

# **A1 in Northumberland: Morpeth to Ellingham**

**Scheme Number: TR010041**

## **6.3 Environmental Statement – Chapter 12 Population and Human Health**

**Part B**

APFP Regulation 5(2)(a)

Planning Act 2008

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

June 2020

Infrastructure Planning

Planning Act 2008

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

**The A1 in Northumberland: Morpeth to Ellingham  
Development Consent Order 20[xx]**

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**Environmental Statement**

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## 12 POPULATION AND HUMAN HEALTH

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### 12.1 INTRODUCTION

- 12.1.1. This chapter presents the assessment of likely significant environmental effects as a result of Part B: Alnwick to Ellingham (Part B) on Population and Human Health.
- 12.1.2. This chapter (and its associated figures and appendices) is intended to be read as part of the wider Environmental Statement (ES), with particular reference to **Chapter 5: Air Quality, Chapter 6: Noise and Vibration Chapter 7: Landscape and Visual and Chapter 10: Road Drainage and the Water Environment** of this ES.
- 12.1.3. A full description of Part B, along with the Scheme as a whole is set out in **Chapter 2: The Scheme, Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**). An assessment of combined effects of Part B is set out in **Chapter 15: Assessment of Combined Effects** of this ES and combined and cumulative effects of the Scheme are set out in **Chapter 16: Assessment of Cumulative Effects, Volume 4** of this ES (**Application Document Reference: TR010041/APP/6.4**).
- 12.1.4. **Section 4.3 of Chapter 4: Environmental Assessment Methodology, Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**) identifies any differences in the assessment methodology employed for Part A: Morpeth to Felton (Part A) and Part B. Further to this, there are other differences between the chapters for Part A and Part B. All key differences include:
- a. There are differences between Part A and Part B that relate to the scoping process, for example elements that are scoped in and out of the assessment. Refer to the **Scoping Report (Application Document Reference: TR010041/APP/6.10)** and **Scoping Opinion (Application Document Reference: TR010041/APP/6.12)** for Part A, and the **Scoping Report (Application Document Reference: TR010041/APP/6.11)** and **Scoping Opinion (Application Document Reference: TR010041/APP/6.13)** for Part B.
  - b. The significance of effect criteria terminology for agricultural land holdings for Part A and Part B is slightly different. However, as the application of the criteria is comparable the definition of a significant effect is comparable.
  - c. Although the agricultural impact assessment is set out within operational effects in Part A and within construction effects in Part B, this is a difference in presentation only and does not affect the overall assessment. Additionally, the methodology for assessing combined and cumulative effects within **Chapter 16: Assessment of Cumulative Effects, Volume 4** of this ES (**Application Document Reference: TR010041/APP/6.4**) assumes that both are assessed during construction.
  - d. Detailed mitigation is presented for agricultural land holdings for Part B, whereas the detailed mitigation for Part A is presented within the relevant appendix and summarised in this chapter. However, as this is a difference in presentation and the implementation of mitigation itself is comparable, the outcome of the assessment is consistent

- e. Part A considers employment by industry baseline data for 2011, whereas Part B also considers data for 2017 / 2018, because the assessments were completed at different times. However, it is considered that there would be no material difference if 2017 / 2018 data was used for Part A.

## 12.2 COMPETENT EXPERT EVIDENCE

12.2.1. **Table 12-1** below demonstrates that the professionals contributing to the production of this chapter have sufficient expertise to ensure the completeness and quality of this assessment.

**Table 12-1 - Relevant Experience**

Name	Role	Qualifications and Professional Membership	Relevant Experience
Corinne Marti	Author, Population and Human Health	LLB (Hons) Bachelor of Laws, BSc Bachelor of Science Associate Royal Town Planning Institute, RTPI	Environmental Consultant Over four years of experience preparing and coordinating ESs in the United Kingdom and New Zealand. Relevant population and human health experience: <ul style="list-style-type: none"> <li>- Drax Re-Power Project, Socioeconomics chapter for the ES.</li> <li>- Finstown Substation Environmental Impact Assessment (EIA), preparation of the Socio-economics chapter.</li> <li>- Preparation of the PEIR chapter - AQUIND Interconnector Project.</li> </ul>
Sophie Collins	Author and Reviewer, Population and Human Health	BSc (Hons) Bachelor of Science MSc Master of Science AIEMA Affiliate member of Institute of Environmental Management and Assessment	Principal Consultant Seven years' experience as a Socio-economic assessor and project manager, inputting to diverse mixed-use schemes and infrastructure projects across the UK for public and private sector clients. Other recent relevant experience includes: <ul style="list-style-type: none"> <li>- A1 Birtley to Coal House scheme - preparation and</li> </ul>

Name	Role	Qualifications and Professional Membership	Relevant Experience
			<p>review of the People and Communities chapters for Scoping and PEIR.</p> <ul style="list-style-type: none"> <li>- Preparation of the Population and Human Health EAR chapters - A27 Arundel Bypass, A27 Worthing and Lancing and A30 Chiverton to Carland Cross.</li> </ul>
Mike Roberts	Reviewer, Population and Human Health	BSc (Hons) Bachelor of Science MSc Master of Science (MIEnvSc) Member of the Institute of Environmental Science CEnv Chartered Environmentalist,	Associate Director Over 13 years' experience in the preparation of EIA with particular experience in the assessment of major infrastructure schemes across the UK, particularly the Highways Sector. Relevant experience includes: <ul style="list-style-type: none"> <li>- A96 Dualling Hardmuir to Fochabers – Environmental Coordinator and discipline lead for the assessment of impacts to People and Communities</li> <li>- A9 Dualling Northern schemes - Environmental Coordinator and discipline lead for the assessment of impacts to People and Communities (WCHs and Community Severance)</li> </ul>
Rebecca Dipoti	Author, Human Health Specialist	MA Environmental Management BSc (Hons) Biological Sciences PIEMA	Assistant Consultant Over one years' experience carrying out human health assessments for Scoping Reports, PEIRs and ESSs. Relevant human health in EIA experience: <ul style="list-style-type: none"> <li>- A29 Realignment scheme (Scoping Report).</li> </ul>



Name	Role	Qualifications and Professional Membership	Relevant Experience
Sally Newbold	Reviewer, Human Health	BSc (Hons) Environmental Conservation MIEMA, CEnv	Associate  Over 10 years' experience in environmental management and three years' experience in assessing and reporting human health in EIA for Screening and Scoping Reports, PEIRs and ESs.  Relevant human health in EIA experience: <ul style="list-style-type: none"> <li>- A29 Realignment scheme (Scoping Report).</li> <li>- M3 Junction 9 (Screening Report).</li> <li>- A27 Arundel (EAR).</li> <li>- A27 Worthing to Lancing (EAR).</li> <li>- A1 Birtley to Coal House (Scoping Report).</li> </ul>

## 12.3 LEGISLATIVE AND POLICY FRAMEWORK

### LEGISLATION

12.3.1. The relevant legislative framework relevant to Population and Human Health is summarised as follows.

#### **The Localism Act 2011 (Ref. 12.1)**

12.3.2. This Act sets out a series of measures with the potential to achieve a substantial shift in power away from central government and towards local people.

#### **The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (EIA Regulations) (Ref. 12.2)**

12.3.3. This requires projects, as part of the EIA process, to identify the potential for, and assess (where present) beneficial and adverse impacts in line with the factors outlined in Regulation 5(2).

#### **The Countryside and Rights of Way (CRoW) Act 2000 (Ref. 12.3) and the Highways Act 1980 (Ref. 12.4)**

12.3.4. This outline the principal legislation governing the registration and protection of public footpaths, bridleways, byways open to all traffic and restricted byways, and give a right of access on foot for the purposes of open-air conservation.

## PLANNING POLICY

### National Policy

- 12.3.5. Relevant national planning policy relevant to the scope of the Population and Human Health assessment and the significance of Part B on policy objectives is outlined in **Table 12-2** below.

### Local Policy

- 12.3.6. Relevant local planning policy relevant to the scope of the Population and Human Health assessment is outlined in **Table 12-3** below.

**Table 12-2 - National Planning Policy Relevant to Population and Human Health**

Policy	Relevant Policy Objectives	Significance of Part B on policy objective
<p>National Policy Statement for National Networks (NPS NN) (2015) (Ref. 12.5)</p>	<p>Population and Human Health is not a topic identified specifically in the NPS NN (Ref. 12.5). However, there is reference to topics of relevance to Population and Human Health assessments in the following sections of the NPS NN:</p> <ul style="list-style-type: none"> <li>- Section 5, para. 5.83 recognises that for nationally significant infrastructure projects of the type covered by this NPS, some impact on amenity on local communities is likely to be unavoidable.</li> <li>- Section 5, para.165, notes that the applicant should “<i>identify existing and proposed land uses near the project, any effects of replacing an existing development or use of the site with the proposed project or preventing a development or use on a neighbouring site from continuing</i>”.</li> <li>- Section 5, para.166, outlines that “<i>existing open spaces, sports and recreational buildings and land should not be developed unless the land is surplus to requirements or the loss would be replaced by equivalent or better provision in terms of quantity and quality in a suitable location</i>”.</li> <li>- Section 5, para.184, emphasises that “<i>public rights of way, National trails, and other rights of access to land (e.g. open access land) are important recreational facilities for walkers, cyclists and equestrians. Applicants are expected to take appropriate mitigation measures to address adverse impacts on public rights of way and open access land, and, where appropriate, to consider what opportunities there may be to improve access. In considering revisions to an existing right of way consideration needs to be given to the use, character, attractiveness and convenience of the right of way. The Secretary of State should consider whether the mitigation measures put forward by the application are acceptable and whether requirements in respect of these measures might be attached to any grant of development consent.</i>”</li> <li>- Section 5, para.185 states that “<i>public rights of way can be extinguished under Section 136 of the Act if the Secretary of State is satisfied that an alternative base has been or will be provided or is not required.</i>”</li> </ul>	<p>The Population and Human Health assessment considers the potential impacts on human health arising from changes in air quality, noise and vibration levels and to the water environment throughout the relevant ‘Human Health’ sub sections. In addition, impacts to community severance is covered under the ‘Effects on Communities’ headings. Although not significantly, during construction of Part B, fugitive dust, noise and vibration levels and flood risk would increase, however construction impacts would be mitigated through a Construction Environmental Management Plan (CEMP) to be developed from the <b>Outline CEMP (Application Document Reference: TR010041/APP/7.3)</b> by the main contractor. During operation, impacts to human health would be negligible as no sensitive receptors i.e. residential properties, would experience air quality or noise levels above the assessment thresholds. In addition, no increase in flood risk that would affect vulnerable flood risk assessments is anticipated.</p> <p>This chapter considers existing land uses within 500 m of the Part B and the potential impacts on the viability and access to residential properties, commercial facilities and community assets. This is considered under ‘Effects on Communities’ (<b>Section 12.8</b>). Part B passes through agricultural land that is currently within private ownership. Identification of the potential impacts on these farms is outlined in <b>Appendix 12.1: Likely Impacts on Agricultural Businesses, Volume 8</b> of this ES (<b>Application Document Reference: TR010041/APP/6.8</b>) (1540/2), and assessment of these potential impacts is included within this chapter. Permanent significant effects are anticipated for two land holdings within the Order Limits and a temporary significant effect is assumed for one holding during construction of Part B at the Lionheart Enterprise Park Compound.</p> <p>The Population and Human Health assessment considers local areas of high quality open spaces, which have been identified within the baseline under Effects on Communities in <b>Section 12.7</b> of this chapter. There are a number of open and recreational spaces that serve Alnwick and the wider area, although they are predominantly located in Alnwick (sport clubs, school playing fields, play areas). During construction, traffic management systems and diversion routes would be put in place to maintain access to community facilities and recreational and open spaces. During operation, the impacts on these spaces would be negligible due to the proximity of Part B to these spaces.</p> <p>During both construction and operation there would be disruption to some of the existing Public Rights of Way (PRoW). Temporary and permanent diversions would be provided, where possible, to maintain access during construction. Some PRoW would also be permanently closed. However, included within mitigation are permanent diversions to ensure that routes remain open and provide safe access for walkers,</p>

Policy	Relevant Policy Objectives	Significance of Part B on policy objective
	<p>Impacts relating to health are covered within the assessment principles of the NPS NN (paragraphs 4.79 to 4.82). This is due to national road networks having the potential to affect the health, well-being and the quality of life of the population. Direct impacts on human health can arise as a result of noise, vibration, air quality, community severance, and the water environment.</p>	<p>cyclists and horse riders (WCH<sup>1</sup>), as detailed in Section 5, paragraph 184 of the NPS NN. Construction impacts would also be mitigated through implementation of a CEMP. Proposed mitigation is detailed in <b>Section 12.9</b> of this chapter.</p> <p>The Population and Human Health assessment covers health and well-being throughout the relevant 'Health' sub sections as detailed within the policy, as well as impacts to community severance under the 'Effects on all Travellers' headings.</p>
<p>National Planning Policy Framework (NPPF) (2019) (Ref. 12.6)</p>	<p>The Population and Human Health Chapter covers land use (the potential impact on farm viability); impacts on physical assets; walking, cycling and horse riding; community severance and community amenity; impacts on public transport users; vehicle travellers; and the economy and employment. This is consistent with the NPPF as this chapter contributes to assessing the impact of a development which aims to deliver health, social and cultural wellbeing. Of particular relevance to the Scheme:</p> <ul style="list-style-type: none"> <li>- Paragraph 8 sets out the core planning principles of the NPPF, which relate to sustainable economic development, active management of growth to make use of sustainable modes of travel, and local strategies to deliver health, social and cultural wellbeing.</li> <li>- Paragraph 18 of Section 6 (Building a strong, competitive economy) covers the Government's commitment to delivering economic growth to create jobs and prosperity, while meeting the challenges of global competition and a low carbon future.</li> <li>- Paragraphs 83-84 of Section 6 (Building a strong, competitive economy) cover economic growth and prosperity in rural areas and local community services in villages. They outline the importance of assessing the effects of developments on the local economy and employment, and opportunities for job creation, in line with the Government's desire to create a competitive economy.</li> <li>- Paragraph 70 of Section 8: 'Promoting Healthy and Safe Communities', requires planning policies and decisions to "<i>deliver the social, recreational and cultural facilities and services the community needs</i>". The NPPF also recognises that access to a network of high quality open spaces and opportunities for sport and physical activity is important for the health and well-being of communities.</li> </ul>	<p>As part of Part B, permanent diversions and enhancements would be made to existing PRoW. <b>Table 12-49</b> within this chapter indicates that although some effects on users of PRoW would be significant, during operation, a network of PRoW is maintained. WCH provision on the proposed Heckley Fence Accommodation Overbridge and Charlton Mires Junction would be comparatively a safer option for crossing the A1. Part B is considered to be consistent with Paragraph 98 of the NPPF, as the PRoW network is maintained.</p> <p><b>Section 12.10</b> of this Chapter indicates that Part B would have a positive effect on the local economy and employment. Part A is consistent with Paragraph 18, Section 1 of the NPPF as it would create jobs during the construction phase. However, the Government's challenges of global competition and a low carbon future would not be compromised.</p> <p>As Part B is located in Northumberland, between two rural towns of Alnwick and Ellingham, the potential employment opportunities created during construction would contribute to supporting economic growth in rural areas which is consistent with the intention of Section 6 of the NPPF.</p> <p>As part of Part B, human health impacts may be expected, particularly during construction. During the construction of Part B, it is predicted that negligible to minor adverse increases in air pollution, noise and vibration levels, flood risk and pollution risk would occur resulting in temporary impacts to human health.</p>

<sup>1</sup> Formally referred to within the **Scoping Report (Application Document Reference: TR010041/APP/6.11)** as non-motorised users (NMU), but updated to align with DMRB terminology.

Policy	Relevant Policy Objectives	Significance of Part B on policy objective
	<ul style="list-style-type: none"> <li>- Paragraph 98 states that planning policies and decisions should protect and enhance PRoW and access, including taking opportunities to provide better facilities for users, for example by adding links to existing rights of way networks including National Trails.</li> </ul>	
Planning Practice Guidance (PPG) (2014) (Ref. 12.7)	The National Planning Practice Guidance (PPG) (Ref. 12.7) has been published alongside the NPPF, and is regularly updated, to provide guidance on the implementation of planning policies. The PPG has not yet been updated to reflect the changes to the NPPF in relation to open space, sports and recreation, facilities, PRoW and local green space and will be updated accordingly in due course. Of relevance to Population and Human Health and a scheme are the following elements from the PPG: <ul style="list-style-type: none"> <li>- Open space is described as incorporating all open space of ‘public value’ and can take many forms including formal sports pitches, informal open areas within a development, linear corridors, and country parks (Paragraph 001 Reference ID: 37-001-20140306).</li> <li>- PRoW are described as forming an important component of sustainable transport links and should be protected or enhanced where relevant and possible (Paragraph 004 Reference ID: 37-004-20140306).</li> </ul>	Part B would not have a significant negative impact on the provision and use of both formal and informal open space as the land impacted is not utilised for recreational purposes or designated as formal open space. Therefore, Part B is consistent with Paragraph 001 of the PPG. <p>As mentioned above, permanent diversions and enhancements would be made to existing PRoW. This includes WCH provision on the proposed Heckley Fence Accommodation Overbridge and Charlton Mires Junction which would be comparatively a safer option for crossing the A1. The number of crossings is reduced, but the provision within Part B would be safer for users and of a standard that is accessible to wheelchair users, pedestrians and cyclists. It is therefore considered that Part B provides sustainable transport links, as WCH are able to utilise a safe PRoW network to get from one side of the A1 to the other, where before crossings were not grade separated, or formal crossings across the A1. This is considered to be consistent with Paragraph 004 of the PPG.</p>

**Table 12-3 - Local Planning Policy Relevant to Population and Human Health**

Policy	Relevant Policy Objectives	Significance of Part B on Policy Objective
Northumberland County Council's (NCC) Local Transport Plan 2011 - 2026 (2011) (Ref. 12.8)	NCC's Local Transport Plan 2011-2026 was published in 2011 with the purpose of focusing on delivering national goals for transport at a regional level. It contributes to the aims of the Northumberland sustainable community strategy and reflects local land use plans, economic development and climate change priorities. The Plan includes policies, priorities and actions to improve active transport opportunities, including the provision and improvement of PRoWs. Those objectives within the Plan relevant to the Scheme and Population and Human Health are as follows: <ul style="list-style-type: none"> <li>- Section 5.13 states that “<i>development of a network of cycling, walking routes, including public rights of way</i>” is part of the Council's priority to improve network capacity.</li> <li>- Section 7.26 states that an objective of the plan is to “<i>promote sustainable travel choices such as walking, cycling and public transport</i>”:</li> <li>- Section 10.26 states that one of the goals of the Plan is to “<i>sustain and improve transport's contribution to the quality of people's lives</i>”. One of the actions to fulfil this goal is to identify and implement improvements to the rights of way network which will enhance its role in providing for the recreational, health and transport requirements of all Northumberland's residents and visitors.</li> </ul>	During construction of Part B, permanent diversions have been designed to maintain existing PRoWs where possible so that a network of PRoWs is maintained during construction and through to operation. Therefore, Part B is consistent with the NCC's Local Transport Plan (Section 5.13, 7.26 and 10.26 of the Local Transport Plan) as it promotes sustainable connections through ensuring that a network of PRoWs is maintained and WCH are provided for on both the proposed Heckley Fence Accommodation Overbridge and Charlton Mires Junction (refer to <b>paragraph 12.8.13</b> of this chapter). <p>Additionally, Part B is consistent with Section 8.4 of the Local Transport Plan because all PRoWs would be diverted to safe, grade-separated crossing points making these routes safer for WCH. Three existing bus stops would be extinguished on the B6341, and replaced by two new bus stops, as outlined in <b>Chapter 2: The Scheme, Volume 1</b> of this ES (<b>Application Document Reference: TR010041/APP/6.1</b>), therefore maintaining accessibility to public transport for all user groups. The location and number of these bus stops has been informed by public consultation and consultation with the service operator regarding levels of use to ensure a proportionate level of provision is provided in replacement.</p>

Policy	Relevant Policy Objectives	Significance of Part B on Policy Objective
	<p>Those objectives within the Plan specifically relevant to Human Health are as follows:</p> <ul style="list-style-type: none"> <li>- Section 7.19 states that the Council plan to develop a number of travel awareness measures including:                             <ul style="list-style-type: none"> <li>o <i>“working in partnership with the health sector to communicate campaign measures about the health impacts of increasing car use and the health benefits of walking and cycling;</i></li> <li>o <i>Promote public transport as an alternative to the car as active travel can form a key part of the journey; and to</i></li> <li>o <i>Promote sustainable forms of transportation, such as walking and cycling, as an attractive mode of transport for tourist and leisure activities”.</i></li> </ul> </li> <li>- Section 8.4 states that objectives of the plan include “improve safety of the transport network, particularly for vulnerable road users” and” Enable and encourage more physically active and healthy travel.”</li> </ul>	<p>The Population and Human Health assessment covers human health and well-being throughout the relevant ‘Health’ sub sections, as well as impacts to community severance under the ‘Effects on Communities’ headings of this chapter. These topics show consideration of the health of WCH as stated in Section 7.19 of the Local Transport Plan which aims to promote active travel as an alternative to a car.</p>
<p>Publication Draft                      Northumberland Local Plan                      (2019) (Ref. 12.9)</p>	<p>The Northumberland Local Plan (Ref. 12.9) is currently undergoing examination. Those policies within the Draft Plan relevant to the Scheme and Population and Human Health are as follows:</p> <ul style="list-style-type: none"> <li>- Policy TRA 1: ‘Promoting sustainable connections’ states that in assessing development proposals the Council will <i>“protect, enhance and support public rights of way”</i></li> <li>- Policy TRA 2: ‘The effects of development on the transport network’ states that in assessing development proposals, <i>“all developments affecting the transport network will be required to:</i> <ul style="list-style-type: none"> <li><i>(d) Facilitate the safe use of the network, including suitable crossing points, crossways and dedicated provision for cyclists where necessary; and</i></li> <li><i>(f) Minimise any adverse impact on communities and the environment, including noise and air quality”.</i></li> </ul> </li> <li>- Policy INF2: ‘Community services and facilities’ states that <i>“the loss of community services and facilities, that provide for the health and well-being, social and educational, spiritual, recreational, leisure or cultural needs of the community will not be permitted unless:</i> <ul style="list-style-type: none"> <li><i>(a) appropriate alternative provision is made; or</i></li> <li><i>(b) suitable and sufficient evidence can be provided to demonstrate that there is no longer a need for the facility to serve the community; or</i></li> <li><i>(c) suitable and sufficient evidence can be provided to demonstrate that its continued current use is no longer viable”.</i></li> </ul> </li> <li>- Policy INF 6: ‘Open Space and facilities for sport and recreation’ states that <i>“consideration will be given to how development proposals:</i></li> </ul>	<p>During construction of Part B, some PRoW would be temporarily and permanently closed and diverted.</p> <p>Prior to operation, permanent diversions and enhancements would be made to existing PRoW so that a network of PRoW is maintained during operation, and is therefore consistent with Policy TRA1, TRA2 and INF2.</p> <p>This chapter demonstrates that Part B is consistent with Policy QOP1 of the Northumberland Local Plan as the potential impacts on human health and well-being have been considered throughout the design of Part B . In particular, the potential risk to people and the environment would be appropriately mitigated during both the construction and operation stages and potential impacts on amenity have been considered and mitigation incorporated where possible.</p> <p>Part B would not negatively impact on community services and facilities (as stated in <b>Section 12.7</b>) and therefore is consistent with Policy INF2 of the Northumberland Local Plan.</p> <p>Part B would not negatively impact on open space and facilities for sports and recreation (as stated in <b>Section 12.7</b>) and therefore is consistent with Policy INF6 of the Northumberland Local Plan.</p> <p>The Population and Human Health assessment covers human health and well-being throughout the relevant ‘Health’ sub sections, as well as impacts to community severance under the ‘Effects on Communities’ headings of this chapter.</p>

Policy	Relevant Policy Objectives	Significance of Part B on Policy Objective
	<p>(a) Enhance the sustainability of communities and residential environments by protecting and enhancing existing recreational facilities and services and/or providing new ones;</p> <p>(b) Guard against the unnecessary loss of Protected Open Space (as shown on the Policies Map), recreational facilities and services by considering up to date evidence of local need and the need to replace facilities and services when they reach the end of their useful life;</p> <p>(c) Ensure that new and established recreational facilities and services are able to develop and modernise in a way that is sustainable, and they are retained for the benefit of the community”.</p> <p>Those policies within the Draft Plan specifically relevant to Part B and Human Health are as follows:</p> <ul style="list-style-type: none"> <li>- Policy QOP 1: ‘Design principles (Strategic Policy)’ states that “proposals will be supported where design:                             <ul style="list-style-type: none"> <li>(g) Supports health and wellbeing and enhances quality of life”.</li> </ul> </li> </ul>	
<p>Alnwick Local Development Framework Core Strategy (2007) (Ref. 12.10)</p>	<p>The Alnwick Local Development Framework Core Strategy forms part of the Northumberland Consolidated Planning Policy Framework and contains Saved Policies still applicable to developments within the former Alnwick Borough. Those policies from within the ‘Saved Policies’ relevant to the Scheme and Population and Human Health are as follows:</p> <ul style="list-style-type: none"> <li>- Objective 6: outlines that the Local Development Framework has a role in assisting in the delivery of a sustainable integrated transport system and enhancing accessibility for all.</li> <li>- Objective 8: outlines that the loss of valuable open land to development should be prevented. Open land is defined as land that can be important for farming, landscape quality, local character, recreational, functional floodplain, or ground water protection.</li> </ul> <p>Those policies from within the ‘Saved Policies’ specifically relevant to the Scheme and Human Health are as follows:</p> <ul style="list-style-type: none"> <li>- Objective 1: outlines that the quality of life in the district’s settlements can be improved by promoting health, safe and inclusive communities and ensuring equal access to homes, jobs, services, open space, recreational, cultural and community facilities and opportunities.</li> </ul>	<p>Part B would improve journey times and increase safety for motorised users by providing additional capacity on the A1. Therefore, people would be able to more efficiently access areas in Northumberland, such as Alnwick. Included within Part B are WCH links which would maintain access for WCH from east to west along Part B and increase safety by providing safer crossing points over the A1 (refer to <b>Section 12.8</b> of this chapter). Therefore, Part B is consistent with Objective 6 of the Alnwick Local Development Framework Core Strategy.</p> <p>By maintaining as far as practicably possible, diverting or improving WCH provision through the development, recreational opportunities with regards to use of PRow, and access to facilities are retained and improved, in alignment with Objective 1.</p> <p>Part B would pass through agricultural land, some of which is used for farmland. The Order Limits has been minimised as much as possible to prevent the loss of agricultural land and reduce the potential impact on farm viability. In instances where this is not possible, appropriate mitigation would be implemented during both construction and operation as outlined in <b>Section 12.9</b>. Additionally, the potential impact on landscape quality is considered within <b>Chapter 7: Landscape and Visual</b> of this ES and outlines how landscape quality is maintained. <b>Chapter 10: Road Drainage and the Water Environment</b> of this ES considers the impact on floodplains and ground water; however no significant effects are anticipated during either the construction or operational stages. Therefore, Part B is considered to be consistent with Objective 8 of the Alnwick Local Development Framework Core Strategy, as where possible, the loss of open farm land and that used for recreational purposes has been avoided.</p>

## 12.4 ASSESSMENT METHODOLOGY

### SCOPE OF ASSESSMENT

12.4.1. As presented within the Scoping Report (**Application Document Reference: TR010041/APP/6.11**), Scoping Opinion (**Application Document Reference: TR010041/APP/6.13**), and the **Scoping Opinion Response Tracker (Appendix 4.1, Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**)), the scope of this assessment was based on DMRB Volume 11 Section 3, Part 6, Land Use Part 8, Pedestrians, Cyclists, Equestrians and Community Effects, and Part 9, Vehicle Travellers as agreed with NCC. The assessment also considers the following elements which were not included within DMRB guidance at the time of Scoping but were included for best practice and to comply with Planning Policy Guidance (PPG) as detailed within the Scoping Opinion:

- a. Recreational facilities
- b. Economy and employment (during construction only)
- c. Human health.

#### Areas of Assessment Scoped In

12.4.2. Therefore, the scope of the assessment is as follows:

#### Construction

##### Population

- a. Effects on Vehicle Travellers
  - i. Driver stress
- b. Effects on Communities
  - i. Community severance (including WCH)
  - ii. Relief from existing severance
  - iii. Journey amenity (for WCH)
- c. Physical Assets and Land Use
  - i. Private and commercial property
  - ii. Community facilities (including Open Space)
  - iii. Recreational facilities
  - iv. Agricultural land holdings (the effect on land-take, type of husbandry, severance and major accommodation works for access, water supply and drainage)
  - v. Development Land
- d. Economy and Employment
  - i. Effects on the local economy and employment (from indirect and induced employment).



### Human Health

- a. Air quality
- b. Noise and vibration
- c. Road drainage and the water environment
- d. Human receptors (e.g. WCHs, vehicle travellers and community receptors)

### **Operation**

- 12.4.3. The assessment of effects during operation are the same as for construction apart from impacts on the local economy which are scoped out.

### **Areas of Assessment Scoped Out**

- 12.4.4. The following aspects have been scoped out of the assessment as detailed in the **Scoping Opinion (Application Document Reference: TR010041/APP/6.13)**:
- a. The impacts of construction compound areas on community amenity and severance during operation of Part B as they would not form part of the of permanent works. The construction compounds are temporary features that are unlikely to impact people's ability to access community facilities. The construction compound areas are also located over 200 m from community facilities so impacts from dust, noise and vibration are also unlikely to be significant. As such, impacts on community amenity are also likely to not be significant.
  - b. Driver views from the A1 during both construction and operation. During operation it is anticipated that views from Part B would be similar to current views from the A1. This is due to the nature of Part B which primarily includes online widening to the east of the existing A1. As such, effects on driver views are not considered to be significantly impacted during both construction and operation.
- 12.4.5. Relief from existing severance during construction is scoped out. It is not considered that there would be a beneficial change in the level of existing severance as it would not be relieved by Part B during construction. Therefore, an assessment of relief from existing severance has not been carried out for the construction period. New severance is assessed under Community Severance.
- 12.4.6. Direct effects on the local economy and employment during operation is scoped out of the assessment. There are no direct employment opportunities generated during operation as a result of Part B so the effects on the local economy and employment are unlikely to be significant. Wider economic effects as a result of Part B are not included within the scope of the Population and Human Health assessment and are considered within the **Case for the Scheme (Application Document Reference: TR010041/APP/7.1)**.
- 12.4.7. Consideration of electromagnetic fields is provided within **Chapter 4: Environmental Assessment Methodology, Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**) and is not included within the assessment of Human Health.

12.4.8. The assessment of potential impacts on agricultural land in relation to the classification and quality of the soil, is undertaken within **Chapter 11: Geology and Soils** of this ES.

## CONSULTATION

12.4.9. **Table 12-4** below outlines the summary of consultation undertaken for Part B in relation to Population and Human Health.

**Table 12-4 - Summary of Consultation**

Body	Date	Consultation Response Summary and Outcome
Northumberland National Park and County Joint Local Access Forum	18 October 2018	Update to forum members on the Scheme, including detailed of proposed changes to PRoW.
NCC	22/05/2019 and 04/07/2019	As the design developed there were two potential locations for the proposed accommodation overbridge (Heckley Fence and Broxfield). The potential impacts on the PRoW for both of these bridges were discussed with NCC as well as suggested diversion options.

