13.9: Essential mitigation and enhancement measures; section 13.10: Assessment of likely significant effects.</p>
5.184	<p>The NPSNN recognises the importance of Public Rights of Way (PRoW), National Trails and other rights of access to land for Walkers Cyclists and Horseriders (WCH). Applicants are expected to take appropriate mitigation measures to address adverse effects on coastal access, National Trails, other public rights of way and open access land and, where appropriate, to consider what opportunities there may be to improve access.</p>	<p>Enhancement measures have been incorporated into the design to develop an east-west active travel connection which utilises the de-trunked sections of the A66 during operation. The design also seeks to consolidate existing WCH provisions and divert them to formal crossing points to increase safety and accessibility across the Project.</p>	<p>Section 13.8: Potential impacts; section 13.9: Essential mitigation and enhancement measures; section 13.10: Assessment of likely significant effects.</p>
5.205	Applicants should consider reasonable opportunities to support other transport modes and		



NPSNN paragraph reference	Requirement	Applicant response	Where addressed?
	endeavour to address any existing severance issues that act as a barrier to non-motorised users.		

### National Planning Policy Framework

13.3.4 The *National Planning Policy Framework (NPPF)* (Ministry of Housing, Communities & Local Government, 2021)<sup>3</sup> originally published in March 2012 and most recently updated in July 2021, sets out the government's planning policies for England and provides a framework within which locally prepared plans can be produced. The *NPPF* is an important and relevant matter to be considered in decision making for Nationally Significant Infrastructure Project (NSIP).

### Regional and local level policy

13.3.5 Other regional and local level policies have been considered as part of the Population and Human Health assessment where these have informed the identification of receptors and resources and their sensitivity; the assessment methodology; the potential for likely significant environmental effects; and required mitigation. These policies include:

- The Cumbria Council Plan 2018 - 2022, Cumbria County Council (2018)
- The County Durham Plan (Durham County Council, 2020)
- North Yorkshire County Council: Council Plan 2021 - 2025 (North Yorkshire County Council, 2021)
- Eden District Local Plan 2014 - 2032 (Eden District Council, 2014)
- Richmondshire Local Plan Core Strategy 2012 - 2028 (Richmondshire District Council, 2014)
- Cumbria's Local Industrial Strategy (March 2019), published by Cumbria Local Enterprise Partnership (LEP) (Cumbria County Council, 2019)<sup>4</sup>
- Cumbria Infrastructure Plan (Cumbria County Council, 2016)<sup>5</sup>
- Cumbria Joint Public Health Strategy (2019)
- County Durham Joint Health and Wellbeing Strategy 2021-2025
- North Yorkshire Joint Health and Wellbeing Strategy 2015-2020.

<sup>3</sup> Ministry of Housing, Communities & Local Government (2021) National Planning Policy Framework

<sup>4</sup> Cumbria County Council (2019) Cumbria's Local Industrial Strategy

<sup>5</sup> Cumbria County Council (2016) Cumbria Infrastructure Plan

Table 13-3: Regional and local level policies

Policy document	Policy wording	Applicant response	Where addressed?
The Cumbria Council Plan 2018 - 2022	Places in Cumbria are well-connected and thriving: Maintaining and improving our road and rail infrastructure and transport services is important to enable people to access work, learning and business opportunities to fulfil their ambitions	The benefits of improving access to employment, educational and recreation facilities have been considered within the assessment.	Section 13.10: Assessment of likely significant effects.
The County Durham Plan 2020	Objective 4: Infrastructure - Enable the delivery of the necessary infrastructure such as transport, health and education, digital and green infrastructure, that is required to support new and existing development and the economic, social and environmental ambitions of the county	The benefits of improving access to health, educational and recreation facilities have been considered within the assessment.	Section 13.10: Assessment of likely significant effects.
North Yorkshire County Council, Council Plan 2021 - 2025	Ambition: North Yorkshire is a place with a strong economy and a commitment to growth Outcome: People across the county have equal access to economic opportunities	Access to employment services has been considered within the assessment.	Section 13.10: Assessment of likely significant effects.
Eden District Local Plan 2014 - 2032	Objectives - Development Principles Objective 3 - To assist in the development and provision of an accessible and sustainable transport system whilst reducing the need for travel Objective 16 - To protect and enhance community facilities and services and maximise accessibility to them	Enhancement measures have been incorporated into the design to develop an east-west active travel connection which utilises the de-trunked sections of the A66 during operation.	Section 13.8: Potential impacts; section 13.9: Essential mitigation and enhancement measures; section 13.10: Assessment of likely significant effects.
Richmondshire Local Plan Core Strategy 2012 - 2028	Policy Framework: Local Objectives Objective 1 - Thriving and sustainable communities are supported by locating development where it will enable people to access jobs and key services like education, training, healthcare, recreation and other facilities	The assessment has also considered how accessibility is impacted during both construction and operation of the Project, to ensure key facilities and	

Policy document	Policy wording	Applicant response	Where addressed?
	Objective 2 - The need for travel is reduced and access to jobs and key services by sustainable forms of transport, such as public transport, walking and cycling is made safer and easier	services are accessible.	
Cumbria's Local Industrial Strategy (March 2019), published by Cumbria Local Enterprise Partnership (LEP)	Strategic Objective 5: Improving connectivity across the county.		
Cumbria Joint Public Health Strategy (2019)	<p>Vision for a Healthier Cumbria: Planet: Cumbria's natural environment [...] will be protected and enhanced. Sustainability will be at the heart of future. development and Cumbria will reduce its ecological footprint even as it develops economically.</p> <p>People: Everyone in Cumbria will have the opportunity to develop and use their skills and talents in a way that recognises the value they bring to society and to enjoy a varied and fulfilling life.</p> <p>Participation: Cumbrian communities will be strong, resilient and inclusive, with well-developed social networks and widespread engagement with community life.</p> <p>Place: Cumbria's physical infrastructure will promote health and wellbeing, with good quality housing, a high quality urban environment and good access to the services needed for a healthy lifestyle.</p>	The effects of the Project on environmental, social and economic determinants of health have been assessed.	Section 13.10: Assessment of likely significant effects.

Policy document	Policy wording	Applicant response	Where addressed?
	Prosperity: Cumbria's economy will develop sustainably, with growth particularly focused on tackling poverty and providing quality employment for all.		
County Durham Joint Health and Wellbeing Strategy 2021-2025	<p>People and Places - Empowering communities: Working with communities to support their development and empowerment</p> <p>Being asset focused: Acknowledging the different needs of communities and the potential of their assets</p> <p>Building resilience: Helping the most disadvantaged and vulnerable, and building their future resilience</p>	The effects of the Project on environmental, social and economic determinants of health have been assessed.	Section 13.10: Assessment of likely significant effects.
North Yorkshire Joint Health and Wellbeing Strategy 2015-2020	<p>Relevant objectives: Vibrant and self-reliant communities in all parts of North Yorkshire [...]</p> <p>Fewer people saying that they feel socially isolated in their local communities.</p> <p>Improved employment opportunities, including rural areas [...]</p>	The effects of the Project on environmental, social and economic determinants of health have been assessed.	Section 13.10: Assessment of likely significant effects.

## 13.4 Assessment methodology

13.4.1 The methodology for the Population and Human Health assessment follows the guidance set out within *DMRB LA 112*.

### Population assessment methodology

#### *Baseline data gathering*

13.4.2 The baseline in relation to land use and accessibility has been developed through using the following methods:

- Data collection utilising the data sources outlined below
- Spatial data mapping
- Consultation (where required to inform assessment conclusions)

13.4.3 The report focused on gathering land use and accessibility data within the following sub-topics:

- Private property and housing: the location and number of both residential and commercial properties at risk of demolition, or from which land would be required or have access affected.
- Community land and assets: the location and number of community land and assets affected by the Project, their level of existing accessibility and the frequency of use within the study area.
- Development land and business: the location and number of businesses at risk of demolition, or from which land would be required or have access affected. Likewise, the location of land allocated for development by local authorities and the number of future jobs that will be affected by the Project. For the more urban schemes, developments have been grouped if they exist within the same business park or facility in order to make the baseline reporting proportionate. The sensitivity assigned to the receptors that are grouped together will be applicable to each individual business, unless stated otherwise. If one or more but not all businesses identified within a group of businesses experiences a significant effect it will be reported specifically for that scheme.
- Agricultural land holdings: the type, location, scale and number of agricultural holdings affected by the Project through the loss of land/existing access routes and the level of impact upon future viability of each affected holding. The level of existing accessibility and their frequency of use within the study area. The assessment is also focussed on:
  - the loss of or damage to key characteristics, features or elements of the agricultural holding and potential effect of this change on viability (e.g. removal or substantial amendment to access or acquisition of land).
  - the availability of access to and nature of land is considered to form the key characteristics, features or elements of an agricultural holding. As such, the potential effect on land is therefore a key part of the assessment
- Landowner engagement and questionnaires have helped identify landowners who have confirmed that their land is used for agricultural purposes.
- WCH: the type, location and extent of WCH provision (for example, PRoWs) within the study area and their frequency of use.

13.4.4 The following publicly available data has been used to inform the baseline assessment:

- Ordnance Survey (OS) mapping<sup>6</sup>.
- Aerial photography<sup>7</sup>.
- OS AddressBase Plus data<sup>8</sup>.
- Sustrans National Cycle Network (NCN) online mapping application<sup>9</sup>.

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<sup>6</sup> Ordnance Survey (2022) Map

<sup>7</sup> Google Maps (2022) Map

<sup>8</sup> Ordnance Survey Address Base Plus Data from Local Authorities, accessed 2022

<sup>9</sup> Sustrans, The National Cycle Network OS Maps, accessed 2022

- Cumbria County Council Plan (2018 - 2022)<sup>10</sup>.
- County Durham Plan (2020)<sup>11</sup>.
- The County Durham Vision 2035<sup>12</sup>.
- North Yorkshire County Council Plan 2021 - 2025<sup>13</sup>.
- Eden District Local Plan 2014 - 2032<sup>14</sup>.
- Richmondshire Local Plan Core Strategy 2012 - 2028<sup>15</sup>
- Outdoor Recreation Valuation Tool<sup>16</sup>.

13.4.5 The A66 Northern Trans-Pennine Walking, Cycling and Horse-riding Proposals report has also been utilised to inform the WCH assessment (Application Document 2.4).

13.4.6 Where possible, publicly available data has been gathered in order to provide information in relation to the frequency and type of use for community land and assets and agricultural land holdings.

13.4.7 Agricultural land holding surveys have been undertaken through meetings with the landowner and/or submission of questionnaire responses. The surveys have been used to assess the impact of the Project on future viability of the holdings. The summarised results of the surveys are presented in ES Appendix 13.2 Agricultural Land Holding Baseline Summary (Application Document 3.4).

#### *Receptor value (sensitivity)*

13.4.8 The value of the baseline receptors for population is determined using Table 3.11 within *DMRB LA 112*.

13.4.9 For the agricultural land holding assessment where access between land holdings (land affected) and key agricultural infrastructure (e.g. buildings/milking parlour) is required daily (very frequently) the sensitivity is very high. Where access is required weekly (frequently) the sensitivity is high. Where access is required monthly (reasonably frequent) the sensitivity is medium, and where access is required less than monthly, the sensitivity is low.

#### *Design and mitigation*

13.4.10 The following mitigation hierarchy has been applied during the design process, with the aim of reducing significant adverse effects:

- Avoidance and prevention: identifying alternatives that avoid the requirement to compulsorily purchase property, land and assets; identifying alternatives that avoid introducing or worsening severance and avoid reducing WCH provision and/or increasing journey times.

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<sup>10</sup> Sustrans (2022) The National Cycle Network OS Maps

<sup>11</sup> Durham County Council (2020) County Durham Plan

<sup>12</sup> Durham County Council (2019) County Durham Vision 2035

<sup>13</sup> North Yorkshire County Council (2021) Council Plan 2021 - 2025

<sup>14</sup> Eden District Council (2014) Eden Local Plan 2014 - 2032

<sup>15</sup> Richmondshire District council (2012) Local Plan Core Strategy 2012 - 2028

<sup>16</sup> Land, Environment, Economics and Policy Institute (LEEP) University of Exeter (2022) Outdoor Recreation Valuation Tool (ORVal:Version 2.0)

- Reduction: minimising impacts on property, land and assets by selecting route alignments that avoid land take from the most sensitive receptors/aspects of receptors, thereby maintaining viability; altering route alignments to minimise severance to communities and disruption to WCH provision.
- Remediation: where it is not possible to avoid or reduce a significant adverse effect, for example community sports pitches must be acquired to facilitate construction, provide equivalent facilities as close to the original location as possible, for example replacement Common Land or business premises.

13.4.11 Engagement with the scheme designers and stakeholders early in the assessment and design process has been undertaken in an effort to increase the effectiveness of design and mitigation measures.

13.4.12 For instances where highways and PRow diversions are not yet known, it is assumed that they will be developed in detail prior to construction. All diversions will follow the principles outlined in section 13.9: Essential mitigation and enhancement measures in order to avoid significant effects.

#### *Magnitude of impact and assessment of significance*

13.4.13 The methodology for the assessment of effects comprises the following stages:

- Identify the importance (value) of receptors identified
- Determine the magnitude of impact with consideration of any embedded measures and additional mitigation
- The significance of effect is then derived by comparing the value of receptors with the magnitude of impact

13.4.14 The magnitude of impact and significance of effect has been based upon Table 3.12 within *DMRB LA 112*.

13.4.15 In addition to the above descriptions, professional judgement has also been applied where appropriate throughout the assessment. For example, a change could lead to an increase in WCH journey length that is over 500m which would constitute a major impact according to DMRB. However, the change could also improve the safety and environmental quality of that route when compared to the baseline position.

13.4.16 Due to the importance of assessing the receptors on a case-by-case basis, 13.10: Assessment of likely significant effects describes all of the likely significant effects. It also outlines where deviations from DMRB guidance has occurred in relation to assigning magnitude of impacts and effects. Any such instances have been based on professional opinion with a rationale provided as to why a deviation from DMRB guidance has occurred.

13.4.17 It should be noted that within the WCH assessment both temporary and permanent effects will be detailed within the construction assessment, where applicable. The temporary effects are where the diversion will be

in place for a set period of time during the construction phase, whereas the permanent effects are indefinite.

- 13.4.18 The population assessment utilises the findings of other chapters namely Chapter 12: Noise and Vibration. For operational noise effects it is possible that the magnitude of impact and significance of effect varies between the short and long term. An explanation of the assessment methodology and how such instances can occur is provided within Section 12.4 Assessment Methodology - Operation.

### Human health assessment methodology

- 13.4.19 The human health assessment follows the approach set out in *DMRB LA 112*.
- 13.4.20 The demographic, social and health characteristics of the communities in the study area have been reviewed using publicly available data to develop a profile of the communities in the study area. This has enabled the health assessment to take account of the sensitivity of the population and to identify specific effects on vulnerable groups. The baseline includes information on:
- General health indicators, including life expectancy and self-rated health
  - Prevalence of children and older people
  - Prevalence of people with long-term limiting illness or disability
  - Mortality rates from cardiovascular disease and respiratory disease
  - Levels of employment, income and deprivation.
- 13.4.21 Data has been obtained from the following online sources:
- Office for National Statistics (Office for National Statistics, 2011)
  - Public Health England Fingertips (Public Health England Fingertips, 2020)
  - Local Authority Health Profiles (Government, 2019a)
  - Nomis Official Labour Market Statistics (Office of National Statistics, 2020)
  - English Index of Multiple Deprivation (Government, 2019b)
  - Small Area Mental Health Index (SAMHI) (Place-based Longitudinal Data Resource, 2019).
- 13.4.22 Data have been obtained at the most detailed geographic level available. This comprises a mixture of Local Authority, Ward and Lower Layer Super Output Area (LSOA) data.
- 13.4.23 Baseline data on residential property, community land and assets, and PRoW, is set out in the population baseline, section 13.7: Baseline conditions below. Baseline data relevant to health determinants, including Air Quality Management Areas (AQMA), noise sensitive areas and landscape designations have been sourced from the relevant EIA topic baselines, and a summary provided in the health baseline, section 13.7: Baseline conditions.



- 13.4.24 Health effects have been identified through qualitative judgement of the likely effects on health outcomes for a defined receptor community. This is based on:
- The nature, severity and geographic extent of an impact on a health determinant.
  - The size and sensitivity of the population exposed to the change, defined as low, medium or high and evidenced using the health baseline data.
  - Knowledge of associations between health determinants and health outcomes, based on published research.
- 13.4.25 Judgements on the likely health outcomes (effects) have been made on a case-by-case basis and a rationale has been provided within the assessment text. Health outcomes have been defined in accordance with DMRB LA 112 (Table 3.32) as follows:
- Positive- a beneficial health impact is identified
  - Neutral- no discernible health impact is identified
  - Negative- an adverse health impact is identified
  - Uncertain- uncertainty exists as to the overall health impact.
- 13.4.26 The assessment has considered the requirements of the EIA Regulations 2017, including the Regulation 18 requirement of for an Environmental Statement to *'include the information reasonably required for reaching a reasoned conclusion on the significant effects of the development on the environment, taking into account current knowledge and methods of assessment'*. There is no accepted definition of a significant health effect, nor any statutory framework to guide the reporting of significance for health effects. The assessment follows the methodology set out in DMRB LA112, which provides a framework for assessing, mitigating and reporting the effects of highways projects on population and human health. This includes identifying likely changes to health determinants, considering the sensitivity of the receptor population and ascertaining the likely positive and negative effects on health outcomes. Health outcomes are reported as being positive, negative, neutral or uncertain, in line with DMRB LA112.
- 13.4.27 Assessments and mitigation of environmental effects undertaken in other Chapters of this ES are relevant to the health assessment. The health assessment is based, in part, on the residual effects identified in the following assessments:
- Chapter 5: Air Quality
  - Chapter 10: Landscape and Visual
  - Chapter 12: Noise and Vibration
- 13.4.28 Information from the assessment of effects on community land and assets and walkers, cyclists and horse riders, in the population assessment within this chapter, has also been used to inform the health assessment.

## In-Combination Climate Change Impact Assessment

13.4.29 An in-combination climate change assessment (see Section 13.10 Assessment of likely significant effects) has been conducted to assess likely changes to the significance of effects when considering the combined impact of the project in a future changed climate on Population and Human Health receptors in the surrounding environment. The assessment considers whether climate change could impact the likelihood and magnitude of the effects of the project on the Population and Human Health receptors, or affect the susceptibility, vulnerability, value or importance of the receptors themselves. The assessment has been based on the latest UK Climate Change Projections and considers a range of climatic hazards including rising temperatures, higher and lower rainfall, and the increased frequency and magnitude of extreme events such as heat waves and flooding.

### Scoping

13.4.30 Table 13-4: Summary of scoping opinion and response sets out the key points from the Planning Inspectorate Scoping Opinion relevant to the Population and Human Health assessment. The full Scoping Opinion is provided in Appendix 4.1 (, Application Document 3.4).

13.4.31 The wording of each point raised in the Scoping Opinion is set out, with a response, and reference to the relevant ES section where the point is addressed is provided. Where further discussion and/or an alternative approach has been agreed with the relevant stakeholders and the Planning Inspectorate, an explanation is provided.

Table 13-4: Summary of scoping opinion and response

Consultee/ respondent	Scoping opinion comment	Applicant response	Where addressed?
Planning Inspectorate	The scoping out of soil and water quality should be consistent throughout the ES chapter on population and human health, as the Scoping Report identifies at various points that the ES chapter for population and human health will include sources and pathways of potential pollution.	Soil and water quality are scoped out of the Human Health assessment since no potential effects have been identified. Soil and water quality are subject to regulation by law to ensure the risks are managed effectively and human health effects are avoided.	Chapter 9: Geology and Soils
Planning Inspectorate	The ES should reference where assessments are undertaken in other Chapters and reference how compliance with	References to relevant information in other ES Chapters 5 (Air quality), 10 (Landscape and visual) and 12 (Noise and vibration) are	Section 13.4: Assessment methodology; Section 13.9: Essential mitigation; Section

Consultee/ respondent	Scoping opinion comment	Applicant response	Where addressed?
	<p>legal standards will be met and ensure that any mitigation is secured through the DCO to support scoping out these impacts.</p>	<p>included in the methodology, mitigation and assessment sections. Measures to comply with relevant standards and legal requirements are reported in these chapters. Information from the Population assessment within this chapter has also informed the human health assessment.</p>	<p>13.10: Assessment of likely significant effects</p>
<p>Planning Inspectorate</p>	<ul style="list-style-type: none"> <li>• Penrith to Temple Sowerby</li> <li>• Cross Lanes to Rokeby</li> <li>• A1(M) Junction 53 Scotch Corner</li> </ul> <p>In the absence of an assessment information, the Inspectorate cannot agree to scope out construction impacts at these locations.</p>	<p>All schemes have been scoped in and assessed.</p>	<p>Section 13.10: Assessment of likely significant effects</p>
<p>Planning Inspectorate</p>	<ul style="list-style-type: none"> <li>• M6 Junction 40 Penrith</li> <li>• Penrith to Temple Sowerby</li> <li>• Temple Sowerby to Appleby</li> <li>• Cross Lanes to Rokeby</li> <li>• Stephen Bank to Carkin Moor</li> <li>• A1(M) Junction 53 Scotch Corner</li> </ul> <p>In the absence an assessment information, the Inspectorate cannot</p>	<p>All schemes have been scoped in and assessed.</p>	<p>Section 13.10: Assessment of likely significant effects.</p>

Consultee/ respondent	Scoping opinion comment	Applicant response	Where addressed?
	agree to scope out operational impacts at these locations.		
Planning Inspectorate	Table 14-4 of the Scoping Report states that construction traffic on the M6 Junction 40 will access the site via the A66 /M6 and not via local roads. This mitigation measure should be secured in the ES and associated mitigation plans, such as a construction travel management and routing plan.	The draft Construction Traffic Management Plan (CTMP) states that 'The CTMP will set out restrictions on the routes to be used by construction vehicles to access the site, including restricting HGV movements to suitable major roads, in agreement with the local highways authorities. The draft EMPConstruction Management Plan states that 'The Principal Contractor will provide detailed route and carriageway closure restrictions for construction vehicles.'	Construction Traffic Management Plan (EMP Annex B13 (Application Document 2.7))
Planning Inspectorate	The Scoping Report identifies Crackenthorpe and Appleby-in - Westmorland as sensitive receptors for the Temple Sowerby to Appleby scheme but does not reference for example, the settlement of Kirkby Thore. No explanation is provided for this omission. The ES should assess significant effects on all relevant settlements, including Kirkby Thore as a sensitive receptor, where they are likely to occur.	Omitted in error. Health effects on all relevant settlements, including Kirkby Thore. have been included in the assessment.	Section 13.10: Assessment of likely significant effects
Cumbria County Council	Further detail should be provided on the provision of footpaths and cycling	The need for the scheme and scheme objectives are set out in Chapter 2. The chapter	Chapter 2: The Project

Consultee/ respondent	Scoping opinion comment	Applicant response	Where addressed?
	infrastructure and how the council's aspirations for increased provision in this area can be facilitated	outlines the additional WCH provisions included within the scheme design.	
Cumbria County Council and Eden District Council	The ES should include details of how the Project will support Cumbria's Local Industrial Strategy, in particular the strategies objective of improving connectivity across the county.	Chapter 2: The Project sets out the need for the Project and its objectives. This describes how the Project will address existing constraints to connectivity and support regional growth.	Chapter 2: The Project. Section 2.2 - Need for the scheme. Section 2.3 - Scheme objectives.
Cumbria County Council and Eden District Council	While significant adverse effects are not anticipated outside the 500m area, it is expected that the ES will clarify whether effects have been identified beyond the 500m area and the study area.	Some potential health effects have been identified outside the study area, for example in Penrith and Barnard Castle. These are assessed and reported in the relevant sections.	Section 13.10: Assessment of likely significant effects
Cumbria County Council and Eden District Council	It is recommended that the Applicant reviews the network of PRoWs beyond the 500m area surrounding the Project boundary, to confirm there are no likely significant effects. The Applicant should also consider the impacts of the Project upon Pennine Bridleway National Trail and the National Cycle Network routes both near Penrith (NCN 71) and Appleby-in-Westmorland (NCN 68).	A comprehensive assessment of PRoW effects, including any National Trails and NCN routes, has been undertaken and is reported in Section 13.10. No likely significant effects on PRoW, or associated health effects, outside the 500m study area have been identified.	Section 13.10: Assessment of likely significant effects
Cumbria County Council and Eden District Council	The Applicant should define the sensitivity (or value) of Population receptors in the ES.	Sensitivity has been defined throughout the assessment.	Section 13.7: Baseline conditions

Consultee/ respondent	Scoping opinion comment	Applicant response	Where addressed?
Cumbria County Council and Eden District Council	It is recommended that an assessment of impacts on Tourism and Recreation, Road Safety of WCH, and Employment Generation is included.	Where potential health effects relating to these issues have been identified, these are assessed in the Human Health assessment.	Section 13.10: Assessment of likely significant effects
Cumbria County Council and Eden District Council	It is recommended that the Applicant includes physical health as a health determinant to be assessed during construction and operational phases.	Effects on physical health have been assessed.	Section 13.10: Assessment of likely significant effects
Cumbria County Council and Eden District Council	The Applicant is requested to provide further information on the Agricultural Land Holdings within the study area including how they could be impacted. The Applicant is requested to show the location of Agricultural Land Holdings on appropriate figures in the ES.	A full agricultural land holdings impact assessment has been undertaken as part of the Population assessment. Figure 13.5: Agricultural land holdings shows those that have been considered within the assessment. (Application Document 3.3). The impact on soil quality is reported in Chapter 9: Geology and Soils.	Section 13.10: Assessment of likely significant effects  Chapter 9: Geology and Soils
Cumbria County Council and Eden District Council	The Environmental Management Plan (EMP) (Document Number 2.7) should include the consideration of the timing of the construction programme to accommodate for peak tourism periods, accommodation changeover days, and events such as the Appleby Horse Fair.	The EMP includes measures to ensure that the phasing of works considers the potential impacts upon key tourism periods for the region. This is also reiterated in the mitigation section of the assessment.	Section 13.9: Essential mitigation and enhancement measures; Environmental Management Plan (Application Document 2.7)
Cumbria County Council and	Consider how an 'off A66' route for walking and cycling between M6 and A1(M) can be	Opportunities to enhance local WCH provisions have been explored and	Chapter 2: The Project; section 13.9: Essential mitigation and

Consultee/ respondent	Scoping opinion comment	Applicant response	Where addressed?
Eden District Council	achieved. This should also have consideration of any emerging Local Walking and Cycling Infrastructure Plans and any significant effects upon WCH routes should be appropriately mitigated with details included within the ES.	incorporated into the design where possible. This includes an east-west active travel route.	enhancement measures
Cumbria Local Enterprise Partnership	The proposed bypass of Kirkby Thore has the potential to bring significant amenity benefit for the community. It is important that as part of any improvement, the village and the services within it are not isolated from the A66.	Where there are potential benefits to amenity for community and residential receptors as identified in the landscape, noise and air quality chapters it has been reported within this chapter. Potential severance of access has also been accounted for in the assessment.	Section 13.10: Assessment of likely significant effects
Cumbria Local Enterprise Partnership	Considered [sic] needs to be given to the future use of former sections of the A66 to support all users and journeys at the Appleby to Brough junction.	Where former sections of the A66 can be re-utilised for local access or as part of the wider east west active travel connectivity it has been included within the scheme design.	Chapter 2: The Project; section 13.9: Essential mitigation and enhancement measures
Durham County Council	A coherent assessment of impacts upon WCH should be undertaken across multiple topics as users will be affected by air quality, landscape and visual impacts, noise and vibration impacts, and population/human health impacts.	Effects on health and wellbeing resulting from direct and indirect effects on PRoW have been assessed.	Section 13.10: Assessment of likely significant effects.
Durham County Council	Recommended the use of the Institute of Public Rights of Way and Access Management (IPROW) guidance documents.	The assessment methodology follows the guidance approach of <i>DMRB LA 112</i> . As such the IPROW guidance has not been utilised as DMRB is	Section 13.4: Assessment methodology

Consultee/ respondent	Scoping opinion comment	Applicant response	Where addressed?
		considered to be appropriate and proportionate for the assessment.	
East and West Layton and Carkin Parish Council	Disagreed that there are no anticipated significant residual effects upon population during operation.	The assessment has been updated to take account of the final scheme design as described in Chapter 2. Where no likely significant effects are anticipated an assessment of non-significant effects is provided in ES Appendix 13.1: Population assessment non-significant effects.	Section 13.10: Assessment of likely significant effects; ES Appendix 13.1: Population assessment non-significant effects.
Kirkby Thore Parish Council	Ensure the village of Kirkby Thore is considered within the assessment as are the local recreation field and village hall.	Kirkby Thore has been considered within the assessment. Memorial Hall and the recreational field have been included within the Penrith to Temple Sowerby scheme assessment.	Section 13.7: Baseline conditions, section 13.10: Assessment of likely significant effects
Public Health England	The impact on amenity, such as noise (tranquillity), air quality or visual, on PRoW and public open space should be considered and reported within the ES. The section should summarise key information, risk assessments, proposed mitigation measures, conclusions and residual impacts, relating to human health.	Health effects resulting from noise, air quality, visual effects and effects on PRoW and open space are reported in the assessment, with reference to the relevant ES chapters.	Section 13.10: Assessment of likely significant effects
Public Health England	Compliance with the requirements of National Policy Statements and relevant guidance and	Legislation and policy requirements are summarised in Section 13.1.	Section 13.3: Legislation and policy framework



Consultee/ respondent	Scoping opinion comment	Applicant response	Where addressed?
	standards should be highlighted.		
Public Health England	No matters are to be scoped out for population or human health, unless supported by additional justification and in consultation with PHE and the local Director of Public Health.	All scheme areas have been scoped into the health assessment.	Section 13.10: Assessment of likely significant effects
Public Health England	The impacts on health and wellbeing of the scheme will have particular effect on vulnerable or disadvantaged populations, including those that fall within the list of protected characteristics.  The ES and Equalities Impact Assessment should be considered in parallel and the findings integrated where appropriate.	The sensitivity of the population in the study area has been evaluated based on information presented in the baseline. Specific vulnerable groups are identified in the assessment where relevant.  An Equalities Impact Assessment has been prepared in parallel to the ES.	Section 13.10: Assessment of likely significant effects  Equalities Impact Assessment Report
Public Health England	The ES should identify the peak construction workforce requirements and report providing geographic and temporal details. Demand for temporary accommodation by the construction workforce should be identified. The assessment should consider the impact on local accommodation supply and affordability, particularly in relation to the provision of affordable rented sector housing supply.  The cumulative effects assessment should consider housing demand dependant on	The peak number of construction workers is set out in the project description.  The effects of construction workers on demand for accommodation and healthcare are assessed in the Route-wide assessment.  As set out in the Essential mitigation section, the following strategies will be prepared: Skills and Employment Strategy, and Accommodation Strategy. The Principal	Chapter 2: The Project  Section 13.9: Essential mitigation  Section 13.10: Assessment of likely significant effects - Routewide

Consultee/ respondent	Scoping opinion comment	Applicant response	Where addressed?
	<p>the number of local large developments. Large numbers of construction workers can impact on the local health care system. An assessment of impacts from construction workers should also consider impacts on accessing local services.</p>	<p>Contractor will also be required to seek opportunities to maximise the benefits of the local supply chain and support local businesses during construction.</p>	
Public Health England	<p>Access to Public Open Space and PRoWs - The impact on amenity, such as noise (tranquillity), air quality or visual, on PRoW and public open space should be considered and reported within the ES in accordance with DMRB LA 111 and LA 112</p>	<p>Health effects resulting from impacts on PRoW have been assessed in accordance with DMRB LA 111 and LA 112. This includes amenity impacts, where these are considered likely to reduce the wellbeing benefits of using PRoW or to deter their use.</p>	<p>Chapter 12: Noise and vibration;            Section 13.10: Assessment of likely significant effects</p>
Public Health England	<p>A systematic approach to the assessment of the impacts on mental health, including suicide, is required. The Mental Well-being Impact Assessment (MWIA) could be used as a methodology. The assessment should identify vulnerable populations and provide clear mitigation strategies that are adequately linked to any local services or assets.</p>	<p>Mental health data has been added to the baseline.</p> <p>Evidence for mental and physical health outcomes associated with the relevant health determinants is summarised in the literature review in ES Appendix 13.3.</p> <p>The assessment, which includes both mental and physical health outcomes, has been undertaken in line with DMRB LA112 guidance.</p>	<p>Section 13.7: Baseline conditions</p> <p>Section 13.10: Assessment of likely significant effects</p> <p>ES Appendix 13.3: Health evidence review</p>
Public Health England	<p>Paragraph 14.5 table 14-2 population baseline conditions –</p>	<p>Omitted in error. Kirkby Thore is included in the assessment.</p>	<p>Section 13.7: Baseline conditions</p>

Consultee/ respondent	Scoping opinion comment	Applicant response	Where addressed?
	<p>section Temple Sowerby to Appleby, there is no mention in the table of the presence of the large village of Kirkby Thore (population more than 750), although Crackenthorpe which is a very small village is described in the table. This omission should be corrected in the scoping report and fully taken into account during the EIA</p>		<p>Section 13.10: Assessment of likely significant effects</p>
<p>Public Health England</p>	<p>Paragraph 14.5 table 14-2 fails to mention the large number of properties in Kirkby Thore which lie within 500 metres of the various routes under consideration. Only a few properties are named, when in fact large numbers of properties lie within 500m of the three proposals and should be included in the assessments. The community land assets listed in the same table do not include the recreation field or the village hall. The recreation field is very well used, close to all three alignments in the North-west of the village and should be treated as a sensitive receptor.</p>	<p>The assessment has considered likely population and health effects within the 500m study area, which includes the village of Kirkby Thore. Memorial Hall and the recreational field have been included within the assessment of the Penrith to Temple Sowerby Scheme.</p>	<p>Section 13.7: Baseline conditions</p> <p>Section 13.10: Assessment of likely significant effects</p>
<p>Public Health England</p>	<p>Paragraph 14.6.19 the text suggests that there is likely to be a beneficial impact on NO<sub>2</sub> levels along the</p>	<p>The health assessment is based on the operational air quality effects reported in</p>	<p>Chapter 5: Air Quality</p> <p>Section 13.10: Assessment of likely significant effects</p>

Consultee/ respondent	Scoping opinion comment	Applicant response	Where addressed?
	current A66 for the blue route but does not mention the fact that this will also cause a deleterious impact elsewhere as the emissions will merely be moved from the part of the village that is currently affected to the rest of the village.	Chapter 5, based on modelled traffic data.	
Public Health England	Paragraph 14.8.6 the Parish Council questions the assumption stated that the health effects will be beneficial since large numbers of people will be affected in the village by the A66 for the first time. The current alignment only affects a small number of properties at one end of the village (the SW side).	The health assessment is based on the operational air quality effects reported in Chapter 5, based on modelled traffic data.	Chapter 5: Air Quality  Section 13.10: Assessment of likely significant effects

## Consultation

13.4.32 Table 13-5: Summary of key consultation comments received below includes a summary of key consultation comments received and how this has been addressed within the ES.

Table 13-5: Summary of key consultation comments received

Consultee/ respondent	Comment	Applicant response	Where addressed?
Durham County Council	Concerns for Public Footpath No. 5/6 experiencing diversions along the carriageway and suggest NMU provisions via a grade separated crossing is preferred solution.	Re-connection of existing FP5 through Rokeby Chapel to FP6 is proposed via the new grade-separated junction.	Chapter 2: The Project. Section 13.10: Assessment of likely significant effects
Eden District Council	All diversions and closures of PRow should be fully appraised within the ES in line with the methodology provided	A full appraisal of potentially affected PRow has been undertaken. Suitable survey data has not been possible due to	Section 13.5: Assessment assumptions and limitations

Consultee/ respondent	Comment	Applicant response	Where addressed?
	in the DMRB. This assessment should be supported by suitable survey data.	the Covid-19 pandemic, as detailed in section 13.5: Assumptions and Limitations. The assessment has accounted for the worst case scenario by utilising higher values for receptors where required.	Section 13.7: Baseline conditions  Section 13.10: Assessment of likely significant effects
Eden District Council	Appleby Horse Fair - assessment is required for potential mitigation relating to de-trunked sections of A66 and likelihood for unauthorised stopping occurring by travellers attending the fair. Dedicated facilities should be provided for the travelling community, advance direction or warning signs, increase capacity and quality of route parallel to the A66, and layby/parking management.	The assessment is covered within the Equalities Impact Assessment.	Equalities Impact Assessment (Application Document 3.10)
Lake District National Park	Encourage to minimise impacts on communities and safety west of the M6 through low carbon active and sustainable travel opportunities. Support cycling and walking measures alongside the A66 route East of the M6.	Opportunities to enhance local WCH provisions have been explored and incorporated into the design where possible. This includes an east-west active travel route. The preparation and delivery of the detailed Public Rights of Way Management Plan will ensure that the needs WCH are met during construction.	Chapter 2: The Project; Section 13.9: Essential mitigation and enhancement measures
North Yorkshire County Council	The A66 creates a significant barrier for WCH. There is demand from both cyclists and horse riders who would	The design includes provision for the diversion of existing PRoWs to newly provided formal	Chapter 2: The Project; Section 13.9: Essential mitigation and enhancement measures

Consultee/ respondent	Comment	Applicant response	Where addressed?
	<p>use the local network more for both recreation and commuting if safer crossings were provided. Walkers would also use PRow for recreation and access to local services if safer crossings of the A66 were available. Small scale diversions of PRows can be considered where this provides a safer but not significantly less convenient route.</p>	<p>crossing points. This provides WCH safe formal crossing of the A66. Opportunities to enhance local WCH provisions have been explored and incorporated into the design where possible. This includes an east-west active travel route.</p>	
<p>Penrith Town Council</p>	<p>The Council identifies key requirements for maintaining footpath and cycling connectivity in the area, specifically around M6 J40 roundabout and the Kemplay Bank Roundabout.</p>	<p>Opportunities to enhance local WCH provisions have been explored and incorporated into the design where possible. This includes an east-west active travel route. The preparation and delivery of the detailed Public Rights of Way Management Plan will ensure that the needs WCH are met during construction.</p>	<p>Chapter 2: The Project; Section 13.9: Essential mitigation and enhancement measures</p>
<p>Richmondshire District Council</p>	<p>Ensure WCH are fully considered to minimise severance and increase amenity on the de-trunked section of A66 Minimise and mitigate severance and improving resilience for connections to local communities</p>	<p>A full appraisal of potentially affected PRows has been undertaken. Opportunities to enhance local WCH provisions have been explored and incorporated into the design where possible. This includes an east-west active travel route. The preparation and delivery of the detailed Public Rights of Way Management Plan will ensure that the needs</p>	<p>Chapter 2: The Project; section 13.7: Baseline conditions; section 13.10: Assessment of likely significant effects; and section 13.9: Essential mitigation and enhancement measures</p>

Consultee/ respondent	Comment	Applicant response	Where addressed?
		WCH are met during construction.	

## 13.5 Assumptions and limitations

### Scheme design and limits of deviation

- 13.5.1 The assessment has been based on the Project description presented in Chapter 2: The Project. The assessment has taken into account the lateral limits of deviation illustrated on the Works Plans, and the vertical limits of deviation, in order to establish a realistic worst case assessment scenario. This identifies and reports the effect that any lateral (horizontal) and/or vertical deviation would realistically give rise to. This has, for example, taken into account the maximum permanent land take that could result from design changes within the limits of deviation. Notwithstanding any potential deviation, all embedded and essential mitigation measures would remain deliverable within the extents of the limits of deviation or the Order Limits, as relevant.

### Baseline data and surveys

- 13.5.2 No site visits have been undertaken for the usage of open spaces and community facilities, due to the Covid-19 pandemic potentially yielding inaccurate results. The baseline set out within this ES, for open space and community facilities, is based upon a mixture of desk-based research and the incorporation of consultation feedback.
- 13.5.3 No walking, cycling and horse-riding surveys have been carried out as part of this assessment, due to the Covid-19 pandemic potentially yielding inaccurate results. Historical WCH data was made available for the assessment, however due to the age of the data and sporadic coverage of the study areas, it has not been utilised.
- 13.5.4 For the purposes of this Environmental Statement the sensitivity of PRowS has been assigned using a combination of the DMRB LA 112 guidance, specifically where the PRowS provide access to and from, as well as professional judgement. This is considered to be a robust approach as it embeds a precautionary approach to the assessment by ensuring the highest possible value for WCH is considered, where appropriate, as all potential usages and linkages that the WCH provisions may provide are considered applicable and does not solely rely on survey data to identify potential usage trends or WCH movement patterns.
- 13.5.5 Within the ES assessment the majority of PRowS are considered to be of medium sensitivity. This is due to the fact there are one or more of the following that applies:
- Alternative routes are available locally in both the rural and urban setting

- The PRow does not have a formal crossing provision across the existing A66
- The PRow connects to the wider rural environment, showing that they are recreational routes and not typically used for commuting. This was verified with the discussions with the WCH working groups
- Given the nature of the local landscape and surrounding land uses (e.g. the Lake District National Park, Center Parcs and North Pennines AONB) it is a reasonable assumption that the majority of routes outside of the main urban centre of Penrith (which could also be for commuting) are for recreational use.

13.5.6 The purpose of the WCH assessment highlights the design proposals for the infrastructure features aimed at improving facilities for Walking, Cycling and Horse-riding (WCH) on the local network around the A66.

### Impact assessment and mitigation

13.5.7 The establishment of baseline conditions has referenced, where relevant, the findings of related assessments reported within the ES. Accordingly, any limitations encountered and/or assumptions applied in those assessments relating to the assessment and mitigation of impacts are relevant to the assessment of population and human health.

13.5.8 The following assumptions relating to the assessment of impacts and effects (and their mitigation) on land and land use interests have been applied:

- The baseline assessment was undertaken during the Covid-19 pandemic and it is assumed that land and assets will return to the pre-pandemic operational capacity.
- The assessment addresses the direct impacts and effects of the Project on commercial land in relation to land take, severance, changes to accessibility and indirect effects.
- Any impacts on individual properties do not constitute a significant community effect, when considered in the context of the wider local housing stock.
- There are a number of individual properties within the Order Limits where impacts may be experienced as a result of the Project at an individual property level (e.g. noise, air quality), where relevant these are reflected in the assessments in the relevant topic chapters.
- Land identified as being returned to agriculture following its temporary use for construction would be restored to its pre-construction condition.
- The existing pattern of agricultural land use would remain unaltered until the start of construction.
- The assessment of impacts and effects on PRows or WCH during construction of the Project has assumed that all permanently impacted PRows would have appropriate diversion routes in place during the works if closures are required. Where diversions are known they have been discussed, otherwise full details of the PRow management plan will be finalised post DCO submission.



- Temporary diversion routes have been identified within the assessment through a combination of construction information provided by National Highway's appointed buildability advisor, and professional judgement.
- As the relevant WCHR Surveys have not been undertaken due to the Covid-19 pandemic, the sensitivity assessment for all PRoW has been based on a worst case scenario using professional judgement and feedback from the consultation.
- It is assumed that suitable access to public transport will be maintained during construction, via the CTMP. An expanded essay plan of the CTMP, setting out what information will be contained in it, is included within the EMP (Document Number 2.7).
- Where there is access to private, commercial or community land and assets that are impacted by the Project it is assumed that the existing access will be maintained through construction, via the CTMP.
- Where changes to access arrangements are not required, traffic management measures will be implemented so that all accesses are retained and usable through the construction period, via the CTMP.

## 13.6 Study area

- 13.6.1 In line with *DMRB LA 112*, the study area for the baseline has been defined by:
- The extent and characteristics of the Project
  - The communities directly and indirectly affected by the Project
- 13.6.2 A 500m study area has been utilised for the Population and Human Health assessment in line with *DMRB LA 112* guidance. Where changes to land use and accessibility or health determinants are identified outside this area (e.g. due to impacts identified by other EIA topics) then these have also been considered in the assessment. The study area is displayed on Figure 13.1 Population and Human Health Study Area (Application Document 3.3).
- 13.6.3 It should be noted that the population assessment has been extended to include the following the receptors, due to their sensitivity and value to the local area:
- Center Parcs Whinfell Forest
  - British Gypsum at Kirkby Thore
  - Appleby Golf Course
  - Helbeck Quarry.
- 13.6.4 A more focussed assessment has also been undertaken when considering agricultural land holdings as effects relate to land take and direct impacts on these receptors only. This has therefore focussed on areas within the Order Limits of the Project where land is required either permanently or temporarily in order to deliver the Project.

## 13.7 Baseline conditions

13.7.1 The baseline conditions for the Project at the time of preparing this ES are presented below, on a routewide and scheme by scheme basis, and report on the following elements:

- land-use and accessibility, including;
  - private property and housing
  - community land and assets
  - development land and businesses
  - agricultural land holdings
- WCH including all groups of non-motorised travellers
  - human health, including;
  - health profiles of affected communities
  - health determinants (e.g. noise or air pollution)
  - likely health outcomes.

### Routewide

13.7.2 No routewide baseline conditions have been provided for either the population or human health conditions. This is because the conditions described on a Scheme by Scheme basis are considered to provide a sufficient description of local conditions. Equally given the geographical variance and size of the schemes, an overall description would not capture the variance between the population and human health conditions.

13.7.3 It should be noted that effects on agricultural soils are presented within ES Chapter 9: Geology and soils, which presents Agricultural Land Classification (ALC) information and considers the effect of the scheme on this soil resource. It is therefore not included within the agricultural land holding assessment within this chapter.

### M6 Junction 40 to Kemplay Bank - Population

#### *Land-use and accessibility*

#### *Private property and housing*

13.7.4 This scheme is located in an urban setting to the south of Penrith, where the A66 provides access to Penrith and the M6. Given the urban nature of the surrounding area, the scheme study area is a denser residential area compared to the other schemes. It should be noted that no private properties or housing are located within the Order Limits of the scheme.

13.7.5 The (2018)-based household projections from 2001 to 2043 for Eden District Council show an increase in household units from 21,507 in 2001 to 26,551 in 2043. This represents a 26.1% increase, which would give a very high sensitivity for private property and housing.

13.7.6 Given the urban nature of the study area and the number of existing residential properties combined with the areas allocated for future housing, it is considered that there is a sufficient housing supply within the study area and wider region. As such, on balance, a medium

sensitivity to the private property and housing receptor group is deemed to be appropriate.

13.7.7 Figure 13.3: Local Plan and Development Land Allocations (Application Document 3.3) shows the housing allocated land within the study area for the scheme. There are three housing allocations located within the study area which are:

- Queen Elizabeth Grammar School Annexe, Ullswater Road: The allocation is approximately 0.58ha in size and is located 475m to the north of the A66. The allocation is for 18 dwellings and does not lie within the red line boundary. The allocation is of medium sensitivity due to its size.
- Carleton East: The allocation is approximately 9.69ha in size and is located 85m to the north-east of the A66. It is also designated within the Eden Local Plan (2014 - 2032) Policy PEN1 - A Town Plan for Penrith Policy, which aims to deliver 2,178 dwellings by 2032. The allocation is for 261 dwellings and does not lie within the Order Limits. The allocation is of very high sensitivity due to its size.
- Land at Carleton Hall Farm: The allocation is approximately 3.8ha in size and is located immediately to the north-east of the A66. The allocation is for 86 dwellings. Approximately 0.03ha of the allocation lies within the Order Limits which equates to approximately 0.6% of the total land allocation. The allocation is of high sensitivity due to the number of dwellings it is allocated to deliver.

13.7.8 Eden Local Plan (2014 - 2032) Policy PEN1 - A Town Plan for Penrith aims to deliver land upon which a minimum of 2,178 additional new homes could be built within the plan period, of which Carleton East is identified as a main location.

#### Community land and assets

13.7.9 ES Figure 13.2: Residential and Private Assets, Community Facilities, Business and Tourism Receptors (Application Document 3.3) shows the community land and assets located within the study area for the scheme. For simplicity only those which may be significantly affected or are a key local receptor have been displayed. The community land and asset receptors are summarised in Table 13-6: Community facilities and assets located within the study area of the M6 Junction 40 to Kemplay Bank scheme.

