A1 in Northumberland: Morpeth to Ellingham

Scheme Number: TR010041

7.1 Case for the Scheme

APFP Regulation 5(2)(q)
Planning Act 2008
Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

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

The A1 in Northumberland: Morpeth to Ellingham

Development Consent Order 20[xx]

CASE FOR THE SCHEME

Regulation Reference	APFP Regulation 5(2)(q)
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1 INTRODUCTION

1.1 Purpose of this document

1.1.1 This Case for the Scheme (this 'Case') relates to an application for a Development Consent Order (DCO) made by Highways England (the 'Applicant') to the Secretary of State for Transport via the Planning Inspectorate (the 'Inspectorate') under section 37 of the Planning Act 2008 (the '2008 Act'). If made, the DCO would grant consent for the A1 in Northumberland: Morpeth to Ellingham (the 'Scheme').

1.1.2 The Scheme comprises two sections known as Part A: Morpeth to Felton (Part A) and Part B: Alnwick to Ellingham (Part B), a detailed description of which can be found in **Chapter 2: The Scheme, Volume 1** of the Environmental Statement (ES) (**Application Document Reference: TR010041/APP/6.1**).

1.1.3 The Scheme requires a DCO as, for the reasons set out at Section 1.4 of this Case, it is a Nationally Significant Infrastructure Project (NSIP) as defined within sections 14(1)(h) and 22(1)(b) of the 2008 Act. The application will therefore be decided by the relevant Secretary of State (SoS), which for this Scheme is the SoS for Transport.

1.1.4 Under Section 104(2) of the 2008 Act the SoS must have regard to (among other matters) to *'any relevant national policy statement'* when deciding an application for a DCO. The relevant national policy statement (NPS) for the Scheme is the National Policy Statement for National Networks ('NPS NN') which sets out the need for, and Government's policies for delivering, the development of NSIPs on the national road and rail networks in England.

1.1.5 The NPS NN has a particular weight in the deciding this DCO application as, under Section 104(3) of the 2008 Act, the SoS is required to decide the application in accordance with the relevant national policy statement, subject to the exceptions set out in section 104 (4) to (8). The Scheme's compliance with the NPS NN is assessed in the **NPS NN Accordance Table** (**Application Document Reference: TR010041/APP/7.2**) which is submitted with this DCO application.

1.1.6 This Case is therefore intended to supplement this assessment of the Scheme's compliance with the NPS NN and also identify '*any other matters*' that are considered '*important and relevant*' to the determination of the application in accordance with Section 104(2) of the 2008 Act.

1.1.7 These important and relevant matters include the Scheme background and objectives and the aims of relevant local and national economic transport and planning policy including the Road Investment Strategy ('RIS'), as set out in Section 1.2 of this Case. This Case also comprises the transport assessment for the Scheme and identifies the benefits that it will bring for road users, which are considered important and relevant considerations in the determination of the application. This Case also uses the conclusions of the ES to assess the impact of the proposed development against local and national planning policies.

1.2 Road Investment Strategy

1.2.1 The Scheme is submitted in accordance with the Government's RIS that was published in 2014 (RIS1) and in 2020 (RIS2). The RIS comprises the Government's long-term programme to improve England's motorways and major roads. The importance of delivering the RIS is illustrated in Section 3(6) of the Infrastructure Act 2015, which places a statutory duty on both the Applicant and the SoS to comply with the provisions of the RIS.

1.2.2 The Scheme was a '*committed'* Scheme in RIS1 and continues to be a *'committed'* Scheme in RIS2. RIS2 specifically states that the Scheme will deliver *"upgrading multiple sections of the A1 to dual carriageway to provide continuous high quality dual carriageway from Newcastle to Ellingham"*.

1.3 The Applicant

1.3.1 The Applicant is Highways England Company Limited. Formerly the Highways Agency, Highways England became a Government owned company in April 2015 and is the strategic highway company responsible for operating, maintaining and improving the Strategic Road Network (SRN) in England. The SRN comprises the motorway and major A roads network, including the A1. As set out in Section 1.2, above, Section 3(6) of the Infrastructure Act 2015, requires that the Applicant 'must comply' with the RIS.