12.4.10. Discussions with various private land owners regarding the temporary or permanent land take required for Part B have been undertaken from an early stage of design development. These are detailed in **Chapter 4: Environmental Assessment Methodology, Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**) and the **Consultation Report (Application Document Reference: TR010041/APP/5.1)**.

## METHODOLOGY

### Guidance

12.4.11. The following guidance documents have been used in the preparation of this Population and Human Health chapter:

- a. Population
  - i. DMRB Vol 11: Section 3: Part 6: Land use (**Ref. 12.11**); Part 8: Pedestrians, Cyclists, Equestrians & Community Effects (**Ref. 12.12**); and Part 9: Vehicle Travellers (**Ref. 12.13**) provide guidance on the assessment methodology for these topics.
  - ii. DMRB Interim Advice Note 125/15 (**Ref. 12.14**) sets out the requirement to combine DMRB Vol 11: Section 3: Parts 6, 8 and 9 into one chapter titled 'Population and Human Health' (formally 'People and Communities').

- iii. Homes and Communities Agency (2014) Additionality Guidance (**Ref. 12.15**) provides guidance on the assessment of effects related to employment generation.
  - iv. The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (**Ref. 12.2**) include guidance on the reporting of population effects under “Population and Human Health’ (formally ‘People & Communities’) (where this topic has already been agreed through a Scoping Opinion).
- b. Human Health**
- i. Although there was no consolidated methodology or practice for assessing the effect on Human Health in EIA at the time of writing, the assessment drew upon DMRB guidance, relevant IANs and the IEMA Health in Environmental Impact Assessment: A Primer for a Proportionate Approach (**Ref. 12.16**). Professional experience and judgement were also used to determine whether Part B brought about changes to the baseline in order to establish the health effects. In addition, information relating to human health presented in **Chapter 5: Air Quality, Chapter 6: Noise and Vibration**, and **Chapter 10: Road Drainage and the Water Environment** of this ES has been considered.

#### Updated DMRB Guidance

- 12.4.12. Since the assessments reported in this ES were completed a number of DMRB guidance documents have been superseded and updated with revised guidance. For Population and Human Health, the following guidance documents which were used in the preparation of this assessment have been superseded:
- a. DMRB Vol 11: Section 3: Part 6: Land use (**Ref. 12.11**)
  - b. DMRB Vol 11: Section 3: Part 8: Pedestrians, Cyclists, Equestrians & Community Effects (**Ref. 12.12**)
  - c. DMRB Vol 11: Section 3: Part 9: Vehicle Travellers (**Ref. 12.13**)
- 12.4.13. These guidance documents have been replaced by DMRB LA 112 Population and Human Health revision 1 (**Ref. 12.17**).
- 12.4.14. To determine the implications of the updated guidance to the conclusions of the ES, a sensitivity test has been undertaken to identify key changes in the assessment methodology and determine whether there would be changes to the significant effects reported in this ES if the updated guidance had been used for the assessment.
- 12.4.15. The findings of the sensitivity test are summarised in **Appendix 4.5: DMRB Sensitivity Test, Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**) and in **Section 12.10**.

#### Data Sources

- 12.4.16. The following list of data sources have been consulted to inform this assessment:
- a. Publicly available sources such as the Office for National Statistics (ONS), GIS and OS mapping

- b.** The baseline information for the assessment of vehicle travellers has been derived entirely from the output of the traffic model, which included traffic flow and speed scenarios for the baseline year 2015, construction year 2023 and design year 2038 (refer to **Appendix 5.1: Traffic Data, Volume 8** of this ES (**Application Document Reference: TR010041/APP/6.8**)).
- c.** Walking, cycling and horse riding (WCH) user surveys and the Walking Cycling and Horse Riding Assessment (WCHAR) (**Ref. 12.18**).
- d.** Agricultural Assessment found in **Appendix 12.1: Likely Impacts on Agricultural Businesses, Volume 8** of this ES (**Application Document Reference: TR010041/APP/6.8**).
- e.** Public Health England (PHE) Northumberland Local Authority Health Profile 2018 (**Ref. 12.19**).
- f.** Local Authority Labour Market profiles – Official Labour Market Statistics (NOMIS) (**Ref. 12.20**). The profiles bring together data from several sources, such as annual survey data on employment, economic inactivity and qualifications.
- g.** Findings of other relevant chapters, namely Chapter 5: Air Quality, Chapter 6: Noise and Vibration and Chapter 10: Road Drainage and the Water Environment of this ES.
- h.** The IEMA Health in Environmental Impact Assessment: A Primer for a Proportionate Approach (**Ref. 12.16**)
- i.** Institute of Environmental Assessment (now Institute of Environmental Management and Assessment (IEMA's)) 'Guidelines for the Environmental Assessment of Road Traffic' (**Ref. 12.21**).

### Effects on Vehicle Travellers

12.4.17. Vehicle travellers refers to all 'motorised' users who are travelling in vehicles.

#### Driver Stress

12.4.18. Driver stress is described in DMRB Volume 11, Section 3: Part 9 (**Ref. 12.13**), as the adverse mental and psychological effects experienced by a driver traversing a road network. Stress can lead to feelings of discomfort, annoyance, frustration or fear; culminating in physical or emotional tension that detracts from the value and safety of the journey.

12.4.19. The assessment follows the methodology outlined in DMRB Volume 11, Section 3, Part 9 (**Ref. 12.13**), and considers three key components of driver stress:

- a. Driver frustration**, which is caused by an inability to drive at a speed consistent with the standard of the road and increases as speed falls in relation to expectations.
- b. Driver fear**, where the main factors are the presence of other vehicles, inadequate sight distances and the likelihood of pedestrians, particularly children, stepping into the road. Fear is highest when speeds, flows and the proportion of Heavy Goods Vehicles (HGVs) are all high, becoming more important in adverse weather conditions.
- c. Driver uncertainty**, caused primarily by signage that is inadequate for the individual's purposes.

- 12.4.20. Volume 11, Section 3, Part 9 of the DMRB (**Ref. 12.13**) indicates that increased driver stress leads to a decline in driving standards, which may be expressed as aggression towards other road users or a diminished response to visual and other stimuli.
- 12.4.21. There is no specific methodology for assessing the degree of driver stress during construction. Therefore, a descriptive assessment as to how likely construction activities would affect driver stress during the construction period has been set out. Traffic data for journeys within Study Area is not available for the construction period. Therefore, a qualitative approach has been applied for the assessment of effects during this phase based on the presumption that there would be an increase in traffic flows and construction vehicles for the duration of the construction period.
- 12.4.22. For the operation of Part B, an assessment of the predicted changes in traffic flows has been undertaken in order to estimate changes in frustration and fear of accidents and the resulting implications on driver stress.
- 12.4.23. Baseline data for driver stress has been derived from the output of the traffic model for Part B, which included traffic flow and speed scenarios for the baseline year (2015), and ‘do minimum scenarios’ (without Part B) for opening year (2023) and design year (2038).
- 12.4.24. To assess driver stress, DMRB guidance provides advice on categorising stress on a three-point scale: low, moderate, or high, based upon speeds and flows during peak hour flows on road links, which is principally a section between where changes in the road occur i.e. at a junction between two roads. Under the DMRB guidance, all links with vehicles travelling at average speeds less than 50 kilometres (km) per hour on a single carriageway or less than 60 km per hour on a dual carriageway are considered to be at ‘high stress’. Driver stress has been calculated by comparing average hourly flow per lane and average vehicle speed during morning (AM) and evening (PM) peak hours against the thresholds for single carriageway and dual carriageways provided in the DMRB guidance. Therefore, Part B has been assessed using the stress ratings in both Table 2 Dual-Carriageway Roads and Table 3 Single-Carriageway Roads in DMRB Volume 11 Section 3 Part 9 (**Ref. 12.13**), which are replicated below in **Table 12-5** and **Table 12-6**.

**Table 12-5 - Assessment of Driver Stress on Single Carriageway Roads**

Average Peak Hourly Flow per Lane, in Flow Units/1 Hour	Average Journey Speed (km/hr)		
	Under 50	50-70	Over 70
Under 600	High	Moderate	Low
600-800	High	Moderate	Moderate
Over 800	High	High	High

**Table 12-6 - Assessment of Driver Stress on Dual Carriageway Roads**

Average Peak Hourly Flow per Lane, in Flow Units/1 Hour	Average Journey Speed (km/hr)		
	Under 50	50-70	Over 70
Under 1200	High	Moderate	Low
1200-1600	High	Moderate	Moderate
Over 1600	High	High	High

- 12.4.25. Driver stress has been calculated for each road section (outlined in **Section 12.7** in **Table 12-19** and on **Figure 12.1: Assessment Area for Driver Stress, Volume 6** of this ES (**Application Document Reference: TR010041/APP/6.6**) in each of the following scenarios to determine the level of impact:
- a. The existing layout in the baseline year (2015)
  - b. The do-minimum scenario (i.e. without Part B) in 2023
  - c. The do-something scenario (i.e. with Part B) in 2023
  - d. The do-minimum scenario (i.e. without Part B) in 2038
  - e. The do-something scenario (i.e. with Part B) in 2038
- 12.4.26. Levels of driver stress have been assessed through a quantitative assessment of the three components of driver stress listed in **paragraph 12.4.19**, with reference to Chapter 4 of DMRB Volume 11, Section 3, Part 9 (**Ref. 12.13**), which recommends a broad three-point descriptive scale of Low, Moderate or High. The data used to determine whether a section of road is considered to have Low, Moderate or High driver stress are the average peak hourly flow per lane and the average journey speed.
- 12.4.27. The traffic data available only provided the percentage of HGVs from the total lane traffic flows. DMRB Volume 11 Section 3, Part 9 states that an HGV is equivalent to 3 flow units (normal vehicle is one flow unit). Using the percentage, the number of HGVs has been calculated from the modelled carriageway lanes data and have been factored up accordingly to gauge an estimate of peak flows per lane.
- 12.4.28. As DMRB provides no significance criteria specifically for Driver Stress, the significance has been addressed using a comparison of present and future conditions, using beneficial, neutral and adverse definitions. For the purposes of this assessment, a comparison has been made between the flows for the Do-Minimum (without Part B) and Do-Something (with Part B) scenarios in 2023 (opening year) and 2038 (design year), with the level in change in these, resulting in beneficial effects if flows are reduced, and adverse effects where flows increase. A change is indicated only when there is a significant enough change based on speeds and flows during peak hour flows which may change the categorisation from low, moderate, or high. This has been applied to the sections listed below in **Table 12-18** with a conclusion provided based on the degree of change overall.

## Effects on Communities

- 12.4.29. The methodology for assessing effects on communities is based upon DMRB Volume 11, Section 3, Parts 8 and 9 and the application of DMRB Volume 5, Section 2, Part 5, HD 42/17 (**Ref. 12.22**). Under the topic of Effects on Communities the following sub-headings will be used “Community Severance”, “Relief from Existing Severance” and “Journey Amenity” in accordance with DMRB guidance. The assessment considers:
- a. Community Severance:** The impact of Part B on usage of both community facilities and PRow by WCHs and new severance.
  - b. Relief from Existing Severance:** The impact of Part B on relieving existing severance for WCH.
  - c. Journey Amenity:** The impact of Part B on the journeys that WCHs make (within the Study Area) e.g. disruption and increase in journey length, and the impact of Part B on the safety and amenity value for users of PRow.

### Community Severance

- 12.4.30. Community severance (new severance) is defined in DMRB as the separation of residents from facilities and services that they use within their community, in this case as a result of Part B. The key community facilities have been identified through a combination of aerial imagery and information from NCC website.
- 12.4.31. A qualitative assessment of community (new) severance has been undertaken, as described in DMRB Volume 11, Section 3, Part 8 (**Ref. 12.12**). Applying professional judgement based on knowledge and experience of similar schemes, effects related to community severance are described as: beneficial, negligible, or adverse; permanent or temporary. Sensitivity has been attributed utilising **Table 12-8** below. The magnitude of impact is described as slight, moderate or severe as set out within **Table 12-14**, as defined within the DMRB guidance (**Ref. 12.12**). The significance of effect is attributed utilising Table 2.4 of DMRB Volume 11, Section 2, Part 5 (HA 205/08) (**Ref. 12.23**) (refer to **Chapter 4: Environmental Assessment Methodology, Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**)).

### Relief from Existing Severance

- 12.4.32. Relief from existing severance is measured by the level of reduction of traffic on the existing highway network. An assessment has been carried out on relief from existing severance during operation as described in DMRB Volume 11, Section 3, Part 8 (**Ref. 12.12**), for crossings across the highway. In this case, this applies to the two overbridges to be constructed as part of Part B, as although there would be closures of existing crossings, these are all at grade and informal crossings, whereby the new overbridges would provide grade separated crossings with the A1 reducing the severance caused by traffic. There is no sensitivity or magnitude criteria detailed for relief from existing severance within DMRB, rather the level of relief is categorised as slight, moderate or substantial, as described in Table 1 of DMRB Volume 11, Section 3, Part 8 (**Ref. 12.12**) and outlined here within **Table**

**12-7.** The rural area figures for relief from existing severance criteria in **Table 12-7** have been used for this assessment.

**Table 12-7 - Relief from Existing Severance Criteria**

	<b>Slight</b>	<b>Moderate</b>	<b>Substantial</b>
Built up Area	c.30%	30-60%	60%+
Rural Area	60-75%	75-90%	90%+

12.4.33. It is not considered that there would be a beneficial change in the level of existing severance as it would not be relieved by Part B during construction. Therefore, an assessment of relief from existing severance has not been carried out for the construction period.

**Journey Amenity**

12.4.34. Journey Amenity is defined in DMRB as “*the relative pleasantness of a journey*”. This encompasses changes in the degree and duration of people’s exposure to traffic, fear and safety, noise, dirt and air quality, and the impact of the road itself, primarily any visual intrusion associated with Part B and its structures. For pedestrians, amenity includes footpath width, distance from traffic, barriers between pedestrians and traffic, and the quality of street furniture and planting. For cyclists, amenity includes beneficial factors such as the clear signing of alternative routes and the provision of subways or cycle crossings, as well as negative factors such as junctions where vehicles and cyclists are not separated. For both pedestrians and cyclists these factors are in addition to the degree and duration of exposure to traffic, and the impact of the road itself. The criteria for determining sensitivity for users of PRoW under journey amenity is defined within **Table 12-9**.

12.4.35. There is an element of subjectivity when assessing journey amenity. Professional judgement is applied to the assessment, in conjunction with baseline data so that effects related to journey amenity can be described as beneficial, negligible, or adverse and permanent or temporary. The magnitude of impact is described as negligible, minor, moderate or major as defined in **Table 12-13** and the significance of effect is attributed using Table 2.4 of DMRB Volume 11, Section 2, Part 5 (HA 205/08) (**Ref. 12.23**) (refer to **Chapter 4: Environmental Assessment Methodology, Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**)).

12.4.36. Baseline data used within the assessment has been compiled from a desktop study using a number of available sources, including Google Earth, NCC Definitive PRoW Map (**Ref. 12.24**) and the WCHAR (**Ref. 12.18**). As part of the WCHAR, site surveys were undertaken in 2016 and 2018. These sources have provided information on WCH routes within the 500 m Study Area.



## Physical Assets and Land Use

- 12.4.37. A qualitative high-level desk based assessment has been carried out in accordance with DMRB Volume 11, Section 3, Part 6 for each of the following elements:
- a. Confirmation of the number of commercial, agricultural land holdings and residential properties (considered under the heading private property) potentially affected by demolition or land take and categorising the impacts on affected land accordingly.
  - b. Assessment of the value of identified community and recreational facilities likely to be affected by land take.

### Private and Commercial Property

- 12.4.38. Sensitivity of physical assets (excluding agricultural land holdings) has been attributed utilising **Table 12-10** below and the magnitude of impact has been attributed according to **Table 12-13**. The significance of effect is attributed utilising Table 2.4 of DMRB Volume 11, Section 2, Part 5 (HA 205/08) (**Ref. 12.23**) (refer to **Chapter 4: Environmental Assessment Methodology, Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**)).

### Community and Recreational Facilities

- 12.4.39. A desk-based study has been undertaken to identify community and recreational facilities within and surrounding the Study Area to assess how these facilities are likely to be affected as a result of Part B, whether adverse or beneficial. The desk study has involved a review of recreational open space areas in the Northumberland region, national trails and cycle routes and a review of the NCC PPG17 open space, sport and recreation assessment (**Ref. 12.25**). It has been supplemented by 2019 statutory consultation feedback from the **Preliminary Environmental Information Report (Appendix J of the Consultation Report (Application Document Reference: TR010041/APP/5.2))** to ensure that all relevant recreational facilities have been identified.
- 12.4.40. There is no established assessment framework outlined within DMRB guidance relating to recreational facilities. As such, the assessment has utilised the criteria in DMRB Volume 11, Section 3, Part 8 (**Ref. 12.12**) and the application of professional judgement, based on knowledge and experience of similar schemes, to determine effects related to recreational facilities are described as: beneficial, negligible, or adverse and permanent or temporary. Sensitivity has been attributed utilising **Table 12-10** below and the magnitude of impact has been attributed according to **Table 12-13**. The significance of effect is attributed utilising Table 2.4 of DMRB Volume 11, Section 2, Part 5 (HA 205/08) (**Ref. 12.23**) (refer to **Chapter 4: Environmental Assessment Methodology, Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**)).

### Agricultural Land Holdings

- 12.4.41. A detailed assessment of agricultural land holdings has also been undertaken and considers a number of criteria: the importance of the land (i.e. whether it is imperative to a business operation); the availability of alternative land within the vicinity; and the proportion

of the land-take as an overall quantum of each land holding. The assessment has drawn upon interviews with the affected landowners which are reported in **Appendix 12.1: Likely Impacts on Agricultural Businesses, Volume 8** of this ES (**Application Document Reference: TR010041/APP/6.8**). Sensitivity and magnitude of impact criteria used to assess effects on agricultural land holdings are found within **Table 12-11** and **Table 12-15**.

- 12.4.42. There is no accepted industry guidance on defining the sensitivity of agricultural land holdings, therefore professional judgement has been used to define the sensitivity criteria within **Table 12-11** and are based upon professional experience and have been developed through assessment on other road schemes within the UK.

### **Economy and Employment**

- 12.4.43. A desk-based assessment has been carried out to understand the baseline conditions in relation to local and regional economy using publicly available data, including NOMIS (**Ref. 12.20**) and Census 2011 from the Office for National Statistics (ONS) (**Ref. 12.26**).
- 12.4.44. There is no formal guidance on the assessment of the impacts on Part B from indirect and induced employment on the local economy, so this is based on professional judgement and using knowledge and experience of similar schemes and the approaches outlined in the English Partnerships Additionality Guide (**Ref. 12.27**). The anticipated number of jobs generated during construction is based upon an evaluation of the total construction cost against the average gross output per construction worker. This figure is evaluated against the total number of employees in the construction industry to determine the magnitude of change.
- 12.4.45. Generation of indirect and induced employment opportunities associated with construction has been calculated by applying English Partnerships Guidance (**Ref. 12.27**) using an assumed multiplier of 1.5 on the basis that multiplier effects are considered to be 'medium' as there are anticipated to be 'average linkages' associated with Part B. In the absence of specific guidance, applying professional judgement based on knowledge and experience of similar schemes, the effects related to employment and the economy during construction are described as: beneficial, negligible, or adverse; permanent or temporary; and of slight, moderate, or large significance, based on the criteria within Table 2.2 of DMRB, Volume 11, Section 2, Part 5, Environmental Impact Assessment (**Ref. 12.23**).

### **Human Health**

- 12.4.46. There has been no formal methodology for the assessment of human health impacts, therefore, a descriptive assessment as to how likely construction and operational activities would affect human health has been set out.
- 12.4.47. A desk based assessment has been carried out to understand the baseline conditions in relation to human health and to identify human health determinants including sensitive receptors, local population, facilities information and indicators of the status of local health, social and economic factors. Publicly available data was used, including; Northumberland Public Health England Health Profile (**Ref. 12.19**), NOMIS Local Authority Labour Market

Profiles (**Ref. 12.20**) and aerial imagery. In addition, information relating to human health presented in **Chapter 5: Air Quality, Chapter 6: Noise and Vibration, and Chapter 10: Road Drainage and the Water Environment** of this ES has been considered.

- 12.4.48. Information gathered from the baseline has been used to identify changes to human health determinants as a result of Part B. Any change to human health determinants can affect the health status of different individuals or communities depending on their characteristics and sensitivity to change.
- 12.4.49. There are no set criteria for the sensitivity of human health; therefore, criteria has been developed based on professional judgement and experience. Human health receptors within NCC (including the residential premises/homes, care homes, hospitals, schools, places of worship, sensitive commercial premises, neighbourhoods and communities within the area) have been assigned a sensitivity or value based on the criteria shown in **Table 12-12**.

### **SIGNIFICANCE OF EFFECTS**

- 12.4.50. DMRB guidance (Volume 11, Section 3, Parts 6, Part 8 and Part 9) (**Ref. 12.11, 12.12 and 12.13**) does not outline a methodology for determining the magnitude of impacts, or for measuring the sensitivity of receptors when assessing the effects on Population and Human Health. Where there is no DMRB assessment method, professional judgement based on knowledge and experience of similar schemes has been used to determine whether the impacts are:
- a.** Adverse or beneficial
  - b.** Permanent or temporary
  - c.** Construction or operational
  - d.** Whether the effect is significant or not significant
- 12.4.51. The assessment process aims to be objective and quantifies effects as far as practicably possible. However, some effects can only be evaluated on a qualitative basis. The overall significance of the likely Population and Human Health effects has been based on sensitivity and magnitude of impact. These are discussed in further detail below.

### **Sensitivity**

- 12.4.52. The sensitivity of receptors has been based on their perceived capacity to respond to changes, their frequency of use and their quality. This approach has been developed based on professional judgement and DMRB guidance Volume 11, Section 2, Part 5 (**Ref. 12.23**).
- 12.4.53. Where there is no available DMRB guidance to define or categorise the sensitivity of receptors for Population and Human Health, sensitivity of receptors has been applied according to the criteria within DMRB Volume 11, Section 2, Part 5 (HA 205/08) (**Ref. 12.23**), in combination with professional judgement.

### Vehicle Travellers

12.4.54. No sensitivities have been attributed to vehicle travellers as the assessment has been undertaken in line with DMRB guidance and specific sensitivity values are not assigned (**Ref. 12.23**).

### Effects on Communities

12.4.55. The sensitivity criteria when considering the sensitivity of community severance and journey amenity aspects under 'Effects on Communities', as none are specified within DMRB Volume 11, Section 3, Parts 6 and 8 (**Ref. 12.11** and **Ref. 12.12**), are applied as outlined in **Table 12-8** and **Table 12-9**, and is guided by DMRB Volume 5, Section 2, Part 5, HD 42/17 (**Ref. 12.22**), DMRB Volume 5, Section 2, Part 4 TA 91/05 (**Ref. 12.28**), professional judgement and other industry examples.

12.4.56. No sensitivities have been attributed under the assessment of relief from existing severance as the assessment has been undertaken in line with DMRB guidance and specific sensitivity values are not assigned (**Ref. 12.11**).

**Table 12-8 - Sensitivity Criteria for WCH Routes**

Sensitivity	Criteria
Very High	<ul style="list-style-type: none"> <li>- Key routes used by pedestrians, cyclists, equestrians and other WCHs. Routes with very high numbers of WCH journeys and / or connects communities with employment land uses and other services and facilities with a direct and convenient WCH route.</li> <li>- National trails that are likely to be used for recreational use. The sensitivity of these routes is judged to be very high because of the number of people affected and effects upon national leisure.</li> <li>- Routes which offer opportunities to meet sustainable transport and public health objectives through active travel modes rather than private car use. Any interruption of these key routes would inconvenience many people and could cause people to switch from active modes to private car use.</li> <li>- Routes regularly used by vulnerable travellers such as the elderly, school children and people with disabilities, who may be disproportionately affected by small changes in the baseline due to potentially different needs.</li> </ul>
High	<ul style="list-style-type: none"> <li>- Key routes used by pedestrians, cyclists, equestrians and other WCHs to facilitate WCH journeys and/or connect communities with employment land uses and other services with a direct and convenient WCH route. These routes may not have very high numbers of WCH and facilities may not be suitable for all types of WCH.</li> </ul>

Sensitivity	Criteria
	<ul style="list-style-type: none"> <li>- Regional trails, long distance paths and routes likely to be used for recreation that record high use. The sensitivity of these routes is judged to be high because of the number of people affected and effects upon regional leisure.</li> <li>- Crossing points on busy roads (over 8,000 vehicles per day) which may not currently record high use by WCHs, but for which limited alternatives are available. These points are sensitive because disruption to these may affect the convenience or safety of journeys for WCHs.</li> </ul>
Medium	<ul style="list-style-type: none"> <li>- Crossing points on busy roads (over 8,000 vehicles per day), but for which alternatives are available.</li> <li>- Locally designated PRowS and other routes close to communities which are used mainly for recreational purposes, but for which limited alternatives are available, or which act as feeder routes for key routes, national or regional trails.</li> </ul>
Low	<ul style="list-style-type: none"> <li>- Crossing points or links between PRowS on quiet roads (less than 8,000 vehicles per day) or unclassified roads.</li> <li>- Locally designated PRowS and other routes close to communities which are used mainly for recreational purposes (e.g. dog walking), but for which alternative routes can be taken. These routes are likely to link to a wider network of routes to provide options for longer, recreational journeys. It is likely that direct and efficient journeys are not the priority for the majority of people using these routes so they would be more tolerant of disruptions and diversions.</li> </ul>
Negligible	<ul style="list-style-type: none"> <li>- Routes which have fallen into disuse such as through past severance or which are scarcely used because they do not currently offer a meaningful route for either utility or recreational purposes. Whilst these routes would not be sensitive in terms of disruption from development proposals, they may present opportunities for enhancement if existing barriers or poor amenity can be overcome through development proposals.</li> </ul>

**Table 12-9 - Journey Amenity Sensitivity Criteria for WCH Routes**

Receptor Sensitivity	Criteria/Justification
High	WCH which any of the following apply:

Receptor Sensitivity	Criteria/Justification
	<ul style="list-style-type: none"> <li>- The surrounding landscape (rural or urban) is of high quality and / or the PRow/route is not adjacent to a classified or busy road</li> <li>- Route/PRow width is of DMRB standard and segregated where relevant for different user groups</li> <li>- Barriers are in place/there is separation from traffic</li> <li>- Signage is clear and well placed and maintained</li> <li>- Crossings are controlled, to DMRB standard and appropriate for the types of WCH using the route/PRow</li> </ul>
Medium	WCH routes where the surrounding landscape (rural or urban) is of high quality, but some or all of the PRow/route has elements of 'low amenity'.
Low	<p>WCH routes where:</p> <ul style="list-style-type: none"> <li>- The majority of the PRow or route is located alongside a classified or busy road and has poorly maintained or placed street furniture or planting, and where barriers are not in place and route width is narrow (less than DMRB standards).</li> </ul> <p>WCH routes for which any of the following apply:</p> <ul style="list-style-type: none"> <li>- The surrounding environment is not of high quality.</li> <li>- Signage is non-existent or in state of disrepair.</li> <li>- Crossings at junctions or roads are not controlled or to DMRB standards, or suitable for the relevant types of WCH using the route.</li> <li>- Visual intrusion from the road network is frequent.</li> <li>- Proximity to the road network results in higher levels of noise or poor air quality.</li> <li>- Road environment is intimidating, of poor surface or unsuitable for cyclists.</li> </ul>
Unusable	WCH routes shown in mapping which in reality are severed or otherwise permanently unusable.

### Physical Assets and Land Use

12.4.57. The sensitivity criteria of receptors under 'physical assets' is outlined in **Table 12-10**, except for impacts on agricultural land holdings, the sensitivity criteria of which are outlined within **Table 12-11**. The criteria within **Table 12-10** are guided by DMRB Volume 11, Section 1, Part 5 HA 205/08 (**Ref. 12.23**), professional judgement and other industry examples.

#### **Table 12-10 - Sensitivity for Physical Assets and Land Use, Excluding Agricultural Land Holdings**

Receptor Sensitivity	Criteria/Justification
High	<ul style="list-style-type: none"> <li>- Residential properties</li> <li>- Commercial or industrial buildings or land key to the operation of a business, for example commercially managed woodland and campsites</li> <li>- Buildings or facilities used by the community, for example schools, community halls and hospitals</li> <li>- Community land or facilities that attract users nationally, for example national parks, elite sporting facilities, national museums or culturally important facilities for the arts. These may also be operated commercially.</li> <li>- Designated public open space and common land</li> <li>- Allotments</li> <li>- Religious sites and cemeteries</li> </ul>
Medium	<ul style="list-style-type: none"> <li>- Residential land or external buildings, secondary to the main dwelling, for example gardens and out houses</li> <li>- Commercial or industrial land not key to the commercial function of a business, for example car parking space and storage space</li> <li>- Land used by the community on a regional scale, for example country parks, forests and other land managed in such a way as to attract visitors from a regional catchment</li> <li>- Facilities or attractions that fill a cultural function on a regional scale or that are not found elsewhere within the region, for example sporting clubs and venues for the arts. These may also be operated commercially.</li> </ul>
Low	<ul style="list-style-type: none"> <li>- Derelict buildings.</li> <li>- Locally used community land, for example local parks and playing fields, which are not safeguarded or designated open spaces.</li> <li>- Community facilities which are used on a local scale, but for which alternatives are available within the locality, for example convenience stores, pharmacies and public houses. These may also be operated commercially.</li> </ul>

12.4.58. There is no accepted industry guidance on defining the sensitivity of agricultural land holdings, therefore professional judgement has been used to define the sensitivity criteria within **Table 12-11** and are based upon professional experience and have been developed through assessment on other road schemes within the UK.

**Table 12-11 - Criteria for Sensitivity of Agricultural Land Holdings**

Sensitivity	Farm Characteristics
High	Small farm size is less than 50 hectares (ha) Dependent relationship with key A1 infrastructure Long-term Agricultural Holdings Act tenant
Medium	Average farm size between 50 ha and 100 ha Some flexibility over operations Mixed business farming some owned land and some medium; or short-term rented land.
Low	Large farm size greater than 100 ha Large degree of flexibility Short-term tenancy/licence or owner-occupied

### Economy and Employment

12.4.59. Sensitivity criteria within Table 2.1 and 2.2 of DMRB Volume 11, Section 2, Part 5 (HA 205/08) (**Ref. 12.23**), in combination with professional judgement is applied for the assessment of economy and employment.

### Human Health

12.4.60. Human health receptors within NCC (including residential premises / homes, care homes, hospitals, schools, places of worship, sensitive commercial premises, neighbourhoods and communities within the area) have been assigned a sensitivity or value based on the criteria detailed in **Table 12-12**. There has been no formal methodology for the assessment of human health impacts these criteria have been developed based on professional judgement and experience.