Table 13-6: Community facilities and assets located within the study area of the M6 Junction 40 to Kemplay Bank scheme

Receptor	Distance and direction from Order Limits	Main activity	Severance	Alternative facility location	Use/ frequency	Used by minority or majority of the population of the study area	Sensitivity
Wetheriggs Country Park	Intersected by Order Limits	Public Park or Garden	No or limited severance or accessibility issues	No known alternative facilities exist at a local level within adjacent communities	Daily	Majority	Very High
Ullswater Community College Playing Field	Intersected by Order Limits	Playing Field	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Weekly (weekend only)	Minority	High
Skirsgill Park	Intersected by Order Limits	Park with walking routes and Manor House	Severance between community and asset but with existing accessibility provision	Limited alternative facilities exist at a local level within adjacent communities	Manor only open on weekdays	Majority	High
Penrith Golf Hub/Redhills Golf Course	390m West	Driving range, foot golf, 9-hole golf course	Severance between community and asset but with existing	No known alternative facilities exist at a local level	Weekly	Minority	High

Receptor	Distance and direction from Order Limits	Main activity	Severance	Alternative facility location	Use/ frequency	Used by minority or majority of the population of the study area	Sensitivity
			accessibility provision	within adjacent communities			
Birbeck Medical Group	Adjacent to the North	GP Surgery/Clinic	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Daily	Majority	Very High
North Lakes Primary School	270m North	Education - ages 7 to 11	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Daily (term time) School capacity - 228 pupils Number of pupils - 204	Minority	Very High
Penrith Community Hospital	55m North	GP Surgery/Clinic	No or limited severance or accessibility issues	No known alternative facilities exist at a local level within adjacent communities	Daily	Majority	Very High
Tennis Court near Carleton Hall	141m North	Recreation	No or limited severance or accessibility issues	Alternative facilities exist at a local level	Weekly	Minority	Medium

Receptor	Distance and direction from Order Limits	Main activity	Severance	Alternative facility location	Use/ frequency	Used by minority or majority of the population of the study area	Sensitivity
				within adjacent communities			
Fire Service National Benevolent Fund/Rehabilitation Centre	125m South	Charity	No or limited severance or accessibility issues	No known alternative facilities exist at a local level within adjacent communities	Weekly	Minority	Very High
Tennis Court near Peter Sorton & Associates	185m South	Recreation	No or limited severance or accessibility issues	Alternative facilities exist at a local level within adjacent communities	Weekly	Minority	Medium
Kiddlywinks	480m West	Nursery/Day Care - ages 3 months to 5 years, and holiday care for children up to 8 years	No or limited severance or accessibility issues	Alternative facilities exist at a local level within adjacent communities	Daily (including holiday care) Number of children - 128	Minority	Very High
Pategill Open Space Play Area	280m North	Recreation	No or limited severance or accessibility issues	Alternative facilities exist at a local level within adjacent communities	Daily	Minority	High

Receptor	Distance and direction from Order Limits	Main activity	Severance	Alternative facility location	Use/ frequency	Used by minority or majority of the population of the study area	Sensitivity
Winter Park Care Home	135m North	Care/Nursing Home	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Daily Residential and Residential Dementia Care capacity - 41 beds	Minority	Very High
Ambulance Station	145m North	Emergency services	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Daily	Majority	Very High
The Play Station, Quondam Arts Trust	320m North	Community Centre for performing arts	No or limited severance or accessibility issues	No known alternative facilities exist at a local level within adjacent communities	Weekly	Minority	High
Ullswater Community College	370m North	Education - ages 11 to 18 years	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Daily (term time) School capacity - 1550 Number of pupils - 1487	Minority	Very High

Receptor	Distance and direction from Order Limits	Main activity	Severance	Alternative facility location	Use/ frequency	Used by minority or majority of the population of the study area	Sensitivity
Penrith Cricket Club	290m North	Cricket club	No or limited severance or accessibility issues	No known alternative facilities exist at a local level within adjacent communities	Weekly	Minority	High
Crescent Playing Fields	45m North	Playground	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Weekly	Majority	High
Village Hall (off A6)	200m North	Village Hall	No or limited severance or accessibility issues	No known alternative facilities exist at a local level within adjacent communities	Daily	Minority	Very High
Cumbria Fire & Rescue Service	Adjacent to the South	Emergency services	No or limited severance or accessibility issues	No known alternative facilities exist at a local level within adjacent communities	Daily	Majority	Very High



Receptor	Distance and direction from Order Limits	Main activity	Severance	Alternative facility location	Use/ frequency	Used by minority or majority of the population of the study area	Sensitivity
Eden Deployment Centre	30m South	Emergency services	No or limited severance or accessibility issues	No known alternative facilities exist at a local level within adjacent communities	Daily	Minority	Very High
Hunter Hall Primary School	280m East	Education - ages 3 to 11 years	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Daily (term time) School capacity - 708 Number of pupils - 629	Minority	Very High
Tennis Court near Tyne Close Terrace	300m North	Recreation - Green Space	No or limited severance or accessibility issues	Alternative facilities exist at a local level within adjacent communities	Weekly	Minority	High
Mountain Rescue	230m North	Emergency services	No or limited severance or accessibility issues	No known alternative facilities exist at a local level within adjacent communities	Daily (on average with seasonal variations)	Minority	Very High
Skate park, Southend Road	495m	Recreation	No or limited severance or	No known alternative	Weekly	Minority	High

Receptor	Distance and direction from Order Limits	Main activity	Severance	Alternative facility location	Use/ frequency	Used by minority or majority of the population of the study area	Sensitivity
	North		accessibility issues	facilities exist at a local level within adjacent communities			
Skirsgill Dental Surgery	125m South	Dentist	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Daily	Majority	Very High
Fit4Racing	60m South	Leisure/Sporting Activity/Centre	No or limited severance or accessibility issues	No known alternative facilities exist at a local level within adjacent communities	Weekly	Minority	High
Kingdom Hall of Jehovas Witnesses	25m South	Kingdom Hall	Severance between community and asset but with existing accessibility provision	No known alternative facilities exist at a local level within adjacent communities	Weekly/Regular Services	Minority	High
Tennis Court on Wetheriggs Lane	350m North	Recreation - Green Space	No or limited severance or	Alternative facilities exist at	Weekly	Minority	High

Receptor	Distance and direction from Order Limits	Main activity	Severance	Alternative facility location	Use/ frequency	Used by minority or majority of the population of the study area	Sensitivity
			accessibility issues	a local level within adjacent communities			
Greengarth Assisted Living Facility	335m North	Care/Nursing Home	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Daily (60 rooms)	Minority	Very High
Happy Hooves Riding Centre	Intersected by Order Limits	Equestrian School - Riding for the Disabled Programme (aligned to Riding for the Disabled Association)	No or limited severance or accessibility issues	No known alternative facilities exist at a local level within adjacent communities	Weekly (open 6 days per week)	Minority	Very High
Penrith Rugby Club - Winters Park	165m North	Recreation	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Weekly	Minority	High
Ghyllmount Dental	Adjacent to the North	Dentist	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level	Daily	Majority	Very High

Receptor	Distance and direction from Order Limits	Main activity	Severance	Alternative facility location	Use/ frequency	Used by minority or majority of the population of the study area	Sensitivity
				within adjacent communities			
Penrith Tennis Club - Winters Park	155m North	Recreation	No or limited severance or accessibility issues	Alternative facilities exist at a local level within adjacent communities	Weekly	Minority	High
Queen Elizabeth Grammar School	360m North	Education - ages 11 to 18 years	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Daily (term time) School capacity - 1420 Number of pupils - 1384	Minority	Very High
Great North Air Ambulance Station	65m South	Emergency services	No or limited severance or accessibility issues	No known alternative facilities exist at a local level within adjacent communities	Daily	Minority	Very High
The Lakes Medical Centre	Adjacent to the North	GP Surgery/Clinic	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Daily	Majority	Very High

Receptor	Distance and direction from Order Limits	Main activity	Severance	Alternative facility location	Use/ frequency	Used by minority or majority of the population of the study area	Sensitivity
Cumbria Constabulary	Adjacent to the south	Blue Light Service	No or limited severance or accessibility issues	No known alternative facilities exist at a local level within adjacent communities	Daily	Minority	Very High
The Bridgeway	130m North	GP Surgery/Clinic - sexual assault support service	No or limited severance or accessibility issues	No known alternative facilities exist at a local level within adjacent communities	Daily (24/7, 365 days a year service)	Minority	Very High
Crossfit Cumbria	75m South	Recreation	No or limited severance or accessibility issues	No known alternative facilities exist at a local level within adjacent communities	Weekly	Minority	High
NHS Teaching Hospital (Penrith Hospital)	55m North	Education	No or limited severance or accessibility issues	No known alternative facilities exist at a local level within adjacent communities	Daily	Minority	Very High

Receptor	Distance and direction from Order Limits	Main activity	Severance	Alternative facility location	Use/ frequency	Used by minority or majority of the population of the study area	Sensitivity
Sunbeams Music Trust, Redhills	980m West	Charity	No or limited severance or accessibility issues	No known alternative facilities exist at a local level within adjacent communities	Weekly	Minority	Very High
Eden Country Care, Core Assets	280m West	Home care provider	No or limited severance or accessibility issues	No known alternative facilities exist at a local level within adjacent communities	Daily	Minority	High
Smile Fast	130m South	Dentist	No or limited severance or accessibility issues	Alternative facilities exist at a local level within adjacent communities	Daily	Majority	Very High
Well Pharmacy (Penrith Health Centre)	30m North	Pharmacy	No or limited severance or accessibility issues	Alternative facilities exist at a local level within adjacent communities	Daily	Majority	High
NHS Primary Care Trust	125m North	Medical Clinic / Hospital	No or limited severance or accessibility issues	Alternative facilities exist at a local level	Daily	Majority	Very High

Receptor	Distance and direction from Order Limits	Main activity	Severance	Alternative facility location	Use/ frequency	Used by minority or majority of the population of the study area	Sensitivity
			accessibility issues	within adjacent communities			
The Lake District	2.3km West	Recreation - National park	No or limited severance or accessibility issues	No known alternative facilities exist at a local level within adjacent communities	Daily	Majority	Very High

### *Common Land and open access land*

- 13.7.10 Open access land is land which is made available to the public for recreation on foot only, as defined under the Countryside and Rights of Way Act 2000 (CROW). The Open access land which is required for the scheme falls into the definition of Open Space as it is land which is used for the purposes of public recreation.
- 13.7.11 Common Land is also Open access land under the CROW Act unless there is evidence that the public have a right of access on foot for recreation by some other means. There is no right for use by bicycle or on horseback unless that right has been specifically provided by the landowner.
- 13.7.12 The areas of Common Land and open access land affected by this scheme are outlined below alongside the amount of land anticipated to be lost:
- Wetheriggs Country Park: approximately 0.74 ha of this greenspace is located within the Order Limits, which is approximately 14.7% of the Park
  - Playing Field (Ullswater Playing Field): approximately 0.44ha of the field is located within the Order Limits, which is approximately 18.7% of the field.
- 13.7.13 All Common Land and open access land is considered to be of very high sensitivity given its nature and to account for a reasonable worst case assessment. However, it should be acknowledged that due to the Covid-19 pandemic it has not been possible to produce representative surveys for Common Land and open access land usage. As such a worst case sensitivity has been applied.

### *Development land and businesses*

- 13.7.14 ES Figure 13.2: Residential and Private Assets, Community Facilities, Business and Tourism Receptors (Application Document 3.3) shows the location of business receptors within the study area. For ease only those which may be which may be significantly affected or are a key local receptor have been displayed.
- 13.7.15 Business within the study area are summarised in Table 13-7: Existing businesses located within the study area of the M6 Junction 40 to Kemplay Bank scheme.
- 13.7.16 This includes business and commercial premises, and tourism related businesses, such as holiday lets. Consideration of effects on agricultural land holdings and businesses is presented separately in the following sections of the baseline.
- 13.7.17 One employment land allocation was identified within 500m of the Order Limits. The allocation is for the land adjacent to Skirsgill Depot, it is an employment site allocated within the Eden Local Plan 2014-31. This site is allocated for employment use (use classes B1-B8) and comprises 3.29ha of developable land. Due to the size of the land allocation the sensitivity of the receptor is assessed as high.



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13.7.18 Data has been presented where possible from publicly available sources or stakeholder engagement, to help inform the sensitivity values.

Table 13-7: Existing businesses located within the study area of the M6 Junction 40 to Kemplay Bank scheme

Receptor	Main activity	Distance and direction from Order Limits	Size of employment site	Sensitivity
Businesses to the west of M6 J40	Auctioneers and Valuers	15m to the west	Existing employment sites covering less than 1ha.	Medium
Redhills Business Park	Range of offices including Cumbria LEP Business Centre and other offices	250m to the west	Existing employment sites covering less than 1ha.	Medium
Skirsgill Business Park	Range of businesses located within the business park including CrossFit, offices and shops.	80m to the south	Existing employment sites covering less than 1ha.	Medium
Gillan Way Business Park	Range of business located here, including the Environmental Agency and a variety of offices	35m to the north west	Existing employment sites covering less than 1ha.	Medium
Penrith Industrial Estate	Industrial estate which is host to a range of different businesses	420m to the north west	Existing employment sites covering less than 1ha.	Medium
North Lakes Hotel and Spa	Hotel with Gym and Restaurant	50m to the north	Existing employment sites covering less than 1ha.	Medium
Skirsgill Depot	Cumbria County Council Offices	30m to the south	Existing employment sites covering less than 1ha.	Medium
Business in Eamont Bridge	Variety of businesses located in the area largely comprising retail and leisure	350m to the south	Existing employment sites covering less than 1ha.	Medium
Action with Communities in Cumbria	Non-profit organisation office	140m to the south	Existing employment sites covering less than 1ha.	Medium
KFC	Fast food Chain	20m to the north	Existing employment sites covering less than 1ha.	Medium
B&M Stores	Retail outlet	30m to the north	Existing employment sites covering less than 1ha.	Medium
Esso Petrol Station	Petrol station and accompanying retail outlet	165m to the north	Existing employment sites covering less than 1ha.	Medium

Receptor	Main activity	Distance and direction from Order Limits	Size of employment site	Sensitivity
Shell Petrol Station	Petrol station and accompanying retail outlet	430m to the north	Existing employment sites covering less than 1ha.	Medium
Ashberry Guest House	Bed and Breakfast	480m to the north	Existing employment sites covering less than 1ha.	Medium
Flowers by Valerie Jane	Florist	60m to the north	Existing employment sites covering less than 1ha.	Medium
Cross Keys Inn	Pub	240m to the north	Existing employment sites covering less than 1ha.	Medium

### Agricultural land holdings

- 13.7.19 Land identified as being agricultural in use and within the Order Limits is shown on Figure 13.5 Agricultural land holdings (Application Document 3.3) and are listed below in Table 13-8: Agricultural land holdings within the Order Limits of the M6 Junction 40 to Kemplay Bank scheme.
- 13.7.20 Land take, from agricultural land holdings, within the Order Limits for the scheme equates to a cumulative total of approximately 33.63 ha. The proportion of the holdings which will be required as part of the scheme varies between 2.33% and 54.42%.
- 13.7.21 There are no known existing accessibility issues between these holdings and existing key agricultural infrastructure.

Table 13-8: Agricultural land holdings within the Order Limits of the M6 Junction 40 to Kemplay Bank scheme

Name of farm or landowner surname	Total holding size	Area within the DCO boundary	% of the holding affected	Current use	Additional observations	Sensitivity
Whinfell Park	800ha	18.60ha	2.33%	Arable & Grassland	Large mixed farm with pedigree livestock & farm shoot	High
Leeming	49ha	4.69ha	9.57%	Grassland	Business Park & Grazing	High
Coach House	19ha	10.34ha	54.42%	Grassland	Equestrian business	Very high

### Walkers, cyclists and horse riders (WCH)

- 13.7.22 The following section of the baseline conditions describes the key PRoWs or routes with a designated legal status which intersect the Order Limits (see Table 13-9: Existing PRoWs located within the Order Limits of the M6 Junction 40 to Kemplay Bank scheme). All PRoWs within the study area are displayed on Figure 13.4 Walkers, Cyclists and Horse rider provisions (Application Document 3.3), however for simplicity of reporting only those with the that could be significantly impacted (i.e. are located within the Order Limits) are described below.
- 13.7.23 PRoW mapping data has been provided by Cumbria County Council. The dataset reflects the Definitive Maps, which are a legal record of the public's rights of way in one of four categories (footpath, bridleway, restricted byway or byway open to all traffic).
- 13.7.24 Routes have been identified through the use of local authority records as well as through workshops and consultation events that highlighted additional routes used, and by local residents and user groups.
- 13.7.25 Where a sensitivity of medium has been assigned to a PRoW the rationale described in Section 13.5 Assumptions and limitation applies.

Table 13-9: Existing PRowS located within the Order Limits of the M6 Junction 40 to Kemplay Bank scheme

PRow	Location	Commentary	Sensitivity
FP321008	South of the A66 to the west of Skirsgill Business Park	The PRow routes southwards from M6 J40 to the River Eamont towards Stockbridge. The footpath falls within the Order Limits of the scheme but is not severed.	Medium
FP 358034	South of the A66 to the west of Skirsgill Business Park	Small footpath connecting the A66 to FP321008. The footpath falls within the Order Limits of the scheme and is severed by an access track to a balancing pond.	Medium
FP358008	North of the A66 to the west of the Kemplay Bank Roundabout	The footpath provides access from Kemplay Bank towards Penrith via Wetheriggs Lane where it connects with the Penrith to Greystone cycle route. The footpath provides direct access to Ullswater Community College and could be used to access North Lakes School. There are designated crossings at the Kemplay Bank Junction for WCH. The footpath will be intersected by the scheme alignment and there are minimal alternatives locally.	High
FP 358005	South of the A66 Routing east to west along the River Eamont.	The footpath routes eastwards from Kemplay Bank along the River Eamont to Moor Lane. The footpath connects to the NCN 71. The footpath falls within the Order Limits of the scheme and is severed by an access track to a balancing pond.	Medium
FP 358006	North of the A66 to the west of Penrith Rugby Union Football Club	The footpath routes from the A66 through the residential area of Pategill. Part of the footpath is intersected by the scheme alignment where it meets the existing A66.	Medium
Penrith to Greystoke cycle route	M6 J40	This is a regional route promoted by Visit Eden and provides connections to the National Cycle Network and the wider Lake District area. A section of the cycle route is located within the Order Limits where it crosses Junction 40 of the M6, via the A66 and A592. There are currently designated crossing points provided at these locations for WCH.	High

## M6 Junction 40 to Kemplay Bank - Human health

### Determinants of health

13.7.26 This scheme is located in a semi-urban area on the southern outskirts of Penrith. Land uses in proximity to the scheme include residential neighbourhoods along Clifford Road and Pategill, a primary school, hospital, fire station, business park, office buildings, a hotel, churches, parks, sports and recreational facilities and a farmers' market. Detailed information on the location and type of green space, community,

healthcare, recreational and educational facilities, are provided in the Population baseline above.

- 13.7.27 PRow within the study area for the M6 Junction 40 to Kemplay Bank scheme are described in the Population baseline above. Recreational routes and routes linking communities on the south side of Penrith with local services and facilities are relevant for the health assessment.
- 13.7.28 Bus services intersect the scheme at Kemplay Bank Roundabout, providing links into Penrith from communities to the south, including routes 508, 106 562 and 563. Additionally, several services run along the A66 linking Penrith with neighbouring settlements to the east and west.
- 13.7.29 There are no AQMA within the M6 Junction 40 to Kemplay Bank scheme study area. Defra background pollutant concentrations and local authority air quality monitoring data has identified that NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations are well within the relevant air quality objectives, meaning that the ambient air quality in the study area is good. Detailed air quality baseline information is presented in Chapter 5: Air Quality.
- 13.7.30 Noise Important Areas (NIA) are designated by Defra in hotspot locations identified as having high levels of background noise and requiring Noise Action Plans. There are four NIAs identified in the study area (see Chapter 12: Noise and Vibration).
- 13.7.31 Visual receptors within the study area that are relevant for the health assessment include residential receptors on Clifford Road, Penrith, users of the local PRow network, Wetheriggs Country Park and Happy Hooves Riding Centre. Detailed landscape baseline information is presented in Chapter 10: Landscape and Visual Effects.
- 13.7.32 The section of the A66 within the M6 Junction 40 to Kemplay Bank scheme area had a total of 16 traffic collisions between 2012 and 2019, 15 of which were slight and one was serious. None of the collisions at this location were fatal.

#### Health profile

- 13.7.33 This section of the route passes though LSOA Eden 003B, Eden 003D and Eden 004G. Table 13-10: M6 Junction 40 to Kemplay Bank - Location of LSOAs by Parish and Ward below shows the location of the LSOAs within Wards and Parishes

Table 13-10: M6 Junction 40 to Kemplay Bank - Location of LSOAs by Parish and Ward

LSOA	Corresponding Parishes	Corresponding Wards
Eden 003B	Penrith Civil Parish	Penrith Pategill
Eden 003D	Penrith Civil Parish	Penrith West Ward
Eden 004G	Penrith Civil Parish	Penrith South Ward

- 13.7.34 Eden 003B, Eden 003D and Eden 004G proportion of under 16s is close to the national average. Eden 003D proportion of people over 65 is close to the national average. Eden 003B and 004G have an above average proportion of people over 65.

- 13.7.35 Both Eden 003B and Eden 004G have an above average percentage of people living with disabilities or long-term health problems that limit day to day activities. Eden 003D has a below average percentage of people in this group.
- 13.7.36 Eden 003B ranks within the 40% most deprived areas in England, when measured as an average across all indices in the Indices of Multiple Deprivation (IMD). It is in the 30% most deprived areas for employment and the 30% most deprived areas for health and disability.
- 13.7.37 Eden 003D ranks within the 40% least deprived areas in England when measured as an average across all indices in the IMD. It is in the 40% most deprived areas for employment and the 40% most deprived areas for health and disability.
- 13.7.38 Eden 004G ranks within the 10% least deprived areas in England when measured as an average across all indices of the IMD. It is in the 40% least deprived areas for employment and the 40% most deprived areas for health and disability.
- 13.7.39 Eden 003B, 003D and 004G rank within the 40%, 50% and 40% least deprived areas in England, in terms of Small Area Mental Health Index (SAMHI) indicators, respectively. This is based on data from multiple indicators including mental health related hospital attendances, antidepressant prescriptions, depression prevalence, incapacity benefits and employment support allowance for mental health.
- 13.7.40 The under 75s mortality rate from cardiovascular disease in Eden District (61.5 per 100,000) is below the national average (70.4 per 100,000).
- 13.7.41 The under 75s mortality rate from respiratory disease in Eden District (17 per 100,000) is below the national average (34.2 per 100,000).
- 13.7.42 The average life expectancy in Eden District is 82.0 years for males (above the national average of 79.4) and 85.9 years for females (above the national average of 83.1).

### Sensitivity

- 13.7.43 The sensitivity of the population as determined by the physical characteristics of the M6 Junction 40 to Kemplay Bank study area is assessed as follows:
- Environmental conditions: residential areas, community facilities and green space close to the scheme; good air quality; some amenity impacts from existing road noise. Based on the above factors, the study area population has high sensitivity to changes in environmental conditions.
  - Severance/accessibility: good road connectivity and access to local services and community resources. Based on the above factors, the study area population has medium sensitivity to changes in severance and accessibility.
- 13.7.44 Some groups are more likely than others to experience adverse health effects due to factors such as their age, health conditions or deprivation.

The vulnerable groups listed below have been identified as having above average representation within all or parts of the study area, or as being users of resources potentially affected by the scheme. Based on this, the sensitivity of the study area population with regard to its demographic and health status is assessed as medium to high.

- Older people (over 65s)
- People in areas of high deprivation with regards to employment
- People in areas of high deprivation with regards to health and disability.

## Penrith to Temple Sowerby - Population

### *Land-use and accessibility*

#### Private property and housing

- 13.7.45 This scheme is located in a rural setting to the east of Penrith, where the A66 provides access to Center Parcs, which is located to the south. Given the rural nature of the surrounding area, the study area is sparsely populated in comparison to other schemes.
- 13.7.46 The (2018)-based household projections from 2001 to 2043 for Eden District Council shows an increase in household units from 21,507 in 2001 to 26,551 in 2043. This represents a 26.1% increase, which would give a very high sensitivity for private property and housing.
- 13.7.47 Given the nature of the study area and the access to larger communities such as Penrith which has multiple areas of land allocated for housing, it is considered that there is a sufficient housing supply within the study area and wider region. As such, on balance, a medium sensitivity to the private property and housing receptor group is deemed to be appropriate.
- 13.7.48 A total of four residential properties are located within the Order Limits, see Table 13-11: Private properties and housing allocations at risk of demolition, land take or permanent acquisition due to the Penrith to Temple Sowerby scheme. Of these four, two will be demolished and two will be acquired by National Highways.
- 13.7.49 Figure 13.2: Residential and Private Assets, Community Facilities, Business and Tourism Receptors (Application Document 3.3) shows the location of the private property and housing receptors. For simplicity only those which may be subject to likely significant effects or are a key local receptor have been displayed.
- 13.7.50 There are no housing allocations located within the study area of this scheme.



Table 13-11: Private properties and housing allocations at risk of demolition, land take or permanent acquisition due to the Penrith to Temple Sowerby scheme

Receptor	Location / Address	Demolition / percentage land take	Sensitivity
Foxgloves	Road from Kemplay Bank Roundabout to the Temple Sowerby Bypass on the A66	Acquired by NH	Medium
Barn Owl Cottage	Road from Kemplay Bank Roundabout to the Temple Sowerby Bypass on the A66T	Acquired by NH	Medium
Lightwater Cottages	Access road to Haversheaf Hall from the A66T	Demolished	Medium
High Barnes Cottage	Access road from Lane Ends to Woodside	Demolished	Medium

### Community land and assets

13.7.51 Figure 13.2: Residential and Private Assets, Community Facilities, Business and Tourism Receptors (Application Document 3.3) shows the community land and assets located within the study area for the scheme. For simplicity only those which may be which may be subject to likely significant effects or are a key local receptor have been displayed. The community land and asset receptors are summarised in Table 13-12: Community facilities and assets located within the study area of the Penrith to Temple Sowerby scheme.

Table 13-12: Community facilities and assets located within the study area of the Penrith to Temple Sowerby scheme

Receptor	Distance and direction from Order Limits	Main activity	Severance	Alternative facility location	Use/frequency	Used by minority or majority of the population within the study area	Sensitivity
Frenchfield Park (including Penrith AFC Amateur Football Club)	30m west	Leisure/Sporting Activity/Centre	Severance between community and asset but with existing accessibility provision	No known alternative facilities exist at a local level within adjacent communities	Daily	Minority	High
Brougham Institute	Adjacent to the north	Public/Village Hall	Severance between community and asset but with existing accessibility provision	No known alternative facilities exist at a local level within adjacent communities	Unknown	Minority	High
St Ninnians Church	670m North	Place of Worship	Severance between community and asset but with existing accessibility provision	No known alternative facilities exist at a local level within adjacent communities	Unknown	Minority	High

### *Common Land and open access land*

13.7.52 There are no areas of Common Land and open access land located within the study area of this scheme.

### *Development land and businesses*

13.7.53 Figure 13.2: Residential and Private Assets, Community Facilities, Business and Tourism Receptors (Application Document 3.3) shows the location of local businesses. For simplicity only those which may be significantly affected or are a key local receptor have been displayed.

13.7.54 Business receptors within the study area have been summarised in Table 13-13: Existing businesses located within the study area of the Penrith to Temple Sowerby scheme.

13.7.55 This includes business and commercial premises, and tourism related businesses, such as holiday lets. Consideration of effects on agricultural land holdings and businesses is presented separately in the following sections of the baseline.

13.7.56 It should be noted that the study area has been extended for the Penrith to Temple Sowerby Scheme due to the presence of Center Parcs Whinfall Forest to the south of the Order Limits. The business is a key tourism business within the region and any potential effects upon it must be considered given that it is predominantly accessed via the A66.

13.7.57 No employment land allocations were identified within 500m of the Order Limits.

13.7.58 Data has been presented where possible from publicly available sources or stakeholder engagement, to help inform the sensitivity values.

Table 13-13: Existing businesses located within the study area of the Penrith to Temple Sowerby scheme

Receptor	Main activity	Distance and direction from Order Limits	Size of employment site	Sensitivity
Llama Karma Kafe	Café	Within the Order Limits	Existing employment sites covering less than 1ha.	Medium
Llamas Pyjamas	Retail	Within the Order Limits	Existing employment sites covering less than 1ha.	Medium
Fairweather Oak	Workshop	50m east	Existing employment sites covering less than 1ha.	Medium
Phoenix Furniture Restoration	Workshop	50m east	Existing employment sites covering less than 1ha.	Medium
Brougham Castle Lodge	English Heritage Shop	150m west	Existing employment sites covering less than 1ha.	Medium

Receptor	Main activity	Distance and direction from Order Limits	Size of employment site	Sensitivity
Whinfell Holme Workshop and container	Workshop	300m north	Existing employment sites covering less than 1ha.	Medium
Center Parcs Whinfell Forest	Tourism	1km south	Existing employment site covering more than 5ha.	Very High

### Agricultural land holdings

- 13.7.59 Land identified as being agricultural in use and within the Order Limits is shown on Figure 13.5 Agricultural land holdings (Application Document 3.3) and are listed below in Table 13-14: Agricultural land holdings within the Order Limits of the Penrith to Temple Sowerby scheme.
- 13.7.60 Land take, from agricultural land holdings, within the Order Limits for the scheme equates to a cumulative total of approximately 82.67ha. The proportion of the holding which will be required as part of the scheme varies between 3.28% and 7.29%.
- 13.7.61 There are no known existing accessibility issues between these holdings and existing key agricultural infrastructure

Table 13-14: Agricultural land holdings within the Order Limits of the Penrith to Temple Sowerby scheme

Name of farm or landowner surname	Total holding size	Area within the DCO boundary	% of the holding affected	Current use	Additional observations	Sensitivity
Brougham Castle Farm	64ha	3.13ha	4.89%	Grassland		High
Fremington	143ha	4.63ha	3.28%	Arable & Grassland		High
Winderwath Estate	1028ha	74.91ha	7.29%	Arable & Grassland	Estate with several tenants, shoot and other enterprises.	High

### Walkers, cyclists and horse riders (WCH)

- 13.7.62 The following section of the baseline conditions describes the key PRoWs or routes with a designated legal status which intersects the Order Limits (see Table 13-15: Existing PRoWs located within the Order Limits of the Penrith to Temple Sowerby). All PRoWs within the study area are displayed on Figure 13.4 Walkers, Cyclists and Horse rider provisions (Application Document 3.3), however for simplicity of reporting only those with the that could be significantly impacted (i.e. are located within the Order Limits) are described below.
- 13.7.63 PRoW mapping data has been provided by Cumbria County Council. The dataset reflects the Definitive Maps, which are a legal record of the

public's rights of way in one of four categories (footpath, bridleway, restricted byway or byway open to all traffic).

13.7.64 Routes have been identified through the use of local authority records as well as through workshops and consultation events that highlighted additional routes used, and by local residents and user groups.

13.7.65 Where a sensitivity of medium has been assigned to a PRow the rationale described in Section 13.5 Assumptions and limitation applies.

Table 13-15: Existing PRows located within the Order Limits of the Penrith to Temple Sowerby

PRow	Location	Commentary	Sensitivity
FP 311004	South of the A66 to the east of the Center Parcs entrance.	This is a footpath that routes southwards from the A66 through Center Parcs and the Cliburn Moss Nature Reserve and is likely to be used recreationally. The route is intersected by the scheme alignment where it terminates at the A66.	Medium
FP 311013	North of the A66 near Whinfell Park	This is a Byway Open to All Traffic (BOAT) which commences from the A66 and provides access to St Ninians Church where the by-way terminates. The by-way is likely to be primarily used for access to the church and may also be used for recreation by a small proportion of people. The route is intersected by the scheme alignment where it terminates at the A66. The route has minimal substitutability in the local area.	High
NCN71/ Pennine Cycle Way	Southwest of the A66, routing along Moor Lane and crossing the B6262	The NCN 71 is part of the wider Coast to Coast route between Whitehaven and Penrith (Blencow). It continues in a southeasterly direction from Penrith via Appleby - in - Westmorland and eventually meets the NCN 65. The route is likely the be used recreationally. The route falls within the Order Limits and will not be intersected by the scheme Alignment.	Very High

## Penrith to Temple Sowerby - Human health

### Determinants of health

13.7.66 This scheme is located in a sparsely populated rural area to the to the southeast of Penrith. Land uses in proximity to the scheme include primarily agricultural land, with scattered residential properties and businesses as described in the Population baseline above.

13.7.67 PRow within the study area for the Penrith to Temple Sowerby scheme are described in the Population baseline above.

13.7.68 Bus services interest the scheme at Penrith to Temple Sowerby, providing links to the communities of Penrith in the west, Eamont Bridge and Temple Sowerby in the east as well as the tourist facility of Centre Parcs. Routes include 104, 506, 563 and 574.

- 13.7.69 There are no AQMA within the Penrith to Temple Sowerby scheme study area. Defra background pollutant concentrations and local authority air quality monitoring data has identified that NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations are well within the relevant air quality objectives, meaning that the ambient air quality in the study area is good. Detailed air quality baseline information is presented in Chapter 5: Air Quality.
- 13.7.70 NIA are designated by Defra in hotspot locations identified as having high levels of background noise and requiring Noise Action Plans. There are no NIAs identified in the study area (see Chapter 12: Noise and Vibration).
- 13.7.71 Visual receptors within the study area that are relevant for the health assessment include the local PRoW and national cycle network users, viewpoints within the communities of Temple Sowerby, Kirkby Thore, Long Marton and Crackenthorpe, and users of Whinell Forest and the wider North Pennines AONB. Detailed baseline information is presented in Chapter 10: Landscape and Visual Effects.
- 13.7.72 A total of 28 traffic collisions occurred at this location between 2012 and 2019, 19 of which were slight, eight were serious and one was fatal.

#### Health profile

- 13.7.73 This section of the route passes through LSOA Eden 001D and Eden 006D. Table 13-16: Penrith to Temple Sowerby - Location of LSOAs by Parish and Ward below shows the location of the LSOAs within Wards and Parishes.

Table 13-16: Penrith to Temple Sowerby - Location of LSOAs by Parish and Ward

LSOA	Corresponding Parishes	Corresponding Wards
Eden 001D	Langwathby Civil Parish Hunsonby Civil Parish Glassonby Civil Parish	Langwathby Ward
Eden 006D	Newbiggin Civil Parish Kirkby Thore Civil Parish Temple Sowerby Civil Parish Brougham Civil Parish	Kirkby Thore Ward

- 13.7.74 Eden 001D and 006D proportion of under 16s is close to the national average percentage. Both LSOAs have an above average proportion of over 65s when compared to the national average.
- 13.7.75 Both LSOAs have a below average percentage of people living with disabilities or long-term health problems that limit day to day activities.
- 13.7.76 Eden 001D ranks within the 40% least deprived areas in England, when measured as an average across all indices in the IMD. It is in the 20% least deprived areas for employment and the 10% least deprived areas for health and disability.
- 13.7.77 Eden 006D ranks within the 40% least deprived areas in England when measured as an average across all indices of the Indices of Multiple

Deprivation (IMD). It is in the 10% least deprived areas for employment and the 10% least deprived areas for health and disability.

- 13.7.78 Eden 001D and 006D rank within the 40% and 20% least deprived areas in England, in terms of SAMHI, respectively. This is based on data from multiple indicators including mental health related hospital attendances, antidepressant prescriptions, depression prevalence, incapacity benefits and employment support allowance for mental health.
- 13.7.79 The under 75s mortality rate from cardiovascular disease in Eden District (61.5 per 100,000) is below the national average (70.4 per 100,000).
- 13.7.80 The under 75s mortality rate from respiratory disease in Eden District (17 per 100,000) is below the national average (34.2 per 100,000).
- 13.7.81 The average life expectancy in Eden District is 82.0 years for males (above the national average of 79.4) and 85.9 years for females (above the national average of 83.1).

#### Sensitivity

- 13.7.82 The sensitivity of the population as determined by the physical characteristics of the Penrith to Temple Sowerby study area is assessed as follows:
- Environmental conditions: agricultural land with scattered residential properties; few community facilities close to the scheme; good air quality; amenity impacts from existing road noise. Based on the above factors, the study area population has medium sensitivity to changes in environmental conditions.
  - Severance/accessibility: limited community facilities and services within the study area; population is dependent of the A66 and rural road network to access services in Penrith. Based on the above factors, the study area population has high sensitivity to changes in severance and accessibility.
- 13.7.83 Some groups are more likely than others to experience adverse health effects due to factors such as their age, health conditions or deprivation. The vulnerable groups listed below have been identified as having above average representation within all or parts of the study area. Based on this, the sensitivity of the study area population with regard to its demographic and health status is assessed as medium.
- Older people (over 65s).

### Temple Sowerby to Appleby - Population

#### Land-use and accessibility

#### Private property and housing

- 13.7.84 This scheme is located in a semi-rural setting with the villages of Kirkby Thore and Appleby-in-Westmorland located to the south and southeast

respectively. As such the residential properties tend to be clustered around the villages with scattered properties within the wider landscape.

- 13.7.85 The (2018)-based household projections from 2001 to 2043 for Eden District Council shows an increase in household units from 21,507 in 2001 to 26,551 in 2043. This represents a 26.1% increase, which would give a very high sensitivity for private property and housing.
- 13.7.86 Given the nature of the study area, the communities within it and the number of allocated sites which will provide future dwellings, it is considered that there is a sufficient housing supply within the study area and wider region. As such, on balance, a medium sensitivity to the private property and housing receptor group is deemed to be appropriate
- 13.7.87 Figure 13.3: Local Plan and Development Land Allocations (Application Document 3.3) shows the housing allocated land within the study area for the scheme. There are four housing allocations located within the study area of this scheme:
- Land adjacent to Primary School: The allocation is approximately 1ha in size and does not lie within the Order Limits. The allocation is of medium sensitivity due to the number of dwellings it is allocated to deliver, which is 24.
  - Townhead: The allocation is approximately 0.6ha in size and is located within Kirkby Thore village. The allocation is for 14 dwellings and does not lie within the Order Limits. The allocation is of medium sensitivity due to its size.
  - Fields at Coal Yard Station: The allocation is approximately 3.44ha in size and is located within Appleby-in-Westmorland village. The allocation is for 39 dwellings and does not lie within the Order Limits. The allocation is of high sensitivity due to its size.
  - Land at Westmorland Road: The allocation is approximately 0.59ha in size and is located within Appleby-in-Westmorland. The allocation is for 15 dwellings and does not lie within the Order Limits. The allocation is of medium sensitivity due to its size.
- 13.7.88 A total of three residential properties and one housing allocation are located within the Order Limits, see Table 13-17: Private properties and housing allocations at risk of demolition, land take or permanent acquisition due to the Temple Sowerby to Appleby scheme.
- 13.7.89 Figure 13.2: Residential and Private Assets, Community Facilities, Business and Tourism Receptors (Application Document 3.3) shows the location of the private property and housing receptors. For simplicity only those which may be subject to likely significant effects or are a key local receptor have been displayed.



Table 13-17: Private properties and housing allocations at risk of demolition, land take or permanent acquisition due to the Temple Sowerby to Appleby scheme

Receptor	Location / Address	Demolition / percentage land take	Sensitivity
Dunelm House	Broom on the C3004 to the A66	Demolished	Medium
Winthorn House	Cross End	Demolished	Medium

### Community land and assets

13.7.90 Figure 13.2: Residential and Private Assets, Community Facilities, Business and Tourism Receptors (Application Document 3.3) shows the community land and assets located within the study area for the scheme. For simplicity only those which may be which may be subject to likely significant effects or are a key local receptor have been displayed. The community land and asset receptors are summarised in Table 13-18: Community facilities located within the study area of the Temple Sowerby to Appleby scheme.

Table 13-18: Community facilities located within the study area of the Temple Sowerby to Appleby scheme

Receptor	Distance and direction from Order Limit	Main activity	Severance	Alternative facility location	Use/frequency	Used by minority or majority of the population within the study area	Sensitivity
Temple Sowerby Bowling Club	310m West	Recreation - Green space	No or limited severance or accessibility issues	No known alternative facilities exist at a local level within adjacent communities	Weekly - approximately 35 members	Minority	High
St Michaels Church	80m South	Place of Worship	No or limited severance or accessibility issues	Alternative facilities exist at a local level within adjacent communities	Weekly/Regular services - estimated visits 1,884 (per year)	Minority	Medium
Memorial Hall	215m South	Village Hall	No or limited severance or accessibility issues	Alternative facilities exist at a local level within adjacent communities	Weekly	Minority	Medium
Methodist Church, Chapel Lane Kirkby Thore	305m South	Place of Worship	No or limited severance or accessibility issues	Alternative facilities exist at a local level within adjacent communities	Weekly/Regular Services	Minority	Medium
Temple Sowerby Church of	225m West	Education - ages 3 to 11 years	No or limited severance or	Limited alternative facilities exist at a	Daily (term time) School capacity - 56	Minority	Very High

Receptor	Distance and direction from Order Limit	Main activity	Severance	Alternative facility location	Use/frequency	Used by minority or majority of the population within the study area	Sensitivity
England Primary School			accessibility issues	local level within adjacent communities	Number of pupils - 50		
Temple Sowerby Medical Practice	290m West	GP Surgery/Clinic	No or limited severance or accessibility issues	No known alternative facilities exist at a local level within adjacent communities	Daily - 4,665 patients	Majority	Very High
St James Church	370m West	Place of Worship	No or limited severance or accessibility issues	Alternative facilities exist at a local level within adjacent communities	Weekly/Regular Services	Minority	Medium
Piper Lane Recreational Field	190m South	Recreation - Green space	Severance between community and asset but with existing accessibility provision	Alternative facilities exist at a local level within adjacent communities	Weekly	Minority	High
Kirkby Thore Pre-School	Adjacent South	Nursery/Day Care - ages 3 to 5 years	No or limited severance or accessibility issues	No known alternative facilities exist at a local level within	Daily (term times) School capacity - 18 Number of pupils - 16	Minority	Very High

Receptor	Distance and direction from Order Limit	Main activity	Severance	Alternative facility location	Use/frequency	Used by minority or majority of the population within the study area	Sensitivity
				adjacent communities			
Temple Sowerby Cricket Ground	500m West	Recreation	No or limited severance or accessibility issues	No known alternative facilities exist at a local level within adjacent communities	Weekly (weekend peaks)	Minority	High
Maypole	250m West	Public open space	No or limited severance or accessibility issues	No known alternative facilities exist at a local level within adjacent communities	Annual (May Day)	Minority	High
Victory Memorial Hall	400m West	Village/Community Hall	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Weekly	Minority	High
Tennis Court near Acton Lodge	180m West	Recreation - Green space	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Weekly	Minority	High

Receptor	Distance and direction from Order Limit	Main activity	Severance	Alternative facility location	Use/frequency	Used by minority or majority of the population within the study area	Sensitivity
Kirkby Thore Primary School	Adjacent to the South, however the associated sports pitch is located within the Order Limits	Education - ages 3 to 11 years	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Daily (term time) School capacity - 70 Number of pupils - 45	Minority	Very High
Appleby Grammar School	95m East	Education - ages 11 to 18 years	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Daily (term time) School capacity - 750 Number of pupils - 361	Minority	Very High
St Margaret and St James Church	335m North	Place of Worship	Severance between community and asset but with existing accessibility provision	Alternative facilities exist at a local level within adjacent communities	Weekly/Regular Services - estimated visits 1,681 (per year)	Minority	High
Appleby Sports Centre	150m East	Leisure/Sporting Activity/Centre	No or limited severance or accessibility issues	No known alternative facilities exist at a local level within	Daily (weekend peaks) - estimated visits 49,462 (per year)	Majority	Very High

Receptor	Distance and direction from Order Limit	Main activity	Severance	Alternative facility location	Use/frequency	Used by minority or majority of the population within the study area	Sensitivity
				adjacent communities			
Allotment/Community Growing Space, off Vicarge Lane	Adjacent West	Allotment/Community Growing Space	No or limited severance or accessibility issues	No known alternative facilities exist at a local level within adjacent communities	Weekly	Minority	High
The Green, Temple Sowerby	380m West	Public Park or Garden - Green Space	No or limited severance or accessibility issues	Alternative facilities exist at a local level within adjacent communities	Weekly - estimated visits 3,826 (per year)	Minority	High
Play area, off Main Street Kirkby Thore	185m South	Recreation - Green space	No or limited severance or accessibility issues	Alternative facilities exist at a local level within adjacent communities	Weekly	Majority	High
Kirkby Thore Public Park or Garden	50m South	Recreation - Green space	No or limited severance or accessibility issues	Alternative facilities exist at a local level within adjacent communities	Weekly	Majority	High
Playing Field, off the B6412	430m West	Recreation - Green space	No or limited severance or	Alternative facilities exist at a	Weekly	Minority	High

Receptor	Distance and direction from Order Limit	Main activity	Severance	Alternative facility location	Use/frequency	Used by minority or majority of the population within the study area	Sensitivity
			accessibility issues	local level within adjacent communities			
Land opposite Marton Mill Common Land (Long Marton)	495m North	Registered Common Land	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Weekly	Majority	High
Common Moss, Common Land	110m North	Registered Common Land	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Weekly	Majority	High
Appleby Horse Fair Ground	150m East	Annual Horse Fair	No or limited severance or accessibility issues	No known alternative facilities exist at a local level within adjacent communities	Annual	Minority	High

### Common Land and open access land

- 13.7.91 There are two areas of Common Land and open access land identified within the study area of the scheme:
- Common Moss - the Common Land is approximately 1ha in size and is located to the west of the scheme. None of the land is located within the Order Limits.
  - Land opposite Marton Mill - the open access land is less than 0.01ha in size and located to the north of the scheme. None of the land is located within the Order Limits.

### Development land and businesses

- 13.7.92 Figure 13.2: Residential and Private Assets, Community Facilities, Business and Tourism Receptors (Application Document 3.3) shows the location of business receptors within the study area. For ease only those which may be which may be significantly affected or are a key local receptor have been displayed.
- 13.7.93 Business within the study area are summarised in Table 13-19: Existing businesses located within the study area of the Temple Sowerby to Appleby scheme.
- 13.7.94 This includes business and commercial premises, and tourism related businesses, such as holiday lets. Consideration of effects on agricultural land holdings and businesses is presented separately in the following sections of the baseline.
- 13.7.95 No employment land allocations were identified within 500m of the Order Limits.
- 13.7.96 Data has been presented where possible from publicly available sources or stakeholder engagement, to help inform the sensitivity values.

