A1 in Northumberland: Morpeth to Ellingham

Scheme Number: TR010041

6.2 Environmental Statement – Chapter 12 Population and Human Health

Part A

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]

Environmental Statement

Regulation Reference:	APFP Regulation 5(2)(a)
Planning Inspectorate Scheme Reference	TR010041
Application Document Reference	TR010041/APP/6.2
Author:	A1 in Northumberland: Morpeth to Ellingham Project Team, Highways England

Version	Date	Status of Version
Rev 0	June 2020	Application Issue

CONTENTS

TABLES

12 POPULATION AND HUMAN HEALTH

12.1 INTRODUCTION

12.1.1. This chapter presents the assessment of likely significant environmental effects as a result of Part A: Morpeth to Felton (Part A) 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 A, 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 A 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 and Part B: Alnwick to Ellingham (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.

12.1.5. The future traffic levels for the assessment of Part A are based upon an opening year predicted to be in 2023. Since the assessments reported in this ES were completed, the Part A opening year has been put back to 2024. The assessment is based on traffic modelling for an opening year of 2023 and reported on that basis. However, as explained in **Section 4.1** in **Chapter 4: Environmental Assessment Methodology**, **Volume 1** of this ES (**Application Document Reference: TR010041/APP6.1**) it is considered that the assessments remain valid for an opening year of 2024.

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	- Bachelor of Laws, LLB (Hons) - Bachelor of Science, BSc - Associate Royal Town Planning Institute, RTPI	Consultant 4 years of experience preparing and coordinating environmental statements in the United Kingdom and New Zealand. Other recent relevant experience includes: - Drax Re-Power Project - Socioeconomics chapter for the ES. - Finstown Substation Environmental Impact Assessment (EIA) - preparation of the Socio-economics Chapter. - Preparation of the PEIR Chapter - AQUIND Interconnector Project
Rebecca Dipoti	Author, Human Health Specialist	- Bachelor of Science, BSc (Hons) - Master of Arts, MA - Practitioner member of the Institute of	Assistant Consultant. 1 years' experience carrying out health assessments for Scoping Reports, PEIRs and ESs. Other

Name	Role	Qualifications and Professional Membership	Relevant Experience
		Environmental Management and Assessment, PIEMA	recent relevant experience includes: - A29 Realignment scheme - Scoping Report.
Sally Newbold	Reviewer, Human Health	- Bachelor of Science, BSc (Hons) - Full member of the Institute of Environmental Management and Assessment, MIEMA - Chartered Environmentalist, CEnv	Associate Consultant 10 years' experience in environmental impact assessment. 3 years' experience carrying out health assessments for Scoping Reports, PEIRs and ESs. Other recent relevant experience includes: - A29 Realignment scheme (Scoping Report). - M3 Junction 9 (Screening Report). - A27 Arundel (EAR). - A27 Worthing to Lancing (EAR). - A1 Birtley to Coal House (Scoping Report).
Sophie Collins	Author and Reviewer, Population and Human Health	- Bachelor of Science, BSc (Hons) - Master of Science, MSc - Affiliate member of Institute of Environmental Management and Assessment, AIEMA	Principal Consultant 7 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: - A1 Birtley to Coal House scheme - preparation and review of the People and Communities. chapters for Scoping and PEIR. - Preparation of the Population and Health EAR Chapters - A27 Arundel Bypass, A27

Name	Role	Qualifications and Professional Membership	Relevant Experience
			Worthing and Lancing and A30 Chiverton to Carland Cross.

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 A 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 A on Policy Objective
National Policy Statement for National Networks (NPS NN) (2015) (**Ref. 12.5**)	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: - Section 5, para. 5.83, recognises that for nationally significant infrastructure projects of the type covered by this NPS, some impact on the amenity of local communities is likely to be unavoidable. - Section 5, para.165, notes that the applicant should "*identify existing and proposed land uses near The Scheme, 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*". - Section 5, para.166, outlines that *"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".* - Section 5, para.184, emphasises that "*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*". - Section 5, para.185 states that "*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*".	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 A, 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 **Outline CEMP** (**Application Document Reference: TR010041/APP/7.3**) 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. This chapter considers existing land uses within 500 m of Part A and the potential impacts on the viability and access to residential property, commercial facilities, or community assets. This is considered under 'Effects on Communities' (Section 12.8). Part A passes through agricultural land that is currently within private ownership. An assessment of the potential impact of the viability of these farms is outlined in **Appendix 12.1: Agricultural Assessment** (**Confidential**), **Volume 7** of this ES (**Application Document Reference: TR010041/APP/6.7**) and assessment of these potential impacts is included in this chapter. Temporary and permanent significant effects are anticipated for four land holdings within the Study Area. 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 **Section 12.7** of this chapter. There are a number of open and recreational spaces that serve the wider area of Part A. 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 Felton Park would be slight adverse due to the proximity of Part A. 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, cyclists and horse riders (WCH[1]), 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 **Section 12.8** of this chapter.

[1] Formally referred to within the **Scoping Report** (**Application Document Reference: TR010041/APP/6.10**) as non-motorised users (NMU), but updated to align with DMRB terminology.

Policy	Relevant Policy Objectives	Significance of Part A on Policy Objective
	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.	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.
National Planning Policy Framework (NPPF) (2019) (**Ref. 12.6**)	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 Part A: - 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. - Paragraph 18 of Section 6: (Building a strong, competitive economy), outlines 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. - 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. - Paragraph 70 of Section 8: 'Promoting Healthy and Safe Communities', requires planning policies and decisions to "*deliver the social, recreational and cultural facilities and services the community needs*". 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. - 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.	As part of Part A, permanent diversions and enhancements would be made to existing PRoW so that a network of PRoW is maintained during operation which is consistent with the intention of Paragraph 98 in Section 3 of the NPPF. **Section 12.10** of this Chapter indicates that Part A 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. As Part A is located in Northumberland, between two rural towns of Morpeth and Felton, 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. As part of Part A, human health impacts may be expected, particularly during construction. During the construction of Part A, 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.

Policy	Relevant Policy Objectives	Significance of Part A on Policy Objective
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 Health and a scheme are the following elements from the PPG: - 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). - 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).	Part A 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 A is consistent with Paragraph 001 of the PPG. St Oswald's Way and Felton Park would be temporarily impacted through a reduction in amenity value and restricted access during construction. However, during operation of Part A through appropriate mitigation (screening and the reopening of the PRoW near to St Oswald's Way) there is considered be a negligible impact. As mentioned above, permanent diversions and enhancements would be made to existing PRoW. The number of crossings is reduced, but the provision within Part A would be safer for users and of a standard that is accessible to pedestrians and cyclists. It is therefore considered that Part A 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.

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

Policy	Relevant Policy Objectives	Significance of Part A 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 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 Part A and Population and Human Health are as follows: - Section 5.13 states that "*development of a network of cycling, walking routes, including public rights of way*" is part of the Council's priority to improve network capacity. - Section 7.26 states that an objective of the plan is to *"promote sustainable travel choices such as walking, cycling and public transport":* - Section 10.26 states that one of the goals of the Plan is to *"sustain and improve transport's contribution to the quality of people's lives".* 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	Part A includes the development of a new cycleway which would improve choices and connectivity for WCHs which is consistent with the Council's aspirations to improve network capacity, as stated at section 5.13 of the Transport Plan. During construction of Part A, permanent diversions and enhancements have been designed to maintain existing PRoWs where possible so that a network of PRoW is maintained during construction and through to operation which is consistent with Section 7.26 and Section 10.26 of the Transport Plan. Additionally, Part A is consistent with Section 8.4 of the Local Transport Plan because where practicable, PRoWs would be diverted to safe, grade-separated crossing points making these routes safer for WCH. Therefore, Part A is consistent with the Council's Transport Plan as it promotes sustainable connections through both ensuring that a network of PRoW is maintained, and the provision of a new cycleway. 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.

Policy	Relevant Policy Objectives	Significance of Part A on Policy Objective
	transport requirements of all Northumberland's residents and visitors. Those objectives within the Plan specifically relevant to Human Health are as follows: Section 7.19 states that the Council plan to develop a number of travel awareness measures including: - *"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;* - *Promote public transport as an alternative to the car as active travel can form a key part of the journey; and to* - *Promote sustainable forms of transportation, such as walking and cycling, as an attractive mode of transport for tourist and leisure activities".* 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."	
Publication Draft Northumberland Local Plan (2019) (**Ref. 12.9**)	The Northumberland Local Plan (**Ref. 12.9**) is currently undergoing examination. Those policies within the Draft Plan relevant to Part A and Population and Human Health are as follows: - Policy TRA 1: 'Promoting sustainable connections' states that in assessing development proposals the Council will "*protect, enhance and support public rights of way*". - Policy TRA 2: 'The effects of development on the transport network' states that in assessing development proposals, *"all developments affecting the transport network will be required to:* (d) Facilitate the safe use of the network, including suitable crossing points, crossways and dedicated provision for cyclists where necessary; and (f) Minimise any adverse impact on communities and the environment, including noise and air quality". - Policy INF2: 'Community services and facilities' states that *"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:* *(a) appropriate alternative provision is made; or* *(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*	If a PRoW is being permanently closed, it is assumed that this would occur prior to or during construction and continue throughout the operation period. Where a permanent diversion is to be provided, it is assumed that this would be undertaken early on in the construction period in order to maintain public use. However, it would be necessary to temporarily close some PRoW during construction. 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. Part A would not negatively impact on community services and facilities (as stated in **Section 12.7**) and therefore is consistent with Policy INF2 of the Northumberland Local Plan. Part A would have a temporary indirect impact on the use of Felton Park during the construction stage. However, as this is only a temporary effect and consideration has been given to how Part A, during operation, would reduce the adverse impact on the park by ensuring that planting is established between the park and new carriageway, Part A is considered to be consistent with Policy INF 6. This chapter demonstrates that Part A 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 A. 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. 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.

Policy	Relevant Policy Objectives	Significance of Part A on Policy Objective
	(c) suitable and sufficient evidence can be provided to demonstrate that its continued current use is no longer viable". - Policy INF 6: 'Open Space and facilities for sport and recreation' states that "*consideration will be given to how development proposals:* *(a) Enhance the sustainability of communities and residential environments by protecting and enhancing existing recreational facilities and services and/or providing new ones;* *(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;* *(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*". Those policies within the Draft Plan specifically relevant to Part A and Human Health are as follows: - Policy QOP 1: 'Design principles (Strategic Policy)' states that *"proposals will be supported where design:* (g) *Supports health and wellbeing and enhances quality of life*"	
Castle Morpeth District Local Plan (2003) (**Ref. 12.10**)	The Northumberland Consolidated Planning Policy Framework is made up of several documents and contains planning policies used to determine and guide planning applications. Included within these documents is the Castle Morpeth District Local Plan (**Ref. 12.10**), which was adopted in February 2003, and the List of Saved Policies is still applicable to developments within the former Castle Morpeth Borough as the Northumberland Local Plan is still at draft stage. Those policies from within the Saved Policies relevant to Part A and Population and Human Health are as follows: Policy R8: 'Public Footpaths and Bridleways' outlines that "in consultation with land owners and occupiers the council will support the protection, maintenance and where appropriate, extension of the rights of way network and other recreational access routes throughout the borough. Positive steps will also be taken to minimise any adverse effects of increased access pressures on established rural interests".	The design of Part A has specifically incorporated extending PRoW to minimise any potential adverse effects from Part A on PRoW. Additionally, during both construction and operation the impact on recreational access routes such as St Oswald's Way, are considered as the River Coquet is recognised as an important recreational area. As such, Part A has appropriately maintained PRoW during both construction and operation. Therefore, Part A is consistent with Policy R8.
Alnwick Local Development Framework Core Strategy (2007) (**Ref. 12.11**)	Similar to the Castle Morpeth District Local Plan, 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	Part A 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. There would also be positive impacts for WCHs as there would be new footway and cycleway provision provided by Part A. Included within Part A are WCH links

Policy	Relevant Policy Objectives	Significance of Part A on Policy Objective
	policies from within the 'Saved Policies' relevant to Part A and Population and Human Health are as follows: - 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. - 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. Those policies from within the 'Saved Policies' specifically relevant to Part A and Human Health are as follows: - 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.	which would maintain access for WCH from east to west along Part A and increase safety by providing safer crossing points over the A1 (refer to **Section 12.8** of this chapter). Therefore, Part A is consistent with Objective 6 of the Alnwick Local Development Framework Core Strategy. 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. Part A would pass through agricultural land, some of which is used for farmland. The Order Limits have 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 Section 1.8. The Order Limits have been minimised as much as possible to prevent the loss of open land. Part A does not utilise any areas of recreational land during both construction and operation. Additionally, the potential impact on landscape quality is considered within **Chapter 7: Landscape and Visual** of this ES and outlines how landscape quality is maintained. **Chapter 10: Road Drainage and the Water Environment** 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 A 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.

12.4 ASSESSMENT METHODOLOGY

SCOPE OF ASSESSMENT

12.4.1. As presented in the **Scoping Report** (**Application Document Reference: TR010041/APP/6.10**), **Scoping Opinion** (**Application Document Reference: TR010041/APP/6.12**) and the **Scoping Opinion Response Tracker** in **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. The scope of assessment is therefore as follows:

Construction

Population

a. Effects on Vehicle Travellers
  i. Views from the road.
  ii. Driver stress.

b. Effects on Communities
  i. Community severance (including WCH).
  ii. 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)

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 **Scoping Opinion** (**Application Document Reference: TR010041/APP/6.12**) requested that if through the iterative design process community land or development land was likely to be significantly affected by the Scheme (defined now as Part A) then an assessment should be provided in the ES. Through the iterative design process, it has been confirmed that there would be no impact on community land and development land as it is located over 500 m from Part A which is outside of the Study Area for impact on physical assets. Access to community facilities is however considered under the assessment of community severance.

12.4.5. Relief from existing severance during construction and operation 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 A. Therefore, an assessment of relief from existing severance has not been carried out for either the construction or operation 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 A so the effects on the local economy and employment are unlikely to be significant. Wider economic effects as a result of Part A 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** outlines the consultation undertaken with stakeholders with regards to Part A 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 Part A, including detailed of proposed changes to PRoW.
NCC Public Rights of Way Officer	12 September 2018	Agreed proposed methodology to assess the potential effects on PRoW as a result of Part A.
British Horse Society	18 June 2018	The British Horse Society are part of the Stakeholder Reference Group (SRG) (further details of the SRG are provided in the **Consultation Report** (**Application Document Reference: TR010041/APP/5.1**) and at para 1.4.6 below and on the 18 June provided design guidelines for the provision of equestrian facilities. There are potential upgrades to parapets that would be considered at detailed design stage in accordance with this guidance.
Sustrans	19 September 2017, 5 June 2018	Sustrans have been provided with information about Part A through the SRG and stakeholder consultation.
Cycling UK	19 September 2017, 5 June 2018, 3 July 2018 (public consultation)	A representative from Cycling UK attended public consultation events held on Part A. Overall, the group are happy with Part A as a whole and appreciate the potential cycleway provision on de-trunked section on carriageway.

12.4.10. Other groups or consultees relevant to the Population and Human Health assessment have formed part of the SRG. The SRG has been set up with consultees to provide a forum for presenting Part A and to obtain their feedback. The SRG include groups such as the Ramblers Association, Northumberland Area of Ramblers, Northumberland Coast and Lowlands Nature Partnership Ramblers, the Joint Local Access Forum, and the International Mountain Bike Association. The SRG has been extremely useful to obtain local knowledge, identify the potential implications of Part A on stakeholders and to raise

awareness between different stakeholder groups. The SRG were consulted at design milestones and meeting minutes recorded the outcomes of these discussion which were circulated to all SRG members. Details of consultation that has taken place during the production of this chapter can be found in **Appendix 4.2: Environmental Consultation, Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**) and the **Consultation Report** (**Application Document Reference: TR010041/APP/5.1**).

12.4.11. 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

12.4.12. 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. 12.12**)**;** Part 8: Pedestrians, Cyclists, Equestrians & Community Effects (**Ref. 12.13**); and Part 9: Vehicle Travellers (**Ref. 12.14**) provide guidance on the assessment methodology for these topics.
ii. DMRB Interim Advice Note 125/15 (**Ref. 12.15**) 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. 12.16**) 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. 12.17**). Professional experience and judgement were also used to determine whether Part A 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

12.4.13. 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. 12.12**)
b. DMRB Vol 11: Section 3: Part 8: Pedestrians, Cyclists, Equestrians & Community Effects (**Ref. 12.13**)
c. DMRB Vol 11: Section 3: Part 9: Vehicle Travellers (**Ref. 12.14**)

12.4.14. These guidance documents have been replaced by DMRB LA 112 Population and Human Health revision 1 (**Ref. 12.18**).

12.4.15. 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.

12.4.16. 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 of this chapter.

Data Sources

12.4.17. 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 7** of this ES (**Application Document Reference: TR010041/APP/6.7**)).
c. Walking, cycling and horse riding (WCH) user surveys and the A1IN Improvement Scheme – Morpeth to Felton Walking, Cycling and Horse Riding Assessment (**Ref. 12.19**).
d. Agricultural Assessment found in Appendix 12.1: Agricultural Assessment (Confidential), Volume 7 of this ES (Application Document Reference: TR010041/APP/6.7).
e. Public Health England (PHE) Northumberland Local Authority Health Profile 2018 (**Ref. 12.20**).
f. Local Authority Labour Market profiles – Official Labour Market Statistics (NOMIS) (**Ref. 12.21**). 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. 12.17**).

i. Institute of Environmental Assessment (now Institute of Environmental Management and Assessment (IEMA's)) 'Guidelines for the Environmental Assessment of Road Traffic' (**Ref. 12.22**).

Effects on Vehicle Travellers

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

Views from the Road

12.4.19. DMRB Volume 11, Section 3, Part 9 (**Ref. 12.14**) describes 'Views from the Road' as "…*the extent to which travellers, including drivers are exposed to the different types of scenery through which a route passes*." Aspects that have been considered are:

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

12.4.20. Views from the road have been assessed by the four categories defined in DMRB Volume 11, Section 3 Part 9. The existing quality of the view is placed into four categories:

a. **No view**: road in deep cutting or contained by earth bunds, environmental barriers or adjacent structures.
b. **Restricted view:** frequent cuttings or structures blocking the view.
c. **Intermittent view:** road generally at ground level but with shallow cutting or barriers at intervals.
d. **Open view:** view extending over may miles, or only restricted by existing landscape features.

12.4.21. The effects on drivers' views have been assessed for the existing A1 falling within Part A as shown on Section 1 on **Figure 12.1: Road Sections Assessed for Driver Stress**, **Volume 5** of this ES (**Application Document Reference: TR010041/APP/6.5**) and outlined in **Table 12-13**. The effects on drivers' views have been classified as follows:

a. **Neutral:** little or no effect for most views from the road, or improvements on some views are generally balanced by deterioration in others.
b. **Beneficial:** views from the road would be, on balance, a change for the better.
c. **Adverse:** views from the road would be, on balance, a change for the worst.

12.4.22. There are no significance criteria outlined within DMRB Volume 11, Section 3, Part 9 (**Ref. 12.14**) to determine the level of effect on driver views. Therefore, the significance of effects assessed in relation to driver views is ascribed using the following scale (which is based on other industry examples and professional judgement) and considers the level of change to baseline views, as categorised in **paragraph 12.4.21**:

a. **Minor beneficial or adverse:** where the number of travellers affected is low (less than 500 a day).
b. **Moderate beneficial or adverse:** where the number of travellers affected is between 500 to 10,000 travellers per day.

c. **Major beneficial or adverse:** where the number of travellers affected is high (more than 10,000 per day).

12.4.23. The assessment has been informed by the landscape and visual discipline. However, views along the length of the existing A1 within Part A are not assessed as part of the landscape and visual assessment.

Driver Stress

12.4.24. Driver stress is described in DMRB Volume 11, Section 3: Part 9 (**Ref. 12.14**), 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.

12.4.25. The assessment follows the methodology outlined in DMRB Volume 11 Section 3: Part 9 (**Ref. 12.14**), 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.

12.4.26. Volume 11, Section 3, Part 9 of the DMRB (**Ref. 12.14**) 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.

12.4.27. 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 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 based on the presumption that there would be an increase in traffic flows and construction vehicles for the duration of the construction period.

12.4.28. For the operation of Part A, 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.

12.4.29. Baseline data for driver stress has been derived from the output of the traffic model for Part A, which included traffic flow and speed scenarios for the baseline year (2015), and ‘do minimum scenarios’ (without Part A) for opening year (2023) and design year (2038).

12.4.30. 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 A 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. 12.14**), 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

12.4.31. Driver stress has been calculated for each road section (outlined under the baseline section in **Table 12-20** and on **Figure 12.1: Road Sections Assessed for Driver Stress**, **Volume 5** of this ES (**Application Document Reference: TR010041/APP/6.5**)) 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 A) in 2023.
c. The do-something scenario (i.e. with Part A) in 2023.

d. The do-minimum scenario (i.e. without Part A) in 2038.
e. The do-something scenario (i.e. with Part A) in 2038.

12.4.32. Levels of driver stress have been assessed through a quantitative assessment of the three components of driver stress listed in **paragraph 12.4.25**, with reference to Chapter 4 of DMRB Volume 11, Section 3, Part 9 (**Ref. 12.14**), 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.

12.4.33. 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.

12.4.34. 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 A) and Do-Something (with Part A) 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 12-14 with a conclusion provided based on the degree of change overall.

Effects on Communities

12.4.35. 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. 12.23**). 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 A on usage of community facilities and PRoW by WCH and new severance.
b. Relief from Existing Severance: The impact of Part A on relieving existing severance for WCH.
c. Journey Amenity: The impact of Part A on the journeys that WCHs make (within the Study Area) e.g. disruption and increase in journey length, and the impact of Part A on the safety and amenity value for users of PRoW.

Community Severance

12.4.36. 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 A. The key community facilities have been identified through a combination of aerial imagery and information from NCC website.

12.4.37. A qualitative assessment of community (new) severance has been undertaken, as described in DMRB Volume 11, Section 3, Part 8 (**Ref. 12.13**). 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 12-7** 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. 12.13**. The significance of effect is attributed utilising Table 2.4 of DMRB Volume 11, Section 2, Part 5 (HA 205/08) (**Ref. 12.24**) (refer to **Chapter 4: Environmental Assessment Methodology**, **Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**)).

Relief from Severance

12.4.38. The scope of the assessment above in relation to Part A is new severance rather than relief from existing severance, as described in DMRB Volume 11, Section 3, Part 8. It is not considered that there would be a significant change in the level of existing severance as both WCH and vehicles would be able to access the same places as they currently do as the portion of the A1 which is not being widened would still be accessible. Therefore, an assessment of relief from existing severance has not been carried out as it would not be relieved by Part A.

Journey Amenity

12.4.39. 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 / or safety, noise, dirt, air quality, and the impact of the road itself; primarily any visual intrusion associated with Part A 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 12-8.**

12.4.40. 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 12-11** and the significance of effect is attributed utilising Table 2.4 of DMRB Volume 11, Section 2, Part 5 (HA 205/08) (**Ref. 12.24**) (refer to

Chapter 4: Environmental Assessment Methodology, **Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**).

12.4.41. Baseline data used within the assessment has been compiled from a desktop study using a number of available sources, including Google Earth, NCC's Definitive PRoW Map (**Ref. 12.25**) and the Walking Cycling and Horse Riding Assessment (WCHAR) (**Ref. 12.19**). 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

12.4.42. 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 effects on identified community and recreational assets likely to be affected by land take.

Private and Commercial Property

12.4.43. Sensitivity of physical assets (excluding agricultural land holdings) has been attributed utilising **Table 12-9** below and the magnitude of impact has been attributed according to **Table 12-11**. The significance of effect is attributed utilising Table 2.4 of DMRB Volume 11, Section 2, Part 5 (HA 205/08) (**Ref. 12.24**) (refer to **Chapter 4: Environmental Assessment Methodology, Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**)).

Community and Recreational Facilities

12.4.44. 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 A, 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. 12.26**). It has been supplemented by 2018 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.

12.4.45. 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. 12.13**) 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 12-9** below and the magnitude of impact has been attributed according to **Table 12-11**. The significance of effect is attributed utilising

Table 2.4 of DMRB Volume 11, Section 2, Part 5 (HA 205/08) (**Ref. 12.24**) (refer to **Chapter 4: Environmental Assessment Methodology**, **Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**)).

Agricultural Land Holdings

12.4.46. 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 land owners which are reported in **Appendix 12.1: Agricultural Assessment (Confidential)**, **Volume 7** of this ES (**Application Document Reference: TR010041/APP/6.7**). Sensitivity and magnitude of impact criteria used to assess effects on agricultural land holdings are outlined within **Table 12-10** and **Table 12-14** and are also found within **Appendix 12.1**.