**Table 12-12 - Human Health Sensitivity/Value Criteria**

Receptor Value	Justification
Very High	Receptors that have no capacity to experience a potential impact without incurring substantial change in population or human health status. This is more likely to be the case: <ul style="list-style-type: none"> <li>- In the most deprived or isolated communities.</li> <li>- In designated air quality management areas.</li> <li>- Where individuals experience severe accessibility restrictions.</li> </ul>



<b>Receptor Value</b>	<b>Justification</b>
	<ul style="list-style-type: none"> <li>- Where communities are extremely reliant on limited services and assets with no alternatives.</li> </ul>
High	<p>Receptors that have a very restricted/limited capacity to experience a potential impact without incurring substantial change in population or human health status. This is more likely to be the case:</p> <ul style="list-style-type: none"> <li>- In the more deprived or isolated communities.</li> <li>- In designated air quality management areas or areas of known poor air quality.</li> <li>- Where individuals experience some accessibility restrictions</li> <li>- Where communities are reliant on limited services and assets with few alternatives.</li> <li>- Routes frequently used by pedestrians, cyclists and other WCH for utility journeys such as commuting, or by vulnerable travellers (e.g. elderly, school children, and people with disability).</li> <li>- Land which is of high importance to business operations and key local development sites.</li> </ul>
Medium	<p>Receptors have a limited capacity to experience a potential impact without incurring substantial change in population or human health status. This is more likely to be the case:</p> <ul style="list-style-type: none"> <li>- Where there are more affluent or connected communities.</li> <li>- In areas known to have moderate air quality.</li> <li>- Where individuals experience some accessibility restrictions</li> <li>- Where communities are able to choose between a narrow range of service and asset alternatives.</li> <li>- Routes moderately used by pedestrian, cyclists and other WCH for recreational and leisure purposes (e.g. regional trails).</li> <li>- Land which is of moderate importance to business operations and allocated sites.</li> </ul>
Low	<p>Receptors have an adequate capacity to experience a potential impact without incurring substantial change in population or human health status. This is more likely to be the case:</p> <ul style="list-style-type: none"> <li>- In more affluent communities.</li> <li>- In areas known to have good air quality.</li> <li>- Where individuals experience few accessibility restrictions.</li> <li>- Where communities are able to choose between a larger range of service and asset alternatives.</li> <li>- Routes sometimes used by pedestrians, cyclists and other WCH for recreational and leisure purposes (e.g. local routes).</li> </ul>

Receptor Value	Justification
	<ul style="list-style-type: none"> <li>- Land which is of moderate importance to business operations and allocated sites.</li> </ul>
Negligible	<p>Receptors that have the capacity to experience a potential impact without incurring change in population or human health status. This is more likely to be the case:</p> <ul style="list-style-type: none"> <li>- In the most affluent communities.</li> <li>- In areas known to have very good air quality.</li> <li>- Where individuals experience no accessibility restrictions.</li> <li>- Where communities are able to choose freely between a wide range of service and asset alternatives.</li> <li>- Routes not used or infrequently used by the pedestrians, cyclists and other WCH for recreational purpose.</li> <li>- Land which is of no importance to business operations and unallocated development sites.</li> </ul>

### Magnitude of Impact

- 12.4.61. The criteria for determining the level of magnitude of an impact for each sub topic of the Population and Human Health assessment are outlined below.
- 12.4.62. Where there is no specific DMRB guidance to define or categorise the magnitude of effects for Population and Human Health, Table 2.2 Magnitude of Impact and Typical Descriptors as detailed in HA 205/08 (**Ref. 12.23**) in combination with professional judgement based on knowledge and experience of similar schemes has been used, as shown within **Table 12-13**. This criteria within **Table 12-13** applies for journey amenity, community and recreational facilities, and physical assets and employment and economy. New community severance criteria are set out in **Table 12-14** and Agricultural Land holdings criteria are set out in **Table 12-15** below.

**Table 12-13 - Magnitude of Impact Criteria**

Magnitude of Impact	Criteria
Major	<ul style="list-style-type: none"> <li>- Loss/addition of resource and/or alteration to quality and integrity of resource; severe damage / major improvement to key characteristics, features or elements. Such as land take that precludes existing or intended use;</li> <li>- Activity that permanently compromises or precludes use; or</li> <li>- Loss of amenity that precludes use.</li> </ul>

Magnitude of Impact	Criteria
Moderate	<ul style="list-style-type: none"> <li>- Loss/addition of resource, but not adversely affecting the integrity; partial loss of/improvement to/damage to key characteristics, features or elements. Such as:                             <ul style="list-style-type: none"> <li>o Land take that compromises but does not preclude existing or intended use;</li> <li>o Activity that compromises or precludes use for a protracted period; or</li> <li>o Loss of amenity that compromises but does not preclude use.</li> </ul> </li> </ul>
Minor	<ul style="list-style-type: none"> <li>- A minor benefit/alteration to, or addition/loss of, one (maybe more) key characteristics, features or elements; some beneficial/adverse impact on attribute or a reduced/increased risk of impact occurring. Such as: land take that is not essential to existing or intended use</li> <li>- Activity that temporarily compromises or precludes use; or</li> <li>- Loss of amenity that does not compromise use.</li> </ul>
Negligible	<ul style="list-style-type: none"> <li>- A barely discernible change from baseline conditions that does not impact use.</li> </ul>

### Vehicle Travellers

12.4.63. DMRB guidance Volume 11, Section 3, Part 9 provides no guidance to define the magnitude of impact on driver stress. The methodology for determining significance of effect is described above in **paragraph 12.4.24**.

### Effects on Communities

12.4.64. A qualitative assessment of new community severance has been undertaken, as described in DMRB Volume 11, Section 3, Part 8. The magnitude of impact is described as slight, moderate, or severe according to the criteria that are outlined in **Table 12-14**.

**Table 12-14 - New Community Severance Magnitude Criteria**

Level of Severance	Criteria
Slight	Pedestrian at-grade crossing of a new road carrying below 8,000 vehicles per day (AADT); or A new bridge would need to be climbed or subway traversed; or Journeys would be increased by up to 250 m.

Level of Severance	Criteria
Moderate	Two or more of the hindrances set out under 'Slight' applied to a single trip; or Pedestrian at-grade crossing of a new road carrying between 8,000 – 16,000 vehicles per day (AADT); or Journeys would be increased by 250-500 m.
Severe	Three or more of the hindrances set out under 'Slight', or two or more set out under 'Moderate' applied to a single trip; or Pedestrian at-grade crossing of a new road carrying over 16,000 vehicles per day (AADT); or Journeys would be increased by over 500 m.

12.4.65. No magnitude of change criteria has been attributed under the assessment of relief from existing severance as the assessment has been undertaken in line with DMRB guidance and specific values are not assigned (**Ref. 12.11**).

12.4.66. Magnitude of change for journey amenity is determined according to **Table 12-13**.

#### Physical Assets and Land Use

12.4.67. The magnitude of change for private and commercial property and community and recreational facilities is determined according to **Table 12-13**.

12.4.68. The criteria for determining the magnitude of impact on agricultural land holdings is provided in **Table 12-15**. There is no accepted industry guidance on defining the magnitude of impact on agricultural land holdings, therefore professional judgement has been used to define the criteria within **Table 12-15** and are based upon professional experience and have been developed through assessment on other road schemes within the UK.

**Table 12-15 - Criteria for Magnitude of Impact on Agricultural Land Holdings**

Magnitude of Impact	Land Take	Severance	Infrastructure	Nuisance	Farm Business
High	Greater than 20% of all land farmed	No access available to severed land	Direct loss of farm dwelling, building or structure	Nuisance discontinues land use or enterprise	The viability of the business is threatened, and strategic management of the farm business requires a major

Magnitude of Impact	Land Take	Severance	Infrastructure	Nuisance	Farm Business
					shift in enterprise mix.
Medium	10 - 20% of all land farmed	Reduction in number of accesses, but access is available to severed land via public highway	Loss of or damage to infrastructure affecting land use	Nuisance necessitates change to scale or nature of land use or enterprise	The viability of the business is not threatened, but significant changes in the day to day management are required which may significantly affect the size and scale of the enterprises.
Low	5 - 9% of all land farmed	Reduction in number of accesses, but access is available to severed land via the public highway or private way	Infrastructure loss/damage does not affect land use	Nuisance does not affect land use or enterprise	The viability of the business is not threatened. Only minor changes would be required to the enterprises and the type and range of enterprises is unaffected.
Negligible	< 5% of all land farmed	No new severance	No impact on farm infrastructure	No nuisance on land use or enterprise	No impact on farm business

### Economy and Employment

12.4.69. Magnitude of change for economy and employment is determined according to **Table 12-13**.

### Human Health

12.4.70. For the assessment of human health, there are no criteria for determining magnitude within industry guidance. However, health impacts are categorised as beneficial or adverse, which is in alignment with best practice and magnitude are determined as detailed within the relevant topic chapter as presented in **Chapter 5: Air Quality**, **Chapter 6: Noise and Vibration** and **Chapter 10: Road Drainage and the Water Environment** of this ES.

## Significance

- 12.4.71. The significance of effects has been assessed using a combination of the magnitude of impact and the sensitivity of the receptor. Each type of effect was then determined to be significant or not significant based on the DMRB guidance presented previously in **Table 4-8 of Chapter 4: Environmental Assessment Methodology, Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**). Where sensitivity and magnitude criteria only range from Low to High and Minor to Major, the level of effect is assigned using a range of slight to very large as per outlined within **Table 12-16**, based on **Table 4-8 of Chapter 4: Environmental Assessment Methodology, Volume 1** of this ES, and noting no change where there is none. For the purposes of this assessment, it is considered that an effect of moderate or above is considered to be significant.

**Table 12-16 - Significance Criteria for Reduced Range Criteria**

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

- 12.4.72. It should be noted that each effect can either be beneficial or adverse and this is stated for each receptor in the assessment below.
- 12.4.73. Where impacts are identified on human health which are informed by other topic chapters, the significance of effects from these topic assessments is included where relevant.

## 12.5 ASSESSMENT ASSUMPTIONS AND LIMITATIONS

- 12.5.1. The DMRB Volume 11, Section 3, Parts 8 and 9 (**Ref. 12.12** and **Ref. 12.13**) used in the preparation of this assessment are over 20 years old (published in 1993) and Volume 11 Section 3 Part 6 (**Ref. 12.11**) was published in 2001. It is acknowledged that some aspects may not be as relevant to the assessment of road schemes today. The Population and Human Health assessment is in accordance with DMRB guidance available at the time of the assessment and consistent with the **Scoping Report (Application Document Reference: TR010041/APP/6.11)** and **Scoping Opinion (Application Document Reference: TR010041/APP/6.13)**.

- 12.5.2. This assessment relies, in part, on data provided by third parties (e.g. OS Mapping, Local Authorities and ONS). The most up-to-date data available at the time of writing have been used. No significant changes or limitations in these datasets have been identified that would affect the robustness of the assessment for EIA purposes.
- 12.5.3. The assessment of the WCH route amenity relies on qualitative descriptions by the assessor which are subjective. Where subjective assessments are presented, attempts to reconcile against evidence (such as published information from local authorities) have been made throughout.
- 12.5.4. The DMRB method for driver stress calculations applies only to individual road links, however, for the purposes of this assessment, the method has been interpreted in relation to multiple road links making up complete journeys through the road network.
- 12.5.5. Traffic data for journeys within the Study Area is not available for the construction period. Therefore, a qualitative approach has been applied for the assessment of effects during this phase.
- 12.5.6. This assessment is reliant on the findings of the Agricultural Assessment (refer to **Appendix 12.1: Likely Impacts on Agricultural Businesses, Volume 8** of this ES (**Application Document Reference: TR010041/APP/6.8**)) which outlines the potential impact on farm holdings. Relevant assumptions to the Agricultural Assessment are listed in **Section 1.4 of Appendix 12.1, Volume 8** of this ES. Agricultural land holdings within the Study Area were contacted for further information where possible, and responses were used to inform the assessment. A number of agricultural land holdings did not respond and where this is the case, the assessment is based on the available information which is publicly available relating to the area and land use.
- 12.5.7. Only land within, or adjacent to the Order Limits with means of access within the Order Limits, which is known to be operated for agricultural purposes (or deemed likely in the case of those holdings which have not responded to questionnaires) has been included within the agricultural assessment.
- 12.5.8. Land drainage plans for agricultural land holdings are not available at this stage to inform the assessment on agricultural enterprises and further information would be required during detailed design.
- 12.5.9. It is assumed that any identified loss of income from impacts on agricultural practises or environmental stewardship (an agri-environment grant scheme run by the government) as a result of Part B would be compensated for as required under the Planning Act 2008.
- 12.5.10. The assessment of employment in this chapter relies on the methodology and guidance as detailed within **Section 12.4**. The outcome may differ from the figures outlined in **Chapter 2: The Scheme, Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**), which are based upon information provided by the Buildability Advisor.
- 12.5.11. There is no consolidated methodology or practice for human health. Therefore, the assessment is based on professional experience and judgement, as well as a consideration

of the outcomes of **Chapter 5: Air Quality**, **Chapter 6: Noise and Vibration** and **Chapter 10: Road Drainage and the Water Environment** of this ES to determine the significance of effects.

- 12.5.12. The assessment of effects on human health relies on the use of reasonable assumptions and professional judgement to determine the significance of effects.
- 12.5.13. If a PRoW is being permanently closed, it is assumed that this would occur during construction and continue throughout the operation period. However, it would be necessary to temporarily close some PRoW during construction and these closures would be communicated in an appropriate manner with alternatives identified. Further detail is provided in the **Construction Traffic Management Plan (Application Document Reference: TR010041/APP/7.4)**.
- 12.5.14. As stated in **Chapter 2: The Scheme, Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**), it is intended that the agricultural land associated with Charlton Mires Farm would be retained by the landowner, where possible, whilst the associated property is to be demolished. For the purposes of the agricultural assessment, a worst case of potential land take has been assumed.

## 12.6 STUDY AREA

- 12.6.1. DMRB Volume 11, Section 3, Parts 6, 8, and 9 (**Ref. 12.11**, **12.12**, and **12.13**) does not specify a scheme study area when considering the effects of a road scheme on travellers, communities and people. However, it does provide guidance on the approach to determining relevant study areas. Assessment areas have therefore been selected based on this, as well as past experience of road development schemes and professional judgement in relation to the layout of Part B.

### VEHICLE TRAVELLERS

- 12.6.2. Potential effects on vehicular travellers could be widespread, influenced by changes in traffic flow as well as infrastructure, and not limited to a certain buffer area around Part B.

### Driver Stress

- 12.6.3. For the purposes of quantitatively assessing driver stress during operation, the Study Area for driver stress has been determined according to DMRB guidance and includes the existing A1 and the links within the Order Limits excluding the Lionheart Enterprise Park Compound that forms part of Part B during construction and the Main Compound that forms part of Part A during construction, and the additional sections as shown on **Figure 12.1: Assessment Area for Driver Stress, Volume 6** of this ES (**Application Document Reference: TR010041/APP/6.6**). This is in accordance with DMRB Volume 11, Section 3, Part 9 (**Ref. 12.13**) which requires that speeds and flows are provided for at least one kilometre of a route. The Study Area provided includes both the existing A1 and the links from the road network into the existing A1.



- 12.6.4. For the construction period, the Study Area consists of the Part B Main Scheme Area, Lionheart Enterprise Part Compound and the Main Compound that is within the Order Limits of Part A. It also includes the likely routes to be taken by construction traffic to and from the Lionheart Enterprise Park Compound and the Main Compound to access the Part B Main Scheme Area.

## EFFECTS ON COMMUNITIES

### Community Severance and Journey Amenity

- 12.6.5. A Study Area of 500 m from the Order Limits has been used to assess the potential impacts on PRoWs and journey amenity, and the effects experienced by WCH. It is likely that impacts on amenity beyond 500 m from the Order Limits would be diminished so as to not be discernible, particularly when considering the existing presence of the A1.
- 12.6.6. Community severance is defined as the separation of residents from facilities and services that they use within their community, in this case as a result of Part B. The Study Area for community severance includes those communities which fall partly or wholly within 1 km, that would potentially be directly affected by Part B, as described in DMRB Volume 11, Section 3, Part 8 (**Ref. 12.12**), and are detailed for Part B in **Section 12.7** of this chapter. Based on professional judgement, this is deemed appropriate for Part B taking into consideration the nature of the rural surroundings and scale of the Scheme. Although it is stated in guidance (**Ref. 12.29**) that pedestrian trips are likely to be up to 2 km, the WCH provision surrounding Part B are in the majority PRoW, across fields and tracks, without lighting and all weather surfaces. It is therefore not deemed that frequent access to community facilities would be taken by means of walking, cycling or horse riding beyond 1 km, and that use of provision is largely to be for recreational purposes. The identified local communities and facilities are displayed in **Figure 12.2: Local Communities and Community Facilities, Volume 6** of this ES (**Application Document Reference: TR010041/APP/6.6**).
- 12.6.7. Potential effects relating to amenity could be widespread (influenced by changes in traffic flow as well as infrastructure) and not limited to a certain buffer area around Part B. As such, the Study Area extends to those facilities within the communities within approximately 500 m of the Order Limits (in order to determine those facilities closest to the Order Limits) as well as community facilities further afield considered to be 'sensitive' or that could experience an impact, which are detailed for Part B in **Section 12.7**.

## PHYSICAL ASSETS AND LAND USE

### Private and Commercial Property

- 12.6.8. Potential effects on residential and commercial assets have been assessed within the Order Limits (direct impacts on land take and existing access) and within 500 m of the Order Limits (changes to existing access).
- 12.6.9. The assessment identifies the impact from changes in access to and from residential and commercial properties. No properties outside of 500 m are likely to be impacted by a

change in access. Residential and commercial properties located within 500 m of the Order Limits are identified on **Figure 12.3: Properties and Commercial Facilities, Volume 6** of this ES (**Application Document Reference: TR010041/APP/6.6**) of this ES.

### **Community Facilities**

- 12.6.10. Potential effects on community facilities within 500 m of the Order Limits have been assessed. This includes the identification of facilities and any means of direct access which fall within this area. The assessment of impacts on facilities beyond the Order Limits is limited to impacts on means of access, as land take is not relevant beyond the Order Limits.

### **Recreational Facilities**

- 12.6.11. There is no defined Study Area for recreational facilities within DMRB guidance. For the purposes of the assessment, a Study Area of 500 m, based on professional judgement has been used to assess potential impacts (including direct impact from land take and disruption to access) on recreational facilities and the effects experienced by users. It is likely that impacts on amenity for users of recreational facilities beyond 500 m from the Order Limits would be diminished so as to not be discernible, particularly when considering the existing presence of the A1.

### **Agricultural Land Holdings**

- 12.6.12. The Study Area for impact on agricultural land holdings is limited to those parcels of land currently utilised for agricultural activities within the Order Limits, or any means of access which fall within the Order Limits for accessing agricultural land holdings. No direct impacts are anticipated to be experienced beyond this area, outside of this scope.

### **ECONOMY AND EMPLOYMENT**

- 12.6.13. The assessment of impacts on the economy and employment during construction focuses on the county of Northumberland. This is because it is assumed that much of the construction workforce would be drawn from the regional labour market. Wider economic effects as a result of Part B are not included within the scope of this assessment and are considered within the **Case for the Scheme (Application Document Reference: TR010041/APP/7.1)**.

### **HUMAN HEALTH**

- 12.6.14. There was no defined study area for human health within industry guidance at the time of writing. For the purposes of this assessment, health data has been collected at a regional and national level. The Study Areas for other environmental topics relevant to health are taken from their own topic assessment chapters where justification has been provided, are as follows:

- a. Air Quality – 200 m
- b. Noise and Vibration – 600 m
- c. Road Drainage and the Water Environment – 1 km.

- 12.6.15. The Study Areas utilised in this assessment are summarised below in **Table 12-17**.

**Table 12-17 - Summary of Study Areas**

Assessment Topic	Study Area
Vehicle Travellers: Driver Stress	<p>Operation: The Study Area for driver stress is the extent of the road network within the Order Limits and includes the connected road network to the existing A1.</p> <p>Construction: The Study Area for driver stress is the extent of the road network within the Order Limits (including Lionheart Enterprise Compound) and includes the connected road network to the existing A1 and the connecting road network used for construction traffic to and from the Main Compound (located within the Order Limits of Part A)</p>
Effects on Communities	
Impacts on PRow	500 m from the Order Limits.
Journey amenity	500 m from the Order Limits.
Community severance	1 km from the Order Limits. Includes those communities and community facilities that would potentially be directly affected by Part B, as described in DMRB Volume 11, Section 3, Part 8 ( <b>Ref.12.2</b> ). Including Alnwick, Denwick, Rock, South Charlton, North Charlton and Ellingham
Physical Assets and Land Use	
Private property	500 m from the Order Limits.
Commercial property	500 m from the Order Limits
Recreational facilities	500 m from the Order Limits.
Community facilities	500 m from the Order Limits.
Agricultural land holdings	Within the Order Limits.
Economy and employment	
Economic receptors	The county of Northumberland.
Human Health	

Assessment Topic	Study Area
Air quality	200 m from the Order Limits (refer to Figure 5.4: Construction Receptors, Volume 6 of this ES (Application Document Reference: TR010041/APP/6.6)).
Noise and vibration	600 m the Order Limits (refer to Figure 6.4: Construction Noise Study Area, Volume 6 of this ES (Application Document Reference: TR010041/APP/6.6)).
Road drainage and the water environment	1 km from the Order Limits (refer to Figure 10.1: Water Constraints Plan, Volume 6 of this ES (Application Document Reference: TR010041/APP/6.6)).

## 12.7 BASELINE CONDITIONS

### GEOGRAPHICAL CONTEXT

- 12.7.1. Where relevant (and publicly available) data within this chapter is presented for the following geographies:
- a. National (England) (only used for context)
  - b. Regional (North East) (only used for context)
  - c. County (Northumberland)
  - d. Ward (Lesbury, Longhoughton, Alnwick)
- 12.7.2. Part B intersects three ward boundaries (in accordance with the 2011 Census ward boundaries): Lesbury, Longhoughton and Alnwick. The largest section of Part B falls in the Lesbury Ward.
- 12.7.3. The baseline conditions are outlined below under the relevant section of Part B:
- a. Part B Main Scheme Area, including Charlton Mires Site Compound (**paragraph 12.7.4**)
  - b. Lionheart Enterprise Park Compound (**paragraph 12.7.87**)
  - c. Main Compound (located within the Order Limits of Part A) (**paragraph 12.7.104**)

### PART B MAIN SCHEME AREA (INCLUDING CHARLTON MIRES SITE COMPOUND)

#### VEHICLE TRAVELLERS

##### Driver Stress

- 12.7.4. The Strategic Road Network (SRN) in England is managed by the Applicant. Within the Study Area is the A1, which connects southern England with Scotland. The road sections included within the Study Area are outlined within **Table 12-18** and shown on **Figure 12.1: Assessment Area for Driver Stress, Volume 6** of this ES (**Application Document Reference: TR010041/APP/6.6**).

- 12.7.5. Users of the existing A1 can experience delays under baseline conditions because there are low average traffic speeds along Part B relative to other sections of the A1. This is detailed in **Chapter 2: The Scheme, Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**). However, **Tables 12-17 to Table 12-19** indicate that despite there being flow restrictions, there are very few instances of high driver stress and most of the road sections are classified as having either ‘low’ or ‘moderate’ driver stress. It is likely that the levels of driver stress experienced along this section of the A1 are also due to fear of potential accidents, which is difficult to quantify.
- 12.7.6. The tables below outline driver stress for sections of the A1 within the Study Area according to the baseline year (2015), opening year (2023) and design year (2038). The baseline in 2023 and 2028 presented in the tables below outlines the driver stress likely to occur during a ‘do minimum scenario’ (without Part B).
- 12.7.7. Within a five-year period of January 2012 to December 2016 there were approximately 12 recorded Personal Injury Accidents (categorised as 2 Fatal, 5 Serious and 5 Slight). In 2017, there were three accidents (2 Serious and 1 Slight) with six casualties along the extent of the A1 within Part B. There were no accidents along the same stretch of the A1 in 2018.

**Table 12-18 - Road Sections assessed for Driver Stress**

Road Section Number	Description
1	The A1 northbound and southbound between Alnwick and Ellingham.
2	<ul style="list-style-type: none"> <li>- Alnmouth Road to the west of the A1 at Alnwick until the road intersects with the B1340.</li> <li>- The portion of the B1340 between Alnmouth Road until it intersects with the A1.</li> <li>- Alnmouth Road to the East of the A1 until it becomes the A1068</li> <li>- The unnamed Road between the A1069 and Denwick until the road intersects with the A1.</li> </ul>
3	The unnamed road which heads west from the Denwick intersection until the road heads north and becomes the B6341. The end of the section is where the B6341 heads east and intersects with the A1.
4	The extent of the B6347 between the A1 and the B6246.
5	The unnamed portions of road between Rennington and Rock Mora Farm.
6	The unnamed road to the east between the A1 at Charlton Mires to Rock Moor Farm.

Road Section Number	Description
Numbered sections apply to nodes from the Part B traffic modelling data (Refer to <b>Appendix 5.1: Traffic Data, Volume 8</b> of this ES ( <b>Application Document Reference: TR010041/APP/6.8</b> )).	

- 12.7.8. The following tables (**Table 12-19**, **Table 12-20** and **Table 19-21**) outline the existing and predicted average morning and afternoon peak hour Driver Stress levels along the traffic modelling nodes (sections of the road along which traffic data is collected) within the Part B extents for baseline year (2015) and opening year (2023) and design year (2038) for a 'Do Minimum' (without Part B) scenario.
- 12.7.9. The Driver Stress rating for each node is categorised using either low, moderate or high, as described under the DMRB guidance in Volume 11, Section 2, Part 9 (**Ref. 12.13**).
- 12.7.10. For each road section, an overall average is stated, providing a more conservative assessment against which the change due to Part B is assessed.

**Table 12-19 - Driver Stress – Baseline year (2015)**

Road Section	Baseline year AM	Baseline Year PM
1	23 nodes Low 3 nodes Moderate 6 nodes High Overall Low driver stress for this section.	23 nodes Low 1 node Moderate 8 nodes High Overall Low driver stress for this section.
2	7 nodes High Overall High driver stress for this section.	10 nodes High 1 node Moderate 1 node Low Overall High driver stress for this section.
3	7 nodes Low 2 nodes Moderate Overall Low driver stress for this section	7 nodes Low 2 nodes Moderate Overall Low driver stress for this section
4	2 nodes Low	2 nodes Low

Road Section	Baseline year AM	Baseline Year PM
	Overall Low driver stress for this section	Overall Low driver stress for this section
5	2 nodes Low Overall Low driver stress for this section	2 nodes Low Overall Low driver stress for this section
6	2 nodes Low Overall Low driver stress for this section	2 nodes Low Overall Low driver stress for this section
7	9 nodes Low 2 node Moderate 1 node High Overall Low driver stress for this section	9 nodes Low 3 nodes Moderate Overall Low driver stress for this section

Source: Part B traffic modelling data (refer to **Appendix 5.1: Traffic Data, Volume 8** of this ES (**Application Document Reference: TR010041/APP/6.8**)).

**Table 12-20 - Driver Stress – Opening Year (2023) Do Minimum Scenario (without Part B) Scenario**

Road Section	Do Minimum 2023 AM	Do Minimum 2023 PM
1	22 nodes Low 5 nodes Moderate 6 nodes High Overall Low driver stress for this section	24 nodes Low 1 node Moderate 8 nodes High Overall Low driver stress for this section
2	7 nodes High Overall High driver stress for this section	7 nodes High Overall High driver stress for this section
3	7 nodes Low 2 nodes Moderate Overall Low driver stress for this section	7 nodes Low 2 nodes Moderate Overall Low driver stress for this section
4	4 nodes Low	4 nodes Low

Road Section	Do Minimum 2023 AM	Do Minimum 2023 PM
	Overall Low driver stress for this section	Overall Low driver stress for this section
5	2 nodes Low Overall Low driver stress for this section	2 nodes Low Overall Low driver stress for this section
6	2 nodes Low Overall Low driver stress for this section	2 nodes Low Overall Low driver stress for this section
7	9 nodes Low 3 nodes Moderate Overall Low driver stress for this section	9 nodes Low 3 nodes Moderate Overall Low driver stress for this section

Source: Part B traffic modelling data (refer to **Appendix 5.1: Traffic Data, Volume 8** of this ES (**Application Document Reference: TR010041/APP/6.8**)).

**Table 12-21 - Driver Stress – Design Year (2038) Do Minimum Scenario (without Part B)**

Road Section	Do Minimum 2038 AM	Do Minimum 2038 PM
1	20 nodes Low 5 nodes Moderate 8 nodes High Overall Low driver stress for this section	16 nodes Low 9 nodes Moderate 8 nodes High Overall Moderate driver stress for this section
2	7 nodes High Overall High driver stress for this section	7 nodes High Overall High driver stress for this section
3	7 nodes Low 2 nodes Moderate Overall Low driver stress for this section	7 nodes Low 2 nodes Moderate Overall Low driver stress for this section
4	4 nodes Low	4 nodes Low



Road Section	Do Minimum 2038 AM	Do Minimum 2038 PM
	Overall Low driver stress for this section	Overall Low driver stress for this section
5	2 nodes Low Overall Low driver stress for this section	2 nodes Low Overall Low driver stress for this section
6	2 nodes Low Overall Low driver stress for this section	2 nodes Low Overall Low driver stress for this section
7	9 nodes Low 3 nodes Moderate Overall Low driver stress for this section	9 nodes Low 3 nodes Moderate Overall Low driver stress for this section

Source: Part B traffic modelling data (refer to **Appendix 5.1: Traffic Data, Volume 8** of this ES (**Application Document Reference: TR010041/APP/6.8**)).

- 12.7.11. During current baseline operation (2015), driver stress along the A1 within Part B is considered to be 'low'. Driver stress along other roads within the Study Area (from Section 3 to 7) are 'low' and road section 2 is 'high', although these vehicles joining the A1 at junctions on Part B is largely the cause of the interruption in traffic flows and the cause of higher levels of Driver Stress. There is an increase in the number of nodes which are considered to be 'moderate' and 'high' within the Study Area from 2015-2038 (refer to **Table 12-19, Table 12-20** and **Table 12-21**) in the absence of Part B indicating that driver stress is likely to slightly increase if Part B is not built.
- 12.7.12. The components that make up driver stress (average peak hourly flows and average journey time in km/hr) for each of the nodes that make up the road sections are provided in **Appendix 12.2: Driver Stress Analysis, Volume 8** of this ES (**Application Document Reference: TR010041/APP/6.8**).

## EFFECTS ON COMMUNITIES

### Community Severance and Journey Amenity

#### Existing Communities and Community Facilities

- 12.7.13. The following section describes community facilities and routes (for both WCHs and vehicles) that have been used to inform the assessments on journey amenity and new severance between communities, as required by DMRB Volume 11, Section 3 Part 8 (**Ref. 12.12**).

- 12.7.14. The existing A1 provides a barrier to movement and it is recognised that there is already a degree of severance experienced, particularly by WCHs, between the communities and community facilities identified within the Study Area.
- 12.7.15. The following communities have been identified within the Study Area:
- a. Alnwick
  - b. Denwick
  - c. Rock
  - d. South Charlton
  - e. North Charlton
  - f. Ellingham
- 12.7.16. There are numerous clusters of residential properties and agricultural land holdings spread throughout the Study Area which are not located within the centre of the communities listed above.
- 12.7.17. Community and recreational facilities have been identified within these communities and comprise a range of facilities including education, healthcare services and shops. None of the facilities identified fall within the Order Limits. Community and recreational receptors are identified on **Figure 12.2: Local Communities and Community Facilities, Volume 6** of this ES (**Application Document Reference: TR010041/APP/6.6**). These facilities have been identified under Community Severance for the purposes of understanding likely travel patterns and routes taken by WCH. Specific impacts on community and recreational facilities within 500 m of the Order Limits are assessed under Physical Assets and Land Use.
- 12.7.18. Only those receptors which are considered to be potentially impacted by community severance (within 500 m of the Order Limits) are included on **Figure 12.2: Local Communities and Community Facilities, Volume 6** of this ES (**Application Document Reference: TR010041/APP/6.6**).