1.4 Requirement for a Development Consent Order

1.4.1 The Scheme lies wholly within England and involves the alteration of a highway for which the Applicant is the highway authority. It is an NSIP as defined within sections 14(1)(h), 22(1)(a) and 22(1)(b) of the 2008 Act as:

i) It comprises the construction and alteration of a highway;
ii) The highway to be constructed and altered is wholly within England;
iii) Highways England Company Limited is the strategic highway authority for the highway; and
iv) The speed limit will be 50mph or more and the area of development exceeds the 12.5 hectares threshold, at approximately 362 hectares.

1.4.2 Pursuant to the 2008 Act, the Applicant is required to secure a DCO in order to construct, operate and maintain the Scheme.

1.5 Requirement for EIA

1.5.1 The Scheme is an Environmental Impact Assessment (EIA) development and both the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (EIA Regulations) and Regulation 5(2) of the 2009 Regulations require that an ES is submitted to accompany the application.

1.5.2 In compliance with these regulations, **Chapters 5 to 15, Volume 2** of the ES (**Application Document Reference: TR010041/APP/6.2**) provides details of the assessment that have been undertaken for Part A and **Chapters 5 to 15, Volume 3** of the ES (**Application Document Reference: TR010041/APP/6.3**) provides details of

the assessment that have been undertaken for Part B. They also set out the impacts, a description of the likely significant effects on the environment and identify the measures that are proposed to reduce and, if possible, offset likely significant adverse effects on the environment.

1.5.3 Further details can also be found in the **NPS NN Accordance Table** (**Application Document Reference: TR010041/APP/7.2**)

1.5.4 The EIA Regulations and the NPS NN also require that DCO applications set out the alternative options as part of the Scheme development. Further details of these options can be found in **Chapter 2** of this Case.

1.6 Structure of the Case

1.6.1 The Case comprises eight chapters as set out below:

- **Chapter 1** – sets out the details of the application, confirms the details of the Applicant, and explains why the Scheme is a NSIP which requires the submission of a DCO application;
- **Chapter 2** – Describes the Scheme and the surrounding area and sets out how the Scheme has developed over time. It details the route options and alternatives that have been considered through the options appraisal process and explains how the Applicant arrived at the proposed Scheme;
- **Chapter 3** – Sets out the background to the Scheme, and the process that has been used to arrive at the preferred option that forms the basis of the Scheme;
- **Chapter 4** – comprises the Case for the Scheme, and assesses it against the NPS NN and other important and relevant considerations such as the RIS and local and national transport, economic and planning policy;
- **Chapter 5** – comprises the transport Case for the Scheme;
- **Chapter 6** – Describes the monetised and non-monetised social, economic and environmental benefits of the Scheme;
- **Chapter 7** – Assesses the Scheme against national and local planning and transport policy, and considers the policy justification for the Scheme; and
- **Chapter 8** – Provides a summary which is intended to assist the SoS in reaching a decision on the application. This chapter brings together the case for the Scheme and assesses its overall compliance with the NPS NN and relevant planning policy and other important considerations.

1.6.2 In addition, the following appendices are provided:

- **Appendix A:** A1 Northumberland Traffic Model Validation Results;
- **Appendix B:** Uncertainty Log;
- **Appendix C:** Wider Impacts in Transport Appraisal (WITA) Tool;
- **Appendix D:** Transport Assessment Sensitivity Technical Note
- **Appendix E:** List of Abbreviations
- **Appendix F:** References.

2 SCHEME DESCRIPTION AND HISTORY

2.1.1 The Scheme is identified on the **Location Plan** (**Application Document Reference: TR010041/APP/2.1**) and is located on the A1 between Morpeth and Ellingham, entirely within the administrative area of Northumberland County Council (NCC).

2.1.2 The Scheme is described in detail in **Chapter 2: The Scheme, Volume 1** of the ES (**Application Document Reference:TR010041/APP/6.1**). The **General Arrangement Plans** (**Application Document Reference: TR010041/APP/2.4**) show the Scheme layout. Each component of the Scheme, split into Part A and Part B, is described in more detail below.