12.4.47. 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 12-10** and are based upon professional experience and have been developed through assessment on other road schemes within the UK.

Economy and Employment

12.4.48. A desk based assessment has been carried out to understand the baseline conditions in relation to the local and regional economy, using publicly available data including NOMIS (**Ref. 12.21**) and Census 2011 from the Office for National Statistics (ONS) (**Ref. 12.27**).

12.4.49. There is no formal guidance on the assessment of the impacts on Part A 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. 12.16**). 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.

12.4.50. Generation of indirect and induced employment opportunities associated with construction has been calculated by applying English Partnerships Guidance (**Ref. 12.16**) 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 A. 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. 12.24**).

Human Health

12.4.51. 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.

12.4.52. 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. 12.20**), NOMIS Local Authority Labour Market Profiles (**Ref. 12.21**) 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 be considered.

12.4.53. Information gathered from the baseline has been used to identify changes to human health determinants as a result of Part A. Any change to human health determinants can affect the health status of different individuals or communities depending on their characteristics and sensitivity to change.

12.4.54. 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 12-11**.

SIGNIFICANCE OF EFFECTS

12.4.55. DMRB guidance (Volume 11, Section 3: Parts 6, Part 8 and Part 9) (**Ref. 12.12**, **12.13** and **12.14**) 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 operation.
d. Whether the effect is significant or not significant.

12.4.56. 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

12.4.57. 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. 12.24**).

12.4.58. 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. 12.24**), in combination with professional judgement.

Vehicle Travellers

12.4.59. 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. 12.14**).

Effects on Communities

12.4.60. 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. 12.12** and **Ref. 12.13**), are applied as outlined in **Tables 12-7** and **Table 12-8,** and is guided by DMRB Volume 5, Section 2, Part 5, HD 42/17 (**Ref. 12.23**), DMRB Volume 5, Section 2, Part 4 TA 91/05 (**Ref. 12.28**), professional judgement and other industry examples.

Table 12-7 - Sensitivity Criteria for WCH Routes

Sensitivity	Criteria
Very High	- 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. - 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. - 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. - 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.

Sensitivity	Criteria
High	- 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. - 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. - 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.
Medium	- Crossing points on busy roads (over 8,000 vehicles per day), but for which alternatives are available. - 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.
Low	- Crossing points or links between PRoWs on quiet roads (less than 8,000 vehicles per day) or unclassified roads. - 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.
Negligible	- 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.

Table 12-8 – Journey Amenity Sensitivity Criteria for WCH Routes

Receptor Sensitivity	Criteria/Justification
High	WCH which any of the following apply: - The surrounding landscape (rural or urban) is of high quality and / or the public right of way/route is not adjacent to a classified or busy road - Route / PRoW width is of DMRB standard and segregated where relevant for different user groups. - Barriers are in place/there is separation from traffic - Signage is clear and well placed and maintained - Crossings are controlled, to DMRB standard and appropriate for the types of WCH using the route/PRoW
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	WCH routes where: - 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). WCH routes for which any of the following apply: - The surrounding environment is not of high quality. - Signage is non-existent or in state of disrepair. - Crossings at junctions or roads are not controlled or to DMRB standards, or suitable for the relevant types of WCH using the route. - Visual intrusion from the road network is frequent. - Proximity to the road network results in higher levels of noise or poor air quality. - Road environment is intimidating, of poor surface or unsuitable for cyclists.
Unusable	WCH routes shown in mapping which in reality are severed or otherwise permanently unusable.

Physical Assets and Land Use

12.4.61. The sensitivity criteria of receptors under 'physical assets' is outlined in **Table 12-9**, except for impacts on agricultural land holdings, the sensitivity criteria of which are outlined within

Table 12-10. The criteria within **Table 12-9** are guided by DMRB Volume 11, Section 1, Part 5 HA 205/08 (**Ref. 12.24**), professional judgement and other industry examples.

Table 12-9 - Sensitivity for Physical Assets and Land Use Excluding Agricultural Land Holdings

Receptor Sensitivity	Criteria/Justification
High	- Residential properties - Commercial or industrial buildings or land key to the operation of a business, for example commercially managed woodland and campsites - Buildings or facilities used by the community, for example schools, community halls and hospitals - 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. - Designated public open space and common land - Allotments - Religious sites and cemeteries
Medium	- Residential land or external buildings, secondary to the main dwelling, for example gardens and out houses - Commercial or industrial land not key to the commercial function of a business, for example car parking space and storage space - 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 - 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.
Low	- Derelict buildings. - Locally used community land, for example local parks and playing fields, which are not safeguarded or designated open spaces. - 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.

12.4.62. 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 12-10**, and are based upon professional experience.

Table 12-10 – 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

12.4.63. Sensitivity criteria within Table 2.1 and 2.2 of DMRB Volume 11, Section 2, Part 5 (HA 205/08) (**Ref. 12.24**), in combination with professional judgement is applied for the assessment of economy and employment.

Human Health

12.4.64. 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 12-11**. There has been no formal methodology for the assessment of health impacts and these criteria have been developed based on professional judgement and experience.

Table 12-11 - 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 health status. This is more likely to be the case:

Receptor Value	Justification
	- In the most deprived or isolated communities. - In designated air quality management areas. - Where individuals experience severe accessibility restrictions. - Where communities are extremely reliant on limited services/assets with no alternatives.
High	Receptors that have a very restricted/limited capacity to experience a potential impact without incurring substantial change in population or health status. This is more likely to be the case: - In the more deprived or isolated communities. - In designated air quality management areas or areas of known poor air quality. - Where individuals experience some accessibility restrictions - Where communities are reliant on limited services/assets with few alternatives. - 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). - Land which is of high importance to business operations and key local development sites.
Medium	Receptors have a limited capacity to experience a potential impact without incurring substantial change in population or health status. This is more likely to be the case: - Where there are more affluent or connected communities. - In areas known to have moderate air quality. - Where individuals experience some accessibility restrictions - Where communities are able to choose between a narrow range of service and asset alternatives. - Routes moderately used by pedestrian, cyclists and other WCH for recreational and leisure purposes (e.g. regional trails). - Land which is of moderate importance to business operations and allocated sites.
Low	Receptors have an adequate capacity to experience a potential impact without incurring substantial change in population or health status. This is more likely to be the case: - In more affluent communities. - In areas known to have good air quality. - Where individuals experience few accessibility restrictions.

Receptor Value	Justification
	- Where communities are able to choose between a larger range of service/asset alternatives. - Routes sometimes used by pedestrians, cyclists and other WCH for recreational and /leisure purposes (e.g. local routes). - Land which is of moderate importance to business operations and allocated sites.
Negligible	Receptors that have the capacity to experience a potential impact without incurring change in population or health status. This is more likely to be the case: - In the most affluent communities. - In areas known to have very good air quality. - Where individuals experience no accessibility restrictions. - Where communities are able to choose freely between a wide range of service/asset alternatives. - Routes not/infrequently used by the pedestrians, cyclists and other WCH for recreational purpose. - Land which is of no importance to business operations and unallocated development sites.

Magnitude of Impact

12.4.65. 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.

12.4.66. 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. 12.24**) in combination with professional judgement based on knowledge and experience of similar schemes has been used, as shown within **Table 12-12**. This criteria within **Table 12-12** applies for journey amenity, community and recreational facilities, and physical assets and employment and economy. New community severance criteria are set out in **Table 12-13** and Agricultural Land holdings criteria are set out in **Table 12-14** below.

Table 12-12 - Magnitude of Impact Criteria

Magnitude of Impact	Criteria
Major	- Loss/addition of resource and/or alteration to quality and integrity of resource; severe damage / major improvement to key

Magnitude of Impact	Criteria
	characteristics, features or elements. Such as land take that precludes existing or intended use; - Activity that permanently compromises or precludes use; or - Loss of amenity that precludes use.
Moderate	- Loss/addition of resource, but not adversely affecting the integrity; partial loss of/improvement to/damage to key characteristics, features or elements. Such as: o Land take that compromises but does not preclude existing or intended use; o Activity that compromises or precludes use for a protracted period; or o Loss of amenity that compromises but does not preclude use.
Minor	- 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; - Activity that temporarily compromises or precludes use; or - Loss of amenity that does not compromise use.
Negligible	- A barely discernible change from baseline conditions that does not impact use.

Vehicle Travellers

12.4.67. 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 12.4.32**. The approach to determine significance for driver views is outlined in **paragraph 12.4.22**.

Effects on Communities

12.4.68. 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 12-13**.

Table 12-13 - 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.
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.

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

Physical Assets and Land Use

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

12.4.71. The criteria for determining the magnitude of impact on agricultural land holdings is provided in **Table 12-14**. 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 12-14** and are based on professional experience and have been developed through assessment on other road schemes within the UK.

Table 12-14 - 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 shift in enterprise mix.
Medium	10 - 20% of all land farmed	Access available to severed land via the 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	Access available to severed land via 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

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

Human Health

12.4.73. 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 determine 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

12.4.74. 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 12-15**, 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 12-15 - 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

12.4.75. Significance of effect criteria for agricultural land holdings varies from **Table 4-8** of **Chapter 4: Environmental Assessment Methodology**, **Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**) and is therefore outlined in **Table 12-16** and

within Table 3 of **Appendix 12.1: Agricultural Assessment** (**Confidential**), **Volume 7** of this ES (**Application Document Reference: TR010041/APP/6.7**).

Table 12-16 - Significance Criteria for Agricultural Land Holdings

		Receptor Sensitivity			
		High	**Medium**	**Low**	**Negligible**
Impact Magnitude	**High**	Major	Major	Moderate	Negligible
	Medium	Major	Moderate	Minor	Negligible
	Low	Moderate	Minor	Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

12.4.76. It should be noted that each effect can either be beneficial or adverse and this is stated for each receptor in the assessment below.

12.4.77. 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. 12.13** and **12.14**) used in the preparation of this assessment are over 20 years old (published in 1993) and Volume 11 Section 3 Part 6 (**Ref. 12.12**) 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/6.10**) and **Scoping Opinion** (**Application Document Reference: TR010041/APP/6.12**).

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: Agricultural Assessment – Confidential**, **Volume 7** of this ES (**Application Document Reference: TR010041/APP/6.7**)), which outlines the potential impact on agricultural land holdings. Relevant assumptions to the Agricultural Assessment are listed in **Section 3.1.1** and **4.4.1** of the **Agricultural Assessment (Confidential)** in **Appendix 12.1**, **Volume 7** 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 as described in **paragraph 3.1.2** of **Appendix 12.1: Agricultural Assessment – Confidential**, **Volume 7** of this ES (**Application Document Reference: TR010041/APP/6.7**)) has been included within the agricultural assessment. Land known not to be operated for agricultural purposes has been excluded from the assessment and is labelled as such on **Figure 12.3: Agricultural Land Plan**, **Volume 5** of this ES (**Application Document Reference: TR010041/APP/6.5**).

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 A 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. Where a permanent diversion is to be provided, it is assumed that this would be undertaken early on in the construction period in order to maintain public use. 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**).

12.6 STUDY AREA

12.6.1. DMRB Volume 11, Section 3, Parts 6, 8, and 9 (**Ref. 12.12, 12.13,** and **12.14**) 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 A.

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 A.

Views from the Road

12.6.3. DMRB Volume 11, Section 3, Part 9 (**Ref. 12.14**) does not specify the Study Area required for assessing views from the road. The Study Area for assessing views from the road is the existing A1 both northbound and southbound shown as Section 1 on **Figure 12.1: Road Sections Assessed for Driver Stress**, **Volume 5** of this ES (**Application Document Reference: TR010041/APP/6.5**). This is considered appropriate as the purpose of the assessment is to determine the extent to which travellers are exposed to different types of scenery through which a route passes (**Ref. 12.14**).

Driver Stress

12.6.4. 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 and the additional sections as shown on **Figure 12.1: Road Sections Assessed for Driver Stress**, **Volume 5** of this ES (**Application Document Reference: TR010041/APP/6.5**). This is in accordance with DMRB Volume 11, Section 3, Part 9 (**Ref. 12.14**) 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.

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 PRoW and journey amenity, and the effects experienced by WCH. This is considered an appropriate area as impacts from the construction of Part A which influence amenity (noise, dust and vibration effects) are primarily experienced within 500 m of the Order Limits. Furthermore, there are no facilities used by WCH which are directly impacted (such as diversions and closures) at a distance greater than 500 m from the Order Limits.

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 A. The Study Area for community severance includes those communities which fall wholly or partly within 1 km of the Order Limits that would potentially be directly affected by Part A, as described in DMRB Volume 11, Section 3, Part 8, and are detailed for Part A in **Section 12.7** of this chapter. Based on professional judgement, this is deemed appropriate for Part A 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.

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 A. As such, the Study Area extends to those facilities within the communities of Morpeth and Felton 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 A in **Section 12.7**. Communities receptors are shown on **Figure 12.2: Commercial Properties and Community Receptors**, **Volume 5** of this ES (**Application Document Reference: TR010041/APP/6.5**).

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. Commercial properties within 500 m of the Order Limits are identified on **Figure 12.2: Commercial Properties and Community Receptors**, **Volume 5** of this ES (**Application Document Reference: TR010041/APP/6.5**) and residential properties are

shown on **Figure 7.6: Visual Effects Drawing Residential Properties**, **Volume 5** 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 A are not included within the scope of this assessment and are considered in 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, heath data have 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 is summarised below in **Table 12-17**.

Table 12-17 - Summary of Study Areas

Assessment Topic	Study Area
Vehicle Travellers	The Study Area for both views from the road and driver stress is the extent of the road network within the Order Limits and includes the connected road network to the existing A1.
Effects on Communities	
Impacts on PRoW	500 m from 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 A, as described in DMRB Volume 11, Section 3, Part 8 (**Ref.12.13**). Including Morpeth, Hebron, Tritlington, Fenrother, Causey Park, Burgham and Felton.
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	
Air quality	200 m from the Order Limits (refer to **Figure 5.4: Construction Receptors**, **Volume 5** of this ES (**Application Document Reference: TR010041/APP/6.5**).
Noise and vibration	600 m from the Order Limits (refer to **Figure 6.1: Noise and Vibration Assessment Extents**, **Volume 5** of this ES (**Application Document Reference: TR010041/APP/6.5**).

Assessment Topic	Study Area
Road drainage and the water environment	1 km from the Order Limits (refer to **Figure 10.1: Water Constraints Plan**, **Volume 5** of this ES (**Application Document Reference: TR010041/APP/6.5**).

12.7 BASELINE CONDITIONS

GEOGRAPHICAL CONTEXT

12.7.1. Where relevant (and available) data within this chapter are 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 (Chevington with Longhorsley and Pegswood Wards).

12.7.2. Part A intersects four ward boundaries (in accordance with the 2011 Census ward boundaries): Chevington with Longhorsley; Pegswood; Shilbottle: and Amble West with Warkworth. The largest section of Part A (approximately 50%) falls into the Chevington with Longhorsley and Pegswood Wards.

VEHICLE TRAVELLERS

Views from the Road

12.7.3. Views from the road within the Study Area are categorised according to the categories within DMRB Volume 11, Section 3, Part 9 as outlined in **paragraph 12.4.21**. Many of the views for motorised users along the A1 carriageway are restricted or completely obstructed due to vegetation lining the carriageway.

12.7.4. On the southern extent of Part A, there are longer views across the wider landscape compared to the northern end of the A1 where there are tree lined slopes on either side of the carriageway screening views of the wider landscape. Between Northgate and Tritlington, mature trees are set within the grass verge adjacent to the carriageway which is referred to as Coronation Avenue.

12.7.5. Baseline views from the road are outlined within Table 12-18.

Table 12-18 - Views from the Road in the Study Area

Approximate Location	Description of View	Category
Views Heading Southbound		
Grid Ref NU174009 to Ref NZ174998.Northern extent of Part A to the northernmost extent of the River Coquet.	From the northern extent of Part A, heading southbound on the A1, there are no views to the right (west) due to vegetation screening lining the carriageway. To the left (east), there are also no views due to vegetation screening lining the carriageway.	No view No view
Grid Ref NZ174998 to Ref NZ174997. From north to south over the River Coquet bridge.	From the southern edge of River Coquet bridge, heading southbound on the A1, there are views to the right (west) and left (east) over the River Coquet. However, due to dense vegetation lining the River Coquet these are restricted.	Restricted view
Grid Ref NZ174997 to Ref NZ174991. From south of the River Coquet Bridge to north of West Moor Junction.	From the south of the River Coquet, heading southbound on the A1, there are no views to the right (west) due to vegetation screening lining the carriageway. From the south of the River Coquet, heading southbound on the A1, there are no views to the left (east) due to vegetation screening lining the carriageway.	No view No view
Grid Ref NZ174991 to Ref NZ174987. From the north of proposed West Moor Junction to south of West Moor Junction.	From north of the proposed West Moor Junction, there are restricted views to the right (west), with the road screened by intermittent vegetation. To the left (east), there are restricted views of the open countryside, with the road screened by intermittent vegetation.	Restricted view Restricted view
Grid Ref NZ174987 to Ref NZ179971. From the south of West Moor Junction to adjacent to Felmoor Park.	Views on the right (west) are a mixture of open extended views and restricted with some vegetation screening. Views on the left (east) are a mixture of open extended views towards Eshott Airfield and Felmoor Park and restricted with some vegetation screening.	Restricted view Restricted view
Grid Ref NZ179971 to Ref NZ181969 North of Burgham Park Road to Burgham Park Road.	Heading southbound from north of Burgham Park Road there are no views to the right (west) due to vegetation screening lining the carriageway. To the left (east), there are also no views due to vegetation screening lining the carriageway.	No view No view
Grid Ref NZ181969 to Ref NZ190953 Burgham Park Road to Causey Park Road.	Views on the right (west) are a mixture of open extended views and restricted with some vegetation screening. Views on the left (east) are a mixture of open extended views and restricted with some vegetation screening.	Restricted view Restricted view
Grid Ref NZ190953 to Ref NZ189944. Causey Park Road to the end of Causey Park Bridge.	From Causey Park Road to Causey Park Bridge there are no views to the right (west) due to vegetation screening lining the carriageway. Views on the left (west) are a mixture of open extended views and restricted with some vegetation screening.	No view Restricted view
Grid Ref NZ189944 to Ref 189936. Causey Park Bridge to Earsdon Road	From Causey Park Bridge to Earsdon Moor Farm, views to the right (west) are a mixture of open extended views and restricted with some vegetation screening. Views on the left (east) are a mixture of open extended views and restricted with some vegetation (of different heights) screening.	Restricted view Restricted view
Grid Ref 189936 to Ref 1899334. Earsdon Road to Earsdon Moor Farm.	From Earsdon Road to Earsdon Moor Farm, views to the right are restricted by small amounts of vegetation screening the carriageway. Vegetation screening is of different heights and results in intermittent views to the right (west).	Restricted view

Approximate Location	Description of View	Category
	There are no views to the left (east) as tall vegetation screens the carriageway from Earsdon Road to Earsdon Moor Farm.	No view
Grid ref NZ1899334 to Grid ref NZ188931. Earsdon Moor Farm to north of Fenrother Junction,	There are no views to the right (west) as tall vegetation screens the carriageway from Earsdon Moor Farm to north of Fenrother Junction. There are restricted views to the left (east) as hedgerows line the carriageway for this section of the Scheme.	No view Restricted views
Grid ref NZ188931 to NZ185912 north of Fenrother Junction to where Floodgate Burn intersects with the A1	There are restricted views to the left (east) and right (west) as hedgerows and vegetation of varying heights line the carriageway.	Restricted views
Grid ref NZ185912 to NZ185909. Floodgate Burn to north of Proposed Highlaws Junctions.	From Floodgate Burn to north of Highlaws Junction there are no views to the right (west) and left (east) due to vegetation lining the carriageway.	No view
NZ185909.to NZ183396 North of Highlaws Junction to south of Proposed High Highlaws Junction	Tall trees line the carriageway intermittently to the right (west) and left (east) restricting views.	Restricted views
Ref NZ183396 to Ref NZ183894. South of the Proposed High Highlaws Junction to south of Strafford House	Tall trees line the carriageway intermittently to the right (west) restricting views. There are no views to the left (east) as tall vegetation screens the carriageway.	Restricted views No views
Ref NZ183894 to Ref NZ182886. South of Strafford House to Warreners House.	Tall trees line the carriageway intermittently to the right (west) and left (east) restricting views. This area is known as Coronation Avenue.	Restricted views
Ref NZ182886 to Ref NZ182882. Warreners House to south of the A697overbridge.	From Warreners House to where the A697 intersects with the A1, there are no views to the right (west) and left (east) due to vegetation lining the carriageway.	No views
Ref NZ182882 to Ref NZ 181875. South of the A697 overbridge to the southern-most extent of Part A.	To the right (west) restricted views due to vegetation screening the carriageway which provide a visual buffer between the carriageway and adjacent residential properties. To the left (east) restricted views due to vegetation intermittently screening views out towards Northgate Hospital and residential properties.	Restricted views Restricted views

Source: Description of views from the road derived from aerial photography and desk based mapping such as Google Street View, Google Maps and Bing Maps. Accessed online in May 2019.

Driver Stress

12.7.6. 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 12-19** and shown on **Figure 12.1: Road Sections Assessment Area for Driver Stress**, **Volume 5** of this ES (**Application Document Reference: TR010041/APP/6.5**).

12.7.7. Users of the existing A1 experience delays under baseline conditions. Delays are most problematic along the sections where minor roads join the A1, causing interruption in traffic flows. This is detailed in **Chapter 2: The Scheme**, **Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**). **Table 12-20** to **Table 12-22** indicate that the majority of 'high' and 'moderate' levels of driver stress are experienced along the A1 within the Study Area, and that the majority of adjoining road sections are classified as having either 'low' 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.

12.7.8. 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 A).

12.7.9. Within a five-year period of January 2012 to December 2016, there were approximately 48 recorded Personal Injury Accidents (categorised as 1 Fatal, 6 Serious and 41 Slight). In 2017, there were two accidents (both categorised as Slight) and in 2018 there were eight accidents (two categorised as Serious and six as Slight) along the section of A1 within Part A.

Table 12-19 - Road Sections Assessed for Driver Stress

Road Section Number	Description
1	The A1 northbound and southbound between Morpeth and Felton.
2	The unnamed road between the A1 and A697 which provides access to proposed Highlaws Junction, west of the A1.
3	Hebron Road which runs east from the A1 and provides access to Hebron. The Study Area includes the portion of the road as it heads east to Hebron and then south, but not the portion which heads east again and connects to the B1337.
4	The unnamed road to the east of Part A from the A1 to Tritlington, where Tritlington Church of England First School is located.

Road Section Number	Description
5	Fenrother Lane between the A1 and the A697, which is located to the west of the A1.
6	Earsdon Road, located to the east of the A1, which provides access to the community of Earsdon from the A1.
7	Widdrington Road, located to the east of the A1, providing access to the community of Chevington. The entirety of the road is part of the Study Area (refer to the definition of the Study Area for assessing the impact on motorised users in **Section 12.6**).
8	Causey Park Road located to the west of the A1. The entirety of the road is part of the Study Area (refer to the definition of the Study Area for assessing the impact on motorised users in **Section 12.6**).
9	An unnamed road to the east of the A1, between the A1 and Eshott Burn.
10	Burgham Park Road, located to the west of the A1, providing access to Burgham Park Golf & Leisure Club. The entirety of the road is part of the Study Area.
11	Bywell Road located to the east of the A1. The entirety of the road is part of the Study Area.
12	Westmoor Road, located to the west of the A1, ending at the intersection with A697. The entirety of the road is part of the Study Area.
13	Unnamed road to the east of the A1 which provides access from the A1 to Thirston New Houses.
14	The B6345 which runs perpendicular to the A1 to the north of the River Coquet. Driver stress to the east and west of the A1 has been calculated.
Numbered sections apply to nodes from the Part A traffic modelling data (Refer to **Appendix 5.1: Traffic Data**, **Volume 7** of this ES (**Application Document Reference: TR010041/APP/6.7**)).	

12.7.10. The following tables (**Table 12-20**, **Table 12-21** and **Table 12-22**) 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 A extents for baseline year (2015) and opening year (2023) and design year (2038) for a 'Do Minimum' (without Part A) scenario.

12.7.11. 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. 12.14**).

12.7.12. For each road section, an overall average is stated, providing a more conservative assessment against which the change due to Part A is assessed.