Alnwick

- 12.7.19. Alnwick is a town with a recorded population of approximately 8,000 in 2011 (**Ref. 12.26**). The following community facilities are located in the immediate area, to the south west of Part B.
- a. Alnwick Infirmary (Hospital)
  - b. Alnwick cemetery
  - c. Three supermarkets and several smaller convenience stores
  - d. One adult learning centre
  - e. Three primary schools
  - f. Seven first schools
  - g. One GP surgery
  - h. Three dentists
  - i. Three pharmacies

**j.** Numerous places of worship

12.7.20. It is likely that the majority of community facilities required by the local community are available to residents within Alnwick, and therefore few journeys from Alnwick are likely to be taken from other locations for this purpose. It is likely that the majority of journeys from Morpeth would be made by vehicle to the south (via the A1) towards Newcastle upon Tyne and to the north (also via the A1) towards Berwick-upon-Tweed. These trips are likely to access employment sites and goods and services not provided in Alnwick.

12.7.21. Journeys are likely to be made by vehicle to Alnwick from the smaller communities from the west (via the B6341 and the B6346), from the north (via the B6341, B1340 and the A1) and from the east (via the A1068).

Denwick

12.7.22. Denwick is a small settlement located to the north east of Alnwick and is accessed from the A1 via the B1340. The settlement consists of residential properties, a church and recreational facilities (tennis courts). As Denwick is approximately 2 miles from the centre of Alnwick journeys are likely to be made by vehicle.

12.7.23. There are two bus stops on the eastern end of the settlement (located on the B1340). Buses that stop here provide services to Ellingham and Alnwick.

Rock

12.7.24. Rock is a small settlement located to the east of the A1 consisting of residential properties, one recreational facility (a cricket club) and a church. There are no other community facilities located within Rock, and therefore these are most likely to be accessed in Alnwick. As Rock is approximately seven miles from the centre of Alnwick, journeys are likely to be made by vehicle.

12.7.25. There is a bus stop on Church Road in Rock. The number 460 bus stops at this location so it is likely that pedestrians would travel from Rock to Ellingham and Alnwick utilising this public transport service.

South Charlton

12.7.26. South Charlton is a small settlement located to the west of A1 consisting of residential properties and a church. There are no other community facilities located within South Charlton, and therefore these are most likely to be accessed in Ellingham and Alnwick.

12.7.27. There are two bus stops on the A1 at Charlton Mires, so it is likely that pedestrians travel from South Charlton to the A1 via the B6347, PRoW 112/009 or PRoW 112/008 to use the bus network.

North Charlton

12.7.28. North Charlton is a small settlement consisting of residential and farming properties to the west of the A1. There are no community facilities located within this settlement and

therefore these are most likely to be accessed in Alnwick by vehicle as North Charlton is approximately seven miles from Alnwick.

- 12.7.29. There are two bus stops on either side of the A1, immediately north of the A1 junction at Charlton Mires. It is likely that pedestrians would travel from North Charlton via the unclassified road to use the bus network to travel both north and south.

### Ellingham

- 12.7.30. Ellingham is a small village with a recorded population of approximately 280 (**Ref. 12.26**).

- 12.7.31. The following community facilities are located in the immediate area:

- a. Ellingham C of E Primary School which is located to the south east of the village
- b. Ellingham Town Hall

- 12.7.32. As there are very few community services available in Ellingham vehicle journeys are likely to be taken to the south to Alnwick and to the north to Belford. These trips are likely to access employment sites and the goods and services not provided in Ellingham.

### **WCH Routes**

- 12.7.33. PRoW are designated routes for WCH and can comprise:

- a. Footpaths, for walking, running, mobility scooters or powered wheelchairs
- b. Bridleways, for walking, horse riding, cycling, mobility scooters or powered wheelchairs
- c. Restricted byways, for any transport without a motor and mobility scooters or powered wheelchairs
- d. Byways open to all traffic, for any kind of transport, including cars

- 12.7.34. There are 26 PRoW which lie within 500 m of the Order Limits, 17 of which are within the Order Limits, with the majority located to the east of the A1 (**Figure 12.2: Local Communities and Community Facilities, Volume 6** of this ES (**Application Document Reference: TR010041/APP/6.6**)). These form a coherent network to the eastern side of Part B, provide access to private properties, and are linked in some places by minor roads. PRoW also offer WCH traffic free routes which create linkages between rural communities. Dependent on their classification, they provide permissible access for WCH.

- 12.7.35. **Table 12-22** provides a summary of PRoWs within 500 m of the Order Limits. Key routes and desire lines have been determined by professional judgement using knowledge and experience of similar schemes based on the location of the PRoW and following WCH usage surveys which were undertaken between July and September 2016.

- 12.7.36. It should be noted that although the original surveys for the WCHAR were undertaken in 2016, a site visit was completed in April 2018 and it was considered by the lead WCHAR assessor that there have been no significant changes to the local area in terms of new local generators that would create any notable increase/decrease in utilisation of the existing PRoW network or footways. Similarly, this applies to cyclist's journeys using the existing road network and equestrians on the Bridleway network. It can be concluded, therefore, that

the 2016 survey data provides a realistic snapshot of how the local road and PRow network are being used by WCH and the information can be used for compiling this WCHAR assessment with some certainty (**Ref. 12.18**).

### National Trails and Cycle Routes

- 12.7.37. National Trails provide long-distance pedestrian routes across England. There are no National Trails located in close proximity to Part B, with the nearest (Hadrian's Wall) located approximately 22 km to the south. Therefore, National Trails are not considered further within this chapter.
- 12.7.38. National Cycle Routes provide designated access routes for cyclists, some of which make use of PRow. There are no national cycle routes within the Study Area, with the nearest (Coast and Castles) located approximately 2.6 km east of Part B. As such, National Cycle Routes are not considered further within this assessment.
- 12.7.39. In addition to the PRow listed in **Table 12-22**, there are footways along the A1 between Alnwick and Ellingham in the following locations:
- a. On the eastern side of the road north and south of junction with the B6347 which links the bus stop locations in each direction
  - b. On the western and eastern side of the A1 at North Charlton Junction which links the bus stops in each direction
  - c. On the western and eastern side of the A1 at Brownieside Junction which links bus stops in each direction

### Bus Stops

- 12.7.40. There are three existing bus stops at Charlton Mires and along the B5341. The existing footway to the east of the existing A1, to the north and south of the at-grade junction at Charlton Mires, links the bus stop locations in each direction.
- 12.7.41. The location of the bus stops is shown on **Figure 12.2: Local Communities and Community Facilities, Volume 6** of this ES (**Application Document Reference: TR010041/APP/6.6**).

**Table 12-22 - Summary of PRowS within the Study Area**

<b>PRow Ref.</b>	<b>PRow Type</b>	<b>Description</b>	<b>Sensitivity for Severance</b>	<b>Sensitivity for Amenity</b>
110/004	Footpath	Follows northwards through agricultural land from the B6341 near to Broom House Farm, north of Alnwick to the existing A1, where it connects to Footpath 129/014 on the opposite side of the A1. The A1 at this location is single carriageway each way, and no crossing is present.  Within the Order Limits	Medium – locally designated and not likely to be used by high numbers of people for access and recreation but does provide a route from north east Alnwick to the wider PRow network to the east of the existing A1.	Low at points joining with the road network either end (A1 and unclassified road to the south). Medium when traversing across open countryside, due to more rural setting, but considering that proximity to A1 results in noise from traffic and infringement of views.
129/014	Footpath	Continues the line of 110/004 north through agricultural land, connecting with the wider PRow network, via Byway 129/022.  Within the Order Limits	Medium – locally designated and not likely to be used by high numbers of people for access and recreation but does provide a route from north east Alnwick for residents in the vicinity.	Low at points joining with the road network either end (A1 and track to the east). Medium when traversing further east from the A1 surrounded by open countryside, due to more rural setting, but considering that proximity to A1 results in noise from traffic and infringement of views.
110/013	Byway	Follows a west/east alignment along the local road network near Heckley House to the A1, where it continues east of the A1 via Byway 129/022.  Within the Order Limits	Low - locally designated and not likely to be used by high numbers of people for access and recreation but does provide a route from PRow 129/002-PRow 129/003.	Low at points joining with the road network either end (A1 and B6341 road to the west). Medium when traversing across open countryside, due to more rural setting, but considering that proximity to A1 results in noise from traffic and infringement of views.
129/022	Byway	Runs from the A1 (where it adjoins 110/013) west along a continuous route to the village of Rennington, connecting with several other footpaths, agricultural tracks and local roads.  Within the Order Limits	Medium – locally designated and not likely to be used by high numbers of people for access and recreation but does provide a route from the A1 to a wider Broxfield and the wider network of PRow to the east of the existing A1.	Low at points joining with the road network either end (A1 and access track road to the east). Medium when traversing across open countryside, due to more rural setting, but considering that proximity to A1 results in noise from traffic and infringement of views.
129/023	Byway	Travels north from the intersection of 129/022 and 110/011 at Broxfield and splits into 129/005 and 120/023.  Within the Order Limits	Medium – locally designated, provides opportunities for WCH activities and connects to the wider network of PRow (129/012, 129/005 and 110/011).	Medium because the PRow traverses across open countryside but is in close proximity to A1 and Broxfield Farm access road which could result in noise from traffic and infringement of views.
110/019	Footpath	Runs from the B6341 near Heiferlaw Tower west of the A1 and continues east on the opposite side of the A1 along 129/009 and connects with a network of PRow from Rock South Farm.  Within the Order Limits	Low - locally designated and not likely to be used by high numbers of people for access and recreation but does provide a route from the western side of the A1 to PRow 129/009 and 110/003.	Low at points joining with the road network either end (A1 and B6341 road to the west). Medium when traversing across open countryside, due to more rural setting, but considering that proximity to A1 results in noise from traffic and infringement of views.
110/003 / 129/009	Footpath	A single path crossing a parish boundary. Runs from the A1, where it continues the line of 110/019, to Rock South Farm, where it connects with a network of other PRow and a minor road.  Within the Order Limits	Medium – locally designated, provides opportunities for WCH activities and connects to the wider network of PRow	Low at points joining with the road network either end (A1 and access road to Rock South Farm to the east). Medium when traversing across open countryside, due to more rural setting, but considering that proximity to A1 results in noise from traffic and infringement of views.

PRoW Ref.	PRoW Type	Description	Sensitivity for Severance	Sensitivity for Amenity
110/010 / 129/021	Footpath	Runs from west to east along a track from the B6341 at Heiferlaw Bank to the A1. Within the Order Limits	Low - locally designated and not likely to be used by high numbers of people for access and recreation	Low at points joining with the road network either end (A1 and B6341 road to the west). Medium when traversing across open countryside, due to more rural setting, but considering that proximity to A1 results in noise from traffic and infringement of views.
129/005	Footpath	Runs northwards from Rock South Farm parallel to the A1 and connects to 'the Avenue' (129/004) and the local road network to Rock, Rock Midstead and Rock Moor House. Also runs south from Rock South Farm and connects to PRoW 129/023. Within the Order Limits	Medium – locally designated and provides a route between Rock South Farm and Rock Midstead.	Medium because the PRoW traverses across open countryside but is in close proximity to A1 and B6341 which could result in noise from traffic and infringement of views.
129/006	Footpath	Runs north eastwards from Rock South Farm to Rock. Within the Order Limits	Medium – locally designated and provides a route between Rock South Farm and Rock Midstead.	Low at points joining with the road network to the east of the PRoW (Church Road at Rock). Medium when traversing across open countryside, due to more rural setting, but considering that proximity to Rock and Rock South Farm and associated road network which could result in noise from traffic and infringement of views.
129/024	Footpath	Located on the western side of the A1 and connects the B6341 near Rock Lodge to the A1. Its line is continued eastwards on the opposite side of the A1 by Footpath 129/004. Within the Order Limits	Low – locally designated and not likely to be used by high numbers of people for access and recreation but does provide a route from the western side of the A1 to PRoW 129/004.	Low due to proximity to the A1 which would result in noise from traffic and infringement of views.
129/004	Footpath	Continues the line of Footpath 129/024 eastwards from the A1 adjacent to 'the Avenue' past Rock Midstead to Rock Hall and Rock. Within the Order Limits	Medium – locally designated and provides access between the communities of Rock Farm and Rock Midstead along an area known as The Avenue.	Low at points joining with the A1. Medium when traversing across open countryside, due to more rural setting, but considering that proximity to A1 results in noise from traffic and infringement of views.
112/009	Bridleway	Runs north to south from West Linkhall and connects West Linkhall (west of the A1), with Craggy Wood and South Charlton to the south-west. Outside of the Order Limits	Medium – well utilised bridleway that provides a link between South Charlton and West Linkhall.	Low at points joining with the oxbow layby off the A1 and B6347. Medium when traversing across open countryside, due to more rural setting, but considering that proximity to A1 and B6431 which could result in noise from traffic and infringement of views.
112/008	Footpath	Runs west to east and connects West Linkhall (which is west of the A1) with Craggy Wood and the wider PRoW network. Outside of the Order Limits	Medium – locally designated that provides access for WCH to the west from the A1 to Brockley Hall and communities further to the west.	Low at points joining with the oxbow layby off the A1. Medium when traversing across open countryside, due to more rural setting, but considering the proximity to A1 and Ditchburn Road which could result in noise from traffic and infringement of views.

PRoW Ref.	PRoW Type	Description	Sensitivity for Severance	Sensitivity for Amenity
112/045	Byway	Joins with Footpath 112/037, east of the A1 at North Charlton and joins with Byway 126/031 and Footpath 126/026 at the east, south of Combs Plantation. Within the Order Limits	Medium – locally designated and provides a link between North Charlton and PRoW network to the east. There are alternatives to the north, but not to the south.	Low at western end alongside A1. Medium when traversing across open countryside, due to more rural setting, but considering that proximity to A1 results in noise from traffic and infringement of views, and high towards the east due to rural setting and undulating topography away from the A1.
112/037 218/024	Bridleway	Follows a north/south route from a layby on the east side of the A1 opposite North Charlton to connect with a network of minor roads near Tynely and Footpath 112/007. 112/037 is within the Order Limits 218/024 is outside of the Order Limits	Medium – locally designated and forms part of a loop with PRoW 218/004 and PRoW 112/007.	Low at points joining with the A1 to the west of the PRoW. Medium when traversing across open countryside, due to more rural setting, but considering that proximity to A1 results in noise from traffic and infringement of views.
112/007 218/023	Footpath	Runs parallel to Charlton Burn and runs west to east and links with the wider PRoW network and minor roads in an area of high recreational use. It connects to 112/037 (a bridleway) which continues south parallel to the A1, 218/024 which runs north towards Brownieside, and 218/023 which continues east. Outside of the Order Limits	Medium – locally designated and forms part of a wider loop between Charlton Bridge and Brownieside.	Medium due to rural setting but taking into consideration the proximity to A1 and unnamed road to the west of Doxford which could result in noise from traffic and infringement of views.
129/013	Footpath	Short section of footpath through the Whinny Plantation Within the Order Limits	Low – locally designated and provides an alternative route to Byways 129/023 and 129/022 west of Broxfield.	Medium due to rural setting but taking into consideration the proximity to A1 which could result in noise from traffic and infringement of views.
129/012	Footpath	Footpath traversing south west of Rennington, joining with Byway 129/023 at its southern end. Within the Order Limits	Low – locally designated and provides an alternative route to Byway 129/023	High due to rural setting and undulating topography away from the A1.
110/011	Byway	Section of byway between Broxfield and Denwick Lane End. Within the Order Limits	Medium – locally designated and provides a link to the PRoW network south west of Broxfield towards Longhoughton and Littlehoughton.	Low at eastern end due to proximity of the substation, overhead lines and the B1430, but medium further to the west considering the rural setting.
124/018	Footpath	Footpath traversing east from Denwick Lane End. Outside of the Order Limits	Medium – locally designated but provides a link between Byway 110/011 and footpaths to the east, where users would otherwise have to use the B1430.	Low where adjacent to the B1430 and medium further east due to rural setting.
129/007	Footpath	Footpath along farm track east of Rock South Farm, linking with Footpath 129/006 at the west and Church Road to the east just north of Rennington. Outside of the Order Limits	Low – locally designated, with alternative west to east links into Rennington in the vicinity (Footpaths 129/010 and 129/012).	High due to rural setting.



PRoW Ref.	PRoW Type	Description	Sensitivity for Severance	Sensitivity for Amenity
110/005	Footpath	An off road alternative for a section of the B6341 north of Alnwick through arable land but adjoins with the B6341 at either end. Outside of the Order Limits	Low – provides an off road alternative for a section of the B6341, but adjoins with the B6341 at either end, which has no WCH provision other than grass verges, and there are no linking PRoW at either end indicating low levels of use.	Low at junctions with B6341 and medium along route due to rural setting.

### WCH Survey Data

- 12.7.42. **Table 12-23** below outlines results from a survey undertaken in 2016 to obtain and understanding of existing WCH movements. These were recorded with a mounted camera at 22 locations and were carried out between July and September 2016, over seven days (three Thursdays, and two weekends). These user counts were taken at the PRoW and road junctions on the existing A1.
- 12.7.43. An additional site visit was undertaken in March 2018 by a Lead Assessor (**Ref. 12.18**). This site visit concluded that there have been no significant changes to the local area in terms of new local generators that would create any notable increases/decreases in the utilisation of existing WCH routes. Therefore, the 2016 survey data provides a realistic representation of how the local footways and PRoW are being used by WCH.
- 12.7.44. The surveys suggest that the busiest PRoWs in terms of overall usage was Broxfield, North Charlton West and Rock South Farm. A summary of WCH user counts is provided below in **Table 12-23**.
- 12.7.45. As outlined in **Table 12-23**. The majority of PRoW users were concentrated at four locations as follows:
- a. Broxfield (but not crossing the A1, only movements to the A1)
  - b. Rock South Farm (but not crossing the A1, only movements to the A1)
  - c. North Charlton West
  - d. North Charlton East
- 12.7.46. The greatest numbers of cyclists were also recorded in the North Charlton east and west areas.
- 12.7.47. In the area within and adjacent to the Order Limits equestrian use was observed to be low with only four equestrian users recorded in the WCH survey at Broxfield Farm and Rock South Farm. Equestrians were noted to be moving away from the A1 and did not cross the A1.

**Table 12-23 - Summary of WCH Movements within the Survey Area in 2016**

Public Right of Way	Site WCH Totals	Pedestrians	Cyclists	Horse Riders
Footpaths 110/004 continuing as 129/014 crossing A1	4	4	0	0
Byway 110/013 continuing as 129/02	3	3	0	0
Footpath 110/019 across A1 as 110/003 and 129/009	2	1	1	0
Footpaths 129/021 and 110/110 and road to Rock South Farm	2	0	2	0

Public Right of Way	Site WCH Totals	Pedestrians	Cyclists	Horse Riders
Broxfield *but not crossing A1, only movements to A1 used	89	30*	0	0
Rock South Farm **but not crossing A1, only movements to A1 used	71	25**	0	4
Footpath 129/024 and 129/004	2	0	2	0
B6341, B6347 and A1 Rock Lodge junction	19	7	12	0
A1/B6347 Charlton Mires Junction	20	3	17	0
Bridleway 112/009 at West Linkhall	17	14	3	0
North Charlton West	86	58	28	0
North Charlton East	38	23	15	0
* Only movements to the A1 used and does not include movements crossing the A1 ** Only movements to the A1 used and does not include movements crossing the A1.				

### Non-designated Public Routes

12.7.48. In addition to designated PRoWs, there are pedestrian footways or pavements along one section of the existing A1, which runs 200 m north and 200 m south of the Charlton Mires junction (on the southbound carriageway). This is considered to be of medium sensitivity under severance due to them providing connectivity between Charlton Mires and South Charlton and an opportunity to cross the A1, but for which there is an alternative to the south.

### Journey Amenity

12.7.49. The PRoW which intersect with the A1 or are located in close proximity to the A1 north of Alnwick are located within a rural setting. Users are currently likely to experience a low level of amenity where crossing the A1 or following routes immediately adjacent. Further away from the A1 and other roads with traffic higher volumes and speeds, amenity for users is likely to be of a medium to low level where the surroundings are rural, but presence of the A1 would still be felt by users where traffic noise can be heard. PRoW closer to Alnwick at the Lionheart Enterprise Park are likely to experience a low level of amenity due to proximity to traffic and a more built up environment. Details for amenity of all PRoWs considered within the assessment are provided within **Table 12-22**.

- 12.7.50. Amenity of the non-designated route at the Charlton Mires Junction is considered to be of low sensitivity due to the proximity to the A1 and traffic.

## PHYSICAL ASSETS AND LAND USE

### Private Property

- 12.7.51. Physical assets describe properties which are situated within the Order Limits or within the 500 m Study Area.
- 12.7.52. There are two adjacent residential properties, Charlton Mires Farm and East Cottage, which are located within the Order Limits. They lie immediately to the east of the A1 on the B6347.
- 12.7.53. There are a number of residential properties situated within the Study Area. Those identified in **Table 12-24** are located to the east of the southbound carriageway and are identified on **Figure 12.3: Properties and Commercial Facilities, Volume 6** of this ES (**Application Document Reference: TR010041/APP/6.6**) (property identification numbers on this figure are consistent with those within **Chapter 7: Landscape and Visual**<sup>2</sup> of this ES).

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<sup>2</sup> Note: Although the residential and commercial property references align with the numbering in **Chapter 7: Landscape and Visual** of this ES, these groupings have been extended where relevant (at Denwick, Alnwick and West Moor) to include additional properties within the Study Area.

**Table 12-24 - Residential Properties Located within 500 m East of the Order Limits**

<b>Property Ref.</b>	<b>Name of Property(ies)</b>	<b>Approximate Distance from the Order Limits</b>	<b>Approximate Location</b>
24	Properties at Denwick	750 m	Located approximately 150 m to the east of the A1, there are a number of properties which are accessed via the B1340.
23	Goldenmoor	525 m	Approximately 250 m east of the A1 situated to the north of Denwick Junction and can also be accessed via the B1340
24	Properties at Denwick	660 m	Located approximately 150 m to the east of the A1, there are a number of properties which are accessed via the B1340.
23	Goldenmoor	500 m	Approximately 250 m east of the A1 situated to the north of Denwick Junction and can also be accessed via the B1340
22	Silvermoor	180 m	Located approximately 2 km from the existing A1, but within 180 m of the Order Limits (works on Byway 129/023), this property is accessed via the B1340
11	Rock Midstead Cottages and Rock Midstead Farmhouse (6 properties)	40 m	Approximately 600 m east of the A1 all of which have use of direct access roads and do not rely on access via the A1
9	Broxfield Farm	0 m (immediately adjacent)	Situated right on the eastern edge of the Order Limits, approximately 800 m east of the A1
12	Rock South Farm (7 properties)	0 m (within)	Located approximately 700 m from the existing A1 and within the Order Limits. Accessible from an unnamed road that provides a direct link to the property. There is also alternative access from the A1 via an access track to the north of the property.
14	Rock Moor House/Rock Moor Farm	130 m	Approximately 1 km east of the A1 but 130 m north of the Order Limits near to the Charlton Mires junction.
13	Drythropple	0 m (immediately adjacent)	Adjacent to the Order Limits near to Charlton Mires Junction and approximately 500 m east of the A1. Accessible via the B6347.
15	West Lodge	0 m (immediately adjacent)	Located within the Order Limits under 100 m to the east of the A1. Accessible via Charlton Hall Road.
16	East Linkhall Farm	240 m	Located approximately 450 m east of the existing A1 and accessible via an unnamed road directly off the A1.
38	Charlton Mires (two residential properties, one of which is called East Cottage)	0 m (within)	Located immediately adjacent to the A1 within the Order Limits and directly accessible from the A1.

12.7.54. The properties identified in **Table 12-25** are located to the west of the northbound carriageway and are identified on **Figure 12.3: Properties and Commercial Facilities, Volume 6** of this ES (**Application Document Reference: TR010041/APP/6.6**). The property references in **Table 12-24** and **Table 12-25** are the same as on **Figure 12.3: Properties and Commercial Facilities, Volume 6** of this ES and within **Chapter 7: Landscape and Visual**<sup>3</sup> of this ES.

**Table 12-25 - Residential Properties Located within 500 m West of the Order Limits**

<b>Property Ref.</b>	<b>Name of Property(ies)</b>	<b>Approximate Location</b>	<b>Approximate Distance from the Order Limits</b>
10	West Linkhall	Immediately adjacent to the west of the A1 and accessed via a minor road off the A1.	0 m (immediately adjacent)
2	Loaning Head	Approximately 1 km west of the A1 situated to the north of Denwick Junction and can also be accessed via the B6341, which runs parallel to the A1 to the west.	440 m
1	Broom House	Approximately 600 m west of the A1 situated to the north of Denwick Junction and can also be accessed via the B6341, which runs parallel to the A1 to the west.	0 m (immediately adjacent)
3	Heckley House and Heckley Cottage (2 properties)	Approximately 650 m west of the A1. Accessed via the B6341 and adjacent to one of the westerly branches of the Order Limits in the southern section of Part B.	10 m
5	Heiferlaw Bank	Located on the western edge of the Order Limits, directly adjacent to the west of the B6341.	0 m (immediately adjacent)

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<sup>3</sup> Note: Although the residential and commercial property references align with the numbering in **Chapter 7: Landscape and Visual** of this ES these groupings have been extended where relevant (at Denwick, Alnwick and West Moor) to include additional properties within the Study Area.

Property Ref.	Name of Property(ies)	Approximate Location	Approximate Distance from the Order Limits
4	Heckley Fence	Adjacent to the Order Limits and accessed via an unnamed road to the west of the A1.	0 m (immediately adjacent)
8	Holywell Cottage	Located 100 m west of B6341, accessed via single track road, which connect another two unnamed residences approximately 200 m further to the west. Situated 500 m west of A1 near to Broxfield Junction.	180 m
10	Patterson Cottage	Adjacent to A1 carriageway. Approximately 500 m north of the Charlton Mires Junction.	0 m (immediately adjacent)
17	North Charlton Farm	Situated 300 m west of the A1 and the Order Limits. Northern end of Part B.	300 m
17	Unnamed residence to the north of North Charlton Farm	Located 200 m west of the A1 and Order Limits. Northern end of Part B.	200 m
17	North Charlton Mill	Located 500 m west of the A1. Immediately north of the North Charlton branch of the Order Limits.	500 m
7	Rock Nab	Approximately 250 m from the A1, accessed via B6347. Located south-west of the Charlton Mires junction.	150 m
6	Rock Lodge	Situated 50 m from the A1. South of the Charlton Mires Junction.	0 m (immediately adjacent)

12.7.55. The sensitivity of the existing residential receptors is considered to be of high sensitivity value as a receptor with limited capacity to absorb changes.

### Commercial Property

12.7.56. In addition to the residential properties outlined above, there are a number of commercial properties within 500 m of the Order Limits. However, none are within the Order Limits.

12.7.57. The following commercial properties identified in **Table 12-26**, or their means of access, are located within 500 m of the west side of the northbound carriageway and are shown on **Figure 12.3: Properties and Commercial Facilities, Volume 6** of this ES (**Application Document Reference: TR010041/APP/6.6**).

**Table 12-26 - Commercial Properties to the West within 500 m of the Order Limits**

Commercial facility	Location
Rock Lodge Holiday Lets	150 m from the Order Limits
Reading Rooms Cottage	Immediately adjacent to the Order Limits
The Old Stables Team Room	70 m from the Order Limits
The Armstrong Household and Farming Museum	310 m from the Order Limits
Patterson's Cottage boarding kennels	Immediately adjacent to the Order Limits

12.7.58. There is a wind farm, Middlemoor Wind Farm, to the west of North Charlton and outside of the Study Area. This wind farm is likely to be accessed from the unclassified road joining west of the A1 and North Charlton.

12.7.59. The following commercial properties identified in **Table 12-27**, or their means of access, are located within 500 m east of the northbound carriageway and are shown on **Figure 12.3: Properties and Commercial Facilities, Volume 6** of this ES (**Application Document Reference: TR010041/APP/6.6**).

**Table 12-27 - Commercial Properties to the East within 500 m of the Order Limits**

Commercial facility	Location
Middlemoor Cottage	60 m from the Order Limits
Rocking Horse Café & Gallery	50 m from the Order Limits
Rock Moor House Bed and Breakfast	130 m from the Order Limits



Commercial facility	Location
Beal ME and Sons	Within the Order Limits
Drythropple (sells produce from the residential property)	Immediately adjacent to the Order Limits
Grahamslaw JEG and Sons (agricultural and farming contractors)	440 m from the Order Limits
Blossom Plantation Pods (accommodation)	430 m from the Order Limits
Charlton Hall Wedding Venue	590 m from the Order Limits

12.7.60. The sensitivity of existing commercial properties listed in **Table 12-26** and **Table 12-27** is considered to be high as these are receptors with limited capacity to absorb changes.

### Community Facilities

12.7.61. There are no designated open spaces, land designated under the CRoW or Commons Act or other community assets such as allotments within the Order Limits or within the Study Area. Additionally, no land designated as Special Category Land is affected by Part B. Therefore, no further consideration of community facilities has been undertaken within this assessment for the Part B Main Scheme Area.

### Recreational Facilities

12.7.62. Within the vicinity of Part B there are a number of open and recreational spaces that serve both Alnwick and the wider area, and that may be accessed from the A1. These are predominantly located in Alnwick and include sports clubs, schools with significant areas of playing fields (which are not always publicly accessible) and children's play areas. Alnwick Garden is located approximately 1.2 km from Part B, to the south-west of Denwick Junction. To the north of Alnwick, to the east and west of the A1, there are small pockets of woodland which can be accessed by some of the PRow described in **Table 12-16**. These however, lie outside of the Study Area.

12.7.63. There is one recreational facility located within the 500 m Study Area (but outside of the Order Limits), the Armstrong Household and Farming Museum in North Charlton, the location of which is shown on **Figure 12.2: Local Communities and Community Facilities, Volume 6** of this ES (**Application Document Reference: TR010041/APP/6.6**).

The sensitivity of the museum as a recreational facility is medium due to its likely regional appeal. It is also considered separately as a commercial property.

### Agricultural Land Holdings

- 12.7.64. The Agricultural Assessment in **Appendix 12.1: Likely Impacts on Agricultural Businesses, Volume 8** of this ES (**Application Document Reference: TR010041/APP/6.8**) outlines the baseline conditions through site survey and farming questionnaires. The assessment of land use in relation to Part B is focused on agricultural fields which the Part B route intersects. The soil quality is reported within **Chapter 11: Geology and Soils** of this ES.
- 12.7.65. As reported in **Appendix 12.1: Likely Impacts on Agricultural Businesses, Volume 8** of this ES (**Application Document Reference: TR010041/APP/6.8**), there are fourteen agricultural land holdings of which seven responded to the questionnaire. These range from 1.35 ha to 320 ha and are a mix of arable, mixed and grazing livestock farms, along with equestrian facilities. These lie within the Order Limits and / or would be directly affected by Part B. Figures showing the location of these agricultural enterprises can be found within **Appendix 12.1: Likely Impacts on Agricultural Businesses, Volume 8** of this ES. A summary description of the agricultural land holdings and their sensitivity is set out in **Table 12-28** below.