Part A

2.1.3 Part A comprises 12.6km of dualling of the existing A1 single carriageway between Warreners House Interchange at Morpeth and the dual carriageway at Felton (both online and a new offline section). It includes the de-trunking of a section of the existing A1, and the construction of four overbridges (three of which are new junctions), an underbridge, a new subway, a bridge over the River Coquet, new and extended culverts and new access tracks.

2.1.4 To facilitate the construction of the Scheme, statutory utilities will need to be diverted throughout Part A. In particular, the diversion of sections of a National Grid high-pressure gas main, a Northern Gas Networks pipeline and a Northern Powergrid overhead electricity line near Causey Park will be required.

2.1.5 At the southern extent of Part A, the dualling of the existing single carriageway section of the A1 would begin close to Northgate Hospital. This is to the northwest of Morpeth where the existing dual carriageway ends and the A1 becomes single carriageway.

2.1.6 From Northgate Hospital to Priest's Bridge, a stretch of approximately 2.9 km of the existing A1 would be used as the southbound carriageway and a new northbound carriageway would be constructed adjacent to the west of the existing carriageway. Both carriageways would comprise two 3.65 m wide lanes with 1 m hard strips on either side. Access from the A1 to residential properties around Warrener's House would be removed and stopped up, and new access arrangements for these properties would be provided to the east and south.

2.1.7 At Priest's Bridge, Part A would include approximately 6.1 km of offline widening with the construction of new dual carriageway to the west of the existing A1 (the "offline section"). This new offline section would move away from the existing line of the A1 towards the west of Earsdon Moor, passing east of Fenrother, New House Farms, and Causey Park, and tying-back into the existing A1 to the east of Burgham Park and west of Felmoor Park. Both carriageways would comprise two 3.65 m wide lanes with 1 m wide hard strips to either side.

2.1.8 A new grade-separated junction with a bridge over the A1 would be constructed where the new road crosses the side road between the existing A1 and Fenrother. Connectivity from Causey Park across the new dual carriageway would be maintained by a new overbridge on the line of the existing side road to Causey Park. An underbridge would

be constructed to enable the road from Longhorsley to the existing A1 to pass under the new dualled A1.

2.1.9 From Burgham Park to the northern extent of Part A, the offline section would tie in with the existing A1 dual carriageway. The widening would be online for approximately 3.6 km and the existing A1 (including the existing bridge over the River Coquet) would form the new northbound carriageway. A new southbound carriageway (including construction of a new bridge over the River Coquet) would be constructed on the eastern side.

2.1.10 Bywell Road is a rural 3.8 km long single carriageway connecting the A697 to the existing A1 in an east-west direction. Along this road, connections to the A697 and A1 are both in the form of at-grade junctions. As part of the Scheme, Bywell Road would be realigned north from its existing junction with the A1, which would be removed, to connect to West Moor Road, with an at-grade junction to the west of the proposed West Moor Junction. From there, access to the A1 would be via the new junction.

2.1.11 Between Priest's Bridge and Felmoor Park, the existing A1 would be bypassed by the offline section of Part A. The existing section of the A1 in this area (de-trunked A1) would cease to be a trunk road and would be passed to the ownership of NCC who would have responsibility for its future maintenance as a local access road.

Part B

2.1.12 The southern extent of Part B is located approximately 15 km north of the northern extent of Part A. Part B comprises approximately 8km of dualling of the existing A1 single carriageway, one new junction at Charlton Mires, an accommodation overbridge at Heckley Fence, new and extended culverts, temporary and permanent Public Rights of Way (PROW) diversions and new access roads.

2.1.13 To facilitate the construction of the Scheme, statutory utilities will need to be diverted throughout Part B. In particular, the diversion of sections of a Northern Powergrid circuit from Denwick to Middlemoor Windfarm Teed and sections of a Northern Gas Networks pipeline will be required.

2.1.14 The entire length of Part B from Alnwick to Ellingham would include online widening to the east of the existing A1. The width of each mainline carriageway would be 9.3 m and comprise of two 3.65 m wide lanes with 1 m hardstrips either side.