Table 13-19: Existing businesses located within the study area of the Temple Sowerby to Appleby scheme

Receptor	Main activity	Distance and direction from Order Limits	Size of employment site	Sensitivity
Eden Garage Self Drive Hire - Penrith	Vehicle Repair Shop	35m to the north west	Existing employment sites covering less than 1ha.	Medium
Grange Court Mews	Holiday Rental	450m to the northwest	Existing employment sites covering less than 1ha.	Medium
Kings Arms Hotel	Hotel	370m to the northwest	Existing employment sites covering less than 1ha.	Medium
The House at Temple Sowerby	Hotel	250m to the northwest	Existing employment sites	Medium



Receptor	Main activity	Distance and direction from Order Limits	Size of employment site	Sensitivity
			covering less than 1ha.	
Low Moor Park	Holiday Park	105m to the south	Existing employment sites covering less than 1ha.	Medium
The Bridge	Pub	10m to the north	Existing employment sites covering less than 1ha.	Medium
Dunkeld Cottage	Holiday Rental Home	420m to the north	Existing employment sites covering less than 1ha.	Medium
Holme Lea Holiday Cottage	Holiday Rental Home	450m to the north	Existing employment sites covering less than 1ha.	Medium
BP Petrol Station	Petrol Station and associated retail outlet	10m to the south	Existing employment sites covering less than 1ha.	Medium
British Gypsum	Manufacturer	280m to the north	Existing employment sites covering more than 5ha	Very High
Broom House Appleby	Holiday Rental Home	360m to the north	Existing employment sites covering less than 1ha.	Medium
Crackenthorpe Hall	Holiday Rental Home	155m to the south	Existing employment sites covering less than 1ha.	Medium
The Rising Sun Holiday Park	Caravan Park	180m to the north	Existing employment sites covering less than 1ha.	Medium
Meinertzhagen Photography	Business	180m to the east	Existing employment sites covering less than 1ha.	Medium
Stable Block Bungalow	Holiday Rental Home	280m to the east	Existing employment sites	Medium

Receptor	Main activity	Distance and direction from Order Limits	Size of employment site	Sensitivity
			covering less than 1ha.	
McKay Barry	Book Shop	300m to the east	Existing employment sites covering less than 1ha.	Medium
1 Friary Cottages	Holiday Rental Home	385m to the east	Existing employment sites covering less than 1ha.	Medium
Eden Conference Barn	Conference Centre	Immediately adjacent to the north.	Existing employment sites covering less than 1ha.	Medium
Foresters Hall	Holiday Rental Home	255 south	Existing employment sites covering less than 1ha.	Medium
Cruck End	Holiday Rental Home	150m north	Existing employment sites covering less than 1ha.	Medium
Somerset House	Shop and post office	280m south	Existing employment sites covering less than 1ha.	Medium
Rose Cottage	Office	50m north	Existing employment sites covering less than 1ha.	Medium

### Agricultural land holdings

- 13.7.97 Land identified as being agricultural in use and within the Order Limits is shown on Figure 13.5 Agricultural land holdings (Application Document 3.3) and are listed below in Table 13-20: Agricultural land holdings within the Order Limits of the Temple Sowerby to Appleby scheme.
- 13.7.98 Land take, from agricultural land holdings, within the Order Limits for the scheme equates to a cumulative total of approximately 119.33ha. The proportion of the holding which will be required as part of the scheme varies between 0.05% and 41.67%.
- 13.7.99 There are no known existing accessibility issues between these holdings and existing key agricultural infrastructure

Table 13-20: Agricultural land holdings within the Order Limits of the Temple Sowerby to Appleby scheme

Name of farm or landowner surname	Total holding size	Area within the DCO boundary	% of the holding affected	Current use	Additional observations	Sensitivity
Spitals	176ha	10.00ha	5.68%	Arable & Grassland	Dairy Unit with land to North & South of A66	Very High
Bridge End Farm	600ha	0.27ha	0.05%	Arable & Grassland	Large Dairy Unit with land used to grow forage	Very High
Far Boorm Lodge	121ha	5.24ha	4.33%	Arable & Grassland		High
West View Farm	80ha	8.03ha	10.04%	Grassland		High
Broad Lea	79ha	0.18ha	0.23%	Grassland		Medium
Low Moor Caravan Park	27ha	8.18ha	30.29%	Grassland	Caravan park & sheep flock.	High
Roman Vale	19ha	7.83ha	41.21%	Grassland		High
Crossfell House Farm	160ha	66.67ha	41.67%	Arable & Grassland	Dairy & Genetics businesses grazing grassland.	Very High
Nicholson	34ha	12.59	37.03%	Grassland		High
Rogerhead	96ha	4.31ha	4.49%	Grassland		High
Street House	57ha	8.62ha	15.12%	Arable & Grassland		High
Redlands Bank	150ha	16.36ha	10.91%	Arable & Grassland		High

### Walkers, cyclists and horse riders

13.7.100 The following section of the baseline conditions describes the key PRoWs or routes with a designated legal status which intersect the Order Limits (see Table 13-21: Existing PRoWs located within the Order Limits of the Temple Sowerby to Appleby scheme). All PRoWs within the study area are displayed on Figure 13.4 Walkers, Cyclists and Horse rider provisions (Application Document 3.3), however for simplicity of reporting only those with the that could be significantly impacted (i.e. are located within the Order Limits) are described below.

13.7.101 PRoW mapping data has been provided by Cumbria County Council. The dataset reflects the Definitive Maps, which are a legal record of the public's rights of way in one of four categories (footpath, bridleway, restricted byway or byway open to all traffic).

13.7.102 Routes have been identified through the use of local authority records as well as through workshops and consultation events that highlighted additional routes used, and by local residents and user groups.

13.7.103 Where a sensitivity of medium has been assigned to a PRoW the rationale described in Section 13.5 Assumptions and limitation applies.

Table 13-21: Existing PRoWs located within the Order Limits of the Temple Sowerby to Appleby scheme

PRoW	Location	Commentary	Sensitivity
FP317006, BW317005 and BW 317012	North of the A66 at Crackenthorpe	The footpaths provide a connection from Crackenthorpe north to BW 341001. The route is likely to be used recreationally. Each of the routes are intersected by the scheme alignment.	Medium
FP 368002	Located to the east of the scheme alignment to the south east of Temple Sowerby	Local footpath crossing over the A66. It routes from FP368001 to the south of the A66 and along Vicarage Road to Templars' Court. The route is likely to be used recreationally. The footpath is located within the Order Limits but will not be intersected by the scheme alignment.	Medium
FP336011	North of the A66 to the north of Kirkby Thore	A short local footpath from Cross Lane close to Kirkby Thore School to a residential area on Sanderson Croft. The route may be used by residents of Sanderson Croft to access the school. The footpath will be intersected by the scheme alignment and provides links to key community receptors.	High
FP336014	North of the A66 to the north of Kirkby Thore	Footpath starting at FP336014 routing westwards to the Maiden Way. The route is likely to be used recreationally. The footpath is located within the Order Limits but will not be intersected by the scheme alignment	Medium
FP336013	North of the A66 to the north of Kirkby Thore	A longer recreational route starting from Kirkby Thore routing northwards and connecting to NCN 68. The route is likely the be used recreationally. The footpath will be intersected by the scheme alignment.	Medium
FP317009	North of the A66 to the west of Main Street in Kirkby Thore	A short local footpath providing a connection from the A66 to FP 341017 to the south of Long Marton. The footpath will be intersected by the scheme alignment.	Medium
FP368006	Located to the northeast of Temple Sowerby	Local footpath providing a connection from Temple Sowerby to Templars Court. It is likely to be used recreationally. The footpath is located within the Order Limits but will not be intersected by the scheme alignment and will remain unaffected.	Low
FP336001	Located to the south of The A66	A short local footpath routing southward from the A66 to the River Eden. The route is likely	Medium

PRoW	Location	Commentary	Sensitivity
	south of Kirkby Thore to the west of Main Street	to be used recreationally. The footpath is located within the Order Limits but is not intersected by the scheme alignment.	
FP336008	Located north of the A66 and south of Kirkby Thore	A short local footpath connecting the A66 to Piper Lane likely to be used for recreation. The footpath is located within the Order Limits but is not intersected by the scheme alignment.	Medium
FP 317008	Located to the south of the A66 to the northeast of Bolton	A short local footpath that provides a connection between the A66 and Chapel Street, via Bolton. Although the route provides a connection to a local centre there are no residential properties near the A66 where the route originates. Therefore the route is likely used recreationally. The footpath is located within the Order Limits but is not intersected by the scheme alignment.	Medium
FP336017	Located to the north of the A66 towards the north of Kirkby Thore.	A local footpath connecting from Cross Street to Fell Lane where there is a connection to a wider PRoW network. Kirkby Thore Primary School is located where the footpath commences at Cross Street, based on where the footpath terminates at Fell Lane it is likely that the route is used recreationally as there are no residential properties on Fell Lane which would need access to the school. The footpath will be intersected by the scheme alignment.	Medium
FP317004	The footpath crosses the A66 to the north of Crackenthorpe Hall and routes to the east of Crackenthorpe.	Local footpath that routes across the A66 from the entrance of Crackenthorpe Hall to BW 341001 to the north of the A66. The footpath provides a connection to a wider network of PRoWs, it is likely that the route is used recreationally. The footpath is located within the Order Limits but is not intersected by the scheme alignment.	Medium
FP341015	Located to the south of Long Marton town and north of St Margaret and St James's Church.	Local footpath routing from Long Marton road to the northeast along Trout Beck and connecting to Eden Valley Ride. As the footpath connects to a wider network of PRoWs it is likely to be used recreationally. The footpath will be intersected by the scheme alignment.	Medium
FP341029	Located to the east of Main Street in Kirkby Thore.	A local footpath, routing northwards from the A66 to Sleastonhow Lane. It is likely that this route is used recreationally. The footpath is located within the Order Limits but is not intersected by the scheme alignment.	Medium

PRoW	Location	Commentary	Sensitivity
FP341017	Located to the south of Long Marston	A local footpath providing a connection from the A66 northwards to Long Marston. It is likely that the footpath is used for recreation as there are connections to the PRoW network . There is potential for the footpath to be used to provide a connection between Long Marston and Bolton although there are no formal crossings on the A66. The footpath will be intersected by the scheme alignment.	Medium
BW317011	Located south of Kirkby Thore and commences to the east of Main Street.	A short local bridleway routing from the A66 to the River Eden. The route is likely to be used recreationally. The bridleway is located within the Order Limits but is not intersected by the scheme alignment.	Medium
BW341001	Routes from the Eden Valley Route in the east on the B6542 to Long Marston road in the west.	A longer recreational bridleway routing east to west along the scheme and provides a connection to a wider network for footpaths and cycleways. It is unlikely to be used for any other trips apart from recreation. The bridleway will be intersected by the scheme alignment.	Medium
BW336007	Located north of the A66 and south of Priest Lane to the west of Kirkby Thore.	A very short local bridleway that connects northwards from the A66 to Priest Lane. The route is likely the be used recreationally. The bridleway will be intersected by the scheme alignment	Medium
BW336018	Located north of the A66 to the north of Kirkby Thore	A short local bridleway connecting from Cross Lane in Kirkby Thorpe to Maiden Way (north of Kirkby Thore). The route is likely the be used recreationally. The bridleway is located within the Order Limits but is not intersected by the scheme alignment.	Medium
Eden Valley Ride	Routes north to south through the Order Limits to the north of Appleby in Westmorland	Regional cycle route promoted by Visit Eden providing connection to NCN 68 to the north and NCN 67 to the south. The assets connects both NCN routes to wider cycling routes in the area. The cycle route is likely to be used recreationally.	High

## Temple Sowerby to Appleby - Human health

### Determinants of health

13.7.104 This scheme runs from east of Temple Sowerby, past the villages of Kirkby Thore and Crackenthorpe before concluding on the westerly extent of Appleby-in-Westmorland. The northern part of Kirkby Thore, which includes Kirkby Thore Primary School, churches and multiple green spaces, is in proximity to the off-line sections of the scheme.

- 13.7.105 The A66 then runs mainly through sparsely populated agricultural land with scattered houses and farmsteads, as well as the small village of Crackenthorpe. The village of Appleby-in-Westmorland lies at the eastern extent of this scheme, with land uses including multiple schools, a fire station, a cricket club and a church. Detailed information on the location and type of green space, community, healthcare, recreational and educational facilities are provided in the Population baseline above.
- 13.7.106 PRoW within the study area for the Temple Sowerby to Appleby scheme is described in the Population baseline above. Recreational routes and routes linking local communities with local services and facilities are relevant for the health assessment. The 563, 506 and 574 bus routes run along the A66, providing services between settlements along the scheme and into Penrith. The 132 bus route linking Penrith with rural settlements to the south and east also intersects the scheme.
- 13.7.107 There are no AQMA within the Temple Sowerby to Appleby scheme area. Defra background pollutant concentrations and local authority air quality monitoring data has identified that NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations are well within the relevant air quality objectives, meaning that the ambient air quality in the study area is good. Detailed air quality baseline information is presented in Chapter 5: Air quality.
- 13.7.108 NIA are designated by Defra in hotspot locations identified as having high levels of background noise and requiring Noise Action Plans. There is one NIA within the study area. Detailed noise baseline information is presented in Chapter 12: Noise and Vibration.
- 13.7.109 Visual receptors within the study area that are relevant for the health assessment include residential receptors within the settlements of Temple Sowerby, Kirkby Thore, Crackenthorpe, and Appleby-in-Westmorland, users of the local PRoW network and Kirkby Thore and Long Marton primary schools. Detailed baseline information is presented in Chapter 10: Landscape and Visual Effects.
- 13.7.110 At this location there were 48 traffic collisions between 2012 and 2019. 39 collisions were considered as slight, six were considered as serious and three were fatal.

#### Health profile

- 13.7.111 This scheme passes through LSOA Eden 006D and Eden 006E. Table 13-22: Temple Sowerby to Appleby - Location of LSOAs by Parish and Ward below shows the location of the LSOAs within Wards and Parishes

Table 13-22: Temple Sowerby to Appleby - Location of LSOAs by Parish and Ward

LSOA	Corresponding Parishes	Corresponding Wards
Eden 006D	Newbiggin Civil Parish Kirkby Thore Civil Parish Temple Sowerby Civil Parish Brougham Civil Parish	Kirkby Thore Ward
Eden 006E	Dufton Civil Parish	Long Marton Ward

LSOA	Corresponding Parishes	Corresponding Wards
	Milburn Civil Parish Long Marton Civil Parish	

- 13.7.112 Eden 006D proportion of under 16s is close to the national average, whilst Eden 006E has a below average proportion of under 16s when compared to the national average. Both LSOAs have an above national average proportion of over 65s.
- 13.7.113 Both LSOAs have a below average percentage of people living with disabilities or long-term health problems that limit day to day activities.
- 13.7.114 The area of Eden 006D is ranked within the 40% least deprived areas in England when measured as an average across all indices of the IMD. It is in the 10% least deprived areas for employment and the 10% least deprived areas for health and disability.
- 13.7.115 The area of Eden 006E is ranked within the 40% least deprived areas in England when measured as an average across all indices of the IMD. It is in the 10% least deprived areas for employment and the 10% least deprived for health and disability.
- 13.7.116 Eden 006D and 006E rank within the 20% and 30% least deprived areas in England, in terms of SAMHI, respectively. This is based on data from multiple indicators including mental health related hospital attendances, antidepressant prescriptions, depression prevalence, incapacity benefits and employment support allowance for mental health.
- 13.7.117 The under 75s mortality rate from cardiovascular disease in Eden District (61.5 per 100,000) is below the national average (70.4 per 100,000).
- 13.7.118 The under 75s mortality rate from respiratory disease in Eden District (17 per 100,000) is below the national average (34.2 per 100,000).
- 13.7.119 The average life expectancy in Eden District is 82.0 years for males (above the national average of 79.4) and 85.9 years for females (above the national average of 83.1).

### Sensitivity

- 13.7.120 The sensitivity of the population as determined by the physical characteristics of the Temple Sowerby to Appleby study area is as follows:
- Environmental conditions: residential areas, community facilities and green spaces close to the scheme; good air quality; some amenity impacts from existing road noise. Based on the above factors, the study area population has medium sensitivity to changes in environmental conditions.
  - Severance/accessibility: Community facilities and services available in Temple Sowerby, Kirkby Thore and Appleby. Surrounding rural population is dependent of the A66 and rural road network to access services. Based on the above factors, the study area population has medium sensitivity to changes in severance and accessibility.



13.7.121 Some groups are more likely than others to experience adverse health effects due to factors such as their age, health conditions or deprivation. The vulnerable groups listed below have been identified as having above average representation within all or parts of the study area, or as being users of resources potentially affected by the scheme. Based on this, the sensitivity of the study area population with regard to its demographics and health status is assessed as medium to high.

- Older people (people over 65)
- Children at Kirkby Thore Pre-school and Primary School

### Appleby to Brough - Population

#### *Land-use and accessibility*

#### *Private property and housing*

13.7.122 This scheme is located in a semi-rural setting, providing access to local villages including Warcop in the south-west and Brough and Church Brough in the south-east. Given the semi-rural nature of the area residential receptors are clustered in the local villages.

13.7.123 The (2018)-based household projections from 2001 to 2043 for Eden District Council shows an increase in household units from 21,507 in 2001 to 26,551 in 2043. This represents a 26.1% increase, which would give a very high sensitivity for private property and housing.

13.7.124 Given the nature of the study area, the communities within it and the number of existing residential developments, it is considered that there is a sufficient housing supply within the study area and wider region. As such, on balance, a medium sensitivity to the private property and housing receptor group is deemed to be appropriate.

13.7.125 Figure 13.3: Local Plan and Development Land Allocations (Application Document 3.3) shows one housing allocation located within the study area of this scheme, which is Rowan House. This allocation is approximately 0.41ha in size and is located approximately 40m north west of the Order Limits, within Brough. It is also designated within the Eden Local Plan (2014 - 2032) Policy RUR1 - A Plan for the Key Hubs Policy, which aims to deliver housing within the key areas of the local authority of which Brough is one. The allocation is for 10 dwellings and is not located within the Order Limits. The allocation is of medium sensitivity due to its size.

13.7.126 A total of two residential properties are located within the Order Limits, see Table 13-23: Private properties and housing allocations at risk of demolition, land take or permanent acquisition due to the Appleby to Brough scheme. The total land take from Mains House equates to 1.4ha which is 76%. The total land take for Croft Cottage equates to less than 0.01ha which is 18%.

13.7.127 Figure 13.2: Residential and Private Assets, Community Facilities, Business and Tourism Receptors (Application Document 3.3) shows the location of the private property and housing receptors. For simplicity

only those which may be which may be significantly affected or are a key local receptor have been displayed.

Table 13-23: Private properties and housing allocations at risk of demolition, land take or permanent acquisition due to the Appleby to Brough scheme

Receptor	Location / Address	Demolition / percentage land take	Sensitivity
Mains House	Access road to West View	Approximately 76% land take	Medium
Croft Cottage	Access road to West View	Approximately 18% land take	Medium

### Community land and assets

13.7.128 Figure 13.2: Residential and Private Assets, Community Facilities, Business and Tourism Receptors (Application Document 3.3) shows the community land and assets located within the study area for the scheme. For simplicity only those which may be significantly affected or are a key local receptor have been displayed. The community land and asset receptors are summarised in Table 13-24: Community facilities located within the study area of the Appleby to Brough scheme.

Table 13-24: Community facilities located within the study area of the Appleby to Brough scheme

Receptor	Distance and direction from Order Limits	Main activity	Severance	Alternative facility location	Use/frequency	Used by minority or majority of the population within the study area	Sensitivity
Play Area, junction with the A66 on the B6259 to Hayber Hill	85m South	Recreation - Green space	No or limited severance or accessibility issues	Alternative facilities exist at a local level within adjacent communities	Weekly	Minority	High
Kingdom Hall of Jehovahs Witnesses	465m West	Place of Worship	Severance between community and asset but with existing accessibility provision	No known alternative facilities exist at a local level within adjacent communities	Weekly/Regular Services	Minority	Very High
Tennis court within the Warcop MoD site	45m South	Recreation - Green space	No or limited severance or accessibility issues	Alternative facilities exist at a local level within adjacent communities	Weekly	Minority	High
Village Hall	455m South	Public/Village Hall	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Weekly	Minority	High
Methodist Chapel, off Brookside, Warcop	270m South	Place of Worship	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Weekly/Regular Services	Minority	High
Ambulance Station	375m East	Emergency services		Limited alternative facilities exist at a local level within adjacent communities	Daily	Majority	Very High

Receptor	Distance and direction from Order Limits	Main activity	Severance	Alternative facility location	Use/frequency	Used by minority or majority of the population within the study area	Sensitivity
Brough Primary School	465m East	Education - ages 4 to 11 years	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Daily	Minority School capacity - 420 Number of pupils - 331	Very High
Tennis court near Pembroke Close	345m East	Recreation - Green space	No or limited severance or accessibility issues	Alternative facilities exist at a local level within adjacent communities	Weekly	Minority	High
Brough Reading Room, The Cornerstone Centre	450m East	Community Centre	No or limited severance or accessibility issues	No known alternative facilities exist at a local level within adjacent communities	Unknown but likely to be weekly	Minority	High
Tennis court near Brough Primary School	355m East	Recreation - Green space	No or limited severance or accessibility issues	Alternative facilities exist at a local level within adjacent communities	Weekly	Minority	High
Upper Eden Medical Practice	270m East	GP Surgery/Clinic	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Daily	Majority	Very High

Receptor	Distance and direction from Order Limits	Main activity	Severance	Alternative facility location	Use/frequency	Used by minority or majority of the population within the study area	Sensitivity
Brough Memorial Hall	415m East	Public/Village Hall	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Weekly	Minority	High
Brough Football Club	445m East	Recreation	No or limited severance or accessibility issues	No known alternative facilities exist at a local level within adjacent communities	Weekly	Minority	High
Brough Pre-School	455m East	Education - ages 2 to 5 years	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Daily (term time) Capacity - 18	Minority	Very High
Ambulance Station, Helbeck Road	375m East	Emergency services	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Daily	Majority	Very High
Playing Field Coltsford Common	300m East	Recreation - Green space	No or limited severance or accessibility issues	Alternative facilities exist at a local level within adjacent communities	Weekly	Minority	High
Play Area, Croft Close, Brough	235m East	Recreation - Green space	No or limited severance or accessibility issues	Alternative facilities exist at a local level within adjacent communities	Weekly	Minority	High
Warcop Cemetery	Adjacent to RLB	Cemetery	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Weekly	Minority	High

Receptor	Distance and direction from Order Limits	Main activity	Severance	Alternative facility location	Use/frequency	Used by minority or majority of the population within the study area	Sensitivity
Play Space, Warcop	90m South	Recreation - Green space	No or limited severance or accessibility issues	Alternative facilities exist at a local level within adjacent communities	Weekly	Minority	High
St Columba's Church	480m South	Place of Worship	Severance between community and asset but with existing accessibility provision	Limited alternative facilities exist at a local level within adjacent communities	Weekly/Regular Services	Minority	Very High
Appleby Golf Course	430m West	Recreation - Green space	Severance between community and asset but with existing accessibility provision	Limited alternative facilities exist at a local level within adjacent communities	Daily	Minority	Very High
MoD Playing Field & Helipad	Within the Order Limits	Recreation - Green space	No or limited severance or accessibility issues	No known alternative facilities exist at a local level within adjacent communities	Daily	Minority	Very High
Brough Allotment	90m East	Allotment or Community Growing Space	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Weekly	Minority	High
Ketland Common, Common Land	Within the Order Limits	Registered Common Land	Severance between community and asset but with existing accessibility provision	Limited alternative facilities exist at a local level within adjacent communities	Weekly	Majority	Very High

Receptor	Distance and direction from Order Limits	Main activity	Severance	Alternative facility location	Use/frequency	Used by minority or majority of the population within the study area	Sensitivity
Platts Green, Common Land	Adjacent to the South	Registered Common Land	Severance between community and asset but with existing accessibility provision	Limited alternative facilities exist at a local level within adjacent communities	Weekly	Majority	Very High
Sandfire Mire, Common Land	160m South	Registered Common Land	Severance between community and asset but with existing accessibility provision	Limited alternative facilities exist at a local level within adjacent communities	Weekly	Majority	Very High
Brough Hill Fair	Partially within the Order Limits	Traveller Horse Fair	Severance between community and asset but with existing accessibility provision	No known alternative facilities exist at a local level within adjacent communities	Annual	Minority	High
North Pennine's AONB	Partially within the Order Limits	National Park and tourism	No or limited severance or accessibility issues	No known alternative facilities exist at a local level within adjacent communities	Daily	Minority	Very High

### *Common Land and open access land*

- 13.7.129 There are three areas of Common Land and open access land identified within the study area of the scheme:
- Ketland Common - the Common Land is approximately 47.5ha in size with approximately 1.12ha (approximately 2.4% of the total land) located within the Order Limits
  - Sandford Mire - the Common Land is approximately 13ha in size and is not located within the Order Limits
  - Platts Green - the Common Land is approximately 0.7ha in size and is not located within the Order Limits

### *Development land and businesses*

- 13.7.130 Figure 13.3: Local Plan and Development Land Allocations (Application Document 3.3) shows the employment allocated land within the study area.
- 13.7.131 Figure 13.2: Residential and Private Assets, Community Facilities, Business and Tourism Receptors (Application Document 3.3) shows the location of business receptors. For simplicity only those which may be subject to likely significant effects or are a key local receptor have been displayed.
- 13.7.132 Businesses within the study area have been summarised in Table 13-25: Existing businesses located within the study area of the Appleby to Brough scheme. Employment allocated land within the study area has been summarised in Table 13-26: Development land located within the study area of the Appleby to Brough scheme.
- 13.7.133 This includes business and commercial premises, and tourism related businesses, such as holiday lets. Consideration of effects on agricultural land holdings and businesses is presented separately in the following sections of the baseline.
- 13.7.134 Data has been presented where possible from publicly available sources or stakeholder engagement, to help inform the sensitivity values.

Table 13-25: Existing businesses located within the study area of the Appleby to Brough scheme

Receptor	Main activity	Distance and direction from Order Limits	Size of employment site	Sensitivity
Wybergh Cottage	Holiday let	170m south	Existing employment sites covering less than 1ha.	Medium
Old Forge	Holiday let	70m south	Existing employment sites covering less than 1ha.	Medium
Studio Cottage	Holiday let	360m south	Existing employment sites covering less than 1ha.	Medium



Receptor	Main activity	Distance and direction from Order Limits	Size of employment site	Sensitivity
Warcop Village Stores	Retail services	400m south	Existing employment sites covering less than 1ha.	Medium
Cafe Sixty Six	Restaurant / café	Within the Order Limits	Existing employment sites covering less than 1ha.	Medium
The Old Sawmill	Holiday let	230m south	Existing employment sites covering less than 1ha.	Medium
Swindale Cottage	Holiday let	200m south	Existing employment sites covering less than 1ha.	Medium
Row End Farm	Holiday let / campsite	150m south	Existing employment sites covering less than 1ha.	Medium
Brookside	Holiday let	180m south	Existing employment sites covering less than 1ha.	Medium
Barn End Caravan Park	Holiday let / campsite	Within the Order Limits	Existing employment sites covering less than 1ha.	Medium
Miller & Co	Workshop	100m south	Existing employment sites covering less than 1ha.	Medium
Cedar Barn	Holiday let	Immediately adjacent to the south	Existing employment sites covering less than 1ha.	Medium
The Fox Studio	Office / work studio	90m south	Existing employment sites covering less than 1ha.	Medium
Eden Farm Supplies	Warehouse / store	450m east	Existing employment sites covering less than 1ha.	Medium
Clifford House	Holiday let	460m east	Existing employment sites covering less than 1ha.	Medium
Oil Solutions	Wholesaler	450m east	Existing employment sites covering less than 1ha.	Medium
Old Oddfellows Hall	Holiday let	450m east	Existing employment sites covering less than 1ha.	Medium

Receptor	Main activity	Distance and direction from Order Limits	Size of employment site	Sensitivity
Frank Allison Ltd	Workshop	350m east	Existing employment sites covering less than 1ha.	Medium
Ale House	Holiday let	350m east	Existing employment sites covering less than 1ha.	Medium
Spencer Cottage	Workshop	440m east	Existing employment sites covering less than 1ha.	Medium
Thompson Garage	Automotive repairs	180m east	Existing employment sites covering less than 1ha.	Medium
Wright Bros	Workshop	160m east	Existing employment sites covering less than 1ha.	Medium
A J Designs	Workshop	480m east	Existing employment sites covering less than 1ha.	Medium
Brough Chip Shop Ltd	Restaurant / café	430m east	Existing employment sites covering less than 1ha.	Medium
Roe Bank	Holiday let	450m east	Existing employment sites covering less than 1ha.	Medium
Peco Services Ltd	Electrical manufacturer	430m east	Existing employment sites covering less than 1ha.	Medium
Joe Rothery Haulage Ltd	Logistics and haulage	200m east	Existing employment sites covering less than 1ha.	Medium
Blue Heron Lodge	Holiday let	490m east	Existing employment sites covering less than 1ha.	Medium
The Book House	Shop	160m east	Existing employment sites covering less than 1ha.	Medium
Golden Fleece Inn	Public House	480m east	Existing employment sites covering less than 1ha.	Medium
Jane Chantler Jeweller	Shop	480m east	Existing employment sites covering less than 1ha.	Medium

Receptor	Main activity	Distance and direction from Order Limits	Size of employment site	Sensitivity
One Stop Convenience Store	Shop	480m east	Existing employment sites covering less than 1ha.	Medium
Eden Valley Sporting Supplies	Shop / warehouse	160m east	Existing employment sites covering less than 1ha.	Medium
Bell & Prime Scaffolding Ltd	Builders Yard	180m east	Existing employment sites covering less than 1ha.	Medium
Allisons Cafe	Café	430m east	Existing employment sites covering less than 1ha.	Medium
M H B Motorcycles	Motor sales and servicing garage	190m east	Existing employment sites covering less than 1ha.	Medium
The Cottage	Holiday let	400m east	Existing employment sites covering less than 1ha.	Medium
Castle Garage	Automotive repairs	460m east	Existing employment sites covering less than 1ha.	Medium
Bloom	Shop	430m east	Existing employment sites covering less than 1ha.	Medium
Davidson Bros	Workshop	400m east	Existing employment sites covering less than 1ha.	Medium
Pendragon Bodyworks	Automotive repairs	400m east	Existing employment sites covering less than 1ha.	Medium
Haybergill Centre	Holiday let	290m east	Existing employment sites covering less than 1ha.	Medium
Helbeck Quarry	Mineral / ore quarrying	1.4km east	Existing employment site covering more than 5ha.	Very High
Elm Cottage	Holiday let	60m south	Existing employment sites covering less than 1ha.	Medium
Apple Tree Barn	Bed and Breakfast / Holiday let	Immediately adjacent to the south	Existing employment sites covering less than 1ha.	Medium

Receptor	Main activity	Distance and direction from Order Limits	Size of employment site	Sensitivity
Flitholme Cottages	Holiday let	160m south	Existing employment sites covering less than 1ha.	Medium

Table 13-26: Development land located within the study area of the Appleby to Brough scheme

Receptor	Main activity	Distance and direction from Order Limits	Size of employment site	Sensitivity
Trading Estate and Grand Prix Club	Two employment development sites by B6276. Grand Prix Coach Depot one side road, small industrial estate opposite.	30m east of the Order Limits	Approximately 2.1ha	High

### Agricultural land holdings

13.7.135 Land identified as being agricultural in use and within the Order Limits is shown on Figure 13.5 Agricultural land holdings (Application Document 3.3) and are listed below in Table 13-27: Agricultural land holdings within the Order Limits of the Appleby to Brough scheme.

Table 13-27: Agricultural land holdings within the Order Limits of the Appleby to Brough scheme

Name of farm or landowner surname	Total holding size	Area within the DCO boundary	% of the holding affected	Current use	Additional observations	Sensitivity
West View	433ha	26.66ha	6.16%	Grassland	Intensive dairy farm with land to the north and south of the A66	Very high
High Green Farm	554ha	8.70ha	1.57%	Grassland	Intensive dairy farm with land to the north and south of the A66	Very high
Coupland Beck Farm	195ha	4.11ha	2.11%	Arable, Grassland and Free Range Poultry	Poultry building with required grazing area around it	Very high
Wheatsheaf Farm	34ha	8.40ha	24.70%	Grassland		High
Wilson	128ha	3.14	2.45%	Arable & Grassland	Dairy farm growing forage next to A66.	High
Low Bank End	220ha	29.45	13.38%	Arable & Grassland	Mixed farm with internal livestock movements	Very high
Roseleigh	76ha	4.21	5.54%	Grassland		High

### Walkers, cyclists and horse riders (WCH)

- 13.7.136 The following section of the baseline conditions describes the key PRowS or routes with a designated legal status which intersect the Order Limits (see Table 13-28: Existing PRowS located within the Order Limits of the Appleby to Brough scheme). All PRowS within the study area are displayed on Figure 13.4 Walkers, Cyclists and Horse rider provisions (Application Document 3.3), however for simplicity of reporting only those with the that could be significantly impacted (i.e. are located within the Order Limits) are described below.
- 13.7.137 PRow mapping data has been provided by Cumbria County Council. The dataset reflects the Definitive Maps, which are a legal record of the public's rights of way in one of four categories (footpath, bridleway, restricted byway or byway open to all traffic).
- 13.7.138 Routes have been identified through the use of local authority records as well as through workshops and consultation events that highlighted additional routes used, and by local residents and user groups.
- 13.7.139 Where a sensitivity of medium has been assigned to a PRow the rationale described in Section 13.5 Assumptions and limitation applies.

Table 13-28: Existing PRowS located within the Order Limits of the Appleby to Brough scheme

PRow	Location	Commentary	Sensitivity
FP372014	Located to the west of Warcop and south of the A66.	Long local footpath routing south from the A66 to Shoregill where there are multiple residential properties. The footpath also provides access to Warcop Church of England Primary School. The footpath could be used to access the primary school from the residential area near Shoregill. The footpath is intersected by the scheme alignment and provides links to key community receptors.	High
FP309004	Located to the south of Main Street to the west of Brough Town Centre	A short PRow connecting from the north of the A66 to BW309003 under the A66 via an underpass. As the footpath connects to a wider PRow network it is likely to be used recreationally. The footpath is intersected by the scheme alignment.	Medium
FP372021	Located to the south of the A66 and routes around the west of Warcop	Footpath routing south from the A66 to Warcop. The footpath connects to a wider PRow network to the north of the A66 and it is likely to be used recreationally. The footpath is intersected by the scheme alignment.	Medium
FP372013	South of the A66 connecting to the north-east of Sanford.	A local footpath providing a connection southward from the A66 to Sanford. The route is likely to be used recreationally. The route is intersected by the scheme alignment.	Medium

PRoW	Location	Commentary	Sensitivity
FP372020	Located to the south of the A66 and the northeast of Warcop, specifically to the east of Warcop Railway Station.	A short footpath routing from the A66 towards the Eden Valley Railway, it is likely to be used recreationally. The footpath is located entirely within the Order Limits but is not intersected by the scheme alignment and alternatives could be taken.	Low
FP372022	Located to the south of the A66 and northeast of Sandford town centre.	A short local footpath providing a connection south from the A66 to the B6259. Most likely to be used for recreation. The footpath is intersected by the scheme alignment.	Medium
FP372027	Located to the south of Coupland Beck and routes east-west to the north of the A66.	A relatively long local footpath running east to west from the A66 south of Coupland Beck to the A66 (north of the B6259). The route is likely to be used for recreation purposes. The footpath is intersected by the scheme alignment.	Medium
FP372028	Footpath routes north from the A66 to the east of Coupland Beck	Local footpath routing north from the A66 to Lycum Beck. The footpath connects to a wider network of PRoWs so it is likely that this route will be used recreationally. The footpath is intersected by the scheme alignment.	Medium
FP372031	Footpath routes north of the A66 to the north of Warcop.	A long footpath routing north from the A66 along Hayber Lane connecting to BW350021 on Musgrave Lane. The route connects to a wider network of PRoWs to the north of the A66 and so will likely be used recreationally. The footpath falls within the Order Limits but is not intersected by the scheme alignment.	Medium
FP309033	Located to the south of the A66 to the west of Brough	Short local footpath routing east to west over a small distance to the south of the A66 connecting from FP 309004 to FP 309003. The footpath is intersected by the scheme alignment.	Medium
FP329001	Located to the west of Brough and north of the A66	Local footpath routing north from the A66 to Helbeck Road. The route provides some connection to residential properties, but it is likely that the route would largely be used recreationally. The footpath is intersected by the scheme alignment.	Medium

PRoW	Location	Commentary	Sensitivity
BW372024	Located to the south of the A66 and north of the River Eden routing south of Coupland Beck.	Bridleway routing from the A66 south and westwards to FP 372025. The route connects to a wider network of PRoWs so will largely be used recreationally. The bridleway is intersected by the scheme alignment.	Medium
BW309003	Located south of the A66 to the west of Brough.	Local footpath routing from Musgrave Lane and the Eden Rivers and Brough Castle regional cycle route to the A66. As the route is connected to a wider network it is likely to be used for recreational purposes. The bridleway is intersected by the scheme alignment.	Medium
BW39032	Located south of the A66 to the west of Brough.	A short local bridleway from A66 to Musgrave Lane. The route provides a connection to a wider PRoW network and is likely to be used for recreation. The bridleway is intersected by the scheme alignment.	Medium
BW372010	Located to the south of the A66 to the east of Warcop	A short local bridleway providing connection from connection from Castlehill Road to the east and connects to FP372019, which routes to Warcop. The route provides a connection to a wider PRoW network.	Medium
BW309031	Is located to the north of the A66 to the west of Brough	A short local bridleway which connects from the A66 to FP 309004 The route provides a connection to a wider PRoW Network.	Medium

## Appleby to Brough - Human health

### Determinants of health

- 13.7.140 This scheme runs through sparsely populated agricultural land with scattered houses and farmsteads. The village of Sandford lies approximately 800m south of the A66. The village of Warcop lies approximately 300m to the south-east. Warcop Training Camp lies to the north of the village, around 100m from the Order Limits. The village of Brough is adjacent to a dualled section of the A66 and approximately 400m from the proposed dualling and embankment.
- 13.7.141 PRoW within the study area for the Appleby to Brough scheme are described in the Population baseline above. Recreational routes and routes linking local communities with local services and facilities are relevant for the health assessment.
- 13.7.142 Bus routes intersecting the scheme include the 563 from Warcop to Penrith, 571 and S4 from Brough to Kirkby Stephen and S6 from Kirkby Stephen to Brough, Warcop and Penrith.

- 13.7.143 There are no AQMA within the Appleby to Brough study area. Defra background pollutant concentrations and local authority air quality monitoring data has identified that NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations are well within the relevant air quality objectives, meaning that the ambient air quality in the study area is good. Detailed air quality baseline information is presented in Chapter 5: Air quality.
- 13.7.144 NIA are designated by Defra in hotspot locations identified as having high levels of background noise and requiring Noise Action Plans. There is one NIA within the study area. Detailed noise baseline information is presented in Chapter 12: Noise and Vibration.
- 13.7.145 Visual receptors within the study area that are relevant for the health assessment include recreational users of the local PRoW network. The Pennine Journey Long Distance Path and Pennine Way National Trail are also considered relevant to this scheme. Detailed landscape baseline information is presented in Chapter 10: Landscape and Visual Effects.
- 13.7.146 There were a total of 45 traffic collisions at this location between 2012 and 2019, 31 of which were slight, 11 were serious and three were fatal.

**Health profile**

- 13.7.147 This scheme passes through LSOA Eden 007E and Eden 007A. Table 13-29: Appleby to Brough - Location of LSOAs by Parish and Ward below shows the location of the LSOAs within Wards and Parishes.

Table 13-29: Appleby to Brough - Location of LSOAs by Parish and Ward

LSOA	Corresponding Parishes	Corresponding Wards
Eden 007E	Murton Civil Parish Warcop Civil Parish Ormside Civil Parish Hoff Civil Parish Colby Civil Parish	Warcop Ward
Eden 007A	Ravenstondale Civil Parish Crosby Garrett Civil Parish Waitby Civil Parish Soulby Civil Parish Musgrave Civil Parish Brough Civil Parish Helbeck Civil Parish Brough Sowerby Civil Parish Stainmore Civil Parish	Ravenstondale Ward Brough Ward

- 13.7.148 Both LSOAs have below average proportion of under 16s and above average proportion of over 65s compared to the national average.
- 13.7.149 Both LSOAs have a below average percentage of people living with disabilities or long-term health problems that limit day to day activities.
- 13.7.150 The area of Eden 007A is ranked within the 40% most deprived areas in England when measured as an average across all indices of the IMD. It



is in the 20% least deprived areas for employment and the 10% least deprived for health and disability.

- 13.7.151 The area of Eden 007E is ranked within the 40% most deprived areas in England when measured as an average across all indices of the IMD. It is in the 50% least deprived areas for employment and the 30% least deprived for health and disability.
- 13.7.152 Eden 007E and 007A rank within the 30% least deprived areas in England, in terms of SAMHI. This is based on data from multiple indicators including mental health related hospital attendances, antidepressant prescriptions, depression prevalence, incapacity benefits and employment support allowance for mental health.
- 13.7.153 The under 75s mortality rate from cardiovascular disease in Eden District (61.5 per 100,000) is below the national average (70.4 per 100,000).
- 13.7.154 The under 75s mortality rate from respiratory disease in Eden District (17 per 100,000) is below the national average (34.2 per 100,000).
- 13.7.155 The average life expectancy in Eden District is 82.0 years for males (above the national average of 79.4) and 85.9 years for females (above the national average of 83.1).

#### Sensitivity

- 13.7.156 The sensitivity of the population as determined by the physical characteristics of the Appleby to Brough study area is assessed as follows:
- Environmental conditions: mainly agricultural land with some residential properties and public open spaces on the edges of Warcop and Brough in proximity to the scheme; good air quality; some amenity impacts from existing road noise. Based on the above factors, the study area population has medium sensitivity to changes in environmental conditions.
  - Severance/accessibility: limited community facilities and services within the study area; population is dependent of the A66 and rural road network to access services in Brough and elsewhere. Based on the above factors, the study area population has high sensitivity to changes in severance and accessibility.
- 13.7.157 Some groups are more likely than others to experience adverse health effects due to factors such as their age, health conditions or deprivation. The vulnerable groups listed below have been identified as having above average representation within all or parts of the study area. Based on this, the sensitivity of the study area population with regard to its demographic and health status is assessed as medium.
- Older people (people over 65)

## Bowes Bypass - Population

### *Land-use and accessibility*

#### Private property and housing

- 13.7.158 This scheme is located in a rural setting to the north of Bowes, along the alignment of the existing A66. Given the rural nature of the area residential receptors are clustered in Bowes Village.
- 13.7.159 The (2018)-based household projections from 2001 to 2043 for Durham County Council shows an increase in household units from 206,133 in 2001 to 258,374 in 2043. This represents a 25.3% increase, which would give a very high sensitivity for private property and housing.
- 13.7.160 Given the nature of the study area, the communities within it and the number of existing residential developments, it is considered that there is a sufficient housing supply within the study area and wider region. As such, on balance, a medium sensitivity to the private property and housing receptor group is deemed to be appropriate.
- 13.7.161 One residential property is located within the Order Limits. Low Broats located on The Street will be demolished in order to accommodate the scheme. The property is of medium sensitivity as outlined above.
- 13.7.162 Figure 13.2: Residential and Private Assets, Community Facilities, Business and Tourism Receptors (Application Document 3.3) shows the location of the private property and housing receptor. For simplicity only those which may be which may be significantly affected or are a key local receptor have been displayed.
- 13.7.163 There are no housing allocations located within the study area of this scheme.

#### Community land and assets

- 13.7.164 Figure 13.2: Residential and Private Assets, Community Facilities, Business and Tourism Receptors (Application Document 3.3) shows the community land and assets located within the study area for the scheme. For simplicity only those which may be which may be significantly affected or are a key local receptor have been displayed. The community land and asset receptors are summarised in Table 13-30: Community facilities located within the study area of the Bowes Bypass scheme.

Table 13-30: Community facilities located within the study area of the Bowes Bypass scheme

Receptor	Distance and direction from Order Limit	Main activity	Severance	Alternative facility location	Use/frequency	Used by minority or majority of the population within the study area	Sensitivity
Bowes Hutchinson Church of England - Nursery	55m South	Education - ages from 15 months	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Daily (term-time) School capacity - 20	Minority	Very High
Bowes Hutchinson Church of England - Primary School	80m South	Education - ages 4 to 11 years	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Daily (term-time) School capacity - 70 Number of pupils - 60	Minority	Very High
Bowes and Gilmonby Village Hall	155m South	Public/Village Hall	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Weekly	Minority	High
The Annums Playground	170m South	Recreation - Green space	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Weekly	Minority	High

Receptor	Distance and direction from Order Limit	Main activity	Severance	Alternative facility location	Use/frequency	Used by minority or majority of the population within the study area	Sensitivity
St Giles Church	35m South	Place of Worship	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Weekly/Regular Services	Minority - estimated visits 915 (per year)	High
Bowes and Gilmonby Cemetery	110m South	Cemetery	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Weekly	Minority - estimated visits 1,216 (per year)	High
Play Space	160m South	Recreation - Green Space	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Weekly	Minority	High
Allotments or community growing spaces	Within the Order Limits	Allotments or community growing spaces	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Weekly	Minority	High
One parcel of land pertaining to	Within the Order Limits	Registered Common Land	No or limited severance or	Limited alternative	Weekly	Majority	Very High

Receptor	Distance and direction from Order Limit	Main activity	Severance	Alternative facility location	Use/frequency	Used by minority or majority of the population within the study area	Sensitivity
One parcel of land pertaining to Bowes Moor Common Land			accessibility issues	facilities exist at a local level within adjacent communities			
Open Country - 31495	Immediately adjacent to the north	Open access	No or limited severance or accessibility issues	Limited alternative facilities exist at a local level within adjacent communities	Weekly	Majority	Very High

*Common Land and open access land*

13.7.165 There is one area of Common Land and open access land identified within the study area of the scheme:

- Bowes Moor – one parcel of the wider Common Land allocation, which is approximately 0.3ha in size and is located fully within the Order Limits.

*Development land and businesses*

13.7.166 Figure 13.2: Residential and Private Assets, Community Facilities, Business and Tourism Receptors (Application Document 3.3) shows the location of business receptors. For simplicity only those which may be which may be significantly affected or are a key local receptor have been displayed.

13.7.167 Businesses within the study area are summarised in Table 13-31: Existing businesses located within the study area of the Bowes Bypass scheme.

13.7.168 This includes business and commercial premises, and tourism related businesses, such as holiday lets. Consideration of effects on agricultural land holdings and businesses is presented separately in the following sections of the baseline.

13.7.169 It should be noted that no employment land allocations were identified within 500m of the Order Limits.

13.7.170 Data has been presented where possible from publicly available sources or stakeholder engagement, to help inform the sensitivity values.

13.7.171 It should be noted that Hulands Quarry is a large operation with the total landownership exceeding 25ha and is located to the north of the existing A66.

Table 13-31: Existing businesses located within the study area of the Bowes Bypass scheme

Receptor	Main activity	Distance and direction from Order Limits	Size of employment site	Sensitivity
Bowes and District Working Mens Club	Public House	140m south	Existing employment sites covering less than 1ha.	Medium
Custom Paint	Workshop	Immediately adjacent to the south	Existing employment sites covering less than 1ha.	Medium
Architect's Studio on the road adjacent to West End Garage	Office	Immediately adjacent to the south	Existing employment sites covering less than 1ha.	Medium
The Ancient Unicorn Pub and Cottage	Public house and accommodation	100m south	Existing employment sites	Medium

Receptor	Main activity	Distance and direction from Order Limits	Size of employment site	Sensitivity
			covering less than 1ha.	
JS Foster Warehouse	Warehouse and storage	70m south	Existing employment sites covering less than 1ha.	Medium
Old West Garage	Automotive repairs	70m south	Existing employment sites covering less than 1ha.	Medium
Town End Garage	Automotive repairs	130m south	Existing employment sites covering less than 1ha.	Medium
Central Garage	Automotive repairs	30m south	Existing employment sites covering less than 1ha.	Medium
Hylton House	Holiday let	80m south	Existing employment sites covering less than 1ha.	Medium
Workshop near Woodbine House	Workshop	70m south	Existing employment sites covering less than 1ha.	Medium
Post Office	Retail services	50m south	Existing employment sites covering less than 1ha.	Medium
Hill Top Cottage	Holiday let	50m south	Existing employment sites covering less than 1ha.	Medium
J W Harkers	Workshop	65m south	Existing employment sites covering less than 1ha.	Medium
Store at the Annams	Warehouse and storage	230m south	Existing employment sites covering less than 1ha.	Medium
The Laurels	Holiday let	Immediately adjacent to the south	Existing employment sites	Medium

Receptor	Main activity	Distance and direction from Order Limits	Size of employment site	Sensitivity
			covering less than 1ha.	
Ivy Hall Farm and campsite	Holiday let / campsite	Immediately adjacent to the south	Existing employment sites covering between 1ha and 5ha.	High
The Old Armoury Campsite	Holiday let / campsite	100m north	Existing employment sites covering less than 1ha.	Medium
Swinholme Cottage	Holiday let	270m south	Existing employment sites covering less than 1ha.	Medium
Hylton Barn	Holiday let	100m south	Existing employment sites covering less than 1ha.	Medium
Ellipse Fabrications	Workshop	400m east	Existing employment sites covering less than 1ha.	Medium
Hulands Quarry	Mineral / ore quarrying	30m north	Existing employment site covering more than 5ha.	Very High

### Agricultural land holdings

- 13.7.172 Land identified as being agricultural in use and within the Order Limits is shown on Figure 13.5 Agricultural land holdings (Application Document 3.3) and are listed below in Table 13-32: Agricultural land holdings within the Order Limits of the Bowes Bypass scheme.
- 13.7.173 Land take, from agricultural land holdings, within the Order Limits for the scheme equates to a cumulative total of approximately 44.46ha. The proportion of the holding which will be required as part of the scheme varies between 1.49% and 29.75%.
- 13.7.174 There are no known existing accessibility issues between these holdings and existing key agricultural infrastructure. It should be noted that Ivy Hall Farm has been assessed within the development land and business assessment due to use as a campsite.