Table 12-20 - Driver Stress – Baseline Year (2015)

Road Section	Baseline Year AM	Baseline Year PM
1	25 nodes Moderate 7 nodes High Overall Moderate driver stress for this section.	30 nodes Moderate 2 nodes High Overall Moderate driver stress for this section.
2	All nodes Low Overall Low driver stress for this section	All nodes Low Overall Low driver stress for this section
3	All nodes Low Overall Low driver stress for this section	All nodes Low Overall Low driver stress for this section
4	All nodes Low Overall Low driver stress for this section	All nodes Low Overall Low driver stress for this section
5	All nodes Low Overall Low driver stress for this section	All nodes Low Overall Low driver stress for this section
6	All nodes Moderate Overall Moderate driver stress for this section	All nodes Moderate Overall Moderate driver stress for this section
7	All nodes Low Overall Low driver stress for this section	All nodes Low Overall Low driver stress for this section
8	All nodes Low Overall Low driver stress for this section	All nodes Low Overall Low driver stress for this section
9	All nodes Low	All nodes Low

Road Section	Baseline Year AM	Baseline Year PM
	Overall Low driver stress for this section	Overall Low driver stress for this section
10	All nodes Low Overall Low driver stress for this section	All nodes Low Overall Low driver stress for this section
11	All nodes Low Overall Low driver stress for this section	All nodes Low Overall Low driver stress for this section
12	All nodes Low Overall Low driver stress for this section	All nodes Low Overall Low driver stress for this section
13	All nodes Low Overall Low driver stress for this section	All nodes Low Overall Low driver stress for this section
14	All nodes Low Overall Low driver stress for this section	All nodes Low Overall Low driver stress for this section
Source: Part A traffic modelling data (refer to **Appendix 5.1: Traffic Data**, **Volume 7** of this ES (**Application Document Reference: TR010041/APP/6.7**)).		

Table 12-21 - Driver Stress – Opening Year (2023) Do Minimum Scenario (without Part A)

Road Section	Opening Year (2023) AM	Opening Year (2023) PM
1	27 nodes High 3 nodes Moderate Overall High driver stress for this section.	27 nodes High 3 nodes Moderate Overall High stress for this section.
2	All nodes Low	All nodes Low

Road Section	Opening Year (2023) AM	Opening Year (2023) PM
	Overall Low driver stress for this section	Overall Low driver stress for this section
3	All nodes Low Overall Low driver stress for this section	All nodes Low Overall Low driver stress for this section
4	All nodes Low Overall Low driver stress for this section	All nodes Low Overall Low driver stress for this section
5	All nodes Low Overall Low driver stress for this section	All nodes Low Overall Low driver stress for this section
6	All nodes Moderate Overall Moderate driver stress for this section	All nodes Moderate Overall Moderate driver stress for this section
7	All nodes Low Overall Low driver stress for this section	All nodes Low Overall Low driver stress for this section
8	All nodes Low Overall Low driver stress for this section	All nodes Low Overall Low driver stress for this section
9	All nodes Low Overall Low driver stress for this section	All nodes Low Overall Low driver stress for this section
10	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
11	All nodes Low Overall Low driver stress for this section	All nodes Low Overall Low driver stress for this section
12	All nodes Low	All nodes Low

Road Section	Opening Year (2023) AM	Opening Year (2023) PM
	Overall Low driver stress for this section	Overall Low driver stress for this section
13	All nodes Low Overall Low driver stress for this section	All nodes Low Overall Low driver stress for this section
14	All nodes Low Overall Low driver stress for this section	All nodes Low Overall Low driver stress for this section
Source: Part A traffic modelling data (Refer to **Appendix 5.1: Traffic Data**, **Volume 7** of this ES (**Application Document Reference: TR010041/APP/6.7**)).		

Table 12-22 - Driver Stress – Design Year (2038) Do Minimum Scenario (without Part A)

Road Section	Design Year (2038) AM	Design Year (2038) PM
1	30 nodes high Overall high driver stress for this section.	30 nodes high Overall high driver stress for this section.
2	All nodes Low Overall Low driver stress for this section	All nodes Low Overall Low driver stress for this section
3	1 node Low, 1 node Moderate Overall Moderate driver stress for this section	1 node Low, 1 node Moderate Overall Moderate driver stress for this section
4	All nodes Low Overall Low driver stress for this section	All nodes Low Overall Low driver stress for this section
5	All nodes Low Overall Low driver stress for this section	All nodes Low Overall Low driver stress for this section

Road Section	Design Year (2038) AM	Design Year (2038) PM
6	All nodes Moderate Overall Moderate driver stress for this section	All nodes Moderate Overall Moderate driver stress for this section
7	All nodes Low Overall Low driver stress for this section	All nodes Low Overall Low driver stress for this section
8	All nodes Low Overall Low driver stress for this section	All nodes Low Overall Low driver stress for this section
9	All nodes Low Overall Low driver stress for this section	All nodes Low Overall Low driver stress for this section
10	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
11	All nodes Low Overall Low driver stress for this section	All nodes Low Overall Low driver stress for this section
12	All nodes Low Overall Low driver stress for this section	All nodes Low Overall Low driver stress for this section
13	All nodes Low Overall Low driver stress for this section	All nodes Low Overall Low driver stress for this section
14	All nodes Low Overall Low driver stress for this section	All nodes Low Overall Low driver stress for this section

Source: Part A traffic modelling data (Refer to **Appendix 5.1: Traffic Data**, **Volume 7** of this ES (**Application Document Reference: TR010041/APP/6.7**)).

12.7.13. During current baseline operation (2015), driver stress along the A1 within Part A is considered to be 'moderate' or 'high'. Driver stress along other roads within the Study Area (from Section 2 to 14) are 'low' to 'moderate', although these vehicles joining the A1 at junctions on Part A 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 'high' within Section 1 from 2015-2038 (refer to **Table 12-20**, **Table 12-21** and **Table 12-22**) in the absence of Part A indicating that driver stress is likely to slightly increase if Part A is not built.

12.7.14. 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 7** of this ES (**Application Document Reference: TR010041/APP/6.7**).

EFFECTS ON COMMUNITIES

Community Severance and Journey Amenity

Existing Communities and Community Facilities

12.7.15. 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. 12.13**).

12.7.16. 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.

12.7.17. The following communities have been identified within the Study Area:

a. Morpeth
b. Hebron
c. Fenrother
d. Tritlington
e. Causey Park
f. Burgham
g. Felton

12.7.18. There are also 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.

12.7.19. 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: Commercial Properties and Community Receptors**, **Volume 5** of this ES (**Application Document Reference: TR010041/APP/6.5**). 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.

12.7.20. 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**: **Commercial Properties and Community Receptors**, **Volume 5** of this ES (**Application Document Reference: TR010041/APP/6.5**).

Morpeth

12.7.21. Morpeth is a town with a recorded population of 14,017 in 2011 (**Ref. 12.27**). The following community facilities are located in the immediate area:

a. Northgate Hospital
b. Fairmoor Cemetery
c. Two supermarkets and several smaller convenience stores
d. Five first schools
e. Three middle schools
f. Two high schools
g. One special school
h. Three GP surgeries
i. Three dentistry practices
j. Six pharmacies
k. Numerous places of worship

12.7.22. It is likely that the majority of community facilities required by the local community are available to residents within Morpeth, and therefore few journeys from Morpeth are likely to be taken from Morpeth to other locations for this purpose. It is likely that the majority of journeys from Morpeth are to be made by vehicle to the east (via the A197 or the A196) and south (via the A1) towards Newcastle upon Tyne to access employment sites. Journeys are likely to be made by vehicle to Morpeth from the smaller communities from the west (via the B6343 and the B6524) and the north (via the A1 and the A697).

Hebron

12.7.23. Hebron is a small hamlet consisting of residential properties. There are no community facilities located within Hebron, and therefore these are most likely to be accessed in Morpeth. As Hebron is approximately 4 km from the centre of Morpeth journeys are likely to be made by vehicle.

12.7.24. Bus stops are located on the A1 at Low Espley, so it is likely that pedestrians would travel from Hebron to the A1 via the unclassified road to use the bus network, and some may continue on the retail park at Quarry Hill.

Tritlington

12.7.25. Tritlington is a small hamlet to the east of the A1 consisting of residential properties and agricultural land holdings. There is a first school (Tritlington Church of England First School) located adjacent to the A1 which could be accessed on foot via Footpath 423/002 and the A1 or via the unclassified road. For other facilities, resident may look to Longhorsely to the north west via the A697 (post office, first school, church), Stobswood to the east via unclassified roads (train station, post office, schools, library, GP's surgery and convenience store), Morpeth to the south or Felton to the north via the A1.

12.7.26. Bus stops are located on the A1 at the junction with Tritlington Road, so it is likely that pedestrians would travel from Tritlington to the A1 via the unclassified road or footpath to use the bus network.

Fenrother

12.7.27. Fenrother is a small hamlet to the west of the A1 consisting of residential properties and agricultural land holdings. There are no community facilities and therefore these are most likely to be accessed in surrounding communities. Tritlington Church of England First School is within walking distance, adjacent to the A1, for which pedestrians could access via an unclassified road or via Footpath 423/001. For other facilities, resident may look to Longhorsely to the north west via the A697, Stobswood to the east via unclassified roads, Morpeth to the south or Felton to the north via the A1.

12.7.28. Bus stops are located on the A1 at the junction with Tritlington Road, so it is likely that pedestrians would travel from Fenrother to the A1 via the unclassified road or footpath to use the bus network.

Causey Park

12.7.29. Causey Park is located to the west of the A1 consisting of a collection of residential properties and agricultural land holdings. There is a public house, the Oak Inn, located in close proximity to the A1 at Causey Park Bridge. There are no other community facilities and therefore these are most likely to be accessed in surrounding communities as detailed above for Fenrother and Tritlington.

12.7.30. Pedestrians may use Footpaths 423/008 from Earsdon, the A1 from Earsdon Moor and Footpath 423/013 from Causey Park to access the Oak Inn on foot. Bus stops are also located in this location on the A1 for those accessing via public transport from further afield.

Burgham

12.7.31. Within Burgham are a number of accommodation and recreational businesses such as Bockenfield Holiday Park, Command Zone Paintball, Coquet Cottages, Northumberland Country Zoo and Burgham Park Golf and Leisure Club. Burgham Horse Trials is also held in close proximity. These facilities are likely to be travelled to by vehicle, but visitors may utilise the surrounding PRoW network for recreational purposes or to access facilities within Felton to the north via unclassified roads or Footpath 422/003. The A1 does not have a footway

alongside the carriageway to Felton in this location. There are bus stops located at West Moor.

Felton

12.7.32. Felton is a village on the east of the A1 with a recorded population in 2011 of 1,234 (**Ref. 12.27**). Within Felton there are the following facilities:

a. Two churches
b. One first school
c. A post office
d. One public house
e. One GP surgery

12.7.33. For other facilities, residents of Felton are likely to travel in vehicles via the A1 north to Alnwick, or south to Morpeth, or east via the B6345 to Broomhill or Amble.

WCH Routes

12.7.34. 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.

12.7.35. There are a number of PRoW which lie within and adjacent to the Order Limits. A number of PRoW provide access between isolated / scattered residential properties and local settlements, in particular to the west of the existing A1, where the offline section of Part A is proposed. PRoW also link several residential properties at Fenrother, Tindale and Causey Park. While the PRoW in the Study Area do not form a coherent network, in places they form peripheral sections of a coherent network lying further to the east or west of Part A. In some areas PRoW also form a localised route of community or recreational importance (e.g. to the west and north-west of Causey Park Bridge, extending westwards to the A697 and Longhorsley).

12.7.36. Side road junctions with the A1 provide crossroads or staggered junctions with the potential to link recreational networks on either side of the A1. While some of these locations may provide opportunities for WCHs to cross the A1, the volume and speed of traffic using the A1 are likely to make crossing difficult.

12.7.37. In addition to designated PRoWs, there are pedestrian footways or pavements along several sections of the existing A1, including much of the southern portion of the Part A route around Tritlington and Causey Park Bridge, and on the bridge over the River Coquet.

12.7.38. Table 12-23 provides a description of the PRoWs and other routes in the area within 500 m of the Order Limits as shown on **Figure 7.7: Visual Effects Drawing PRoW**, **Volume 5** of this ES (**Application Document Reference: TR010041/APP/6.5**).

National Trails and Cycle Routes

12.7.39. National Trails provide long-distance pedestrian routes across England. There are no National Trails located in close proximity to Part A, with the nearest (Hadrian's Wall) located approximately 21 km to the south. Therefore, National Trails are not considered further within this chapter.

12.7.40. St Oswald's Way is a long-distance pedestrian route between St Cuthbert's Way at the Holy Islands and the Hadrian's Wall Path at Heavenfield. A portion of St Oswald's Way follows the northern bank River Coquet and is crossed by Part A.

12.7.41. National Cycle Routes provide designated access routes for cyclists, some of which make use of PRoW. There are no National Cycle Routes located in close proximity to Part A, with the nearest (National Cycle Route 155 - Morpeth and Newbiggin-by-the-sea) located approximately 2.3 km south-west of Part A. As such, National Cycle Routes are not considered further within this assessment.

Bus Stops

12.7.42. There are three sets of existing bus stops within the Order Limits:

a. On the northbound and southbound carriageways at chainage 10959 near Warreners House.
b. On the northbound and southbound carriageways between chainages 12000 and 12200, at Hebron Road End, would both be removed.
c. On the northbound and southbound carriageways at Low Espley Road End, at chainage 13300.

Table 12-23 - Summary of PRoWs within the Study Area

PRoW / Route Ref.	PRoW / Route Type	Description	Sensitivity for Severance	Sensitivity for Amenity
PRoWs				
407/019	Bridleway	Connects the A192 to St Leonards Lane and passes through the residential area of Fair Moor. Not within the Order Limits	Low – locally designated and providing local access.	Low as footpath is in close proximity to residential properties and roads.
407/010	Bridleway	Connects Northgate Farm and A697 with North Gate House and the local road network. Within the Order Limits	Low – locally designated and likely to be used primarily for recreational purposes.	Low at points joining with the road network either end (A1 and unclassified road 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.
407/013	Footpath	Connects Fair Moor with PRoW 407/012 (bridleway) and Heighley Wood, which form a circular route in combination with a minor road. Not within the Order Limits	Low – locally designated and likely to be used primarily for recreational purposes.	Medium, as surrounded by fields and the cemetery, but considering that proximity to A1 results in noise from traffic and infringement of views.
407/012	Bridleway	Forms a circular route with PRoW 407/013 and a minor road. Not within the Order Limits	Low – locally designated and likely to be used primarily for recreational purposes.	Low at points joining with the road network either end (A697 to the east and unclassified road to the west). 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.
407/018	Footpath	From the existing A1 to Hebron via The Bungalows. Within the Order Limits	Medium – locally designated and not likely to be used by high numbers of people for access / recreation but provides an alternative to unclassified road to A1 for access to public transport.	Low at points joining with the road network either end (A1 and unclassified road 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.
407/001	Footpath	A section of the footpath runs parallel to Floodgate Burn. The footpath forms a loop from the A1 up towards Floodgate Burn and then reconnects with the A1. Within the Order Limits	Low – locally designated and not likely to be used by high numbers of people for access / recreation.	Low at points joining with the road network (A1) at either end. 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.
407/002	Footpath	Connects with PRoW 407/001. Within the Order Limits	Low – locally designated and not likely to be used by high numbers of people for access / recreation.	Low at western end, in close proximity with the road network (A1) at either end. Medium when traversing further east from the A1 surrounded by open countryside, due to

PRoW / Route Ref.	PRoW / Route Type	Description	Sensitivity for Severance	Sensitivity for Amenity
				more rural setting, but considering that proximity to A1 results in noise from traffic and infringement of views.
407/003	Footpath	A small portion of footpath that runs north from Tank Plantation (located on the unnamed road that connects Low Espley to the A1) and crosses over a watercourse and connects to PRoW 423/014. Not within the Order Limits	Low – locally designated and not likely to be used by high numbers of people for access / recreation.	Low at south where joining with the road network. Medium when traversing further north from the road network surrounded by open countryside, due to more rural setting, but considering that proximity to A1 and A697 results in noise from traffic and infringement of views.
423/014	Footpath	A small portion of footpath that connects to PRoW 407/003 and runs west from Old Coach House and connects to the A697. Not within the Order Limits	Low – locally designated and not likely to be used by high numbers of people for access / recreation.	Low at western end joining with the road network. Medium when traversing further east from the road network surrounded by open countryside, due to more rural setting, but considering that proximity to A1 and A697 results in noise from traffic and infringement of views.
423/001	Footpath	Connects Fenrother to the A1 and starts opposite an unnamed road which provides access to Tritlington Church of England First School. Within the Order Limits	Medium – locally designated and not likely to be used by high numbers of people for access / recreation but provides an alternative to unclassified road to A1 for access to public transport and Tritlington Church of England First School.	Low at points joining with the road network either end (A1 and unclassified road to the west). 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.
423/002	Footpath	Follows a track from nearby residential properties adjacent to the A1 to a farm at Tritlington Broom (called The Farmhouse) and on to the village of Tritlington. This is likely to provide access to local amenities for residents. Adjacent to the Order Limits	Low – locally designated and not likely to be used by high numbers of people for access / recreation but provides an alternative to unclassified road to A1 for access to public transport and Tritlington School.	Low at points joining with the road network either end (A1 and unclassified road 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.
423/007	Footpath	Connects 423/006 to New House Farm and is approximately 400 m long. Within the Order Limits	Low – locally designated and not likely to be used by high numbers of people for access / recreation.	Medium, as surrounded by fields, but considering that proximity to A1 results in noise from traffic and infringement of views.
423/006	Footpath	Commences at A1 passing Earsdon Moor Farm extending west along access farm track ends at filed boundary. The footpath does not link or connect to other footpaths and is 1.21 km long. Within the Order Limits	Low – locally designated and not likely to be used by high numbers of people for access / recreation.	Low at eastern end joining with the road network (A1). Medium when traversing further west 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.
423/008	Footpath	The footpath runs along the valley of Earsdon Burn, linking the A1 near Causey Park Bridge with a minor road near Earsdon West Farm/Earsdon. It continues the same line as footpaths 423/017 and 423/013. Together with local	Low – locally designated and not likely to be used by high numbers of people for access / recreation but provides access to the Oak Inn and bus stop on A1.	Low at points joining with the road network either end (A1 and unclassified road to the east). Medium when traversing further east from the A1 surrounded by open countryside, due to more rural setting, but considering that

PRoW / Route Ref.	PRoW / Route Type	Description	Sensitivity for Severance	Sensitivity for Amenity
		roads/tracks and footpath 423/009, it is likely to provide access to local amenities for residents and opportunities for circular walks. Within the Order Limits		proximity to A1 results in noise from traffic and infringement of views.
423/013	Footpath	Connects Causey Park Bridge with Causey Park. The footpath seems to form part of a wider PRoW network and follows the same line as 423/008 and 423/017. Within the Order Limits	Medium – locally designated and not likely to be used by high numbers of people for access / recreation but provides access to the Oak Inn and bus stop on A1.	Low at points joining with the road network either end. 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.
423/017	Footpath	Very short path through Causey Park Bridge, forming a short section of a single continuous line with 423/008 (east of the A1) and 423/013 (west of Causey Park Bridge). Within the Order Limits	Low – locally designated and not likely to be used by high numbers of people for access / recreation.	Low, due to proximity to A1, resulting in noise from traffic and infringement of views.
422/023	Restricted Byway	Runs from the A1 to the east and connects to an unnamed road and PRoW 422/022. Adjacent to the Order Limits	Low – locally designated and not likely to be used by high numbers of people for access / recreation.	Low at points joining with the road network at the southern end. 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.
422/022	Restricted Byway	Runs from 422/022 to the north west and connects to 422/018. Adjacent to the Order Limits	Low – locally designated and not likely to be used by high numbers of people for access / recreation.	Low at points joining with the road network at the northern end. 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.
422/018	Byway	Runs from the A1 south of Felmoor Park to (and across) Thirston Airfield to the east of the A1. Links with several minor roads and tracks and with another footpath (outside the Study Area) that connects to West Thirston and Felton. Adjacent to the Order Limits	Low – locally designated and not likely to be used by high numbers of people for access / recreation.	Low at points joining with the road network either end. 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. Additionally, due to the byway being on a lane, users may meet traffic, which is not segregated.
422/011	Footpath	Connects the A1, Burgham Park and a local road to the west of the existing A1, which then provides further links to other footpaths and bridleways outside the Study Area. There is no WCH provision however, on the A1 in this location. Within the Order Limits	Low – locally designated and not likely to be used by high numbers of people for access / recreation.	Low at points joining with the road network either end. Medium when traversing further west from the A1 surrounded by open countryside and golf course, due to more rural setting, but considering that proximity to A1 results in noise from traffic and infringement of views.

PRoW / Route Ref.	PRoW / Route Type	Description	Sensitivity for Severance	Sensitivity for Amenity
422/002	Footpath	Runs westwards from the A1 along the upper edge of the wooded River Coquet gorge on its south side, linking with other footpaths and tracks further west. Links to 422/020 running eastwards from the A1 via an A1 crossing and connects to 422/001 further to the west. Walking groups are understood use the footpaths in the gorge area. Within the Order Limits	Low – locally designated and not likely to be used by high numbers of people for access / recreation.	Low at point joining with the road at eastern end. Medium when traversing further west from the A1 surrounded by open countryside and the river, due to more rural setting, but considering that proximity to A1 results in noise from traffic and infringement of views.
422/001	Footpath	Runs from south of Shothaugh Farm High Cottage north to PRoW 115/013 on the northern side of the River Coquet. Not within the Order Limits	Low – locally designated and not likely to be used by high numbers of people for access / recreation.	Medium as surrounded by open countryside and the river, due to more rural setting, but considering that proximity to A1 results in noise from traffic and infringement of views.
422/020	Footpath	Runs eastwards from the A1 to Felton, along the upper edge of the wooded River Coquet gorge on its south side, linking with 422/002. Appears to form a recreational walking route. Walking groups are understood to use the footpaths in the gorge area. Crossing the A1 in this location is likely to be dangerous. Within the Order Limits	Low – locally designated unclassified road (less than 8,000 vehicles) and there are two further footpaths to the north in close proximity, providing alternative routes.	Low at point joining with the road at western end. Medium when traversing further east from the A1 surrounded by open countryside and the river, due to more rural setting, but considering that proximity to A1 results in noise from traffic and infringement of views.
115/009	Footpath	Connects Felton westwards to a wider PRoW network passing below the north end of the existing A1 bridge over the River Coquet gorge. The PRoW runs along the top of the north side of the River Coquet gorge through a wooded area. It also forms part of the following long-distance routes: St Oswald's way, Tops of the North (Carlisle and Cheviot to Cat and Fiddle) and Inn Way to Northumberland. Walking groups are understood to use the footpaths in the gorge area. Therefore, this PRoW is likely to be a key recreational route. Within the Order Limits	High – forming part of the Oswald's Way long distance path attracting users from the wider region. Likely to be used primarily for recreation.	Low at points joining with the road network at the A1. Medium when traversing further away from the A1 surrounded by open countryside, woodland and the river, due to more rural setting, but considering that proximity to A1 results in noise from traffic and infringement of views.
115/008	Footpath	Runs westwards from Felton through woodland to the A1, where it is severed by a cutting from 115/016, which would otherwise provide an onward connection to Park Wood and the continuation of 115/009, which forms part of several long-distance trails. There is a subway to the north passing beneath the A1 which is not a PRoW, but which is understood to be used by walkers. Within the Order Limits	Low – locally designated and not likely to be used by high numbers of people for access / recreation.	Low at point joining with the road at western end. Medium when traversing further east from the A1 surrounded by woodland and the river, due to more rural setting, but considering that proximity to A1 results in noise from traffic and infringement of views.