2.1.15 A new grade-separated junction, with a bridge over the A1, would be constructed at Charlton Mires at the northern end of Part B. The B6347 to the west of the Charlton Mires junction would be realigned to accommodate a roundabout and access to the junction. At the southern end of Part B an accommodation overbridge would be located east of Heckley Fence to provide additional connectivity.

2.1.16 A number of Private Means of Access (PMAs) currently take access directly onto the A1. These would all be extinguished, and alternative safer accesses provided as part of Part B.

2.2 Existing Land Uses and Character

Part A

2.2.1 The area surrounding the existing A1 and that would be close to Part A is generally an open and rural landscape of medium to large scale intensive farmland with arable and pasture fields enclosed by hedgerows, some tree-lined and some stone walls, as shown in **Figure 2.1: Environmental Constraints Plan: Part A, Volume 1** of the ES (**Application Document Reference: TR010041/APP/6.1**).

2.2.2 There are numerous small areas of woodlands, both conifer plantations and broadleaf woodland. The southern extent of Part A is located within designated Green Belt as identified on **Figure 7.10: Green Belt, Volume 5** of the ES (**Application Document Reference: TR010041/APP/6.5**).

2.2.3 The towns of Morpeth and Felton constitute the main urban areas near to Part A. In addition, smaller hamlets or villages, such as Hebron, Fenrother and Espley are near to Part A and are interspersed along its length. Isolated residential and commercial properties lie within proximity to Part A, together with farm holdings and community facilities.

2.2.4 The Tritlington Church of England First School is located adjacent to Part A, situated along the proposed de-trunked section of the A1 just north of Priest's Bridge. A network of PRoW surrounds and at some locations, cross Part A. This network includes the St Oswald's Way long-distance walking route, which follows the route of the River Coquet under the existing A1.

2.2.5 Two Noise Important Areas (NIA) lie adjacent to Part A: one at Northgate Farm adjacent to the southbound side of the A1 just north of Morpeth; and the other at Field View adjacent to the southbound side of the A1.

2.2.6 Part A crosses or lies close to a number of watercourses. Two of these, the River Coquet and Longdike Burn (located north of Causey Park Bridge), are designated by the Environment Agency (EA) as Main Rivers.

2.2.7 The majority of Part A would be located within the low-risk Flood Zone 1 (where the risk of fluvial flooding is less than 1 in 1000 (0.1%) in any year). However, some sections of Part A would be in the medium-risk Flood Zone 2 (where the risk of fluvial flooding is between 1 in 1000 (0.1%) and 1 in 100 (1%) in any year) and the high-risk Flood Zone 3 (where the risk of fluvial flooding is greater than 1 in 100 (1% in any year).

2.2.8 Part A is moderately elevated (generally between about 80 m and 150 m Above Ordnance Datum (AOD)) and gently rolling with the topography generally falling towards the coast to the east.

2.2.9 Part A lies within areas designated as an Area of High Landscape Value (AHLV), predominately the northern extent of Part A around the River Coquet.

2.2.10 The River Coquet and Coquet Valley SSSI, the Coquet River Felton Park Local Wildlife Site (LWS) and Dukes Bank Wood Ancient Woodland are affected by Part A because they lie in part within the Order limits of Part A. The Order limits of Part A and surrounding area also contains multiple priority or notable habitats and records of, or potential for, numerous protected or notable species.

2.2.11 Within the Order Limits of Part A, there are six designated heritage assets (Grade II Listed mileposts), nine non-designated assets and 16 areas identified as being of potential to contain further non-designated remains, which have the potential to be directly impacted as a result of Part A.

2.2.12 Within a 1 km boundary of Part A, there are 61 Listed Buildings, one Scheduled Monument (Felton Old Bridge) and two Conservation Areas (Felton and West Thirston). Six of the historic buildings lie on or adjacent to the carriageway and comprise Grade II mileposts.

Part B

2.2.13 The area surrounding the existing A1 is a generally open and rural landscape of medium to large scale intensive farmland with arable and pasture fields enclosed by hedgerows, some tree-lined, and some stone walled, as shown in **Figure 2.1: Environmental Constraints Plan: Part B, Volume 1** of the ES (**Application Document Reference: TR010041/APP/6.1**).