Table 13-32: Agricultural land holdings within the Order Limits of the Bowes Bypass scheme

Name of farm or landowner surname	Total holding size	Area within the DCO boundary	% of the holding affected	Current use	Additional observations	Sensitivity
Middle Lowfield	60ha	7.67ha	12.78%	Grassland		High
High Broats	70ha	1.04ha	1.49%	Grassland		High
Bowes Cross Farm	84ha	3.48ha	4.14%	Grassland	Access between farm holdings is key to ongoing operations	High
The Old Armoury	10ha	1.29ha	12.90%	Grassland & Campsite	Campsite & sheep flock	High
Stone Bridge Farm	4ha	0.49ha	12.25%	Grassland	Holiday Cottages & Grazing	Medium
2 Low Row	8ha	2.38ha	29.75%	Grassland		High
Old Police House	12ha	0.69ha	5.75%	Grassland		High
Myre Keld Farm	30ha	2.08ha	6.93%	Grassland		High
West End Farm	220ha	13.63ha	6.20%	Grassland	Livestock farm with land to north and south of A66	Very High
East Barn	1ha	0.03ha	3.00%	Grassland		Medium
Black Lodge Farm	38ha	2.25ha	5.92%	Grassland		High
Streatlam Grove Farm	100ha	7.08ha	7.08%	Grassland		High
Lyndale House	70ha	2.35ha	3.35%	Grassland		High

### Walkers, cyclists and horse riders (WCH)

13.7.175 The following section of the baseline conditions describes the key PRoWs or routes with a designated legal status which intersect the Order Limits (see Table 13-33 Existing PRoWs located within the Order Limits of the Bowes Bypass scheme). All PRoWs within the study area are displayed on Figure 13.4 Walkers, Cyclists and Horse rider provisions (Application Document 3.3), however for simplicity of reporting only those with the that could be significantly impacted (i.e. are located within the Order Limits) are described below.

13.7.176 PRoW mapping data has been provided by Cumbria County Council. The dataset reflects the Definitive Maps, which are a legal record of the

public's rights of way in one of four categories (footpath, bridleway, restricted byway or byway open to all traffic).

13.7.177 Routes have been identified through the use of local authority records as well as through workshops and consultation events that highlighted additional routes used, and by local residents and user groups.

13.7.178 Where a sensitivity of medium has been assigned to a PRow the rationale described in Section 13.5 Assumptions and limitation applies.

Table 13-33 Existing PRowS located within the Order Limits of the Bowes Bypass scheme

PRoW	Location	Commentary	Sensitivity
FP6	Located to the north of the A6 and south of the A67, routing from Bowes in the west to Boldron in the east.	A long local footpath that routes from The Street westwards towards the A67 and Boldron. FP6 provides a connection to a wider network of PRowS in the area. It also provides a connection between Bowes and Boldron but due to its presence within a wider PRowS network, the route is likely to be used for recreational purposes and be readily replaced as a preferred route. The footpath is intersected by the scheme alignment.	Medium
FP16	Located to the south of the A66 and south of Bowes Town Centre.	Provides connection from the Pennine Way (Bowes Loop) along the River Greta to a wider network of PRowS. Due to its connection with a wider network, the route is likely to be used recreationally. The footpath is intersected by the scheme alignment.	Medium
FP18	Located to the south of the A66 and south of Bowes Town Centre.	Provides connection from the Pennine Way (Bowes Loop) to Back Lane. Due to its connection with a wider network, the route is likely to be used recreationally. The footpath is intersected by the scheme alignment.	Medium
FP12	The route is located to the south of the A66 to the east of Bowes and links up to other PRowS to the south of Boldron.	A long local footpath which routes from the A66 providing connection westwards to a wider network of PRowS. The connection to the wider network indicates that the route is used for recreational purposes. The footpath is intersected by the scheme alignment.	Medium
Pennine Way/NCN 70	Routes from the south of Bowes to the west of the town centre across the A66 and continues northwards.	Routes through Bowes from Barnard Castle and routes south to the Yorkshire Dales National Park. This is a nationally significant route and is largely used for recreational purposes. The route is intersected by the scheme alignment.	Very High

## Bowes Bypass - Human health

### Determinants of health

13.7.179 The Bowes Bypass scheme runs immediately north of the village of Bowes, with houses and a primary school adjacent to the Order Limits.

The church and village hall lie approximately 50m and 200m from the Order Limits.

- 13.7.180 PRoW within the study area for the Bowes Bypass scheme are described in the Population baseline above. Recreational routes and routes linking local communities with local services and facilities are relevant for the health assessment.
- 13.7.181 The B66 bus service from Newcastle to Blackpool, which intersects the scheme, provides a local service from Bowes to Barnard Castle and Kirkby Stephen.
- 13.7.182 There are no AQMA within the Bowes Bypass study area. Defra background pollutant concentrations and local authority air quality monitoring data has identified that NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations are well within the relevant air quality objectives, meaning that the ambient air quality in the study area is good. Detailed air quality baseline information is presented in Chapter 5: Air Quality.
- 13.7.183 NIA are designated by Defra in hotspot locations identified as having high levels of background noise and requiring Noise Action Plans. There are no NIA within the study area. Detailed noise baseline information is presented in Chapter 12: Noise and Vibration.
- 13.7.184 Visual receptors within the study area that are relevant for the health assessment include recreational users of the local PRoW network, the Pennine Journey Long Distance Path and National Cycle Network (NCN) Route 70. Detailed landscape baseline information is presented in Chapter 10: Landscape and Visual.
- 13.7.185 Eight traffic accidents occurred at this location between 2012 and 2018, of which seven were slight and one was serious.

**Health profile**

- 13.7.186 This scheme passes through LSOA of County Durham 065B. Table 13-34: Bowes Bypass - Location of LSOAs by Parish and Ward below shows the location of the LSOA within Wards and Parishes.

Table 13-34: Bowes Bypass - Location of LSOAs by Parish and Ward

LSOA	Corresponding Parishes	Corresponding Wards
County Durham 065B	Bowes Civil Parish Gilmonby Civil Parish Scargill Civil Parish Hope Civil Parish Baringham Civil Parish Brignall Civil Parish Boldron Civil Parish Eggleston Abbey Civil Parish Rokeby Civil Parish Wycliffe with Thorpe Civil Parish Hutton Magna Civil Parish	Barnard Castle West Electoral Division

LSOA	Corresponding Parishes	Corresponding Wards
	Ovington Civil Parish Barforth Civil Parish	

- 13.7.187 County Durham 065B has a below national average proportion of under 16s and an above national average proportion of over 65s.
- 13.7.188 County Durham 065B has a below average percentage of people living with disabilities or long-term health problems that limit day to day activities.
- 13.7.189 The LSOA is ranked within the 50% most deprived areas in England when measured as an average across all indices of the IMD. It is in the 10% least deprived areas for employment and the 20% least deprived areas for health and disability.
- 13.7.190 County Durham 065B ranks within the 30% most deprived areas in England, in terms of SAMHI. This is based on data from multiple indicators including mental health related hospital attendances, antidepressant prescriptions, depression prevalence, incapacity benefits and employment support allowance for mental health.
- 13.7.191 The under 75s mortality rate from cardiovascular disease in County Durham (78.9 per 100,000) is above the national average (70.4 per 100,000).
- 13.7.192 The under 75s mortality rate from respiratory disease in County Durham (42.4 per 100,000) compares poorly against the national average (33.6 per 100,000).
- 13.7.193 The average life expectancy in County Durham is 77.7 years for males (below the national average of 79.4) and 81.2 years for females (below the national average of 83.1).

### Sensitivity

- 13.7.194 The sensitivity of the population as determined by the physical characteristics of the Bowes Bypass study area is as follows:
- Environmental conditions: residential areas, community facilities and public open space close to the scheme; good air quality; some amenity impacts from existing road noise. Based on the above factors, the study area population has medium to high sensitivity to changes in environmental conditions.
  - Severance/accessibility: limited community facilities and services within Bowes; population is dependent of the A66, A67 and rural road network to access services in Barnard Castle and elsewhere. Based on the above factors, the study area population has medium to high sensitivity to changes in severance and accessibility.
- 13.7.195 Some groups are more likely than others to experience adverse health effects due to factors such as their age, health conditions or deprivation. The vulnerable groups listed below have been identified as having above average representation within all or parts of the study area, or as being users of resources potentially affected by the scheme.

Based on this, the sensitivity of the study area population with regard to its demographic and health status is assessed as medium to high.

- Older people (people over 65)
- Children at Bowes Hutchinson Church of England Nursery and Primary School

## Cross Lanes to Rokeby - Population

### *Land-use and accessibility*

### *Private property and housing*

- 13.7.196 This scheme is located in a rural setting to the south of Barnard Castle and north-west of Greta Bridge. Given the rural nature of the area residential receptors are clustered in local villages.
- 13.7.197 The (2018)-based household projections from 2001 to 2043 for Durham County Council shows an increase in household units from 206,133 in 2001 to 258,374 in 2043. This represents a 25.3% increase, which would give a very high sensitivity for private property and housing.
- 13.7.198 Given the nature of the study area, the communities within it and the number of existing residential developments, it is considered that there is a sufficient housing supply within the study area and wider region. As such, on balance, a medium sensitivity to the private property and housing receptor group is deemed to be appropriate.
- 13.7.199 There are no private properties within the Order Limits of this scheme.
- 13.7.200 There are no housing allocations located within the study area of this scheme.

### *Community land and assets*

- 13.7.201 Figure 13.2: Residential and Private Assets, Community Facilities, Business and Tourism Receptors (Application Document 3.3) shows the community land and assets located within the study area for the scheme. For simplicity only those which may be which may be significantly affected or are a key local receptor have been displayed. The community land and asset receptors are summarised in Table 13-35: Community facilities located within the study area of the Cross Lanes to Rokeby scheme.

Table 13-35: Community facilities located within the study area of the Cross Lanes to Rokeby scheme

Receptor	Distance and direction from Order Limit	Main activity	Severance	Alternative facility location	Use/frequency	Used by minority or majority of the population within the study area	Sensitivity
The Old School	Adjacent to the north	Public/Village Hall	Severance between community and asset but with existing accessibility provision	No known alternative facilities exist at a local level within adjacent communities	Unknown	Minority	High
St Mary's Church	Adjacent to the north	Place of Worship	Severance between community and asset but with existing accessibility provision	Limited alternative facilities exist at a local level within adjacent communities	Weekly/Regular Services	Minority	High

*Common Land and open access land*

13.7.202 There are no areas of Common Land and open access land affected by this scheme.

*Development land and businesses*

13.7.203 Figure 13.2: Residential and Private Assets, Community Facilities, Business and Tourism Receptors (Application Document 3.3) shows the location of business receptors. For simplicity only those which may be significantly affected or are a key local receptor have been displayed.

13.7.204 Businesses within the study area are summarised in Table 13-36: Existing businesses located within the study area of the Cross Lanes to Rokeby scheme.

13.7.205 This includes business and commercial premises, and tourism related businesses, such as holiday lets. Consideration of effects on agricultural land holdings and businesses is presented separately in the following sections of the baseline.

13.7.206 No employment land allocations were identified within 500m of the Order Limits.

13.7.207 Data has been presented where possible from publicly available sources or stakeholder engagement, to help inform the sensitivity values.

Table 13-36: Existing businesses located within the study area of the Cross Lanes to Rokeby scheme

Receptor	Main activity	Distance and direction from Order Limits	Size of employment site	Sensitivity
Cross Lane Organic Farm Shop	Shop and restaurant / cafe	Located within the Order Limits	Existing employment sites covering less than 1ha.	Medium
The Morrill Hotel and Spa 5684	Hotel and Spa	150m east	Existing employment sites covering less than 1ha.	Medium
Thorpe Farm Centre	Restaurant	150m east	Existing employment sites covering less than 1ha.	Medium
The Coach House	Hotel	150m east	Existing employment sites covering less than 1ha.	Medium
Burns Cottage Holiday Let	Holiday let	180m east	Existing employment sites covering less than 1ha.	Medium
The Smithy, Cross Lanes	Workshop	Immediately adjacent to the north	Existing employment sites covering less than 1ha.	Medium
Black Barn Holiday Let	Holiday let	440m west	Existing employment sites covering less than 1ha.	Medium

### Agricultural land holdings

13.7.208 Land identified as being agricultural in use and within the Order Limits is shown on Figure 13.5 Agricultural land holdings (Application Document 3.3) and are listed below in Table 13-37: Agricultural land holdings within the Order Limits of the Cross Lanes to Rokeby scheme.

13.7.209 Land take, from agricultural land holdings, within the Order Limits for the scheme equates to a cumulative total of approximately 83.73ha. The proportion of the holding which will be required as part of the scheme varies between 1.78% and 25.21% (excluding Cross Lanes Organic Farm Shop which is assessed within the development land and business assessment).

13.7.210 There are no known existing accessibility issues between these holdings and existing key agricultural infrastructure.

Table 13-37: Agricultural land holdings within the Order Limits of the Cross Lanes to Rokeby scheme

Name of farm or landowner surname	Total holding size	Area within the DCO boundary	% of the holding affected	Current use	Additional observations	Sensitivity
Cross Lanes Organic Farm Shop	4.3ha	3.28ha	76.28%	Grassland	Organic Farmshop with outdoor events	Very high - assessed within the development land and business assessment
Timpton Hill Farm	55ha	0.98ha	1.78%	Grassland		High
Trees House Farm	146ha	2.62ha	1.79%	Grassland	Organic farm	High
Poundergill	23ha	0.51ha	2.21%	Grassland		Medium
Harrison	99ha	4.80ha	4.84%	Arable & Grassland		High
Mortham Estate	664ha	27.24ha	4.10%	Arable, Grassland & Woodland	Several tenanted farms, shoot and other enterprises.	High
Thorsgill	72ha	6.69ha	9.29%	Arable & Grassland		High
Moss	69ha	17.40ha	25.21%	Arable & Grassland	Arable land next to A66 is main enterprise	High
Tutta Beck	44ha	3.85ha	8.75%	Grassland		High



### Walkers, cyclists and horse riders (WCH)

- 13.7.211 The following section of the baseline conditions describes the key PRoWs or routes with a designated legal status which intersects the Order Limits (see Table 13-38: Existing PRoWs located within the Order Limits of the Cross Lanes to Rokeby scheme). All PRoWs within the study area are displayed on Figure 13.4 Walkers, Cyclists and Horse rider provisions (Application Document 3.3), however for simplicity of reporting only those with the that could be significantly impacted (i.e. are located within the Order Limits) are described below.
- 13.7.212 PRoW mapping data has been provided by Durham County Council. The dataset reflects the Definitive Maps, which are a legal record of the public's rights of way in one of four categories (footpath, bridleway, restricted byway or byway open to all traffic).
- 13.7.213 Routes have been identified through the use of local authority records as well as through workshops and consultation events that highlighted additional routes used, and by local residents and user groups.
- 13.7.214 Where a sensitivity of medium has been assigned to a PRoW the rationale described in Section 13.5 Assumptions and limitation applies.

Table 13-38: Existing PRoWs located within the Order Limits of the Cross Lanes to Rokeby scheme

PRoW	Location	Commentary	Sensitivity
FP 1 and FP7	Located to the north of the A66 to the west of Rokeby	Routes from the A66 northwards towards Barnard Castle and connects to a larger network of PRoW. Due to its connection to a wider PRoW network, the route is likely to be used recreationally. The footpath is intersected by the scheme alignment.	Medium
FP8	Located to the north of the A66 to the west of Rokeby	Provides an east-west connection from Boldron to a wider network of PRoW in the west, which connects to Barnard Castle and the River Tees. Due to its connection to a wider PRoW network, the route is likely to be used recreationally. It forms part of a wider footpath route belonging to FP14. The footpath is intersected by the scheme alignment.	Medium
FP5 (Brignall)	Located to the south-east of Boldron	Provides an east-west connection from Moorhouse Lane in the west to Rutherford Lane in the east. It is a short local footpath that is likely to be used for recreation. The route falls within the Order Limits but is not intersected by the scheme alignment.	Low
FP5 (Rokeby) and FP6	Routes north to south over the A66. The footpath is located to the west of Greta Bridge and east of Rokeby.	These footpaths provide a north (FP 5) to south connection (FP 6). To the north, the footpath connects to a wider network along the River Tees. Whilst to the south the footpath provides a connection to Brignall (via FP3). The footpaths meet at the A66 however, there is no designated crossing, but it is likely that users will informally	Medium

PRoW	Location	Commentary	Sensitivity
		cross the road. The route is likely used recreationally. The route is intersected by the scheme alignment.	
FP9 and FP 10	Located to the north of the A66 to the north of Rokeby.	These footpaths terminate at the A66 and provide connection northwards towards Barnard Castle and the wider network of PRoWs. There is no designated crossing where the PRoW meets the A66. The route is likely used recreationally.	Medium

## Cross Lanes to Rokeby - Human health

### Determinants of health

- 13.7.215 This scheme is located in a rural area comprising open countryside with scattered residential properties as described in the Population baseline above. Population density in the area is low.
- 13.7.216 PRoW within the study area for the Cross Lanes to Rokeby scheme are described in the Population baseline above.
- 13.7.217 Bus route 79 follows the existing A66 on the eastern extent of this scheme. This route provides connection from Barnard Castle in the north to Richmond in the south.
- 13.7.218 There are no AQMA within the Cross Lanes to Rokeby scheme study area. Defra background pollutant concentrations and local authority air quality monitoring data has identified that NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations are well within the relevant air quality objectives, meaning that the ambient air quality in the study area is good. Detailed air quality baseline information is presented in Chapter 5: Air Quality.
- 13.7.219 NIA are designated by Defra in hotspot locations identified as having high levels of background noise and requiring Noise Action Plans. There are no NIAs identified in the study area (see Chapter 12: Noise and Vibration).
- 13.7.220 Visual receptors within the study area that are relevant for the health assessment include Rokeby Park and multiple PRoW. Detailed landscape baseline information is presented in Chapter 10: Landscape and Visual Effects.
- 13.7.221 The A66 route within the Cross Lanes to Rokeby scheme area had 15 traffic collisions between 2012 to 2019, 10 of which were slight and five were serious.

### Health profile

- 13.7.222 This section of the route passes through LSOA County Durham 065B. Table 13-39: Cross Lanes to Rokeby - Location of LSOAs by Parish and Ward below shows the location of this LSOA within Wards and Parishes.

Table 13-39: Cross Lanes to Rokeby - Location of LSOAs by Parish and Ward

LSOA	Corresponding Parishes	Corresponding Ward
County Durham 065B	Bowes Civil Parish Gilmonby Civil Parish Scargill Civil Parish Hope Civil Parish Baringham Civil Parish Brignall Civil Parish Boldron Civil Parish Eggleston Abbey Civil Parish Rokeby Civil Parish Wycliffe with Thorpe Civil Parish Hutton Magna Civil Parish Ovington Civil Parish Barforth Civil Parish	Barnard Castle East Electoral Division

- 13.7.223 County Durham 065B has a below national average proportion of under 16s and an above national average proportion of over 65s.
- 13.7.224 County Durham 065B has a below average percentage of people living with disabilities or long-term health problems that limit day to day activities.
- 13.7.225 LSOA County Durham 065B ranks within the 50% least deprived areas in England when measured as an average across all indices of the Indices of Multiple Deprivation (IMD). It is in the 10% least deprived areas for employment and the 20% least deprived areas for health and disability.
- 13.7.226 County Durham 065B ranks within the 30% most deprived areas in England, in terms of SAMHI. This is based on data from multiple indicators including mental health related hospital attendances, antidepressant prescriptions, depression prevalence, incapacity benefits and employment support allowance for mental health.
- 13.7.227 The under 75s mortality rate from cardiovascular disease in County Durham (78.9 per 100,000) compares poorly against the national average (70.4 per 100,000).
- 13.7.228 The under 75s mortality rate from respiratory disease in County Durham (42.4 per 100,000) compares poorly against the national average (33.6 per 100,000).
- 13.7.229 The average life expectancy in County Durham is 77.7 years for males (below the national average of 79.4) and 81.2 years for females (below the national average of 83.1).

**Sensitivity**

- 13.7.230 The sensitivity of the population as determined by the physical characteristics of the Cross Lanes to Rokeby study area is as follows:

- Environmental conditions: agricultural land with scattered residential properties; no community facilities close to the scheme; good air quality; amenity impacts from existing road noise. Based on the above factors, the study area population has medium sensitivity to changes in environmental conditions.
- Severance/accessibility: no services or community facilities present within the study area; rural population is dependent of the A66 and rural road network to access services in Barnard Castle or elsewhere. Based on the above factors, the study area population has high sensitivity to changes in severance and accessibility.

13.7.231 Some groups are more likely than others to experience adverse health effects due to factors such as their age, health conditions or deprivation. No vulnerable groups have been identified as having above average representation within the study area for this scheme. Based on this, the sensitivity of the study area population with regard to its demographic and health status is assessed as low to medium.

## Stephen Bank to Carkin Moor - Population

### *Land-use and accessibility*

#### Private property and housing

- 13.7.232 This scheme is located in a rural setting to the southwest of East Layton and West Layton, and to the north-east of Ravensworth. Given the rural nature of the area residential receptors are clustered in the local villages
- 13.7.233 The (2018)-based household projections from 2001 to 2043 for Richmondshire District Council shows an increase in household units from 18,028 in 2001 to 23,435 in 2043. This represents a 30% increase, which would give a very high sensitivity for private property and housing.
- 13.7.234 Given the nature of the study area, the communities within it and the number of existing residential developments, it is considered that there is a sufficient housing supply within the study area and wider region. As such, on balance, a medium sensitivity to the private property and housing receptor group is deemed to be appropriate.
- 13.7.235 One residential property is located within the Order Limits. Monks Rest Farm located on Moor Lane will be acquired by National Highways, due to a blight claim by the current landowner. The property is of medium sensitivity as outlined above.
- 13.7.236 Figure 13.2: Residential and Private Assets, Community Facilities, Business and Tourism Receptors (Application Document 3.3) shows the location of the private property and housing receptors. For simplicity only those which may be significantly affected or are a key local receptor have been displayed.
- 13.7.237 There are no housing allocations located within the study area of this scheme.

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### Community land and assets

13.7.238 Figure 13.2: Residential and Private Assets, Community Facilities, Business and Tourism Receptors (Application Document 3.3) shows the community land and assets located within the study area for the scheme. For simplicity only those which may be significantly affected or are a key local receptor have been displayed. The community land and asset receptors are summarised in Table 13-40: Community facilities located within the study area of the Stephen Bank to Carkin Moor scheme.

Table 13-40: Community facilities located within the study area of the Stephen Bank to Carkin Moor scheme

Receptor	Distance and direction from Order Limits	Main activity	Severance	Alternative facility location	Use/frequency	Used by minority or majority of the population within the study area	Sensitivity
Tennis court 100m from Fox House	455m East	Recreation - Green space	Severance between community and asset but with existing accessibility provision	Limited alternative facilities exist at a local level within adjacent communities	Weekly	Minority	High
Tennis 105m from West Ash House	430m East	Recreation - Green space	Severance between community and asset but with existing accessibility provision	Limited alternative facilities exist at a local level within adjacent communities	Weekly	Minority	High

*Common Land and open access land*

13.7.239 There are no areas of Common Land or open access land identified within the study area.

*Development land and businesses*

13.7.240 Figure 13.2: Residential and Private Assets, Community Facilities, Business and Tourism Receptors (Application Document 3.3) shows the location of the business receptors. For simplicity only those which may be which may be significantly affected or are a key local receptor have been displayed.

13.7.241 Those within the study area are summarised in Table 13-41: Existing businesses located within the study area of the Stephen Bank to Carkin Moor scheme.

13.7.242 This includes business and commercial premises, and tourism related businesses, such as holiday lets. Consideration of effects on agricultural land holdings and businesses is presented separately in the following sections of the baseline.

13.7.243 No employment land allocations were identified within 500m of the Order Limits.

13.7.244 Data has been presented where possible from publicly available sources or stakeholder engagement, to help inform the sensitivity values.

Table 13-41: Existing businesses located within the study area of the Stephen Bank to Carkin Moor scheme

Receptor	Main activity	Distance and direction from Order Limits	Size of employment site	Sensitivity
Carkin Moor Quarry	Mineral / ore quarrying	160m north	Existing employment sites covering more than 5ha	Very high
Smallways Garage	Automotive repairs	400m west	Existing employment sites covering less than 1ha.	Medium
Greenbank Farms Holiday Let	Holiday let	200m south	Existing employment sites covering less than 1ha.	Medium
Foxhall Caravan Park	Holiday let / campsite	50m south	Existing employment sites covering less than 1ha.	Medium
Caravan site on Browson Bank	Holiday let / campsite	190m south	Existing employment sites covering less than 1ha.	Medium
Turnip Cottage	Holiday let	140m south	Existing employment sites covering less than 1ha.	Medium
Foxhall Inn Pub	Restaurant	Immediately adjacent to the south	Existing employment sites covering less than 1ha.	Medium

Receptor	Main activity	Distance and direction from Order Limits	Size of employment site	Sensitivity
Mainsgill Farm Shop	Food and beverage store	Within the Order Limits	Existing employment sites covering more than 5ha	Very high

### Agricultural land holdings

- 13.7.245 Land identified as being agricultural in use and within the Order Limits is shown on Figure 13.5 Agricultural land holdings (Application Document 3.3) and are listed below in Table 13-42: Agricultural land holdings within the Order Limits of the Stephen Bank to Carkin Moor scheme.
- 13.7.246 Land take, from agricultural land holdings, within the Order Limits for the scheme equates to a cumulative total of approximately 45.89 ha. The proportion of the holding which will be required as part of the scheme varies between 0.68% and 10.65%.
- 13.7.247 There are no known existing accessibility issues between these holdings and existing key agricultural infrastructure.

Table 13-42: Agricultural land holdings within the Order Limits of the Stephen Bank to Carkin Moor scheme

Name of farm or landowner surname	Total holding size	Area within the DCO boundary	% of the holding affected	Current use	Additional observations	Sensitivity
Browson Bank	112ha	2.96ha	2.64%	Arable & Grassland	Woodland management currently in place	High
Pond Dale	1600ha	10.95ha	0.68%	Arable & Grassland	Part of larger pig & arable business.	High
East Layton Hall	225ha	23.98ha	10.65%	Arable		High

### Walkers, cyclists and horse riders (WCH)

- 13.7.248 The following section of the baseline conditions describes the key PRoWs or routes with a designated legal status which intersects the Order Limits (see Table 13-49). All PRoWs within the study area are displayed on Figure 13.4 Walkers, Cyclists and Horse rider provisions (Application Document 3.3), however for simplicity of reporting only those with the that could be significantly impacted (i.e. are located within the Order Limits) are described below.
- 13.7.249 PRoW mapping data has been provided by Richmondshire District Council and North Yorkshire County Council. The dataset reflects the Definitive Maps, which are a legal record of the public's rights of way in one of four categories (footpath, bridleway, restricted byway or byway open to all traffic).



13.7.250 Routes have been identified through the use of local authority records as well as through workshops and consultation events that highlighted additional routes used, and by local residents and user groups.

13.7.251 Where a sensitivity of medium has been assigned to a PRoW the rationale described in Section 13.5 Assumptions and limitation applies.

Table 13-43: Existing PRoWs located within the Order Limits of the Stephen Bank to Carkin Moor

PRoW	Location	Commentary	Sensitivity
BW12	Located to the north of the A66 to the west of West Layton	Provides a connection northward from the A66 towards Hutton Magna where there is a connection to a wider PRoW network. Due to its connection with a wider PRoW network, the route is likely to be used recreationally. This bridleway is intersected by the scheme alignment.	Medium
FP20.72/1/1	Located north of the A66 to the west of West Layton town centre.	A short footpath providing a connection from the A66 to Collier Lane. Due to the length of the footpath, it is likely that it is used for some recreational journeys that require it to link between other PRoWs. This footpath is intersected by the scheme alignment.	Medium
FP 20.55/1/1	Located to the south of the A66 and south of West Layton town centre.	Provides a connection between an area to the south of the A66 and a wider PRoW network towards Dalton and Ravensworth. Due to the route connecting to a wider network of PRoWs, it is likely to be used recreationally. This footpath is intersected by the scheme alignment.	Medium
FP 20.23/8/1	Located to the north of the A66 to the east of West Layton.	Provides a connection to the north of the A66 to West Lane where there is access to a wider PRoW network. There is also another footpath that users may continue their journey on from this footpath to the south of the A66. This footpath is intersected by the scheme alignment.	Medium
FP 20.55/2/1	Located to the south of the A66 to the east of West Layton.	Provides a connection to the south of the A66 to New Lane where connections to other PRoWs in the wider network can be made. Therefore the route is likely to be used recreationally. This footpath is intersected by the scheme alignment.	Medium
BW20.55/6/1	Located to the south of the A66 and north-east of Ravensworth.	Provides a connection south of the A66 to the north-east of Ravensworth where there is also access to a wider PRoW network. The connection to the wider network of PRoWs suggests that the route is used recreationally. The bridleway falls within the Order Limits but is not intersected by the scheme alignment.	Medium

PRoW	Location	Commentary	Sensitivity
BW 20.23/5/1	Located to the north of the A66 to the south of East Layton	Provides a connection northward to Moor Lane and the village of East Layton and users are also able to access a longer bridleway route on Limerick Lane. The route is likely to be used recreationally. This bridleway is intersected by the scheme alignment.	Medium
BW20.33/17/2	Located to the north of the A66 to the east of Ravensworth.	Shorter bridleway providing a connection from Warrener Lane to Comfort Lane where a wider PRoW network can be accessed. The route is likely to be used recreationally. The bridleway falls within the Order Limits but is not intersected by the scheme alignment.	Low
BW20.30/8/1	Located to the north of the A66 to the south-east of East Layton	Short Bridleway providing connection to BW 20.30/2/1. Likely to be used recreationally. This footpath is intersected by the scheme alignment.	Medium

## Stephen Bank to Carkin Moor - Human health

### Determinants of health

- 13.7.252 This scheme runs through sparsely populated agricultural land with scattered houses and farmsteads. The village of West Layton lies to the north, with a garden centre and hotel approximately 250m off the road and houses beyond. The village of Ravensworth lies approximately 1km south of the road.
- 13.7.253 PRoW within the study area for the Stephen Bank to Carkin Moor scheme are described in the Population baseline above. Recreational routes and routes linking local communities with local services and facilities are relevant for the health assessment.
- 13.7.254 The 79 bus route intersects the scheme, providing services between Barnard Castle, West Layton, Rokeby and Greta Bridge.
- 13.7.255 There are no AQMA within the Stephen Bank to Carkin Moor study area. Defra background pollutant concentrations and local authority air quality monitoring data has identified that NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations are well within the relevant air quality objectives, meaning that the ambient air quality in the study area is good. Detailed air quality baseline information is presented in Chapter 5: Air Quality.
- 13.7.256 NIA are designated by Defra in hotspot locations identified as having high levels of background noise and requiring Noise Action Plans. There is one NIA within the study area. Detailed noise baseline information is presented in Chapter 12: Noise and Vibration.
- 13.7.257 Key identified visual receptors within the Stephen Bank to Carkin Moor Scheme include recreational users of the local PRoW network, community resources including the Fox Hall Inn and Mainsgill Farm

Shop and scattered residential properties and farmsteads. Detailed landscape baseline information is presented in Chapter 10: Landscape and Visual Effects.

13.7.258 47 traffic collisions occurred in this location between 2012 and 2019 including 32 slight, 13 serious and two fatal.

**Health profile**

13.7.259 This scheme passes through LSOA Richmondshire 001C and Richmondshire 001F. Table 13-44: Stephen Bank to Carking Moor - Location of LSOAs by Parish and Ward below shows the location of this LSOA within Wards and Parishes.

Table 13-44: Stephen Bank to Carking Moor - Location of LSOAs by Parish and Ward

LSOA	Corresponding Parishes	Corresponding Wards
Richmondshire 001C	Ravensworth Civil Parish Kirkby Hill Civil Parish Gayles Civil Parish Gilling with Hartforth and Sedbury Civil Parish Aske Civil Parish Whashton Civil Parish	Gilling West Ward
Richmondshire 001F	Eppleby Civil Parish Caldwell Civil Parish Stanwick St John Civil Parish Forcett Civil Parish West Layton Civil Parish East Layton Civil Parish Carkin Civil Parish	Melsonby Ward

13.7.260 Both LSOAs have a below national average proportion of under 16s and an above national average proportion of over 65s.

13.7.261 Both LSOAs have a below national average of people living with disabilities or long-term health problems that limit day to day activities.

13.7.262 The area of Richmondshire 001C is ranked within the 40% least deprived areas in England when measured as an average across all indices of the IMD. It is in the 20% least deprived areas for employment and the 30% least deprived areas for health deprivation and disability.

13.7.263 The area of Richmondshire 001F is ranked within the 30% least deprived areas in England when measured as an average across all indices of the IMD. It is in the 20% least deprived areas for employment and the 10% least deprived for health deprivation and disability.

13.7.264 Richmondshire 001C and 001F rank within the 40% least deprived areas in England, in terms of SAMHI, respectively. This is based on data from multiple indicators including mental health related hospital attendances, antidepressant prescriptions, depression prevalence, incapacity benefits and employment support allowance for mental health.

- 13.7.265 The under 75s mortality rate from cardiovascular disease in Richmondshire (58.0 per 100,000) is below the national average (70.4 per 100,000).
- 13.7.266 The under 75s mortality rate from respiratory disease in Richmondshire (23.7 per 100,000) is below the national average (33.6 per 100,000).
- 13.7.267 The average life expectancy in Richmondshire is 81.3 years for males (above the national average of 79.4) and 83.3 years for females (marginally above the national average of 83.1).

#### Sensitivity

- 13.7.268 The sensitivity of the population as determined by the physical characteristics of the Stephen Bank to Carkin Moor study area is assessed as follows:
- Environmental conditions: agricultural land with scattered residential properties; no community facilities close to the scheme; good air quality; amenity impacts from existing road noise. Based on the above factors, the study area population has medium sensitivity to changes in environmental conditions.
  - Severance/accessibility: no services or community facilities present within the study area; rural population is dependent of the A66 and rural road network to access services in Richmond or elsewhere. Based on the above factors, the study area population has high sensitivity to changes in severance and accessibility.
- 13.7.269 Some groups are more likely than others to experience adverse health effects due to factors such as their age, health conditions or deprivation. The vulnerable groups listed below have been identified as having above average representation within all or parts of the study area. Based on this, the sensitivity of the study area population with regard to its demographic and health status is assessed as medium.
- Older people (people over 65)

### A1(M) Junction 53 Scotch Corner - Population

#### *Land-use and accessibility*

#### *Private property and housing*

- 13.7.270 This scheme is located in a semi-rural setting to the southwest of Middleton Tyas. Given the nature of the surrounding landscape area residential receptors are clustered in Middleton Tyas.
- 13.7.271 The (2018)-based household projections from 2001 to 2043 for Richmondshire District Council shows an increase in household units from 18,028 in 2001 to 23,435 in 2043. This represents a 30% increase, which would give a very high sensitivity for private property and housing.
- 13.7.272 Given the nature of the study area, the communities within it and the number of existing residential developments, it is considered that there is a sufficient housing supply within the study area and wider region. As

such, on balance, a medium sensitivity to the private property and housing receptor group is deemed to be appropriate.

13.7.273 There are no private properties within the Order Limits of this scheme.

13.7.274 There are no housing allocations located within the study area of this scheme.

**Community land and assets**

13.7.275 There are no community assets located within the study area of this scheme.

**Common Land and open access land**

13.7.276 There are no areas of Common Land and open access land located within the study area of this scheme.

**Development land and businesses**

13.7.277 Figure 13.3: Local Plan and Development Land Allocations (Application Document 3.3) shows the employment allocated land within the study area. Figure 13.2: Residential and Private Assets, Community Facilities, Business and Tourism Receptors (Application Document 3.3) shows the location of businesses. For simplicity only those which may be significantly affected or are a key local receptor have been displayed.

13.7.278 Development land and businesses within the study are summarised in Table 13-45: Existing businesses located within the study area of the A1(M) Junction 53 Scotch Corner scheme and Table 13-46: Development land located within the study area of the A1(M) Junction 53 Scotch Corner scheme

13.7.279 This includes business and commercial premises, and tourism related businesses, such as holiday lets. Consideration of effects on agricultural land holdings and businesses is presented separately in the following sections of the baseline.

13.7.280 Data has been presented where possible from publicly available sources or stakeholder engagement, to help inform the sensitivity values.

13.7.281 It should be noted that no existing businesses or development land are located within the Order Limits.

Table 13-45: Existing businesses located within the study area of the A1(M) Junction 53 Scotch Corner scheme

Receptor	Main activity	Distance and direction from Order Limits	Size of employment site	Sensitivity
Travelodge Hotel	Hotel	115m north	Existing employment sites covering less than 1ha.	Medium
Holiday Inn	Hotel	50m south	Existing employment sites covering between 1ha and 5ha.	High

Receptor	Main activity	Distance and direction from Order Limits	Size of employment site	Sensitivity
The Vintage Hotel	Hotel	130m west	Existing employment sites covering less than 1ha.	Medium
Brady Motorsports	Automotive sales	100m south	Existing employment sites covering less than 1ha.	Medium
Friendly Leisure, Urban Spa Retreat	Health Spa	80m west	Existing employment sites covering less than 1ha.	Medium
Scotch Corner Auto Services and Compound	Automotive repairs	110m south	Existing employment sites covering less than 1ha.	Medium
Scotch Corner Caravan Park	Holiday let / campsite	155m south	Existing employment sites covering between 1 and 5ha.	High
Sedbury Caterers	A66 Layby Cafe	450m west	Existing employment sites covering less than 1ha.	Medium
Peel House Workshop	Workshop / light industrial	230m east	Existing employment sites covering less than 1ha.	Medium
Leisure Park Limited Garage	Warehouse/ depot/ storage land	85m south	Existing employment sites covering less than 1ha.	Medium
Storage land at Dalesway Lodge	Warehouse/ depot/ storage land	150m south	Existing employment sites covering less than 1ha.	Medium
Northern Trailers	Warehouse/ depot/ storage land	120m south	Existing employment sites covering less than 1ha.	Medium
Mial Coachbuilders	Workshop / light industrial	110m south	Existing employment sites covering less than 1ha.	Medium
Esso	Petrol Filling Station	95m north	Existing employment sites covering less than 1ha.	Medium
Scotch Corner Motorway Services	Motorway Services	50m north	Existing employment sites covering between 1 and 5ha.	High

Table 13-46: Development land located within the study area of the A1(M) Junction 53 Scotch Corner scheme

Receptor	Main activity	Distance and direction from Order Limits	Size of employment site	Sensitivity
Strategic Direction of Growth	A 45.2ha allocated land for the creation of the Scotch Corner Designer Outlet Village which is due to open in 2023	150m west	45.2ha	Very High

### Agricultural land holdings

13.7.282 There are no agricultural land holdings located within the Order Limits of the scheme as shown on Figure 13.5 Agricultural land holdings (Application Document 3.3).

### Walkers, cyclists and horse riders (WCH)

13.7.283 All PRoWs within the study area are displayed on Figure 13.4 Walkers, Cyclists and Horse rider provisions (Application Document 3.3)

13.7.284 No PRoWs intersect the Order Limits for this scheme and therefore none have been recorded within the baseline assessment.

## A1(M) Junction 53 Scotch Corner - Human health.

### Determinants of health

13.7.285 This scheme is located in a rural and semi-rural area to the west of the village of Middleton Tyas. Land uses in proximity to the scheme include primarily agricultural land, with residential properties and businesses as described in the Population baseline above.

13.7.286 There are no PRoW within the Order Limits of the A1(M) Junction 53 Scotch Corner scheme.

13.7.287 Bus services intersect the scheme at A1(M) Junction 53 Scotch Corner, providing links between Scotch Corner, Darlington, Catterick, Colburn, Scotton and Haughton Road, including routes X26, X27, 831 and 34.

13.7.288 There are no AQMA within the A1(M) Junction 53 Scotch Corner scheme study area. Defra background pollutant concentrations and local authority air quality monitoring data has identified that NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations are well within the relevant air quality objectives, meaning that the ambient air quality in the study area is good. Detailed air quality baseline information is presented in Chapter 5: Air Quality.

13.7.289 NIA are designated by Defra in hotspot locations identified as having high levels of background noise and requiring Noise Action Plans. There are no NIAs identified in the study area (see Chapter 12: Noise and Vibration).

13.7.290 There are no visual receptors within the study area that are relevant for the health assessment. Detailed landscape baseline information is presented in Chapter 10: Landscape and Visual Effects.

13.7.291 There were 15 traffic collisions at this location between 2012 and 2019, 13 slight and two serious.

**Health profile**

13.7.292 This section of the route passes through LSOA Richmondshire 001E. Table 13-47: A1(M) Junction 53 Scotch Corner - Location of LSOAs by Parish and Ward below shows the location of Richmondshire 001E within Wards and Parishes.

Table 13-47: A1(M) Junction 53 Scotch Corner - Location of LSOAs by Parish and Ward

LSOA	Corresponding Parishes	Corresponding Wards
Richmondshire 001E	Middleton Tyas Civil Parish Moulton Civil Parish	Croft & Middleton Tyas Ward

13.7.293 Richmondshire 001E has a lower proportion of under 16s and a higher proportion of over 65s when compared to the national average.

13.7.294 Richmondshire 001E has a higher percentage of people living with disabilities or long-term health problems that limit day to day activities compared to the national average.

13.7.295 Richmondshire 001E ranks within the 20% least deprived areas in England, when measured as an average across all indices in the IMD. It is in the 20% least deprived areas for employment and the 10% least deprived areas for health and disability.

13.7.296 Richmondshire 001E ranks within the 40% least deprived areas in England, in terms of SAMHI. This is based on data from multiple indicators including mental health related hospital attendances, antidepressant prescriptions, depression prevalence, incapacity benefits and employment support allowance for mental health.

13.7.297 The under 75s mortality rate from cardiovascular disease in Richmondshire (58.0 per 100,000) is below the national average (70.4 per 100,000).

13.7.298 The under 75s mortality rate from respiratory disease in Richmondshire (23.7 per 100,000) is below the national average (33.6 per 100,000).

13.7.299 The average life expectancy in Richmondshire is 81.3 years for males (above the national average of 79.4) and 83.3 years for females (marginally above the national average of 83.1).

**Sensitivity**

13.7.300 The sensitivity of the population as determined by the physical characteristics of the A1(M) Junction 53 Scotch Corner study area is assessed as follows:

- Environmental conditions: small number of residential properties and community facilities (e.g. gym) close to the scheme; good air quality; some amenity impacts from existing road noise. Based on the above factors, the study area population has medium sensitivity to changes in environmental conditions.



- Severance/ accessibility: limited community facilities available in Middleton Tyas. Local community is reliant on the A1(M) and local road network to access services in centres such as Richmond and Darlington. Based on the above factors, the study area population has high sensitivity to changes in severance and accessibility.

13.7.301 Some groups are more likely than others to experience adverse health effects due to factors such as their age, health conditions or deprivation. The vulnerable groups listed below have been identified as having above average representation within all or parts of the study area, or as being users of resources potentially affected by the scheme. Based on this, the sensitivity of the study area population is assessed as medium.

- Older people (over 65s)

### Future baseline

13.7.302 Chapter 4 Environmental assessment methodology sets out the 'Do-Minimum' and 'Do-Something' scenarios, with the 'Do-Minimum' scenario representing the future baseline with minimal interventions and without new infrastructure.

13.7.303 The future baseline has been set as 2044. It is acknowledged that populations will increase locally, particularly given the numerous housing related planning applications considered within Chapter 15: Cumulative developments. However it is not predicted that any growth would occur in such a way that development will be outside of the existing conurbations. Any increases in population or housing will be appropriately provisioned through their own respective planning application and additional pressure on local services is not anticipated. It is also noted that agricultural, businesses and community facilities may open and close, and the level of usage of community resources including PRoWs may change.

13.7.304 It is not possible to predict any changes to the population and human health baseline with any degree of accuracy. With that said it is reasonable to assume that the trends, patterns and usage outlined in the previous sections will most likely still be relevant, albeit with slight variances. As such potential changes to population and human health receptors in the future would not be noticeable.

13.7.305 The in-combination climate change assessment has used a future climate baseline that is based on representative concentration pathway 8.5 (RCP 8.5) of the UK climate change 2018 projections (UKCP18). This future climate baseline is presented in Chapter 7 Climate Change.

## 13.8 Potential impacts

13.8.1 Based on the Project design and associated construction activities, the Project has the potential to impact upon Population and Human Health during both construction and operation.

13.8.2 The design of the Project, including any embedded mitigation measures that have been incorporated, are described in Chapter 2: The Project.

Any key aspects of the design and embedded mitigation are also referenced in this section where they are directly applicable to the Population and Human Health assessment.

- 13.8.3 Potential impacts of the Project are described in this section prior to the implementation of the essential mitigation described in Section 13.9 below. The residual effects of the Project, taking into account this essential mitigation, are then described in Section 13.10.

## Construction

### *Population*

#### Private property and housing

- 13.8.4 Potential impacts on residential properties and housing receptors are:
- Demolition of residential properties
  - Loss or reduction of access to residential properties
  - Loss of land associated with residential property
  - Loss of or impacts on land allocated for housing growth

#### Development land and businesses

- 13.8.5 Potential impacts on development land and businesses, including the potential impacts on residential properties and land receptors, are:
- Construction effects on commercial property and business receptors (including tourism businesses).
  - Change in attributes of business receptors (such as accessibility).
  - Loss of or impacts on land allocated or identified for employment/business growth.
  - During the peak tourism season, when occupancy rates are generally higher, the potential additional requirements for long-term accommodation could place increased pressure on local businesses within the tourism sector. This may result in construction workers who are not local to the area having to access accommodation in the wider region.

#### Community land and assets

- 13.8.6 Potential impacts on community land and assets are:
- Construction related effects (e.g. noise, vibration, dust and travel disruption) on community facilities such as village halls, schools and religious premises.
  - Construction related effects on tourism and recreational facilities within the vicinity of the Project, including direct effects on the receptor as well as indirect effects associated with any impacts on users of the receptors (such as amenity or perceived effects).
  - Potential effects on other land (such as open space land) during construction.
  - Physical access to healthcare services is not anticipated to be affected by the Project during the construction phase as access will remain in place but temporary diversions could increase journey

times. Construction workers are unlikely to add additional pressures on local service as many of them are likely to stay registered with their local home practice (if working outside of their home region) or already registered locally if they are from the local area. Any accidents or emergencies requiring local services are likely to result in negligible effects given the nature and anticipated duration of the construction phase.

#### Walkers, cyclists and horse riders (WCH)

13.8.7 Potential impacts during construction include:

- Permanent land-take associated with the footprint of the Project which may affect PRoW and walking and cycling routes.
- Temporary land take, closure or diversion of PRoW and walking and cycling routes during construction.
- Temporary disruption to PRoW during construction resulting in severance or increased journey times to access community facilities.

#### Agricultural land holdings

13.8.8 The principal potential impacts on the day to day running of agricultural land holdings are likely to occur during the construction of the project.

13.8.9 Construction impacts on agricultural land holdings largely relate to land temporarily or permanently acquired for the project. This will permanently reduce the land resource in the study area.

13.8.10 There is also a potential for the construction of the project to impact upon access to agricultural land holdings. In instances where severance is temporary, there may still be longer term effects if the viability of assets becomes undermined though reduced usage during the construction period.