**Table 12-28 - Agricultural Land Holdings within the Order Limits**

Holding Name	Holding Size*	Holding Type	Diversification	Agri-environ Schemes	Sensitivity
Broxfield Farm	197 ha Agricultural Tenancy Act Holdings 69 ha Farm Business Tenancy 70 ha Grazing License	Mixed farming (cows, lamb and organic crops) 197 hectares of Agricultural Tenancy Act Holdings 69 hectares of Farm Business Tenancy	No	Organic Entry Level Plus Higher Level Stewardship scheme	Low

Holding Name	Holding Size*	Holding Type	Diversification	Agri-environ Schemes	Sensitivity
		70 hectares Grazing License			
Charlton Mires Farm	61.5 ha	Livestock	No	Organic Entry Level plus Higher Level Stewardship scheme	Medium
Drythrople Cottage	1.33 ha	Livestock (pigs) and crops selling (firewood, eggs, fruit and vegetables)	Machinery repair of lawnmowers	N/a	High
East Cottage	2.3 ha	Equestrian	No	N/a	High
East Link Hall Farm	100 ha	Mixed farming (arable, beef, sheep enterprise)	Bulk haulage business	N/a	Low
Goldenmoor Farm	119 ha on Agricultural Tenancy Act Holdings	Arable crops (spring barley, oilseed rape and wheat)	Equestrian livery business	Entry Level plus Higher Level Stewardship scheme	Low
Heckley Fence	1.19 ha on Farm Business Tenancy	Stock for free range chicken and eggs, and sheep	No (Stables and paddocks for personal equestrian use)	N/a	High

<b>Holding Name</b>	<b>Holding Size*</b>	<b>Holding Type</b>	<b>Diversification</b>	<b>Agri-environ Schemes</b>	<b>Sensitivity</b>
Humbleheugh Farm	167.97 ha on Agricultural Tenancy Act Holding plus additional land held away from the A1	Livestock (cattle and ewes)	Residential property let to third party	Higher Level Stewardship agreement	Low
North Charlton Farm	275.6 ha	Mixed arable and livestock	No	N/a	Low
Rock Estate	131.6 ha	Mixed arable and livestock	No	N/a	Low
Rock Farms	183.0 ha	Mixed arable and livestock	No	N/a	Low
Rock Nab	14.94 ha	Grassland	No	N/a	High
Silvermoor Farm (Northumberland Estates)	150.65 ha Agricultural Tenancy Act Holdings 165.79 ha Farm Business Tenancy	Hayledge production	Provide agricultural contracting services for local farmers. Grassland grazed by sheep during winter months by third party grazer.	Organic Entry Level Plus Higher Level Stewardship scheme	Low

Holding Name	Holding Size*	Holding Type	Diversification	Agri-environ Schemes	Sensitivity
			Small area of land and stables let for equestrian use and other disused buildings to third parties.		
West Link Hall Farm	124.6 ha	Mixed arable and livestock	No	N/a	Low

\*Note – size of land holdings has been provided by landowners or is based on land parcels where responses to questionnaires were not received and therefore are to be treated as approximate.

- 12.7.66. Further details, in relation to each of the parcels, are provided in **Appendix 12.1: Likely Impacts on Agricultural Businesses, Volume 8** of this ES (**Application Document Reference: TR010041/APP/6.8**).

#### Development Land

- 12.7.67. There is no land within the Order Limits or the Study Area that has been allocated for development within the Alnwick District Wide Local Plan (**Ref. 12.30**) or the Northumberland Local Plan Draft Policies Map (**Ref. 12.9**). Therefore, no further consideration of development land would be undertaken within this assessment for Part B.
- 12.7.68. Within the Northumberland Local Plan Draft Policies Map (**Ref. 12.9**), an area has been identified as suitable for wind turbine development (Policy REN2) to the west of the existing A1 between approximately West Linkhall and North Charlton, and which overlaps partially with the Study Area. However, as this is not a designated allocation for development, this will not be considered further.

#### ECONOMY AND EMPLOYMENT

- 12.7.69. The National Office of Labour Market Statistics (**Ref. 12.26**) publishes Labour Market Profiles for each local authority area which provide a number of economic and education statistics compared with regional and national averages. The profile for Northumberland is outlined below.

#### Economic Activity

- 12.7.70. The economic activity rate measures the proportion of the working age population (16 to 64 years old) who are economically active or potentially active members of the labour market

(e.g. unemployed but looking for work). A high economic activity rate means that a high proportion of the population is working or is available for work or training.

12.7.71. The ONS Labour Market Profile indicates that in 2017-2018 for Northumberland 74.0% of working age residents (16 to 64 year olds) were economically active; a marginally lower proportion of the population than the England average of 78.4%. At ward level, economic activity rates in Alnwick (70.0%) and Longhoughton (71.5%) are marginally higher than those within Lesbury (67.5%), as shown in **Table 12-29**. All wards have very similar economic activity rates compared to the Northumberland average.

12.7.72. Although employment industry type varies by ward, as shown on **Table 12-29** the main employment sectors in the Part B Main Scheme Area are:

- a. Human Health and social work activities
- b. Public administration and defence, compulsory social security
- c. Wholesale and retail trade; repair of motor vehicles and motorcycles

**Table 12-29 - Economic Activity Data**

Area / Ward Name	All Usual Residents aged 16 to 64 (2011)	All Usual Residents aged 16 to 64 (2017-2018)	Economically Active (2011)	Economically Active (2017-2018)	Economically Inactive (2011)	Economically Inactive (2017-2018)
England	38,881,374	34,950,900	69.9%	78.4%	30.1%	21.6%
North East	1,924,206	1,658,600	66.1%	74.8%	33.9%	25.2%
Northumberland	233,224	190,600	67.9%	74.0%	32.1%	26.0%
Lesbury	3,721	Data not available	67.5%	Data not available	32.5%	Data not available
Alnwick	6,021	Data not available	68.7%	Data not available	31.3%	Data not available
Longhoughton	2,950	Data not available	71.4%	Data not available	28.6%	Data not available

## Employment by Industry

- 12.7.73. The industries with the highest proportions of the regional population in Northumberland are identified as human health and social work, whole sale and retail trade, manufacturing and accommodation and food service activities (**Ref. 12.20**). This is largely consistent with the proportions identified for the three wards within the Study Area. By contrast, rates of employment in construction are more than twice as high in Lesbury, and rates in agriculture, forestry and fishing in Longhoughton are more than three times the regional proportion, and that of Lesbury and Alnwick.

**Table 12-30 - Employment by Industry in the Study Area 2011**

Industry	Lesbury (%)	Longhoughton (%)	Alnwick (%)	Northumberland (%)
A Agriculture, forestry and fishing	2.9	7.3	1.0	2.5
B Mining and quarrying	0.3	0.5	0.4	0.2
C Manufacturing	4.6	4.4	5.2	10.9
D Electricity, gas, steam and air conditioning supply	0.4	0.3	0.3	0.3
E Water supply; sewerage, waste management and remediation activities	0.5	0.5	1.0	1.5
F Construction	9.2	5.0	1.0	4.0
G Wholesale and retail trade; repair of motor vehicles and motor cycles	12.2	10.4	17.7	15.8
H Transport and storage	3.4	2.9	3.0	3.5
I Accommodation and food service activities	8.4	7.1	9.4	10.9
J Information and communication	1.8	1.7	2.3	1.2
K Financial and insurance activities	1.8	1.4	0.9	0.7
L Real estate activities	2.9	1.4	0.9	1.7
M Professional, scientific and technical activities	6.6	4.7	5.5	5.9

Industry	Lesbury (%)	Longhoughton (%)	Alnwick (%)	Northumberland (%)
N Administrative and support service activities	3.6	3.2	4.4	5.9
O Public administration and defence; compulsory social security	10.8	25.5	10.2	3.5
P Education	10.4	8.3	8.7	8.9
Q Human health and social work activities	13.1	11.2	13.9	18.8
R, S, T, U Other	6.9	4.2	5.9	5.7

## HUMAN HEALTH

12.7.74. Residential properties, neighbourhoods, care homes, communities and users of schools, places of worship, hospitals, commercial premises, recreational facilities and community facilities as previously discussed in relevant sections of this chapter, have also been considered within the human health assessment.

### Population Health

12.7.75. The PHE Health Profiles for each local authority area compare the indicators of a number of population health statistics for each area with the national average. Indicators from the 2018 Public Health Profile for Northumberland Unitary authority information for Northumberland is provided in **Table 12-31** to **Table 12-33**.

12.7.76. This section sets out the baseline conditions in relation to human health, comprising local population information, and indicators of the status of local health, social and economic factors.

12.7.77. The PHE health profile for Northumberland indicates that the health of the Northumberland population is slightly worse than the England average as shown in **Table 12-31**. Instances of poorer health than the England average include:

- a. Rates of child obesity in children aged 10-11 and excess weight in adults for Northumberland are both slightly higher than the national average.
- b. Life expectancy at birth for both males and females is slightly lower than the national average.
- c. Mortality rates for those under 75 from cancer is higher than the national average.
- d. The suicide rate in Northumberland is also slightly higher than the national average.



**Table 12-31 - Indicators of Population Health for Northumberland Compared with England**

Indicator	Indicator Value	Period	Local Value	England Value
Obese children (aged 10-11)	Percentage	2016/17	21.1	20.0
Excess weight in adults	Percentage	2016/17	63.8	61.3
Life expectancy at birth – males	Years	2014-16	79.2	79.5
Life expectancy at birth – females	Years	2014-16	82.6	83.1
Under 75 mortality: all causes	Per 100,000 of population aged under 75	2014-16	340.5	333.8
Under 75 mortality: cardiovascular	Per 100,000 of population aged under 75	2014-16	72.7	73.5
Under 75 mortality: cancer	Per 100,000 of population aged under 75	2014-16	139.1	136.8
Suicide rate	Per 100,000 population aged 10 and over	2014-16	11.0	9.9

### Lifestyle

- 12.7.78. The PHE health profile for Northumberland indicates that the adult population in Northumberland have a healthier lifestyle than the national average, with lower rates of smoking and higher rates of participation in physical activity than the England averages, as shown in **Table 12-32**.

**Table 12-32 - Lifestyle Indicators for Adults in Northumberland Compared with England**

Indicator	Indicator Value	Period	Northumberland	England
Smoking prevalence in adults	%	2017	13.0	14.9
Percentage of physically active adults	%	2016/17	67.2	66.0

## Children

- 12.7.79. The PHE health profile indicates that the proportion of children in low income families in Northumberland is broadly in line with the national average. The rate of obesity amongst children in Northumberland is slightly higher than the national average. The General Certificate of Secondary Education (GCSEs) attainment rate in Northumberland is slightly lower than the national average. The PHE health profiles data therefore indicates that the health and level of education of children in Northumberland is slightly poorer than the national average (refer to **Table 12-33** below).

**Table 12-33 - Indicators of Childhood Health in Northumberland Compared with England**

Indicator	Indicator Value	Period	Northumberland	England
Children in low income families (under 16s)	%	2015	16.7	16.8
Obese children (aged 10-11)	%	2016/17	21.1	20.0
GCSEs achieved	% (A*-C including Maths and English)	2015/16	55.4	57.8

## Collision Risk

- 12.7.80. The profile indicates that a higher number of fatalities or instances of being seriously injured on roads in Northumberland (including the A1 and local road network) than the national average. This data could suggest therefore, that the roads in Northumberland are more dangerous than the national average, as shown in **Table 12-34**.

**Table 12-34 - Indicators of Collision Risk in Northumberland Compared with England**

Indicator	Indicator Value	Period	Local Value	England Value
Killed or seriously injured on roads	Per 100,000 of population	2014/16	52.5	39.7

## Indices of Multiple Deprivation

- 12.7.81. The English Indices of Multiple Deprivation 2015 (IMD) (**Ref. 12.31**) comprise seven different 'domains' which relate to income, employment, education, health, skills and training, barriers to housing, and services to create an overall deprivation score. Deprivation is ranked from 1 to 326, on the basis of the 326 local authority areas in England. A lower

score indicates greater levels of deprivation; with the most deprived area in England having a rank of 1.

- 12.7.82. In 2015, Northumberland was ranked 145 most deprived out of the 326 local authorities in England. This places Northumberland in the top 50% most deprived local authorities in England.
- 12.7.83. There are 197 Lower Super Output Areas (LSOAs) in Northumberland, 101 of which are within the 50% most deprived areas, and 14 of which are within the 10% most deprived areas in England. Part B would pass through 3 LSOA's, as shown in **Table 12-35**.

**Table 12-35 - LSOA's Crossed by Part B**

LSOA Name	IMD	% Deprivation Group
Northumberland 004A	25,003	30% least deprived area
Northumberland 004C	14,506	50% most deprived area
Northumberland 007A	15,403	50% most deprived area

### Health Summary

- 12.7.84. Part B is located in an area which experiences an inequality in health and has some areas of deprivation and where, overall, the health of the population is worse to the national average.
- 12.7.85. As such, health receptors in the area are likely to have a limited capacity to experience a potential impact without incurring substantial change in population or human health status. Therefore, based on criteria shown in **Table 12-12** human health receptors are expected to have a **medium sensitivity** to Part B.
- 12.7.86. The sensitivity of the human health receptors has been determined using baseline data gathered at the county level, therefore the sensitivity rating is applicable for this scale, and cannot be determined for a smaller scale. It has been assumed that vulnerable populations (such as children and older people) are present across the Study Area, and these populations may be more susceptible to impacts than the general population.

### LIONHEART ENTERPRISE PARK COMPOUND

- 12.7.87. Detail on the Lionheart Enterprise Park Compound is provided within **Chapter 2: The Scheme, Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**). The baseline findings for the Study Area surrounding the Lionheart Enterprise Park Compound are the same as those outlined for the above for Part B as they are assessed on a regional basis, aside from those outlined below.

## VEHICLE TRAVELLERS

### Driver stress

- 12.7.88. Users of the existing A1 experience delays under baseline conditions. Delays are most problematic along the sections where minor roads join the A1. Construction traffic is likely to travel to the Part B Main Scheme Area from the Lionheart Enterprise Park Compound via the Enterprise Park internal roads and the A1.

## EFFECTS ON COMMUNITIES

### Community Severance and Journey Amenity

#### Existing Communities and Community Facilities

- 12.7.89. The closest community to the Lionheart Enterprise Park Compound is Alnwick, with residential areas approximately 1 km to the north-west. A description of the community of Alnwick is provided above under the Part B Main Scheme Area.
- 12.7.90. Community receptors within 1 km of the Lionheart Enterprise Park Compound are outlined in **Table 12-36**. None are within the Order Limits.

**Table 12-36 - Community Facilities within 1 km of the Lionheart Enterprise Park Compound**

Type of Facility	Name	Approximate Distance from the Lionheart Enterprise Park Compound	Sensitivity
Education	The Duchess's Community High School (and adjacent playing fields)	500 m	High
Primary Healthcare	Genix Healthcare NHS Dentist	150 m	High
Sports and Recreation	Alnwick Rugby Football Club	800 m	Medium
	Willowburn Leisure Centre	600 m	Medium
	St James Park	800 m	Low
	Alnwick Cricket Club	800 m	Medium
Places of Worship and Burial Grounds	Alnwick Cemetery	700 m	High

### National Trails and Cycle Routes

12.7.91. There are no National Trails or National Cycle Routes within 500 m of the Lionheart Enterprise Park Compound.

### Public Rights of Way

12.7.92. There are four PRowS within 500 m of the Lionheart Enterprise Park Compound, as set out in **Table 12-37** and shown on (**Figure 12.2: Local Communities and Community Facilities, Volume 6** of this ES (**Application Document Reference: TR010041/APP/6.6**). No PRow are within the Order Limits.

**Table 12-37 - PRow within 500 m of the Lionheart Enterprise Park Compound**

<b>PRow Ref.</b>	<b>PRow Type</b>	<b>Description</b>	<b>Sensitivity for Severance</b>	<b>Sensitivity for Amenity</b>
141/022	Footpath	Runs perpendicular to the A1 and starts to the west of the proposed location for the Lionheart Enterprise Park Compound and finishes at the unnamed road which provides access to Redfoot Lea Bed and Breakfast.	Low. Locally designated and alternative WCH provision available in close proximity on unclassified road through the Enterprise Park to the south of the A1.	Low because the PRow is located in close proximity to the A1 and the Lionheart Enterprise Park Compound which results in noise from traffic and operations associated with the industrial units, and infringement of views.
141/013	Footpath	Continues on from PRow 141/022 along the southern most boundary of the Lionheart Enterprise Park Compound towards Nabs Plantation.	Low. Locally designated and likely to be used primarily for recreational use.	Medium because the PRow traverses across open countryside but is in close proximity to Lionheart Enterprise Park Compound and the A1 which could result in noise from traffic and operations associated with the industrial units, and infringement of views.

PRoW Ref.	PRoW Type	Description	Sensitivity for Severance	Sensitivity for Amenity
141/014	Footpath	Starts from the A1 and runs from west to east along an unnamed road which provides access to the properties to the north of Lionheart Estate, directly to the north of Cawledge Burn.	Low. Locally designated and likely to be used primarily for recreational use.	Low at points joining with the A1 to the north of the PRoW and where routed along the boundary of the Lionheart Enterprise Park Compounds. Medium when traversing across open countryside and woodland, due to more rural setting, but considering that proximity to A1 and Lionheart Enterprise Park Compound which could result in noise from traffic and operations associated with the industrial units, and infringement of views.
141/016	Footpath	A small section of footpath that runs from the western edge of Lionheart Enterprise Park from an unnamed road to the A1.	Medium. Likely to be used by high numbers of users as part of WCH provision around Enterprise Park.	Low because the PRoW is located in close proximity to the A1 and Lionheart Enterprise Park Compound which results in noise from traffic and operations associated with the industrial units, and infringement of views.

## PHYSICAL ASSETS AND LAND USE

### Private Property

- 12.7.93. The closest residential properties are located approximately 400 m to the south-west (Greensfield Moorhouse) and 150 m to the north east (East Cawledge) of the Lionheart Enterprise Park Compound. The sensitivity of these receptors is high as these are receptors with limited capacity to absorb changes.

### Commercial Property

- 12.7.94. The proposed Lionheart Enterprise Park Compound is located approximately 250 m east of the A1, on the outskirts of the Alnwick Lionheart Enterprise Park. The Lionheart Enterprise Park comprises of approximately 20-25 commercial and light industrial premises such as agricultural supply stores, plumbers, medical supplies and building supply stores. The sensitivity of these receptors is high as these are receptors with limited capacity to absorb changes.
- 12.7.95. Situated in Greensfield Moorhouse, approximately 500 m from the Lionheart Enterprise Park Compound, are a campsite (Greensfield Moor Caravan Site), and two properties operated commercially for accommodation (Bucklaw Cottages and Redfoot Lea Holiday Accommodation and B&B). The sensitivity of these receptors is high as these are receptors with limited capacity to absorb changes.

### Community Facilities

- 12.7.96. There are no designated open spaces, land designated under the CRoW or Commons Act or other community assets such as allotments within the Order Limits or within the Study Area. Additionally, no land designated as Special Category Land is affected by the Lionheart Enterprise Park.
- 12.7.97. As shown on **Figure 12.2: Local Communities and Community Facilities, Volume 6** of this ES (**Application Document Reference: TR010041/APP/6.6**), there are two community facilities which fall within the Study Area: a dentistry practice and the Duchess's Community High School, both of which fall outside of the Order Limits.

### Recreational Facilities

- 12.7.98. The closest formal recreational facilities to the Lionheart Enterprise Park Compound are the playing fields at The Duchess's Community High School (of high sensitivity as part of the school) which are located to the west of the Lionheart Enterprise Park Compound, on the opposite side of the A1. They appear to be publicly accessible and available outside of school hours. Approximately 800 m to the west are the Alnwick Rugby Football Club field and Alnwick Town Football Club fields (of medium sensitivity). The Willowburn Sport and Leisure Centre (of high sensitivity) is also located approximately 650 m to the west.
- 12.7.99. As detailed above, there is also a campsite (Greensfield Moor Caravan Site), located approximately 500 m from the Lionheart Enterprise Park Compound, which as a recreational facility is considered to be of medium sensitivity.

### Agricultural Land Holdings

12.7.100. The agricultural land within which the Lionheart Enterprise Park Compound is situated is summarised within **Table 12-38**, based on desk top data. It comprises of one land parcel owned by the Northumberland Estate, which is tenanted by another agricultural land holding.

**Table 12-38 - Agricultural Land within Lionheart Enterprise Park Compound**

Parcel Name	Parcel Size	Holding Type	Diversification	Agri-environ Schemes	Sensitivity
79	16.51 ha	Arable	Unknown	Unknown	<p>Freehold - Land is owned by the Northumberland Estates</p> <p>Low sensitivity (holding is over 100 ha)</p> <p>Land is tenanted in its entirety by one tenant, listed under the Land Registry at West Farm.</p> <p>The extent of this holding is unknown and therefore a worst case sensitivity is applied. It is known that adjacent parcels 73 and 74 are both tenanted under the same holding, totalling at approximately 38 ha.</p> <p>High sensitivity</p>

### Development Land

12.7.101. There is no land within the Order Limits of the Lionheart Enterprise Park Compound which is designated for development under the Alnwick Local Development Framework 2007 (**Ref. 12.10**) There are several allocations (T1, ED3 (1), ED3(2) and ED3(3)) designated under the Alnwick Local Development Framework 2007 for industrial and employment land within the Lionheart Enterprise Park, which fall within the Study Area. The majority of this land has now been developed and is under use as part of the Enterprise Park.

12.7.102. The Lionheart Enterprise Park Compound lies within an area identified under Policy REN2 of the Northumberland Local Plan Draft Policies Map (**Ref. 12.9**) as suitable for wind turbine development. However, as this is not a designated allocation for development, this will not be considered further.



- 12.7.103. The Lionheart Enterprise Park Compound is located in land identified under the Alnwick and Denwick Neighbourhood Plan (**Ref. 12.32**) as employment land under Policy E2. The Neighbourhood Plan states that under Policy E2, the land allocated for employment use at Lionheart Enterprise Park shall be available for uses within Classes B1, B2 and B8, including trade warehouses in the period to 2031 and would be retained thereafter for employment uses.

### **MAIN COMPOUND**

- 12.7.104. Detail on the Main Compound is provided within **Chapter 2: The Scheme, Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**). The baseline findings for the Study Area surrounding the Main Compound are the same as those outlined above for the Part B Main Scheme Area as they are assessed on a regional basis, aside from those outlined below.

### **VEHICLE TRAVELLERS**

#### **Driver Stress**

- 12.7.105. Users of the existing A1 experience delays under baseline conditions. Delays are most problematic along the sections where minor roads join the A1 such as the location of the Main Compound at West Thirston. Construction traffic is likely to travel to Part B from the Main Compound via the B6345 and the A1.

### **EFFECTS ON COMMUNITIES**

#### **Community Severance and Journey Amenity**

##### **Existing Communities and Community Facilities**

- 12.7.106. There are no community receptors within 1 km of the Main Compound. Felton is the closest community located to the Main Compound with a recorded population in 2011 of 1,234 (**Ref. 12.33**). Within Felton there are a number of community facilities (such as churches, schools and GP surgeries). None of these are within 1 km of the Main Compound.

##### **National Trails, Cycle Routes and PRow**

- 12.7.107. There are no national trails, National Cycle Routes or PRow within 500 m of the Order Limits of the Main Compound.

##### **Non-designated Public Routes**

- 12.7.108. There are no non-designated public routes within the vicinity of or within of the Order Limits of the Main Compound.

### **PHYSICAL ASSETS AND LAND USE**

#### **Private Property**

- 12.7.109. There are a small number of properties located within the Study Area of the Main Compound:

- a. West Moor Houses, two residential properties located approximately 400 m to the west of the A1.
- b. Glenshotten, 480 m north east of the Main Compound.
- c. Thirston New Houses, a grouping of properties located approximately 200 m to the east of the Main Compound.

12.7.110. The sensitivity of these receptors is high as these are receptors with limited capacity to absorb changes.

### Commercial Property

12.7.111. Eshott Airfield is located immediately south of the Main Compound. Approximately 700 m to the west of the A1, on the unnamed road running perpendicular to the A1 is the Northumberland Canine Centre. Along this road, within 500 m of the Main Compound, there is one commercial property, which is understood to be a construction yard. The sensitivity of this receptor is high as this is a receptor with limited capacity to absorb changes.

### Community Facilities

12.7.112. There are no designated open spaces, land designated under the CRoW or Commons Act or other community assets such as allotments within the Order Limits at the Main Compound or within the Study Area. Additionally, no land designated as Special Category Land is affected by Part B. Therefore, no further consideration of community facilities would be undertaken within this assessment for the Main Compound.

### Recreational Facilities

12.7.113. The nearest open and recreational space to the Main Compound is Felton Park, located approximately 800 m to the north and outside of the Study Area, on the northern side of the River Coquet. There are no other open or recreational spaces within the Order Limits surrounding the Main Compound.

### Agricultural land holdings

12.7.114. The agricultural land within which the Main Compound is situated is summarised within **Table 12-39**, based on desk top data. The land consists of two land parcels, owned by one freeholder and one parcel is tenanted.

**Table 12-39 - Agricultural Land within Main Compound**

Parcel Name	Parcel Size	Holding Type	Diversification	Agri-environ Schemes	Sensitivity
1384	13.92 ha	Arable	Unknown	Unknown	Freehold - Owner listed on land registry as residing at Thirston New Houses

Parcel Name	Parcel Size	Holding Type	Diversification	Agri-environ Schemes	Sensitivity
					Low Sensitivity
					Tenanted in entirety by Hebron West Farm and East Shield Farm (as listed on Land Registry) Low Sensitivity
1380	8.52 ha	Arable	Unknown	Unknown	Freehold - Owner listed on land registry as residing at Thirston New Houses Low Sensitivity

### Development Land

- 12.7.115. The compound lies within an area identified under Policy REN2 of the Northumberland Local Plan Draft Policies Map (**Ref. 12.9**) as suitable for wind turbine development. However, as this is not a designated allocation for development, this will not be considered further.
- 12.7.116. There is no land within the Order Limits or the Study Area for the Main Compound which is allocated for any means of development under the Northumberland Local Plan Policies Map (**Ref. 12.9**). Therefore, no further consideration of development land would be undertaken within this assessment for the Main Compound.

### HUMAN HEALTH

- 12.7.117. Vulnerable groups of people who are most likely to experience health inequality, include:
- a. Children;
  - b. The elderly;
  - c. Those living in deprived areas; and
  - d. People with disabilities, both physical and mental.

### FUTURE BASELINE

- 12.7.118. According to the ONS 2016-based sub-national population projections (**Ref. 12.26**) (the most recently available data at the time of writing) the population in Northumberland is projected to increase from approximately 318,000 in 2018, peaking in 2024 at 319,000 and then declining steadily from 2028 to approximately 315,000 in 2041. This contrasts with

projections for England as a whole, with the national population projected to steadily increase by over 10% in the period to 2041.

- 12.7.119. Population trends over the next 25 years will see an increase in the older age population, with the Northumberland Joint Strategic Needs Assessment identifying that *“Northumberland has an ageing population, a trend which is projected to continue in the near future”* with over 24% of the population currently aged 65 years or over (**Ref. 12.26**).
- 12.7.120. While the Northumberland population is projected to decline overall, an increasing older age population is likely to result in greater pressure on community facilities, particularly those related to elderly care services such as medical services and care homes. Older people are also more likely to rely on vehicle transport (particularly local bus services) and this could also lead to an increase in vehicles using local roads, potentially leading to higher levels of congestion.
- 12.7.121. NCC is a member of the England-wide ‘Go Smarter’ travel initiative which encourages the use of “sustainable modes of transport - walking, cycling, public transport and car sharing - when travelling to work and school; making journeys greener, cheaper and healthier” (**Ref. 12.34**). Part B also provides a business network, encouraging companies and employees to work collaboratively in developing and delivering sustainable travel initiatives. There is the potential therefore, that there may be a counteractive effect through the Council’s promotion of ‘Go Smarter’ should local residents and businesses choose to alter their mode of transport and reduce levels of vehicle travellers on local roads by using alternative modes to private vehicles.
- 12.7.122. Without Part B, driver stress is likely to increase along the A1 between Alnwick and Ellingham. As outlined in **Chapter 2: The Scheme, Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**) this is due to frustration caused by a lack of overtaking opportunities particularly due to the volume of HGVs that use the route., in addition to a lack of certainty over journey times and journey reliability, being exacerbated due to increased traffic volumes. This information is set out in **Chapter 4 of the Case for the Scheme (Application Document Reference: TR010041/APP/7.1)**.

## 12.8 POTENTIAL IMPACTS

### PART B MAIN SCHEME AREA

#### VEHICLE TRAVELLERS

##### Driver Stress

##### Construction

- 12.8.1. During construction there would be some temporary disruption to motorised travellers on the A1 and surrounding road network. As it is an online upgrade, traffic management would be required (refer to the **Construction Traffic Management Plan (Application Document Reference: TR010041/APP/7.4)** for further details). Although the majority of the works would be to the east of the existing carriageway, there are some diversions which require

vehicular traffic to be rerouted off the A1 onto local roads. The A1 southbound traffic diversion route would be between Morpeth and south of Belford and would follow the A697 and B6348. The diversion would be approximately 63 km in length and be located to the west of the existing A1. The A1 northbound traffic diversion route would be between Denwick and north of Brownieside and would follow the B1340 and an unnamed road to the east of the A1. The diversion would be approximately 25 km in length and extend east towards the coast. It is anticipated that there would be 17 nights of southbound diversions and 17 nights of northbound diversions required during the construction of Part B.

- 12.8.2. There would therefore be some temporary increases in driver stress where traffic management is required.

### Operation

- 12.8.3. During operation, vehicular traffic users would experience an improvement in road conditions and amenity, and reduced journey times due to increased capacity provided by Part B which would also improve resilience of the route. Additionally, the operation of a grade separated junction at Charlton Miles would remove the need for direct access to B6341 and B6347 on to the A1, improving safety for vehicular traffic users.
- 12.8.4. Once in operation, it is anticipated that driver stress would be reduced on the existing A1 due to the additional capacity provided by Part B which would improve resilience; improve journey times; improve journey time reliability; and improve safety along the route.

## EFFECTS ON COMMUNITIES

### Community Severance

#### Construction

- 12.8.5. There are twelve PRoW identified out of the 26 within the Study Area which would be directly affected by Part B and would be temporarily closed or diverted during construction.
- 12.8.6. A summary of potential impacts on PRoW and their users within the Study Area is shown in **Table 12-40**. Those PRoW that are within the 500 m Study Area and listed in **Table 12-22** but are not included in **Table 12-40**. are not considered to be affected by new severance caused by Part B.
- 12.8.7. If a PRoW is being permanently closed, it is assumed that this would occur during construction and continue throughout the operational period. It would be necessary to temporarily close some PRoW during construction and these closures would be communicated in an appropriate manner with alternatives identified. Further detail is provided in the **Construction Traffic Management Plan (Application Document Reference: TR010041/APP/7.4)**.
- 12.8.8. The three existing bus stops at Charlton Mires and along the B6341 would be extinguished as part of Part B. To replace these bus stops, two new bus stops are proposed along the B6341 to the west of the A1. One of these new bus stops would be located alongside the southbound lane and the other alongside the northbound lane. No new bus stops are

proposed along the route of the A1 for safety purposes. The location of the proposed bus stops and parking lay-bys are shown on the **General Arrangement Plans (Application Document Reference: TR010041/APP/2.4)**.

- 12.8.9. The existing footway to the east of the existing A1, to the north and south of the at-grade junction at Charlton Mires, links the bus stop locations in each direction. As the bus stops would be replaced on the B6341 as part of Part B, no new footways are proposed along the proposed mainline carriageway.
- 12.8.10. It is assumed for the purposes of the assessment that the bus stops listed above would also be closed during construction. The exact location of temporary provision would be developed at the detailed design stage in conjunction with the bus operators and NCC as the Highway Authority. These closures would impact on people's ability to travel from the communities between Alnwick and Ellingham to travel both north and south to access services. The reduced access to public transport would also increase community severance along the route as people who rely on public transport would find it comparatively more difficult to access public transport and services.