2.2.14 There are numerous small areas of woodland adjacent to the existing A1. To the east, the landform gradually rises to approximately 100 metres AOD near Rennington Moor. To the west, the land is more undulating with a high point of approximately 140 metres AOD near White House Folly. A number of natural resources and areas classified or protected under legislation and policy are located within the corridor and surrounding area as detailed below.

2.2.15 The largest town within 5 km of Part B is Alnwick to the south-west. Smaller hamlets and villages such as Denwick, South Charlton, North Charlton and Brownieside are interspersed throughout the length of Part B, and isolated residential dwellings, commercial properties and several farms lie adjacent to it, within the Order Limits of Part B.

2.2.16 There are no Air Quality Management Areas (AQMAs) or NIAs within or adjacent to Part B. Alnwick Castle Registered Park and Garden is located approximately 900 metres to the south west of Part B.

2.2.17 Northumberland Coast Area of Outstanding Natural Beauty (AONB) lies approximately 5 km to the east of Part B. The former Kyloe Hills and Glendale Area of High Landscape Value (AHLV), an intermediate area of landscape value, is situated approximately 1 km north of Part B. In addition to this a former area of high landscape value is situated to the west of Part B. Key visual receptors include individual rural properties and recreational viewpoints from PRoW are identified in **Chapter 7: Landscape and Visual, Volume 3** of the **ES** (**Application Document Reference: TR010041/APP/6.3**).

2.2.18 There are eight Scheduled Monuments located within 1 km of Part B. Two Scheduled

Monuments (North Charlton Medieval Village and open field system and Camp at West Linkhall) abut the Order Limits of Part B and two are located in close proximity (Ellsnook Round Barrow and a Prehistoric Burial Mound) to the Order Limits of Part B.

2.2.19 There are 39 Listed Buildings, with two of the Listed Buildings also designated as Scheduled Monuments, Alnwick Castle Registered Park and Garden and Rock Conservation Area within 1 km of the Order Limits of Part B. There are no designated built heritage assets within the Order Limits.

2.2.20 A total of 50 non-designated heritage assets, which were identified via the Historic Environment Record and through the assessment, are within 500 m of the Order Limits of Part B. Two built heritage assets (Milepost north of Shipperton Bridge and Charlton Mires) and three non-designated below ground heritage assets (Stone Cists and Tumulus, two flint flakes of Neolithic and Bronze Age date, and Heckley House) are within the Order Limits of Part B. There are 9 historic landscape types recorded within the Order Limits of Part B. There is also potential for underground unknown buried archaeological remains.

2.2.21 No statutory ecological sites are located within the Order Limits of Part B. Four Special Areas of Conservation (SAC), one Special Protection Area (SPA) and one Ramsar site are located within 10 km of Part B. Longhoughton Site of Special Scientific Interest (SSSI) is located 1.9 km south east of Part B and Hulne Park Local Wildlife Site is situated 1.5 km to the west. Swineclose Wood is an area of ancient semi-natural woodland 5.18 ha in size, located 1.6 km to the north east of Part B. The Order Limits of Part B and surrounding area also contains habitats of principal importance and records of, or potential for, numerous protected or notable species including, for example, bats, barn owls and breeding birds.

2.2.22 The majority of Part B's main alignment is located in the low risk flood zone 1 where the risk of flooding from fluvial sources is less than 1 in 1000 (0.1%) in any year. However, there are small areas of Flood Zone 3 located at the southern section of the Part B study area to the north west of Denwick, and to the east of Shipperton Bridge, where the risk of flooding from fluvial sources is greater than 1 in 100 in any year. Sections of Part B are at high, medium and low risk of flooding from surface water sources. The hydraulic model undertaken for Part B has identified that Charlton Mires Site Compound (to be located adjacent to the existing Charlton Mires junction) is at risk of fluvial flooding from the southern tributary of Kittycarter Burn.

2.2.23 Part B's alignment would cross five watercourses and their associated tributaries. There are no main rivers within 500 m of Part B.

Construction Compounds

2.2.24 It is proposed that several construction compounds would be required to facilitate construction of the Scheme. The largest construction compounds are as follows:

2.2.25 The Main Compound is located within the Order Limits of Part A and would be shared with Part B. It is approximately 1.5 km south west of Felton and approximately 16 km from Part B.