13.8.11 Other potential construction impacts to agricultural activity will include the deposition of dust on sensitive crops; disruption to drainage, irrigation and water supply systems; unintentional pollution of soil and water courses; spread of injurious weeds to adjacent agricultural land from soil and material stockpiles; and construction noise.

#### Health

##### Environmental conditions

13.8.12 During construction, the population in the study area may be exposed to environmental effects including noise, dust, visual and lighting impacts and the presence of construction traffic, including HGVs. These effects on the environmental amenity of residential neighbourhoods and community assets may potentially affect the health of local people through:

- negative effects on mental and physical wellbeing, including annoyance, stress and reduced quality of life;
- impacts on sleep disturbance from noise and lighting, where night-time working is required;

- negative effects on mental and physical health arising from changes in behaviour, such as reductions in the use of outside space.

#### Severance and accessibility

13.8.13 There is a potential for temporary increases in local journey times by car and public transport (bus), resulting from temporary traffic delays, road closures and diversions. Journey times for WCH may be increased by temporary closure and diversion of PRow during construction. These severance impacts may potentially affect the health of local people through:

- impacts on access to local shops, facilities and services (including healthcare), leading to temporary negative effects on wellbeing and quality of life;
- impacts on access to and use of public open space, sport and leisure facilities, leading to a temporary decrease in the physical and mental health benefits associated with physical activity, social interaction and contact with nature; and
- reduction in the use of PRow, leading to a temporary decrease in the physical and mental health benefits of physical activity.

13.8.14 The construction phase may increase employment opportunities through the creation of direct construction jobs and increased demand for local suppliers and facilities such as shops and cafés. This may have a potential positive effect on the physical and mental health of people in the study area, through improved earnings and opportunities for employment and training.

13.8.15 The presence of the construction workforce may affect demand within the local healthcare and housing sectors.

### Operation

#### Population

#### Private property; community land and assets and development land and businesses

13.8.16 Operation of the Project will not require any further land from residential or private properties, community land and assets or development land and businesses located within the study area.

13.8.17 Changes to the local environment could occur which could affect the tranquillity of the receptors. For example noise increases or landscape and visual impacts due to a closer proximity to the realigned A66.

13.8.18 Access will be reinstated as a minimum as part of the design of the Project. There will be instances of enhancement in specific cases and it is likely that the Project will result in beneficial impacts. This is due to enhanced accessibility and a general reduction in congestion across the A66 and associated local road network.

#### Walkers, cyclists and horse riders (WCH)

13.8.19 Potential impacts during operation of the Project include:

- Reducing severance and improving connectivity and local travel patterns through provision of new walking and cycling routes.
- Changes to journey times for WCHs accessing community resources, through the provision of new WCH routes, connections and crossing provisions.

#### Agricultural land and holdings

- 13.8.20 The predicted effects of the proposed Scheme's operation on agriculture are principally forms of disturbance related to traffic using the road and maintenance activities. Noise from traffic and lighting might affect livestock however it is expected that stock would become accustomed to these effects over time and the effects are not predicted to be significant. Road maintenance including cutting verge vegetation might impact and cause disturbance to those occupying the neighbouring land, but due to the nature and infrequency of these operations it would not be significant. Salt used during winter maintenance could impact on crops in close proximity to the road particularly if downwind, but given the separation of the road from crops this is not predicted to be significant.

#### Health

##### Environmental conditions

- 13.8.21 During operation, the population in the study area may be exposed to both increased and decreased levels of traffic noise in residential areas, community facilities and open spaces. This may give rise to potential effects on health and wellbeing, including levels of annoyance, sleep disturbance, quality of life and mental wellbeing associated with the enjoyment of outside space.
- 13.8.22 Potentially significant positive and negative effects have been identified, resulting from changes in NO<sub>2</sub> concentrations at locations along the existing A66 where traffic is diverted on the new route further away from sensitive receptors. This may give rise to effects on respiratory health, particularly for vulnerable people such as children and people with existing health conditions.
- 13.8.23 The presence of the new road infrastructure may result in adverse visual and lighting impacts on residential areas, community facilities and open space. This may give rise to potential effects on health and wellbeing including effects on quality of life associated with changes in neighbourhood amenity and the perceived quality of the local environment, and changes in behaviour, such as in the level of walking and cycling or use of green spaces.

##### Severance and accessibility

- 13.8.24 Reduced congestion along the A66 as a result of the project will improve journey times for local traffic. This may give rise to potential effects on health and wellbeing including:

- accessibility and use of local facilities and services (including healthcare), leading to positive effects on wellbeing and quality of life;
- accessibility of employment sites and business benefits resulting from improved connectivity, leading to improved earnings and positive effects on quality of life;
- accessibility of public open space, sport and leisure facilities, leading to increases in the physical and mental health benefits associated physical activity, social interaction and contact with nature.
- Changes to the safety and quality of journeys resulting from improved junction layouts and traffic flows.

13.8.25 Direct and indirect impacts on the PRow network, leading to changes in the use of PRow for physical activity and access to green space.

13.8.26 Direct and indirect impacts on community resources, including public open space, local services and facilities, affecting the quality and availability of these resources.

## 13.9 Essential mitigation and enhancement measures

### Construction

#### *Essential mitigation*

13.9.1 The EMP (Application Document 2.7) provides a list of mitigation measures that will be implemented during the construction stage. Annex B6 of the EMP provides an expanded essay plan of the Public Rights of Way Management Plan that will be further developed and implemented at construction stage. The plan will detail the proposed diversions and new routes before and during construction, which seek to mitigate impacts on the PRow network. It will also set out a hierarchy of mitigation to help maintain access across the PRow network during construction, for example through the use of appropriate signage, diversions and/or public liaison where necessary. The preparation and delivery of the detailed Public Rights of Way Management Plan will incorporate inputs from the local community through the appointed Public Liaison Officer.

13.9.2 Annex B13 of the EMP provides an outline Construction Traffic Management Plan (CTMP). The CTMP will set out mitigation measures to maintain access across the highway network during construction, for example through the use of appropriate signage, diversions and/or landowner and public liaison where necessary. It will set out restrictions on the routes to be used by construction vehicles to access the site, including restricting HGV movements to suitable major roads, in consultation with the local highways authorities.

13.9.3 Where access to private properties and businesses is affected, temporary alternative access will be provided and agreement will be sought with the landowner and/or tenant(s) as necessary, via the CTMP.

- 13.9.4 The A66 is served by public transport and there are multiple bus stops along the highway. Temporary re-location of such provisions will be required during construction. Their location will be agreed upon with the Local Authorities and public transport operators before the commencement of the construction phase and incorporated within the CTMP.
- 13.9.5 Where the construction works would affect access to existing tourism receptors, temporary alternative access arrangements would be provided in agreement with the receptor. The EMP will ensure appropriate phasing of the construction works to ensure that access is maintained and not significantly disrupted during key tourism periods such as the school holidays, the Christmas period and the Appleby Horse Fair.
- 13.9.6 The CTMP will take into account the specific requirements of the Gypsy and Traveller community, particularly those that attend the Appleby Horse Fair. Construction activities along the route of the A66, and particularly in the area of Appleby have the potential to impact on journeys to and from Appleby Horse Fair as a result of diversions, congestion, and delays. The Appleby Horse Fair and the Appleby Horse Fair Multi-Agency Strategic Coordinating Group (MASCG) will be liaised with around the timing of works, adequate diversions, and routing of fair traffic away from the A66 to minimise impacts on journeys to and from the fair. This principle is set out in the EMP and will be incorporated into the CTMP relevant to this scheme.
- 13.9.7 Land required for construction compounds would be used temporarily before being returned to its original use and condition as per before the works (unless required for mitigation such as alternative habitat creation, in which case it will be prepared and planted accordingly after the construction works are complete). Consultation with the landowners will be required to ensure that the land returned is of the same condition as its current use to prevent any potential sterilisation of land parcels. The EMP will also ensure impacts of dust and noise on crops and livestock are minimised.
- 13.9.8 Severance during construction would be reduced through careful siting of construction compounds and lay down areas and careful planning of construction activities through consultation with the landowners and mitigated in places by new temporary and permanent accesses.
- 13.9.9 Essential mitigation measures for noise and visual impacts during construction of the scheme are outlined in Chapter 12: Noise and Vibration, essential mitigation measures for air quality are reported in Chapter 5: Air Quality and essential mitigation for landscape and visual impacts are reported in Chapter 10: Landscape and Visual.
- 13.9.10 Potential indirect amenity effects relating to air quality (dust), noise, ground conditions and visual impacts associated with the movement of construction vehicles and construction works will be mitigated through considerate construction management including the use of screening

(temporary or permanent), which is outlined in further detail within the EMP .

- 13.9.11 The Principal Contractor will include measures to reduce crop loss by giving advanced warnings to enable farmers to forward plan, and will give specific consideration to potential field drainage impacts and how they will be avoided.
- 13.9.12 In regard to the potential impacts upon agricultural land holdings the strategy will:
- Commit to reinstating any land required temporarily to a quality and value equal to that of its existing use.
  - Accommodate harvesting periods into the construction programme where possible to avoid potential crop loss.
  - Maintain farm access points where possible and reinstate these as soon as possible.
  - Outline a clear communication plan with agricultural landowners to give advanced notice of planned works to ensure field rotation strategies are maximised to minimise crop loss as far as possible by giving advanced warning of works to enable farmers to plan for potential field rotations.
- 13.9.13 Annex B12 of the EMP provides an outline Skills and Employment Strategy, which will set out measures to upskill and maximise the use of a local workforce and supply chains. The Principal Contractor will be required to implement measures to promote opportunities to benefit the local supply chain and support local businesses during construction. The strategy will ensure that local businesses are made aware of the procurement process and tendering opportunities whilst providing support for those who require it. Key Performance Indicators (KPIs) will be outlined to monitor the utilisation of local subcontractors and suppliers. The Strategy will also provide support and guidance to existing businesses that are impacted as a result of the construction and/or operation of Project.
- 13.9.14 The Skills and Employment Strategy will support local training infrastructure and provide opportunities for vulnerable members of the community. It will outline how the Project aims to utilise and maximise the benefits to local schools and colleges. This will include measures to increase and extend the range of courses available to young people as well as employing them on the Project to develop their skills and qualifications first-hand, for example through apprenticeships.
- 13.9.15 Annex B10 of the EMP provides an outline Construction Worker Travel and Accommodation Plan, which will be developed in consultation with the Local Planning Authorities. It will ensure that additional demand created by non-home-based workers does not place excessive pressure on the local housing market and visitor accommodation supply. This will be based on a forecast of the number of people employed throughout the construction programme. Impacts on the local housing and tourism



sectors will be evaluated and the strategy will set out proposals to address any issues as required.

- 13.9.16 Contractors will be required to provide occupational health care to workers, including health monitoring, preventative treatment where necessary, and first aid.
- 13.9.17 The Appleby to Brough scheme will result in the loss of the Brough Hill Fair site and two alternative sites are being considered. Option 1 includes relocating Brough Hill Fair to a site currently used by the MoD as a 'bivvy' or camping site and training area, and the access to the site is from Station Road. Option 2 is located to the south of the A66 and has access from Musgrave Lane which would allow access for horses and horse-drawn vehicles. It would also allow users of the site to park their caravans further from the road. This mitigation will be operational prior to land take of the existing site.
- 13.9.18 The Appleby to Brough scheme will result in the loss of the Ministry of Defence playing field and helipad. Relocation of them will be provided to the south of the scheme, located off Castlehill Road. This site is likely to include a parking area, pavilion and storage shed; however, the details are still to be confirmed with the Ministry of Defence. The replacement facilities will be fully operational before the closure of the existing provisions due to the potential use as an emergency services helipad.
- 13.9.19 Under Section 131 of the Planning Act 2008, National Highways will provide replacement land in exchange for the Common Land being compulsorily acquired. "Replacement land" is defined in Section 131(12) as land which is:
- Not less in area than the order land (the area proposed to be acquired).
  - No less advantageous to the persons, if any, entitled to rights of common or other rights.
  - No less advantageous to the public.
- 13.9.20 The following areas of replacement land are required in order to comply with the Section 131 of the Planning Act:
- 0.9ha of replacement Common Land at Wetheriggs Country Park and the loss of land at the Ullswater Community College Rugby Field. It should be noted that the Rugby field itself is not affected and suitable spectator areas are maintained.
  - 1.12ha of replacement Common Land at Ketland Common.
- 13.9.21 Both areas of mitigation will be operational prior to land take of the existing sites.
- 13.9.22 The impact on Happy Hooves Riding Centre, within the M6 Junction 40 to Kemplay Bank scheme, will require mitigation and consultation with the landowner is currently ongoing. It is expected that an agreement on the required mitigation will be reached post submission of the DCO and pre-commencement of the construction works. In order to assess the worst case scenario, no potential mitigation has been accounted for in the assessment.

- 13.9.23 The design of the scheme has where possible avoided direct impacts on development land and businesses and appropriate embedded mitigation has been developed in order to mitigate potential effects where possible (e.g. early re-provision of access to ensure accessibility during construction).
- 13.9.24 Access arrangements would be maintained during construction to all identified commercial property and businesses, and any disruption would be minimised as much as possible as part of the CTMP. Through scheme design, appropriate access would continue to be provided. Where concerns have been raised by landowners and tenants about the scheme and its potential effects on business viability, landowner engagement has helped inform design with appropriate mitigation measures agreed and incorporated as part of the scheme.
- 13.9.25 It should be noted that financial compensation is provided to owners of properties or assets subjected to direct land take and blight, to allow the landowners to find other suitable housing. This is not considered as mitigation for the impacts identified on private property and housing as it does not mitigate the impact on housing stock and does not guarantee the land or property owner can obtain a property of the same standard and suitability as their current residence.

#### *Enhancement*

- 13.9.26 No additional enhancement measures are proposed as part of the works outside of those to be secured as part of the Skills and Employment Strategy and Accommodation Strategy. The Principal Contractor will also seek opportunities to maximise the benefits of the local supply chain and support local businesses during construction.

#### **Operation**

##### *Essential mitigation*

- 13.9.27 The EMP (Document Reference 2.7) provides an expanded essay plan for the Public Rights of Way Management Plan which sets out the operation mitigation for WCH and other users of rights of way/highway with public access. This includes changes to existing routes or new routes as part of the scheme design. For example, FP317009 and FP341017 near Long Marton would both be severed by the proposed design. A diversion is proposed via a new bridge proposed for a local road diversion. The diversion will redirect pedestrians back to the old de-trunked A66 and along a proposed footway. This will also provide a connection to Footpath 317008. The Annex will include all changes to existing routes or new routes as part of the scheme design.

##### *Enhancement*

- 13.9.28 Throughout the preliminary design process, the need for providing east-west WCH provision has been raised during ongoing engagement with stakeholders. As a result, action was taken to provide more east-west connections on those schemes that were being dualled. For the majority

of schemes, east-west provision has been made along the scheme extent, either parallel to the new dual carriageway, or in the verge along the old de-trunked A66, where it will remain.

### 13.10 Assessment of likely significant effects

13.10.1 This section identifies the likely population effects of the Project that are predicted to be significant. Likely population effects that are not predicted to be significant are presented in ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4). As described in Section 13.4, health effects are identified in this section as positive, negative or neutral and the significance of health effects is not assessed.

#### Routewide

##### Private property and housing

##### *Construction assessment*

13.10.2 Residential receptors will be close to construction activities and will experience indirect adverse impacts as a result of construction related effects. This will impact upon the tranquillity and access for private property and housing receptors.

13.10.3 Any such effects would be temporary for the duration of the construction phase, with appropriate mitigation and management to be put in place through the EMP (Document Number 2.7) , which will mitigate the impacts so that there are no likely significant effects. .

13.10.4 There will be direct impacts upon private properties and housing allocated land as a result of land take for the Project. The impacts are deemed to be localised and do not result in a significant effect at the routewide level. As such they have only been assessed within their relevant scheme.

13.10.5 There will be direct impacts upon properties and land allocated for housing. As the impacts are localised and do not result in a significant effect at the routewide level, they have only been assessed within their relevant scheme.

13.10.6 Detailed assessment of the indirect/amenity effects described above are considered in Chapter 5 Air quality, Chapter 10 Landscape and visual effects and Chapter 12 Noise and vibration assessments. Where relevant to human health, impacts are considered later in within this section, for example where there are significant impacts on properties arising from noise changes during construction and operation.

##### *Operation assessment*

13.10.7 No significant routewide operational impacts or effects are likely as a result of the Project. Any impacts on private property and housing receptors have been detailed within the scheme by scheme assessment.

## Community land and assets

### *Construction assessment*

- 13.10.8 Community land and assets will be close to construction activities and will experience indirect adverse effects as a result of construction related impacts. This will impact upon the tranquillity and access to community land and assets.
- 13.10.9 Any such effects would be temporary for the duration of the construction phase, with appropriate mitigation and management to be put in place through the EMP (Document Number 2.7) , which will mitigate the impacts such that there are no likely significant effects.
- 13.10.10 Detailed assessment of the indirect/amenity effects described above are considered in Chapter 5 Air quality, Chapter 10 Landscape and visual effects and Chapter 12 Noise and vibration assessments. Where relevant to human health, impacts are considered later in within this section, for example where there are significant impacts on properties arising from noise changes during construction and operation.
- 13.10.11 There is the potential that during construction an influx of workers could increase demand on local community assets such as doctors or the leisure accommodation stock. The potential for significant effects as a result of reduced access to services has been considered within the Human Health routewide assessment.

### *Operation assessment*

- 13.10.12 No significant routewide operational impacts or effects are likely as a result of the Project. Any impacts on community land and assets has been detailed within the scheme by scheme assessment.

## Development land and businesses

### *Construction assessment*

- 13.10.13 The consideration of effects on development land and businesses focuses on businesses at risk (including severance) or from which land would be required to facilitate construction and/or operation of the scheme. It also considers potential effects (e.g. sterilisation) of land allocated for development or subject to a planning application, within the study area.
- 13.10.14 The Project has the potential to lead to significant effects on those businesses that are lost (in part or in full). Such instances are assessed in the scheme by scheme assessment. For other businesses and commercial property during construction, there could be short-term impacts as a result of disruption and diversions. No significant effects are anticipated unless specifically stated within the scheme by scheme assessment.
- 13.10.15 Development land and businesses will be close to construction activities and will experience indirect adverse effects as a result of construction related impacts. This will impact upon the tranquillity and access to such receptors but is unlikely to be significant.

- 13.10.16 There will be direct impacts upon development land as a result of land take for the Project. The impacts are deemed to be localised and do not result in a significant effect at the routewide level. As such they have only been assessed within their relevant scheme.
- 13.10.17 Any such effects would be temporary for the duration of the construction phase, with appropriate mitigation and management to be put in place through the EMP (Document Number 2.7) , which will mitigate the impacts such that there are no likely significant effects.
- 13.10.18 Detailed assessment of the indirect/amenity effects described above are considered in Chapter 5 Air quality, Chapter 10 Landscape and visual effects and Chapter 12 Noise and vibration assessments. Where relevant to human health, impacts are considered later in within this section, for example where there are significant impacts on properties arising from noise changes during construction and operation.
- 13.10.19 Potential benefits arising from employment during the construction phase have been considered within the routewide Human health assessment.
- Operation assessment*
- 13.10.20 Overall, the Project is envisaged to provide minor beneficial impacts by improving journey time, reliability and safety, which would in turn serve to improve traffic conditions in the local area. No significant effects are anticipated unless specifically stated within the scheme by scheme assessment.
- Agricultural land holdings*  
*Construction assessment*
- 13.10.21 The following section is applicable to all schemes and as such has been detailed only in the route wide assessment
- 13.10.22 The assessment of receptor sensitivity is primarily linked to the frequency of access to the land impacted by the schemes. As the majority of the land along the Project route is accessed once per week, or more frequently, the sensitivity has been assessed to be high in many cases. When combined with the magnitude of impact many moderate adverse significant effects will occur.
- 13.10.23 Where the assessment is greater than moderate a rationale of the impact and effect has been provided. However for those of moderate adverse, the principal reason for the resulting effects is due to the frequency of access and the minor land loss associated the holdings rather than a high magnitude of impact.
- Operation assessment*
- 13.10.24 The following section is applicable to all schemes and as such has been detailed only in the route wide assessment.
- 13.10.25 The effects of permanent land take are discussed in the construction assessment as this is when the impact occurs. The following

assessment looks at the effects upon the agricultural land holdings once the Scheme is operational.

- 13.10.26 Potential severance effects during operation have been considered as part of the design development and the scheme includes a number of solutions that mitigate potential severance to agricultural holdings.
- 13.10.27 This includes new private means of access and a number of new overbridges which have been designed in consultation with affected landowners in order to meet their long-term needs.
- 13.10.28 Given the steps taken to avoid the complete severance of land with no access, it is not considered that the Project would lead to any likely significant severance effects on agricultural holdings during operation.
- 13.10.29 With temporary land take returned to the farm holding post construction, it is considered that the majority of agricultural holdings would continue to operate, particularly given mitigation measures such as new overbridges which seek to provide ongoing access between land and key infrastructure. Overall, during operation it is therefore considered that there would be neutral effects on agricultural holdings.
- 13.10.30 Any that cannot continue to operate as a result of land take have been assessed in the scheme by scheme construction assessment.
- 13.10.31 Agricultural holdings within the wider 500m study area would experience no loss or alteration of characteristics, features, elements or accessibility during operation (no change) which when combined with their low sensitivity would lead to a neutral effect.

#### Walkers, Cyclists and Horse-riders

##### *Construction Assessment*

- 13.10.32 During construction it is anticipated that the Project may result in some adverse effects on WCH using the PRow network, particularly routes located within the Order Limits. In total there are approximately 265 PRows within the study area of which approximately 85 intersect the Order Limits. In respect of all routes either temporarily or permanently effected by the scheme, the most appropriate diversion which provides the best practicable alternative will be put in place.
- 13.10.33 It should be noted that a sensitivity of medium has been applied to WCH for the routewide construction assessment. This is due to the fact that all WCH provisions in the scheme by scheme assessments are of medium or lower sensitivity, barring the following eight WCH provisions:
- FP358008
  - Penrith to Greystoke cycle route
  - FP 311013
  - NCN71/ Pennine Cycle Way
  - FP336011
  - Eden Valley Ride
  - FP372014
  - Pennine Way/NCN 70.

- 13.10.34 All of the above PRowWs are of high sensitivity apart from NCN71/Pennines Cycle Way and Pennine Way/NCN70 which are of very high sensitivity.
- 13.10.35 It is deemed appropriate to apply medium as the sensitivity of the WCH network at the routewide level due to the significantly higher proportion of medium sensitivity routes and availability of WCH provisions.
- 13.10.36 Appropriate diversions, where known, have been incorporated into the preliminary design and will be finalised at detailed design stage. There is an extensive PRowW network in the study area and the scheme by scheme assessment demonstrates that there are limited significant effects. This is due to the implementation of diversions as well as the fact that the routes within the study area are likely to be predominantly used for recreation and there are alternative routes available within the wider area. The Project is likely to result in either temporary or permanent slight adverse effects on WCH at the routewide level, which are not significant.

#### *Operation Assessment*

- 13.10.37 Throughout the preliminary design process, the need for providing east-west WCH provision has been raised during consultation. Subsequently the design has provided greater east-west connections particularly by utilising de-trunked sections of the existing A66. In other instances connectivity has been provided parallel to the new dual carriageway. A summary of the provision for each scheme is outlined below:
- M6 Junction 40 to Kemplay Bank - Existing Toucan crossings and parallel shared cycle/footway on north side into Penrith to be retained to the north of the dual carriageway, although the alignment of the path may change slightly.
  - Penrith to Temple Sowerby - Shared cycle/footway parallel to scheme running entire length. New route ties into existing provision at each end of the scheme.
  - Temple Sowerby to Appleby - Shared cycle/footway primarily in the verge of de-trunked A66 running entire length. New route ties into existing provision at each end of the scheme.
  - Appleby to Brough - Shared cycle/footway parallel to scheme running entire length. New route ties into existing provision at each end of the scheme.
  - Bowes Bypass - Segregated crossing of dual carriageway for PRowW at Bowes Cross Farm to Hulands Quarry. Existing footway to be retained under Bowes junction, signed National Cycle Route to be retained over new Clint Lane bridge.
  - Cross Lane to Rokeby - Shared cycle/footway parallel to the scheme from Cross Lanes to Greta Bridge, connecting into existing cycleway at Greta Bridge.
  - Stephen Bank to Carkin Moor - Shared bridleway/footway in verge of old de-trunked A66 running entire length. Segregated crossings of dual carriageway at several locations to reconnect and tie into existing PRowWs.

- 13.10.38 Whilst the benefits on an individual scheme by scheme basis may not be significant, the routewide benefits will result in a permanent moderate beneficial effect across the whole route, which will be significant.
- 13.10.39 It should be noted that a sensitivity of medium has been applied to routewide WCH provision. This aligns with the fact that medium sensitivity is the dominant category across the scheme by scheme assessment and also prevent any beneficial effects from being over reported within the assessment, if a higher sensitivity was utilised.

*Human health*

*Construction assessment – environmental conditions*

*Air quality*

- 13.10.40 To construct the Project, large quantities of materials will be transported to construction compounds. A traffic management programme will be implemented to mitigate impacts on local traffic flows. An indicative route-wide assessment of the effects of construction traffic on NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations is reported in Chapter 5: Air Quality. This has identified seven receptors along the Project route where predicted changes in annual mean NO<sub>2</sub> concentrations are greater than 0.4µg/m<sup>3</sup>, the threshold identified in DMRB LA105 for a non-imperceptible effect on human exposure. No receptors are predicted to exceed this threshold for PM<sub>10</sub> and PM<sub>2.5</sub> concentrations. Based on the findings of the air quality assessment, changes in the level of population exposure to NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> are considered to be negligible and the health effect is assessed as neutral.

*Construction assessment - severance and accessibility*

*Access to employment*

- 13.10.41 As described in Chapter 2: The Project, the Project will generate new job opportunities in the study area throughout the five-year construction period, with an estimated maximum monthly workforce of 540 staff working across all schemes. A range of jobs will be created, including unskilled and skilled construction jobs, engineering, planning and management professionals. Without deliberate intervention, the majority of professional and skilled workers are likely to come from outside the local area, with jobs that are available to the local population likely to comprise mainly low-skilled or unskilled positions. The Skills and Employment Strategy will seek to enable local people to access the opportunities for employment and training resulting from the presence of the large-scale 5-year construction project.
- 13.10.42 For people who are currently unemployed, in low-paid or insecure employment, or who have low levels of qualifications, access to employment and training during the construction of the Project may lead to positive health outcomes, including improved mental health and the ability to access healthier lifestyle choices through increased income. There is a potential for long-term health benefits resulting from improved



future employment prospects. It is considered that construction employment and training will result in a positive health effect.

- 13.10.43 Increased spend by the construction workforce on accommodation, retail and hospitality is likely to benefit local businesses, although the impact is likely to be relatively small compared with overall spend in the area. Construction of the Project will also provide opportunities for local businesses to provide services and materials through the supply chain. The Principal Contractor will support local businesses to identify and bid for contracts. These local economic effects may lead to increased employment and incomes, leading to positive health outcomes. The scale of indirect employment has not been quantified and therefore the health effect is assessed as uncertain.

*Access to local services and housing*

- 13.10.44 The estimated maximum monthly workforce of 540 staff working across all schemes will generate increased demand for accommodation in the local area. This has the potential to create additional demand in the private rental market and influence rental values and availability of housing for local people. Workers may also utilise tourist accommodation, reducing the capacity to accommodate tourists who would generate spend elsewhere in the economy. These effects have the potential to lead to negative wellbeing effects associated with reduced income in the tourism sector and reduced availability and/or increased costs of housing.
- 13.10.45 As described in Section 13.9, an Accommodation Strategy prepared in consultation with the Local Planning Authorities will aim to ensure that additional demand created by non-home-based workers does not place excessive pressure on the local housing market and visitor accommodation supply. At this stage, the health effect is assessed as uncertain.
- 13.10.46 The construction workforce has the potential to increase demand for local health services, reducing the capacity of those services to provide for the local population. It is considered that the majority of non-home-based workers will continue to be registered with their existing GPs rather than registering with a GP in the local area. Occupational healthcare and first aid provided by the contractor(s) will reduce the additional demand for local services, including A&E services. The health effects associated with access to health services is assessed as neutral.

*Operational assessment - Severance and accessibility*

*Access to employment*

- 13.10.47 Chapter 2: The Project sets out the Project Objectives, which include an objective to 'seek to improve access to services and jobs for local road users and the local community'.
- 13.10.48 The Combined Modelling and Appraisal Report (Application Document 3.8) predicts that the improved connectivity provided by the Project will give rise to wider economic benefits of £263.107m over a 60-year

economic appraisal period (2029 – 2088). These benefits will occur across the North of England, with an unknown proportion of benefits directly affecting communities within the study area.

- 13.10.49 Communities within the study area will benefit from shorter, more reliable journey times along the A66. Existing severance resulting from congestion at peak times and occasional major disruption in the event of lane closures on the single carriageway sections will be reduced. The Transport Assessment (Table 6-8) (Application Document 3.7) identifies a journey time saving of 19% (from 56 to 45 minutes) in 2029, increasing to 22% by 2051, as a result of the Project. This will support the growth of local businesses and improve commuting times for workers within the study area who travel to work in private vehicles or by public transport (bus) on the A66 and surrounding local road network.
- 13.10.50 It is considered that the Project is likely to lead to improved access to employment and associated improvements to income and quality of life for communities in the study area. Due to uncertainty about the scale of local employment and economic benefits, the health effect is assessed as uncertain.

## M6 Junction 40 to Kemplay Bank

### *Population*

### *Land-use and accessibility*

### *Private property and housing*

### *Construction assessment*

- 13.10.51 The assessment of effects on private property and housing considers the potential effects on residential properties within the vicinity of the scheme. As described in the baseline, there are no residential properties located within the Order Limits of this scheme and as such none will experience direct land take or demolition. Therefore no significant effect are expected for properties within the Order Limits.
- 13.10.52 There is one non-significant effect of note for the scheme which relates to the land take at the housing allocated land, The Land at Carleton Hall Farm. The associated land take results in a negligible impact which results permanent slight adverse effect, which is not significant.
- 13.10.53 In relation to private property and housing within the study area that would experience indirect effects during construction, effects would be temporary for the duration of the construction phase, with appropriate mitigation and management to be put in place through the EMP (Document Number 2.7), which will mitigate the impacts such that there are no likely significant effects.
- 13.10.54 Further details of all non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

### *Operation assessment*

- 13.10.55 In relation to private property and housing, the scheme would not differ significantly from the baseline situation. Any impacts would result in a discernible change in amenity and attributes which would be a minor adverse indirect impact.
- 13.10.56 The resulting effects would not be significant and further details of the non-significant effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

### *Community land and assets*

#### *Construction assessment*

- 13.10.57 The assessment of effects on community land and assets considers the potential effects on any land receptors that are considered to be community assets, for example religious facilities, open spaces, schools and emergency services. As described in the baseline, there are five community facilities located within the Order Limits of this scheme. They are predominantly located adjacent to the existing A66 where online widening will be required.
- 13.10.58 The land required to construct the scheme and implement the mitigation strategy will result in the Happy Hooves Riding Centre experiencing a total permanent and temporary land take of approximately 7.6ha which equates to approximately 52% of the total land ownership. With the school linked to the Riding for the Disabled Association and relying on a particular amenity value and outdoor space in order to operate and maximise the benefits to the users, the land take and construction disruption renders the asset unusable for its intended purpose. Whilst multiple businesses also operate on site they are owned by the same landowner and given that Happy Hooves has the highest sensitivity they have all been assessed as one receptor. The impact will be permanent and major adverse with the resulting effect being very large and significant.
- 13.10.59 During construction, the scheme is anticipated to lead to temporary indirect minor adverse impacts due to the construction phase works including dust, noise and vibration and landscape impacts, upon the following receptors:
- Cumbria Constabulary Station
  - Wetheriggs Country Park
  - Ullswater Community College Playing Field
  - Skirsgill Park.
- 13.10.60 The resulting effects on both Cumbria Constabulary Station and Wetheriggs Country Park, which are of very high sensitivity, will be moderate adverse and significant. Large effects are not anticipated as there will be no land take from the community receptors, and they will still be able to function in their existing capacity.

- 13.10.61 Similarly for Ullswater Community College Playing Field and Skirsgill Park, which are of high sensitivity, the resulting effects will be moderate adverse and significant.
- 13.10.62 The remainder of effects on all other community and tourism/recreation receptors are indirect and relate to potential effects associated with accessibility (e.g. severance or increased access issues) and more general construction effects (e.g. noise effects). No significant effects are likely.
- 13.10.63 With good design that ensures ongoing access to facilities, and with mitigation measures identified within the EMP (Document Number 2.7) it is not anticipated that construction would lead to any significant effects on the identified community assets over and above the direct effects recorded above.
- 13.10.64 Further details of all non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).
- Operation assessment*
- 13.10.65 During operation of the scheme it is anticipated that there would be an overall reduction in congestion and enhancements to the resilience of the local road network around the A66 (see Application Document 3.7 Transport Assessment).
- 13.10.66 As such, reduced delays and improved travel conditions and journey times as a result of the scheme are likely to contribute positively to accessibility to communities, facilities and services during operation, with junctions provided as part of the proposed A66 in order to facilitate greater connectivity across the scheme. This is considered to lead to a slight beneficial effect in terms of accessibility for local communities along the scheme.
- 13.10.67 The improvements will have a minor impact upon the tourism sector by improving access to and from the Lake District National Park, which is of very high sensitivity, particularly during peak seasons when congestion can be higher. Overall, the scheme will therefore lead to permanent moderate beneficial effects which will be significant.
- 13.10.68 During operation, the scheme is anticipated to lead to improvements in travel conditions which will be a minor beneficial impact due to the improved connectivity. The resulting effect upon the following community land and assets, which are of very high sensitivity, will be moderate beneficial and significant (large beneficial effects are not anticipated, in order to account for a reasonable worst case scenario):
- Wetheriggs Country Park
  - Birbeck Medical Group
  - North Lakes Primary School
  - Penrith Community Hospital
  - Fire Service National Benevolent Fund/Rehabilitation Centre
  - Kiddlywinks Nursery
  - Winter Park Care Home

- Ambulance Station
- Ullswater Community College
- Village Hall
- Cumbria Fire & Rescue Service
- Eden Deployment Centre
- Hunter Hall Primary School
- Mountain Rescue
- Skirsgill Dental Surgery
- Greengarth Assisted Living Facility
- Ghyllmount Dental
- Queen Elizabeth Grammar School
- Great North Air Ambulance Station
- The Lakes Medical Centre
- Cumbria Constabulary
- The Bridgeway
- NHS Teaching Hospital
- NHS Primary Care Trust
- Smile Fast.

13.10.69 All other community land and asset receptors will experience a slight beneficial and not significant effect as a result of the improved accessibility in the local area. Moderate beneficial effects are not anticipated, in order to account for a reasonable worst case scenario.

13.10.70 As reported in Chapter 12: Noise and Vibration there will be a moderate beneficial noise and vibration impact in the short term at three buildings within the Cumbria Blue Light Services adjacent to Kemplay which is significant. This will have a moderate beneficial impact on these receptors due to a change in quality to the amenity value for the facilities. The resulting permanent effect will be large beneficial, which is significant.

13.10.71 Further details of all non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

#### Development land and businesses

##### *Construction assessment*

13.10.72 No businesses are anticipated to experience permanent or temporary land loss as a result of this scheme.

13.10.73 During construction temporary land take from the Land Adjacent to Skirsgill Depot employment land allocation, will be required to allow for a construction compound. Approximately 2.03ha of the site, which equates to 61% will be required, which constitute a temporary major adverse impact as the compound would prevent the allocated land from being developed for the duration of the construction period. Overall, the effect of the temporary land take on the employment site is assessed very large adverse, which is significant.

13.10.74 It should be noted that the land will be reinstated to its current condition to allow for future development upon decommissioning of the compound.

13.10.75 Further information on the impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

*Operation assessment*

13.10.76 Overall, the scheme is envisaged to provide minor beneficial impacts through improvement made to journey time reliability and safety, which would serve to improve traffic conditions in the local area. It is not considered that the existing businesses identified within the study area would experience significant effects.

13.10.77 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

13.10.78 As reported in Chapter 12: Noise and Vibration there will be a moderate beneficial noise and vibration impact in the short term for three businesses within the Skirsgill Depot area, one of which is the Cumbria County Council Offices. The impact will be minor beneficial due to a change in quality to the amenity value for the business. The resulting permanent effect will be slight beneficial, which is not significant.

13.10.79 There will also be a minor adverse noise and vibration impact in the short term for one business (Atlantic Geomatics) within the Gillan Way business park. The impact will be minor adverse due to a change in quality to the amenity value for the business. The resulting permanent effect will be slight adverse, which is not significant.

*Agricultural land holdings*

*Construction assessment*

13.10.80 Land identified as being agricultural in use and within the Order Limits is shown on Figure 13.5 Agricultural land holdings (Application Document 3.3). Three agricultural land holding will be subjected to significant effects as listed below in Table 13-48: Agricultural land holdings subject to significant effects within the M6 Junction 40 to Kemplay Bank scheme.

Table 13-48: Agricultural land holdings subject to significant effects within the M6 Junction 40 to Kemplay Bank scheme

Name of farm or landowner surname	Total plot area(s) (ha)	Area (ha) within DCO boundary	Area (ha) permanently required	Area (ha) returned to agriculture (modified grassland)	Impact to access	Sensitivity	Magnitude of impact	Significance of effect
Coach House	19	10.34	6.77	3.26	Access to severed land required	Very high	Permanent moderate adverse	Very large adverse
Whinfell Park	800	18.60	9.58	8.97	Negligible	High	Permanent minor adverse	Moderate adverse
Leeming	49	4.69	3.71	0.74	Negligible	High	Permanent minor adverse	Moderate adverse

13.10.81 Permanent and temporary land take of approximately 6.77ha at the Coach House agricultural land holding will result in a permanent moderate adverse impact, which is a very large adverse significant effect. The land take is a as a result of the need for a construction compound and mitigation, which will reduce the available grazing land.

*Walkers, Cyclists and Horse-riders (WCH)*

*Construction assessment*

*Temporary Effects*

13.10.82 During construction multiple PRowS will be subject to temporary effects due to temporary closures and/or diversions to facilitate the construction of the scheme. The closures will be in place for the duration of the works and that alternative access will be provided for WCH using the PRowS. This will either be via a formal diversion to another local PRow or the construction of a suitable temporary PRow that provides the best practicable alternative.

13.10.83 Overall, the temporary closures will have a temporary slight adverse effect, which is not significant, upon WCH. The PRowS affected are listed below:

- FP321008
- FP358034
- FP358006
- FP358005.

13.10.84 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

*Permanent Effects*

13.10.85 Only PRowS located within the Order Limits will potentially be affected by the construction of the scheme. Multiple PRowS will be subject to permanent effects due to either permanent closures or diversions as a result of the construction of the scheme. However with appropriate mitigation and diversions the permanent slight adverse effects, are not significant upon WCH. The PRowS affected are listed below:

- FP358034
- FP358008
- The Penrith to Greystoke cycle route

13.10.86 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

*Operation assessment*

13.10.87 As a result of the scheme, several new footpaths and cycleways will be introduced. These are shown in the Walking, Cycling and Horse Riding Proposals (see Application Document 2.4). The magnitude of impact is assessed to be minor beneficial as it will improve safety and access to a



network of PRowS. Overall, the scheme is assessed to have a permanent slight beneficial effect on WCH, which is not significant.

- 13.10.88 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

### *Human health*

#### *Environmental conditions - construction assessment*

- 13.10.89 Environmental effects caused by the construction of the scheme will occur in suburban and rural communities on the south side of Penrith. The study area has an above average proportion of people over 65 and includes areas of high deprivation for employment, health and disability. People from these groups are more likely to have existing health conditions that may make them more vulnerable to adverse effects.
- 13.10.90 Chapter 5: Air Quality has identified a large construction dust risk potential for high-sensitivity receptors within 100m of the draft Order Limits. Residents on Clifford Road, Carleton Hall Road and Pategill Park will therefore be at risk of adverse impacts from dust effects. However, requirements for dust mitigation set out in Chapter 5 are considered to remove any significant impacts. The Air Quality assessment has not identified any significant effects on NO<sub>x</sub> and PM<sub>10</sub> concentrations resulting from construction activities. Therefore the health effect is assessed as neutral.
- 13.10.91 Construction activities with the potential to generate significant noise effects are listed in Chapter 12: Noise and Vibration. The residential areas around Clifford Road, Carleton Hall Road, Pategill Park and Skirsgill Lane, as well as Wetheriggs Country Park and Pategill Open Space, are in proximity to construction activities and are therefore likely to be impacted temporarily by construction noise. Construction noise effects will combine with significant visual impacts identified in Chapter 10: Landscape and Visual Effects, on Clifford Road and Skirsgill Lane and at Wetheriggs Country Park. Lighting at the Penrith Main Compound and during occasional night-time working will result in additional glare and localised light spill. These combined effects are likely to result in a temporary increase in levels of annoyance, reduced enjoyment of the public realm and open space, and a reduction in the perceived quality of the living environment for the affected communities. This is assessed as a negative health effect.
- 13.10.92 There is a likelihood of additional HGVs movements in and around Penrith, which may reduce the perceived quality of the local environment because of concerns about air emissions, noise and visual amenity and safety. This will depend on the number of movements, the location of construction traffic routes and the implementation of measures included in the Construction Traffic Management Plan (CTMP). The health effect is assessed as uncertain.

### *Severance and accessibility - construction assessment*

- 13.10.93 The study area includes suburban and rural communities on the south side of Penrith. It has an above average proportion of people over 65 and includes some areas of high deprivation for employment, health and disability. People from these groups are more likely to use services such as health and social care and to be dependent on public transport, making them more vulnerable to impacts on severance and accessibility.
- 13.10.94 Impacts on public green space and PRow during construction will include the temporary or permanent diversion of six footpaths and the Penrith to Greystoke cycle route. The landscape and visual assessment (Chapter 10: Landscape and Visual Effects) has identified significant adverse visual impacts on Wetheriggs Country Park and two PRow at Skirsgill Park and Brougham. Parts of Wetheriggs Country Park and PRow close to construction activities are also likely to be impacted by noise. These direct and indirect impacts will temporarily reduce the availability of tranquil green spaces and PRow for communities on the south side of Penrith. Some people may be deterred from using the affected resources and for others their enjoyment of them may be diminished. This will result in a temporary reduction in the mental and physical health benefits linked with access to green space and physical activity. The health effect is assessed as negative.
- 13.10.95 As reported in the Population assessment, the land required to construct the scheme and implement the mitigation strategy will require around half (7.6ha) of the land owned and used by the Happy Hooves Riding Centre, with the remaining land affected by noise and visual impacts from the construction site. This will prevent the facility from operating. As well as catering for the general public, the centre is an approved establishment for disabled riders and provides an alternative education programme for secondary pupils. The loss of this facility will reduce access to green space, physical activity, education and therapeutic activities its users, reducing the mental and physical health benefits linked to these activities. Vulnerable children and disabled people who use the site will be particularly affected. There are no alternative sites providing similar services in the local area. The health effect is assessed as negative.
- 13.10.96 The construction phase will lead to increased congestion on M6 Junction 40 and Kemplay Bank Roundabout, and longer journey times on the A66, due to traffic management measures such as reduced speed limits, narrow lanes and temporary closures of lanes and slip roads. Measures implemented through the CTMP will aim to minimise knock-on effects on the local road network. The Transport Assessment predicts that traffic will be diverted onto Clifford Road, to the north of Kemplay Bank Roundabout, with the potential to cause increased congestion on local roads in Penrith. To the south of Kemplay Bank Roundabout, traffic flows on the A6 and Eamont Bridge will increase. Traffic will be monitored and action will be taken as necessary to deter traffic from using minor roads. Based on information presented in the

Transport Assessment, there is a potential for some increases in journey times to community facilities such as local shops, Penrith Hospital, the Lakes Medical Practice, Penrith Leisure Centre and Ullswater Community College. These will depend on the effectiveness of mitigation measures set out in the CTMP. Journey time increases may deter some people from choosing to access these facilities. The health effect is assessed as negative.

- 13.10.97 Kemplay Bank Roundabout is adjacent to Penrith Community Fire and Ambulance Station. The CTMP will set out measures, developed in consultation with the emergency services, to maintain adequate access for the emergency services throughout the construction phase. The health effect of changes to emergency response times is assessed as neutral.

*Environmental conditions - operational assessment*

- 13.10.98 The Project will affect local air quality through changes in traffic flow, speed and fleet composition. The Air Quality Assessment (Chapter 5: Air Quality) has identified small increases and decreases in NO<sub>x</sub> and PM<sub>10</sub> concentrations at some locations close to the affected road network within the study area. Predicted concentrations will exceed the air quality objective for NO<sub>2</sub> as a result of the Project at two residential receptors on Ullswater Road in Penrith. Based on the air quality assessment, it is considered that there will be no change in exposure of the population to air pollutants during operation. Therefore, the health effect is assessed as neutral.
- 13.10.99 The noise and vibration assessment (Chapter 12) identifies significant adverse and beneficial effects on residential and non-residential receptors as a result of changes to traffic flows in the study area. Increased flows around the upgraded M6 Junction 40 will result in significant adverse noise effects on two offices and a children's nursery within the business parks adjacent to the junction. Upgrades to the Kemplay Bank roundabout will allow for more free-flowing traffic on the A66, decreasing noise emissions and resulting in significant beneficial effects at one dwelling and three non-residential properties (a local government service and two office/work studios) near the roundabout. Across the scheme, the changes in exposure to traffic noise will be low and are not expected to affect levels of annoyance, enjoyment of outdoor space, quality of sleep or perception of quality of the local environment at population scale. The health effect is therefore assessed as neutral.
- 13.10.100 The landscape and visual assessment (Chapter 10) has identified significant adverse impacts on viewpoints in the vicinity of the scheme. During the first year of operation, the presence of new road infrastructure between the M6 Junction 40 and Kemplay Bank Roundabout will result in major adverse visual impacts on users of Wetheriggs County Park and residents on Clifford Road. To the south, residents and users of community resources on Skirsgill Lane, including Hooves Riding Centre, will experience moderate adverse visual impacts

during the first year of operation. These impacts will reduce to slight (non-significant) impacts over 15 years as planting becomes established.

- 13.10.101 Exposure of the population to visual impacts will be high during the early stages of operation, resulting in reduced enjoyment of outdoor space and satisfaction with the local environment. This is assessed as a negative health effect. The health effect will be reduced to neutral once vegetation becomes established and the community becomes used to the presence of the new infrastructure.

#### *Severance and accessibility - operational assessment*

- 13.10.102 The Transport Assessment sets out the changes in local traffic flows resulting from the Project. Local journey times on the A66, M6 Junction 40 and Kemplay Junction will improve. However, increased traffic flows into Penrith, for instance on the A592 Ullswater Road, are likely to lead to minor increases in congestion elsewhere on the local road network. Overall, the effect on journeys in and around Penrith will be marginal. The health effect associated with road connectivity in the study area is assessed as neutral.

- 13.10.103 The Road Safety assessment reported in the Transport Assessment (Table 8-5) predicts that, over the 60-year appraisal period, the Project will save 23 slight, 3 serious and 0 fatal casualties on the M6 Junction 40 to Kemplay Bank section of the A66 and associated junctions and links. This is assessed as a positive health effect.

- 13.10.104 Access for WCH across the M6 Junction 40 and Kemplay Bank roundabouts will be retained, as will the existing shared use cycle/footway runs along the north side of the A66. The effects on access for WCH is assessed as neutral.

### **Penrith to Temple Sowerby**

#### *Population*

#### *Land-use and accessibility*

#### *Private property and housing*

#### *Construction assessment*

- 13.10.105 The assessment of effects on private property and housing considers the potential effects on residential properties within the vicinity of the scheme, as well as potential effects on residential development land.
- 13.10.106 Lightwater Cottages, located along the access road to Haversheaf Hall, will require demolition in order for the scheme to be constructed. This will have a major adverse impact on the two properties. When combined with the medium sensitivity of the receptor it will lead to permanent large adverse effects, which will be significant.
- 13.10.107 Foxgloves, located directly off the existing A66, will be acquired to construct this scheme. This will have a major adverse impact. When

combined with the medium sensitivity of the receptor it will lead to permanent large adverse effects, which will be significant.