**Table 12-40 - Summary of Potential Construction Impacts (without mitigation) on PRowS within the Study Area**

<b>PRow Ref.</b>	<b>PRow Type</b>	<b>Description</b>	<b>Temporary or Permanent</b>	<b>Level of Severance (based on the 3 points scale in DMRB Volume 11, Section 3, Part 8 (Ref. 12.12))</b>
110/004	Footpath	Footpath 110/004 would be temporarily closed for the duration of the works until completion of the proposed Heckley Fence Accommodation Overbridge.	Temporary	Severe
129/014	Footpath	Located to the east of Part B, this footpath would be permanently stopped up at the start of the construction period.	Permanent	Severe
110/013	Byway	The existing Byway 110/013 crosses the A1 at Broxfield and would be severed by Part B.	Temporary	Severe
129/022	Byway	Footpath located to the east of Part B that provides WCH access from the A1 to Broxfield. This would be permanently stopped up during the construction period, and it is assumed as a worst case that there would be no pedestrian crossing over the A1 from east to west during construction within the Study Area.	Permanent	Severe
129/013	Footpath	Footpath location between PRow 129/022 (footpath) and PRow 129/023 (bridleway). This footpath short section of footpath would be permanently closed from the start of the construction period.	Permanent	Severe (in combination with connecting routes)
110/003 and 129/009	Footpaths	Footpaths located to the east of Part B that provide WCH access from the A1 to Rock South Farm. Both footpaths would be permanently stopped up during the construction period.	Permanent	Severe
110/019	Footpath	Footpath 110/019 would be temporarily closed for the duration of the works until completion of the proposed Heckley Fence Accommodation Overbridge and the completion of new footpath alignment running on the southern and eastern side of A1.	Temporary	Severe
110/010	Footpaths	Located to the west of Part B to the north of the proposed Heckley Fence Accommodation Overbridge. Footpath 110/010 and 129/021 would be temporarily closed for the duration of the construction works until the completion of the proposed Heckley Fence Accommodation Overbridge and the new footpath alignment running south.	Temporary	Slight.
129/024	Footpath	This footpath would be permanently lost as the connection to Footpath 129/004 would be severed, making this connection redundant.	Permanent	Severe
129/004	Footpath	Footpath 129/004 would be temporarily closed for the duration of the works until completion of new Charlton Mires junction and completion of new footpaths running north to the junction.	Temporary	Slight
129/005	Footpath	No change to PRow. However, it is anticipated construction vehicles would use this PRow for the construction of Rock South Farm Access Road.	Temporary	Slight

- 12.8.11. During construction, traffic management systems and diversion routes may lead to some traffic being rerouted onto local roads. There are no community facilities along the route, so the temporary effects on community severance would be isolated to individuals accessing community facilities in Alnwick as identified under the Part B Main Scheme Area, who may have to temporarily utilise longer routes to access these facilities due to construction activities on the A1. Direct access to these facilities is not impacted.

### Operation

- 12.8.12. Nine PRoW would be directly affected by Part B and would be permanently closed or diverted during operation.
- 12.8.13. A summary of potential impacts (without mitigation, but with consideration of embedded mitigation, for example, permanent PRoW diversions) on PRoWs within the Study Area is shown in **Table 12-41**.



**Table 12-41 - Summary of Potential Operation Impacts on PRowS within the Study Area**

<b>PRow Ref.</b>	<b>PRow Type</b>	<b>Description</b>	<b>Temporary or Permanent</b>	<b>Level of Severance</b>
110/004	Footpath	The footpath would be severed at the access track south-west from where it intersects the existing A1 route. The section of Footpath 110/004 between this point at the A1 and Footpath 129/014 would be extinguished. Footpath 110/004 would be diverted along the access track northwards to the proposed Heckley Fence Overbridge, at which point it would cross the A1 via a proposed PRow constructed to bridleway standard. The diverted route would then meet Footpath 129/005 and continue south until it meets Footpath 129/023. The total length of the diversion is 4.6 km, compared to a previous length of 1.8 km along the existing PRow.	Permanent	Severe
110/013	Byway	Byway 110/013 would be severed and diverted north to the proposed Heckley Fence Accommodation Overbridge, at which point it would cross the A1 via a proposed PRow constructed to bridleway standard. The diverted route would then meet Footpath 129/005 and continue south until it meets Footpath 129/023. The total length of the diversion is 3.6 km, compared to a previous length of 1 km along the existing PRow network. The severed section of Footpath 110/013 would be extinguished.	Permanent	Severe
129/022 and 129/014	Byway	These footpaths are located to the east of Part B that provides WCH access from the A1 to Broxfield. As mentioned above, these PRow would be permanently stopped up during the construction period which would continue through to operation. However, during operation WCH would be able to use 129/023 to head north and then west over the new WCH on the proposed Heckley Fence Accommodation Overbridge.	Permanent	Severe
110/010	Footpaths	Located to the west of Part B to the north of the proposed Heckley Fence Accommodation Overbridge. Instead of stopping at the A1, this footpath would be diverted to the south to the proposed footway across Heckley Fence Accommodation Overbridge.	Permanent	Moderate
110/019	Footpath	Located to the west of Part B to the north of the proposed Heckley Fence Accommodation Overbridge. Instead of stopping at the A1 and continuing over on the eastern side as PRow 110/003, this footpath would be diverted to the south to the proposed footway across Heckley Fence Accommodation Overbridge.	Permanent	Moderate
129/004	Footpath	Footpath users would be diverted north via a PRow diversion that runs parallel to the A1 and ends at the B6347, before they cross over the A1 at Charlton Mires Junction and continue along the B6341 using footways provided along the road's edge. The total length of the diversion would be 1.7 km, compared to a previous length of 0.15 km along the existing PRow network.	Permanent	Moderate.
129/009	Bridleway	Part B would increase the amount of traffic on the A1 and it would be located closer to the bridleway, reducing the amenity value for those users of bridleway.	Permanent	Slight
112/008	Footpath	Part B would increase the amount of traffic on the A1 and it would be located closer to the footpath, reducing the amenity value for those users of footpath.	Permanent	Slight

## Relief from Existing Severance

### Construction

- 12.8.14. Although relief from severance is completed through the construction of the Heckley Fence Accommodation Overbridge and the Charlton Mires Junction two, these are not programmed to be completed until the end of the construction period. On this basis, relief from severance is considered to be an operational effect.

### Operation

- 12.8.15. The completion of the Heckley Fence Accommodation Overbridge and the Charlton Mires Junction at the end of the construction phase would provide grade separated WCH provision for crossing the A1, reducing the need for WCH to cross the highway and interact with traffic. Therefore, there would be a beneficial impact on WCH and a reduction in severance, once these are completed and operational.

## Journey Amenity

### Construction

- 12.8.16. Users of PRow and other routes within the 500 m Study Area could experience reduction of amenity due to noise and air quality effects, and visual intrusion from construction works during the construction period, particularly for any that pass within 100 m of Part B.

### Operation

- 12.8.17. Users of PRow within the 500 m Study Area could experience loss or reduction of amenity due to noise and air quality effects, and visual intrusion from Part B, particularly for any that pass within 100 m of Part B.

## PHYSICAL ASSETS AND LAND USE

### Private Property

#### Construction

- 12.8.18. Part B requires the demolition of two properties to accommodate the proposed Charlton Mires Junction. These properties are East Cottage and Charlton Mires Farm, which are located to the east of the existing junction between the A1 and B6347 at Charlton Mires. This loss of private property is considered as a permanent impact occurring during the construction stage of Part B as the current owners of the house would no longer be able to live in their property once its demolished and this would be a permanent change.
- 12.8.19. A description is provided below of those residential properties that are likely to be impacted during the construction of Part B due to impacts on their existing access from the A1. A brief description of the potential impact is also provided for each of the properties identified.

**Table 12-42 - Summary of Potential Effects on Access to Private Properties during Construction without Mitigation**

<b>Property</b>	<b>Description of Impact</b>
Rock South Farm	The existing direct access between Rock South Farm and the A1 would be stopped up. Access would be temporarily affected until permanent measures implemented.
Heckley Fence	The direct access between Heckley Fence and the A1 would be stopped up. Access would be temporarily affected until permanent measures implemented.
West Linkhall	The access to West Linkhall would be provided via the West Linkhall Access Track. Access would be temporarily affected until permanent measures implemented.
Paterson Cottage	There would no longer be direct access to the A1 and instead West Linkhall Access Track would provide access to this property. Access would be temporarily affected until permanent measures implemented.
East Linkhall	Access to this property would be provided by the East Linkhall Access Track. Access would be temporarily affected until permanent measures implemented.
West Lodge	Access to this property would be provided by the East Linkhall Access Track. Access would be temporarily affected until permanent measures implemented.
Rock Nab	Access to this property from the B6347 would be maintained. Vehicle users would have to travel north to Charlton Miles Junction to access the A1. Access would be temporarily affected until permanent measures implemented.

### Operation

12.8.20. An assessment of the potential impact on the access to residential properties is also provided below in **Table 12-43**.

**Table 12-43 - Summary of Potential Effects on Access to Private Properties during Operation**

<b>Receptor</b>	<b>Description of Access</b>	<b>Description of Impact</b>
Rock South Farm	The existing direct access between Rock South Farm and the A1 would be stopped up and a new Rock South Farm Access Road would be constructed.	Longer journeys from the property to the A1 as residents are now required to utilise the new Rock South Farm Access Road to access the farm. However, this access is considered to be safer compared to the existing direct access onto the A1.
Heckley Fence	The direct access between Heckley Fence and the A1 would be stopped up. Residents would have to travel north and access the A1 from Charlton Miles Junction.	Longer journeys from the property to the A1 as residents are now required to travel north and access the A1 from Charlton Mires Junction. However, this access is considered to be safer compared to the existing direct access onto the A1.
West Linkhall	The access to West Linkhall would be provided via the West Linkhall Access Track.	Safer access compared to the existing direct access onto the A1. There is considered to be a negligible impact on journey times.
Paterson Cottage	There would no longer be direct access to the A1 and instead West Linkhall Access Track would provide access to this property.	Safer access compared to the existing direct access onto the A1. There is considered to be a negligible impact on journey times.
East Linkhall	Access to this property would be provided by the East Linkhall Access Track.	The property is currently accessed via an unnamed road which is accessible from a road which runs parallel to the A1. Access and safety are not impacted by this change.
West Lodge	Access to this property would be provided by the East Linkhall Access Track.	The property is currently accessed via Charlton Hall Road which is accessible from a road which runs parallel to the A1. Access and safety are not impacted by this change.
Rock Nab	Access to this property from the B6347 would be maintained. Vehicle users would have to travel north to Charlton Miles Junction to access the A1.	Access to this property is not impacted. Safer access to the A1 via Charlton Mires Junction compared to direct access from the B6341.

- 12.8.21. Additionally, journey times to access East Linkhall, West Lodge, West Linkhall and Patterson Cottages would be increased if vehicles are travelling from the north. This is due to the requirement to travel south to Charlton Mires Junction to exit the A1 and then travel north along the access tracks. The increase in journey times is predicted to be negligible when travelling in a vehicle and would be a safer journey as vehicle travellers would not have to navigate a junction with the A1.

## Commercial Property

### Construction

- 12.8.22. A property at Charlton Mires Farm would be demolished during construction of Part B. As this is a farming premises, this has been assessed in the Agricultural Land Holdings section below (but has also been considered as a residential property above).
- 12.8.23. During construction of Part B, commercial assets could experience disruption in access, although with alternatives to be provided if closures are necessary it is anticipated that they would continue to be able to operate during construction. The following businesses (which are shown on **Figure 12.3: Properties and Commercial Facilities, Volume 6** of this ES (**Application Document Reference: TR010041/APP/6.6**) rely partially on passing trade so are likely to be adversely impacted during construction due to temporary disruption to access due to construction activities along the A1:

- a. Rock Lodge Holiday Lets
- b. Patterson's Cottage and Boarding Kennels
- c. Reading Rooms Cottage
- d. The Armstrong Household and Farming Museum
- e. Middlemoor Wind Farm
- f. Rocking Horse Café and Gallery
- g. Middlemoor Cottage
- h. Rock Moor House Bed and Breakfast
- i. Grahamslaw JEG and Sons (agricultural and farming contractors)
- j. Blossom Plantation Pods (accommodation)
- k. Charlton Hall Wedding Venue

### Operation

- 12.8.24. Journey times to access Charlton Hall Wedding Venue, Blossom Plantation Pods and Grahamslaw JEG and Sons would be increased if vehicles are travelling from the north. This is due to the requirement to travel south to Charlton Mires Junction to exit the A1 and then travel north along the access tracks. The increase in journey times is predicted to be negligible when travelling in a vehicle and would be a safer journey as vehicle travellers would not have to navigate a junction with the A1.
- 12.8.25. During operation of Part B, the businesses listed in **paragraph 12.8.23** would still have unfettered access from the existing A1 so customers would still be able to access the goods and services that these businesses provide.

12.8.26. Part B improves access for Grahamslaw JEG and Sons as a larger paved area is being provided at the entrance to their access track which would enable Heavy Goods Vehicles (HGVs) to turn more easily within the property.

12.8.27. As such, it is envisaged that there would be a beneficial impact on Grahamslaw JEG and Sons. There are no impacts envisaged for the other businesses listed above.

### **Community Facilities**

#### **Construction**

12.8.28. As shown on **Figure 12.2: Local Communities and Community Facilities, Volume 6** of this ES (**Application Document Reference: TR010041/APP/6.6**), there are no community facilities which fall within the Study Area for the Part B Main Scheme Area, and therefore no impacts are anticipated on community facilities.

#### **Operation**

12.8.29. No impacts on community facilities are anticipated during operation of Part B.

### **Recreational Facilities**

#### **Construction**

12.8.30. As stated above in **paragraph 12.7.63** the closest recreational area to Part B is the Armstrong Household and Farming Museum in North Charlton. Visitors may experience some temporary disruption if road diversions or traffic management measures are required in the vicinity, but as the museum is accessible from both the A1 and the B6346, this should not prevent visitors from accessing it.

12.8.31. As all other recreational areas are all over 1 km from construction and the Part B Main Scheme Area, there is unlikely to be a change in amenity value or disruption to recreational facilities due to reduced access. No impacts on recreational areas are anticipated.

#### **Operation**

12.8.32. As the Armstrong Household and Farming Museum would be fully accessible from Brownieside and is already in close proximity to the A1, it is not anticipated that visitors would experience a loss of amenity, or would be prevented from accessing from the A1, and therefore would not be deterred from visiting.

12.8.33. As stated above, all other recreational areas and areas of open and green space are over 1 km away from Part B. These areas are not considered to be impacted by operation of Part B as they are outside of the area of influence.

### **Agricultural Land Holdings**

#### **Construction and Operation**

12.8.34. There is likely to be both temporary and permanent severance/disruption to farm holdings and impacts on the viability of farm businesses across the Order Limits. **Table 12-44** describes the impact for each farm during construction, based on the information within

**Appendix 12.1: Likely Impacts on Agricultural Businesses, Volume 8** of this ES (**Application Document Reference: TR010041/APP/6.8**). Areas of temporary and permanent land take for each holding are shown within **Appendix 12.1: Likely Impacts on Agricultural Businesses, Volume 8** of this ES. It is assumed that impacts occur during construction and no new impacts would occur during operation.

**Table 12-44 - Temporary Impacts During Construction on Agricultural land holdings (without mitigation)**

<b>Holding Name</b>	<b>Land Take</b>	<b>Severance</b>	<b>Nuisance</b>	<b>Farm Business</b>
Broxfield Farm	6.39 ha temporary land take on Broxfield Farm land. 6.04 ha of permanent land take. Combined total land take – 12.43 ha (Low)	One access on A1 to be closed, but access to land is possible from the east via unnamed track. There may be some temporary disruption to accesses off the A1, but within the Order Limits. Impact on access road could sever access by school buses for educational visits. (Medium)	Potential impact to land drains and soil resources through compaction. (Medium)	Slight reduction in viability of enterprise due to land loss. (Low)
Charlton Mires Farm	4.81 ha temporary land take. 8.67 ha of permanent land take. Combined total land take – 13.48 ha (High)	Permanent loss of four gated accesses to A1. Access is available to the south from the B6347 to the east and west of the A1, but some existing field boundaries may prevent access to all land within the holding. Work to the A1 may also result in long diversions from the east to the west for farm operators. (Medium)	Potential impact to land drains and soil resources through compaction. (Medium)	Reduction in viability of enterprise due to land loss. (High)
Drythrople Cottage	No temporary land take anticipated. No permanent land take anticipated.	There may be some temporary disruption to the access of Drythrople Cottage during construction due to works and traffic management. (Low)	None anticipated.	During periods of works and traffic management which affect the B6347, it is likely that there would be a temporary reduction in the viability of the enterprise due to the disruption of access road to the farmgate. (Medium)
East Cottage	None anticipated. 2.28 ha of permanent land take. Combined total land take – 2.28 ha (High)	None anticipated. Disruption would be limited to that caused by traffic management during construction. (Low)	None anticipated.	Reduction in viability of enterprise due to land loss. (High)
East Link Hall Farm	0.17 ha temporary land take. 1.11 ha of permanent land take. Combined total land take – 1.28 ha (Negligible)	Permanent closure of one access from the A1. The land is surrounded by other holdings' land and therefore there is likely to be temporary access disruption until alternatives are put in place. (High)	Potential impact to land drains and soil resources through compaction. (Medium)	Slight reduction in viability of enterprise due to land loss and severance. (Medium)
Goldenmoor Farm	0.98 ha temporary land take.	None anticipated. Access is gained from the south east.	Potential impact to land drains and soil	Slight reduction in viability of enterprise due to land loss, and nuisance factors.



Holding Name	Land Take	Severance	Nuisance	Farm Business
	2.58 ha of permanent land take. Combined total land take – 3.56 ha (Negligible)	Disruption would be limited to that caused by traffic management during construction. (Low)	resources through compaction. (Medium)	(Low)
Heckley Fence	0.04 ha temporary land take. No permanent land take. Combined total land take – 0.04 ha (Negligible)	Main access to the property is within the Order Limits. The land is surrounded by other holdings' land and therefore there is likely to be temporary access disruption until alternatives are put in place. (High)	Potential impact to land drains and soil resources through compaction. (Medium)	Slight reduction in viability of enterprise due to land loss and severance. (Medium)
Humbleheugh Farm	0.47 ha permanent land take for land under environmental stewardship. 0.17 ha of permanent land take. Combined total land take – 0.64 ha (Negligible)	None anticipated. Access is gained from the B6341. Disruption would be limited to that caused by traffic management during construction. (Low)	Potential impact to land drains and soil resources through compaction. (Medium)	Slight reduction in viability of enterprise due to land loss and nuisance factors. (Low)
North Charlton Farm	3.07 ha temporary land take. 0.76 ha of permanent land take. Combined total land take – 3.83 ha (Negligible)	Disruption would be limited to that caused by traffic management during construction. (Low)	Potential impact to land drains and soil resources through compaction. (Medium)	Slight reduction in viability of enterprise due to land loss and nuisance factors. (Low)
Rock Estate	3.98 ha temporary land take. 6.24 ha of permanent land take. Combined total land take – 10.22 ha (Low)	Access for land on the west of the A1 is gained from the B6341, which is not due to be affected during construction. However, work to the A1 may result in long diversions from the east to the west for farm operators. There may be some temporary disruption to accesses for land on the east of the A1. (Low)	Potential impact to land drains and soil resources through compaction. (Medium)	Reduction in viability of enterprise due to land loss, severance and nuisance factors. (Low)
Rock Farms	2.33 ha temporary land take.	There may be some temporary disruption to accesses for land off the B6347 and unnamed road to the south.	Potential impact to land drains and soil	Some reduction in viability of enterprise due to land loss, severance and nuisance factors.

Holding Name	Land Take	Severance	Nuisance	Farm Business
	7.68 ha of permanent land take. Combined total land take – 10.01 ha (Low)	(Low)	resources through compaction. (Medium)	(Low)
Rock Nab	0.30 ha temporary land take. 0.22 ha of permanent land take. Combined total land take – 0.52 ha (Negligible)	There may be some temporary disruption to the access of Rock Nab during construction, which is the only access to the property from the B6347. (Medium)	Potential impact to land drains and soil resources through compaction. (Medium)	Reduction in viability of enterprise due to land loss, severance and nuisance factors. (Low)
Silvermoor Farm (Northumberland Estates)	4.95 ha temporary land take. 7.28 ha of permanent land take. Combined total land take – 12.23 ha (Low)	Permanent closure of two accesses from the A1. However, alternative access is available for land both east and west of the A1 so no temporary severance is anticipated. Disruption would be limited to that caused by traffic management during construction. (Low)	None anticipated.	Slight reduction in viability of enterprise due to land loss. (Low)
West Link Hall Farm	1.91 ha temporary land take. 6.04 ha of permanent land take. Combined total land take – 12.43 ha (Negligible)	Permanent closure of three accesses from the A1. The land is surrounded by other holdings' land and therefore there is likely to be temporary access disruption until alternatives are put in place. Work to the A1 may also result in long diversions from the east to the west for farm operators. (High)	Potential impact to land drains and soil resources through compaction. (Medium)	Slight reduction in viability of arable enterprise due to land loss severance and nuisance factors. (Medium)

**Table 12-45 - Permanent Impacts During Construction on Agricultural Land Holdings (Without Mitigation)**

Holding Name	Impact on Land Take	Impact on Severance	Infrastructure	Impact on Nuisance	Impact on Farm Business
Broxfield Farm	4.49 ha permanent land take (Negligible)	One access on A1 to be closed, but access to land is possible from the east via unnamed track. Impact on access road could sever access by school buses for educational visits. (Medium)	No loss of dwelling, building or structure anticipated.	None anticipated	Slight reduction in viability of arable enterprise due to land loss. (Low)

Holding Name	Impact on Land Take	Impact on Severance	Infrastructure	Impact on Nuisance	Impact on Farm Business
Charlton Mires Farm	7.99 ha permanent land take (Low)	Permanent loss of four gated accesses to A1. (Medium)	Loss of residence and farm buildings (High)	None anticipated	The loss of land and the majority of farm buildings is likely to affect viability of the enterprise. (High)
Drythrople Cottage	None anticipated	None anticipated (Low)	No loss of dwelling, building or structure anticipated.	None anticipated	None anticipated
East Cottage	2.27 ha permanent land take. (High)	None anticipated. (Low)	Permanent loss of structure	None anticipated.	The loss of land and the farm building is likely to affect viability of the enterprise. (High)
East Link Hall Farm	0.86 ha permanent land take. (Negligible)	Permanent closure of one access from the A1. The land is surrounded by other holdings' land and therefore there is likely to be a high level of severance without mitigation. (High)	No loss of dwelling, building or structure anticipated.	None anticipated.	Reduction in viability of enterprise due to land loss and severance. (Medium)
Goldenmoor Farm	2.37 ha permanent land take (Negligible)	None anticipated. (Low)	No loss of dwelling, building or structure anticipated.	None anticipated.	Slight reduction in viability of enterprise due to land loss. (Low)
Heckley Fence	None anticipated	None anticipated. (Low)	No loss of dwelling, building or structure anticipated.	None anticipated.	None anticipated.
Humbleheugh Farm	0.16 ha permanent land take (Negligible)	None anticipated. (Low)	No loss of dwelling, building or structure anticipated.	None anticipated.	Slight reduction in viability of enterprise due to land loss. (Low)
North Charlton Farm	0.69 ha permanent land take (Negligible)	Permanent closure of two accesses from the A1. It is known that the farm owners' current practice is to manually drive sheep across the A1 from land parcels on either side. This would not be possible from the start of construction with the closure of accesses on the A1. However, alternative access is available for land both east and west of the A1 so sheep could be transported by vehicle. This is likely to be more time consuming for the farm owners. (Low)	No loss of dwelling, building or structure anticipated.	None anticipated	Slight reduction in viability of enterprise due to land loss. (Low)

<b>Holding Name</b>	<b>Impact on Land Take</b>	<b>Impact on Severance</b>	<b>Infrastructure</b>	<b>Impact on Nuisance</b>	<b>Impact on Farm Business</b>
Rock Estate	5.49 ha permanent land take. (Negligible)	Loss of land access off the A1, however, alternative means of access are available, so none anticipated. (Low)	No loss of dwelling, building or structure anticipated.	None anticipated	Slight reduction in viability of enterprise due to land loss. (Low)
Rock Farms	7.03 ha permanent land take. (Negligible)	None anticipated. Disruption would be limited to that caused by traffic management during construction. (Low)	No loss of dwelling, building or structure anticipated.	None anticipated.	Slight reduction in viability of enterprise due to land loss. (Low)
Rock Nab	0.27 ha permanent land take. (Negligible)	None anticipated. (Low)	No loss of dwelling, building or structure anticipated.	None anticipated.	None anticipated.
Silvermoor Farm (Northumberland Estates)	7.22 ha permanent land take. (Negligible)	Permanent closure of two accesses from the A1. However, alternative access is available for land both east and west of the A1 so no temporary severance is anticipated. (Low)	No loss of dwelling, building or structure anticipated.	None anticipated.	Slight reduction in viability of enterprise due to land loss. (Low)
West Link Hall Farm	2.7 ha permanent land take. (Negligible)	Permanent closure of three accesses from the A1. The land is surrounded by other holdings' land and therefore without mitigation there would be a high level of severance. (High)	No loss of dwelling, building or structure anticipated.	None anticipated	Reduction in viability of enterprise due to land loss and severance. (Medium)

## ECONOMY AND EMPLOYMENT

### Construction

- 12.8.35. The construction stage would commence in 2021 (mobilisation anticipated in December) and would be completed in 2023, as outlined in **Chapter 2: The Scheme, Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**). The construction stage would have a beneficial, though temporary impact on the local economy through enhancing local labour and supporting local businesses through expenditure from direct spend on materials for Part B. There may also be beneficial impacts from any construction labour employed from outside of the region who would need to use local hotels and/or restaurants.

### Operation

- 12.8.36. No impacts on local economic receptors are predicted during operation of Part B.
- 12.8.37. Wider economic effects as a result of the operation of Part B are not included within the scope of the Population and Human Health assessment and are considered within the **Case for the Scheme (Application Document Reference: TR010041/APP/7.1)**.

## HUMAN HEALTH

### Construction

- 12.8.38. Part B has the potential to result in reduced air quality arising from increased emissions during construction, from particulate matter and dust from earthworks, materials handling and transportation, and exhaust emissions, and dust from the use of non-road mobile machinery. This is likely to result in temporary adverse effects on nearby residents, commercial properties, community and recreational facilities and PRoW (refer to **Chapter 5: Air Quality** of this ES for further details).
- 12.8.39. It is expected that there would be an increase in noise and vibration levels during construction, which is likely to give rise to short-term adverse effects on some properties during the main construction period. This is likely to result in a temporary adverse effect on nearby residential and commercial properties, community and recreational facilities and PRoW users (refer to **Chapter 6: Noise and Vibration** of this ES for further details).
- 12.8.40. The proposed works may cause a localised increase in flood risk during construction, particularly associated with in-channel works such as the installations and alteration of culverts, bridges and outfalls. However, it should be noted that there are no residential properties in close proximity to these works. In addition, there is the potential for an increase in pollution risk due to run-off. However, through the implementation of measures set out within the **Outline CEMP (Application Document Reference: TR010041/APP/7.3)** no significant effects are expected to occur (refer to **Chapter 10: Road Drainage and the Water Environment** of this ES for further details).

## Operation

- 12.8.41. Part B has the potential to result in reduced air quality arising from increased emissions due to exhaust emissions from traffic on the local road network, considering the effects of the re-routing traffic and changes to traffic flow. It is expected that three receptors would experience improved air quality, eleven receptors would experience an increase in annual NO<sub>2</sub> concentrations, and five receptors experience an imperceptible change in air quality (refer to **Chapter 5: Air Quality** of this ES for further details).
- 12.8.42. The majority of noise sensitive receptors are predicted to experience a negligible change in noise levels in the long term. Moderate beneficial effects are predicated at one receptor and minor benefits at two receptors. However, no receptors are predicted to experience an adverse effect above negligible (refer to **Chapter 6: Noise and Vibration** of this ES for further details).
- 12.8.43. Detailed modelling indicated that there would be no increase in fluvial flood risk to any upstream or downstream receptors or to Part B. In addition, the proposed surface water drainage would provide appropriate treatment prior to discharge into local watercourses. Therefore, no human health impacts for road drainage and the water environment are predicted (refer to **Chapter 10: Road Drainage and the Water Environment** of this ES for further details).

## LIONHEART ENTERPRISE PARK COMPOUND

### VEHICLE TRAVELLERS

#### Driver stress

#### Construction

- 12.8.44. Vehicle users travelling to, from or past Alnwick utilising the A1 may experience increased journey times due to traffic management measures or increased presence of construction vehicles accessing the Lionheart Enterprise Park Compound.

#### Operation

- 12.8.45. As the Lionheart Enterprise Park Compound would no longer be required during operation of Part B, it is not envisaged that there would be any impacts arising during this stage.

## EFFECTS ON COMMUNITIES

### Community Severance and Journey Amenity

#### Construction

- 12.8.46. Current access arrangements to Lionheart Enterprise Park are proposed to be maintained throughout construction as the Compound is located at the eastern edge of the existing site via Ash Close. As such there is not considered to be an impact on community severance during construction as both vehicles and WCH would still be able to access community facilities, residential properties and commercial facilities.

- 12.8.47. No PRoW would be temporarily closed or diverted as a result of the Lionheart Enterprise Park Compound. However, there is a potential for a loss of amenity value from construction activities (effects from noise, dust vibration etc) as PRoW 141/014 and PRoW 141/013 are located adjacent to the boundary of the Compound.

#### **Operation**

- 12.8.48. As the Lionheart Enterprise Park Compound would no longer be required during operation of Part B, it is not envisaged that there would be any impacts arising during this stage.

### **PHYSICAL ASSETS AND LAND USE**

#### **Residential Properties**

##### **Construction**

- 12.8.49. No direct impacts are anticipated during construction of Part B on residential properties through the use of the Lionheart Enterprise Park Compound.

##### **Operation**

- 12.8.50. As the Lionheart Enterprise Park Compound would no longer be required during operation of Part B, it is not envisaged that there would be any impacts arising during this stage.

#### **Commercial Properties**

##### **Construction**

- 12.8.51. There are a number of commercial properties adjacent to the Order Limits relating to the Lionheart Enterprise Park Compound and there is the potential for increased journey times associated for those people accessing Lionheart Enterprise Park due to increased construction traffic. However, there are not anticipated to be impacts associated with accessibility or land-take to commercial properties on the Lionheart Enterprise Park.
- 12.8.52. There are three accommodation businesses located approximately 500 m west of the Lionheart Enterprise Park Compound: the Greensfield Moor Caravan Park; Bucklaw Cottages and Redfoot Lea Holiday Accommodation and bed and breakfast. There may be some temporary reduction on the amenity of users during the construction period due to the presence of the Compound, but it is not anticipated that these effects would be detrimental to the businesses at this distance from the construction works.

##### **Operation**

- 12.8.53. As the Lionheart Enterprise Park Compound would no longer be required during operation of Part B, it is not envisaged that there would be any impacts arising during this stage.

#### **Community Facilities**

##### **Construction**

- 12.8.54. As shown on **Figure 12.2: Local Communities and Community Facilities, Volume 6** of this ES (**Application Document Reference: TR010041/APP/6.6**), there are two community facilities which fall within the Study Area: a dentistry practice and the Duchess's Community

High School, both of which fall outside of the Order Limits. The high school is located on the western side of the A1, and it is not anticipated that its direct means of access would be affected, and therefore no impacts upon the school or its users are anticipated. The dentistry practice is accessed from the same road within the Enterprise Park as the compound, and therefore there may be some temporary, short term intermittent disruption for users due to any traffic management implemented in association with construction traffic movements to and from the Compound.