PRoW / Route Ref.	PRoW / Route Type	Description	Sensitivity for Severance	Sensitivity for Amenity
115/013	Footpath	A small portion of footpath that links PRoW 422/001 and PRoW 115/009. Not within the Order Limits	Low – locally designated and not likely to be used by high numbers of people for access / recreation.	Medium as surrounded by woodland and the river, due to more rural setting, but considering that proximity to A1 results in noise from traffic and infringement of views.
115/016	Footpath	Runs westwards from the A1 past the south side of Park Wood to provide a link with the continuation of 115/009, which forms part of several long-distance trails. Within the Order Limits	Low – locally designated and not likely to be used by high numbers of people for access / recreation.	High due to rural setting, woodland screening and undulating topography away from the A1.
422/017	Footpath	Small portion of footpath connecting residential properties to the north of the B6345 as it enters Thirston from the west to the B6345 (the Peth). Not within the Order Limits	Low – locally designated and not likely to be used by high numbers of people for access / recreation.	Low, as short stretch of footpath within area of residential development.
422/016	Footpath	This footpath connects the bridge over the River Coquet at West Thirston to the B6345 and runs past Thirston House. Not within the Order Limits	Low – locally designated and not likely to be used by high numbers of people for access / recreation.	Low, as short stretch of footpath within area of residential development.
422/021	Footpath	A small portion of footpath that provides an alternative path from PRoW 422/016 to the B6345. Not within the Order Limits	Low – locally designated and not likely to be used by high numbers of people for access / recreation.	Low, as short stretch of footpath within area of residential development.
Non-designated Routes				
-A1	Footway adjacent to carriageway	Approximately 2.5 km road footway on the east side of the A1 between the junction with the A192 and the junction turning to Hebron in Low Espley Within the Order Limits	Medium – A-road and part of the strategic road network, providing access to public transport.	Low, due to proximity to high volumes of traffic travelling at high speeds.
-	Unclassified road	Two sections of unclassified road between Quarry Hill and Hebron, both meeting the A1 at Low Espley. No WCH provision is provided. Within the Order Limits (junction with A1)	Medium – local access only and unlikely to be used by high numbers of WCH, but they provide access to bus stops on the A1.	Low. Although road is surrounded by open countryside, there is no WCH provision and the national speed limit applies.
-	Access track	Gated access track for The Cottage at Beacon Hill on the east of the A1. No WCH provision is provided. Within the Order Limits (junction with A1)	Negligible – local access only and likely to be used by very low numbers of WCH.	Low at point joining with the road network at the western end. 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.

PRoW / Route Ref.	PRoW / Route Type	Description	Sensitivity for Severance	Sensitivity for Amenity
-	Access track	Track between Hill Top Cottage (on A697) and Floodgate Wood at the A1. Also connects with Footpath 407/001 at the east. No WCH provision is provided. Within the Order Limits (junction with A1)	Negligible – local access only and likely to be used by very low numbers of WCH.	Low at points joining with the road network at either end. Medium when traversing further west from the A1 surrounded by woodland and residential properties, due to more rural setting, but considering that proximity to A1 results in noise from traffic and infringement of views. Vehicles are unlikely to be travelling at high speeds.
-	Unclassified road	Unclassified road (known as Tritlington Road) adjacent to the A1 providing access to Priest's Bridge House and other properties. No specific WCH provision is provided. Within the Order Limits (junction with A1)	Low – local access only and unlikely to be used by high numbers of WCH.	Low. Although road is surrounded by open countryside, there is no WCH provision and the national speed limit applies.
-	Unclassified road	An unclassified section of road on the east of the A1 which connects with Tritlington Within the Order Limits (junction with A1)	Medium– local access only and unlikely to be used by high numbers of WCH, but provides an alternative access to Footpath 423/002 to access the bus stop on the A1 and Tritlington Church of England First School.	Low. Although road is surrounded by open countryside, there is no WCH provision and the national speed limit applies.
-	Unclassified road	An unclassified section of road on the west of the A1 which connects with Fenrother and the A697. Within the Order Limits (junction with A1)	Medium – local access only and unlikely to be used by high numbers of WCH, but provides an alternative access to Footpath 423/001 to access the bus stop on the A1 and Tritlington Church of England First School.	Low. Although road is surrounded by open countryside, there is no WCH provision and the national speed limit applies.
-A1	Footway adjacent to carriageway	Approximately 3 km on the east side of the A1 between the Shield Green/ Tritlington Road junction with the A1, and the west road junction north of Causey Park. Within the Order Limits	Medium – A-road and part of the strategic road network, providing access to public transport and with pedestrian provision.	Low, due to proximity to high volumes of traffic travelling at high speeds.
-	Unclassified road	An unclassified section of road on the east of the A1 which connects with Earsdon. Within the Order Limits (junction with A1)	Low – local access only and unlikely to be used by high numbers of WCH.	Low. Although road is surrounded by open countryside, there is no WCH provision and the national speed limit applies.
-	Unclassified road	An unclassified section of road on the west of the A1 providing access to properties at Causey Park Bridge. Within the Order Limits (junction with A1)	Medium – local access only and unlikely to be used by high numbers of WCH, but provides access to bus stop on the A1.	Low. Although road is surrounded by open countryside, there is no WCH provision and the national speed limit applies.
-	Unclassified road	An unclassified section of road on the east of the A1 which connects with Chevington Moor. Within the Order Limits (junction with A1)	Medium – local access only and unlikely to be used by high numbers of WCH, but joins with a section of the A1 that has pedestrian provision to Causey Park Bridge and the bus stop located there.	Low. Although road is surrounded by open countryside, there is no WCH provision and the national speed limit applies.

PRoW / Route Ref.	PRoW / Route Type	Description	Sensitivity for Severance	Sensitivity for Amenity
-	Unclassified road	An unclassified section of road on the west of the A1 which connects with Causey Park, Longhorsley and the A697. Within the Order Limits (junction with A1)	Medium – local access only and unlikely to be used by high numbers of WCH but joins with a section of the A1 that has pedestrian provision to Causey Park Bridge and the bus stop located there (alternative to Footpath 423/013).	Low. Although road is surrounded by open countryside, there is no WCH provision and the national speed limit applies.
-	Unclassified road	An unclassified section of road on the east of the A1 at Helm which connects with Eshott. Within the Order Limits (junction with A1)	Low – local access only and unlikely to be used by high numbers of WCH.	Low. Although road is surrounded by open countryside, there is no WCH provision and the national speed limit applies.
-	Unclassified road	An unclassified section of road on the west of the A1 which connects with Longhorsley and the A697. Within the Order Limits (junction with A1)	Low – local access only and unlikely to be used by high numbers of WCH.	Low. Although road is surrounded by open countryside, there is no WCH provision and the national speed limit applies.
-	Unclassified road	An unclassified section of road on the east of the A1 providing access to Bockenfield Holiday Park and Eshott Airfield. Within the Order Limits (junction with A1)	Low – local access only and unlikely to be used by high numbers of WCH	Low, due to proximity to A1, resulting in noise from traffic and infringement of views.
-	Unclassified road	An unclassified section of road on the west of the A1 at West Moor which connects with the A697, through North and South Highmoor. Within the Order Limits (junction with A1)	Medium – local access only and unlikely to be used by high numbers of WCH but it provides a route to access a bus stop located east of the A1 providing access to public transport.	Low. Although road is surrounded by open countryside, there is no WCH provision and the national speed limit applies.
-	Unclassified road	An unclassified section of road on the east of the A1 which immediately splits, the north fork travelling north to Felton and the south travelling east, but both connecting with the B6345. Within the Order Limits (junction with A1)	Medium – local access only and unlikely to be used by high numbers of WCH, but there is a bus stop located adjacent to the A1 providing access to public transport.	Low. Although road is surrounded by open countryside, there is no WCH provision beyond the bus stop and the national speed limit applies.
B6345	B-road	B-road crossing the A1 for access east to Felton and west to Old Swarland, Longframlington and the A697. Within the Order Limits (junction with A1)	Low – local access only and unlikely to be used by high numbers of WCH.	Low. Although road is surrounded by open countryside, there is no WCH provision and the national speed limit applies.

Source: Northumberland County Council PRoW Map (**Ref. 12.25**)

12.7.43. **Table 12-24** 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.

12.7.44. An additional site visit was undertaken in March 2018 by a Lead Assessor (**Ref. 12.19**). 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.

12.7.45. Survey results indicate that the greatest numbers of WCHs were recorded at the following five locations:

a. Proposed Highlaws Junction
b. Proposed Causey Park Overbridge (offline section of Part A at Footpath 423/013) (off the line of the A1)
c. Byway north of Helm
d. West Moor Junction
e. Footpath 115/009 (St Oswald's Way), in the River Coquet Valley

12.7.46. The most popular cycling routes were at the Highlaws Junction and West Moor junction.

12.7.47. On the days that the surveys were undertaken, there was very limited movement by equestrians, with only two recorded in the survey area.

Table 12-24 - Summary of WCH Movements within the Study Area in 2016

Area/Ward Name	WCH Total	Pedestrians	Cyclists	Horse Riders
Highlaws/ Hebron junction	33	10	21	2
Footpath 407/001 and track to Espley Hall	3	3	0	0
Tritlington Junction and Footpath, 423/001, footway and bus stops	15	8	7	0
Fenrother Junction	10	7	3	0
Footpath 423/002	8	7	1	0
Footpath 423/007/ Earsdon Moor Farm/	7	7	0	0
Earsdon West Farm junction	3	3	0	0

Area/Ward Name	WCH Total	Pedestrians	Cyclists	Horse Riders
Causey Park Bridge south	13	13	0	0
Footpath 423/013/A1	6	6	0	0
Causey Park Bridge/Footpath 423/013	49	39	10	0
Causey Park North/track to Earsdon Hill	7	5	2	0
Junction to east north of Causey Park	9	3	6	0
Causey Park Hag Lodge junction	11	5	6	0
Helm Junction	12	8	4	0
Byway 422/018	91	82	9	0
Longhorsley East Road	13	10	3	0
Footpath 422/011	10	9	1	0
Junction with road west to Bywell Cottage	6	1	5	0
West Moor Junction	104	54	50	0
Footpaths 422/002 and 422/020 south of River Coquet	10	8	2	0
Footpaths 115/009, passing under bridge north of River Coquet	79	78	1	0
Footpath 115/008	6	6	0	0

Non-designated Public Routes

12.7.48. In addition to designated PRoWs, there are pedestrian footways along the southbound carriageway of the southern section of the existing A1, from the southern extent of Part A to Low Espley (a stretch of approximately 1.3km), and also from the junction adjacent to Tritlington School north to the junctions at Causey Park (a stretch of approximately 2.5km). This is considered to be of medium sensitivity from Morpeth to Epsley and high sensitivity under severance between Tritlington to Causey Park due to the footway providing connectivity between Tritlington and Causey Park (including access to bus stops and the school).

Journey Amenity

12.7.49. The PRoW which intersect with the A1 or are located in close proximity to the A1 north of Morpeth 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. Details for amenity of all PRoWs considered within the assessment are provided within **Table 12-23**.

PHYSICAL ASSETS AND LAND USE

Private Property

12.7.50. Physical assets describe properties which are situated within the Order Limits or within the 500 m Study Area.

12.7.51. There is only one residential property; North Gate House, which is located within the Order Limits. It lies to the west of the A1, approximately 100 m north of the A697 junction.

12.7.52. There are number of residential properties situated within the Study Area. The properties identified in **Table 12-25** are located to the west of the northbound carriageway and are identified on **Figure 7.6: Visual Effects Drawing Residential Properties**, **Volume 5** of this ES (**Application Document Reference: TR010041/APP/6.5**).

12.7.53. The properties identified in Table 12-26 are located to the east of the northbound carriageway and are identified on Figure 7.6: Visual Effects Drawing Residential Properties, Volume 5 of this ES (Application Document Reference: TR010041/APP/6.5).

Table 12-25 – Residential Properties located within 500 m West of the Order Limits

Property/Properties ID	Approximate Distance from the Order Limits	Location Description
R128, R129 and R130	R128 (c.310 m), R129 (c. 465 m), R130 (c. 515 m)	Approximately 25-30 properties within the suburb of Fairmoor; these are accessed via Fairmoor Road and Dark Lane which connect to the A192 which is accessible from the west of the A1.
R119	c.195 m	The Red House, located approximately 190 m from the Order Limits the A1 and accessed via an unnamed road which runs parallel to the A1.
R114, R115, R117, R118	R114 (c.140 m), R115 (c. 90 m), R117 (c.140 m), R118 (c.150 m),	Cluster of houses accessed off the same road to R119, all of which are located approximately 90 – 150 m from the Order Limits.
R112	c.210 m	Heighley Cottage located approximately 210 m from the Order Limits.
R99	c.0 m	Directly accessible from the A1 and located within the Order Limits.
R94 and R95	R94 (0 m) and R95 (c 25 m)	High Highlaws Cottage located adjacent to Part A (and within the Order Limits) and High Highlaws Farm located approximately 250 m from Part A.
R84	c.440 m	Gamekeepers Cottage, located approximately 440 m from the A1 and accessed via an unnamed road.
R65	c.180 m	New Houses Farm, located approximately 180 m from the A1 and accessible via an unnamed road from the A1.
R78, R79, R80, R81,	R78 (c.60 m), R79 (c.75 m), R80 (c.100 m), R81(c.200 m)	A number of residential properties located in an area known as Fenrother and are accessed via an unnamed road that links the A1 to the A697. The properties in this settlement are Stonebrook Cottage (5 properties (R78)), East Fenrother (3 properties (R79)), Middle Fenrother (4 properties (R80)) and Fenrother (4 properties (R81)). The closest property to Part A is Stonebrook Cottage, which is located approximately 60 m from the Order Limits.
R70 and R69	R70 (c. 330 m) and R69 (c. 365 m)	Earsdon Moor House (R69) and Earsdon Moor Farm (R70) are located directly adjacent to the existing A1 and are accessed via an unnamed loop road to the north and south of the properties. Earsdon Moor House is located directly adjacent to the A1.
R68	c.150 m	Tindale Hill located approximately 150 m from the Order Limits and accessed via an unnamed road.
R40	c.110 m	Blackwood Hall is a residential property located adjacent to the A1.
R66	c.256 m	Earsdon Mill House is located to the south of Earsdon Burn, directly adjacent to the A1 and is accessed directly from the A1.
R56, R57, R58, R59, R60, R61	R56 (c.25 m), R57 (c.30 m), R58 (c.10 m), R59 (c.25 m), R60 (c.25 m), R61 (c.55 m),	Five properties located on a loop road to and from the A1 in an area known as Causey Park Bridge. All five properties are located within 100 m of the A1.
R48, R49	R48 (c.85 m), R49 (c.10 m),	Two properties located parallel to the existing A1 and accessed via an unnamed road. Both properties are located within 85 m of the Order Limits. These properties are known as Causey Park Lodge (North and South) as outlined in **Chapter 7: Landscape and Visual** of this ES**.**
R50	c.125 m	Two properties known as Causey Park Hag, located approximately 125 m from the Order Limits and accessed via an unnamed road which also provides access to Causey Park Lodge.

Property/Properties ID	Approximate Distance from the Order Limits	Location Description
R40	c.110 m	Located adjacent to and accessed directly from the A1. The Order Limits are approximately 110 m from the residential property.
R35, R36, R37	R35 (0 m abutting Part A), R36 (c.50 m), and R37(c.25 m)	Three properties in Westmoor accessed via an unnamed road. The Cottage (R35) which abuts the Order Limits, West Moor House (R36) located approximately 50 m from the Order Limits and West Moorhouse (R37) located approximately 25 m from the Order Limits.
R38	c.255 m	West Moor Plantation Cottage is located approximately 255 m from the Order Limits and is accessed via an unnamed road.
R30	c.340 m	Shothaugh Farm High Cottage, located approximately 340 m from the Order Limits and 150 m to the south of the River Coquet.
R9	c.90 m	Longfield Cottage, located approximately 90 m from the Order Limits on the edge of Park Wood.
R2	c.375 m	Swarland Dene, located approximately 375 m from the Order Limits north of Mino's Dean.

Table 12-26 – Residential Properties Located within 500 m East of the Order Limits

Property / Properties ID	Approximate Distance from the Order Limits	Location Description
R120, R121, R122, R123, R124, R125, R126	R120 (c. 170 m), R121 (c. 195 m), R122 (c. 205 m), R123 (c. 300 m), R124 (c. 220 m), R125 (c. 285 m), R126 (c. 360 m)	Approximately 40 houses in the Fair Moor residential area, which is located between the A1 and Northgate Hospital and is accessible from via the A192 which connects to the A1.
R111	c.135 m	Two properties (The Lodge and Middle Rigg) located on the unnamed road into Northgate Hospital.
R107, R108, R109	R107 (c. 15 m), R108 (c. 17 m), R109 (c. 10 m)	Approximately 12 properties located on West View Road which is accessible via the A192 (which connects to the A1). The area is known as West View. These properties are located approximately 10-20 m from the Order Limits.
R100, R101, R102	R100 (c. 10 m), R101 (c. 65 m), R102 (c. 5 m)	There are four properties at this location, Warreners Cottages (2 properties (R100)), Warreners House (1 property (R100)), Warreners House (2 properties (R102)). These properties share an access directly from the A1.
R97	c.44 m	Located in the same area of the other properties in the 'Warreners complex' this property is located to the east of Northgate Farm (R98) and shares an access directly from the A1 with R100, R101 and R102.
R98	c.10 m	Northgate Farm located adjacent to and directly from the A1. The farm is located directly adjacent to Warreners House but slightly further north.
R96	c.20 m	Capri Lodge located adjacent to and directly accessible from the A1. Capri Lodge shares an access with Northgate Farm R107.
R93	c.15 m	Strafford House, directly adjacent to and accessible from the A1 and located approximately 15 m from the Order Limits.

Property / Properties ID	Approximate Distance from the Order Limits	Location Description
R87 and R88	R87 (c. 340 m), and R88 (c. 370 m)	Hebron Hill (The Cottage (R87)) and Hebron Hill (R88), located approximately 350 m from the A1 and accessible via an unnamed private road from the A1.
R83	c. 30 m	Woodlands House located approximately 30 m from the Order Limits and accessible via a loop road off the A1.
R82	c. 105 m	Priest's Bridge House located approximately 105 m from the Order Limits and accessible via a loop road off the A1.
R73	c. 20 m	The Old School located adjacent to the A1 approximately 20 m from the Order Limits and accessible via an unnamed road.
R74	c. 20 m	South View, accessible via an unnamed road and located approximately 50 m from the Order Limits.
R75, R76	R75 (c. 350 m), R76 (c. 355 m),	Shield Green (2 properties(R75)) and Shield Green (2 properties (R76), accessible via an unnamed road that also provides access to Tritlington Church of England First School and other residential properties. Located approximately 350 m from the Order Limits.
R77	c. 405 m	Shield Green Farm, accessible via an unnamed road that also provides access to Tritlington School and other residential properties. Located approximately 405 m from the Order Limits.
R71 and R72	R71 (c. 350 m), and R72 (c. 20 m	Portland House (R71) and Welbeck House (R72), located directly adjacent to the A1 and accessed via an unnamed road which also provides access to a further property.
R67	c.370 m	Earsdon Cottage located approximately 370 m from the Order Limits and accessed via an unnamed road off the A1.
R62, R63 and R64	R62 (c. 15 m), R63 (c. 15 m), and R64 (c. 15 m)	Three properties (High Trees, Field View and Thornbank) all directly adjacent and accessible from the A1.
R47	c.114 m	Helm (2 properties) located approximately 114 m from the Order Limits and accessible via an unnamed road.
R46	c.255 m	Home Cottage located approximately 255 m from the Order Limits and accessible via an unnamed road.
R41, R42, R43, R44	R41 (c. 295 m), R42 (c. 355 m), R43 (c. 250 m), R44 (c. 305 m),	These four properties are located off an unnamed road to the east of Part A, approximately 250-300 m from the Order Limits.
R31, R32, R33, R44	R31 (c. 325 m), R32 (c. 275 m), R33 (c. 305 m), R44 (c. 305 m),	A number of properties (6) accessible via Felton Road that also provides access to residential properties in Hemelspeth.
R27 and R28	R27 (c.50 m), and R28 (c.155 m),	Two residential properties (Hemelspeth and Glenshotten) located approximately 700 m from the A1 along the same road as Thirston New Houses, further north west.
R20 and R21	R20 (c.315 m), and R21 (c.320 m),	St Mary's House and Felton Park located approximately 320 from the Order Limits, to the north of Felton Park. Accessed via an unnamed road to the east of the A1 that also provides access to Felton Park.
R7 and R8	R7(c.435 m), and R8 c.345 m),	Cowslip Cottage (3 properties(R7)) and Cowslip Hill (3 properties (R8)), located 345 m and 435 m from the Order Limits and both accessed via the B6345.

Property / Properties ID	Approximate Distance from the Order Limits	Location Description
R1	c.340 m	Shortlaw Cottage (3 properties), located approximately 340 m from the A1 and accessible via an unnamed road which exits the A1 north of Felton.

12.7.54. 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

12.7.55. 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.

12.7.56. The commercial properties listed in **Table 12-27** below are located within 500 m to the west of the northbound carriageway and are shown on **Figure 12.2: Commercial Properties and Community Receptors**, **Volume 5** of this ES (**Application Document Reference: TR010041/APP/6.5**).

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

Commercial Property ID	Commercial Facility	Location
C01	Heighley Gate Retail Centre	Located approximately 500 m to the west of the A1 and access via the A697.
C02	The Oak Inn	Accessed via a loop road off the A1 in an area known as Causey Park Bridge.
C03	Causey Park Bridge Cafe	Accessed via a loop road off the A1 in an area known as Causey Park Bridge.
C04	G Youll & Son Fencing	Accessed via a loop road off the A1 in an area known as Causey Park Bridge.
C05	Burgham Park Golf & Leisure Club	Accessed via Burgham Park Road which has direct access from the A1.
C06	Coquet Cottages (shown as Sunflower and Clover Cottage)	Accessed via Burgham Park Road which has direct access from the A1.
C07	Bywell Shooting Ground	Accessed via Burgham Park Road which has direct access from the A1.

Commercial Property ID	Commercial Facility	Location
C08	Northumberland Canine Centre	Accessed via an unnamed road in an area known as West Moor Plantation.

12.7.57. The commercial properties listed below are located within 500 m of the Order Limits to the east of the northbound carriageway and are shown on **Figure 12.2: Commercial Properties and Community Receptors**, **Volume 5** of this ES (**Application Document Reference: TR010041/APP/6.5**).

Table 12-28 - Commercial Properties to the East within 500 m of the Order Limits

Commercial Property ID	Commercial Facility	Location
C09	Alnorthumbria Veterinary Practice	Accessed via the A192 to the east of the A1.
C10	Jet Petrol Station	Accessed via the A192 to the east of the A1.
C11	Londis Supermarket	Accessed via the A192 to the east of the A1 directly adjacent to the petrol station.
C12	The Quilt Shop	Accessed via the A192 to the east of the A1 directly adjacent to the petrol station.
C13	Jackson G K & Sons	This commercial facility has direct access from the A1 and via a loop road.
C14	Felmoor park holiday accommodation which comprises a number of cabins	Accessed via a number of roads to the east of the A1 to the north of Burgham Park Underbridge.
C15	Bockenfield Holiday Park	Accessed via a loop road off the A1 towards Eshott Airfield.

Commercial Property ID	Commercial Facility	Location
C17	Eshott Airfield	Accessed via a loop road off the A1 to the south of Eshott Airfield.
C18	Northumberland Woodland Burials	Accessed via a loop road off the A1 to the south of Eshott Airfield directly adjacent to Part A.
C19	Thurston Garage	Located adjacent to the River Coquet and accessed via The Perth which forms part of the B6345 which connects to the A1.
C20	Command Zone Paintball	Accessed via a loop road off the A1 to the south of Eshott Airfield approximately 480 m from Part A.

12.7.58. The sensitivity of existing commercial properties listed in **Table 12-27** and **Table 12-28** above is considered to be high as these are receptors with limited capacity to absorb change.

Community Facilities

12.7.59. There are no designated open spaces, land designated under the CRoW Act or other community assets such as allotments within the Order Limits. The following community assets are within 500 m of the Order Limits, and are identified on **Figure 12.2: Commercial Properties and Community Receptors**, **Volume 5** of this ES (**Application Document Reference: TR010041/APP/6.5**):

a. Fairmoor Cemetery (Item A on **Figure 12.2**).
b. Northgate Hospital (Item B on **Figure 12.2**).
c. Tritlington Church of England First School (Item C on **Figure 12.2**).
d. h of St Michael and All Angels (Item D on **Figure 12.2**).
e. Felton Surgery URC Church (Item E on **Figure 12.2**).
f. Felton Church of England Primary School (Item F on **Figure 12.2**).
g. Felton Post Office (Item G on **Figure 12.2**).
h. Felton Recreation Field (Item H on **Figure 12.2**).

Recreational Facilities

12.7.60. Due to Northumberland having a significant amount of open land, outdoor recreational facilities are popular throughout the region. As such, the towns of Morpeth and Felton

service the recreational needs of relatively large catchments. The recreational facilities within the Study Area are:

a. Burgham Park Golf and Leisure Club, located to the west of Part A.
b. Felton Park, located to the north of the River Coquet and east of Part A.
c. A portion of St Oswald's Way which is a long-distance walking route in Northumberland. Some of the route follows the River Coquet and coincides with the point where the A1 crosses the River Coquet.