2.2.26 The Main Compound is bordered on all boundaries by existing tree and hedgerow planting. There are a number of residential receptors within the vicinity of the Main Compound: West Moor Houses located 400 metres west of the A1; Glenshotten situated 480 metres to the north east, and Thirston New Houses located 200m to the east of the **Main Compound**

2.2.27 The River Coquet and Coquet Valley Woodlands SSSI is located approximately 500m to the north of the Main Compound, and the Coquet River Felton Park Local Wildlife Site is also located approximately 500m north. Habitats at the boundary of the Main Compound provide some value for nesting birds.

2.2.28 The closest AQMA to the Main Compound is the Newcastle City Council's AQMA No.5 (Gosforth), which is approximately 34km to the south of the Main Compound. There are no NIAs within 1km of the Main Compound.

2.2.29 There is one Grade II listed milepost recorded within the compound boundary (NHLE 1371021) although a recent site inspection failed to locate it in this location. There are three non-designated assets recorded within 500m of the Main Compound (two below ground assets and one built heritage asset). There are nine designated built heritage assets within 1km of the Main Compound.

2.2.30 A single statutory nature conservation site is located within 2 km of the Main Compound; the River Coquet and Coquet Valley Woodlands SSSI, which is located approximately 500m north of the Main Compound. Coquet River Felton Park Local Wildlife Site (LWS) is also located approximately 500m north of the Main Compound. Additionally, habitats at the boundary of the compound location provide some value for nesting birds.

2.2.31 The Main Compound is located in close proximity to one watercourse; an unnamed tributary of the Thirston Burn which flows along the northern boundary of the compound. The unnamed tributary of Thirston Burn discharges into the Thirston Burn approximately 2km downstream of the compound. The Thirston Burn discharges into the River Coquet approximately 3km downstream of the site compound. At this location and immediately north of the Main Compound, the River Coquet is a Main River and forms part of the River Coquet and Coquet Valley Woodlands SSSI. A surface water pond is also located approximately 400 m to the south east of the Main Compound.

2.2.32 The Main Compound is located within the low-risk Flood Zone 1 where the risk of flooding from fluvial sources is less than 1 in 1000 (0.1%) in any year. The Main Compound is also at low risk of flooding from surface water sources.

Lionheart Enterprise Park Compound

2.2.33 The Applicant currently has a Maintenance Depot that is located within Lionheart Enterprise Park to the south of Alnwick approximately 4km south of Part B. The proposed Lionheart Enterprise Park Compound would utilise the depot as well as the immediately surrounding area.

2.2.34 Whilst the area adjacent to the existing depot has been identified within the Alnwick District local plan for commercial development, it is not anticipated that the Scheme would impact on this wider policy aspiration in this location as it is likely that the Scheme

would be complete before the land is required for commercial development, It is in any case not considered that there is any inherent conflict between the short term use of the land as a temporary site compound and the long term policy aspirations for developing the site,

2.2.35 The Lionheart Enterprise Park Compound is bordered by an existing hedgerow to the south, existing industrial estate to the north and an existing PRoW to the west. There is a total of five PRoW within 500m of the Order Limits of the Lionheart Enterprise Park Compound.

2.2.36 No National Trails or National Cycle Routes are located within 500m of the Lionheart Enterprise Park Compound.

2.2.37 The Genix Healthcare NHS Dentist is situated approximately 150m from the Lionheart Enterprise Park Compound. The Duchess's Community High School is located approximately 500m to the west of the Lionheart Enterprise Park Compound.

2.2.38 The nearest AQMA to the Lionheart Enterprise Park Compound is the Newcastle City Council's AQMA No.5 (Gosforth), which is approximately 45km to the south of the Lionheart Enterprise Park Compound. There are no NIAs within 1km of the Lionheart Enterprise Park Compound. Sensitive receptors are predominantly commercial as the Compound is located on an industrial estate. The nearest residential receptor is the new Hogs Head Inn and hotel approximately 400m to the west.