13.10.108 Barn Owl Cottage, located directly off the existing A66, will be acquired to construct the scheme. This will have a major adverse impact. When combined with the medium sensitivity of the receptor it will lead to permanent large adverse effects, which will be significant.

13.10.109 Both Foxgloves and Barn Owl Cottage will be acquired by National Highways as part of the works to repurpose the Llama Karma Kafe into the National Highways Information Hub. The Information Hub has not been considered as a receptor, for construction, as it is part of the Project infrastructure.

13.10.110 High Barnes Cottage, located directly off the existing A66, will be demolished in order to construct the scheme. This will have a major adverse impact. When combined with the medium sensitivity of the receptor it will lead to permanent large adverse effects, which will be significant.

13.10.111 In relation to private property and housing within the study area that would experience indirect effects during construction, effects would be temporary for the duration of the construction phase, with appropriate mitigation and management to be put in place through the EMP (Document Number 2.7), which will mitigate the impacts such that there are no likely significant effects.

13.10.112 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

#### *Operation assessment*

13.10.1 In relation to private property and housing, the scheme would not differ significantly from the baseline situation. Any impacts would result in a permanent adverse discernible change in amenity and attributes, which would be a minor indirect adverse impact.

13.10.2 The resulting effects would not be significant and further details of the non-significant effects can be found within Further information on the impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

#### *Community land and assets*

##### *Construction assessment*

13.10.3 The assessment of effects on community land assets considers the potential effects on any and receptors that are considered to be community assets, for example religious facilities, open spaces, school and emergency services. As described in the baseline, there are no community facilities located within the Order Limits of this scheme.

13.10.4 With good design that ensures ongoing access to facilities, and with mitigation measures identified within the EMP (Document Number 2.7) it is not anticipated that construction would lead to any significant effects on the identified community assets.

- 13.10.5 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).  
*Operation assessment*
- 13.10.6 During operation of the scheme it is anticipated that there will be an overall reduction in congestion and enhancements to the resilience of the local road network around the A66 (see Application Document 3.7 Transport Assessment). No significant effects are anticipated as a result of the works.
- 13.10.7 Non-significant beneficial effects are likely at St Ninnians Church and the Brougham Institute due to the improved accessibility, with slight beneficial effects likely.
- 13.10.8 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).
- 13.10.9 As reported in Chapter 12: Noise and Vibration there will be a major beneficial noise and vibration impact in the short term at Brougham Institute, which is significant. This will have a moderate beneficial impact on this receptor due to a change in quality to the amenity value of the facility. The resulting permanent effect will be moderate beneficial, which is significant.  
*Development land and businesses*  
*Construction assessment*
- 13.10.10 As a result of works to widen the carriageway, both the Llama Karma Kafe and Llamas Pyjamas businesses, will be rendered unviable due to statutory blight and a loss of parking. Both businesses have a medium sensitivity, and the magnitude impact would be major adverse. The effect would be large adverse and permanent in nature, to account for assessing the worst-case scenario.
- 13.10.11 It should be noted that National Highways have undertaken early consultation with the owners of both businesses and acquired those businesses during the design development process. The buildings that the businesses operated from have been repurposed as a National Highways Information Hub. The Information Hub has not been considered as a receptor, for construction, as it is part of the Project infrastructure.
- 13.10.12 No other businesses are anticipated to experience land loss or acquisition as a result of this scheme.
- 13.10.13 Center Parcs Whinfell Forest is located 1km to the south of the Order Limits and is a key tourism business within the region. The receptor is accessed via the A66 and there is the potential for access to be restricted during construction which could potentially deter visitors to the site, particularly if the timings of construction fall during peak tourism seasons, with the impact being minor adverse. Due to the very high sensitivity of the site, the resulting effect will be moderate adverse and

significant but temporary in nature. Large adverse effects are not anticipated as maintaining access will be a key requirement of the CTMP during construction and there will be appropriate signage to signpost the access locations to Center Parcs Whinfell Forest.

- 13.10.14 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

*Operation assessment*

- 13.10.15 Overall, the scheme is envisaged to provide minor beneficial impacts improving journey time, reliability and safety, which would in turn serve to improve traffic conditions in the local area. It is not considered that the existing businesses identified within the study area would experience significant effects.

- 13.10.16 An exception to this would be the new grade-separated junction will provide access to Center Parcs from the new alignment of the A66. The junction will allow for all movements on and off the A66, making it easier and safer for users to join the main highway and preventing tailbacks at peak times. This will be a beneficial impact, particularly during peak tourism seasons when traffic flows are higher. Center Parcs is a very high sensitivity receptor and the improvements to access will represent a minor beneficial impact which will be a permanent moderate beneficial effect, which is significant. Large beneficial effects are not anticipated as the scheme is not likely to significantly increase visitor numbers to the site.

- 13.10.17 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

*Agricultural land holdings*

*Construction assessment*

- 13.10.18 Land identified as being agricultural in use and within the Order Limits is shown on Figure 13.5 Agricultural land holdings (Application Document 3.3). Two agricultural land holding will be subjected to significant effects as listed below in Table 13-49: Agricultural land holdings subject to significant effects within the Penrith to Temple Sowerby scheme.

Table 13-49: Agricultural land holdings subject to significant effects within the Penrith to Temple Sowerby scheme

Name of farm or landowner surname	Total plot area(s) (ha)	Area (ha) within DCO boundary	Area (ha) permanently required	Area (ha) returned to agriculture (modified grassland)	Impact to access	Sensitivity	Magnitude of impact	Significance of effect
Winderwath Estate	1028	74.91	43.59	30.92	Negligible	High	Permanent minor adverse	Moderate adverse
Brougham Castle Farm	64	3.13	3.13	0.35	Negligible	High	Permanent minor adverse	Moderate adverse



## Walkers, Cyclists and Horse-riders (WCH)

### Construction assessment

#### Temporary Effects

- 13.10.19 During construction multiple PRowS will be subject to temporary effects due to temporary closures and/or diversions to facilitate the construction of the scheme. The closures will be in place for the duration of the works and that alternative access will be provided for WCH using the PRowS. This will either be via a formal diversion to another local PRow or the construction of a suitable temporary PRow that provides the best practicable alternative.
- 13.10.20 Overall, the temporary closures will have a temporary slight adverse effect, which is not significant, upon WCH. The PRowS affected are listed below:
- NCN 71/ Pennine Way. The PRow will be largely unaffected by the construction works and it will remain open. As outlined in the EMP and PRow Management Plan, WCH segregation will be required for the duration of the works which would have a negligible impact on WCH users.
- 13.10.21 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

#### Permanent Effects

- 13.10.22 Only PRowS located within the Order Limits will potentially be affected by the construction of the scheme. Multiple PRowS will be subject to permanent effects due to either permanent closures or diversions as a result of the construction of the scheme. However with appropriate mitigation and diversions the permanent slight adverse effects, are not significant, upon WCH. The PRowS affected are listed below:
- FP311013
  - FP311004
- 13.10.23 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

#### Operational assessment

- 13.10.24 As a result of the scheme, several new footpaths and cycleways will be introduced. These are shown in the Walking, Cycling and Horse Riding Proposals (see Application Document 2.4). The magnitude of impact is assessed to be minor beneficial as it will improve safety and access to a network of PRowS. Overall, the scheme is assessed to have a permanent slight beneficial effect on WCH, which is not significant.
- 13.10.25 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

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## *Human Health*

### *Environmental conditions -construction assessment*

- 13.10.26 Environmental effects caused by the construction of the scheme will occur in rural areas with low population density to the east of Penrith. This area includes an above average proportion of older people. Older people are more likely than others to have existing health conditions and therefore may be more vulnerable to some adverse health effects.
- 13.10.27 Chapter 5: Air Quality has identified a large construction dust risk potential for high-sensitivity receptors within 100m of the draft Order Limits. Residents at Whinfell Park, High Barn and Whinfell House will therefore be at risk of adverse impacts on wellbeing from dust effects. However, requirements for dust mitigation set out in Chapter 5 are considered to remove any significant impacts. The Air Quality assessment has not identified any significant effects on NO<sub>x</sub> and PM<sub>10</sub> concentrations resulting from construction activities. Therefore the health effects of air emissions from construction activities are assessed as neutral.
- 13.10.28 Construction activities with the potential to generate significant noise effects are listed in Chapter 12: Noise and Vibration. Residents of rural properties close to the draft Order Limits are likely to be impacted temporarily by construction noise. This will combine with close range views of construction activities from rural properties as described in Chapter 10: Landscape and Visual Impact Assessment. There are no environmental effects on public open spaces or other sensitive community receptors. Individual and combined noise and visual effects may result in a temporary reduction in the perceived quality of the living environment for the affected residents. Due to the low population density in the study area, the extent of exposure to these changes will be low and the health effect is assessed as neutral.
- 13.10.29 The CTMP will ensure that HGVs are prevented from using small rural roads and will be routed along suitable major roads, such as the existing A66, through the Penrith to Temple Sowerby area. Due to the low population density along the A66 in this area, the health effect from HGV traffic is assessed as neutral.

### *Severance and accessibility - construction assessment*

- 13.10.30 The study area is rural and sparsely populated. There is an above average proportion of people over 65. Older people are more likely to have impaired mobility and to use services such as health and social care, making them more vulnerable to impacts on severance and accessibility.
- 13.10.31 Two footpaths and National Cycle Network (NCN) route 71 will be diverted during the construction phase. The landscape and visual assessment (Chapter 10) has also identified significant adverse visual impacts on two rural PRoW in this area. The diversion of NCN 71 is not considered to reduce the value of this resource for health, since the

route will remain open throughout construction and the additional distance and amenity impacts will be slight in the context the overall route. Impacts on PRow are considered to have a small effect on overall access to green space and opportunities for physical activity due to the rural context and the availability of alternative recreational routes. The health effect is assessed as neutral.

- 13.10.32 The construction phase will lead to increased journey times on the A66 due to traffic management measures such as reduced speed limits and temporary closures of lanes and slip roads. Measures implemented through the CTMP will aim to minimise knock-on effects on the local road network. The Transport Assessment predicts that significant volumes of traffic will be diverted through Temple Sowerby, causing congestion in the village. Traffic will be monitored and action, such as traffic calming measures, will be taken to reduce traffic through the village. For the community of Temple Sowerby and surrounding rural areas, journey times are likely to be impacted both on and off the A66. Impacts on access to services such as Temple Sowerby Medical Practice, and facilities in larger centres such as Penrith, will depend on the effectiveness of mitigation measures set out in the CTMP. Journey time increases may deter some people from choosing to access these facilities. The health effect is assessed as negative.

*Environmental conditions - Operational assessment*

- 13.10.33 The Project will affect local air quality through changes to road alignment traffic flow, speed and fleet composition. The Air Quality Assessment (Chapter 5: Air Quality) has identified small increases and decreases in NOx and PM10 concentrations at receptors close to the affected road network within the study area. However, as the air quality across the study area is good and the number of sensitive receptors experiencing changes in air quality is low, no significant air quality impacts have been identified for the Penrith to Temple Sowerby area. Therefore, the health effect is assessed as neutral.
- 13.10.34 The noise and vibration assessment (Chapter 12 of this ES) identifies significant adverse and beneficial effects on residential and non-residential receptors as a result of changes to traffic flows in the study area. These include significant adverse effects on four residential properties close to the new dualled section of the A66 at Whinfell Park and a 400m section of a 1km PRow (Cumbria Footpath ID: 311013), and beneficial effects on one dwelling and a non-residential receptor near the Center Parcs junction and three residential properties on Moore Lane.
- 13.10.35 Across the scheme, the change in exposure to traffic noise is low and is not expected to lead to changes in levels of annoyance, enjoyment of outdoor space, quality of sleep or perception of quality of the local environment at population scale. The health effect is therefore assessed as neutral.
- 13.10.36 The landscape and visual assessment (Chapter 10 of this ES) has identified significant adverse impacts on viewpoints from rural areas in

the vicinity of the scheme. The visual impacts of the scheme in this area will affect unpopulated rural locations and individual rural properties. This will not result in exposure of the wider community to changes in visual amenity, and therefore there will be no effect on wellbeing at the population scale. The health effect is therefore assessed as neutral.

*Severance and accessibility - Operational assessment*

- 13.10.37 Traffic congestion along the A66 will be reduced as a result of the Project, leading to shorter, more reliable journey times. This will lead to improved connectivity for the rural communities in the study area to facilities, shops and services in Penrith and elsewhere. Better connectivity can benefit mental and physical health through increased access to a wide range of resources including employment, educational facilities, health and social care, sport, leisure and cultural facilities as well as basic needs such as food shopping, and increased opportunities for social interaction. The improved connectivity resulting from the Project is likely to result in a small increase in the number of people accessing these resources and is assessed as a positive health effect.
- 13.10.38 The existing at-grade junction at Centre Parcs will be replaced by a grade-separated junction, removing the need to cross oncoming traffic when turning right. The resulting reduction in driver stress on this stretch of the A66 is considered a positive wellbeing effect for road users.
- 13.10.39 The Road Safety assessment reported in the Transport Assessment (Table 8-5) predicts that, over the 60-year appraisal period, the Project will save 9 slight, 13 serious and 2 fatal casualties on the Penrith to Temple Sowerby section of the A66 and associated junctions and links. This is due to the removal of the single carriageway, junction improvements and diversion of traffic from the surrounding rural road network. This is assessed as a positive health effect.
- 13.10.40 A parallel shared cycleway/footway will be provided on the north side of the A66 between Penrith and Temple Sowerby. Two existing rural routes (Byway 311013 and Footpath 311004), which currently terminate at the A66, will be connected via the new route and grade-separated junction, creating enhanced opportunities for walking and cycling. By providing a safe crossing of the A66 and a 6-mile segregated route between Penrith and Temple Sowerby, the scheme will encourage active travel, physical activity and access to the countryside, which are linked to positive mental and physical health outcomes. The health effect is assessed as positive.

## Temple Sowerby to Appleby

### *Population*

### *Land-use and accessibility*

### *Private property and housing*

### *Construction assessment*

- 13.10.41 The assessment of effects on private property and housing considers the potential effects on residential properties within the vicinity of the scheme, as well potential effects on residential development land.
- 13.10.42 Two residential demolitions will occur as a result of the scheme.
- 13.10.43 Dunelm House, located along the Broom on the C3004 to the A66, will require demolition in order to construct the scheme. This will have a major adverse impact. When combined with the medium sensitivity of the receptor it will lead to permanent large adverse effects, which will be significant.
- 13.10.44 Winthorn House, located along Cross End, will require demolition in order to construct the scheme. This will have a major adverse impact. When combined with the medium sensitivity of the receptor it will lead to permanent large adverse effects, which will be significant.
- 13.10.45 In relation to private property and housing within the study area that would experience indirect effects during construction, effects would be temporary for the duration of the construction phase, with appropriate mitigation and management to be put in place through the EMP (Document Number 2.7), which will mitigate the impacts such that there are no likely significant effects.
- 13.10.46 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

### *Operation assessment*

- 13.10.47 In relation to private property and housing, the scheme would result in some properties being located closer to the A66 due to the bypass, which would result in an adverse discernible change in amenity and attributes. However those to the south would experience minor benefits due to increased distances to the A66. On balance and in order to assess the reasonable worst case scenario the operational impact on private properties and housing would result in a permanent adverse discernible change in amenity and attributes, which would be a minor indirect adverse impact.
- 13.10.48 The resulting effects would not be significant and further details of non-significant operational impacts and effects can be found within Further information on the impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

## Community land and assets

### *Construction assessment*

- 13.10.49 The assessment of effects on community land assets considers the potential effects on any land receptors that are considered to be community assets, for example religious facilities, open spaces, school and emergency services. As described in the baseline, only the sports pitch associated with the Kirkby Thore Primary School is located within the Order Limits. No other community facilities are located within the Order Limits of this scheme and as such none will experience demolition or land take.
- 13.10.50 The Kirkby Thore Primary School sports pitch will be temporarily required to facilitate the diversion of a utility and will be returned to its existing use upon completion of the diversion works. The temporary land take equates to approximately 0.15ha which is approximately 35% of the outdoor space available to the School. This represents a major adverse temporary impact on the very high sensitivity receptor, which will be a very large adverse significant effect.
- 13.10.51 During construction, the scheme is anticipated to lead to temporary indirect minor adverse impacts due to the construction phase works including dust, noise and vibration and landscape impacts. The resulting effect upon the following community land and assets, which are of very high sensitivity, will be moderate adverse and significant. Large effects are not anticipated as there will be no land take from the community receptors, and they will still be able to function in their existing capacity:
- Temple Sowerby Church of England Primary School
  - Temple Sowerby Medical Practice
  - Appleby Grammar School
  - Kirkby Thore Pre-School
  - Appleby Sports Centre.
- 13.10.52 The remainder of effects on all other community land and assets are indirect and relate to potential effects associated with accessibility (e.g. severance or increased access issues) and more general construction effects (e.g. noise effects). This will lead to non-significant adverse effects on the receptors identified within the study area.
- 13.10.53 With good design that ensures ongoing access to facilities, and with mitigation measures identified within the EMP (Document Number 2.7) it is not anticipated that construction will lead to any significant effects on the identified community land and assets within the study area.
- 13.10.54 Details of all non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

### *Operation assessment*

- 13.10.55 During operation of the scheme it is anticipated that there would be an overall reduction in congestion and enhancements to the resilience of

the local road network around the A66. (see Application Document 3.7 Transport Assessment).

- 13.10.56 As such, reduced delays and improved travel conditions and journey times as a result of the scheme are likely to contribute positively to accessibility to communities, facilities and services during operation, with junctions provided as part of the proposed A66 in order to facilitate greater connectivity across the scheme. This is considered to lead to a slight beneficial effect in terms of accessibility for local communities along the scheme.
- 13.10.57 During operation, the scheme is anticipated to lead to improvements in travel conditions which will be a minor beneficial impact due to the improved connectivity. The resulting effect upon the following community land and assets, which are of very high sensitivity, will be moderate beneficial and significant. Large beneficial effects are not anticipated in order to account for a worst case scenario:
- Temple Sowerby Church of England Primary School
  - Temple Sowerby Medical Practice
  - Kirkby Thore Primary School
  - Kirkby Thore Pre-School
  - Appleby Grammar School
  - Appleby Sports Centre.
- 13.10.58 All other community land and asset receptors will experience a slight beneficial and not significant effect as a result of the improved accessibility in the local area. Moderate beneficial effects are not anticipated in order to account for a worst case scenario.
- 13.10.59 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).
- 13.10.60 As reported in Chapter 12: Noise and Vibration there will be a major beneficial noise and vibration impact in the short term at the following receptors, which are significant. This will have a moderate beneficial impact on the following receptors, which will be significant, due to a change in quality of the amenity value:
- St Michael's Church
  - Methodist Church
  - Play Area, Main Street
  - Kirkby Thore Primary School
  - Victory Memorial Hall.
- 13.10.61 Moderate beneficial effects are likely at all receptors listed above, apart from Kirkby Thore Primary School, the Play Area on Main Street and Victory Memorial Hall. These receptors experience a large beneficial effect due to their very high or high sensitivity.

## Development land and businesses

### *Construction assessment*

- 13.10.62 As no existing businesses or development land are subject to demolition or land loss no significant effects are anticipated as a result of the construction works for this scheme, with the exception of British Gypsum.
- 13.10.63 British Gypsum is of very high sensitivity. After the implementation of the CTMP there will be temporary indirect minor adverse impacts due to potential traffic and transport disruption along the local highway network. The resulting effect, on British Gypsum, will be temporary large adverse, in the worst case, predominantly due to disruption to accessibility and logistics.
- 13.10.64 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

### *Operation assessment*

- 13.10.65 Overall, the scheme is envisaged to provide minor beneficial impacts through improving journey time reliability and safety, which would serve to improve traffic conditions in the local area.
- 13.10.66 British Gypsum will experience minor beneficial impacts due to improved journey time reliability and safety. Due to the very high sensitivity of the site, the resulting permanent effect will be moderate beneficial and therefore significant. Large beneficial effects are not anticipated in order to assess the worst case scenario.
- 13.10.67 As reported in Chapter 12: Noise and Vibration there will be a major beneficial noise and vibration impact in both the short and long term for the receptors listed below. The impact will be moderate beneficial due to a change in quality to the amenity value for the business. The resulting permanent effect will be moderate beneficial, which is significant
- Bridge End pub
  - Dunkeld Cottage
  - Somerset House
  - Foresters Hall.
- 13.10.68 In addition to this there will a major beneficial noise and vibration impact in both the short term reducing to moderate at Cruck End and Rose Cottage. Overall a minor beneficial impact will occur in the long term due to a change in quality to the amenity value for the business. The resulting permanent effect will be minor beneficial, which is not significant.
- 13.10.69 There will also be a moderate adverse noise and vibration impact in the short term but reducing to minor in the long term at the Eden Conference Barn. The impact will be minor adverse due to a change in quality to the amenity value for the business. The resulting permanent effect will be slight adverse, which is not significant.



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13.10.70 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

[Agricultural land holdings](#)

[Construction assessment](#)

13.10.71 Land identified as being agricultural in use and within the Order Limits is shown on Figure 13.5 Agricultural land holdings (Application Document 3.3). Twelve agricultural land holding will be subjected to significant effects as listed below in Table 13-50: Agricultural land holdings subject to significant effects within the Temple Sowerby to Appleby to scheme.

Table 13-50: Agricultural land holdings subject to significant effects within the Temple Sowerby to Appleby to scheme

Name of farm or landowner surname	Total plot area(s) (ha)	Area (ha) within DCO boundary	Area (ha) permanently required	Area (ha) returned to agriculture (modified grassland)	Impact to access	Sensitivity	Magnitude of impact	Significance of effect
Spitals	176	10.00	6.01	3.02	Negligible	Very High	Permanent minor adverse	Moderate adverse
West View		26.66	20.83	7.41	Access along and across A66 required	Very high	Permanent moderate	Very large adverse
Low Moor Caravan Park	27	8.18	4.18	4.06	Access for severed land	High	Permanent minor adverse	Moderate adverse
Crossfell House Farm	160	66.67	50.07	17.12	Access to severed land required	Very high	Permanent moderate adverse	Very large adverse
Roman Vale	19	7.83	7.2	1.77	Negligible	High	Permanent minor adverse	Moderate adverse
Street House	57	8.62	6.54	2.10	Access for severed land	High	Permanent minor	Moderate adverse
Fremington	143	4.63	2.48	2.15	Negligible	High	Permanent minor adverse	Moderate adverse
Rogerhead	96	4.31	3.23	1.05	Negligible	High	Permanent minor adverse	Moderate adverse
West View Farm	80	8.03	7.88	0.15	Negligible	High	Permanent minor adverse	Moderate adverse
Far Boorm Lodge	121	5.24	4.66	0.57	Negligible	High	Permanent minor adverse	Moderate adverse

Name of farm or landowner surname	Total plot area(s) (ha)	Area (ha) within DCO boundary	Area (ha) permanently required	Area (ha) returned to agriculture (modified grassland)	Impact to access	Sensitivity	Magnitude of impact	Significance of effect
Redlands Bank	150	16.36	12.38	3.22	Negligible	High	Permanent minor adverse	Moderate adverse
Nicholson	34	12.59	8.2	4.3	Negligible	High	Permanent minor adverse	Moderate adverse

- 13.10.72 Permanent and temporary land take of approximately 20.83ha at the West View agricultural land holding will result in a permanent moderate adverse impact, which is a very large adverse significant effect. The land take is required to facilitate the construction of the scheme which includes multiple drainage ponds and crossing provisions across the A66 as well as environmental mitigation. This results in the loss of a large area of land in close proximity to the dairy unit which is critical for the operating of the business.
- 13.10.73 Permanent land take to 50.07 ha at the Crossfell House Farm agricultural land holding will result in a permanent moderate adverse impact, which is a large adverse significant effect. The land take is predominantly required to facilitate the construction of the scheme including a drainage pond. This results in the loss of a large area of land in close proximity to the dairy unit.

#### Walkers, Cyclists and Horse-riders (WCH)

##### Temporary Effects

- 13.10.74 During construction multiple PRoWs will be subject to temporary effects due to temporary closures and/or diversions to facilitate the construction of the scheme. The closures will be in place for the duration of the works and that alternative access will be provided for WCH using the PRoWs. This will either be via a formal diversion to another local PRoW or the construction of a suitable temporary PRoW that provides the best practicable alternative.
- 13.10.75 Overall, the temporary closures will have a temporary slight adverse effect, which is not significant, upon WCH. The PRoWs affected are listed below
- FP368002
  - FP368006
  - FP336008
  - FP317004
  - FP341029
  - BW317011
  - FP336014
  - FP317008
  - Eden Valley Cycle Route
  - BW341001

- 13.10.76 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

##### Construction assessment

##### Permanent Effects

- 13.10.77 Only PRoWs located within the Order Limits will potentially be permanently affected by the construction of the scheme. Multiple PRoWs will be subject to permanent effects due to either permanent closures or diversions as a result of the construction of the scheme.

However with appropriate mitigation and diversions the permanent slight adverse effects, are not significant, upon WCH. The PRoWs affected are listed below:

- BW336007
- FP336011
- FP336017
- BW336018
- FP336013
- FP341017
- FP317006
- BW317005
- FP317004
- BW317012

13.10.78 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

#### *Operation assessment*

13.10.79 As a result of the scheme, several new footpaths and cycleways will be introduced. These are shown in the Walking, Cycling and Horse Riding Proposals (see Application Document 2.4). The magnitude of impact is assessed to be minor beneficial as it will improve safety and access to a network of PRoWs. Overall, the scheme is assessed to have a permanent slight beneficial effect on WCH, which is not significant.

13.10.80 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

#### *Human Health*

##### *Environmental conditions - construction assessment*

13.10.81 Environmental effects caused by the construction of the scheme will occur in the community of Kirkby Thore, with the residential area and Kirkby Thore Primary School located close to the Order Limits. This area includes an above average proportion of people over 65. Older people are more likely than others to have existing health conditions and therefore may be more vulnerable to some adverse health effects. The presence of Kirkby Thore Primary School means that a large number of children are present in the study area, close to the Order Limits. Children are particularly vulnerable as effects can have lasting impacts on longer term health.

13.10.82 Chapter 5: Air Quality has identified a large construction dust risk potential for high-sensitivity receptors within 100m of the draft Order Limits. Kirkby Thore Primary School and the residential area of Dunfell View and Sandersons Croft will therefore be at risk of adverse impacts on wellbeing from dust effects. Requirements for dust mitigation set out in Chapter 5: Air Quality are considered to remove any significant impacts. The Air Quality assessment has not identified any significant

effects on NO<sub>x</sub> and PM<sub>10</sub> concentrations resulting from construction activities. Therefore the health effects are assessed as neutral.

- 13.10.83 Construction activities with the potential to generate significant noise effects are listed in Chapter 12: Noise and Vibration. The school and residential areas on the northern and western edges of Kirkby Thore are in proximity to construction activities and therefore are likely to be impacted by construction noise. Construction noise effects will combine with significant visual effects reported in Chapter 10: Landscape and Visual Effects in residential areas on the western and northern edges of Kirkby Thore, including Low Moor Park and Sandersons Croft, and at Kirkby Thore Primary School. Lighting during occasional night-time working will result in additional glare and localised light spill. These combined effects are likely to result in a temporary increase in levels of annoyance, reduced enjoyment of the public realm and open space, and a reduction in the perceived quality of the living environment for the affected communities. This is assessed as a negative health effect.
- 13.10.84 To construct the Project, large quantities of materials will be transported to construction compounds. The CTMP will ensure that HGVs are prevented from using small rural roads and will be routed along suitable major roads, such as the existing A66, through the Temple Sowerby to Appleby area. The A66 passes close to Kirkby Thore and Crackenthorpe and the presence of additional HGVs in these locations is likely to reduce the perceived quality of the local environment because of concerns about air emissions, noise and visual amenity and safety. The impacts will depend on the number of HGV movements and the implementation of measures included in the CTMP. The health effect is assessed as uncertain.

#### *Severance and accessibility - construction assessment*

- 13.10.85 The study area is rural and contains a number of villages, including Kirkby Thore and Crackenthorpe, which are close to the Order Limits. There is an above average proportion of people over 65, who are more likely to have impaired mobility and to use services such as health and social care, making them more vulnerable to impacts on severance and accessibility.
- 13.10.86 Impacts on access to publicly accessible green space and P<sub>RoW</sub> during construction will include the temporary or permanent diversion of 13 footpaths, six bridleways and the Eden Valley Cycle Route. The landscape and visual assessment (Chapter 10) has identified significant adverse visual impacts on seven P<sub>RoW</sub> and the Eden Valley Cycle Route. P<sub>RoW</sub> close to construction activities are also likely to be impacted by noise. The affected P<sub>RoW</sub> are in proximity to settlements in the study area, in particular at Kirkby Thore and Crackenthorpe. The direct and indirect impacts on P<sub>RoW</sub> are likely to reduce people's enjoyment of these routes and may deter some from using them for physical activity and access to the countryside, reducing the mental and physical health benefits linked to these activities. The health effect is assessed as negative.

- 13.10.87 As described in the Population assessment of community land and assets, sports pitch will be temporarily required to facilitate the diversion of a utility and will be returned to its existing use upon completion of the works. The temporary land take equates to approximately 0.15ha which is approximately 35% of the outdoor space available to the school. This will temporarily reduce opportunities for children to take part in sport and outdoor exercise. This is assessed as a negative health effect.
- 13.10.88 The majority of the new dual carriageway will be built offline, with traffic management measures such as temporary speed limits and lane closures required around the tie-in points between existing and new carriageway, resulting in short periods of disruption. The Transport Assessment has not identified any significant increases in traffic flows on the local road network in the Temple Sowerby to Appleby area. Communities in this area will experience congestion elsewhere on the A66 when accessing services and facilities in Penrith, but journey times to Appleby-in-Westmoreland will not be affected. The health effect is assessed as neutral.

*Environmental conditions - operational assessment*

- 13.10.89 The Project will affect local air quality through changes to road alignment, traffic flow, speed and fleet composition. The Air Quality Assessment (Chapter 5 of this ES) has identified small increases and decreases in NO<sub>x</sub> and PM<sub>10</sub> concentrations at receptors close to the affected road network within the study area. However, as the air quality across the study area is good and the number of sensitive receptors experiencing changes in air quality is low, no significant air quality impacts have been identified. Therefore, the health effect is assessed as neutral.
- 13.10.90 The Noise and Vibration assessment (Chapter 12 of this ES) and the Landscape and Visual assessment (Chapter 10 of this ES) identify significant effects on residential and non-residential receptors. In Sanderson Croft, on the north side of Kirkby Thore, the presence of the new offline bypass and junction will result in adverse noise effects on 57 properties and adverse visual effects in the early years of operation. There will also be significant noise and visual effects on four PRoW to the north of the village. As reported in Chapter 10 of this ES, the bypass will not be lit and the introduction of headlights will not cause a notable effect in the context of the British Gypsum site to the north. The noise and visual effects will adversely affect the wellbeing of the community at Sanderson Croft through annoyance and possible sleep disturbance, reduced enjoyment of outdoor space (including gardens and an area of public open space), and a perceived reduction in the quality of the living environment. These responses will lessen over time, as planting becomes established and the community becomes used to the presence of the new bypass. This is assessed as a negative health effect in the early years of operation, reducing to neutral in year 15 of operation.
- 13.10.91 Elsewhere in Kirby Thore there will be adverse visual impacts in the early years of operation due to the presence of the new bypass and

beneficial effects on noise due to reduced traffic flows on the de-trunked A66. Significant beneficial noise effects are predicted at 223 dwellings in central, southern and eastern Kirkby Thore (including Low Moor Park), nine non-residential receptors including Kirkby Thore Primary School, a playground, village hall, shops and places of worship, and 11 PRow. Adverse visual impacts will occur on the west side of the village at Low Moor Park, Priest Lane, Kirkby Thore Primary School and two PRow, and in the centre of the village on Main Street. These effects will be moderate adverse in the early years of operation, reducing to non-significant in year 15 when planting is established. The community in the central, southern and eastern areas of Kirkby Thore will experience reduced levels of annoyance and sleep disturbance due to reductions in traffic noise. This is assessed as a positive health effect. The combination of adverse visual and beneficial noise effects will lead to changes in levels of enjoyment of outdoor space and perceptions of the quality of the local environment across the village. It is likely that individuals within the community will respond to these effects in different ways, resulting in both positive and negative effects on wellbeing in the short term. Over time, as planting becomes established, negative health effects will be reduced to neutral.

- 13.10.92 The presence of a new bypass to the north of Crackenthorpe will decrease the traffic flow and noise emissions along the existing A66 on the southern boundary of the village. This will result in a significant beneficial effect on noise on 32 dwellings, three non-residential receptors and 14 PRow in this area. The non-residential receptors include a hotel, an office/work studio, and a place of worship. This is assessed as a positive health effect for the community of Crackenthorpe. Adverse noise and visual impacts to the north of Crackenthorpe as a result of the new bypass affect PRow and are assessed under severance and accessibility.
- 13.10.93 The Project will decrease traffic flows on Long Marton Road, resulting in a significant beneficial noise effect at eight residential properties in eastern Appleby. This may improve enjoyment of outdoor space and perceptions of the quality of the local environment for these residents, however due to the small number of properties affected and the low potential for wider effects on the public realm, the health effect is assessed as a neutral.
- 13.10.94 Across the Temple Sowerby to Appleby study area, there will be significant adverse noise effects at 10 rural dwellings and a significant beneficial noise effects at 17 rural dwellings. Residents in these properties may experience positive and negative changes in levels of annoyance, sleep disturbance and enjoyment of outdoor space. Since these are isolated rural properties, there will be no effects on public realm. Due to the low level of exposure, noise effects at individual rural dwellings are not considered to give rise to changes in population health and wellbeing, and therefore the health effect is assessed as neutral.



### *Severance and accessibility - operational assessment*

- 13.10.95 Traffic congestion along the dualled A66 will be reduced, leading to shorter, more reliable journey times and improved connectivity for rural communities to facilities, shops and services in Penrith and Appleby-in-Westmorland. Better connectivity can benefit mental and physical health through increased access to a wide range of resources including employment, educational facilities, health and social care, sport, leisure and cultural facilities, basic needs such as food shopping, and opportunities for social interaction. The improved connectivity resulting from the Project is likely to result in a small increase in the number of people accessing these resources and is assessed as a positive health effect.
- 13.10.96 The existing at-grade junction at Long Marton will be replaced by a grade-separated junction, removing the need to cross oncoming traffic when turning right. The resulting reduction in driver stress on this stretch of the A66 is considered a positive wellbeing effect for road users.
- 13.10.97 The Road Safety assessment reported in the Transport Assessment (Table 8-5) predicts that, over the 60-year appraisal period, the Project will save 184 slight, 39 serious and 4 fatal casualties on the Temple Sowerby to Appleby section of the A66 and associated junctions and links. This is due to the removal of the single carriageway, junction improvements and diversion of traffic from the surrounding rural road network. This is assessed as a positive health effect.
- 13.10.98 At Kirkby Thore, the Transport Assessment (Table 7-3) reports a 98% reduction in traffic flow on the de-trunked A66 along the southern edge of the village and an 86% reduction in flows on Main Street through the centre of the village. The speed limit on the de-trunked A66 will be reduced from 40 to 30mph. These changes will improve conditions for pedestrians and cyclists, increasing community connectivity within the village. This is assessed as a positive health effect.
- 13.10.99 To the north of Kirkby Thore, three rural PRow (Bridleway 336018 and Footpaths 336017 and 336013) will be crossed by the scheme. These will be diverted across the dual carriageway via the grade-separated junction, with diversion distances ranging from negligible to 500m. The amenity of these routes will be impacted by traffic noise from the new dual carriageway. These PRow are close to communities on the north side of the village and there are no alternative routes in the immediate area. It is considered that these impacts are likely to deter some residents from using the PRow for physical activity and access to the countryside, reducing the mental and physical health benefits linked to these activities. This is assessed as a negative health effect.
- 13.10.100 To the north of Crackenthorpe, the new dual carriageway will run alongside Bridleway 341001 (and old Roman Road) for approximately 2 miles and will cross three rural PRow currently linked to the bridleway. Connectivity between these routes will be retained via underpasses and the diversion distances will be minimal. However, the amenity of these routes will be impacted by the new dual carriageway. This is likely to

deter their use by people in Crackenthorpe and the wider area for physical activity and access to the countryside, reducing the mental and physical health benefits linked to these activities. This is assessed as a negative health effect.

- 13.10.101 A new shared cycle/footway will be provided alongside the de-trunked A66 from Kirkby Thore to the western extent of Appleby. The new 5-mile segregated route will encourage active travel, physical activity and access to the countryside, which are linked to positive mental and physical health outcomes. The health effect of the new route is assessed as positive.

## Appleby to Brough

### *Population*

### *Land-use and accessibility*

### *Private property and housing*

### *Construction assessment*

- 13.10.102 The assessment of effects on private property and housing considers the potential effects on residential properties within the vicinity of the scheme, as well potential effects on residential development land. There are two residential properties located within the Order Limits of this scheme.
- 13.10.103 Mains House and Croft Cottage, both located on the access road to West View, will be subjected to land take in order to construct the scheme. For Mains House this scheme will require 76% land take, which will have a major adverse impact. When combined with the medium sensitivity of the receptor it will lead to permanent large adverse effects, which will be significant.
- 13.10.104 For Croft Cottage this scheme will require 18% land take, which will be a moderate adverse impact. When combined with the medium sensitivity of the receptor it will lead to permanent moderate adverse effects, which will be significant.
- 13.10.105 It should be noted that neither property will be demolished as a result of the scheme.
- 13.10.106 In relation to private property and housing within the study area that would experience indirect effects during construction, effects would be temporary for the duration of the construction phase, with appropriate mitigation and management to be put in place through the EMP (Document Number 2.7), which will mitigate the impacts such that there are no likely significant effects.
- 13.10.107 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

### *Operation assessment*

13.10.108 In relation to private property and housing, the scheme would not differ significantly from the baseline situation. Any impacts would result in a permanent adverse discernible change in amenity and attributes, which would be a minor indirect adverse impact.

13.10.109 The resulting effects would not be significant and further details of the non-significant effects can be found within Further information on the impacts and effects within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4). Community land and assets.

### *Community land and assets*

#### *Construction assessment*

13.10.110 The assessment of effects on community land assets considers the potential effects on any and receptors that are considered to be community assets, for example religious facilities, open spaces, school and emergency services. As described in the scheme baseline, there are two community facilities located within the Order Limits, one area of Common Land and one AONB.

13.10.111 The scheme requires a land take from the Ministry of Defence (MoD). This includes the permanent acquisition of land which contains a playing field and a helipad, which could be utilised by emergency services and which has a high sensitivity. The loss represents a major adverse impact, which would be significant. However the embedded mitigation within the scheme design means that both the playing field and helipad will be relocated to the south of the scheme, off Castlehill Road. The replacement facilities will be fully operational before the closure of the existing provisions due to the potential use as an emergency services helipad. As such the residual impact will be no change which will be a neutral effect.

13.10.112 Brough Hill Fair, which is of high sensitivity, will be subjected to land take due to the realignment of this scheme. The land will be replaced with one of two potential alternative sites. Option 1 is to relocate the Brough Hill Fair to a site currently used by the MoD as a 'bivvy' or camping site and training area, and the access to the site is from Station Road. Option 2 is located to the south of the A66 and has access from Musgrave Lane which would allow access for horses and horse-drawn vehicles. It would also allow users of the site to park their caravans further from the road. This mitigation will be implemented during the construction phase and the replacement site would be operational prior to closure of the existing Brough Hill Fair. Therefore, it is considered that this scheme will not change the overall viability of this community asset and the impact would be temporary in nature and negligible adverse due to the disruption caused for relocation. This will be a slight adverse effect, which is not significant.

13.10.113 Ketland Common, which is of very high sensitivity, will be subjected to land take, due to the online widening and provision of new access to

Café 66. However as the land lost will be replaced by extending the current boundary of the Common Land, neutral effects are likely. The mitigation will also be implemented during the construction phase to ensure there is no overall loss in Common Land at any one point.

13.10.114 The North Pennine's AONB, which is of very high sensitivity, will be subjected to permanent land take in order to facilitate the construction of the scheme. The land take equates to less than 0.01% of the total site and is deemed to be a negligible impact and therefore is not significant, despite it not being replaced as part of the mitigation proposals.

13.10.115 During construction, the scheme is anticipated to lead to temporary indirect minor adverse impacts due to the construction phase works including dust, noise and vibration and landscape impacts. The resulting effect upon the following community land and assets, which are of very high sensitivity, will be moderate adverse and significant. Large effects are not anticipated as there will be no land take from the community receptors, and they will still be able to function in their existing capacity:

- Appleby Golf Course
- St Columbas Church
- Kingdom of Jehovahs Witnesses
- Brough Pre-School
- Brough Primary School
- Ambulance station
- Upper Eden Medical Practice
- Platts Green, common land
- Sandfire Mire, common land.

13.10.116 The remainder of effects on all other community and tourism/recreation receptors are indirect and relate to potential effects associated with accessibility (e.g. severance or increased access issued) and more general construction effects (e.g. noise effects). No significant effects are likely.

13.10.117 With good design that ensures ongoing access to facilities, and with mitigation measures identified within the EMP (Document Number 2.7) it is not anticipated that construction would lead to any significant effects on the identified community assets over and above the direct effects recorded above.

13.10.118 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

#### *Operation assessment*

13.10.119 During operation of the scheme it is anticipated that there will be an overall reduction in congestion and enhancements to the resilience of the local road network around the A66, which will be a minor beneficial impact (see Application Document 3.7 Transport Assessment).

13.10.120 The scheme is anticipated to lead to improvements in travel conditions. This will be particularly beneficial at peak times during summer months

and the holiday seasons. This will help to reduce any perceived barriers to accessibility, with associated benefits in terms of access to community land and assets.

13.10.121 The improvements will have a minor impact upon the tourism sector by improving access to and from the North Pennine's AONB. Overall, the scheme could therefore lead to permanent moderate beneficial effects which would be significant.

13.10.122 Brough Hill Fair will be relocated to one of the two alternative sites. Both sites will improve access compared to the existing site. This will result in a permanent minor beneficial impact. The resulting slight beneficial effect is not considered to be significant.

13.10.123 During operation, the scheme is anticipated to lead to improvements in travel conditions which will be a minor beneficial impact due to the improved connectivity. The resulting effect upon the following community land and assets, which are of very high sensitivity, will be moderate beneficial and significant. Large effects are not anticipated in order to account for a worst case scenario.

- Appleby Golf Course
- St Columbas Church
- Kingdom Hall of Jehovahs Witnesses
- Brough Pre-School
- Brough Primary School
- Ambulance station
- Upper Eden Medical Practice
- The relocated MoD Playing Field and Helipad
- Ketland Common, Common Land
- Platts Green, Common Land
- Sandfire Mire, Common Land.

13.10.124 All other community land and asset receptors will experience a slight beneficial and not significant effect as a result of the improved accessibility in the local area. Moderate effects are not anticipated in order to account for a worst case scenario.

13.10.125 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

#### Development land and businesses

##### *Construction assessment*

13.10.126 At the Barn End Caravan Park the temporary works will require access to the land for the duration of the works for the diversion of an overhead line. In order to assess the worst case it has been assumed the Caravan Park cannot operate temporarily but it would be returned to its current use on completion of the works. This represent a major adverse impact due to the temporary loss of the resource, which would result in a large significant effect, which will be temporary in nature.

- 13.10.127 No other businesses are anticipated to experience land loss or acquisition as a result of this scheme.
- 13.10.128 Helbeck Quarry is of very high sensitivity. After the implementation of the EMP there will be temporary indirect minor adverse impacts due to the construction phase works including dust, noise and vibration and landscape impacts. The resulting effect on the business will be temporary large adverse.
- 13.10.129 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).
- Operation assessment*
- 13.10.130 Overall, the scheme is envisaged to provide minor beneficial impacts improving journey time reliability and safety, which would in turn serve to improve traffic conditions in the local area. This applies to Café 66 where there is a new left-in/left-out junction that will ensure access to the eastbound carriageway matches the existing during operation.
- 13.10.131 Access to and from Helbeck Quarry will be made safer and more reliable due to the scheme. Whilst this represents a beneficial effect it would be minor as it would not noticeably change the operating of the business. The permanent effect would be moderate beneficial and significant. Large effects are not anticipated in order to ensure the worst case scenario has been assessed.
- 13.10.132 It is not considered that the existing businesses identified within the study area would experience significant effects, including Café 66, unless specifically detailed below. Further details of all non-significant impacts and effects can be found within Further information on the impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).
- 13.10.133 As reported in Chapter 12: Noise and Vibration there will be a minor adverse noise and vibration impact in the short term, at Apple Tree Barn, which is significant. This will have a minor adverse impact on the business due to a discernible change in quality of the amenity value of the holiday let, which will not compromise the viability of the business. The resulting permanent effect will be slight adverse and therefore not significant.
- Agricultural land holdings*  
*Construction assessment*
- 13.10.134 Land identified as being agricultural in use and within the Order Limits is shown on Figure 13.5 Agricultural land holdings (Application Document 3.3). Six agricultural land holding will be subjected to significant effects as listed below in Table 13-51: Agricultural land holdings subject to significant effects within the Appleby to Brough scheme

Table 13-51: Agricultural land holdings subject to significant effects within the Appleby to Brough scheme

Name of farm or landowner surname	Total plot area(s) (ha)	Area (ha) within DCO boundary	Area (ha) permanently required	Area (ha) returned to agriculture (modified grassland)	Impact to access	Sensitivity	Magnitude of impact	Significance of effect
High Green Farm		8.70	5.48	6.03	Access along and across A66 required	Very high	Permanent moderate adverse	Very large adverse
Low Bank End	220	29.45	29.45	0.00	Access along and across A66 required	High	Permanent moderate	Large adverse
Coupland Beck Farm	195	4.11	3.93	0.19	Access along and across A66 required	Very High	Permanent minor adverse	Large adverse
Wheatsheaf Farm	34	8.40	5.63	2.76	Negligible	High	Permanent minor adverse	Moderate adverse
Roseleigh	76	4.21	3.44	0.88	Negligible	High	Permanent minor adverse	Moderate adverse
Wilson	128	3.14	2.58	1.14	Negligible	High	Permanent minor adverse	Moderate adverse

13.10.135 Permanent land take of approximately 5.48ha at the High Green Farm agricultural land holding will result in a permanent moderate adverse impact, which is a very large adverse significant effect. The land take is required to facilitate the construction of the scheme which includes multiple drainage ponds, a new junction near Warcop as well as environmental mitigation. This results in the loss of a large area of land in close proximity to the dairy unit which is critical for the operating of the business.

13.10.136 Permanent land take of approximately 29.45ha at Low Bank End agricultural land holding will result in a permanent moderate adverse impact, which is a very large adverse significant effect. The land take is required to predominantly for environmental mitigation. This results in the loss of a large area of land in close proximity to the farm yard which is used to move livestock within the wider agricultural holding.

13.10.137 Permanent land take of approximately 3.93ha at the Coupland Beck Farm agricultural land holding will result in a permanent minor adverse impact, which is a large adverse significant effect. The land take is required to facilitate the construction of the scheme as well as environmental mitigation. This results in the loss of a large area of land currently utilised as a free range hen unit.

#### Walkers, Cyclists and Horse-riders (WCH)

##### *Construction assessment*

##### *Temporary Effects*

13.10.138 During construction multiple PRoWs will be subject to temporary effects due to temporary closures and/or diversions to facilitate the construction of the scheme. The closures will be in place for the duration of the works and that alternative access will be provided for WCH using the PRoWs. This will either be via a formal diversion to another local PRoW or the construction of a suitable temporary PRoW that provides the best practicable alternative.