12.7.61. There are a number of organisations which utilise the Study Area and surrounds for recreational purposes. These include organisations for angling (such as the West End Anglers) and canoeing and other types of boating.

12.7.62. Within the Study Area, the Northumberland Open Space Study identifies only one greenspace area, which is classified as Amenity Greenspace (AGS). Felton AGS is located to the east of the carriageway, north of the River Coquet between PRoW 115/013 and 115/008, within the Study Area but outside of the Order Limits. There are no other open or greenspaces identified within the Study Area.

Agricultural Land Holdings

12.7.63. The Agricultural Assessment in **Appendix 12.1: Agricultural Assessment** (**Confidential**), **Volume 7** of this ES (**Application Document Reference: TR010041/APP/6.7**) outlines the agricultural impacts from construction and operation of Part A. The assessment of land use in relation to Part A is focused on agricultural fields which the Part A route intersects. The soil quality is reported within **Chapter 11: Geology and Soils** of this ES.

12.7.64. As reported in **Appendix 12.1**, there are 18 agricultural land holdings of which 10 responded to the questionnaire. These range from 45 ha to 800 ha and are a mix of arable, mixed and grazing livestock farms. These lie within the Order Limits and / or would be directly affected by Part A. The Agricultural Assessment assumes that the types of businesses represented by the 10 responders accurately reflects the types that would be shown if all 18 businesses had chosen to respond. Agricultural land (and the relevant land holdings) considered within the assessment is shown in **Figure 12.3: Agricultural Land Plan**, **Volume 5** of this ES (**Application Document Reference: TR010041/APP/6.5**).

12.7.65. A summary description of the agricultural land holdings and their sensitivity is set out in **Table 12-29**.

Table 12-29 – Agricultural Land Holdings within the Order Limits

Agricultural Land Holding	Holding Characteristics	Sensitivity
Bywell Farm	365 hectares of predominantly arable land 313 ha Owned & 52 ha Short Term Tenancy.	Low (Farm) High (Shooting Ground)

Agricultural Land Holding	Holding Characteristics	Sensitivity
	Major additional non-agricultural enterprise: Bywell Shooting Ground, clothing and gun shop.	
Thirston New Houses	100 hectares, the majority of which is owner occupied. 70% of the land is in arable production with 30% grassland. Non arable stock consists of 100 ewes. The area of land affected is occupied under a Farm Business Tenancy (FBT).	Low
Hebron West Farm	800 hectares (700 ha owned, 100 ha rented under a FBT). The land is in an arable rotation with a variety of crops. 20% of the land is cropped with high value produce each year.	Low
Clarehugh	The land extends to 10 ha of owner occupied woodland and includes a woodland burial site.	High
Hemelspeth Farm	45 hectares of permanent pasture which supports, 20 suckler cows, 20 followers, 200 ewes and 4 four rams.	Medium
Highlaws	231 hectares and is a mix of owned, long term tenancy, short term tenancy and land on a grazing licence. The land is predominantly grassland with some temporary grass rotated with arable crops. Two cuts of silage are made on 44 ha. There are 584 cattle on the farm including 220 suckler cows.	Low
Causey Park	607 hectares, the majority of which is in an arable rotation which includes a three year grass lay with a further 116 hectares of permanent pasture. One or two cuts of silage are made from some of the grassland.	Medium

Agricultural Land Holding	Holding Characteristics	Sensitivity
	The holding supports 335 cattle and 570 sheep. Diversified enterprises include: New Houses Farm Holiday Let and New Houses Farm Livery. Causey Park also own Eshott Heugh Farm to the East side of current A1. There is further diversified income generated here including further commercial lettings and the Northumberland Zoo.	
Hebron Hill	254.95 hectares, the majority of which is in arable rotation which includes some temporary grassland, the remainder is permanent pasture with some woodland. One or two cuts of silage are made from some of the grassland. The holding supports 401 cattle and 50 sheep. The holding is split between Hebron Hill Farm and South Linden Farm at Longhorsley.	Medium
East Fenrother Farm	82.37 hectares of owner occupied land plus 82.37 hectares occupied on short term agreements. No details of farming system given however some land held on grazing licence which would suggest grazing livestock as a principle enterprise.	Low
West Moor	211.53 hectares let on a five year FBT. Rotation of various crops.	Low
Other 8 non-represented agricultural land holdings (A-H outlined below)	Mixture of AHA, FBT and short term grazing agreements/contract farming agreements. Small and large farms. No clear loss of infrastructure. Assumed that some flexibility is possible in terms of farm management.	Medium
A		Low
B		Negligible (Land not used for agriculture)
C		Medium

Agricultural Land Holding	Holding Characteristics	Sensitivity
D		Low
E		Low
F		Low
G		Low
H		Low

Source: **Appendix 12.1: Agricultural Assessment (Confidential)**, **Volume 7** of this ES (**Application Document Reference: TR010041/APP/6.7**).

12.7.66. Further details, in relation to each of the parcels, are provided in Appendix 12.1: Agricultural Assessment (Confidential), Volume 7 of this ES (Application Document Reference: TR010041/APP/6.7).

ECONOMY AND EMPLOYMENT

12.7.67. The National Office of Labour Market Statistics (**Ref. 12.21**) 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

12.7.68. 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.

12.7.69. The ONS Labour Market Profile indicates that in comparison to the England average, a lower proportion of the population of Northumberland are in employment (67.9% in Northumberland compared to 69.9% nationally). A higher proportion of the population of Northumberland is economically inactive compared to the national average. This suggests that the local economy in Northumberland is performing poorly compared to the national average.

12.7.70. As shown in **Table 12-30**, Pegswood has a slightly higher rate of economic activity and slightly lower unemployment rate than the Northumberland and national average. By comparison, rates in Amble West with Warkworth, and Chevington with Longhorsley are slightly lower than the Northumberland and England averages.

Table 12-30 - Economic Activity Data

Area/Ward Name	All usual Residents aged 16 to 64 (2011)	All usual Residents aged 16 to 64 (2017)	Economically Active (2011)	Economically Active (2017- 2018)	Economically Inactive (2011) (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%	22.7%	26.0%
Amble West with Warkworth	3,180	Data not available	63.3%	Data not available	24.6%	Data not available
Shilbottle	3,678	Data not available	67.8%	Data not available	21.6%	Data not available
Chevington with Longhorsley	4,428	Data not available	58.9%	Data not available	34.9%	Data not available
Pegswood	2,867	Data not available	71.4%	Data not available	20.8%	Data not available

Employment by Industry

12.7.71. The proportion of people in Northumberland employed in the Manufacturing (10.9%) and Accommodation and food service activities (10.9%) sectors is approximately four percentage points higher on average than within the four wards local to Part A (**Ref. 12.20**). By contrast, rates of construction are approximately twice as high in the four wards compared with Northumberland levels (4.0%) and public administration and defence; compulsory social security activities are between three and four times as high as rates in Northumberland (3.5%).

12.7.72. There is a similar split in the employment rates by industry across all four ward areas, with the only statistically significant difference being a lower rate of employment in the Agriculture, forestry and fishing, and Mining and quarrying industries in Pegswood (1.2% and 0.4% respectively) compared with the other wards.

Table 12-31 - Employment by Industry in the Study Area 2011

Industry	Amble West with Warkworth	Chevington with Longhorsley	Pegswood	Shilbottle	Northumberland
A Agriculture, forestry and fishing	2.4%	3.0%	1.2%	4.3%	2.5%
B Mining and quarrying	1.1%	1.4%	0.4%	1.0%	0.2%
C Manufacturing	6.4%	7.0%	7.5%	6.0%	10.9%
D Electricity, gas, steam and air conditioning supply	0.7%	0.2%	0.4%	0.3%	0.3%
E Water supply; sewerage, waste management and remediation activities	0.6%	0.6%	1.5%	0.3%	1.5%
F Construction	8.0%	8.9%	7.2%	8.0%	4.0%
G Wholesale and retail trade; repair of motor vehicles and motor cycles	13.1%	12.0%	15.9%	13.1%	15.8%
H Transport and storage	3.6%	3.3%	3.7%	3.4%	3.5%
I Accommodation and food service activities	6.4%	5.4%	6.0%	7.6%	10.9%
J Information and communication	2.2%	1.8%	2.4%	2.2%	1.2%
K Financial and insurance activities	2.2%	1.7%	1.8%	1.2%	0.7%
L Real estate activities	1.6%	1.3%	0.9%	1.5%	1.7%
M Professional, scientific and technical activities	6.0%	4.5%	4.6%	6.7%	5.9%
N Administrative and support service activities	3.3%	4.0%	3.9%	3.6%	5.9%
O Public administration and defence; compulsory social security	12.8%	16.0%	9.8%	10.7%	3.5%
P Education	10.5%	8.0%	7.8%	11.4%	8.9%

Industry	Amble West with Warkworth	Chevington with Longhorsley	Pegswood	Shilbottle	Northumberland
Q Human health and social work activities	14.2%	16.2%	20.0%	13.3%	18.8%
R, S, T, U Other	4.8%	4.6%	5.0%	5.4%	5.7%
All categories	1,882	2,366	1,903	2,362	146,901

HUMAN HEALTH

12.7.73. 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

12.7.74. 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 12-32** to **Table 12-34**.

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

12.7.76. The PHE health profile for Northumberland therefore indicates that the health of the Northumberland population is slightly worse than the England average. Instances of poorer health than the England average include:

a. Rates of child obesity in children aged 10-11 years old 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.

12.7.77. However, mortality rates in Northumberland for those under 75 from cardiovascular diseases is lower than the national average.

Table 12-32 - Indicators of Population Health for Northumberland Compared with England

Indicator	Indicator value	Period	Local value	England value
Obese children (year 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 the population aged under 75	2014-16	72.7	73.5
Under 75 mortality: cancer	Per 100,000 of the 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 England average, with lower rates of smoking and higher rates of participation in physical activity than the England averages, as shown in **Table 12-33**.

Table 12-33 - Indicators of Lifestyle for Adults in Northumberland Compared with England

Indicator	Indicator value	Period	Local value	England value
Smoking prevalence in adults	Percentage	2017	13.0	14.9
Percentage of physically active adults	Percentage	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 England 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 profile data therefore indicates that the health and level of education of children in Northumberland is slightly poorer than the national average, as shown in **Table 12-34**.

Table 12-34 - Indicators of Childhood Health in Northumberland Compared with England

Indicator	Indicator value	Period	Local value	England value
Children in low income families (under 16s)	%	2015	16.7	16.8
Obese children (Year 6)	%	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 12-35**.

Table 12-35 - Indicator 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. 12.30**) 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; hence the most deprived area is indicated by 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 fall within the 50% most deprived areas in England, and 14 of which are within the 10% most deprived areas in England. Part A would pass through 3 LSOA's, as shown in **Table 12-36.**

Table 12-36 - LSOA's Crossed by Part A

LSOA Name	IMD	% Deprivation Group
Northumberland 015B	14,877	50% most deprived
Northumberland 015C	22,872	40% least deprived
Northumberland 006E	28,501	20% least deprived

Health Summary

12.7.84. Part A is located in an area which experiences an inequality in health, has areas of deprivation and where overall, the health of the population is worse than 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 health status. Therefore, based on criteria shown in **Table 12-11**, human health receptors are expected to have a **medium sensitivity** to Part A.

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.

FUTURE BASELINE

12.7.87. According to the ONS 2016-based sub-national population projections (**Ref. 12.27**) (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.

12.7.88. Population trends over the next 25 years would 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. 12.27**).

12.7.89. 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.

12.7.90. 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. 12.31**). Part A 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 slight counteractive effect through the NCC'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.

12.7.91. Without Part A, driver stress is likely to increase along the A1. 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

VEHICLE TRAVELLERS

Views from the Road

Construction

12.8.1. In the short term, vegetation screening along the carriageway would be reduced to facilitate the construction of Part A. This may result in a less pleasant road user experience in some locations such as between Tritlington and Northgate where the loss of some of the trees that make up Coronation Avenue would erode the distinctive roadside landmark that contributes to the road users experience.

Operation

12.8.2. Views from the road immediately following completion would be more pleasant than during the construction phase of Part A. Immediately post construction and prior to the

establishment of the proposed planting views from the road would be unrestricted in locations at grade or set on embankments, allowing broader views of the surrounding countryside. However, this would change, such that by the Year 15 following completion, views experienced by travellers would be comparable to those currently experienced as outlined in **Section 12.7**, as vegetation matures and screens or restricts views of the wider landscape, albeit within the broader, dual carriageway highway corridor.

Driver Stress

Construction

12.8.3. During construction there would be some temporary disruption to motorised travellers on the A1 and surrounding road network, on the online widening section, particularly the A697 to the west of Part A and the road between Morpeth and Hebron. However, between Fenrother and Burgham Park, the extent of disruption to traffic flows on the existing A1 would be minimised as this is the offline section of Part A.

12.8.4. As detailed within the **Construction Traffic Management Plan** (**Application Document Reference: TR010041/APP/7.4**), there would be a series of diversions required during the construction period, which would be limited to night time and weekend periods. Northbound traffic would be diverted via the A1 north, Morpeth Bypass, A197, A189, A1068 Coast Road, Alnwick A1 north for all traffic types. The diversion would be approximately 45 km in length. The southbound diversion for cars and local traffic would be via the A1 south Alnwick, B6346, B6341 and A697 (which would be approximately 35 km in length) while the southbound diversion would be via the A698 and A697 for HGV and long-distance traffic. It is anticipated that there would be 23 nights of southbound diversions and 23 nights of northbound diversions required during the construction of Part A.

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

Operation

12.8.6. The section of the existing A1 that is to be bypassed would be de-trunked (i.e. would cease to be a trunk road) and would form part of the local highway network. Once in operation, the new arrangement would serve to separate strategic, long-distance traffic from local traffic, reducing driver stress for local journeys and making local journeys safer.

12.8.7. Once in operation, it is anticipated that driver stress would be reduced on the existing A1 due to the additional capacity provided by Part A which would improve resilience; improve journey times; improve journey time reliability; and improve safety along the route.

EFFECTS ON COMMUNITIES

Community Severance

Construction

12.8.8. Eighteen of the thirty PRoWs identified within the Study Area would be directly affected by Part A and would be temporarily closed during construction.

12.8.9. A summary of potential effects on PRoW and their users within the Study Area is shown in **Table 12-37**. Those PRoW that are within the 500 m Study Area, and listed in **Table 12-23**, but are not in **Table 12-37** are not considered to be affected by Part A.

12.8.10. If a PRoW is being permanently closed, it is assumed that this would occur during construction and continue throughout the operation period. Where a permanent diversion is to be provided, it is assumed that this would be undertaken early on in the construction period in order to maintain public use. 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/APP7.4**).

Table 12-37 - Summary of Potential Construction Impacts (without mitigation) on PRoWs within the Study Area

PRoW Ref.	PRoW Type	Description	Level of Severance (based on the 3 points scale in DMRB Volume 11, Section 3, Part 8 (Ref. 12.13))
407/019	Bridleway	Located to the west of Part A in Fair Moor, this bridleway is likely to be temporarily closed as it connects to the existing A1.	Slight adverse
407/013	Footpath	Located to the west of Part A in Fair Moor, this footpath is likely to be temporarily closed as it connects to the existing A1.	Severe adverse
407/010	Bridleway	This bridleway connects Northgate Farm/West Shield Hill Cottage with the A697 and the adjacent road network. During construction the bridleway would be required temporarily closed to construct Part A as it currently connects to the existing A1 where works are proposed.	Severe adverse
407/018	Footpath	This footpath starts at the eastern side of the A1 at Hebron Road and extends south for approximately 1.4 km to Warreners House which is located approximately 900 m east of Part A. During construction this would be temporarily closed to enable the proposed PRoW (running from Highlaws Junction to the start of the offline section of Part A) to be completed.	Severe (assuming WCH use road network as an alternative route) adverse
407/001	Footpath	During construction this footpath would be permanently terminated and there would be no method in place to cross the A1. This would increase journey times for users or limit options for recreational use of the area.	Moderate adverse
407/002	Footpath	The footpath would be severed and there would be no method in place to cross the A1 whilst the permanent diversion is completed. As 407/001 and 407/002 are connected this would make the two connected paths have dead ends at two points which currently have access to the A1. This would limit options for recreational use of the area as the footpaths would be temporarily closed during construction.	Slight adverse
423/001	Footpath	During construction this footpath would be temporarily closed until the footpath is diverted onto a new alignment across the proposed Fenrother Junction. Therefore, WCH provision would be limited in this area during the construction period.	Moderate (assuming WCH use the road network as an alternative route) adverse
423/002	Footpath	During construction access to this footpath would be impacted as currently it intersects with the A1. It would be required to be temporarily closed during construction until the footpath is diverted onto a new alignment, increasing journey times and reducing WCH provision in the area.	Slight (assuming WCH use the road network as an alternative route) adverse
423/006	Footpath	The footpath on both the eastern and western side of Part A would be severed by the offline section and permanently closed. This would reduce WCH facilities provision in the area.	Severe adverse
423/007	Footpath	During construction this footpath would be required to be permanently closed to enable the construction of the offline option. This would reduce access to New Houses Farm and increase journey times for WCHs.	Severe adverse
423/013	Footpath	This footpath would be severed by the A1. However, 423/017 would be diverted on the eastern side of Part A to Causey Park Overbridge. This footpath would be closed until the diversion of the footpath is complete, increasing journey times and reducing WCH provision in the area.	Moderate (assuming WCH would use road network as an alternative route) adverse.
422/002	Footpath	The footpath would be temporarily closed during construction of the new bridge over the River Coquet. This would reduce access to the River Coquet and has the potential to impact on the number of recreational activities usually undertaken in and around the river area that rely on this access.	In combination with closures of PRoW north of the river this would be severe adverse impact.

PRoW Ref.	PRoW Type	Description	Level of Severance (based on the 3 points scale in DMRB Volume 11, Section 3, Part 8 (Ref. 12.13))
422/020	Footpath	The footpath would be temporarily closed during construction to enable the construction of the new bridge over the River Coquet. This would reduce access to the River Coquet and has the potential to impact on the number of recreational activities usually undertaken in and around the river area that rely on this access.	In combination with closures of PRoW north of the river this would be severe adverse impact.
115/009	Footpath	The footpath would be temporarily closed during construction of the new bridge over the River Coquet as the footpath connects to 115/013 which would be closed during construction. This would reduce access to the River Coquet and has the potential to impact on the number of recreational activities usually undertaken in and around the river area that rely on this access.	In combination with closures of PRoW south of the river this would be severe adverse impact.
115/013	Footpath	This footpath would be temporarily closed due to construction of the River Coquet Bridge. This is likely to increase journey times and reduce amenity for those users of the route due to proximity to proposed construction. This would reduce access to the River Coquet and has the potential to impact on the number of recreational activities usually undertaken in and around the river area that rely on this access.	In combination with closures of PRoW south of the river this would be severe adverse impact.
115/008	Footpath	There is an underpass in close proximity to the route and, whilst it is not a designated PRoW, it is used by WCHs. During construction this would be temporarily closed which would increase journey times for WCHs and reduce the ability safely cross the A1 from east to west.	Severe adverse impact.
115/016	Footpath	This footpath would be temporarily closed during construction PRoW reducing connectivity to PRoW 115/016 to 115/008. This would increase journey times for WCHs and reduce connectivity from west to east of the A1.	Severe adverse impact.
422/011	Footpath	Footpath connecting Burgham Park Road to the A1 which runs through the Burgham Park residential area. During construction this is likely to be partially closed at the end which reaches the A1 so that Part A and proposed PRoW can be constructed. This would reduce WCH provision in the area and access to Burgham Park.	Severe (A1 has no pedestrian provision in this location to provide alternative) adverse impact.

12.8.11. During construction, traffic management systems and diversion routes may lead to some traffic being rerouted onto local roads, in particular the A697. These diversions, and the associated congestion, could result in new community severance along the route, in particular for people trying to travel from Tritlington and Hebron across Part A to the west or from Longhorsley to the north or south.

12.8.12. The existing non-designated footways along the southbound carriageway of the A1, between Morpeth and Espley and Tritlington and Causey Park (which will be on the de-trunked section of the existing A1) will be retained. However, there may be some temporary disruption to the section of footway south of Espley during construction due to construction works.

12.8.13. The following bus stops would be removed as part of Part A:

a. The existing bus stops on the northbound and southbound carriageways at chainage 10959 near Warreners House would both be removed.
b. The existing bus stops on the northbound and southbound carriageways between chainages 12000 and 12200, at Hebron Road End, would both be removed.
c. The existing bus stops on the northbound and southbound carriageways at Low Espley Road End, at chainage 13300. On the A697 at Espley (outside of the Order Limits), a bus stop on both the northbound and southbound carriageways would be formalised including the provision of new bus stop signs (with further detail, for example new street furniture and road markings) to be confirmed at the detailed design stage of Part A).

12.8.14. It is assumed for the purposes of the assessment that the bus stops listed above would also be closed during construction of Part A. The exact location of temporary provision would be developed at the detailed design stage in conjunction with Arriva and NCC as the Highway Authority. These closures would impact on people's ability to travel from the communities between Morpeth and Felton to travel both north and south to Morpeth and Felton to access goods and 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 goods and services.

Operation

12.8.15. Eleven PRoWs would be directly affected by Part A and would be permanently closed or diverted during operation.

12.8.16. 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 12-38**.

Table 12-38 - Summary of Potential Operation Impacts on PRoWs within the Study Area

PRoW Ref.	PRoW Type	Description	Level of Severance
407/018	Footpath	This footpath currently runs from Hebron Road to the existing A1 via a property on Hebron Hill. Instead of stopping at the A1 (where there is currently no WCH provision), the footpath would connect to the proposed PRoW running from the proposed Highlaws Junction to the start of the offline portion of Part A. This connection to the proposed PRoW would also mean that PRoW 407/018 would be linked to PRoW 407/001, increasing the length of footpath which users can utilise. The proposed PRoW would run from Hebron Road to the east of proposed Highlaws Junction and would run parallel to the A1 until the River Lyne. Existing PRoWs 407/001, 407/002 and 407/018 would connect into the proposed PRoW to create a continuous stretch of footpath from the south to the north for approximately 2 km.	No change to existing PRoW Provision of new link with Footpath 407/001.
407/001	Footpath	Currently, as this footpath is not easily accessible from the A1 (where there is currently no WCH provision), it is proposed that the PRoW is linked south to PRoW 407/018 on the eastern side of the A1, to increase connectivity. It is also proposed to be extended north to tie in with the de-trunked section of the A1 by Priest's Bridge. Adverse effects anticipated as the footpath would be severed from the west and there would be no method in place to cross the A1. The proposed PRoW would run from Hebron Road to the east of proposed Highlaws Junction and would run parallel to the A1 until the River Lyne. Existing PRoWs 407/001, 407/002 and 407/018 would connect into the proposed PRoW to create a continuous stretch of footpath from the south to the north for approximately 2 km.	Two short sections of existing PRoW connecting to A1 to be stopped up, and PRoW to be extended north to unclassified road. Provision of new link with Footpath 407/018 at the south.
407/002	Footpath	This footpath would connect to the proposed PRoW which would run from Hebron Road to east of proposed Highlaws Junction. However, the connection to the proposed PRoW gives users more options of places to go on the eastern side of Part A. The proposed PRoW would run from Hebron Road to the east of proposed Highlaws Junction and would run parallel to the A1 until the River Lyne. Existing PRoWs 407/001, 407/002 and 407/018 would connect into the proposed PRoW to create a continuous stretch of footpath from the south to the north for approximately 2 km.	No change
423/001	Footpath	Part A would sever this route with no provision for WCHs travelling west. Users would be diverted north to Fenrother Junction. Adverse effects due to the proposed diversion to the north to Fenrother Junction (on both east and west side), thereby increasing journey times. A footway would be provided on the southern bound side of the carriageway at Fenrother Junction to allow for safe crossing.	Moderate adverse (assuming WCH use the road network)
423/013 and 423/017	Footpath	This footpath would be severed by the A1, and the western part of it stopped up. However, it would be diverted on the eastern side of Part A to Causey Park overbridge. A footway would be provided to divert users north and over the A1 on the southern side of Causey Park overbridge and would tie-in with PRoW 423/013 which would be stopped up by Part A.	Slight adverse
422/011	Footpath	A small section of this PRoW connecting to the A1 would be stopped up. There is no grade separated WCH route at this location and users would face a diversion to the north to tie-in with a proposed access track to Bywell Road. This would enhance this PRoW as currently the footpath stops just south of Bywell Road (where there is currently no WCH provision) and instead there would be a specific path at the end of the footpath connecting it to Bywell Road. WCH looking to travel east from the A1 at this location would be required to travel north to West Moor Junction, approximately 1km north to cross.	Slight beneficial due to provision of WCH facility segregated from the A1.