### Operation

12.8.55. No further impacts on community facilities are anticipated during operation of Part B.

### Recreational Facilities

#### Construction

12.8.56. The closest formal recreation area is located at The Duchess’s Community High School which is approximately 850 m to the west on the opposite side of the A1. Due to the distance, there are not likely to be any impacts of the Lionheart Enterprise Park Compound on the recreational value of this receptor.

12.8.57. There is a caravan park (Greensfield Moor Caravan Park) located on the edge of the Study Area, approximately 500 m from the Order Limits, which is likely to be a seasonal business. There may be some temporary reduction on the amenity of users during the construction period due to the presence of the construction compound.

#### Operation

12.8.58. As the Lionheart Enterprise Park Compound would no longer be required during operation of Part B, it is not envisaged that there would be any impacts arising during this stage.

### Agricultural land holdings

#### Construction

12.8.59. Potential impacts associated with the works associated with the Lionheart Enterprise Park Compound are outlined within **Table 12-46**.

**Table 12-46 - Impacts on Agricultural Land Holdings during Construction for Lionheart Enterprise Park Compound**

Parcel Name	Land Take	Severance	Nuisance	Farm Business	Overall Impact
1384	Approximately 10.26 ha of temporary land take	No severance anticipated	Potential impact to land drains and soil resources	Low for freeholder (Northumberland Estate)	Low
				High assumed as worst case for	High



Parcel Name	Land Take	Severance	Nuisance	Farm Business	Overall Impact
	No permanent land take		through compaction.  No farm properties would be affected.	tenant (West Farm)	

### Operation

- 12.8.60. As the Lionheart Enterprise Park Compound would no longer be required during operation of Part B, it is not envisaged that there would be any further impacts arising during this stage.

### Development Land

#### Construction

- 12.8.61. The Lionheart Enterprise Park Compound is located in land identified under the Alnwick and Denwick Neighbourhood Plan (**Ref. 12.32**) as employment land under Policy E2. This land would be partially occupied during construction to accommodate the Compound.

#### Operation

- 12.8.62. There are no further impacts anticipated during operation of Part B on Development Land.

### ECONOMY AND EMPLOYMENT

- 12.8.63. As the estimated, direct, indirect and induced employment impacts associated with Part B are assessed on a regional basis, the effects outlined in **paragraph 12.8.35 to 12.8.37** are also applicable to the area in which the Lionheart Enterprise Park Compound is located.

### HUMAN HEALTH

#### Construction

- 12.8.64. The Lionheart Enterprise Park Compound has the potential to result in reduced air quality arising from increased emissions during construction, from particulate matter and dust from earthworks, material handling and exhaust emissions and dust from the use of non-road mobile machinery. This is likely to result in temporary adverse effects on residential properties and PRoW (refer to **Chapter 5: Air Quality** of this ES for further details).
- 12.8.65. It is expected that there would be an increase in noise and vibration levels during construction, which is likely to give rise to short-term adverse effects on some properties during the main construction period (2021 – 2023). This is likely to result in a temporary

adverse effect on nearby residential properties and PRow (refer to Chapter 6: Noise and Vibration of this ES for further details).

- 12.8.66. There is the potential for increased pollution risk from spillage of fuels or other harmful substances i.e. concrete or cement products, associated with temporary works to migrate into local water and groundwater receptors. This is likely to result in a temporary adverse effect on nearby waterbodies (refer to **Chapter 10: Road Drainage and the Water Environment** of this ES for further details).

### Operation

- 12.8.67. The Lionheart Enterprise Park Compound would not be required during operation of Part B; therefore, no human health impacts are anticipated during this stage.

### MAIN COMPOUND

- 12.8.68. The Main Compound would be used by both Part A and Part B and is located within the Order Limits Part A. As detailed in **Section 2.8** in **Chapter 2: The Scheme, Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**), the use of the Main Compound for Part B would lead to additional activities. However, due to the limited number of additional staff and additional traffic movements there would be a negligible impact on population and human health. This is because ten additional jobs would have a negligible impact on economy and employment due to the regional scale of the assessment. In addition, the economy and employment calculations are based on the construction cost of Part B alone and therefore provide an assessment of jobs that would be generated due to Part B by itself. The volume of additional traffic generated from the staff travelling to Part B would be negligible in the scale of the overall assessment.
- 12.8.69. With reference to human health, it is expected that there would be an increase in noise and vibration levels during construction, which is likely to give rise to short-term adverse impacts on some residents during the construction period (2021 – 2023). Appropriate mitigation measures detailed in the **Outline CEMP (Application Document Number: TR010041/APP/7.3)** would be implemented during construction ensuring negligible impact on human health from Part B on local receptors. No human health potential impacts are identified for either Air Quality or Road Drainage and the Water Environment.
- 12.8.70. In relation to vehicle travellers, users of the existing A1 experience delays under baseline conditions. Delays are most problematic along the sections where minor roads join the A1 such as the location of the Main Compound at West Thirston. Construction traffic is likely to travel to the Main Compound from Part B via the B6345 and the A1. Traffic management measures set out within the **Construction Traffic Management Plan (Application Document Reference: TR010041/APP/7.4)** would be implemented during construction ensuring negligible impact on driver stress from Part B on vehicle travellers.
- 12.8.71. As there would be a negligible impact on Population and Human Health as a result of using the Main Compound for Part B, this is not discussed further within this chapter. The effects of the Main Compound on Population and Human Health are reported in Part A **Chapter 12:**

**Population and Health, Volume 2 of this ES (Application Document Reference: TR010041/APP/6.2).**

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

### **DESIGN MEASURES**

- 12.9.1. Best practice construction control measures to be implemented are detailed within the **Outline CEMP (Application Document Reference: TR010041/APP/7.3)**.

#### **Vehicle Travellers**

##### **Driver Stress**

- 12.9.2. Part B aims to improve the experience of motorised travellers using the route and connecting roads. Appropriate signage for Part B would be implemented to avoid creating route uncertainty.
- 12.9.3. The provision of grade separated crossings would reduce the fear of accidents for road users during operation.

#### **Effects on Communities**

##### **Community Severance and Journey Amenity**

- 12.9.4. Part B would aim to accommodate WCH users and would either retain an existing standard or improve access arrangements to both residential and commercial properties and community facilities. Existing PRow and WCH routes would be retained where possible, and where they are crossed by the route, an alternative proper means of access would be provided to prevent severance.
- 12.9.5. Use of best practice design, with regards to safety of WCH, would improve the amenity of users of footpaths in the surrounding areas, particularly in those areas where diversions of PRow are proposed.
- 12.9.6. The design for Part B also includes the following elements which are considered to be beneficial for WCH users:
- a.** A footway to facilitate safe pedestrian access across Charlton Mires Junction would be provided. As outlined in **Table 12-41** the footway would link the diverted Footpath 129/004, to the east of Part B, extend across the A1 and along the improved B6341, to the west of Part B, to approximately Rock Lodge.
  - b.** A footway to facilitate safe pedestrian access across the proposed Heckley Fence Accommodation Overbridge would be provided. As outlined in **Table 12-41**, the footway would link to the diverted PRow 110/004, to the east of Part B across the A1 to PRow 129/023.
  - c.** Use of best practice design with regards to the safety of WCHs would improve the amenity of users of the footpaths in the surrounding areas. Additionally, landscape planting would provide screening of the road.

- 12.9.7. Three existing bus stops on the A1 are to be removed as part of Part B. To replace these bus stops, two new bus stops are proposed along the B6341 to the west of the A1. One of these new bus stops would be located alongside the southbound lane and the other alongside the northbound lane. No new bus stops are proposed along the route of the A1 for safety purposes. The location of the proposed bus stops and parking lay-bys are shown on the **General Arrangement Plans (Application Document Reference: TR010041/APP/2.4)**.

### Physical Assets and Land Use

#### Private Property

- 12.9.8. Part B would either retain an existing standard or improve access arrangements to both residential and commercial properties and community facilities.

#### Agricultural Land Holdings

- 12.9.9. The proposed Heckley Fence Accommodation Overbridge has been located to ensure that access is maintained to land farmed by Broxfield Farm.

### MITIGATION MEASURES

#### Construction

##### Vehicle Travellers

###### Driver Stress

- 12.9.10. Part B aims to improve the experience of motorised travellers using the route and connecting roads. The following measures would contribute to an improved experience for motorised users:
- a. During the construction phase, traffic is anticipated to be managed using speed restrictions and some overnight working as outlined in **Chapter 2: The Scheme, Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**).
  - b. Temporary signage and layout would be clear to avoid creating route uncertainty for users. Any diversions or closures undertaken during construction would be clearly advertised, and any diversionary routes would be clearly signposted. Details of traffic management measures would be listed within the **Construction Traffic Management Plan (Application Document Reference: TR010041/APP/7.4)**.

##### Effects on Communities

###### Community Severance and Journey Amenity

- 12.9.11. Part B would aim to accommodate WCH users. During construction, safe crossing points across the A1 for pedestrians and agricultural vehicles would be provided at Charlton Mires. Safe crossing points across the A1 would be provided for pedestrians, cyclists, equestrians and agricultural vehicles at Broxfield or Heckley Fence depending of the stage of the construction works. The exact type and location of crossing points would be developed at detailed design of Part B.

- 12.9.12. Temporary bus stops would be provided during construction and permanent bus stops during operation of Part B. The exact location of these temporary locations would be finalised prior to construction in discussions with the service provider and NCC as the Highway Authority.
- 12.9.13. To ensure the negative effects on amenity value and disruption are reduced as far as possible during the construction stage of Part B for WCHs, the following mitigation measures are detailed within the **Outline CEMP (Application Document Reference: TR010041/APP/7.3)**, which would be developed into the CEMP by the main contractor:
- a. Any temporary or permanent diversionary works or closure of WCH routes (as identified in **Table 12-40** and Error! Reference source not found.) would be undertaken following consultation with affected individuals, groups and NCC.
  - b. The public would be informed of the nature, timing and duration of particular activities during the construction stage and the duration of any works by newsletter and other forms of appropriate communication locally and regionally (where applicable).
  - c. Any diversions and alternative routes would be clearly sign-posted.
  - d. A PRoW Management Plan would be produced by the main contractor. The PRoW Management Plan would highlight where potential PRoW closures and diversions are required and the extent of any reinstatement works required. Details of the temporary management of affected PRoW are outlined within the **Construction Traffic Management Plan (Application Document Ref: TR010041/APP/7.4)**.
- 12.9.14. Landscaping that can provide screening of the road would be provided where possible and practicable. Details of proposed screening are shown in the **Figure 7.10: Landscape Mitigation Plan, Volume 6** of this ES (**Application Document Reference: TR010041/APP/6.6**).
- 12.9.15. Traffic management systems and, potentially, diversion routes would be put in place to maintain access to the identified community facilities, residential properties and communities, businesses and private land holdings.

### Physical Assets and Land Use

#### Private Property

- 12.9.16. Pursuant to the Compensation Code, compensation would be agreed as part of Part B with the occupiers of those houses which are proposed to be demolished to facilitate the construction of the new Charlton Mires Junction (East Cottage and Charlton Mires Farm).
- 12.9.17. Traffic management systems and, potentially, diversion routes would be put in place to maintain access to the identified community facilities, residential properties / communities, businesses/commercial facilities and private land holdings. Particular measures are outlined within the **Construction Traffic Management Plan (Application Document Ref: TR010041/APP/7.4)** to ensure that access is maintained for emergency services.

### Recreational Facilities

- 12.9.18. Similar to the mitigation measures described above for reducing impact on WCH users, community severance and journey amenity, to ensure that the negative effects on amenity value and disruption are reduced as far as possible the following mitigation measures are detailed in the **Outline CEMP (Application Document Reference: TR010041/APP/7.3)**:
- a. The public and community groups affected by the construction of Part B would be informed of the nature, timing and duration of particular activities during the construction stage.
  - b. If alternative access points or routes are required, directions would be clearly communicated in appropriate locations.
- 12.9.19. Mitigation measures in relation to visual intrusion are detailed in **Chapter 7: Landscape and Visual** of this ES.

### Agricultural Land Holdings

- 12.9.20. The questionnaires sent to agricultural land holding landowners provided an opportunity to for landowners to identify potential mitigation measures. These measures have been incorporated where deemed proportionate and relevant to Part B. Consideration of these measures is included in those measures below.
- 12.9.21. Pursuant to the Compensation Code, compensation would be agreed as part of Part B with the relevant parties whose land would be temporarily and permanently acquired or severed to accommodate Part B. During the period when temporarily occupied land is in aftercare, any shortfall in production can be made up through the payment of compensation. The business should therefore not be disadvantaged in the short term. This would be by agreement with the District Valuer and the Applicant.
- 12.9.22. The temporary loss of land during construction would impact on the day to day management and potentially the ability to claim Basic Payment Scheme, a grant and payment scheme for the farming industry offered by the EU (or any replacement thereof following the UK's departure). The impact would be mitigated through financial compensation. Existing access would be maintained wherever possible and where not, new temporary tracks or access points would be created. It is proposed that correspondence takes place with land owners to understand livestock rotation and designing working arrangements, as far as possible, to avoid impact. If unavoidable then secure fencing which is appropriate to the type of livestock would be erected and safe working area established.
- 12.9.23. Any temporarily required land would be reinstated to its original condition following the completion of construction. The assessment has been made on the assumption that restoration would be carried out to a high standard and that compensation would be paid for loss of profits as a result of Part B. Measures to the correct specification as to soil stripping, storage and replacement would be outlined within a CEMP (to be developed by the main contractor from the **Outline CEMP (Application Document Reference: TR010041/APP/7.3)**).

- 12.9.24. Drainage has been raised as an issue by a number of landowners **Appendix 12.1: Likely Impacts on Agricultural Businesses, Volume 8** of this ES (**Application Document Reference: TR010041/APP/6.8**). Where the existing drainage infrastructure is of a suitable standard, Part B would tie the proposed drainage infrastructure into this existing infrastructure. However, where the existing drainage infrastructure is considered to have too many defects it would be abandoned and replaced with new.
- 12.9.25. Land and surface drainage affected by the construction works would be reinstated and land restored to a functional state. Any damage to the land or surface drains would be made good.
- 12.9.26. Appropriate access to the affected fields would be provided where required and any farm boundaries such as hedgerows, fences and walls affected during construction would be reinstated to maintain the boundary and restore landscape and ecology features. Farm boundaries should generally be reinstated like for like.
- 12.9.27. Field boundaries such as hedgerows and walls would be re-built or replanted and be in keeping with the existing boundary (e.g. hedgerow species) wherever possible.

### **Economy and Employment**

- 12.9.28. Measures would be put in place, where possible, to maximise the potential for the workforce and supply chain for Part B to be sourced locally. These measures would include:
- a. Working with local people and local businesses to ensure that, wherever possible, investment in the North East, stays in the North East.
  - b. Engaging with Jobcentre Plus to advertise job opportunities to local people seeking employment and identifying opportunities for work placements, further education, skills training.
  - c. Upskill everybody working on Part B through experience, training and development programmes.

### **Human Health**

- 12.9.29. Best practice construction methods would be used to minimise noise and vibration levels, air pollution (i.e. dust emissions), and flood and pollution risk to or from the road drainage and the water environment, are detailed in **Chapter 5: Air Quality, Chapter 6: Noise and Vibration** and **Chapter 10: Road Drainage and the Water Environment** of this ES and the **Outline CEMP (Application Document Reference: TR010041/APP/7.3)**. Monitoring should be established to ensure acceptable working limits are adhered to, using best practice methods to be included in the **Outline CEMP**.

### **Operation**

#### **Human Health**

- 12.9.30. During operation, impacts would be mitigated as proposed within **Chapter 5: Air Quality, Chapter 6: Noise and Vibration** and **Chapter 10: Road Drainage and Water Environment** of this ES.

## ENHANCEMENT MEASURES

- 12.9.31. The overbridges at Charlton Mires Junction and Heckley Fence would provide an improved crossing provision for WCH, by closing off dangerous at grade informal crossings and providing overbridges instead, thereby improving safety for pedestrians, cyclists and horse-riders while crossing the A1. These would also be wheelchair and pushchair accessible.
- 12.9.32. There is opportunity under detailed design of Part B to provide improved provision at the permanent bus stops than is currently provided at the existing bus stops which would be extinguished as part of Part B. There is also opportunity to provide rest areas and/or seating along permanent PRow diversions. These measures have not been considered within this assessment.

## 12.10 ASSESSMENT OF LIKELY SIGNIFICANT EFFECTS

- 12.10.1. The potential impacts detailed in **Section 12.8** have been reviewed based on the implementation of the mitigation measures to provide an assessment of Part B on Population and Human Health and related receptors, which are set out below.

### VEHICLE TRAVELLERS

#### Driver Stress

##### Construction

- 12.10.2. Driver stress may be temporarily adversely affected by construction works of Part B. It is assumed that during construction, driver stress would be high for vehicle travellers along the A1, as traffic diversions, construction traffic movements and construction works would likely cause increased user confusion and disruption on the road network in the Study Area. Therefore, there is likely to be an overall increase to the level of driver stress experienced along the A1 during construction, however implementation of measures set out in the **Construction Traffic Management Plan (Application Document Reference: TR010041/APP/7.4)** would limit effects where possible.

##### Operation

- 12.10.3. Predicted driver stress levels for opening year (2023) and design year (2038) are outlined in **Appendix 12.2: Driver Stress Analysis, Volume 8** of this ES (**Application Document Reference: TR010041/APP/6.8**). According to the criteria within DMRB guidance, the figures show that driver stress would remain low for the majority of links between nodes through Part B and therefore, there is not likely to be a significant change in the driver stress experienced by road users. However, it is worth noting that the number of traffic units provided in the 'Do Minimum' scenario (without Part B) would be reduced in comparison with the 'Do Something' scenario (with Part B). This change may not be evident in the level of driver stress according to DMRB guidance thresholds, as driver stress on links are already categorised as low for the majority of sections. Further details are provided in **Table 12-47** and **Table 12-48**.



- 12.10.4. Part B is also likely to reduce the fear of potential accidents for drivers on the A1 and adjoining roads, with improved traffic flows, a grade separated junction at Charlton Mires and safety measures during operation.
- 12.10.5. Overall, the effect of Part B on driver stress is expected to be **slight beneficial (not significant)**.

**Table 12-47 - Driver stress – Opening Year (2023) ‘Do Something’ (with Part B) Scenario**

Road Section	‘Do Something’ 2023 AM Peak	‘Do Something’ 2023 PM Peak
1	15 nodes Low 3 nodes Moderate 3 nodes High Overall Low driver stress for this section.	17 nodes Low 1 node Moderate 3 nodes High Overall Low driver stress for this section.
2	6 nodes High Overall High driver stress for this section.	6 nodes High Overall High driver stress for this section.
3	7 nodes Low 2 nodes Moderate Overall Low driver stress for this section	7 nodes Low 2 nodes Moderate Overall Low driver stress for this section
4	2 nodes Low Overall Low driver stress for this section	2 nodes Low Overall Low driver stress for this section
5	3 nodes Low 1 node Moderate Overall Low driver stress for this section	3 nodes Low 1 node Moderate Overall Low driver stress for this section
6	2 nodes Low Overall Low driver stress for this section	2 nodes Low Overall Low driver stress for this section
7	11 nodes Low 3 nodes Moderate	11 nodes Low 3 nodes Moderate

Road Section	'Do Something' 2023 AM Peak	'Do Something' 2023 PM Peak
	Overall Low driver stress for this section	Overall Low driver stress for this section
Source: Part B traffic modelling data is set out in <b>Chapter 4</b> of the <b>Case for the Scheme</b> ( <b>Application Document Reference: TR010041/APP/7.1</b> ).		

**Table 12-48 - Driver stress – Design Year (2038) 'Do Something' (with Part B) Scenario (2038)**

Road Section	'Do Something' 2038 AM Peak	'Do Something' 2038 PM Peak
1	15 nodes Low 1 node Moderate 4 nodes High Overall Low driver stress for this section.	14 nodes Low 4 nodes Moderate 3 nodes High Overall Low driver stress for this section.
2	6 nodes High Overall status High	6 nodes High Overall status High
3	7 nodes Low 2 nodes Moderate Overall Low driver stress for this section	8 nodes Low 1 node Moderate Overall Low driver stress for this section
4	2 nodes Low Overall Low driver stress for this section	2 nodes Low Overall Low driver stress for this section
5	N/a	N/a
6	2 nodes Low Overall Low driver stress for this section	2 nodes Low Overall Low driver stress for this section
7	11 nodes Low 3 nodes Moderate Overall Low driver stress for this section	11 nodes Low 3 nodes Moderate Overall Low driver stress for this section

Road Section	'Do Something' 2038 AM Peak	'Do Something' 2038 PM Peak
Source: Part B traffic modelling data is set out in <b>Chapter 4</b> of the <b>Case for the Scheme</b> ( <b>Application Document Reference: TR010041/APP/7.1</b> ).		

## EFFECTS ON COMMUNITIES

### Community Severance

#### Construction

- 12.10.6. There are no community facilities along the route, so the temporary effects on community severance would be isolated to individuals accessing community facilities in Alnwick (most likely by vehicle), who may have to temporarily utilise longer routes to access these facilities due to construction activities on the A1. Road closures into the Lionheart Enterprise Park Compound are not anticipated and therefore there would be no significant effect on community severance from community facilities for users. Direct access to these facilities, as shown in **Figure 12.2: Local Communities and Community Facilities, Volume 6** of this ES (**Application Document Reference: TR010041/APP/6.6**) would not be impacted.
- 12.10.7. Twelve PRowS are proposed to be permanently or temporarily closed during the construction period, and one may be temporarily affected by construction vehicles. Temporary and permanent diversions are assessed in **Table 12-49**. Permanent diversions utilising the Charlton Mires Junction, or the Heckley Fence Accommodation Overbridge may become available to WCH during the construction period, depending on the phasing of works. Further details are included in the **Construction Traffic Management Plan** (**Application Document Reference: TR010041/APP/7.4**) and details of the locations of temporary diversions are also provided in Schedule 5 of the **draft DCO** (**Application Document Reference: TR010041/APP/3.1**). These diversions and closures, although not likely to sever WCH and communities within the Study Area from community facilities, are likely to cause severance on PRowS and routes used recreationally, routes crossing the A1 in between communities and also routes used to access bus stops within the Order Limits.

**Table 12-49 - Significance of Temporary and Permanent Effects on PRow**

<b>PRow</b>	<b>Sensitivity</b>	<b>Temporary Effect</b>	<b>Permanent Effect</b>
110/004	Low	<p>The connection to Footpath 129/014 would be severed by Part B. The southern section of Footpath 110/004 would be retained along its existing route. PRow diverted north to safe crossing point during construction. It is assumed that the furthest diversion for WCHs would be to the Heckley Fence Accommodation Overbridge, however shorter diversions may be available during the construction period depending on the phasing of the construction works, and location of safe crossing points implemented.</p> <p>Magnitude of change (worst case) – Severe (diversion over 500 m in length)  Level of effect – Moderate adverse*</p>	<p>The connection to Footpath 129/014 would be severed by Part B. The southern section of Footpath 110/004 would be retained along its existing route. The PRow would however be extinguished from the point at which it meets an existing track, located to the north of Broom House, to the existing A1. At this location, the PRow would be diverted north along an existing track to the proposed Heckley Fence Accommodation Overbridge, at which point it would cross the A1 via the overbridge which would be constructed to bridleway standard. The diverted route would meet the existing PRow network at Footpath 129/023 which would then be followed southwards to Broxfield. The total length of the diversion would be 4.4 km, compared to a previous length of 1.8 km along the existing PRow network. Magnitude of change – Severe (diversion over 500 m in length)  Level of effect - Moderate adverse*</p>
129/014	Low	<p>Footpath 129/014 would be permanently closed at start of the construction period.  Magnitude of change – Severe  Level of effect – Moderate adverse*</p>	<p>Permanent closure from the start of the construction period which would restrict WCH users from being able to travel west to east across the A1. WCH travelling north to south would be required to cross the A1 at Heckley Fence Accommodation Overbridge and the subsequent PRow diversion would be the same as for Footpath 110/004, on the west of the A1.  Magnitude of change – Severe (diversion over 500 m in length)  Level of effect - Moderate adverse*</p>
110/013	Low	<p>PRow on western side of A1 diverted north to safe crossing point during construction via existing access track. It is assumed that the furthest diversion for WCHs would be at the Heckley Fence Accommodation Overbridge, however shorter diversions may be available during the construction period depending on the phasing of the construction works.  Section of PRow on the east of the A1 would be permanently closed.  Magnitude of change (worst case) – Severe (diversion over 500 m in length)  Level of effect – Moderate adverse*</p>	<p>The existing Byway 110/013 crosses the A1 at Broxfield and would be severed by Part B. Byway 110/013 would be diverted north to the proposed Heckley Fence Accommodation Overbridge via a proposed bridleway, at which point it would cross the A1 via the overbridge via the proposed Byway Open to All Traffic (BOAT). The diverted route would meet the existing PRow network at Footpath 129/023 which would then be followed southwards to Broxfield. The total length of the diversion is 3.1 km, compared to a previous length of 1.0 km along the existing PRow network. The majority of Byway 110/013 would retain its byway classification, except for the eastern section which is to be extinguished.  Magnitude of change – Severe (for those users crossing the A1)  Level of effect - Moderate adverse*</p>
129/022	Low	<p>Permanent closure from the start of the construction period.  Magnitude of change – Severe  Level of effect - Moderate adverse*</p>	<p>Byway 129/022 would be extinguished. No PRow diversions would be provided because Byway 110/013 and Footpath 129/014 would be extinguished. Magnitude of change – Severe  Level of effect - Moderate adverse*</p>
129/013	Low	<p>Permanent closure from the start of the construction period.  Magnitude of change – Severe</p>	<p>Footpath 129/013 would be extinguished. No PRow diversions would be provided because Byway 129/022 would be extinguished as part of Part B making Footpath 129/013 redundant. Footpath 129/013 links Byway 129/022 with Byway 129/023. Byway</p>

PRoW	Sensitivity	Temporary Effect	Permanent Effect
		Level of effect – slight adverse* (users going north/south are still able to use Byway 129/023)	129/023 would remain open for WCH travelling north to south, but there would be no connectivity to the west, due to PRoW closures. Magnitude of change – Severe Level of effect - Moderate adverse*
110/019	Low	PRoW diverted south to safe crossing point during construction. It is assumed that the furthest diversion for WCHs would be at the Heckley Fence Accommodation Overbridge, however shorter diversions may be available during the construction period depending on the phasing of the construction works. Magnitude of change (worst case) – Severe (diversion over 500 m in length) Level of effect – Moderate adverse*	The connection to Footpath 110/003 would be severed by Part B. Footpath 110/019 would be diverted south, running parallel to the A1 before reaching the proposed Heckley Fence Accommodation Overbridge where users would cross over the A1, travel eastwards along the diverted PRoW, and then northwards along Byway 129/023 and Footpath 129/005 to Rock South Farm. The total length of the diversion is 4 km, compared to a previous length of 1 km along the existing PRoW network. Magnitude of change – Severe (diversion over 500 m in length) Level of effect - Moderate adverse*
110/010 and 129/021	Low	PRoW diverted south to safe crossing point during construction. It is assumed that the furthest diversion for WCHs would be at the Heckley Fence Accommodation Overbridge, however shorter diversions may be available during the construction period depending on the phasing of the construction works. Magnitude of change (worst case) – Severe (diversion over 500 m in length) Level of effect – Moderate adverse*	Footpath 129/021 would be diverted south, running parallel to the A1 before reaching the proposed Heckley Fence Accommodation Overbridge where users would cross over the A1, travel eastwards along the diverted PRoW, meeting the existing PRoW network at Byway 129/023. The diversion would then continue northwards along Footpaths 129/023 and 129/005 to Rock South Farm. The total length of the diversion is 4.6 km, compared to a previous length of 1 km along the existing PRoW network. Magnitude of change – Severe (diversion over 500 m in length) Level of effect – Moderate adverse*
110/003 and 129/009	Medium	Permanent closure from the start of the construction period. Magnitude of change – Severe Level of effect - Moderate adverse* (WCH surveys show low usage of this PRoW)	Footpaths 110/003 and 129/009 (1 km) would be extinguished as the connection to Footpath 110/019 would be severed by Part B, making them redundant. The PRoW diversion would be the same as Byway 110/019. Magnitude of change – Severe Level of effect - Moderate adverse* (WCH surveys show low usage of this PRoW)
129/024	Low	Permanent closure from the start of the construction period. Magnitude of change – Severe Level of effect – Moderate adverse*	Footpath 129/024 (0.15 km) would be extinguished as the connection to Footpath 129/004 would be severed by Part B, making it redundant. Footpath users would be diverted north along the B6341 and cross over the A1 at Charlton Mires Junction, using footways provided along the road's edge. Users would then cross the B6347 East and continue south along the PRoW diversion, parallel to the A1, until it meets the existing PRoW network at Footpath 129/004. The total length of the diversion would be 1.9 km, compared to a previous length of 0.15 km along the existing PRoW network. Magnitude of change – Severe (diversion over 500 m in length) Level of effect – Moderate adverse*
129/004	Medium	PRoW diverted to safe crossing point during construction. It is assumed that the furthest diversion for WCHs would be at the Charlton Mires Junction, however shorter diversions may be available during the construction period depending on the phasing of the construction works.	The connection to Footpath 129/024 would be severed by Part B. The PRoW diversion would be the same as Footpath 129/024. The total length of the diversion would be 1.7 km, compared to a previous length of 0.15 km along the existing PRoW network.

PRoW	Sensitivity	Temporary Effect	Permanent Effect
		Magnitude of change (worst case) – Severe Level of effect – Moderate adverse*	Magnitude of change – Severe (diversion over 500 m in length) Level of effect – Moderate adverse*
129/005	Medium	No change to PRoW. However, it is anticipated construction vehicles would use this PRoW for the construction of Rock South Farm Access Road, and therefore temporary management measures may be used. Magnitude of change – Slight Level of effect – Slight adverse (not significant)	No change Magnitude of change – No change Level of effect - No change

Note: \* denotes where a range of level of effect is applicable in Table in DMRB Part 5 HA 205/08 (Ref. 12.23), and professional judgement has been applied to determine the significance of effect.

12.10.8. In addition to the temporary and permanent closures of PRoW, the removal of three bus stops at Charlton Mires and along the B5341 is likely to increase journey times and reduce access to public transport for some local residents travelling via public transport. However, temporary bus stops would be provided during construction and permanent bus stops during operation. The exact location of temporary bus stop provision would be determined during detailed design. In consultation with the service providers of the bus services, it was noted that usage of these services is low. However, depending on the origin of journey in reaching the bus stops for different users, when considering the closures and diversions of PRoW and routes as detailed in **Table 12-49**, there may be some significant effects experienced by some users. This is likely to be the case where significant levels of severance for a PRoW are outlined, or where a route is taken on several PRoWs where the combined increase is of a significant length. As the exact detail of temporary bus stop provision and unknown journey origins for different users is not known, it is not possible to provide quantification of this.