13.10.139 Overall, the temporary closures will have a temporary slight adverse effect, which is not significant, upon WCH. The PRoWs affected are listed below:

- FP372031
- BW372010
- BW309031

13.10.140 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

##### *Permanent Effects*

13.10.141 Only PRoWs located within the Order Limits will potentially be permanently affected by the construction of the scheme. Multiple PRoWs will be subject to permanent effects due to either permanent closures or diversions as a result of the construction of the scheme. However with appropriate mitigation and diversions the permanent slight



adverse effects, are not significant, upon WCH. The PRowS affected are listed below:

- FP372028
- BW371024
- FP372013
- FP372022
- FP372027
- FP 372014
- BW372024
- FP372021
- FP372020
- BW309003
- FP 309004
- FP329001
- FP309033
- BW39032

13.10.142 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

#### *Operation Assessment*

13.10.143 As a result of the scheme, several new footpaths and cycleways will be introduced. These are shown in the Walking, Cycling and Horse Riding Proposals (see Application Document 2.4). The magnitude of impact is assessed to be minor beneficial as it will improve safety and access to a network of PRowS. Overall, the scheme is assessment to have a permanent slight beneficial effect on WCH, which is not significant.

13.10.144 Further information on the impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

#### *Human Health*

##### *Environmental conditions - construction assessment*

13.10.145 Environmental effects caused by the construction of the scheme will occur in rural areas with low population density to the east of Appleby, and close to the villages of Warcop and Brough. This area includes an above average proportion of people over 65. Older people are more likely than others to have existing health conditions and therefore may be more vulnerable to some adverse health effects.

13.10.146 The Air Quality Assessment (Chapter 5: Air Quality) has identified a large construction dust risk potential for high-sensitivity receptors within 100m of the draft Order Limits. Residents in a number of rural properties and farmsteads, Warcop village and Warcop Training Camp will therefore be at risk of adverse impacts on wellbeing from dust effects. However, requirements for dust mitigation set out in Chapter 5 are considered to remove any significant impacts. The Air Quality

assessment has not identified any significant effects on NO<sub>x</sub> and PM<sub>10</sub> concentrations resulting from construction activities. Therefore the health effects of air emissions from construction activities are assessed as neutral.

- 13.10.147 Construction activities with the potential to generate significant noise effects are listed in Chapter 12: Noise and Vibration. Residents on the eastern edge of Warcop and in rural properties close to the draft Order Limits are likely to be impacted temporarily by construction noise. This will combine with views of construction activities from rural areas as described in Chapter 10: Landscape and Visual Impact Assessment. There are no adverse noise or visual effects on public open spaces or other sensitive community receptors. Individual and combined noise and visual effects may result in a temporary reduction in the perceived quality of the living environment for residents of rural properties. Due to the low population density in the study area, the extent of exposure to these changes will be low and the health effect is assessed as neutral.
- 13.10.148 The CTMP will ensure that HGVs will be routed along suitable major roads, such as the existing A66, and will be prevented from passing through minor roads in the villages of Warcop and Brough. Due to the low population density along the A66 in this area, the health effect from HGV traffic is assessed as neutral.

*Severance and accessibility - construction assessment*

- 13.10.149 The study area is rural and contains a number of villages, including Warcop, which is close to the Order Limits. There is an above average proportion of people over 65, who are more likely to have impaired mobility and to use services such as health and social care, making them more vulnerable to impacts on severance and accessibility.
- 13.10.150 Impacts on access to green space and PRoW during construction will include the temporary or permanent diversion of 11 rural footpaths and six rural bridleways, and the loss of land from the south side of Ketland Common, which will be mitigated by increasing the boundary elsewhere. The landscape and visual assessment (Chapter 10) has identified significant adverse visual impacts on five rural PRoW, one of which crosses Ketland Common. Impacts on PRoW in this area are considered to have a small effect on overall access to green space and opportunities for physical activity due to the rural context and the availability of alternative recreational routes. The health effect is assessed as neutral.
- 13.10.151 The construction of the dual carriageway will include offline and online elements and online works will lead to periodic increases in journey times on the A66 due to traffic management measures such as reduced speed limits and the temporary closure of lanes and slip roads. These delays will affect access to the villages of Appleby-in-Westmoreland and Brough. Based on information presented in the Transport Assessment, it is not considered that the journey time delays would hinder access to services and facilities for rural communities in the study area. The health effect is assessed as neutral.

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*Environmental conditions - operational assessment*

- 13.10.152 The Project will affect local air quality through changes to road alignment traffic flow, speed and fleet composition. The Air Quality Assessment (Chapter 5: Air Quality) has identified small increases and decreases in NO<sub>x</sub> and PM<sub>10</sub> concentrations at receptors close to the affected road network within the study area. However, as the air quality across the study area is good and the number of sensitive receptors experiencing changes in air quality is low, no significant air quality impacts have been identified. Therefore, the health effect is assessed as neutral.
- 13.10.153 The Noise and Vibration assessment (Chapter 12 of this ES) and the Landscape and Visual assessment (Chapter 10 of this ES) identify significant adverse and beneficial effects on residential and non-residential receptors. The Project will increase the traffic flow on the existing dual carriageway resulting in a significant adverse effect on noise on 16 residential properties on Lady Anne Drive on the southern edge of Brough. This may reduce enjoyment of outdoor space and perceptions of the quality of the local environment for these residents, however due to the small number of properties affected and the low potential for wider effects on the public realm, the health effect is assessed as a neutral.
- 13.10.154 Across the Appleby to Brough study area, there will be significant adverse noise effects at 17 rural dwellings. Residents in these properties may experience positive and negative changes in levels of annoyance, sleep disturbance and enjoyment of outdoor space. Since these are isolated rural properties, there will be no effects on public realm. Due to the low level of exposure, these noise effects are not considered to give rise to changes in population health and wellbeing, and therefore the health effect is assessed as neutral.

*Severance and accessibility - operational assessment*

- 13.10.155 Traffic congestion along the A66 will be reduced as a result of the Project, leading to shorter, more reliable journey times. This will lead to improved connectivity for the rural communities in the study area to facilities, shops and services in Appleby-in-Westmorland and elsewhere. Better connectivity can benefit mental and physical health through increased access to a wide range of resources including employment, educational facilities, health and social care, sport, leisure and cultural facilities, basic needs such as food shopping, and opportunities for social interaction. The improved connectivity resulting from the Project is likely to result in a small increase in the number of people accessing these resources and is assessed as a positive health effect.
- 13.10.156 Three at-grade junctions at Sandford, Warcop and Brough will be replaced by grade-separated junctions, which will improve safety by removing the need to cross oncoming traffic when turning right. In addition, two existing field accesses and two minor side roads will be diverted to use the grade-separated junctions. The resulting reduction in

driver stress on this stretch of the A66 is considered a positive wellbeing effect for road users.

- 13.10.157 The Road Safety assessment reported in the Transport Assessment (Table 8-5) predicts that, over the 60-year appraisal period, the Project will save 129 slight, 36 serious and 5 fatal casualties on the Appleby to Brough section of the A66 and associated junctions and links. This is due to the removal of the single carriageway, junction improvements and diversion of traffic from the surrounding rural road network. This is assessed as a positive health effect.
- 13.10.158 A shared cycleway/footway is proposed to run alongside the dual carriageway from east of Appleby to Brough. The route will connect into 10 existing PRow which currently terminate at the A66. Proposed safe crossing points at grade-separated junctions and shared underpasses will improve pedestrian access and remove the severance caused by the existing A66. The new 5-mile segregated route and improved north-south connectivity on the rural PRow network will encourage active travel, physical activity and access to the countryside, which are linked to positive mental and physical health outcomes. The health effect is assessed as positive.

## Bowes Bypass

### *Population*

### *Land-use and accessibility*

### *Private property and housing*

### *Construction assessment*

- 13.10.159 The assessment of effects on private property and housing considers the potential effects on residential properties within the vicinity of the scheme, as well as potential effects on residential development land. There is one residential property located within the Order Limits of this scheme, which will experience significant effects.
- 13.10.160 Low Broats, located along The Street, will require demolition in order for the scheme to be constructed. This will have a major adverse impact. When combined with the medium sensitivity of the receptor it will lead to permanent large adverse effects, which will be significant.
- 13.10.161 In relation to private property and housing within the study area that would experience indirect effects during construction, effects would be temporary for the duration of the construction phase, with appropriate mitigation and management to be put in place through the EMP (Document Number 2.7), which will mitigate the impacts such that there are no likely significant effects.
- 13.10.162 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

### *Operation assessment*

- 13.10.163 In relation to private property and housing, the scheme would not differ significantly from the baseline situation. Any impacts would result in a permanent adverse discernible change in amenity and attributes, which would be a minor indirect adverse impact.
- 13.10.164 The resulting effects would not be significant and further details of the non-significant effects can be found within Further information on the impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

### *Community land and assets*

#### *Construction assessment*

- 13.10.165 The assessment of effects on community land assets considers the potential effects on any land receptors that are considered to be community assets, for example religious facilities, open spaces, school and emergency services. As described in the baseline, there is only one area of Common Land located within the Order Limits of this scheme. No other receptors are subject to land take or demolition.
- 13.10.166 Only one parcel of land which is part of the wider Bowes Moor Common Land allocation, which is of very high sensitivity, is anticipated to be subject to land take. The Common Land will be required for the duration of the construction phase as the entirety will be used as a site compound. The impact on the site will be major adverse but temporary as the Common Land will be reinstated to its existing use upon completion of the works. No alternative provisions are to be made and as such the resulting the effect will be very large adverse and significant but temporary in nature.
- 13.10.167 The remainder of effects on all other community and tourism/recreation receptors are indirect and relate to potential effects associated with accessibility (e.g. severance or increased access issued) and more general construction effects (e.g. noise effects). No significant effects are likely.
- 13.10.168 Both Bowes Hutchinson Church of England nursery and Bowes Hutchinson Church of England Primary School are of very high sensitivity. After the implementation of the EMP there will be temporary indirect minor adverse impacts due to the construction phase works including dust, noise and vibration and landscape impacts. The resulting effect on both community receptors will be temporary large adverse, in the worst case, predominantly due to disruption to accessibility and the sensitive nature of the users.
- 13.10.169 With good design that ensures ongoing access to facilities, and with mitigation measures identified within the EMP (Document Number 2.7) it is not anticipated that construction would lead to any significant effects on the identified community assets over and above the direct effects recorded above.

13.10.170 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

*Operation assessment*

13.10.171 During operation of the scheme it is anticipated that there will be an overall reduction in congestion and enhancements to the resilience of the local road network around the A66, which will be a minor beneficial impact (see Application Document 3.7 Transport Assessment).

13.10.172 The scheme is anticipated to lead to improvements in travel conditions. This will be particularly beneficial at peak times particularly during summer months and the holiday seasons. This will help to reduce any perceived barriers to accessibility, with associated benefits in terms of access to community land and assets.

13.10.173 During operation, the scheme is anticipated to lead to improvements in travel conditions which will be a minor beneficial impact due to the improved connectivity. The resulting effect upon the parcel of land which is part of the Bowes Moor Common Land, Bowes Hutchinson Church of England nursery and Bowes Hutchinson Church of England Primary School (all of which are of very high sensitivity), will be moderate beneficial and significant. Large beneficial effects are not anticipated in order to account for a worst case scenario.

13.10.174 All other community land and asset receptors will experience a slight beneficial and not significant effect as a result of the improved accessibility in the local area. Moderate beneficial effects are not anticipated in order to account for a worst case scenario.

13.10.175 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

*Development land and businesses*

*Construction assessment*

13.10.176 At Ivy Hall Farm and Campsite there is a requirement for the scheme to take approximately 50% (1.75ha) of the total 3.5ha land parcel. This is required to facilitate the construction of a drainage pond. Of the land taken approximately 60% (1.05ha) will be required permanently due to the drainage pond and access requirements for maintenance. The remaining land (0.7ha) will be returned to the current landowner during operation. Following consultation with the landowners it is noted that the land which is lost isn't currently utilised for camping, but the landowners have plans to use it in such a way in the future. Therefore the assessment considers the effect on the business assuming the full area is utilised.

13.10.177 The temporary loss of 0.7ha represents a moderate adverse impact due to the acquisition of land which will compromise the viability of the holiday lets and campsite. This is due to a loss of approximately 20% of the total 3.5ha land parcel and a loss of amenity. The moderate adverse impact will result in a temporary effect which is large and significant.

13.10.178 The permanent loss of approximately 1.05ha of land represents a moderate adverse impact due to the acquisition of land which equates to 30% of the total 3.5ha land parcel. This will alter how the business operates in the future as the permanently lost land was highlighted as an area of potential future development by the landowner to expand their campsite. The moderate adverse impact will result in a permanent effect which is large and significant.

13.10.179 Hulands Quarry is of very high sensitivity. After the implementation of the EMP there will be temporary indirect minor adverse impacts due to the construction phase works including dust, noise and vibration and landscape impacts. The resulting effect on the business will be temporary large adverse, in the worst case, predominantly due to disruption to accessibility and logistics.

13.10.180 No other businesses are anticipated to experience land loss or acquisition as a result of this scheme.

13.10.181 Further information on the impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

*Operation assessment*

13.10.182 Access to and from Hulands Quarry will be made safer due to the closure of the existing central reserve gaps and upgrading the junction geometry. Whilst this represents a beneficial effect it would be minor as it would not noticeably change the operating of the business. The permanent effect would be moderate beneficial and significant. Large beneficial effects are not reported in order to ensure the worst case scenario has been assessed.

13.10.183 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

13.10.184 As reported in Chapter 12: Noise and Vibration there will be a minor adverse noise and vibration impact in the short term, at the Architect's Studio located on the road adjacent to West End Garage, which is significant. This will have a minor adverse impact on the business due to a discernible change in quality to the amenity of the office, which will not compromise the viability of the business. The resulting permanent effect will be slight adverse and therefore not significant.

*Agricultural land holdings*

*Construction assessment*

13.10.185 Land identified as being agricultural in use and within the Order Limits is shown on Figure 13.5 Agricultural land holdings (Application Document 3.3). Eleven agricultural land holding will be subjected to significant effects as listed below in Table 13-52: Agricultural land holdings subject to significant effects within the Bowes Bypass scheme.

Table 13-52: Agricultural land holdings subject to significant effects within the Bowes Bypass scheme

Name of farm or landowner surname	Total plot area(s) (ha)	Area (ha) within DCO boundary	Area (ha) permanently required	Area (ha) returned to agriculture (modified grassland)	Impact to access	Sensitivity	Magnitude of impact	Significance of effect
The Old Armoury	10	1.29	0.96	0.42	Negligible	High	Permanent minor adverse	Moderate adverse
Old Police House	12	0.69	0.69	0.01	Negligible	High	Permanent minor adverse	Moderate adverse
West End Farm	220	13.63	7.12	6.47	Crossing point maintained	Very High	Permanent minor adverse	Moderate adverse
Black Lodge Farm	38	2.25	1.69	0.57	Negligible	High	Permanent minor adverse	Moderate adverse
Bowes Cross Farm	84	3.48	1.76	1.72	Access along and across A66 required	High	Permanent minor adverse	Moderate adverse
Middle Lowfield	60	7.67	5.13	2.52	Negligible	High	Permanent minor adverse	Moderate adverse
Streatlam Grove Farm	100	7.08	3.11	3.96	Negligible	High	Permanent minor adverse	Moderate adverse
Lyndale House	70	2.35	1.31	1.05	Negligible	High	Permanent minor adverse	Moderate adverse
High Broats	70	1.04	0.44	0.61	Negligible	High	Permanent minor adverse	Moderate adverse
2 Low Row	8	2.38	1.65	0.74	Negligible	High	Permanent minor adverse	Moderate adverse



Name of farm or landowner surname	Total plot area(s) (ha)	Area (ha) within DCO boundary	Area (ha) permanently required	Area (ha) returned to agriculture (modified grassland)	Impact to access	Sensitivity	Magnitude of impact	Significance of effect
Myre Keld Farm	30	2.08	0.99	1.09	Negligible	High	Permanent minor adverse	Moderate adverse

## Walkers, Cyclists and Horse Riders (WCH)

### *Construction Assessment*

#### *Permanent effects*

13.10.186 Only PRowS located within the Order Limits will potentially be permanently affected by the construction of the scheme. Multiple PRowS will be subject to permanent effects due to either permanent closures or diversions as a result of the construction of the scheme. However with appropriate mitigation and diversions the permanent slight adverse effects, are not significant, upon WCH. The PRowS affected are listed below:

- FP16
- FP18
- FP6
- FP12

13.10.187 During construction NCN 70 / Pennine Way is severed by the scheme and will require a permanent diversion. The route is nationally significant and is often used by cyclists on longer recreational journeys. Due to its national significance, the route is assessed to have a very high sensitivity. A permanent diversion will be required for the duration of the works and will provide the best practicable alternative. The route will be diverted to the south of the Order Limits, along The Street towards Bowes and then north along the A67, reconnecting to Clint Lane. As users are likely to already be committed to a longer journey, an increase in journey length from the diversion is not likely to have an impact on the user's ability to complete a journey. The magnitude of impact is therefore minor adverse. Overall, the permanent effect of the scheme on WCH is assessed to be moderate adverse, which is significant.

13.10.188 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

#### *Operational Assessment*

13.10.189 As a result of the scheme, several new footpaths and cycleways will be introduced. These are shown in the Walking, Cycling and Horse Riding Proposals (see Application Document 2.4). The magnitude of impact is assessed to be minor beneficial as it will improve safety and access to a network of PRowS. Overall, the scheme is assessment to have a permanent slight beneficial effect on WCH, which is not significant.

13.10.190 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

#### *Human Health*

#### *Environmental conditions - construction assessment*

13.10.191 Environmental effects caused by the construction of the scheme will occur in proximity to the village of Bowes. This area includes an above

average proportion of people over 65. Older people are more likely than others to have existing health conditions and therefore may be more vulnerable to some adverse health effects. The presence of Bowes Hutchinson Primary School means that a large number of children are present in the study area, close to the Order Limits. Children are particularly vulnerable as effects can have lasting impacts on longer term health.

13.10.192 The Air Quality Assessment (Chapter 5: Air Quality) has identified a large construction dust risk potential for high-sensitivity receptors within 100m of the draft Order Limits. Residents on The Street and Bowes Hutchinson Primary School will therefore be at risk of adverse impacts on wellbeing from dust effects. Requirements for dust mitigation set out in Chapter 5: Air Quality are considered to remove any significant impacts. The Air Quality assessment has not identified any significant effects on NOx and PM10 concentrations resulting from construction activities. Therefore the health effects of air emissions from construction activities are assessed as neutral.

13.10.193 Construction activities with the potential to generate significant noise effects are listed in Chapter 12: Noise and Vibration. Bowes Hutchinson Primary School, residential properties on the north side of The Street and properties on Clint Lane to the north of the A66 are located close to construction activities and therefore likely to be impacted temporarily by construction noise. Construction noise effects will combine with significant visual impacts identified in Chapter 10: Landscape and Visual Effects, on Clint Lane and The Street. Lighting during occasional night-time working will result in additional glare and localised light spill. These combined effects are likely to result in a temporary increase in levels of annoyance, reduced enjoyment of the public realm and open space, and a reduction in the perceived quality of the local environment for people in Bowes. This is assessed as a negative health effect.

13.10.194 The CTMP will ensure that HGVs are routed along suitable major roads, such as the existing A66, and will be prevented from passing along minor roads through the village of Bowes. Therefore the health effect from HGV traffic is assessed as neutral.

#### *Severance and accessibility - construction assessment*

13.10.195 The study area comprises the village of Bowes, and rural areas to the south of Bowes and to the north of the A66. There is an above average proportion of people over 65, who are more likely to have impaired mobility and to use services such as health and social care, making them more vulnerable to impacts on severance and accessibility.

13.10.196 Impacts on public green space and PRow during construction will include the permanent diversion four public footpaths and National Cycle Network Route 40 / Pennine Way Bowes Loop, where these routes cross the A66. The landscape and visual assessment (Chapter 10) has identified significant adverse visual impacts on the Pennine Way Bowes Loop and five rural PRow to the south of Bowes. Impacts on PRow in this area are considered to have a small effect on overall

access to green space and opportunities for physical activity due to the rural context and the availability of alternative recreational routes. The diversion of NCN 40 and Bowes Loop is not considered to reduce the value of these resources for health, since these cycling and walking routes will remain open throughout construction and the additional distance and amenity impacts will be slight in the context the overall routes. The health effect is assessed as neutral.

13.10.197 As described in the Population assessment of community land and assets, the area of Bowes Moor Common Land to the south of the A66 at the western end of Bowes village will be used as a site compound for the duration of the construction phase and will be reinstated on completion of the works. This land is not considered to be of value for access to green space and physical exercise. The health effect is assessed as neutral.

13.10.198 The construction phase will lead to longer journey times on the A66 due to traffic management measures such as reduced speed limits and temporary closures of lanes and slip roads. The Transport Assessment predicts that, due to increased travel times on the A66, traffic will be diverted onto the A67 and the A688 to undertake east west movements. This will increase traffic flows through Barnard Castle and Gainford, to the north of the A66. These roads will be monitored and action, such as traffic calming measures, will be taken as necessary to discourage traffic from using these routes. Depending on the effectiveness of mitigation measures set out in the CTMP, journey time increases on the A66, A67 and A688 have the potential to impact on access to services and facilities for rural communities. The health effect is assessed as uncertain

#### *Environmental conditions - operational assessment*

13.10.199 The Project will affect local air quality through changes in traffic flow, speed and fleet composition. The Air Quality Assessment (Chapter 5: Air Quality) has identified small increases and decreases in NO<sub>x</sub> and PM<sub>10</sub> concentrations at receptors close to the affected road network within the study area. However, as the air quality across the study area is good and the number of sensitive receptors experiencing changes in air quality is low, no significant air quality impacts have been identified. Therefore the health effect is assessed as neutral.

13.10.200 The Noise and Vibration assessment (Chapter 12: Noise and Vibration) and the Landscape and Visual assessment (Chapter 10: Landscape and Visual Effects) identify significant adverse and beneficial effects on residential and non-residential receptors. Changes in traffic flows on the Bowes Bypass will result in a significant adverse effect on one residential property and a business premises and a P<sub>RoW</sub> in Bowes. In the short term, there will be a moderate adverse visual impact on residents and community facilities located near the Bowes roundabout on the eastern side of the village. This will reduce to a non-significant impact at year 15 once vegetation is established and the community becomes used to the presence of new infrastructure. Due to the low

level of exposure to environmental effects in the community of Bowes, the health effect is assessed as neutral.

*Severance and accessibility - operational assessment*

- 13.10.201 Traffic congestion along the A66 and A67 will be reduced as a result of the Project, leading to shorter, more reliable journey times. This will lead to improved connectivity between Bowes and Barnard Castle, and easier access for rural communities to facilities, shops and services in both settlements. Better connectivity can benefit mental and physical health through increased access to a wide range of resources including employment, educational facilities, health and social care, sport, leisure and cultural facilities, basic needs such as food shopping, and opportunities for social interaction. The improved connectivity resulting from the Project is likely to result in a small increase in the number of people accessing these resources and is assessed as a positive health effect.
- 13.10.202 An upgraded, fully grade-separated junction will replace the existing partially grade-separated junction. This will improve safety by removing the need to cross oncoming traffic when turning right onto the A66 from The Street to the east of Bowes. Additionally, three farm accesses in this area will be diverted onto the new grade-separated junction. The resulting reduction in driver stress on this stretch of the A66 is considered a positive wellbeing effect for road users.
- 13.10.203 The Road Safety assessment reported in the Transport Assessment (Table 8-5) predicts that, over the 60-year appraisal period, the Project will result in an increase of 17 slight casualties and save 3 serious and 0 fatal casualties on the Bowes Bypass section of the A66 and associated junctions and links. This is due to the junction improvements, increased traffic flow on the existing dualled sections of the A66, and changes to traffic flows on the surrounding road network. These impacts are assessed respectively as negative and positive health effects.
- 13.10.204 To the northeast of Bowes, a new accommodation underpass will reconnect Footpath 6, which is currently severed by the existing A66. This will provide better links for the east of Bowes to rural PRoW on the north side of the A66. Further east, the gap in the central reservation will be closed to prevent WCH from crossing the dual carriageway and PRoW on the south side of the A66 will be diverted westwards to the accommodation underpass. These changes will result in better provision for WCH to the east of Bowes. However, the scale of change is not considered to have a material effect on active travel, physical activity and access to the countryside and therefore the health effect is assessed as neutral.

## Cross Lanes to Rokeby

### *Population*

### *Land-use and accessibility*

### *Private property and housing*

### *Construction assessment*

- 13.10.205 The assessment of effects on private property and housing considers the potential effects on residential properties within the vicinity of the scheme. As described in the baseline, there are no residential properties located within the Order Limits of this scheme and as such none will experience direct land take or demolition. Therefore no significant effect are expected for properties within the Order Limits.
- 13.10.206 In relation to private property and housing within the study area that would experience indirect effects during construction, effects would be temporary for the duration of the construction phase, with appropriate mitigation and management to be put in place through the EMP (Document Number 2.7), which will mitigate the impacts such that there are no likely significant effects.
- 13.10.207 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

### *Operation assessment*

- 13.10.208 In relation to private property and housing, the scheme would not differ significantly from the baseline situation. Any impacts would result in a permanent adverse discernible change in amenity and attributes, which would be a minor indirect adverse impact.
- 13.10.209 The resulting effects would not be significant and further details of the non-significant effects can be found within Further information on the impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

### *Community land and assets*

### *Construction assessment*

- 13.10.210 The assessment of effects on community land assets considers the potential effects on any land receptors that are considered to be community assets, for example religious facilities, open spaces, school and emergency services. As described in the baseline, there are no community facilities located within the Order Limits of this scheme.
- 13.10.211 The effects on all community and tourism/recreation receptors are indirect and relate to potential effects associated with accessibility (e.g. severance or increased access issues) and more general construction effects (e.g. noise effects). This will lead to non-significant adverse effects on The Old School and St Mary's Church.
- 13.10.212 With good design that ensures ongoing access to facilities and with mitigation measures identified within the EMP (Document Number 2.7),

it is not anticipated that construction would lead to any significant effects on the identified community assets.

13.10.213 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

*Operation assessment*

13.10.214 During operation of the scheme it is anticipated that there will be an overall reduction in congestion and enhancements to the resilience of the local road network around the A66 (see Application Document 3.7 Transport Assessment).

13.10.215 The scheme is anticipated to lead to improvements in travel conditions. However it is unlikely that this would significantly alter the existing conditions with respect to access to community land and assets. As such negligible impacts are expected on The Old School and St Mary's Church, which would not be significant.

13.10.216 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

*Development land and businesses*

*Construction assessment*

13.10.217 At Cross Lane Organic Farm Shop the works within the northern portion of the site will result in the partial loss of parking and approximately 20% of the Farm Shop's land. Following consultation with the landowner, it was identified that the land is utilised as staff parking and the loss would not compromise the viability of the business. During consultation it was noted that by amending the location of the slip road, to its current design, the scheme was able to reduce its land take on the business. This represents a moderate impact due to a partial loss of/damage to key characteristics of the business which will result in a permanent effect that is moderate adverse and significant.

13.10.218 It should be noted that access to the Cross Lane Organic Farm Shop and the Smithy on Cross Lanes will be maintained for the duration of the construction works, to prevent significant adverse effects regarding accessibility.

13.10.219 No other businesses are anticipated to experience land loss or acquisition as a result of this scheme.

13.10.220 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

*Operation assessment*

13.10.221 Overall, the scheme is envisaged to provide minor beneficial impacts improve journey time reliability and safety, which would serve to improve traffic conditions in the local area. It is not considered that the existing

businesses identified within the study area would experience significant effects.

13.10.222 At Cross Lane Organic Farm Shop, a new access will be provided via the realigned Moorhouse Lane. The impact to the business is negligible and not significant as the proposed access is situated close to the existing access.

13.10.223 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

13.10.224 As reported in Chapter 12: Noise and Vibration there will be a minor adverse noise and vibration impact in the short term, at the Cross Lane Organic Farm Shop, which is significant. This will have a minor adverse impact on the business due to a discernible change in quality of the amenity value of the outdoor seating area used as part of the Café, which will not compromise the viability of the business. The resulting permanent effect will be slight adverse and therefore not significant.

13.10.225 As reported in Chapter 12: Noise and Vibration there will be a minor beneficial noise and vibration impact in the short term for approximately 26 business receptors located within Barnard Castle, which are not significant. Although the receptors are outside of the population study area this will have a minor beneficial impact due to a change in quality to the amenity value for the facilities. The resulting permanent effect will be minor beneficial. This will have a slight beneficial impact, which is not significant.

#### [Agricultural land holdings](#)

##### [Construction assessment](#)

13.10.226 Land identified as being agricultural in use and within the Order Limits is shown on Figure 13.5 Agricultural land holdings (Application Document 3.3). Seven agricultural land holding will be subjected to significant effects as listed below in Table 13-53: Agricultural land holdings subject to significant effects within the Cross Lane to Rokeby scheme.



Table 13-53: Agricultural land holdings subject to significant effects within the Cross Lane to Rokeby scheme

Name of farm or landowner surname	Total plot area(s) (ha)	Area (ha) within DCO boundary	Area (ha) permanently required	Area (ha) returned to agriculture (modified grassland)	Impact to access	Sensitivity	Magnitude of impact	Significance of effect
Trees House Farm	146	2.62	2.24	0.34	Negligible	High	Permanent minor adverse	Moderate adverse
Timpton Hill Farm	55	0.98	0.76	0.01	Negligible	High	Permanent minor adverse	Moderate adverse
Moss	69	17.40	16.61	0.87	Access to severed land required	High	Permanent moderate adverse	Large adverse
Mortham Estate	664	27.24	19.50	2.61	Access along and across A66 required	High	Permanent minor adverse	Moderate adverse
Thorsgill	72	6.69	6.39	0.30	Negligible	High	Permanent minor adverse	Moderate adverse
Tutta Beck	44	3.95	2.33	1.65	Negligible	High	Permanent minor adverse	Moderate adverse
Harrison	99	4.80	3.49	0.82	New farm access provided	High	Permanent minor	Moderate adverse

13.10.227 Permanent land take of approximately 16.61ha at the Moss agricultural land holding will result in a permanent moderate adverse impact, which is a large adverse significant effect. The land take is due to the need for a balancing pond and environmental mitigation which results in the loss of a large area of the farms arable land and the subdivision of field parcels.

#### Walkers, Cyclists and Horse Riders (WCH)

##### *Construction Assessment*

##### *Temporary effects*

13.10.228 During construction multiple PRoWs will be subject to temporary effects due to temporary closures and/or diversions to facilitate the construction of the scheme. The closures will be in place for the duration of the works and that alternative access will be provided for WCH using the PRoWs. This will either be via a formal diversion to another local PRoW or the construction of a suitable temporary PRoW that provides the best practicable alternative.

13.10.229 Overall, the temporary closures will have a temporary slight adverse effect, which is not significant, upon FP 5 (Brignall).

13.10.230 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

##### *Permanent effects*

13.10.231 Only PRoWs located within the Order Limits will potentially be permanently affected by the construction of the scheme. Multiple PRoWs will be subject to permanent effects due to either permanent closures or diversions as a result of the construction of the scheme. However with appropriate mitigation and diversions the permanent slight adverse effects, are not significant, upon WCH. The PRoWs affected are listed below:

- FP1
- FP7
- FP8
- FP9
- FP10
- FP5 (Rokeby)
- FP6 (Rokeby).

13.10.232 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

##### *Operation Assessment*

13.10.233 As a result of the scheme, several new footpaths and cycleways will be introduced. These are shown in the Walking, Cycling and Horse Riding Proposals (see Application Document 2.4). The magnitude of impact is assessed to be minor beneficial as it will improve safety and access to a

network of PRowS. Overall, the scheme is assessed to have a permanent slight beneficial effect on WCH, which is not significant.

13.10.234 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

### *Human Health*

#### *Environmental conditions - construction assessment*

13.10.235 Environmental effects caused by the construction of the scheme will occur in rural areas with low population density. No vulnerable groups have been identified as having above average prevalence within the Cross Lanes to Rokeby area.

13.10.236 The Air Quality Assessment (Chapter 5: Air Quality) has identified a large construction dust risk potential for high-sensitivity receptors within 100m of the draft Order Limits. A small number of rural properties close to the scheme will therefore be at risk of adverse impacts on wellbeing from dust effects. Requirements for dust mitigation set out in Chapter 5: Air Quality are considered to remove any significant impacts. The Air Quality assessment has not identified any significant effects on NOx and PM10 concentrations resulting from construction activities. Therefore the health effects of air emissions from construction activities are assessed as neutral.

13.10.237 Construction activities with the potential to generate significant noise effects are listed in Chapter 12: Noise and Vibration. Residents of rural properties close to the draft Order Limits are likely to be impacted temporarily by construction noise. This will combine with views of construction activities described in Chapter 10: Landscape and Visual Impact Assessment. There are no adverse effects on public open spaces or other sensitive community receptors. Individual and combined noise and visual effects may result in a temporary reduction in the perceived quality of the living environment for the affected residents. Due to the low population density in the study area, the extent of exposure to these changes will be low and the health effect is assessed as neutral.

13.10.238 The CTMP will ensure that HGVs are prevented from using small rural roads and will be routed along suitable major roads, such as the existing A66, through the Cross Lanes to Rokeby area. Due to the low population density along the A66 in this area, the health effect from HGV traffic is assessed as neutral.

#### *Severance and accessibility - construction assessment*

13.10.239 The study area is rural and has a low population density. No vulnerable groups have been identified as having above average prevalence within the Cross Lanes to Rokeby area.

13.10.240 Impacts on access to publicly accessible green space and PRow during construction will include the temporary or permanent diversion of seven

footpaths. The landscape and visual assessment (Chapter 10) has identified significant adverse visual impacts two rural PRoW. Impacts on PRoW are considered to have a small effect on overall access to green space and opportunities for physical activity due to the rural context and the availability of alternative recreational routes. The health effect is assessed as neutral.

13.10.241 The construction phase will lead to longer journey times on the A66 due to traffic management measures such as reduced speed limits and the temporary closure of lanes and slip roads. The Transport Assessment has not identified any significant increases in traffic flows on the local road network in the Cross Lanes to Rokeby area. The rural community to the south of the scheme relies on services and facilities in Barnard Castle and may experience some delays to this journey when crossing the A66. The health effect is assessed as neutral.

*Environmental conditions - operational assessment*

13.10.242 The Project will affect local air quality through changes to road alignment traffic flow, speed and fleet composition. The Air Quality Assessment (Chapter 5: Air Quality) has identified small increases and decreases in NOx and PM10 concentrations at receptors close to the affected road network. However, as the air quality across the study area is good and the number of sensitive receptors experiencing changes in air quality is low, no significant air quality impacts have been identified. Therefore, the health effect is assessed as neutral.

13.10.243 The Noise and Vibration assessment (Chapter 12 of this ES) and the Landscape and Visual assessment (Chapter 10 of this ES) identify significant adverse and beneficial effects on residential and non-residential receptors. The increased traffic flow on the A66 will result in a significant adverse noise effects on nine rural residential properties, as well as Cross Lanes Farm. Residents of these properties may experience increased annoyance, possible sleep disturbance and reduced enjoyment of outdoor space. Since these are isolated rural properties, there will be no effects on public realm. Due to the low level of population exposure, these noise effects are not considered to give rise to changes in population health and wellbeing, and therefore the health effect is assessed as neutral.

13.10.244 There will be a significant adverse noise effect at Cross Lanes Organic Farm Shop and significant beneficial noise effects at St Mary's Church and the Old School village hall at Rokeby, the usage of which is unknown but thought to be infrequent. Visitors to these sites may experience noticeable changes in amenity, but this is not considered likely to affect wellbeing. The health effect is assessed as neutral.

13.10.245 The scheme will encourage traffic to use the A66 instead of travelling through Barnard Castle and therefore there will be a decrease in traffic flow and noise emissions along Newgate Road and A67 within the town. This will result in a significant beneficial effect on 60 residential and 27 non-residential receptors, including a village hall, hotels, restaurants, bars/pubs and commercial properties such as offices and shops. This

will improve wellbeing through increased enjoyment of outdoor space and a perceived improvement in the quality of the living environment. This is assessed as a positive health effect.

*Severance and accessibility - operational assessment*

- 13.10.246 Traffic congestion along the A66 will be reduced as a result of the Project, leading to shorter, more reliable journey times. This will lead to improved connectivity for rural communities to facilities, shops and services in Barnard Castle and elsewhere. Better connectivity can benefit mental and physical health through increased access to a wide range of resources including employment, educational facilities, health and social care, sport, leisure and cultural facilities, basic needs such as food shopping, and opportunities for social interaction. The affected population within the study area is very small due to the low population density in the Cross Lanes to Rokeby area, and the health effect is assessed as neutral.
- 13.10.247 To the north of the study area, on the south side of Barnard Castle, the Transport Assessment reports a 53% increase in traffic flow on The Sills due to the new grade separated junction at Cross Lanes, improving access to Barnard Castle from areas to the south of the A66 via the B6277 Moorhouse Lane. Other roads will see a reduction in traffic due to reduced flows on the A67, including Barnard Castle Bridge and Galgate within the town centre. The health effect associated with severance and accessibility in Barnard Castle is assessed as neutral.
- 13.10.248 The new grade-separated junction at Cross Lanes will replace three at-grade junctions, which will improve safety by removing the need to cross oncoming traffic when turning right. In addition, four farm accesses will be diverted onto grade separated junctions. The resulting reduction in driver stress associated with congestion on this stretch of the A66 is considered a positive wellbeing effect for road users.
- 13.10.249 The Road Safety assessment reported in the Transport Assessment (Table 8-5) predicts that, over the 60-year appraisal period, the Project will result in an increase of 23 slight casualties and save 4 serious and 1 fatal casualty on the Cross Lanes to Rokeby section of the A66 and associated junctions and links. This is due to the junction improvements, increased traffic flow on the existing dualled sections of the A66, and changes to traffic flows on the surrounding road network. This is assessed as a negative and positive health effect.
- 13.10.250 A 2-mile shared cycleway/footway is proposed to run alongside the dual carriageway from Cross Lanes junction to Greta Bridge, where it will connect to an existing cycle route through the village. The grade-separated junction at Cross Lanes will connect existing footpaths to the north and south of the A66 and provide a safe crossing point for cyclists travelling between Rutherford Lane and the B6277. At Rokeby, three existing footpaths on the north side of the A66 will be joined to the new shared cycleway/footway and connected to the PRow network south of the A66 via the new grade-separated junction. The new shared cycleway/footway will provide a safer option for cyclists travelling from

Greta Bridge to Barnard Castle, who currently use a route including steps down to a poorly maintained path leading onto the A66 carriageway. These changes are considered to improve the provision for WCH to the southeast of Barnard Castle. This will encourage active travel, physical activity and access to the countryside, which are linked to positive mental and physical health outcomes. The health effect is assessed as positive.

## Stephen Bank to Carkin Moor

### *Population*

### *Land-use and accessibility*

### *Private property and housing*

### *Construction assessment*

13.10.251 The assessment of effects on private property and housing considers the potential effects on residential properties within the vicinity of the scheme, as well potential effects on residential development land. There is one residential property located within the Order Limits of this scheme, which will experience significant effects.

13.10.252 Monks Rest Farm, located along Moor Lane, will be acquired by National Highways. This will have a major adverse impact. When combined with the medium sensitivity of the receptor it will lead to permanent large adverse effects, which will be significant.

13.10.253 In relation to private property and housing within the study area that would experience indirect effects during construction, effects would be temporary for the duration of the construction phase, with appropriate mitigation and management to be put in place through the EMP (Document Number 2.7) , which will mitigate the impacts such that there are no likely significant effects.

13.10.254 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

### *Operational assessment*

13.10.255 In relation to private property and housing, the scheme would result in some properties being located closer to the A66 in the north which would result in an adverse discernible change in amenity and attributes. However those to the south would experience minor benefits due to increased distances to the A66. On balance and in order to assess the worst case scenario the operational impact on private properties and housing would result in a permanent adverse discernible change in amenity and attributes, which would be a minor indirect adverse impact.

13.10.256 The resulting effects would not be significant and further details of non-significant operational impacts and effects can be found within Further information on the impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

## Community land and assets

### *Construction assessment*

- 13.10.257 The assessment of effects on community land assets considers the potential effects on any land receptors that are considered to be community assets, for example religious facilities, open spaces, school and emergency services. As described in the baseline, there are no community facilities located within the Order Limits of this scheme and as such none will experience demolition or land take.
- 13.10.258 The remainder of effects on all other community land and assets are indirect and relate to potential effects associated with accessibility (e.g. severance or increased access issues) and more general construction effects (e.g. noise effects). This will lead to non-significant adverse effects on the two tennis courts within the study area.
- 13.10.259 With good design that ensures ongoing access to facilities, and with mitigation measures identified within the EMP (Document Number 2.7) it is not anticipated that construction would lead to any significant effects on the identified community assets.
- 13.10.260 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

### *Operation assessment*

- 13.10.261 During operation of the scheme it is anticipated that there will be an overall reduction in congestion and enhancements to the resilience of the local road network around the A66 (see Application Document 3.7 Transport Assessment).
- 13.10.262 The scheme is anticipated to lead to improvements in travel conditions. This will be particularly beneficial at peak times particularly during summer months and the holiday seasons. This will help to reduce any perceived barriers to accessibility, with associated benefits in terms of access to community land and assets.
- 13.10.263 During operation, the scheme is anticipated to lead to improvements in travel conditions which will be a minor beneficial impact due to the improved connectivity. The resulting effect upon the two tennis court community assets identified within the study area will not be significant.
- 13.10.264 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

## Development land and businesses

### *Construction assessment*

- 13.10.265 As no existing businesses or development land are subject to demolition or land loss no significant effects are anticipated as a result of the construction works for this scheme, excluding Carkin Moor Quarry and Mainsgill Farm Shop.

13.10.266 Both Carkin Moor Quarry and Mainsgill Farm Shop are of very high sensitivity. After the implementation of the EMP there will be temporary indirect minor adverse impacts due to the construction phase works including dust, noise and vibration and landscape impacts. The resulting effect on both businesses will be temporary large adverse, in the worst case, predominantly due to disruption to accessibility and logistics.

13.10.267 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

*Operation assessment*

13.10.268 Overall, the scheme is envisaged to provide minor beneficial impacts, improving journey time reliability and safety, which would in turn serve to improve traffic conditions in the local area. It is not considered that the existing businesses identified within the study area would experience significant effects.

13.10.269 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

13.10.270 Carkin Moor Quarry will experience minor beneficial impacts due to improved journey time reliability and safety. Due to the very high sensitivity of the site, the resulting permanent effect will be moderate beneficial and therefore significant. Large beneficial effects are not anticipated in order to assess the worst case scenario.

13.10.271 Mainsgill Farm Shop will experience minor beneficial impacts due to improved journey time reliability and safety. Due to the very high sensitivity of the site, the resulting permanent effect will be moderate beneficial and therefore significant. Large beneficial effects are not anticipated in order to assess the worst case scenario.

13.10.272 As reported in Chapter 12: Noise and Vibration there will be a moderate beneficial noise and vibration impact in the short term at 11 Gallowgate Holiday Let, which is not significant. Although the receptor is outside of the population study area the impact will be minor beneficial due to a change in quality to the amenity value for the business. The resulting permanent effect will be slight beneficial, which is not significant.

*Agricultural land holdings*

*Construction assessment*

13.10.273 Land identified as being agricultural in use and within the Order Limits is shown on Figure 13.5 Agricultural land holdings (Application Document 3.3). Three agricultural land holding will be subjected to significant effects as listed below in Table 13-54: Agricultural land holdings subject to significant effects within the Stephen Bank to Carkin Moor scheme.



Table 13-54: Agricultural land holdings subject to significant effects within the Stephen Bank to Carkin Moor scheme

Name of farm or landowner surname	Total plot area(s) (ha)	Area (ha) within DCO boundary	Area (ha) permanently required	Area (ha) returned to agriculture (modified grassland)	Impact to access	Sensitivity	Magnitude of impact	Significance of effect
Browson Bank	112	2.96	2.64	0.38	Negligible	High	Permanent minor adverse	Moderate adverse
Pond Dale	1600	10.95	10.04	0.49	Negligible	High	Permanent minor adverse	Moderate adverse
East Layton Hall	225	23.98	19.64	0.39	Negligible	High	Permanent minor adverse	Moderate adverse

## Walkers, Cyclists and Horse Riders (WCH)

### *Construction Assessment*

#### *Temporary Effect*

13.10.274 During construction multiple PRoWs will be subject to temporary effects due to temporary closures and/or diversions to facilitate the construction of the scheme. The closures will be in place for the duration of the works and that alternative access will be provided for WCH using the PRoWs. This will either be via a formal diversion to another local PRoW or the construction of a suitable temporary PRoW that provides the best practicable alternative.

13.10.275 Overall, the temporary closures will have a temporary slight adverse effect, which is not significant, upon WCH. The PRoWs affected are listed below

- BW 20.55/6/1

13.10.276 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

#### *Permanent effects*

13.10.277 Only PRoWs located within the Order Limits will potentially be permanently affected by the construction of the scheme. Multiple PRoWs will be subject to permanent effects due to either permanent closures or diversions as a result of the construction of the scheme. However with appropriate mitigation and diversions the permanent slight adverse effects, are not significant, upon WCH. The PRoWs affected are listed below:

- BW 20.23/5/1
- BW20.30/8/1
- BW12
- FP20.72/1/1
- FP20.55/1/1
- FP20.23/8/1
- FP 20.55/2/1
- BW20.23/5/1
- BW20.33/17/2

13.10.278 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

#### *Operation Assessment*

13.10.279 As a result of the scheme, several new footpaths and cycleways will be introduced. These are shown in the Walking, Cycling and Horse Riding Proposals (see Application Document 2.4). The magnitude of impact is assessed to be minor beneficial as it will improve safety and access to a network of PRoWs. Overall, the scheme is assessment to have a permanent slight beneficial effect on WCH, which is not significant.

13.10.280 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

*Human Health*

*Environmental conditions - construction assessment*

13.10.281 Environmental effects caused by the construction of the scheme will occur in rural areas with low population density, and close to the village of West Layton. This area includes an above average proportion of older people.

13.10.282 The Air Quality Assessment (Chapter 5: Air Quality) has identified a large construction dust risk potential for high-sensitivity receptors within 100m of the draft Order Limits. There are no sensitive receptors within 100m of the scheme. The Air Quality assessment has not identified any significant effects on NO<sub>x</sub> and PM<sub>10</sub> concentrations resulting from construction activities. Therefore the health effects of air emissions from construction activities are assessed as neutral.

13.10.283 Construction activities with the potential to generate significant noise effects are listed in Chapter 12: Noise and Vibration. Residents on the southern edge of West Layton and in rural properties along the existing A66 are likely to be impacted by construction noise. This will combine with views of construction activities from West Layton, properties along the A66 and to the south of the A66, including long-range views from the village of Ravensworth, as described in Chapter 10: Landscape and Visual Impact Assessment. There are no adverse effects on public open spaces or other sensitive community receptors. Individual and combined noise and visual effects may result in a temporary reduction in the perceived quality of the living environment for the affected residents. Due to the low population density in the study area, the extent of exposure to these changes will be low and the health effect is assessed as neutral.

13.10.284 The CTMP will ensure that HGVs are prevented from using small rural roads and will be routed along suitable major roads, such as the existing A66, through the Stephen Bank to Carkin Moor area. Due to the low population density along the A66 in this area, the health effect from HGV traffic is assessed as neutral.

*Severance and accessibility - construction assessment*

13.10.285 The study area is rural and contains a number of villages, including West Layton, which is close to the Order Limits. There is an above average proportion of people over 65, who are more likely to use services such as health and social care, making them more vulnerable to impacts on severance and accessibility.

13.10.286 Impacts on access to publicly accessible green space and PRoW during construction will include the temporary or permanent diversion of four footpaths and five bridleways. The landscape and visual assessment (Chapter 10) has identified significant adverse visual impacts on seven

rural PRoW. The affected PRoW are in proximity to the small settlements of West Layton, East Layton and Ravensworth. However, since these routes currently terminate at the A66 it is likely that the community mainly uses alternative rural PRoW for physical activity and access to the countryside. The health effect is assessed as neutral.

13.10.287 The majority of the new dual carriageway will be built offline, with traffic management measures such as temporary speed limits and lane closures required around the tie-in points between existing and new carriageway, resulting in short periods of disruption. The Transport Assessment has not identified any significant increases in traffic flows on the local road network in the Stephen Bank to Carkin Moor area. Communities in this area will experience congestion elsewhere on the A66 when accessing services and facilities in Barnard Castle. The health effect is assessed as neutral.