PRoW Ref.	PRoW Type	Description	Level of Severance
422/002	Footpath	A small section of this PRoW connecting to the A1 would be stopped up. The footpath would be diverted to the north and a new PRoW constructed to replace it which would run underneath the River Coquet Bridge and connect to PRoW 422/020 on the eastern side of the River Coquet. Users would need to access to new portion of the footpath via steps. This would enhance the users experience as they would no longer have to cross the A1 to get to the eastern side of Part A.	Slight beneficial
422/020	Footpath	A small section of this PRoW connecting to the A1 would be stopped up. The footpath would be diverted to the south via some access steps and connect to PRoW 422/002 on the western side. The new portion of the footpath which connects PRoW 422/020 and 422/0002 would run underneath and the existing and proposed River Coquet Bridges. This would enhance the users experience as they would no longer have to cross the A1 to get to the western side of Part A.	Slight beneficial
115/009	Footpath	A small section of this PRoW connecting to the A1 would be stopped up and realigned. This is a footpath on the northern side of the River Coquet which forms a portion of the St Oswald's Way. This currently crosses the A1 and would be diverted underneath the new structure on the northern side of the River Coquet. Apart from the presence of a new structure, this is likely to have a negligible impact on user experience.	Slight beneficial
115/008	Footpath	A small section of this PRoW connecting to the A1 would be stopped up. This PRoW connects to PRoW 115/009 and continues west towards the A1. There is an underpass in close proximity to the route and, whilst it is not a designated PRoW, it is used by WCHs. Upgrading this route to a recognised PRoW would assist WCHs in crossing the A1 at this point and enhance connectivity with PRoW 115/016.	Slight beneficial
115/016	Footpath	A small section of this PRoW connecting to the A1 would be stopped up. There is an underpass in close proximity to the route and, whilst it is not a designated PRoW, it is used by WCHs. Upgrading this route to a recognised PRoW would assist WCHs in crossing the A1 at this point and enhance connectivity between PRoW 115/008 and PRoW 115/008.	Slight beneficial

12.8.17. During operation, there are potential changes to the amenity of PRoW users and WCH (both spatially and temporally) through the new alignment of Part A. Permanently diverting traffic from the A1 onto the new offline section of Part A near to Tritlington Church of England School would reduce traffic near to the school, making it safer for people to access and increasing amenity for the school.

12.8.18. In areas where de-trunking of the A1 is proposed (between Priest's Bridge and Felmoor Park), amenity for community users is likely to increase as there would be comparatively less traffic on the road as it would be diverted to the new section of the A1.

Journey Amenity

Construction

12.8.19. 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 A

12.8.20. There is also a potential impact during construction on Tritlington Church of England First School. During construction of Part A, users and visitors to Tritlington Church of England School are likely to experience reduced amenity due to its proximity to proposed construction works and therefore an increase in noise/air quality pollutants as well as visual disturbance due to earthworks and the presence of plant/equipment. This could also be the case for visitors to Fairmoor Cemetery and Norgate Hospital, if arriving by non-motorised means. It is not considered that journeys for any of the other community facilities within 500 m of the Order Limits, listed under **paragraph 12.7.59**, would be affected.

Operation

12.8.21. Users of PRoW within the 500 m Study Area could experience loss or reduction of amenity due to noise and air quality effects, particularly for any that pass within 100 m of Part A. Users of footpaths 423/008 and 423/017 are likely to experience an improvement in amenity as they are in proximity to the section of the A1 which is to be de-trunked, resulting in lower volumes of traffic in close proximity.

PHYSICAL ASSETS AND LAND USE

Private Property

Construction

12.8.22. Part A requires the demolition of North Gate House, which is located opposite Northgate Farm, on the western side of the A1 approximately 100 m north of the A697 junction. This loss of private property is considered during the construction stage of Part A as the current owners of the house would no longer be able to live in their property from this point in time and recognised that this would be a permanent impact rather than a temporary loss.

12.8.23. A description is provided below of those residential properties that are likely to be impacted during the construction of Part A due to impacts on their existing access and/or land take

from the A1. A brief description of the potential impact is also provided for each of the properties identified.

12.8.24. Three temporary construction compounds are proposed to facilitate the construction of Part A:

a. The Main Compound would be located at the northern end of Part A, adjacent to the proposed West Moor Junction and accessible via Felton Road which is to the east of Part A.

b. A smaller satellite compound would be located in the southern area of Part A, adjacent to the proposed Fenrother Junction and accessible via Fenrother Lane.

c. The third compound would be required to the east of the Part A alignment, just south of the River Coquet. This would be used as the laydown area for the construction of the new bridge over the River Coquet Bridge.

12.8.25. The potential impacts from these compounds and the movements of construction vehicles between these compounds have also been considered in Table 12-39 below.

Table 12-39 - Summary of Potential Impacts on Private Properties during Construction without Mitigation

Property/Properties ID	Property	Description of Impact
Between Morpeth and Proposed Highlaws Junction		
R107, R108, R109, R110	The Lodge and Middle Rig, located on the unnamed road into Northgate Hospital and houses along West View Road.	Potential impact on access if the unnamed road is temporarily closed to enable construction works.
R100, R101, R102, R97	Warreners Properties (cottages, houses, house and complex).	Access would be affected temporarily as it is currently accessed via the A1.
No reference	Located opposite Northgate Farm, on the western side of the A1 approximately 100 m north of the A697 Junction.	During construction North Gate House is required to be demolished. There would be a permanent loss of private property.
R98	Northgate Farm	Construction works are proposed to the existing A1 which is adjacent to the property to the west and an access track is proposed to be constructed on the properties' eastern and northern boundary. Access would be affected temporarily as it is currently accessed via the A1.
R96	Capri Lodge	Access is likely to be affected temporarily as the property is currently accessed via the A1. Construction works are proposed to the existing A1 which is adjacent to the property to the west and an access track is proposed to be constructed on the properties' eastern and northern boundary.
R93	Strafford House	Access is likely to be affected temporarily as is currently accessed via the A1.
R94 and R95	High Highlaws Cottage and Farm	Construction works are proposed on High Highlaws Road for proposed High Highlaws Junction which may also affect access.
Between Proposed Highlaws Junction and Proposed Fenrother Junction there are no potential impacts envisaged.		
Between Fenrother Junction and Burgham Park Underbridge		
R70, R68, R66, R65	Earsdon Moor Farm, Tindale Hill Property, Earsdon Mill and New Houses Farm	As no works are proposed at this location on the existing A1 it is unlikely that access would be compromised for the properties which use this portion of the A1 for access.
R56, R57, R58, R59, R60, R62, R63, R64	Properties near to Causey Park	These properties would be located in between the current A1 and offline section of Part A. The offline construction would be constructed adjacent to these properties and the proposed diversion of the National Grid gas transmission pipeline would also be near these properties (to the west of the properties). Access to the properties is unlikely to be affected by both the construction of the offline section of Part A and the diversions of the National Grid gas transmission pipeline.
R50, R48	Causey Park Lodge, Causey Park Hag	This property is located adjacent to the existing A1 and is accessible via an unnamed road which Causey Park Overbridge would be constructed on. Although access to the existing A1 is unlikely to be compromised, there would be temporary disruption for those wishing to travel west on Causey Park Road as it would be severed during the construction of the overbridge.

Property/Properties ID	Property	Description of Impact
Between Burgham Park Underbridge and West Moor Junction		
R40	Blackwood Hall	This property is located adjacent to the existing A1 and is accessible directly from the A1. There is likely to be disrupted access.
R35, R36 and R37	The Cottage, West Moor House and West Moorhouses	These properties are located on the corner of the existing A1 and West Moor Road. During the construction of West Moor Junction residents would likely to be temporarily impacted due to the closure of West Moor Road during construction of Part A.
R34, R32	Thirston New Houses	The Main Compound is proposed to be located adjacent to West Moor Junction and accessible off Felton Road, approximately 70 m from this property. During construction residents would experience increased traffic along Felton Road.
Between West Moor Junction and the end of Part A (intersection with the B6345) there are no potential impacts envisaged.		

Operation

Access

12.8.26. There are proposed changes to private means of access and other access tracks along Part A which are described in **Chapter 2: The Scheme**, **Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**). An assessment of the potential impact on the access to residential properties is also provided below in **Table 12-40**.

Table 12-40 - Summary of Potential Impacts on Access to Private Properties during Operation

Properties/Property ID	Receptor	Description	Impacts
R100, R101, R102, R97	Warreners Properties (cottages, houses, house and complex)	These properties would no longer have direct access to the A1. A new 4.8 m proposed access track would connect Warrener's House to the currently closed cul-de-sac at the northern extent of West View Road.	Longer journey from the property to the A1 as residents are now required to access the A1 via St Leonards Junction at the end of the Morpeth Bypass. However, the access to the A1 is comparatively safer.
R96	Capri Lodge	This property would no longer have direct access to the A1. A new access tracks off the 'Warrener's House' track would be provided.	Longer journey from the property to the A1 as residents are now required to access the A1 via St Leonards Junction at the end of the Morpeth Bypass.
R98	Northgate Farm	This property would no longer have direct access to the A1. A new access track off the 'Warrener's House' track would be provided.	Longer journey from the property to the A1 as residents are now required to access the A1 via St Leonards Junction at the end of the Morpeth Bypass
R93	Strafford House	This property would no longer have direct access to the A1. Instead, an access track is provided, linking Strafford House to	Longer journey time to access the A1. However, this would be a safer access compared to the existing access.

Properties/Property ID	Receptor	Description	Impacts
		Hebron Road at proposed Highlaws Junction.	
R87 and R88	Hebron Hill Farm	The direct access from the A1 would be closed Instead a field access would be provided at proposed Highlaws Junction extending from Hebron Road parallel to Part A. The direct access from the A1 would be connected to this proposed field access.	Longer journey time to access the A1. However, this would be a safer access compared to the existing private access.
R65	New Houses Farm	In order to connect New Houses Farm to Part A , a proposed access track would connect the existing unnamed road that New Houses Farm is located on, to Causey Park Road in the north.	Longer journey time to access the A1. However, this would be a safer access compared to the existing access off the unnamed road.

12.8.27. Other residential properties which currently are accessible from the A1 would be unaffected as access would continue to be provided from the A1 or from the de-trunked section of the A1.

Commercial Property

Construction

12.8.28. During construction of Part A, commercial properties could experience disruption in access, which could potentially result in loss of passing trade. The following businesses (which are shown on **Figure 12.2: Commercial Properties and Community Receptors**, **Volume 5** of this ES (**Application Document Reference: TR010041/APP/6.5**)) 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. The Oak Inn
b. Causey Park Bridge Café
c. G Youll & Son Fencing

d. Northumberland Canine Centre
e. Alnorthumbria Veterinary Practice
f. Jet Petrol Station
g. Londis Supermarket
h. The Quilt Shop
i. Jackson G K & Sons
j. Thurston Garage

12.8.29. People staying at accommodation near to Part A may experience a temporary reduction in amenity due to dust, noise and vibration due to the proximity to the construction works. Accommodation providers within 500 m of Part A are Burgham Park Golf & Leisure Club, Coquet Cottages, Felmoor Holiday Park and Bockenfield Holiday Park. The impact would differ depending on what rooms the people stay in as many of accommodation providers offer cabin style accommodation. A worst case scenario would be assumed for the assessment. The following two accommodation providers are the closest to the proposed construction activities:

a. Felmoor park holiday accommodation which comprises a number of cabins
b. Bockenfield Holiday Park

12.8.30. Northumberland Woodland Burials is located directly adjacent to Part A, in-between the westernmost runway at Eshott Airfield and the existing A1. During construction, there is likely to be temporary adverse effects on the amenity from dust, noise and vibration due to the proximity to the construction works.

Operation

12.8.31. During operation, the businesses listed above in **Table 12-25** and **Table 12-26** 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.

12.8.32. Although some traffic would be diverted off the existing A1 to the offline section of Part A, this is unlikely to have an impact on the passing trade for businesses located to the north of Tritlington Church of England School. It is understood that Jackson G K & Sons (which is a commercial vehicle repair and recovery service), obtains the majority of its business from pre-booked appointments and the garage near to Felton (C19 on **Figure 12.2: Commercial Properties and Community Receptors**, **Volume 5** of this ES (**Application Document Reference: TR010041/APP/6.5**)) would still get passing trade from those coming from Felton, West Thirston and the section of the existing A1 which is not being duelled.

12.8.33. Northumberland Woodland Burials is located directly adjacent to Part A, in-between the westernmost runway at Eshott Airfield and the existing A1. During operation of Part A, there would only be a minor change to the planting on the north westernmost corner of the property which is not considered to be significant. As the business currently operates next to the existing A1 and Part A does not require any significant land take from the property, there

is not considered to be an adverse impact during operation on businesses activities at the property.

Community Facilities

Construction

12.8.34. The users of Fairmoor Cemetery, Northgate Hospital (both of which are accessed directly from the A1) and Tritlington Church of England First School (accessed from an unclassified road on the east of the A1) could experience some temporary reduction in amenity caused by construction works, due to their proximity to the works.

12.8.35. Felton Park is located to the north of the River Coquet between PRoW 115/005 and 115/013. The proposed carriageway is being constructed to the east of the existing carriageway and the vegetation which is located alongside the existing carriageway would be removed. Users of the park would experience a temporary reduction in amenity value of the park due to the proximity of construction works and the temporary removal of the vegetation which currently provides screening between the park and the A1. There would be no land take required from Felton Park, as it falls outside of the Order Limits.

12.8.36. In addition, there could be temporary disruption to traffic caused by construction works along the route, when looking to access these community facilities.

12.8.37. There would be no temporary or permanent land take required from community assets.

Operation

12.8.38. It is not anticipated that there would be any further impacts on users of the cemetery, hospital or Felton Park during operation.

Recreational Facilities

Construction

12.8.39. During construction of Part A, there is the potential for a change in amenity value and disruption to recreational facilities due to reduced access where construction is proposed.

12.8.40. The River Coquet is popular for recreational facilities such as angling and boating. Access to the river for boat users would not be impacted as boats would still be able to go under the bridge for the majority of the duration of construction works. There may be a few occasions where high risk activities over the river (such as the launching of heavy pieces of material) temporarily suspends boats from passing under the bridge. However, this would only be for a short duration of time and would not inhibit users from accessing the river as the location of the bridge is not where boats are launched into the water.

12.8.41. There would be an increase in plant and equipment around the River Coquet, particularly near to the existing bridge as haul roads are to be established down to the sites of the abutments and pier foundations and laydown areas prepared adjacent to each of these works' areas. Additionally, a tower crane would be utilised on the North and South embankments. The presence of the construction works, and plant materials are likely to

increase fear with regards to safety and reduce amenity value for users of the River Coquet and users of PRoW within vicinity of the River (PRoW 422/002, 422/020 and 115/009).

12.8.42. Felton Park is located to the north of the River Coquet between PRoW 115/005 and 115/013. The proposed carriageway is being constructed to the east of the existing carriageway and the vegetation which is located alongside the existing carriageway would be removed. Users of the park would experience a temporary reduction in amenity value of the park due to the proximity of construction works and the temporary removal of the vegetation which currently provides a buffer between the park and the A1. There would be no land take required from Felton Park, as it falls outside of the Order Limits.

12.8.43. There are not anticipated to be effects on other open spaces.

Operation

12.8.44. During operation of Part A, the presence of an additional structure over the River Coquet would not reduce access for existing users. Since the bridge would follow a parallel alignment to the existing bridge and is only a very small portion of the River Coquet, this is would not reduce amenity value for recreational users in and around the River.

12.8.45. The impact on recreational users of the PRoW next to the River Coquet is considered in **Table 12-38** above. The diversion of PRoW 422/002 underneath the bridge would increase safety and enhance access as users no longer have to cross the A1 and use the steep stairs down to the existing PRoW on either side of the bridge. As the portion of the PRoW which crossed the road would instead run alongside the River, amenity for users of path would also be enhanced. Currently PRoW 115/009 runs alongside the River Coquet underneath the bridge and it is proposed that this is amended to enable the new bridge to be constructed. As users of the path would still be crossing underneath the bridge next to the River there would not be an impact on amenity and access.

12.8.46. The proposed carriageway is being constructed to the east of the existing carriageway which would be closer to Felton Park, so traffic would be comparatively closer to the park. However, this is unlikely to have a discernible impact on the amenity of the park.

Agricultural Land Holdings

Construction and Operation

12.8.47. **Section 4.2.1** of the Agricultural Assessment in **Appendix 12.1: Agricultural Assessment** (**Confidential**), **Volume 7** of this ES (**Application Document Reference: TR010041/APP/6.7**) outlines the potential impacts during construction on agricultural land holdings along Part A. The assessment in **Table 12-41** is split into individual holdings where a response was received. Where limited information was available for those nine holdings which did not complete the questionnaire, assumptions have been made. Furthermore, **Table 12-41** and **Table 12-42** describe the impact for each holding during construction. It is assumed that impacts occur during construction and no new impacts would occur during operation.

Table 12-41 - Impacts during Construction on Agricultural Land Holdings

Agricultural Land Holding	Impact on Land Take	Impact on Severance	Impact on Nuisance	Impact on Holding
Bywell Farm	Loss of small tenanted field for drainage ponds and minor linear loss alongside of widened A1.	No severance as severed field would be lost to drainage ponds	The construction works have the potential to impact on the operation of the shooting ground at Bywell and impact adversely on non-agricultural enterprise income.	The construction works have the potential to adversely impact on the operation of the shooting ground at Bywell and impact adversely on non-agricultural enterprise income.
Thirston New Houses	Land loss on the eastern side of West Moor junction with additional linear land loss due to road widening. The land lost is tenanted on FTB.	Severance not anticipated.	Impact on drainage within retained land.	Slight reduction in viability of arable enterprise due to land loss.
Hebron West Farm	Quite significant areas of land loss due to diversion off the old route. While this is a small percentage of the overall landholding, Part A would still have an adverse impact on the farming of the blocks of land affected.	One field would be severed between Fenrother Burn and the new A1, no access has been provided.	Part A would cause adverse impact to the farming of the land, field size shape and boundaries and could potentially cause damage to the existing drainage infrastructure.	A manageable but adverse impact due to land loss and disruption to field pattern.
Clarehugh	Small area but important due to small scale of total landholding and the presence of an area of woodland to be lost.	Severance not anticipated.	Unlikely to impact on woodland burial business.	Not a farm business but the woodland burial business on site may be adversely affected by the loss of land and woodland.
Hemelspeth Farm	Small area but the affect is inflated by the small size of the land holding.	Severance not anticipated.	None anticipated.	Would reduce the viability of the business due to the intensive nature of the business on a small land area.
Highlaws	A reasonable area of landtake around Highlaws junction as well as some smaller areas of linier land take along the road frontage. Small proportion of total holding but should be minimised where possible.	Severance not anticipated.	Access affected during construction, land loss & field boundary disruption.	Would reduce the farmable area and could have knock on effect on the stock numbers on the holding.
Causey Park	Quite large areas of land loss due to diversion off the old route. This effect of this has been watered down by the scale of the landholding and therefore still a small percentage, however Part A would still have an adverse impact on the farming of Causey Park as a	Land severed by the new road, access provided but would no longer be able to move stock along private tracks. Accommodation works in the form of access or stock handling facilities should be investigated.	Substantial potential disturbance to the farm businesses and the many additional enterprises and commercial lets at Causey Park. Access needs to be maintained at all times and the effects of the new	The Farming business is of a large scale and it is the livestock enterprise that would be most affected due to the loss of private track access to the land to the east of the new road. The other adverse effect is on the large number of diversifications on the farm and

Agricultural Land Holding	Impact on Land Take	Impact on Severance	Impact on Nuisance	Impact on Holding
	previously ring fenced farm would now be split by the A1.		road on the farm mitigated where possible.	particularly those at New Houses which may have to be altered or adapted to take account of the close proximity to the new road.
Hebron Hill	A reasonable area of land take around Highlaws junction as well as some smaller areas of linear land take along the road frontage and the new access track. Small proportion of total holding (Including South Linden Farm) but should be minimised where possible.	Severance not anticipated but a new access road should be designed to avoid this. .	Access during construction is the main concern	Land area would be lost, and this could result in slightly reduced stock numbers, which means a reduction in turnover and potentially a reduction in profitability.
East Fenrother Farm	A reasonable area of land take around the junction as well as some smaller areas of linear land take along the road frontage. Small proportion of total holding but should be minimised where possible.	Possible small strip of severance which may need to be compensated for.	Access during construction is the main concern.	Land area would be lost, and this could result in slightly reduced stock numbers, which means a reduction in turnover and potentially a reduction in profitability.
West Moor	A reasonable area of land take around West Moor junction as well as some smaller areas of linear land take along the road frontage. Small proportion of total holding but should be minimised where possible.	Severance not anticipated.	Access during construction is the main concern	Land area would be lost which means a reduction in turnover and potentially a reduction in profitability.
Summary of the farm businesses where no questionnaire response was received including the most common and frequent impacts (Farms A to H, outlined separately below) A key for farms A – H is outlined in the **Agricultural Assessment** in **Appendix 12.1**: **Agricultural Assessment (Confidential)** of **Volume 3** (**Application Document Reference: TR010041/APP/6.3**) of this ES.	Due to the linear nature of the road and the relatively large average size of farm along the route, the percentage land take of farms is relatively small. There would be larger areas where Part A leaves the old route completely and where new junctions and crossing points are proposed. It is important to minimise the land take from Part A so as to reduce the impact on the farms and their viability.	The impact of severance is limited due to the current land boundaries and accesses having evolved around the existing A1. There is a section in the middle of the route where Part A is proposed to the west of the existing A1 and at this point there are areas where farmers are going to be left with land at both sides of the road when they have previously just been on the west. Land take at these points is to be minimised where possible to mitigate the effects of severance.	There would be a level of nuisance during construction although the level of this would be reduced once in operation and alternative access points are up and running.	The land take is in most cases a small proportion of the total farm, alternative accesses have been offered where required and the size and tenure of farms along Part A seem to be of a scale that would mean the impact on farm viability from Part A would be low.

Agricultural Land Holding	Impact on Land Take	Impact on Severance	Impact on Nuisance	Impact on Holding
A	Small area of land take from arable field.	Severance not anticipated.	Land loss and field boundary disruption.	Land area would be lost which means a reduction in turnover and potentially a reduction in profitability.
B	Very small area of unfarmed land taken.	Severance not anticipated.	Land loss and field boundary disruption.	No measurable impact.
C	Small areas of land take from grassland and woodland.	Severance not anticipated.	Land loss and field boundary disruption. Additional land used during construction.	Land area would be lost which means a reduction in turnover and potentially a reduction in profitability.
D	Small areas of land take from grassland and woodland.	Severance not anticipated.	Land loss and field boundary disruption. Additional land used for topsoil storage during construction.	Land area would be lost which means a reduction in turnover and potentially a reduction in profitability.
E	Small areas of land take from grassland.	Severance not anticipated.	Land loss and field boundary disruption.	Land area would be lost which means a reduction in turnover and potentially a reduction in profitability.
F	Small areas of land take from grassland and woodland.	Severance not anticipated.	Land loss and field boundary disruption.	Land area would be lost which means a reduction in turnover and potentially a reduction in profitability.
G	Small areas of land take from grassland and woodland.	Severance not anticipated.	Land loss and field boundary disruption.	Land area would be lost which means a reduction in turnover and potentially a reduction in profitability.
H	Small areas of land take from arable land.	Severance not anticipated.	Land loss and field boundary disruption.	Land area would be lost which means a reduction in turnover and potentially a reduction in profitability.