### Operation

- 12.10.9. There are no community facilities along the route considered to be accessed by WCH. As it is anticipated that residents of communities within the Study Area, surrounding Part B, would access community facilities in Alnwick by vehicular journeys, it is not anticipated that there would be any severance for WCH from community facilities during operation of Part B.
- 12.10.10. A number of PRoWs are proposed to be permanently diverted or amended during the operation period. The significance of these effects to be experienced by users of these PRoWs are outlined in **Table 12-49**. These diversions and closures, although not likely to sever WCH and communities within the Study Area from community facilities, are likely to cause severance on PRoW and routes used recreationally, routes crossing the A1 in between communities and also routes used to access bus stops within the Order Limits.
- 12.10.11. WCH provision is proposed over the Heckley Fence Accommodation Overbridge and Charlton Mires Junction. Although these facilities are an improvement to the existing cycle and footpath provision, there are diversions of existing PRoW which are required for WCHs to access these, which are likely to increase journey length for the majority of WCH users (refer to **Figure 12.3: Properties and Commercial Facilities, Volume 6** of this ES (**Application Document Reference: TR010041/APP/6.6**)). WCHs would have to take longer routes if utilising the PRoW network both to the east and west of Part B.
- 12.10.12. In addition to the permanent closures of PRoW, the removal of three bus stops at Charlton Mires and along the B5341 is likely to increase journey times and reduce access to public transport for some local residents travelling via public transport. In consultation with the service providers of the bus services, it was noted that usage of these services is low. However, depending on the origin of journey in reaching the bus stops for different users, when considering the closures and diversions of PRoW and routes as detailed in **Table 12-49**, there may be some significant effects experienced by some users. This is likely to be the case where significant levels of severance for a PRoW are outlined, or where a route is

taken on several PRoWs where the combined increase is of a significant length. As the exact detail of journey origins for different users is not known, it is not possible to provide quantification of this.

### Relief from Existing Severance

#### Operation

- 12.10.13. Construction of the Heckley Fence Overbridge and the Charlton Mires Junction would provide grade separated WCH provision for crossing the A1, reducing the need for WCH to cross the highway and interact with traffic. As the level of traffic interacting with WCH would be reduced to zero, it is considered that relief from severance would be **substantial** during operation at both the Heckley Fence Overbridge and the Charlton Mires Junction, according to the categories outlined within **Table 12-7**.

### Journey Amenity

#### Construction

- 12.10.14. The introduction of construction works as part of Part B, within the vicinity of WCH facilities (PRoW) is anticipated to result in temporary reduction of visual amenity and therefore journey pleasantness (refer to **Chapter 7: Landscape and Visual** of this ES). It is anticipated that the routes identified in **Table 12-49**, and the non-designated route at Charlton Mires Junction, which are located within 500 m of Part B are susceptible to visual intrusion of variable magnitude. Construction activities are anticipated to have an effect on noise levels for users of the PRoW (refer to **Chapter 6: Noise and Vibration** of this ES), dust and air quality levels (refer to **Chapter 5: Air Quality** of this ES).
- 12.10.15. It is anticipated that the magnitude of change following mitigation is minor for PRoW which require temporary diversions and are not permanently closed (these are assessed separately below). Therefore, there is likely to be a direct, temporary, slight adverse effect for WCH users during construction (**not significant**) as a worst case during the construction period following the implementation of mitigation measures.

#### Operation

- 12.10.16. It is anticipated that the magnitude of change of amenity for users of PRoW following the implementation of mitigation measures during operation is negligible. Therefore, there is likely to be a direct, permanent, slight adverse effect for WCH users during operation (**not significant**) as a worst case.
- 12.10.17. Improved provision for WCHs at Heckley Fence Accommodation Overbridge and Charlton Mires Junction would improve amenity comparatively for those WCHs previously crossing the A1 on at-grade, informal crossings. This is anticipated to be a moderate localised beneficial impact, resulting in a slight beneficial slight effect where sensitivity of PRoW was low where formerly crossing the A1.



## PHYSICAL ASSETS AND LAND USE

### Private Property

#### Construction

- 12.10.18. During construction of Part B East Cottage and Charlton Mires Farm are required to be demolished to enable Charlton Mires Junction to be constructed. The sensitivity of these assets is high as they are receptors with limited capacity to absorb change. The magnitude of impact is considered to be major. Overall, there would be a direct, permanent effect of large significance (**considered to be significant**), but compensation would be provided to landowners.
- 12.10.19. During construction of Part B there are also a number of residential properties which would experience temporary disruption to change in access to the A1 and proximity to construction activities. The sensitivity of these properties is high as the residential receptors have limited capacity to change as the location of their properties is fixed. These properties are listed in **Table 12-42** and the magnitude of change is considered to be minor as construction activities would temporarily reduce amenity for these properties, but not preclude their use. With mitigation measures set out in the **Outline CEMP (Application Document Reference: TR010041/APP/7.3)** the worst case effect for those residential receptors with affected accesses during construction is considered to be temporary adverse slight effect (**not significant**).

#### Operation

- 12.10.20. Access to existing residential properties would change during operation of Part B for those properties listed in **Table 12-43**. The sensitivity of these properties is high as the residential receptors have limited capacity to change as the location of the properties is fixed. Although the changes in access would increase journey times, in most instances comparatively safer access is provided, so the magnitude of change is minor beneficial. A worst case effect for all properties with affected access during operation is a permanent direct adverse slight effect (**not significant**).

### Commercial Property

#### Construction

- 12.10.21. As stated within **Section 12.7**, commercial properties have been assessed as having a high sensitivity.
- 12.10.22. The magnitude of change for users of the commercial properties along the route, detailed in **Table 12-42** and **Table 12-43**, and is likely to be negligible to minor as construction activity would increase journey lengths to the commercial properties for a protracted period.
- 12.10.23. The access off the A1 to Middlemoor Wind Farm would temporarily be disrupted while a new exit from the A1 is constructed, causing a minor temporary adverse impact. Access would still be possible during this period from the unclassified road to the west of the

junction at North Charlton. It is therefore anticipated that a slight adverse temporary effect (**not significant**) would be experienced during construction.

12.10.24. It is also anticipated that for users of the accommodation businesses west of the Lionheart Enterprise Park Compound, impacts on amenity would be negligible, resulting in a slight adverse effect. This is not anticipated to be detrimental to their ability to operate during the construction period.

12.10.25. Mitigation measures, as detailed within the **Outline CEMP (Application Document Reference: TR010041/APP/7.3)**, would be put in place to reduce potential impacts from noise, dust and vibration as much as practicable and to maintain access. Therefore, customers would still be able to access the goods and services which these businesses provide. As such, there is predicted to be a direct, temporary effect as a worst-case on commercial properties of slight adverse significance (**not significant**) with mitigation.

### Operation

12.10.26. Existing accesses to commercial properties in the Study Area would be maintained so there would not be an impact on the operation of these businesses during operation of Part B.

12.10.27. As such, there is not predicted to be any permanent effects on commercial properties with mitigation during operation of Part B.

### Community Facilities

#### Construction

12.10.28. The dentistry practice (of high sensitivity) is accessed from the same road within the Lionheart Enterprise Park as the compound, and therefore there may be some minor temporary, short term intermittent disruption for users due to any traffic management implemented in association with construction traffic movements to and from the Lionheart Enterprise Park Compound. This is likely to result in a worst case slight adverse temporary effect for users of the dentistry practice.

12.10.29. There is not anticipated to be any effect on the Duchess's Community High School or its users.

#### Operation

12.10.30. No further effects on community facilities are anticipated as part of Part B.

### Recreational Facilities

#### Construction

12.10.31. Visitors to the Armstrong Household and Farming Museum in North Charlton may experience some temporary disruption if road diversions or traffic management measures are required in the vicinity, but as the museum is accessible from both the A1 and the B6346, this should not prevent visitors from accessing it and constitutes a negligible impact. This effect to visitors is anticipated to be neutral (not significant).

12.10.32. Users of Greensfield Moor Caravan Park (of low sensitivity), located on the edge of the Study Area, approximately 500 m from the Order Limits of the Lionheart Enterprise Park Compound may be affected by temporary reduced amenity. Temporary reduction on the amenity of users during the construction period due to the presence of the construction compound is anticipated to be at a worst case of negligible adverse, resulting in a temporary slight adverse effect.

### Operation

12.10.33. No permanent effects are anticipated for the Armstrong Household and Farming Museum, or the Greensfield Moor Caravan Park.

12.10.34. All other recreational areas and areas of open and green space are over 1 km away from Part B. These areas are not considered to be impacted by operation of Part B as they are outside of the area of influence.

### Agricultural Land Holdings

#### Construction and Operation

12.10.35. Temporary and permanent effects, with consideration of proposed mitigation, on agricultural enterprises are outlined in **Table 12-50** and **Table 12-51** and are summarised with the overall level of effect in **Table 12-52**. The amount of temporary and permanent land take has been combined to assess the temporary effect from land take during construction of Part B.

12.10.36. Significant permanent effects overall are anticipated for Charlton Mires Farm (**large adverse effect**) and East Cottage (**very large adverse effect**), which are to be affected by land take and demolition of farm buildings, but compensation would be provided to landowners. A worst case temporary significant large adverse effect is assumed for the tenants operating land (registered under West Farm) at the Lionheart Enterprise Park Compound during construction, but compensation would be provided to landowners. All other temporary and permanent effects are anticipated to not be significant, following the implementation of mitigation during construction and operation of Part B.

**Table 12-50 - Temporary Effects on Agricultural Land Holdings**

Holding Name	Land Take	Severance	Nuisance	Farm Business
Broxfield Farm	6.39 ha temporary land take on Broxfield Farm land. 6.04 ha of permanent land take. Combined total land take – 12.43 ha (Low)	One access on A1 to be closed, but access to land is possible from the east via unnamed track. Additional temporary accesses may be required during construction. There may be some temporary disruption to accesses off the A1, but within the Order Limits (Medium)	Potential impact to land drains and soil resources through compaction, but land would be reinstated according to best practice and the appropriate specifications to limit the impacts from compaction. (Low)	Slight reduction in viability of enterprise due to land loss. (Low)
Charlton Mires Farm	4.81 ha temporary land take. 8.67 ha of permanent land take. Combined total land take – 13.48 ha (High)	Permanent loss of four gated accesses to A1. With temporary or permanent alternatives in place, disruption would be limited to that caused by traffic management during construction. (Low)	Potential impact to land drains and soil resources through compaction, but land would be reinstated according to best practice and the appropriate specifications to limit the impacts from compaction. (Low)	Reduction in viability of enterprise due to land loss. (High)
Drythrople Cottage	No temporary land take anticipated. No permanent land take anticipated.	None anticipated.	None anticipated.	Slight reduction in viability of enterprise due to disruption of access road to the farmgate. (Low)
East Cottage	None anticipated. 2.28 ha of permanent land take. Combined total land take – 2.28 ha (High)	None anticipated.	None anticipated.	Reduction in viability of enterprise due to land loss. (High)
East Link Hall Farm	0.17 ha temporary land take. 1.11 ha of permanent land take. Combined total land take – 1.28 ha (Negligible)	Permanent closure of one access from the A1. With temporary or permanent alternatives in place disruption would be limited to that caused by traffic management during construction. (Medium)	Potential impact to land drains and soil resources through compaction, but land would be reinstated according to best practice and the appropriate specifications to limit the impacts from compaction. (Low)	Slight reduction in viability of enterprise due to land loss. (Low)
Goldenmoor Farm	0.98 ha temporary land take.	Disruption would be limited to that caused by traffic management during construction.	Potential impact to land drains and soil resources through compaction, but land	Slight reduction in viability of enterprise due to land loss.

Holding Name	Land Take	Severance	Nuisance	Farm Business
	2.58 ha of permanent land take. Combined total land take – 3.56 ha (Negligible)	(Low)	would be reinstated according to best practice and the appropriate specifications to limit the impacts from compaction. (Low)	(Low)
Heckley Fence Farm	0.04 ha temporary land take. No permanent land take. Combined total land take – 0.04 ha (Negligible)	Main access to the property is within the Order Limits. The land is surrounded by other holdings' land and therefore there it is likely that temporary alternative accesses would need to be utilised until the Heckley Fence Accommodation Overbridge is operational. (Medium)	Potential impact to land drains and soil resources through compaction, but land would be reinstated according to best practice and the appropriate specifications to limit the impacts from compaction. (Low)	Slight reduction in viability of enterprise due to land loss. (Low)
Humbleheugh Farm	0.47 ha permanent land take for land under environmental stewardship. 0.17 ha of permanent land take. Combined total land take – 0.64 ha (Negligible)	Disruption would be limited to that caused by traffic management during construction. (Low)	Potential impact to land drains and soil resources through compaction, but land would be reinstated according to best practice and the appropriate specifications to limit the impacts from compaction. (Low)	Slight reduction in viability of enterprise due to land loss. (Low)
North Charlton Farm	3.07 ha temporary land take. 0.76 ha of permanent land take. Combined total land take – 3.83 ha (Negligible)	Disruption would be limited to that caused by traffic management during construction. (Low)	Potential impact to land drains and soil resources through compaction, but land would be reinstated according to best practice and the appropriate specifications to limit the impacts from compaction. (Low)	Slight reduction in viability of enterprise due to land loss. (Low)
Rock Estate	3.98 ha temporary land take. 6.24 ha of permanent land take. Combined total land take – 10.22 ha (Low)	Disruption would be limited to that caused by traffic management during construction and extended trips to access land on the opposite side of the A1. (Low)	Potential impact to land drains and soil resources through compaction, but land would be reinstated according to best practice and the appropriate specifications to limit the impacts from compaction. (Low)	Reduction in viability of enterprise due to land loss. (Low)

Holding Name	Land Take	Severance	Nuisance	Farm Business
Rock Farms	2.33 ha temporary land take. 7.68 ha of permanent land take. Combined total land take – 10.01 ha (Low)	Disruption would be limited to that caused by traffic management during construction. (Low)	Potential impact to land drains and soil resources through compaction, but land would be reinstated according to best practice and the appropriate specifications to limit the impacts from compaction. (Low)	Some reduction in viability of enterprise due to land loss. (Low)
Rock Nab	0.30 ha temporary land take. 0.22 ha of permanent land take. Combined total land take – 0.52 ha (Negligible)	There may be some temporary disruption to the access of Rock Nab during construction, which is the only access to the property from the B6347. Traffic management measures would limit the impact but for short periods of time there is likely to be reductions in access throughout construction works. (Medium)	Potential impact to land drains and soil resources through compaction, but land would be reinstated according to best practice and the appropriate specifications to limit the impacts from compaction. (Low)	Reduction in viability of enterprise due to land loss. (Low)
Silvermoor Farm (Northumberland Estates)	4.95 ha temporary land take. 7.28 ha of permanent land take. Combined total land take – 12.23 ha (Low)	Disruption would be limited to that caused by traffic management during construction. (Low)	Potential impact to land drains and soil resources through compaction, but land would be reinstated according to best practice and the appropriate specifications to limit the impacts from compaction. (Low)	Slight reduction in viability of enterprise due to land loss. (Low)
West Link Hall Farm	1.91 ha temporary land take. 6.04 ha of permanent land take. Combined total land take – 12.43 ha (Negligible)	Permanent closure of three accesses from the A1. With temporary or permanent alternatives in place, disruption would be limited to that caused by traffic management during construction. (Medium)	Potential impact to land drains and soil resources through compaction, but land would be reinstated according to best practice and the appropriate specifications to limit the impacts from compaction. (Low)	Slight reduction in viability of enterprise due to land loss. (Low)
Northumberland Estate	10.26 ha temporary land take No permanent land take (Negligible)	No temporary or permanent severance is anticipated. The parcel is directly accessed by access roads within the Lionheart Enterprise Park and the surrounding agricultural land is owned and tenanted by the same people.	Potential impact to land drains and soil resources through compaction, but land would be reinstated according to best practice and the appropriate specifications to limit the impacts from compaction. (Low)	Slight reduction in viability of enterprise due to loss of land for lease under tenancy (Low)
West Farm	10.26 ha temporary land take	No temporary or permanent severance is anticipated. The parcel is directly accessed by access roads within	Potential impact to land drains and soil resources through compaction, but land	As the size of the land holding is unknown, it is assumed that the

Holding Name	Land Take	Severance	Nuisance	Farm Business
	No permanent land take (Worst case assumption of high)	the Lionheart Enterprise Park and the surrounding agricultural land is owned and tenanted by the same people.	would be reinstated according to best practice and the appropriate specifications to limit the impacts from compaction.  (Low)	proportion of land required is over 20% of the land within the agricultural land holding and a worst case is applied in terms of viability.  It is noted that this land is allocated within the Alnwick and Denwick Neighbourhood Plan (Ref. 12.32) under Policy E2 as employment land.  (High)

**Table 12-51 - Permanent Effects on Agricultural Land Holdings (with Mitigation)**

Holding Name	Impact on Land Take	Impact on Severance	Infrastructure	Impact on Nuisance	Impact on Farm Business
Broxfield Farm	6.04 ha permanent land take (Negligible)	One access on A1 to be closed, but access to land is possible from the east via unnamed track. (Medium)	No loss of dwelling, building or structure anticipated.	None anticipated	Slight reduction in viability of enterprise due to land loss and severance. (Low)
Charlton Mires Farm	8.67 ha permanent land take (Medium)	Permanent loss of four gated accesses to A1. Access is available to the south from the B6347 to the east and west of the A1, and with some new accesses through existing field boundaries all land within the holding would be accessible. (Low)	Loss of residence and farm buildings (High)	None anticipated	Reduction in viability of enterprise due to land loss and loss of farm buildings. (High)
Drythropple Cottage	None anticipated	None anticipated	No loss of dwelling, building or structure anticipated.	None anticipated	None anticipated
East Cottage	2.28 ha permanent land take. (High)	None anticipated.	Permanent loss of structure (High)	None anticipated.	Reduction in viability of enterprise due to land loss and loss of farm buildings. (High)
East Link Hall Farm	1.11 ha permanent land take. (Negligible)	Permanent closure of one access from the A1. The land is surrounded by other holdings' land but with alternative means of access provided a low level of severance is anticipated. (Medium)	No loss of dwelling, building or structure anticipated.	None anticipated.	Slight reduction in viability of enterprise due to land loss and severance. (Low)

Holding Name	Impact on Land Take	Impact on Severance	Infrastructure	Impact on Nuisance	Impact on Farm Business
Goldenmoor Farm	2.58 ha permanent land take for land under environmental stewardship. (Negligible)	None anticipated.	No loss of dwelling, building or structure anticipated.	None anticipated.	Slight reduction in viability of enterprise due to land loss. (Low)
Heckley Fence	None anticipated	None anticipated with the use of the Heckley Fence Accommodation Overbridge.	No loss of dwelling, building or structure anticipated.	None anticipated.	None anticipated.
Humbleheugh Farm	0.17 ha permanent land take for land under environmental stewardship. (Negligible)	None anticipated.	No loss of dwelling, building or structure anticipated.	None anticipated.	Slight reduction in viability of enterprise due to land loss. (Low)
North Charlton Farm	0.76 ha permanent land take. (Negligible)	Permanent closure of two accesses from the A1. It is known that the farm owners' current practice is to manually drive sheep across the A1 from land parcels on either side. This would not be possible from the start of construction with the closure of accesses on the A1. However, alternative access is available for land both east and west of the A1 so sheep would be able to be transported by vehicle. This is likely to be more time consuming for the farm owners. (Medium)	No loss of dwelling, building or structure anticipated.	None anticipated	Slight reduction in viability of enterprise due to land loss. (Low)
Rock Estate	6.24 ha permanent land take. (Negligible)	None anticipated.	No loss of dwelling, building or structure anticipated.	None anticipated	Slight reduction in viability of enterprise due to land loss. (Low)
Rock Farms	7.68 ha permanent land take. (Negligible)	None anticipated.	No loss of dwelling, building or structure anticipated.	None anticipated.	Slight reduction in viability of enterprise due to land loss. (Low)
Rock Nab	0.22 ha permanent land take. (Negligible)	None anticipated.	No loss of dwelling, building or structure anticipated.	None anticipated.	Slight reduction in viability of enterprise due to land loss. (Low)
Silvermoor Farm (Northumberland Estates)	7.28 ha permanent land take. (Negligible)	None anticipated.	No loss of dwelling, building or structure anticipated.	None anticipated.	Slight reduction in viability of enterprise due to land loss. (Low)



Holding Name	Impact on Land Take	Impact on Severance	Infrastructure	Impact on Nuisance	Impact on Farm Business
West Link Hall Farm	3.22 ha permanent land take. (Negligible)	Permanent closure of three accesses from the A1. The land is surrounded by other holdings' land but with alternative means of access provided a medium level of severance is anticipated. (medium)	No loss of dwelling, building or structure anticipated.	None anticipated	Slight reduction in viability of enterprise due to land loss and severance. (Low)

**Table 12-52 - Summary of Effects on Agricultural Land Holdings**

<b>Holding Name</b>	<b>Sensitivity</b>	<b>Overall Level of Effect (Temporary)</b>	<b>Overall Level of Effect (Permanent)</b>
Broxfield Farm	Low	Slight (not significant)	Slight (not significant)
Charlton Mires Farm	Medium	Large (significant)	Large (significant)
Drythropple Cottage	High	Slight (not significant)	Neutral
East Cottage	High	Very large (significant)	Very large (significant)
East Link Hall Farm	Low	Slight (not significant)	Slight (not significant)
Goldenmoor Farm	Low	Slight (not significant)	Slight (not significant)
Heckley Fence	High	Slight (not significant)	Neutral
Humbleheugh Farm	Low	Slight (not significant)	Slight (not significant)
North Charlton Farm	Low	Slight (not significant)	Slight (not significant)
Rock Estate	Low	Slight (not significant)	Slight (not significant)
Rock Farms	Low	Slight (not significant)	Slight (not significant)
Rock Nab	High	Slight (not significant)	Slight (not significant)
Silvermoor Farm (Northumberland Estate)	Low	Slight (not significant)	Slight (not significant)
West Link Hall Farm	Low	Slight (not significant)	Slight (not significant)
Northumberland Estate	Low	Slight (not significant)	N/A
West Farm	High (worst case assumed)	Large (significant) (worst case assumed)	N/A

## ECONOMY AND EMPLOYMENT

### Construction

- 12.10.37. The sensitivity of local economic receptors is medium, and the magnitude of change is minor. The construction stage would have a beneficial, though temporary effect on the local economy through enhancing local labour and supporting local businesses through expenditure from direct spend on materials for Part B. There may also be beneficial effects from any construction labour employed from outside of the region who would need to use local hotels and/or restaurants. Therefore, there is likely to be a direct, temporary effect on local (Northumberland) receptors of minor beneficial significance (**not significant**).
- 12.10.38. The construction stage would commence in 2021 (mobilisation anticipated in December) and would be completed in 2023, as outlined in **Chapter 2: The Scheme, Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**). It is assumed that employment opportunities associated with such works would be made available to the local workforce where possible, although it is recognised that the installation of specialist plant and equipment may not be able to be completed by the local workforce. Additionally, the site preparation, earthworks and construction activities would lead to an increase in spending in the local economy by local contractors. As such multiplier effects are anticipated both in terms of sourcing of local supplies (indirect employment across wider supply chains) and local spend on-site workers (induced employment) prior to, during and after the working day for the duration of the construction stage.
- 12.10.39. The estimated total construction cost of Part B is approximately £81 million, and construction is likely to take approximately 22 months. This is estimated to generate direct employment opportunities for approximately 226 workers per year. Assuming a medium multiplier (1.5), as indicated in **paragraph 12.4.43**, the number of indirect and induced employment opportunities at a 'regional level' (Northumberland) per year is 113 construction workers. Therefore, the estimated, direct employment associated with Part B equates to approximately 3.6% of the economically active population in full-time employment in the construction industry in Northumberland. The estimated indirect and induced employment associated with Part B equates to approximately 1.8% of the economically active population in the construction industry in Northumberland.

### Operation

- 12.10.40. No impacts on local economic receptors are predicted during operation of Part B and therefore there are no significant effects.

## HUMAN HEALTH

- 12.10.41. Based on the sensitivity criteria shown in **Table 12-12** and on the justifications presented in **Section 12.7**, human health receptors are expected to have a medium sensitivity to Part B. This is due to Part B being located in an area which experiences an inequality in health, has areas of deprivation and where overall, the population's health is worse than the national average.

## Construction

- 12.10.42. During construction, there would be works within the vicinity of human health receptors such as residential and commercial properties, community and recreational facilities and PRow.
- 12.10.43. Particulate matter and dust from enabling works, material handling and transportation and exhaust emissions from construction machinery would result in an increase in air pollution and reduced amenity. An increase in air pollution would be of particular concern to children, the elderly and those with underlying respiratory ailments. The magnitude of impact is **minor**, as the effects would be temporary in nature and Part B is in a rural area and therefore would not impact a significant number of receptors.
- 12.10.44. Construction works and traffic would also result in an increase in noise and vibration levels, which would have a disproportionate impact on children and the elderly. The magnitude of impact is **minor**, Part B is in a rural area and therefore would not impact a significant number of receptors and the as the effects would be temporary in nature.
- 12.10.45. In-channel construction works such as installations and alterations of culverts, bridges and outfalls may cause localised increase in flood risk, and there may be an increase in pollution risk due to surface water run-off. The magnitude of impact is **minor**, as the effects would be temporary in nature and particularly in relation to flood risk, because Part B is in a rural area and therefore would not impact a significant number of receptors.
- 12.10.46. Therefore, during construction, there is likely to be a temporary **slight adverse** effect (not significant) on human health receptors.

## Operation

- 12.10.47. Part B is likely to result in an increased number of vehicles travelling through the area; however, no receptors have been found to experience pollutant concentrations above the assessment thresholds, as set out in **Chapter 5: Air Quality** of this ES. The magnitude of impact is therefore **negligible**.
- 12.10.48. Part B is likely to result in an increased number of vehicles travelling through the area; however, there are no significant adverse operational noise effects identified as set out in **Chapter 6: Noise and Vibration** of this ES. Therefore, the magnitude of impact is expected to be **negligible**.
- 12.10.49. There would be no increase in flood risk associated with watercourses crossed by Part B that would affect vulnerable flood risk receptors i.e. residential properties. Through the implementation of surface water drainage systems, run-off would be appropriately treated to minimise risk of pollution. The magnitude of impact is **negligible**, as Part B is in a rural area with no residential properties in close proximity to these works.
- 12.10.50. Therefore, during operation, there is likely to be a permanent, long-term **negligible** effect (not significant) on human health receptors.
- 12.10.51. Following mitigation, no significant effects on human health are anticipated for either construction or operation.

## ASSESSMENT PARAMETERS

- 12.10.52. The Assessment Parameters are presented in **Section 2.12 of Chapter 2: The Scheme, Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**). The parameters would incur changes to temporary and / or permanent land take and therefore impact the accuracy of the agricultural land holding assessment calculations. However, the parameters are unlikely to alter the findings or significance of effects of the Population and Human Health assessment as a result of Part B, as the changes in the amount of land required are within the Order Limits and would not alter the level of impact, and therefore the overall level of effect of the assessment would remain as stated.

## UPDATED DMRB GUIDANCE

- 12.10.53. The findings of the sensitivity test are set out in detail in **Appendix 4.5: DMRB Sensitivity Test, Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**) and summarised below.

### Vehicle Travellers

- 12.10.54. Assessment of vehicle travellers is not required under the updated DMRB guidance. However, this has not been discarded since it provides information which may be of value or interest in considering the Scheme.

### Effects on Communities

#### Community Severance and Journey Amenity

- 12.10.55. The sensitivity and magnitude of impact criteria used for the assessment of severance is considered to be similar to the updated DMRB guidance. It is considered that the assessment undertaken is robust and with the application of the updated guidance the conclusions of the assessment would remain unchanged.
- 12.10.56. Assessment of journey amenity is not required under the updated DMRB guidance. However, this has not been discarded since it provides information which may be of value or interest in considering the Scheme.

### Physical Assets and Land Use

#### Private Property

- 12.10.57. The sensitivity and magnitude of impact criteria used for the assessment of private property is considered to be similar to the updated DMRB guidance. It is considered that the assessment undertaken is robust and with the application of the updated guidance the conclusions of the assessment would remain unchanged.
- 12.10.58. Under the updated guidance, private property which falls below 1 ha in size would likely be categorised as medium sensitivity, rather than high sensitivity. The implications to the conclusions of the ES as a result of this update are as follows:

- a. For East Cottage and Charlton Mires Farm, as discussed in **paragraph 12.10.18**, it is considered that the large significant adverse effect due to the loss of the property would remain with the application of the updated guidance.
- b. For temporary effects upon residential properties as outlined within **paragraph 12.10.19**, and permanent effects as outlined within **paragraph 12.10.20**, the overall effect would remain as not significant with the application of the updated guidance.

### Commercial Property

- 12.10.59. The sensitivity and magnitude of impact criteria used for the assessment of commercial property is considered to be similar to the updated DMRB guidance. It is considered that the assessment undertaken is robust and with the application of the updated guidance the conclusions of the assessment would remain unchanged.
- 12.10.60. Under the updated guidance commercial property which falls below 1 ha in size would likely be categorised as medium sensitivity, rather than high sensitivity. As outlined within **paragraph 12.10.25** the overall effect upon commercial receptors would remain as not significant.
- 12.10.61. The sensitivity of Middlemoor Wind Farm as outlined in **paragraph 12.10.23** would be likely to remain as high under the updated guidance. As the updated guidance focuses more on physical loss and alteration of assets or introduction of severance, it is anticipated that temporary adverse impacts would be negligible, and the overall effect would remain as not significant.

### Recreational Activities

- 12.10.62. Assessment of recreational facilities is not required under the updated DMRB guidance, although some facilities may be considered under the section 'community land and assets'. However, this has not been discarded since it provides information which may be of value or interest in considering the Scheme.
- 12.10.63. The Study Area, sensitivity and magnitude of impact criteria used for the assessment of recreational facilities is considered to be similar to the updated DMRB guidance. It is considered that the assessment undertaken is robust and with the application of the updated guidance the conclusions of the assessment would remain unchanged.

### Community Facilities

- 12.10.64. Assessment of community facilities would be considered under the section 'community land and assets' of the updated DMRB guidance.
- 12.10.65. The sensitivity and magnitude of impact criteria used for the assessment of community facilities is considered to be similar to the updated DMRB guidance. It is considered that the assessment undertaken is robust and with the application of the updated guidance the conclusions of the assessment would remain unchanged.

### Agricultural Land Holdings

- 12.10.66. The criteria used for assessment of agricultural land holdings in the original assessment is based on industry best practice and is more detailed than that required under the updated DMRB guidance. However, the categorisation of sensitivity in the current assessment is based on size and type of agricultural land holding and the updated DMRB guidance bases sensitivity on the frequency of use of land and access. Although these are different, they both give an indication as to the importance of the land and access to the viability of the land holding. It is therefore considered that the assessment undertaken is robust.

### Economy and Employment

- 12.10.67. Assessment of economy and employment is not required under the previous or the updated DMRB guidance but was included in the scope of the assessment additionally. The DMRB significance criteria which is used to assign overall significance for effect on economy and employment remains materially unchanged in the updated DMRB guidance. Therefore, it is considered that the assessment undertaken is robust and with the application of the updated guidance the conclusions of the assessment would remain unchanged.

### Human Health

- 12.10.68. Assessment of human health is required under the updated DMRB guidance. The sensitivity criteria used for assessment of human health is considered to be similar to the updated DMRB guidance. It is considered that the assessment undertaken is robust and with the application of the updated guidance the conclusions of the assessment would remain unchanged.

## 12.11 MONITORING

- 12.11.1. It is not anticipated that any specific monitoring would be carried out. Monitoring in relation to air quality, noise and vibration and landscape are detailed in **Chapter 5: Air Quality**, **Chapter 6: Noise and Vibration** and **Chapter 7: Landscape and Visual** of this ES.

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