*Environmental conditions - operational assessment*

13.10.288 As described in Section 13.7, the overall sensitivity of the population to environmental impacts is assessed as medium, based on its location and health characteristics. The study area has an above average proportion of people over 65, who are more likely to have existing health conditions that may make them more vulnerable to adverse effects.

13.10.289 The Project will affect local air quality and levels of traffic noise through changes in traffic flow, speed and fleet composition. The Air Quality Assessment (Chapter 5: Air Quality) has identified small increases and decreases in NO<sub>x</sub> and PM<sub>10</sub> concentrations at receptors close to the affected road network within the study area. However, as the air quality across the study area is good and the number of sensitive receptors experiencing changes in air quality is low, no significant air quality impacts have been identified. Therefore, the health effect is assessed as neutral.

13.10.290 The noise and vibration assessment identifies significant adverse and beneficial effects on residential and non-residential receptors. The presence of a new offline dual carriageway will result in a significant adverse effect on noise at eight residential properties in the West Layton, and noise and visual impacts on Collier Lane and West Lane within the village. The noise and visual effects will adversely affect the wellbeing of the community at West Layton through annoyance and possible sleep disturbance, reduced enjoyment of outdoor space and a perceived reduction in the quality of the living environment. These responses will lessen over time, as planting becomes established and the community becomes used to the presence of the new bypass. This is assessed as a negative health effect in the early years of operation, reducing to neutral in year 15 of operation.

13.10.291 Across the Stephen Bank to Carkin Moor study area, there will be significant adverse noise effects at four rural dwellings and significant beneficial noise effects at eight rural dwellings. Residents in these properties may experience positive and negative changes in levels of annoyance, sleep disturbance and enjoyment of outdoor space. Since

these are isolated rural properties, there will be no effects on public realm. Due to the low level of exposure, these noise effects are not considered to give rise to changes in population health and wellbeing, and therefore the health effect is assessed as neutral.

*Severance and accessibility - operational assessment*

- 13.10.292 As described in Section 13.7, the overall sensitivity of the population to impacts on severance is assessed as medium to high, based on its location and health characteristics. The study area has an above average proportion of people over 65, who are more likely to use services such as health and social care, making them more vulnerable to impacts on severance and accessibility.
- 13.10.293 Traffic congestion along the A66 will be reduced as a result of the Project, leading to shorter, more reliable journey times. This will lead to improved connectivity for residents of West Layton and the surrounding rural community to shops, services and facilities. Better connectivity can benefit mental and physical health through increased access to a wide range of resources including employment, educational facilities, health and social care, sport, leisure and cultural facilities, basic needs such as food shopping, and opportunities for social interaction. The improved connectivity resulting from the Project is likely to result in a small increase in the number of people accessing these resources and is assessed as a positive health effect.
- 13.10.294 A new grade-separated junction will provide access to the dualled A66 at Moor Lane, to the east of West Layton. The de-trunked existing A66 will function as a collector road for local access via Collier Lane, West Layton, and three other local roads. To the west, the existing farm access at Dick Scott Lane will be replaced with an underpass. To the east, the right turn across the existing dual carriageway to Warrener Lane will be removed and traffic diverted to the grade-separated junction via a new link road. The resulting reduction in driver stress on this stretch of the A66 is considered a positive wellbeing effect for road users.
- 13.10.295 The Road Safety assessment reported in the Transport Assessment (Table 8-5) predicts that, over the 60-year appraisal period, the Project will save 87 slight, 28 serious and 4 fatal casualties on the Stephen Bank to Carkin Moor section of the A66 and associated junctions and links. This is due to the removal of the single carriageway, junction improvements and diversion of traffic from the surrounding rural road network. This is assessed as a positive health effect.
- 13.10.296 A shared path for horse-riders and pedestrians is proposed alongside the de-trunked A66, connecting into four existing footpaths and four bridleways, which currently either terminate at the A66 or cross it via road verges and at-grade crossings. Proposed safe crossing points at grade-separated junctions and shared underpasses will improve access for WCH and reduce the severance caused by the existing A66. The new 2.5-mile segregated route and improved crossings will encourage walking and horse riding, promoting physical activity and access to the

countryside, which are linked to positive mental and physical health outcomes. The health effect is assessed as positive.

## A1(M) Junction 53 Scotch Corner

### *Population*

### *Land-use and accessibility*

### *Private property and housing*

### *Construction assessment*

13.10.297 The assessment of effects on private property and housing considers the potential effects on residential properties within the vicinity of the scheme. As described in the baseline, there are no residential properties located within the Order Limits of this scheme and as such none will experience direct land take or demolition. Therefore no significant effect are expected for properties within the Order Limits.

13.10.298 In relation to private property and housing within the study area that would experience indirect effects during construction, effects would be temporary for the duration of the construction phase, with appropriate mitigation and management to be put in place through the EMP (Document Number 2.7), which will mitigate the impacts such that there are no likely significant effects.

13.10.299 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

### *Operation assessment*

13.10.300 In relation to private property and housing, the scheme would not differ significantly from the baseline situation. Any impacts would result in a permanent adverse discernible change in amenity and attributes, which would be a minor indirect adverse impact.

13.10.301 The resulting effects would not be significant and further details of non-significant operational impacts and effects can be found within Further information on the impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

### *Community land and assets*

### *Construction and operation assessment*

13.10.302 As described in the baseline, there are no community facilities located within the study area of this scheme and as such no significant effects are anticipated.

### *Development land and businesses*

### *Construction assessment*

13.10.303 As no existing businesses or development land are subject to demolition or land loss no significant effects are anticipated as a result of the construction works for this scheme.

13.10.304 The consideration of impacts upon the Scotch Corner Designer Outlet Village is assessed within Chapter 15: Cumulative Impacts, although no cumulative construction effects are likely.

13.10.305 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

*Operation assessment*

13.10.306 Overall, the scheme is envisaged to provide minor beneficial impacts improve journey time reliability and safety, which would serve to improve traffic conditions in the local area. It is not considered that the existing businesses identified within the study area would experience significant effects.

13.10.307 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

*Agricultural land holdings*

13.10.308 No agricultural land holdings are located within the Order Limits of the scheme and therefore none will be subject to significant effects during construction or operation.

*Walkers, Cyclists and Horse-riders (WCH)*

*Construction assessment*

13.10.309 No PRoW intersect the Order Limits for this scheme and therefore none are anticipated to be significantly affected.

*Operation assessment*

13.10.310 As a result of the scheme, several new footpaths and cycleways will be introduced. These are shown in the Walking, Cycling and Horse Riding Proposals (see Application Document 2.4). The magnitude of impact is assessed to be minor beneficial as it will improve safety and access to a network of PRoWs. Overall, the scheme is assessed to have a permanent slight beneficial effect on WCH, which is not significant.

13.10.311 Further information on non-significant impacts and effects can be found within ES Appendix 13.1 Population assessment non-significant effects (Application Document 3.4).

*Human Health*

*Environmental conditions - construction assessment*

13.10.312 Environmental effects caused by the construction of the scheme will occur at the A1(M) Junction 53 Scotch Corner, on the western edge of Middleton Tyas. The study area includes an above average proportion of people over 65. Older people are more likely than others to have existing health conditions and therefore may be more vulnerable to some adverse health effects.

13.10.313 The Air Quality Assessment (Chapter 5: Air Quality) has identified a large construction dust risk potential for high-sensitivity receptors within 100m of the Order Limits. Residents at the western end of Middleton Tyas Lane and users of the Active Life Leisure Club will therefore be at risk of adverse impacts on wellbeing from dust effects. Requirements for dust mitigation set out in Chapter 5: Air Quality are considered to remove any significant impacts and therefore the health effects are assessed as neutral. The Air Quality assessment has not identified any significant effects on NO<sub>x</sub> and PM<sub>10</sub> concentrations resulting from construction activities. Therefore the health effects of air emissions from construction activities are assessed as neutral.

13.10.314 Construction activities will be undertaken at night to avoid impacts on traffic flows around the junction during the day. No visual impacts are reported in Chapter 10: Landscape and Visual Assessment. Lighting of night-time construction activities will result in additional glare and localised light spill. Periodic construction noise during the night-time has the potential to impact on sleep disturbance. These impacts may adversely affect the wellbeing of residents at the western end of Middleton Tyas Lane. Due to the temporary nature of the impact and the small number of properties affected, the health effect is assessed as neutral.

13.10.315 The CTMP will ensure that HGVs are routed along the existing A66 and A1(M) and are prevented from using small rural roads. Therefore the health effect from HGV traffic is assessed as neutral.

*Severance and accessibility - construction assessment*

13.10.316 The study area has an above average proportion of people over 65, who are more likely to have impaired mobility and to use services such as health and social care, making them more vulnerable to impacts on severance and accessibility.

13.10.317 The assessment has not identified any impacts to green space or PRow during construction. All works to A1(M) J53 would be completed overnight, and would require lane closures and temporary closure of Middleton Tyas Lane. Traffic would operate normally during the day. Therefore no impacts on severance and accessibility are identified and the health effect is assessed as neutral.

*Operational assessment - Environmental conditions*

13.10.318 No significant operational visual or noise effects are identified in Chapter 10: Landscape and Visual Effects and Chapter 12: Noise and Vibration for the A1(M) Junction 53 Scotch Corner.

*Operational assessment - Severance and accessibility*

13.10.319 As described in Section 13.7, the overall sensitivity of the population to impacts on severance is assessed as medium, based on its location and health characteristics. The study area has an above average proportion of people over 65, who are more likely to use services such as health and social care, making them more vulnerable to impacts on severance



and accessibility. The health effect associated with road connectivity within the study area is assessed as neutral.

- 13.10.320 The Transport Assessment identifies changes in local traffic flows resulting from the Project. The improved A1(M) Junction 53 is predicted to perform within acceptable limits, with maximum queue lengths not forecast to extend beyond the length of the slip roads. The Project will attract more traffic to the strategic road network from the local road network, resulting in increased flows on the A1(M) and the A6055 Kneeton Lane. However, the increased flows will be small relative to the capacity of these roads and will not affect journey times.
- 13.10.321 The Road Safety assessment reported in the Transport Assessment (Table 8-5) predicts that, over the 60-year appraisal period, the Project will result in an additional 25 slight and 2 serious casualties on the A1 (M) Junction 53 and associated links. This is due to increased traffic flows on the roundabout and A66. This is assessed as a negative health effect.
- 13.10.322 Access for WCH across the A1(M) Junction 53 via Toucan crossings will be retained. The effects on access for WCH is assessed as neutral.

### In-Combination Climate Change Impact Assessment

- 13.10.323 Table 13-55: Potential ICCI implications to the project relevant to Population and Human Health sets out the potential ICCI implications to the Project relevant to Population and Human Health.
- 13.10.324 It should be noted that impacts of climate change may affect Population and Human Health receptors in general terms for the construction phase only. UKCP18 projections suggest that changes to the climate during construction and operation are unlikely to have a significant impact on this effect. As a result, no in-combination effects are anticipated to occur from the perspective of the Population and Human Health assessment (both not significant and significant) and as a result no mitigation required.

Table 13-55: Potential ICCI implications to the project relevant to Population and Human Health

Effect impacted by climate change	Climate hazard(s)	Impact of climate hazard(s)	Impact on significance of the effect	Embedded mitigation or additional mitigation/enhancement
Population				
Accessibility and connectivity for residential receptors	Prolonged heavy rainfall and flooding	A flooded highways network resulting in an adverse impact on connectivity and accessibility for local residents.	Not significant	A climate change allowance has been used in the design of the road drainage systems to increase the resilience of the road network to flooding (See Chapter 14: road drainage and water environment, and Chapter 7: Climate Change for more information). No mitigation required
Accessibility and connectivity to community facilities	Prolonged heavy rainfall and flooding	A flooded highways network resulting in an adverse impact on connectivity and accessibility to community facilities which could affect their usage.	Not significant	A climate change allowance has been used in the design of the road drainage systems to increase the resilience of the road network to flooding (See Chapter 14: road drainage and water environment, and Chapter 7: Climate Change for more information). No mitigation required
Accessibility and connectivity for businesses	Prolonged heavy rainfall and flooding	A flooded highways network resulting in an adverse impact on connectivity and accessibility for local businesses which rely on the network.	Not significant	A climate change allowance has been used in the design of the road drainage systems to increase the resilience of the road network to flooding (See Chapter 14: road drainage and water environment, and

Effect impacted by climate change	Climate hazard(s)	Impact of climate hazard(s)	Impact on significance of the effect	Embedded mitigation or additional mitigation/enhancement
				Chapter 7: Climate Change for more information). No mitigation required
<b>Human Health</b>				
Environmental conditions	Increased temperatures	Higher temperatures may lead to drier conditions, exacerbating dust on construction sites. However this is expected to be manageable with existing dust mitigation measures.	Not significant	No additional mitigation required
Usability of PRow and public open spaces	Prolonged heavy rainfall and flooding and high temperatures	Decline in use of open spaces and PRow as a result of flooding and high temperatures may exacerbate effects on access to green space and physical activity.	Not significant	No additional mitigation required
Access to health and social care	Increased temperatures	Health problems linked to higher temperatures may place additional demand on services, affecting capacity.	Not significant	No additional mitigation required
Severance and access	Prolonged heavy rainfall and flooding	A flooded highways network resulting in an adverse impact on connectivity and accessibility for local residents.	Not significant	No additional mitigation required

Table 13-56: Summary of significant effects (construction)

Receptor	Attribute	Receptor sensitivity	Potential impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
Routewide						
No significant effects are likely as a result of the construction phase.						
M6 Junction 40 to Kemplay Bank						
Happy Hooves Riding Centre	Land ownership and business operation	Very High	Permanent and temporary land take of approximately 7.6ha which equates to approximately 52% of the total land ownership, for a construction compound.	Suitable mitigation measures are being agreed with the owners of the property.	Permanent major adverse	Permanent very large adverse
Land Adjacent to Skirsgill Depot employment land allocation	Employment land size and availability	High	Temporary land take of approximately 61% of the allocated employment site	No mitigation measures are proposed. The site will be reinstated to its existing condition to allow for future use.	Temporary major adverse	Temporary very large adverse
Cumbria Constabulary Station	Amenity value of community asset	Very High	Temporary indirect minor adverse impacts due to the construction phase works including dust, noise and vibration and landscape impacts	Construction measures to control dust and noise during construction as described in Annex B4 and B5, respectively, within the EMP, Application Document 2.7	Cumbria Constabulary Station	Amenity value of community asset
Wetheriggs Country Park	Amenity value of community asset	Very High	Temporary indirect minor adverse impacts due to the construction	Construction measures to control dust and noise during construction as described in	Temporary minor adverse	Temporary moderate adverse

Receptor	Attribute	Receptor sensitivity	Potential impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
			phase works including dust, noise and vibration and landscape impacts	Annex B4 and B5, respectively, within the EMP, Application Document 2.7		
Ullswater Community College Playing Field	Amenity value of community asset	High	Temporary indirect minor adverse impacts due to the construction phase works including dust, noise and vibration and landscape impacts	Construction measures to control dust and noise during construction as described in Annex B4 and B5, respectively, within the EMP, Application Document 2.7	Temporary minor adverse	Temporary moderate adverse
Skirsgill Park	Amenity value of community asset	High	Temporary indirect minor adverse impacts due to the construction phase works including dust, noise and vibration and landscape impacts	Construction measures to control dust and noise during construction as described in Annex B4 and B5, respectively, within the EMP, Application Document 2.7	Temporary minor adverse	Temporary moderate adverse
Coach House	Accessibility and physical size of the agricultural land holding	Very high	Permanent and temporary land take of approximately 6.77ha resulting in moderate adverse impacts	Suitable mitigation measures are being agreed with the owners of the property.	Permanent moderate adverse	Very large adverse
Whinfell Park	Accessibility and physical size of the agricultural land holding	High	Permanent minor adverse impact primarily due to the loss of land	Suitable mitigation measures are being agreed with the owners of the property.	Permanent minor adverse	Moderate adverse

Receptor	Attribute	Receptor sensitivity	Potential impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
Leeming	Accessibility and physical size of the agricultural land holding	High	Permanent minor adverse impact primarily due to the loss of land	Suitable mitigation measures are being agreed with the owners of the property.	Permanent minor adverse	Moderate adverse
Penrith to Temple Sowerby						
Lightwater Cottages	Residential land and property ownership	Medium	Demolition of the property in order for the scheme to be constructed	Suitable mitigation measures are being agreed with the owners of the property.	Permanent major adverse	Lightwater Cottages
Foxgloves	Residential land and property ownership	Medium	Property will be acquired to facilitate the construction of the scheme	Suitable mitigation measures are being agreed with the owners of the property.	Permanent major adverse	Foxgloves
Barn Owl Cottage	Residential land and property ownership	Medium	Property will be acquired to facilitate the construction of the scheme	Suitable mitigation measures are being agreed with the owners of the property.	Permanent major adverse	Barn Owl Cottage
High Barnes Cottage	Residential land and property ownership	Medium	Demolition of the property in order for the scheme to be constructed	Suitable mitigation measures are being agreed with the owners of the property.	Permanent major adverse	High Barnes Cottage
Llama Karma Kafe	Business land and property ownership	Medium	The business will be rendered unviable due to blight and a loss of parking	Suitable mitigation measures are being agreed with the owners of the property.	Permanent major adverse	Permanent large adverse

Receptor	Attribute	Receptor sensitivity	Potential impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
Llamas Pyjamas	Business land and property ownership	Medium	The business will be rendered unviable due to blight and a loss of parking	Suitable mitigation measures are being agreed with the owners of the property.	Permanent major adverse	Permanent large adverse
Center Parcs Whinfell Forest	Accessibility to tourist destination	Very High	There is the potential for access to be restricted during construction which could potentially deter visitors to the site particularly during holiday seasons	Construction measures to ensure the continuation of local access either via this route or alternative diversions within a reasonable alternative distance as described in the Public Rights of Way Management Plan and Construction Traffic Management Plan (CTMP), Annex B6 and B14, respectively, within the EMP, Application Document 2.7.	Temporary minor adverse	Temporary moderate adverse
Winderwath Estate	Accessibility and physical size of the agricultural land holding	High	Permanent minor adverse impact primarily due to the loss of land	Suitable mitigation measures are being agreed with the owners of the property.	Permanent minor adverse	Moderate adverse
Brougham Castle Farm	Accessibility and physical size of the agricultural land holding	High	Permanent minor adverse impact primarily due to the loss of land	Suitable mitigation measures are being agreed with the owners of the property.	Permanent minor adverse	Moderate adverse

Receptor	Attribute	Receptor sensitivity	Potential impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
Temple Sowerby to Appleby						
Winthorn House	Residential land and property ownership	Medium	Demolition of property the property to facilitate the construction of the scheme	Suitable mitigation measures are being agreed with the owners of the property.	Permanent major adverse	Permanent large adverse
Dunelm House	Residential land and property ownership	Medium	Demolition of property the property to facilitate the construction of the scheme	Suitable mitigation measures are being agreed with the owners of the property.	Permanent major adverse	Permanent large adverse
Kirkby Thore Primary School	Usability of recreational spaces at an educational facility	Very High	Temporary land take of approximately 0.15ha, or 35%, of the schools outdoor playing field to facilitate a utility diversion.	No alternative provisions will be provided during construction. The playing field will be reinstated to existing condition upon completion of the works.	Temporary major adverse	Temporary very large adverse
Kirkby Thore Pre-School	Amenity value of community asset	Very High	Temporary indirect minor adverse impacts due to the construction phase works including dust, noise and vibration and landscape impacts	Construction measures to control dust and noise during construction as described in Annex B4 and B5, respectively, within the EMP, Application Document 2.7	Temporary minor adverse	Temporary moderate adverse
Temple Sowerby Church of England Primary School	Amenity value of community asset	Very High	Temporary indirect minor adverse impacts due to the construction phase works including dust, noise and	Construction measures to control dust and noise during construction as described in Annex B4 and B5,	Temporary minor adverse	Temporary moderate adverse



Receptor	Attribute	Receptor sensitivity	Potential impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
			vibration and landscape impacts	respectively, within the EMP, Application Document 2.7		
Temple Sowerby Medical Practice	Amenity value of community asset	Very High	Temporary indirect minor adverse impacts due to the construction phase works including dust, noise and vibration and landscape impacts	Construction measures to control dust and noise during construction as described in Annex B4 and B5, respectively, within the EMP, Application Document 2.7	Temporary minor adverse	Temporary moderate adverse
Appleby Grammar School	Amenity value of community asset	Very High	Temporary indirect minor adverse impacts due to the construction phase works including dust, noise and vibration and landscape impacts	Construction measures to control dust and noise during construction as described in Annex B4 and B5, respectively, within the EMP, Application Document 2.7	Temporary minor adverse	Temporary moderate adverse
Appleby Sports Centre.	Amenity value of community asset	Very High	Temporary indirect minor adverse impacts due to the construction phase works including dust, noise and vibration and landscape impacts	Construction measures to control dust and noise during construction as described in Annex B4 and B5, respectively, within the EMP, Application Document 2.7	Temporary minor adverse	Temporary moderate adverse
British Gypsum	Business connectivity and operation	Very High	Disruption to accessibility and logistics during construction	Construction measures to ensure the continuation of local access as described in the Construction Traffic Management Plan (CTMP),	Temporary minor adverse	Temporary large adverse

Receptor	Attribute	Receptor sensitivity	Potential impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
				Annex B14, within the EMP, Application Document 2.7		
Spitals	Accessibility and physical size of the agricultural land holding	Very High	Permanent minor adverse impact primarily due to the loss of land	Suitable mitigation measures are being agreed with the owners of the property.	Permanent minor adverse	Moderate adverse
West View	Accessibility and physical size of the agricultural land holding	Very high	Permanent and temporary land take of approximately 20.83ha resulting in moderate adverse impacts	Suitable mitigation measures are being agreed with the owners of the property.	Permanent moderate adverse	Very large adverse
Low Moor Caravan Park	Accessibility and physical size of the agricultural land holding	High	Permanent minor adverse impact primarily due to the loss of land	Suitable mitigation measures are being agreed with the owners of the property.	Permanent minor adverse	Moderate adverse
Crossfell House Farm	Accessibility and physical size of the agricultural land holding	Very high	Permanet land take of approximately 50.07ha resulting in moderate adverse impacts	Suitable mitigation measures are being agreed with the owners of the property.	Permanent moderate adverse	Very large adverse
Roman Vale	Accessibility and physical size of the agricultural land holding	High	Permanent minor adverse impact primarily due to the loss of land	Suitable mitigation measures are being agreed with the owners of the property.	Permanent minor adverse	Moderate adverse

Receptor	Attribute	Receptor sensitivity	Potential impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
Street House	Accessibility and physical size of the agricultural land holding	High	Permanent minor adverse impact primarily due to the loss of land	Suitable mitigation measures are being agreed with the owners of the property.	Permanent minor adverse	Moderate adverse
Fremington	Accessibility and physical size of the agricultural land holding	High	Permanent minor adverse impact primarily due to the loss of land	Suitable mitigation measures are being agreed with the owners of the property.	Permanent minor adverse	Moderate adverse
Rogerhead	Accessibility and physical size of the agricultural land holding	High	Permanent minor adverse impact primarily due to the loss of land	Suitable mitigation measures are being agreed with the owners of the property.	Permanent minor adverse	Moderate adverse
West View Farm	Accessibility and physical size of the agricultural land holding	High	Permanent land take of approximately 8.03ha resulting in moderate adverse impacts	Suitable mitigation measures are being agreed with the owners of the property.	Permanent minor adverse	Moderate adverse
Far Boorm Lodge	Accessibility and physical size of the agricultural land holding	High	Permanent minor adverse impact primarily due to the loss of land	Suitable mitigation measures are being agreed with the owners of the property.	Permanent minor adverse	Moderate adverse
Redlands Bank	Accessibility and physical size of the	High	Permanent minor adverse impact	Suitable mitigation measures are being agreed with the owners of the property.	Permanent minor adverse	Moderate adverse

Receptor	Attribute	Receptor sensitivity	Potential impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
	agricultural land holding		primarily due to the loss of land			
Nicholson	Accessibility and physical size of the agricultural land holding	High	Permanent minor adverse impact primarily due to the loss of land	Suitable mitigation measures are being agreed with the owners of the property.	Permanent minor adverse	Moderate adverse
Appleby to Brough						
Mains House	Residential land and property ownership	Medium	The scheme will permanently require 76% of the properties land to facilitate construction	Suitable mitigation measures are being agreed with the owners of the property.	Permanent major adverse	Permanent large adverse
Croft Cottage	Residential land and property ownership	Medium	The scheme will permanently require 18% of the properties land to facilitate construction	Suitable mitigation measures are being agreed with the owners of the property.	Permanent moderate adverse	Permanent moderate adverse
Appleby Golf Course	Amenity value of community asset	Very High	Temporary indirect minor adverse impacts due to the construction phase works including dust, noise and vibration and landscape impacts	Construction measures to control dust and noise during construction as described in Annex B4 and B5, respectively, within the EMP, Application Document 2.7	Temporary minor adverse	Temporary moderate adverse
St Columbas Church	Amenity value of community asset	Very High	Temporary indirect minor adverse impacts due to the construction	Construction measures to control dust and noise during construction as described in	Temporary minor adverse	Temporary moderate adverse

Receptor	Attribute	Receptor sensitivity	Potential impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
			phase works including dust, noise and vibration and landscape impacts	Annex B4 and B5, respectively, within the EMP, Application Document 2.7		
Kingdom Hall of Jehovahs Witnesses	Amenity value of community asset	Very High	Temporary indirect minor adverse impacts due to the construction phase works including dust, noise and vibration and landscape impacts	Construction measures to control dust and noise during construction as described in Annex B4 and B5, respectively, within the EMP, Application Document 2.7	Temporary minor adverse	Temporary moderate adverse
Brough Pre-School	Amenity value of community asset	Very High	Temporary indirect minor adverse impacts due to the construction phase works including dust, noise and vibration and landscape impacts	Construction measures to control dust and noise during construction as described in Annex B4 and B5, respectively, within the EMP, Application Document 2.7	Temporary minor adverse	Temporary moderate adverse
Ambulance station	Amenity value of community asset	Very High	Temporary indirect minor adverse impacts due to the construction phase works including dust, noise and vibration and landscape impacts	Construction measures to control dust and noise during construction as described in Annex B4 and B5, respectively, within the EMP, Application Document 2.7	Temporary minor adverse	Temporary moderate adverse
Upper Eden Medical Practice	Amenity value of community asset	Very High	Temporary indirect minor adverse impacts due to the construction phase works including	Construction measures to control dust and noise during construction as described in Annex B4 and B5,	Temporary minor adverse	Temporary moderate adverse

Receptor	Attribute	Receptor sensitivity	Potential impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
			dust, noise and vibration and landscape impacts	respectively, within the EMP, Application Document 2.7		
Platts Green, Common Land	Amenity value of community asset	Very High	Temporary indirect minor adverse impacts due to the construction phase works including dust, noise and vibration and landscape impacts	Construction measures to control dust and noise during construction as described in Annex B4 and B5, respectively, within the EMP, Application Document 2.7	Temporary minor adverse	Temporary moderate adverse
Sandfire Mire, Common Land	Amenity value of community asset	Very High	Temporary indirect minor adverse impacts due to the construction phase works including dust, noise and vibration and landscape impacts	Construction measures to control dust and noise during construction as described in Annex B4 and B5, respectively, within the EMP, Application Document 2.7	Temporary minor adverse	Temporary moderate adverse
Helbeck Quarry	Business connectivity and operation	Very High	Disruption to accessibility and logistics	Construction measures to ensure the continuation of local access as described in the Construction Traffic Management Plan (CTMP), Annex B14, within the EMP, Application Document 2.7	Temporary minor adverse	Temporary large adverse
Barn End Caravan Park	Business connectivity and operation	Medium	Temporary works will require access to the land for the duration of the works for the	Suitable mitigation measures are being agreed with the owners of the property.	Temporary major adverse	Temporary large adverse

Receptor	Attribute	Receptor sensitivity	Potential impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
			diversion of an overhead line.			
Bowes Bypass						
Low Broats	Residential land and property ownership	Medium	Demolition required in order for the scheme to be constructed	Suitable mitigation measures are being agreed with the owners of the property.	Permanent major adverse	Permanent large adverse
One parcel of land pertaining to Bowes Moor Common Land	Usability of a public open space	Very High	Temporary land take of the Common Land for use as a site compound.	No alternative provisions are to be made available during construction. The Common Land will be reinstated to its existing condition prior to decommission and completion of the construction phase.	Temporary major adverse	Temporary very large
Bowes Hutchinson Church of England nursery	Amenity value of community asset	Very High	Temporary indirect minor adverse impacts due to the construction phase works including dust, noise and vibration and landscape impacts	Construction measures to control dust and noise during construction as described in Annex B4 and B5, respectively, within the EMP, Application Document 2.7	Temporary minor adverse	Temporary large adverse
Bowes Hutchinson Church of England Primary School	Amenity value of community asset	Very High	Temporary indirect minor adverse impacts due to the construction phase works including dust, noise and vibration and landscape impacts	Construction measures to control dust and noise during construction as described in Annex B4 and B5, respectively, within the EMP, Application Document 2.7	Temporary minor adverse	Temporary large adverse

Receptor	Attribute	Receptor sensitivity	Potential impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
Ivy Hall Farm and Campsite	Amenity value of community asset	High	Permanent land take of approximately 1.05ha and temporary land take of 0.7ha in order to facilitate the construction of a drainage pond.	Suitable mitigation measures are being agreed with the owners of the property. All land that will be temporarily acquired will be reinstated once works are complete	Permanent: Moderate adverse  Temporary: Moderate adverse	Permanent: Large adverse  Temporary: Large adverse
Hulands Quarry	Business connectivity and operation	Very High	Disruption to accessibility and logistics	Construction measures to ensure the continuation of local access as described in the Construction Traffic Management Plan (CTMP), Annex B14, within the EMP, Application Document 2.7	Temporary minor adverse	Temporary large adverse
The Old Armoury	Accessibility and physical size of the agricultural land holding	High	Permanent minor adverse impact primarily due to the loss of land	Suitable mitigation measures are being agreed with the owners of the property.	Permanent minor adverse	Moderate adverse
Old Police House	Accessibility and physical size of the agricultural land holding	High	Permanent minor adverse impact primarily due to the loss of land	Suitable mitigation measures are being agreed with the owners of the property.	Permanent minor adverse	Moderate adverse
West End Farm	Accessibility and physical size of the	Very High	Permanent minor adverse impact primarily due to the loss of land	Suitable mitigation measures are being agreed with the owners of the property.	Permanent minor adverse	Moderate adverse



Receptor	Attribute	Receptor sensitivity	Potential impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
	agricultural land holding					
Black Lodge Farm	Accessibility and physical size of the agricultural land holding	High	Permanent minor adverse impact primarily due to the loss of land	Suitable mitigation measures are being agreed with the owners of the property.	Permanent minor adverse	Moderate adverse
Bowes Cross Farm	Accessibility and physical size of the agricultural land holding	High	Permanent minor adverse impact primarily due to the loss of land	Suitable mitigation measures are being agreed with the owners of the property.	Permanent minor adverse	Moderate adverse
Middle Lowfield	Accessibility and physical size of the agricultural land holding	High	Permanent minor adverse impact primarily due to the loss of land	Suitable mitigation measures are being agreed with the owners of the property.	Permanent minor adverse	Moderate adverse
Streatlam Grove Farm	Accessibility and physical size of the agricultural land holding	High	Permanent minor adverse impact primarily due to the loss of land	Suitable mitigation measures are being agreed with the owners of the property.	Permanent minor adverse	Moderate adverse
Lyndale House	Accessibility and physical size of the agricultural land holding	High	Permanent minor adverse impact primarily due to the loss of land	Suitable mitigation measures are being agreed with the owners of the property.	Permanent minor adverse	Moderate adverse

Receptor	Attribute	Receptor sensitivity	Potential impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
High Broats	Accessibility and physical size of the agricultural land holding	High	Permanent minor adverse impact primarily due to the loss of land	Suitable mitigation measures are being agreed with the owners of the property.	Permanent minor adverse	Moderate adverse
2 Low Row	Accessibility and physical size of the agricultural land holding	High	Permanent minor adverse impact primarily due to the loss of land	Suitable mitigation measures are being agreed with the owners of the property.	Permanent minor adverse	Moderate adverse
Myre Keld Farm	Accessibility and physical size of the agricultural land holding	High	Permanent minor adverse impact primarily due to the loss of land	Suitable mitigation measures are being agreed with the owners of the property.	Permanent minor adverse	Moderate adverse
NCN 70 / Pennine Way	Public Right of Way accessibility, connectivity and usability	Very High	A permanent diversion will be required as a result of the construction of the Scheme	The route will be diverted to the south of the Order Limits, along The Street towards Bowes and then north along the A67, reconnecting to Clint Lane.	Permanent minor adverse	Permanent moderate adverse
Cross Lanes to Rokeby						
Cross Lane Organic Farm Shop	Business land and property ownership	Medium	Permanent land take resulting in a loss of parking and approximately 20% of the Farm Shop's land	Suitable mitigation measures are being agreed with the owners of the property.	Permanent moderate adverse	Permanent moderate adverse

Receptor	Attribute	Receptor sensitivity	Potential impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
Trees House Farm	Accessibility and physical size of the agricultural land holding	High	Permanent minor adverse impact primarily due to the loss of land	Suitable mitigation measures are being agreed with the owners of the property.	Permanent minor adverse	Moderate adverse
Timpton Hill Farm	Accessibility and physical size of the agricultural land holding	High	Permanent minor adverse impact primarily due to the loss of land	Suitable mitigation measures are being agreed with the owners of the property.	Permanent minor adverse	Moderate adverse
Moss	Accessibility and physical size of the agricultural land holding	High	Permanent land take of approximately 16.61ha resulting in moderate adverse impacts	Suitable mitigation measures are being agreed with the owners of the property.	Permanent moderate adverse	Large adverse
Mortham Estate	Accessibility and physical size of the agricultural land holding	High	Permanent minor adverse impact primarily due to the loss of land	Suitable mitigation measures are being agreed with the owners of the property.	Permanent minor adverse	Moderate adverse
Thorsgill	Accessibility and physical size of the agricultural land holding	High	Permanent minor adverse impact primarily due to the loss of land	Suitable mitigation measures are being agreed with the owners of the property.	Permanent minor adverse	Moderate adverse
Tutta Beck	Accessibility and physical size of the	High	Permanent minor adverse impact	Suitable mitigation measures are being agreed with the owners of the property.	Permanent minor adverse	Moderate adverse

Receptor	Attribute	Receptor sensitivity	Potential impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
	agricultural land holding		primarily due to the loss of land			
Harrison	Accessibility and physical size of the agricultural land holding	High	Permanent minor adverse impact primarily due to the loss of land	Suitable mitigation measures are being agreed with the owners of the property.	Permanent minor adverse	Moderate adverse
Stephen Bank to Carkin Moor						
Monks Rest Farm	Residential land and property ownership	Medium	Permanently acquired	Suitable mitigation measures are being agreed with the owners of the property	Permanent major adverse	Permanent large adverse
Carkin Moor Quarry	Business connectivity and operation	Very High	Disruption to accessibility and logistics.	Construction measures to ensure the continuation of local access as described in the Construction Traffic Management Plan (CTMP), Annex B14, within the EMP, Application Document 2.7	Temporary minor adverse	Temporary large adverse
Mainsgill Farm Shop	Business connectivity and operation	Very High	Disruption to accessibility and logistics.	Construction measures to ensure the continuation of local access as described in the Construction Traffic Management Plan (CTMP), Annex B14, within the EMP, Application Document 2.7	Temporary minor adverse	Temporary large adverse
Browson Bank	Accessibility and physical size of the	High	Permanent minor adverse impact	Suitable mitigation measures are being agreed with the owners of the property.	Permanent minor adverse	Moderate adverse

Receptor	Attribute	Receptor sensitivity	Potential impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
	agricultural land holding		primarily due to the loss of land			
Pond Dale	Accessibility and physical size of the agricultural land holding	High	Permanent minor adverse impact primarily due to the loss of land	Suitable mitigation measures are being agreed with the owners of the property.	Permanent minor adverse	Moderate adverse
East Layton Hall	Accessibility and physical size of the agricultural land holding	High	Permanent minor adverse impact primarily due to the loss of land	Suitable mitigation measures are being agreed with the owners of the property.	Permanent minor adverse	Moderate adverse
A1(M) Junction 53 Scotch Corner						
No significant effects are likely as a result of the construction phase.						

Table 13-57: Summary of significant effects (operation)

Receptor	Attribute	Receptor sensitivity	Potential Impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
Routewide						
No significant effects are likely as a result of the operational phase.						
M6 Junction 40 to Kemplay Bank						
Lake District National Park	Accessibility and usability of tourist destination	Very High	Access to and from the Lake District will be improved as a result of the scheme	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Wetheriggs Country Park	Accessibility to community facilities	Very High	Improvements in travel conditions which will lead to improved connectivity.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Birbeck Medical Group	Accessibility to community facilities	Very High	Improvements in travel conditions which will lead to improved connectivity.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
North Lakes Primary School	Accessibility to community facilities	Very High	Improvements in travel conditions which will lead to improved connectivity.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Penrith Community Hospital	Accessibility to community facilities	Very High	Improvements in travel conditions which will lead to improved connectivity.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Fire Service National Benevolent	Accessibility to community facilities	Very High	Improvements in travel conditions which will lead to improved connectivity.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial

Receptor	Attribute	Receptor sensitivity	Potential Impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
Fund/Rehabilitation Centre						
Kiddlywinks Nursery	Accessibility to community facilities	Very High	Improvements in travel conditions which will lead to improved connectivity.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Winter Park Care Home	Accessibility to community facilities	Very High	Improvements in travel conditions which will lead to improved connectivity.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Ambulance Station	Accessibility to community facilities	Very High	Improvements in travel conditions which will lead to improved connectivity.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Ullswater Community College	Accessibility to community facilities	High	Improvements in travel conditions which will lead to improved connectivity.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Village Hall	Accessibility to community facilities	Very High	Improvements in travel conditions which will lead to improved connectivity.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Cumbria Fire & Rescue Service	Accessibility to community facilities	Very High	Improvements in travel conditions which will lead to improved connectivity.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Eden Deployment Centre	Accessibility to community facilities	Very High	Improvements in travel conditions which will lead to improved connectivity.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial

Receptor	Attribute	Receptor sensitivity	Potential Impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
			to improved connectivity.			
Hunter Hall Primary School	Accessibility to community facilities	Very High	Improvements in travel conditions which will lead to improved connectivity.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Mountain Rescue	Accessibility to community facilities	Very High	Improvements in travel conditions which will lead to improved connectivity.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Skirsgill Dental Surgery	Accessibility to community facilities	Very High	Improvements in travel conditions which will lead to improved connectivity.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Greengarth Assisted Living Facility	Accessibility to community facilities	Very High	Improvements in travel conditions which will lead to improved connectivity.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Ghyllmount Dental	Accessibility to community facilities	Very High	Improvements in travel conditions which will lead to improved connectivity.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Queen Elizabeth Grammar School	Accessibility to community facilities	Very High	Improvements in travel conditions which will lead to improved connectivity.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Great North Air Ambulance Station	Accessibility to community facilities	Very High	Improvements in travel conditions which will lead	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial



Receptor	Attribute	Receptor sensitivity	Potential Impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
			to improved connectivity.			
The Lakes Medical Centre	Accessibility to community facilities	Very High	Improvements in travel conditions which will lead to improved connectivity.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Cumbria Constabulary	Accessibility to community facilities	Very High	Improvements in travel conditions which will lead to improved connectivity.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
The Bridgeway	Accessibility to community facilities	Very High	Improvements in travel conditions which will lead to improved connectivity.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
NHS Teaching Hospital	Accessibility to community facilities	Very High	Improvements in travel conditions which will lead to improved connectivity.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
NHS Primary Care Trust	Accessibility to community facilities	Very High	Improvements in travel conditions which will lead to improved connectivity.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Smile Fast.	Accessibility to community facilities	Very High	Improvements in travel conditions which will lead to improved connectivity.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Cumbria Blue Light Services	Amenity value of community	Very High	Beneficial noise and vibration impacts which	No mitigation required	Permanent moderate beneficial	Permanent large beneficial

Receptor	Attribute	Receptor sensitivity	Potential Impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
	asset during operation		will improve the amenity value at the facilities			
Penrith to Temple Sowerby						
Center Parcs	Accessibility and usability of tourist destination	Very High	A new grade-separated junction will provide access to Center Parcs making it easier and safer for users to access the facility and the highway.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Temple Sowerby to Appleby						
Temple Sowerby Church of England Primary School	Accessibility to community facilities	Very High	Improvements in travel conditions due to improved connectivity resulting from the improvements made by the Scheme.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Kirkby Thore Pre-School	Accessibility to community facilities	Very High	Improvements in travel conditions due to improved connectivity resulting from the improvements made by the Scheme.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Kirkby Thore Primary School	Accessibility to community facilities	Very High	Improvements in travel conditions due to improved connectivity resulting from the	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial

Receptor	Attribute	Receptor sensitivity	Potential Impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
			improvements made by the Scheme.			
Temple Sowerby Medical Practice	Accessibility to community facilities	Very High	Improvements in travel conditions due to improved connectivity resulting from the improvements made by the Scheme.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Appleby Grammar School	Accessibility to community facilities	Very High	Improvements in travel conditions due to improved connectivity resulting from the improvements made by the Scheme.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Appleby Sports Centre.	Accessibility to community facilities	Very High	Improvements in travel conditions due to improved connectivity resulting from the improvements made by the Scheme.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
St Michael's Church	Amenity value of community facilities	Medium	Beneficial noise and vibration impacts at the receptor in the short term.	No mitigation required	Permanent moderate beneficial	Permanent moderate beneficial
Methodist Church	Amenity value of community facilities	Medium	Beneficial noise and vibration impacts at the receptor in the short term.	No mitigation required	Permanent moderate beneficial	Permanent moderate beneficial

Receptor	Attribute	Receptor sensitivity	Potential Impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
Play Area, Main Street	Amenity value of community facilities	High	Beneficial noise and vibration impacts at the receptor in the short term.	No mitigation required	Permanent moderate beneficial	Permanent large beneficial
Kirkby Thore Primary School	Amenity value of community facilities	Very High	Beneficial noise and vibration impacts at the receptor in the short term.	No mitigation required	Permanent moderate beneficial	Permanent very large beneficial
Victory Memorial Hall.	Amenity value of community facilities	High	Beneficial noise and vibration impacts at the receptor in the short term.	No mitigation required	Permanent moderate beneficial	Permanent large beneficial
British Gypsum	Business conditions and connectivity	Very High	Improvements in travel conditions due to improved connectivity as a result of the Scheme.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Bridge End pub	Amenity value of community facilities	Medium	Improvements in noise and vibration at the receptor in the short term and long term.	No mitigation required	Permanent moderate beneficial	Permanent moderate beneficial
Dunkeld Cottage	Amenity value of community facilities	Medium	Improvements in noise and vibration at the receptor in the short term and long term.	No mitigation required	Permanent moderate beneficial	Permanent moderate beneficial
Somerset House	Amenity value of community facilities	Medium	Improvements in noise and vibration at the receptor in the short term and long term.	No mitigation required	Permanent moderate beneficial	Permanent moderate beneficial

Receptor	Attribute	Receptor sensitivity	Potential Impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
Foresters Hall.	Amenity value of community facilities	Medium	Improvements in noise and vibration at the receptor in the short term and long term.	No mitigation required	Permanent moderate beneficial	Permanent moderate beneficial
Appleby to Brough						
North Pennine's AONB	Accessibility to community facilities	Very High	Improvements in access to and from the North Pennines AONB	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Appleby Golf Course	Accessibility to community facilities	Very High	Improvements in travel conditions due to improved connectivity as a result of the Scheme.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
St Columbas Church	Accessibility to community facilities	Very High	Improvements in travel conditions due to improved connectivity as a result of the Scheme.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Kingdom Hall of Jehovahs Witnesses	Accessibility to community facilities	Very High	Improvements in travel conditions due to improved connectivity as a result of the Scheme.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Brough Pre-School	Accessibility to community facilities	Very High	Improvements in travel conditions due to improved connectivity as a result of the Scheme.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Brough Primary School	Accessibility to community facilities	Very High	Improvements in travel conditions due to improved connectivity as a result of the Scheme.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial

Receptor	Attribute	Receptor sensitivity	Potential Impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
Ambulance station	Accessibility to community facilities	Very High	Improvements in travel conditions due to improved connectivity as a result of the Scheme.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Upper Eden Medical Practice	Accessibility to community facilities	Very High	Improvements in travel conditions due to improved connectivity as a result of the Scheme.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
The relocated MoD Playing Field and Helipad	Accessibility to community facilities	Very High	Improvements in travel conditions due to improved connectivity as a result of the Scheme.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Ketland Common, Common Land	Accessibility to community facilities	Very High	Improvements in travel conditions due to improved connectivity as a result of the Scheme.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Platts Green, Common Land	Accessibility to community facilities	Very High	Improvements in travel conditions due to improved connectivity as a result of the Scheme.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Sandfire Mire, Common Land	Accessibility to community facilities	Very High	Improvements in travel conditions due to improved connectivity as a result of the Scheme.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Helbeck Quarry	Business conditions and connectivity	Very High	Access to and from Helbeck Quarry will be made safer and more reliable due to the scheme	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial

Receptor	Attribute	Receptor sensitivity	Potential Impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
<b>Bowes Bypass</b>						
One parcel of land pertaining to Bowes Moor Common Land	Accessibility to community facilities	Very High	Improvements in travel conditions due to improved connectivity as a result of the Scheme.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Bowes Hutchinson Church of England nursery	Accessibility to community facilities	Very High	Improvements in travel conditions due to improved connectivity as a result of the Scheme.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Bowes Hutchinson Church of England Primary School	Accessibility to community facilities	Very High	Improvements in travel conditions due to improved connectivity as a result of the Scheme.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
Hulands Quarry	Business conditions and connectivity	Very High	Improvements in travel conditions due to improved connectivity as a result of the Scheme.	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
<b>Cross Lane to Rokeby</b>						
No significant effects are likely as a result of the operational phase.						
<b>Stephen Bank to Carkin Moor</b>						
Carkin Moor Quarry	Business conditions and connectivity	Very High	Improvements to journey time reliability and safety to access the receptor as a result of the Scheme	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial

Receptor	Attribute	Receptor sensitivity	Potential Impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
Mainsgill Farm Shop	Business conditions and connectivity	Very High	Improvements to journey time reliability and safety to access the receptor as a result of the Scheme	No mitigation required	Permanent minor beneficial	Permanent moderate beneficial
A1(M) Junction 53 Scotch Corner						
No significant effects are likely as a result of the operational phase.						
In-Combination Climate Change Impact Assessment						
No significant effects are likely as a result of the operational phase.						



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## 13.11 Monitoring

- 13.11.1 Beyond the recommendations for monitoring made in other relevant assessments and supporting documents (i.e. the Accommodation Strategy), there are no proposals for monitoring arising from this chapter.

## 13.12 References

Highways England (2020) Design Manual for Road and Bridges LA 112 Population and human health

Department for Transport (2014) National Policy Statement for National Networks

Ministry of Housing, Communities & Local Government (2021) National Planning Policy Framework

Cumbria County Council (2019) Cumbria's Local Industrial Strategy

Cumbria County Council (2016) Cumbria Infrastructure Plan

Ordnance Survey (2022) Map

Google Maps (2022) Map

Sustrans (2022) The National Cycle Network OS Maps

Durham County Council (2020) County Durham Plan

Durham County Council (2019) County Durham Vision 2035

North Yorkshire County Council (2021) Council Plan 2021 - 2025

Eden District Council (2014) Eden Local Plan 2014 - 2032

Richmondshire District council (2012) Local Plan Core Strategy 2012 - 2028

Land, Environment, Economics and Policy Institute (LEEP) University of Exeter (2022) Outdoor Recreation Valuation Tool (ORVal:Version 2.0)