Table 12-42 – Magnitude of Impact per Farm Occurring in Construction

Farm	Description of Impact	Magnitude of Impact
Bywell Farm	There is a relatively minimal impact of the farming enterprise. The profitability of the shooting enterprise could be impacted if access is not maintained during construction	Low
Thirston New Houses	There would be a slight loss of profit from the loss of some land rented on a FBT. The main impact raised in the questionnaire response is the impact Part A has on the drainage of the retained land.	Negligible
Hebron West Farm	There would be a loss of profit from the loss of land. The main impact raised in the questionnaire response is the impact Part A has on the drainage of the retained land and the severance of a field between Fenrother burn and the A1.	Low
Clarehugh	The issue is the partial removal of the existing woodland between the A1 and the burial site.	Medium
Hemelspeth Farm	The main impact of land loss is the reduction of livestock that can be kept on the holding and the resulting impact on profitability and viability. Drainage is also to be considered.	Medium
Highlaws	The issues include access, degree of land take, drainage & reduction of stocking due to loss of land.	Low
Causey Park	There are significant issues with severance of land for use for grazing without crossing point or new handling facilities. Impacts on access, loss of land, proximity of previously isolated dwellings to the new road. Impacts on additional enterprises and commercial lets.	Medium
Hebron Hill	The issues include access, connectivity to other holding, degree of land take, drainage & reduction of stocking due to loss of land.	Low
East Fenrother Farm	The main impact of land loss and the reduction of livestock that can be kept on the holding and the resulting impact on profitability and viability. Drainage is also to be considered.	Low
West Moor	The impact of land loss and the resulting impact on profitability and viability. Drainage is also to be considered.	Low
A	The main impact of land loss and the resulting impact on profitability and viability.	Low
B	The main impact is land loss, land does not appear to be farmed.	Negligible

Farm	Description of Impact	Magnitude of Impact
C	The main impact of land loss and the resulting impact on profitability and viability.	Low
D	The impact of land loss and the resulting impact on profitability and viability.	Low
E	The impact of land loss and the resulting impact on profitability and viability.	Low
F	The impact of land loss and the resulting impact on profitability and viability.	Low
G	The impact of land loss and the resulting impact on profitability and viability.	Low
H	The impact of land loss and the resulting impact on profitability and viability.	Low

12.8.48. In addition to the impacts listed in the two tables above, there is a sheep track near to Parkwood Subway that is understood to currently utilised by nearby farms. This track would be temporarily impacted during the construction phase due to the construction of Parkwood culvert. The sheep track would be reinstated during operation.

ECONOMY AND EMPLOYMENT

Construction

12.8.49. The construction phase would commence in 2021 (mobilisation anticipated in December) and would be completed in 2024, as outlined in **Chapter 2: The Scheme**, **Volume 1** of this ES (**Application Document Reference: TR010041APP/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

12.8.50. No impacts on local economic receptors are predicted during operation of Part A.

12.8.51. Wider economic effects as a result of the operation of Part A 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

12.8.52. Part A 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 use of non-road mobile machinery. This is likely to result in a temporary adverse effect on nearby residents, commercial properties, community and recreational and PRoW users (refer to **Chapter 5: Air Quality** of this ES for further details).

12.8.53. It is expected that there would be an increase in noise and vibration levels during construction, which are 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).

12.8.54. The proposed works may cause a localised increase in flood risk during construction, particularly associated with in-channel works such as new culverts and watercourse crossings. 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

12.8.55. Part A has the potential to result in reduced air quality arising from increased emissions during operation, due to exhaust emissions from traffic on the local road network, considering the effects of the reassignment of traffic between routes and changes in traffic speed. It is expected that receptors along the de-trunked A1, the A697, and Main Street in Felton would experience an improvement in air quality due to reductions in traffic flows (refer to **Chapter 5: Air Quality** of this ES for further details).

12.8.56. The majority of noise sensitive receptors are predicted to experience a negligible change in noise levels in the long term. Major beneficial effects are predicted at nine properties located close to the existing section of A1 which would be re-classified, however, major adverse effects are predicted at three properties and moderate adverse effects are predicted at a single property (refer to **Chapter 6: Noise and Vibration** of this ES for further details).

12.8.57. Detailed modelling indicated that there would be no increase in fluvial flood risk to any upstream or downstream receptors or to Part A. In addition, the proposed surface water drainage system 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).

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 A aims to improve the experience of motorised travellers using the route and connecting roads. Appropriate signage for Part A 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 A would aim to accommodate WCHs, and either retain or improve access arrangements to both residential and commercial properties and community facilities.

12.9.5. Use of best practice design, with regards to safety of WCH, including lighting, 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. 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. This would be secured through the DCO.

12.9.7. Part A has been designed to include the following:

a. The proposed footways at the three new junctions link into the existing side roads. Pedestrians are accommodated by footpaths immediately to each side of the proposed junctions and across the new bridges. This increases linkages and provides safer pedestrian access across the A1.

b. The proposed Causey Park overbridge would be designed to safely carry both pedestrians and vehicular traffic.

c. The proposed Burgham Underbridge would be designed with access for pedestrians using hardened verges, and vehicular traffic, with clear visibility for all users.

d. A new segregated 3 m wide footway / cycleway would be provided along the length of the eastern side of the proposed link road, between the de-trunked A1 and Felton Road. This improves access and safety for cyclists alongside the A1.

12.9.8. Two bus stops are proposed to be relocated on the northbound and southbound carriageways from chainage 31500 to just north of the proposed Fenrother free-flow link road at chainage 31900. Two existing bus stops would be retained on the northbound and southbound carriageways, to the south of Burgham Park Underbridge at chainage 35500 to chainage 35600. On the A697 at Espley (outside of the Order Limits), a bus stop on both the northbound and southbound carriageways would be formalised prior to operation, including the provision of new bus stop signs (with further detail, for example new street furniture and road markings) to be confirmed at the detailed design stage of Part A).

Physical Assets and Land Use

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

MITIGATION MEASURES

Construction

Vehicle Travellers

Driver Stress

12.9.10. Part A 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 A would aim to accommodate WCHs, and either retain or improve access arrangements to both residential and commercial properties and community facilities.

12.9.12. Prior to construction, the main contractor would develop a PRoW Management Plan. 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 Reference: TR010041/APP/7.4**).

12.9.13. Temporary bus stop provision would be provided during construction of Part A, the locations of which would be developed at the detailed design stage in conjunction with Arriva and NCC as the Highway Authority.

12.9.14. Landscape planting that can provide screening of the road where possible and reduce noise level for the wider network of PRoW would also improve amenity for users. Details of proposed screening are shown in **Figure 7.8: Landscape Mitigation Masterplan, Volume 5** of this ES (**Application Document Reference: TR010041/APP/6.5**).

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.

12.9.16. To ensure the negative effects on amenity value and disruption are reduced as far as possible during the construction stage of Part A for WCH, the following mitigation measures would be incorporated into the Construction Environmental Management Plan (CEMP) to be developed by the main contractor and are listed in the **Outline CEMP** (**Application Document Reference: TR010041/APP/7.3):**

a. Any temporary diversionary works or closure of WCH routes (as identified in **Table 12-37**) 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. If alternative access points or routes are required, directions would be clearly communicated in appropriate locations.

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 Reference: TR010041/APP/7.4**).

Physical Assets and Land Use

Private Property

12.9.17. Compensation has been agreed as part of Part A with the occupiers of North Gate House.

12.9.18. 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 Reference: TR010041/APP/7.4**) to ensure that access is maintained for emergency services (of relevance to Northgate Hospital).

Recreational Facilities

12.9.19. Similar to the mitigation measures described above for reducing impact on WCH, to ensure that the negative effects on amenity value and disruption are reduced as far as possible for recreational users of Felton Park and areas in and around the River Coquet, 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 A would be informed of the nature, timing and duration of particular activities during the construction stage.

b. Directions at the appropriate places would be provided for alternative access points or routes (only potentially anticipated in and around the River Coquet and Felton Park).

12.9.20. Mitigation measures in relation to visual intrusion are detailed in **Chapter 7: Landscape and Visual** of this ES.

Agricultural Land Holdings

12.9.21. Section 4.4.8 of the Agricultural Assessment in **Appendix 12.1: Agricultural Assessment (Confidential), Volume 7** of this ES (**Application Document Reference: TR010041/APP/6.7**) details the mitigation principles during construction phase.

12.9.22. 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 A. 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**)).

12.9.23. Pursuant to the Compensation Code, compensation would be agreed as part of Part A with the relevant parties whose land would be temporarily and permanently acquired or severed to accommodate Part A. 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.

Economy and Employment

12.9.24. Measures would be put in place, where possible, to maximise the potential for the workforce and the supply chain for Part A to be sourced locally. The 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 A, through experience, training and development programmes.

Human health

12.9.25. Best practice construction methods would be used to minimise noise and vibration levels, air quality pollution (i.e. dust emissions), and flood risk to or from the road drainage and the water environment as outlined 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 would be established to ensure acceptable working limits are adhered to, using best practice methods to be included in the Outline CEMP.

Operation

Physical Assets and Land Use

Agricultural Land Holdings

12.9.26. Where agricultural land holdings are permanently affected by Part A (through into the operation phase), relevant mitigation is outlined in **Section 4.4.12** of the Agricultural Assessment in **Appendix 12.1: Agricultural Assessment** (**Confidential**), **Volume 7** of this ES (**Application Document Reference: TR010041/APP/6.7**). Mitigation includes measures set out in **Figure 7.8: Landscape Mitigation Masterplan, Volume 5** of this ES (**Application Document Reference TR010041/APP/6.5**).

Human health

12.9.27. During operation of Part A, 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

12.9.28. The overbridges at Fenrother Junction and Causey Park 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

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 A on Population and Human Health and related receptors, which are set out below.

VEHICLE TRAVELLERS

Views from the Road

Construction

12.10.2. Construction would result in localised temporary reduction of roadside vegetation and roadside landmark features (Coronation Avenue). Construction activities would be visible from the road which would include features of works associated with construction activities and construction/traffic management.

12.10.3. The temporary reduction in roadside vegetation screening would extend beyond the construction period, into the Part A operational period, as it is anticipated that mitigation planting would take at least 15 years to reach maturity (further details are provided in **Chapter 7: Landscape and Visual** of this ES. Therefore, views outlined in **Table 12-18** are likely to change from 'restricted views' or 'no view' to 'intermittent views' or 'open views' (depending on the location) of the construction activities for the online section of Part A .

12.10.4. Therefore, the effect on driver views during construction is assessed to be of adverse **moderate** significance as the number of travellers affected is between 500 to 10,000 travellers a day for the portion of the road where the construction activities are proposed.

Operation

12.10.5. Once construction works associated have finished and Part A is operational, views from the A1 are likely to be slightly less restricted as planting adjacent to Part A would be less dense than existing until the new planting matures. Views from the road would be 'Open' in location at grade or set on embankments, allowing for broader views of the surrounding countryside. However, this would change as mitigation vegetation planting matures which screens or restricts views of the wider landscape meaning that views would be comparable to those currently experienced. Details of proposed screening are shown in **Figure 7.8: Landscape Mitigation Masterplan, Volume 5** of this ES (**Application Document Reference: TR010041/APP/6.5**).

12.10.6. Therefore, the magnitude of impact is considered to be **neutral**. No significance is attributed to this effect as the effect is considered to be **neutral** (**not significant**).

Driver Stress

Construction

12.10.7. Driver stress may be temporarily adversely affected by construction works of Part A. It is assumed that during construction of Part A, driver stress would be high for vehicle travellers along the A1, as traffic diversions 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 no overall change to the level of driver stress experienced along the A1 during construction, as the levels are already high.

Operation

12.10.8. Predicted driver stress levels for opening year (2023) and design year (2038) are outlined in **Appendix 12.2: Driver Stress Analysis, Volume 7** of this ES (**Application Document Reference: TR010041/APP/6.7**). Once operational, it is expected that Part A would reduce driver stress due to the additional lanes along the main trunk of the A1. Refer to **Table 12-43** and **Table 12-43** which outline that in a 'do something' (with Part A) scenario, driver stress is reduced for most nodes along the A1 in the Study Area using the method set out in DMRB (**Ref. 12.14**) and described in **Section 12.4.** Road sections within the study area for Part A are as shown on Section 1 on **Figure 12.1: Road Sections Assessed for Driver Stress, Volume 5** of this ES (**Application Document Reference: TR010041/APP/6.5**).

12.10.9. However, as usage of the route increases, the peak hourly flow is expected to have a higher level of negative impact on driver stress over time.

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

12.10.11. Overall, the effect of Part A on driver stress is expected to be **slight beneficial** (**not significant**).

Table 12-43 - Driver stress – Opening Year (2023) 'Do Something' (with Part A) Scenario

Road Section	'Do Something' 2023 AM Peak	'Do Something' 2023 PM Peak
1	11 nodes Low 3 nodes Moderate 3 nodes High Overall Low driver stress for this section.	12 nodes Low 5 nodes Moderate Overall Low driver stress for this section.
2	5 nodes Low 1 node High Overall Low driver stress for this section.	6 nodes Low Overall Low driver stress for this section.
3	3 nodes Low 1 node High Overall Low driver stress for this section	4 nodes Low Overall Low driver stress for this section
4	4 nodes Low Overall Low driver stress for this section	4 nodes Low Overall Low driver stress for this section

Road Section	'Do Something' 2023 AM Peak	'Do Something' 2023 PM Peak
5	6 nodes Low 1 node Moderate 1 node High Overall Low driver stress for this section	8 nodes Low Overall Low driver stress for this section
6	4 nodes Low Overall Low driver stress for this section	4 nodes Low Overall Low driver stress for this section
7	4 nodes Low Overall Low driver stress for this section	4 nodes Low Overall Low driver stress for this section
8	2 nodes Low Overall Low driver stress for this section	2 nodes Low Overall Low driver stress for this section
9	2 nodes Low Overall Low driver stress for this section	2 nodes Low Overall Low driver stress for this section
10	4 nodes Low Overall Low driver stress for this section	4 nodes Low Overall Low driver stress for this section
11	2 nodes Low Overall Low driver stress for this section	2 nodes Low Overall Low driver stress for this section
12	2 nodes Low Overall Low driver stress for this section	2 nodes Low Overall Low driver stress for this section
13	2 nodes Low Overall Low driver stress for this section	2 nodes Low Overall Low driver stress for this section
14	2 nodes Low Overall Low driver stress for this section	2 nodes Low Overall Low driver stress for this section

Source: Part A traffic modelling data is set out in **Chapter 4** of the **Case for the Scheme** (**Application Document Reference: TR010041/APP/7.1**).

Table 12-44 - Driver stress – Opening Year (2038) 'Do Something' (with Part A) Scenario

Road Section	'Do Something' 2038 AM Peak	'Do Something' 2038 PM Peak
1	12 nodes Low 2 nodes Moderate 3 nodes High Overall Low driver stress for this section.	11 nodes Low 3 nodes Moderate 3 nodes High Overall Low driver stress for this section.
2	5 nodes Low 1 node High Overall Low driver stress for this section.	5 nodes Low 1 node High Overall Low driver stress for this section.
3	3 nodes Low 1 node High Overall Low driver stress for this section	3 nodes Low 1 node High Overall Low driver stress for this section
4	4 nodes Low Overall Low driver stress for this section	4 nodes Low Overall Low driver stress for this section
5	7 nodes Low 1 node Moderate Overall Low driver stress for this section	6 nodes Low 1 node Moderate 1 node High Overall Low driver stress for this section
6	4 nodes Low Overall Low driver stress for this section	4 nodes Low Overall Low driver stress for this section
7	4 nodes Low Overall Low driver stress for this section	4 nodes Low Overall Low driver stress for this section
8	2 nodes Low Overall Low driver stress for this section	2 nodes Low Overall Low driver stress for this section
9	2 nodes Low Overall Low driver stress for this section	2 nodes Low Overall Low driver stress for this section
10	4 nodes Low	4 nodes Low

Road Section	'Do Something' 2038 AM Peak	'Do Something' 2038 PM Peak
	Overall Low driver stress for this section	Overall Low driver stress for this section
11	2 nodes Low Overall Low driver stress for this section	2 nodes Low Overall Low driver stress for this section
12	2 nodes Low Overall Low driver stress for this section	2 nodes Low Overall Low driver stress for this section
13	2 nodes Low Overall Low driver stress for this section	2 nodes Low Overall Low driver stress for this section
14	2 nodes Low Overall Low driver stress for this section	2 nodes Low Overall Low driver stress for this section
Source: Part A traffic modelling data is set out in **Chapter 4** of the **Case for the Scheme** (**Application Document Reference: TR010041/APP/7.1**).		

EFFECTS ON COMMUNITIES

Community Severance

Construction

12.10.12. A number of PRoW are proposed to be temporarily closed during the construction period. These are outlined in **Table 12-45** in addition to the level of temporary effect during construction to be experienced by users of these PRoW.

Table 12-45 - Significance of Effect on PRoW during Construction

PRoW	Sensitivity	Magnitude	Level of Effect
407/019	Low	Slight	Slight adverse (not significant)
407/013	Low	Severe	Moderate adverse
407/010	Low	Severe	Moderate adverse
407/018	Medium	Severe	Moderate adverse*
407/001	Low	Moderate	Slight adverse (not significant)
407/002	Low	Slight	Slight adverse (not significant)

PRoW	Sensitivity	Magnitude	Level of Effect
423/001	Medium	Moderate	Moderate adverse
423/002	Low	Slight	Slight adverse (not significant)
423/006	Low	Severe	Moderate adverse
423/007	Low	Severe	Moderate adverse
423/013	Medium	Severe	Moderate adverse
422/002	Low	Severe	Moderate adverse
422/020	Low	Severe	Moderate adverse
115/009	High	Moderate	Moderate adverse*
115/013	Low	Severe	Moderate adverse
115/008	Low	Severe	Moderate adverse
115/016	Low	Severe	Moderate adverse
422/011	Low	Severe	Moderate adverse

*Indicates where a range of level of effect is provided within the matrices in Table 2.4 of DMRB, Volume 11, Section 2, Part 5. In this instance a moderate level of significance has been assigned, using professional judgement, due to the conclusion that the effect on users of this PRoW is not of a severity to warrant a significance of Large.

12.10.13. Users of the existing non-designated footway along the southbound carriageway of the A1, between Morpeth and Espley, are likely to experience some temporary disruption during construction due to construction works. However, the footway is anticipated to remain open, but may require some localised temporary diversions (of slight magnitude) to accommodate construction works. Therefore, the effect is anticipated to be temporary **slight adverse** (**not significant**).

12.10.14. In addition to the temporary closures of PRoW, some existing bus stops along the de-trunked A1 would be removed, and new ones proposed. Two bus stops are proposed to be relocated on the northbound and southbound carriageways from chainage 31500 to just north of the proposed Fenrother free-flow link road at chainage 31900. Two existing bus stops would be retained on the northbound and southbound carriageways, to the south of Burgham Park Underbridge at chainage 35500 to chainage 35600.

12.10.15. The removal of three bus stops from near Warreners House, Hebron Road End and Low Espley Road End would increase journey times and reduce access to public transport for

those travelling north from the settlements of Northgate, Hebron, Highlaws Junction and Espley.

12.10.16. The sensitivity of the existing community links (including those between residents within the vicinity of Tritlington Church of England First School, and for non-motorised means of accessing Fairmoor Cemetery and Northgate Hospital) crossing Part A and accessing community facilities are of **medium** sensitivity value as there are limited alternative facilities. The magnitude of change is considered to be **slight** as the community would still be able to access community facilities and private residences during the construction period through the implementation of traffic management regimes. Therefore, the significance of effect on communities in relation to community severance is considered to be **slight adverse** (**not significant**) during construction.

Operation

12.10.17. A number of PRoW are proposed to be permanently diverted or amended prior to the operation period. The significance of these effects to be experienced by users of these PRoW are outlined in **Table 12-46** below.

Table 12-46 - Significance of Effect on PRoW during Operation

PRoW	Sensitivity	Magnitude	Level of Effect
407/018	Medium	Slight beneficial (due to increased provision for WCH)	Slight beneficial
407/001	Low	Slight beneficial (due to increased provision for WCH)	Slight beneficial
423/001	Medium	Moderate adverse	Moderate adverse
423/013	Medium	Slight adverse	Slight adverse
423/017	Low	Slight adverse	Slight adverse
422/002	Low	Slight beneficial (due to increased connectivity and PRoW provision in PRoW network for WCH)	Slight beneficial
422/020	Low	Slight beneficial (due to increased connectivity and PRoW provision in PRoW network for WCH)	Slight beneficial
115/009	Medium	Slight beneficial (due to increased connectivity and PRoW provision in PRoW network for WCH)	Slight beneficial

PRoW	Sensitivity	Magnitude	Level of Effect
115/008	Low	Slight beneficial (due to increased connectivity and PRoW provision in PRoW network for WCH)	Slight beneficial
115/016	Low	Slight beneficial (due to increased connectivity and PRoW provision in PRoW network for WCH)	Slight beneficial
422/011	Low	Slight beneficial (due to increased connectivity and PRoW provision in PRoW network for WCH)	Slight beneficial

12.10.18. The location of the new bus stop at Low Espley would increase journey times for those that usually use public transport to travel north from Northgate, Hebron and Highlaws Junction. Public transport users would be required to travel to the west to the new bus stop on the A697 rather than access the three bus stops which are being removed from the A1 between Warreners House Lower Espley.

Cyclists

12.10.19. A new segregated 3 m cycleway would be provided along the length of the eastern side of the proposed link road, between the de-trunked A1 and Felton Road. This improves access and safety for cyclists alongside the A1.

12.10.20. The area is not currently utilised a lot by cyclists, likely due to existing safety concerns and lack of cycling path provision. Therefore, the sensitivity of cyclists within the Study Area is considered to be **medium**.

12.10.21. The proposed cycle path and routes would be permanent, and the magnitude of change **slight** compared to existing cycling path provision, which is an improvement, but the proposed cycle path does not connect to other routes within the area. Therefore, there is likely to be a direct, permanent **slight** beneficial effect (**not significant**) for cyclists.

Journey Amenity

Construction

12.10.22. The introduction of construction works as part of Part A, within the vicinity of WCH facilities (PRoW and existing informal cycleways/footpaths) 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 12-23**, which are located within 500 m of the Order Limits, 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).

12.10.23. 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 during construction (**not significant**) as a worst case during the construction period following the implementation of mitigation measures.

Operation

12.10.24. During operation, there are potential changes (to the amenity of users of PRoW and other routes due to the alignment of Part A. Permanently diverting traffic from the A1 onto the new offline section of Part A near to Tritlington Church of England School would reduce traffic near to the school, making it safer for people to access and increasing amenity for the school.

12.10.25. The sensitivity of community receptor (Tritlington Church of England School) is considered to be **high** as there are no alternative facilities or properties for receptors to utilise.

12.10.26. For Tritlington Church of England School the magnitude of change is likely to be **minor** as the enhanced amenity due to a reduction in traffic is unlikely to substantially change the users experience of the facility. Overall, during operation with mitigation, there is likely to be a **slight beneficial** permanent effect (**not significant**), relieving severance along some portions of the route and enhancing the amenity value for some community facilities.

12.10.27. It is anticipated that the magnitude of change of amenity for users of PRoW following the implementation of mitigation measures during operation is minor to negligible (depending on proximity to Part A, users within 100m of works are likely to experience minor adverse impacts and impacts further afield would likely be negligible). Therefore, there is likely to be a direct, permanent, slight adverse effect for WCH users during operation (**not significant**) as a worst case.

12.10.28. Users of footpaths 423/008 and 423/017 are likely to experience an improvement in amenity, of minor magnitude as they are in proximity to the section of the A1 which is to be detrunked, resulting in lower volumes of traffic in close proximity. Therefore, there is likely to be a permanent, slight beneficial effect for WCH users during operation (**not significant**).

PHYSICAL ASSETS AND LAND USE

Private Property

Construction

12.10.29. During construction, North Gate House is required to be demolished. The sensitivity of this asset is **high** as a receptor with limited capacity to absorb change. The magnitude of impact (**major**), is considered to be reduced to minor as compensation has been agreed with the occupiers of the property as outlined in **paragraph 12.9.17**. Overall, there would be a direct, permanent effect of **moderate** adverse significance, and would not be considered to be critical in the decision-making process at this scale of loss.

12.10.30. During construction, there are also a number of residential properties which would experience temporary disruption to access. 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 12-39** above and the magnitude of change is considered to be minor as construction activities would temporarily disrupt access to and from the properties, but not preclude their use. With mitigation measures set out in the **Outline CEMP** (**Application Document Reference: TR010041/APP/7.3**) and the **Construction Traffic Management Plan** (**Application Document Reference: TR010041/APP/7.4**) the overall impact during construction is considered to be temporary adverse slight effect (**not significant**).

Operation

12.10.31. Access to existing residential properties would change during the operational phase of Part A for those properties listed in **Table 12-40** above. 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. Overall impact during operation is a permanent direct beneficial slight effect (not significant).

Commercial Property

Construction

12.10.32. As stated within **Section 12.7**, commercial properties have been assessed as having a **high** sensitivity.

12.10.33. The magnitude of change for users of some commercial properties along the route is considered to be **negligible to minor** as construction activity would potentially disrupt access to the commercial properties for a protracted period. 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.

12.10.34. As such, there is considered to be a direct, temporary worst-case **slight adverse** effect on commercial properties (**not significant**) with mitigation.

Operation

12.10.35. As stated within **Section 12.7**, commercial properties have been assessed as having a **high** sensitivity.

12.10.36. The magnitude of change for users of some commercial properties along the route is considered to be **negligible**. All existing accesses to commercial properties would be maintained so there won't be an impact on the passing trade of these businesses.

12.10.37. As such, there is considered to be a direct, permanent, long term **slight adverse** effect on commercial properties (**not significant**) with mitigation.

Community Facilities

Construction

12.10.38. Fairmoor Cemetery, Northgate Hospital and Tritlington C of E First School are assets of high sensitivity. The magnitude of change is likely to be **minor** during construction as the temporary works are unlikely to substantially change the users experience of the facility, particularly when considering the existing presence of the A1. For users of these assets, with mitigation, there is likely to be a **slight adverse** temporary effect (**not significant**), reducing the amenity value for some users.

12.10.39. Felton Park is located to the north of the River Coquet between PRoW 115/005 and 115/013. The proposed carriageway would be constructed to the east of the existing carriageway and the vegetation which is located alongside the existing carriageway would be removed. Users of the park would experience a temporary reduction in amenity value of the park due to the proximity of construction works and the temporary removal of the vegetation which currently provides a buffer between the park and the A1. This is considered to be of **minor** magnitude, resulting in a **slight** adverse temporary effect (**not significant**).

12.10.40. Temporary disruption to traffic caused by construction works along the route, for users looking to access these community facilities, is expected to be of **minor** adverse magnitude when considering measures to be implemented as detailed within the **Construction Traffic Management Plan** (**Application Document Ref: TR010041/APP/7.4**). This would result in a slight adverse temporary effect (**not significant**).

Operation

12.10.41. During operation, there are potential changes (to the amenity of users of PRoW and other routes due to the alignment of Part A. Permanently diverting traffic from the A1 onto the new offline section of Part A near to Tritlington Church of England School would reduce traffic near to the school, making it safer for people to access and increasing amenity for the school. The sensitivity of Tritlington Church of England School is considered to be **high**. For Tritlington Church of England School the magnitude of change is likely to be **minor** as the enhanced amenity due to a reduction in traffic is unlikely to substantially change the users experience of the facility. Overall, during operation with mitigation, there is likely to be a **slight** beneficial permanent effect (**not significant**), enhancing the amenity value for some users.

12.10.42. For users of Felton Park, as planting would be reinstated screening the park from the A1, the magnitude of change is likely to be **negligible**. Therefore, there is likely to be a direct, permanent **slight** adverse effect (not significant).

12.10.43. It is not anticipated that there would be any further impacts on users of the cemetery, hospital or Felton Park during operation, and therefore there are no significant effects on community assets during operation.

Recreational Facilities

Construction

12.10.44. During construction of Part A, there is potential for a change in amenity value and disruption to recreational facilities, such as angling, boating and general use of the River in terms of noise, dust and disruption to existing views. The sensitivity of the receptors is considered to be high, due to the popularity of the River Coquet for recreational activities. Similarly, Felton Park is of local value and is safeguarded in local policy. The sensitivity of receptors utilising this area is also considered to be **high**.

12.10.45. The magnitude of change for users of the River Coquet is considered to be a worst case of **moderate** as construction activity would reduce the amenity value of the areas for a protracted period and there are also likely to be times when the areas are unable to be used, such as when the second bridge over the River Coquet is constructed.

12.10.46. As such, there is considered to be a direct, temporary **moderate adverse** effect for recreational users of the River Coquet.

12.10.47. Felton Park is located to the north of the River Coquet between PRoW 115/005 and 115/013. The proposed carriageway would be constructed to the east of the existing carriageway and the vegetation which is located alongside the existing carriageway would be removed. Users of the park would experience a temporary reduction in amenity value of the park due to the proximity of construction works and the temporary removal of the vegetation which currently provides a buffer between the park and the A1. This is considered to be of **minor** magnitude, resulting in a **slight** adverse temporary effect.

Operation

12.10.48. The sensitivity of the receptors is considered to be **high**, due to the popularity of the River Coquet for recreational facilities and the high local value of Felton Park.

12.10.49. The bridge that is being constructed over the River Coquet would be parallel to the existing structure and of a similar design. Therefore, for recreational users of the River Coquet the magnitude of change is likely to be **minor**. Therefore, there is considered to be a direct, permanent **slight adverse** effect (**not significant**) for recreational users of the River Coquet.

12.10.50. For users of Felton Park, as planting would be reinstated screening the park from the A1, the magnitude of change is likely to be **negligible**. Therefore, there is likely to be a direct, permanent **slight adverse** effect (**not significant**).

Agricultural Land Holdings

Construction and Operation

12.10.51. As stated in **Section 5** of the Agricultural Assessment in **Appendix 12.1: Agricultural Assessment** (**Confidential**), **Volume 7** of this ES (**Application Document Reference: TR010041/APP/6.7**), the sensitivity of the agricultural land holding varies from holding to

holding depending on a number of factors including scale, land tenure and the impact on key infrastructure.

12.10.52. The predicted impacts during construction have been assessed for the individual holdings within the Study Area and outlined in **Table 7A** of the Agricultural Assessment in Appendix **12.1: Agricultural Assessment** (**Confidential**), **Volume 7** of this ES (**Application Document Reference: TR010041/APP/6.7**). **Table 7A** outlines the significance of effects which takes into account the sensitivity and magnitude of impacts to give a significance of the effect of Part A on an individual agricultural land holding during construction. This table is also summarised in **Table 12-47**.

Table 12-47 - Significance of Effects Post-mitigation per Holding during Construction

Agricultural Land Holding	Significance Post-Mitigation
Bywell Farm	Minor If the access is maintained at all times along with appropriate signage them any impact on the shooting ground would be sufficiently mitigated.
Thirston New Houses	Negligible
Hebron West Farm	Minor Significance reduced by providing access to land between Fenrother burn and A1.
Clarehugh	Moderate Some woodland would be lost, however **Figure 7.8: Landscape Mitigation Masterplan**, **Volume 5** of this ES (**Application Document Reference: TR010041/APP/6.5**) includes hedgerow, grassland and hedgerow tree planting in this area. It would be influenced by how quickly planting is carried out as there is potential for greater significance if carried out at the end of the construction period rather than the start.
Hemelspeth Farm	Moderate Little that can be done, sensitivity increased due to small size of holding.
Highlaws	Minor Main mitigation measures would be the continual provision of access to the A1 through construction.
Causey Park	Moderate

Agricultural Land Holding	Significance Post-Mitigation
	The main mitigation measures that could potentially reduce the impact of Part A upon Causey Park are: Access Provision or cattle handling facilities to land severed to the east of new A1. Access provision during construction for farm and all additional enterprises and commercial lets. Accommodation works have been included in **Figure 7.8: Landscape Mitigation Masterplan**, **Volume 5** of this ES (**Application Document Reference: TR010041/APP/6.5**) to reduce impact to New Houses farm. The level of impact would be influenced by how quickly planting is carried out as there is potential for greater impact if carried out at the end of the construction period rather than the start. A worst case has therefore been assumed.
Hebron Hill	Minor Minimising land take through efficient use of land for access track would reduce impact on holding (Hebron Hill farmstead).
East Fenrother Farm	Minor Minimising land take through efficient use of land for junction would reduce impact on holding.
West Moor	Minor Minimising land take through efficient use of land for junction would reduce impact on holding.
A	Minor Minimising land take through efficient use of land for the road and new planting would reduce impact on holding.
B	Minor Minimising land take through efficient use of land for the road and new planting would reduce impact on holding.
C	Moderate Little that can be done, sensitivity has been increased due to small size of holding.
D	Minor

Agricultural Land Holding	Significance Post-Mitigation
	Minimising land take through efficient use of land for the road and new planting would reduce impact on holding.
E	Minor Minimising land take through efficient use of land for the road and new planting would reduce impact on holding.
F	Minor Minimising land take through efficient use of land for the road and new planting would reduce impact on holding.
G	Minor Minimising land take through efficient use of land for the road and new planting would reduce impact on holding.
H	Minor Minimising land take through efficient use of land for the A1 and local access road, would reduce impact on holding.

12.10.53. Through early consultation with landowners, Part A has been designed to maintain access and minimise the impact on farm and diversified agricultural land holdings along the route. Several of the responses suggest mitigation measures such as maintaining access during construction and during operation, facilities to access severed land, screening of the road from sensitive locations such as holiday cottages and ensuring drainage is managed correctly. If all of these items are addressed, plus any further mitigation which is identified as Part A develops, it is expected that impacts during and after construction are minimised and therefore the significance is reduced.

12.10.54. The Agricultural Assessment within **Appendix 12.1: Agricultural Assessment** (**Confidential**), **Volume 7** of this ES (**Application Document Reference: TR010041/APP/6.7**) concludes that as holdings have varying sensitivities there are varying levels of effect. Part A would have direct temporary **moderate adverse** effects on four agricultural land holdings and **minor adverse** effects on twelve agricultural land holdings with mitigation during construction.

12.10.55. The predicted permanent effects which have been assessed for the individual holdings are outlined in **Table 7B** of the **Agricultural Assessment** in **Appendix 12.1: Agricultural Assessment** (**Confidential**), **Volume 7** of this ES (**Application Document Reference: TR010041/APP/6.7**), and which are presented below as **Table 12-48**. **Table 7B** outlines the

significance of effects which takes into account the sensitivity and magnitude of impacts to give a significance of the effect of Part A on an individual agricultural land holding.

Table 12-48 - Significance of Permanent Effects Post-Mitigation per Holding

Agricultural Land Holding	Significance Post-Mitigation
Bywell Farm	Minor If the access is maintained at all times along with appropriate signage, then any impact on the shooting ground would be sufficiently mitigated.
Thirston New Houses	Negligible
Hebron West Farm	Minor Significance reduced by providing access to land between Fenrother burn and A1.
Clarehugh	Moderate Some woodland would be lost, however **Figure 7.8: Landscape Mitigation Masterplan**, **Volume 5** of this ES (**Application Document Reference: TR010041/APP/6.5**) of this ES includes hedgerow, grassland and hedgerow tree planting in this area.
Hemelspeth Farm	Moderate Little that can be done, sensitivity increased due to small size of holding.
Highlaws	Minor Main mitigation measures would be the provision of access to the A1 once operational.
Causey Park	Moderate The main mitigation measures that would reduce the impact of Part A upon Causey Park are: Access provision for cattle handling facilities to land severed to the east of Part A. Access provision once operational for farm and all additional enterprises and commercial lets. Accommodation works have been included in Figure 7.8: Landscape Mitigation Masterplan, Volume 5 of this ES (Application Document Reference: TR010041/APP/6.5) to reduce impact to New Houses farm.

Agricultural Land Holding	Significance Post-Mitigation
Hebron Hill	Minor Minimising land take through efficient use of land for access track would reduce impact on holding (Hebron Hill farmstead).
East Fenrother Farm	Minor Minimising land take through efficient use of land for junction would reduce impact on holding.
West Moor	Minor Minimising land take through efficient use of land for junction would reduce impact on holding.
A	Minor Minimising land take through efficient use of land for the road and new planting would reduce impact on holding.
B	Negligible
C	Moderate Little that can be done, sensitivity has been increased due to small size of holding.
D	Minor Minimising land take through efficient use of land for the road and new planting would reduce impact on holding.
E	Minor Minimising land take through efficient use of land for the road and new planting would reduce impact on holding.
F	Minor Minimising land take through efficient use of land for the road and new planting would reduce impact on holding.
G	Minor Minimising land take through efficient use of land for the road and new planting would reduce impact on holding.
H	Minor Minimising land take through efficient use of land for the A1 and local access road, would reduce impact on holding.

12.10.56. The Agricultural Assessment within Appendix 12.1: Agricultural Assessment (Confidential), Volume 7 of this ES (Application Document Reference: TR010041/APP/6.7) concludes that as agricultural land holdings have varying sensitivities and there are varying levels of effect. Part A would have direct permanent moderate adverse effects on four agricultural land holdings and minor adverse effects on twelve agricultural land holdings with mitigation during operation.

ECONOMY AND EMPLOYMENT

Construction

12.10.57. 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 A. 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 **minor** beneficial effect on local (Northumberland) receptors (**not significant**).

12.10.58. The construction phase would commence in 2021 (mobilisation anticipated in December) and would be completed in 2024, as outlined in **Chapter 2**: **The Scheme, Volume 1** of this ES (**Application Document Reference: TR010041APP/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 phase.

12.10.59. The estimated total construction cost of Part A is £173 million, and construction is likely to take 30 months. This is estimated to generate approximately direct employment opportunities for approximately 354 workers per year. Assuming a medium multiplier (1.5), as indicated in **paragraph 12.4.50**, the number of indirect and induced employment opportunities at a 'regional level' (Northumberland) per year is 177 construction workers. Therefore, the estimated, direct employment associated with Part A equates to approximately 5.6% of the economically active population in full-time employment in the construction industry in Northumberland. The estimated indirect and induced employment associated with Part A equates to approximately 2.8% of the economically active population in the construction industry in Northumberland.

Operation

12.10.60. No impacts on local economic receptors are predicted during operation of Part A and therefore there are no significant effects.

HUMAN HEALTH

12.10.61. Based on the sensitivity criteria shown in **Table 12-11** and the justifications presented in **Section 12.7**, human health receptors are expected to have a **medium** sensitivity. This is due to Part A 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

12.10.62. During construction, there would be works within the vicinity of human health receptors including residential properties, community and recreational facilities and PRoWs.

12.10.63. 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 a particular concern to children, the elderly and those with underlying respiratory ailments. The magnitude of impact is **minor**, as Part A is in a rural area and therefore would not impact a significant number of receptors and the effects would be temporary in nature.

12.10.64. Construction works and traffic would also result in an increase on noise and vibration levels, this would have a disproportionate impact on children and the elderly. The magnitude of impact is **minor**, Part A is in a rural area and therefore would not impact a significant number of receptors and the effects would be temporary in nature.

12.10.65. In-channel construction works such as new culverts and watercourse crossings may cause a 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 **negligible**, as Part A is in a rural area with no residential properties in close proximity to these works.

12.10.66. Therefore, during construction, there is likely to be a temporary **slight adverse** effect (**not significant**) on human health receptors.

Operation

12.10.67. Part A is likely to result in an increased number of vehicles travelling through the area, therefore human health receptors in close proximity to Part A may experience a decrease in air quality due to exhaust emissions. However, receptors along the de-trunked A1 would experience an improvement in air quality due to reduced traffic flow. The magnitude of impact is expected to be **negligible**, as some receptors close to Part A would experience adverse effects and others along the de-trunked A1 would experience beneficial effects.

12.10.68. Part A is likely to result in an increased number of vehicles travelling through the area; therefore, human health receptors in close proximity to Part A may experience an increase in noise and vibration as the Scheme would create a new source of noise. However,

receptors along the de-trunked A1 would experience a reduced noise and vibration levels due to reduced traffic flow. The magnitude of impact is expected to be **negligible**, as the receptors closer to Part A would experience increased noise and vibration levels resulting in adverse effects and other receptors would experience beneficial effects.

12.10.69. There would be no increase in flood risk associated with watercourses crossed by Part A 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 A is in a rural area with no residential properties in close proximity to these works.

12.10.70. Therefore, during operation, there is likely to be a permanent, long-term **negligible** effect (**not significant**) on human health receptors.

12.10.71. Following mitigation, no significant effects on human health are anticipated for either construction or operation of Part A.

ASSESSMENT PARAMETERS

12.10.72. The purpose of Parameter 12 which is outlined in **Section 2.12** of **Chapter 2**: T**he Scheme, Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**) is to accommodate WCH on overbridges. Although there may be benefits for WCH if this was implemented, this WCH provision is unlikely to change the significant effects assessment outlined above. As such, no change is predicted for WCH if Parameter 12 was implemented.

12.10.73. The other Assessment Parameters, as presented in **Chapter 2**: T**he Scheme, Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**), are not considered to alter the findings or significance of effects of the Population and Human Health assessment as a result of Part A as they are within the Order Limits and therefore would not introduce new effects or result in a change to the significance of effects identified.

UPDATED DMRB GUIDANCE

12.10.74. 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

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

Effects on Communities

Community Severance and Journey Amenity

12.10.76. 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 originally undertaken is robust and with the application of the updated guidance the conclusions of the assessment would remain unchanged.

12.10.77. 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 Part A.

Physical Assets and Land Use

Private Property

12.10.78. 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.

12.10.79. Under the updated guidance private property which falls below 1 ha in size would be likely to be categorised as having medium sensitivity, rather than high sensitivity due to the land parcel being under 1 ha. There would also be a change to the magnitude of impact for North Gate House, as although compensation has been agreed, it would not be considered as mitigation. The implications to the conclusions of the ES as a result of this update are as follows:

a. For North Gate House, as discussed in **paragraph 12.10.29** the application of the updated guidance, without the consideration of compensation as mitigation, would change the magnitude of impact to major rather than minor, which would result in a direct, permanent effect of **large significant** adverse effect due to the loss of the property. However, this remains a significant effect, and compensation has been agreed with the occupiers of the property.

b. For temporary effects upon residential properties as outlined within **paragraph 12.10.30** the overall effect would remain as not significant with the application of the updated guidance.

Commercial Property

12.10.80. The sensitivity and magnitude of impact criteria used for the assessment of commercial property are 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.

12.10.81. 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 **paragraphs 12.10.32** to **12.10.37** the overall effects upon commercial properties would remain as not significant.

Recreational Facilities

12.10.82. 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.

12.10.83. The sensitivity and magnitude of impact criteria used for the assessment of recreational facilities is considered to be similar to that used for community land and assets in 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.

12.10.84. Under the updated guidance community facilities which are used frequently (weekly) and used by the majority (>=50%) of the community are classified as having high sensitivity, whereas facilities which are used reasonably frequently (monthly) and are used by the majority (>=50%) of the community, but have alternatives within adjacent communities, are classified as having medium sensitivity. On this basis, with the application of the updated guidance a precautionary approach would be applied for the River Coquet and Felton Park, based on frequency of use, and both would be classified as having high sensitivity. However, the magnitude of impact would not alter, and there would therefore be no change to the significance of effects. The conclusions of the assessment would therefore remain unchanged.

Community Facilities

12.10.85. Assessment of community facilities would be considered under the section “community land and assets” of the updated DMRB guidance.

12.10.86. 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.

12.10.87. Under the new guidance community facilities which are used very frequently (daily) and used by the majority (>=50%) of the community are classified as having very high sensitivity, facilities which are used frequently (weekly) and used by the majority (>=50%) of the community are classified as having high sensitivity, whereas facilities which are used reasonably frequently (monthly) and are used by the majority (>=50%) of the community, but have alternatives within adjacent communities are classified as having medium sensitivity. On this basis, with the application of the updated guidance a precautionary approach would be applied for Felton Park, based on frequency of use, and it would be classified as having high sensitivity. However, the magnitude of impact would not alter, and there would therefore be no change to the significance of effects. The conclusions of the assessment would therefore remain unchanged.

12.10.88. Furthermore, the sensitivity of Tritlington Church of England School, the cemetery and Northgate Hospital would be very high under the updated guidance. However, as the new guidance focuses more on physical loss and alteration of assets or introduction of

severance, it is anticipated that the magnitude of impacts would be negligible and the overall temporary and permanent significance of effect would remain as not significant.

Agricultural Land Holdings

12.10.89. 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

12.10.90. 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

12.10.91. Assessment of human health is required under the updated DMRB guidance. The sensitivity criteria used for the 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, respectively.

REFERENCES

Ref. 12.1 - Her Majesty's Stationery Office (HMSO), The Localism Act 2011

Ref. 12.2 - HMSO, The Infrastructure Planning (Environmental Impact Assessment (EIA)) Regulations 2017

Ref. 12.3 - HMSO, The Countryside and Rights of Way (CRoW) Act 2000

Ref. 12.4 - HMSO, The Highways Act, 1980

Ref. 12.5 - Department for Transport, National Policy Statement for National Networks (NPS NN) (Designated January 2015)

Ref. 12.6 - Department for Communities and Local Government (2019), National Planning Policy Framework

Ref. 12.7 - Department for Communities and Local Government (2014), Planning Practice Guidance Note

Ref. 12.8 - Northumberland County Council (2011), Northumberland County Council Local Transport Plan 2011 – 2026. Available at :https://www.northumberland.gov.uk/NorthumberlandCountyCouncil/media/Roads-streets-and-transport/transport%20policy/Local%20Transport%20Plan/Local-Transport-Plan-2011-2026.pdf

Ref. 12.9 - Northumberland Local Plan Publication Draft Plan (Regulation 19). Northumberland County Council. January 2019. Available at: https://www.northumberland.gov.uk/NorthumberlandCountyCouncil/media/Planning-and-Building/planning%20policy/Local%20Plan/Northumberland-Local-Plan-Reg-19-Publication-Draft-January-2019-Web-PDF-Version.pdf

Ref. 12.10 - Castle Morpeth District Council (2003) Castle Morpeth District Local Plan

Ref. 12.11 - Alnwick District Council (2007), Alnwick Local Development Framework Core Strategy

Ref. 12.12 - Highways England (1993) Design Manual for Roads and Bridges (DMRB) Volume 11 Section 3 Part 6 Land Use

Ref. 12.13 - Highways England (1993) Design Manual for Roads and Bridges (DMRB) Volume 11 Section 3 Part 8 Pedestrians, Cyclists, Equestrians and Community Effects

Ref. 12.14 - Highways England (1993) Design Manual for Roads and Bridges (DMRB) Volume 11 Section 3 Part 9 Vehicle Travellers

Ref. 12.15 - DMRB Interim Advice Note 125/15 Environmental Assessment Update

Ref. 12.16 - Homes and Communities Agency (2014) Additionality Guidance 4th Edition

Ref. 12.17 - The Institute of Environmental Management and Assessment (2017) Health in Environmental Impact Assessment (online) Available at ((https://www.iema.net/assets/newbuild/documents/IEMA%20Primer%20on%20Health%20in%20UK%20EIA%20Doc%20V11.pdf (Accessed May 2019)

Ref. 12.18 - Highways England (2019) Design Manual for Roads and Bridges (DMRB) LA 112 Population and human health revision 1. Available at: https://www.standardsforhighways.co.uk/dmrb/search?volume=11&section=3

Ref. 12.19 - WSP Walking, Cycling and Horse Riding Assessment (2018)

Ref. 12.20 - Public Health England (2018) Northumberland Local Authority Health Profile 2018

Ref. 12.21 - NOMIS Official Labour Market Statistics (online) Available at: https://www.nomisweb.co.uk/ (Accessed November 2018)

Ref. 12.22 - Institute of Environmental Assessment (now Institute of Environmental Management and Assessment) (1993) Guidelines for the Environmental Assessment of Road Traffic.

Ref. 12.23 - Highways England (2017) Design Manual for Roads and Bridges (DMRB) Volume 5, Section 2, Part 5 HD 42/17 Walking, Cycling & Horse-Riding Assessment and Reviews

Ref. 12.24 - Highways England (2008) Design Manual for Roads and Bridges (DMRB) Volume 11, Section 2, Part 5, HA205/08 Assessment and Management of Environmental Effects

Ref. 12.25 - Northumberland County Council Public Rights of Way Map - http://northumberland.maps.arcgis.com/apps/webappviewer/index.html?id=59bccc5416b144a28def537994bf7d10 (accessed online December 2018)

Ref. 12.26 - Northumberland County Council (2011) PPG17 open space, sport and recreation assessment.

Ref. 12.27 - Office for National Statistics (online) Available at: https://www.ons.gov.uk/census/2011census (Accessed November 2018)

Ref. 12.28 - Highways England (2005) Design Manual for Roads and Bridges (DMRB) Volume 5, Section 2, Part 4 TA 91/105 Provision for Non-Motorised Users

Ref. 12.29 - Department for Transport (2017) Local Cycling and Walking Infrastructure Plans (online) Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/607016/cycling-walking-infrastructure-technical-guidance.pdf

Ref. 12.30 - The Indices of Multiple Deprivation (2015) (online) Available at: https://www.gov.uk/government/statistics/english-indices-of-deprivation-2015 (Accessed November 2018)

Ref. 12.31 - Go Smarter (2019) (online) Available at: http://www.gosmarter.co.uk/about-us

This document is also available on our website at **www.gov.uk /highways**

If you have any enquiries about this document A1inNorthumberland@highwaysengland.co.uk or call **0300 470 4580***.

*Calls to 03 numbers cost no more than a national rate call to an 01 or 02 number and must count towards any inclusive minutes in the same way as 01 and 02 calls.
These rules apply to calls from any type of line including mobile, BT, other fixed line or payphone. Calls may be recorded or monitored.

Registered office Bridge House, 1 Walnut Tree Close, Guildford GU1 4LZ
Highways England Company Limited registered in England and Wales number 09346363