2.2.39 Four Grade II listed buildings lie within 1km of the Lionheart Enterprise Park Compound, but none are located within its Order Limits. Part of the area proposed for the Compound has already been subject to archaeological evaluation as part of an earlier Highways England planning application for the maintenance depot and access road (Ref. 16/04691/FUL). The surveys identified furrow type features and drains of negligible importance.

2.2.40 No statutory ecological designated sites are located within 2km of the Lionheart Enterprise Park Compound. However, habitats at the boundary of the Compound provide some value for nesting birds where clearance is required for access.

2.2.41 The Lionheart Enterprise Park Compound is located within 500m of two ordinary watercourses: the Willow Burn and the Cawledge Burn, both of which are located to the south.

2.2.42 The Lionheart Enterprise Park Compound is also located within the low-risk Flood Zone 1 where the risk of flooding from fluvial sources is less than 1 in 1000 (0.1%) in any year. There is a small area 400 metres to the south that is in the high-risk Flood Zone 3 where the risk of flooding from fluvial sources is greater than 1 in 100 in any year, however the Lionheart Enterprise Park Compound is at low risk of flooding from surface water sources. Land immediately adjacent to the Cawledge Burn is at a medium risk of surface water flooding.

2.3 Background to the Scheme

2.3.1 The A1 is a route of national importance that plays an essential strategic role linking

England with Edinburgh. It is an important route for long distance traffic on the eastern side of the country.

2.3.2 The A1 also plays an important regional role within Northumberland, providing a local route for commuters, holiday makers and agricultural traffic, as well as accommodating a higher than average level of HGV use.

2.3.3 The A1 is part of the Strategic Road Network (SRN). The SRN as a whole is the most heavily used part of the road network, carrying over 4 million vehicles a day. The importance of the SRN is illustrated by the statistic that despite only accounting for 2% of the overall road network it carries one third of all traffic and over two thirds of all freight traffic. Demand on the SRN is predicted to increase, with forecasts indicating that traffic on the SRN will continue to grow across the short, medium, and long term.

2.3.4 The A1 in Northumberland is *'one of the most notorious and longstanding road hot spots in the country*[1]*'.* Improving the A1 is a long-established aim of planning policy, with Policy TT2 of the Alnwick Wide District Local Plan (1997) specifically safeguarding the route of the Scheme with the aim of delivering the '*upgrading of the A1 Trunk Road*'.

2.3.5 A search of Hansard shows that the operation of the A1 in Northumberland, and its improvement, was raised in parliament as long ago as 1978[2] and has subsequently been referred to in parliamentary debate a further 77 times, in written answers on 55 occasions, and was twice the subject of specific parliamentary debate.[3]

2.3.6 A '*Dual the A1 Campaign Group*' campaign was established in 2007[4] with the express view of securing the dualling on the A1 in Northumberland, and more recently the Prime Minister's chief advisor indicated in January 2020 that the Government's desire to appoint people and companies that '*could dual carriageway the A1 north of Newcastle in record time'.*

2.3.7 In February 2020 the Prime Minister confirmed to parliament the Government's commitment to dualling the A1 to the north of Newcastle: '*I can signal today that we are taking forward transformative improvements from Cornwall to the A1 north of Newcastle, from south Salisbury to south Ribble, from Cheadle to Chiverton*[5]'.

2.3.8 This commitment is part of a wider programme to 'level up' investment in infrastructure

[1] Page 13 of Investing in Britain's Future (published in June 2013): https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/209279/PU1524_IUK_new_template.pdf

[2] '*From just south of Alnwick through to Scotland there are no dual carriageway sections at all. The whole of the A1 is a single-carriageway road, and at times it is just a steep and winding country lane. Even where it has been improved and the Department has put resources into it, the result is still a road on which it is not safe to overtake unless traffic in the opposite direction is mysteriously absent.'* Alan Beith MP (Berwick-upon-Tweed) 03 August 1978: https://hansard.parliament.uk/Commons/1978-08-03/debates/f6b97cff-f317-40d9-9931-ecf75dfaf246/Roads(Northumberland)?highlight=a1%20northumberland#contribution-1e0fbd18-9a09-4203-9d3e-5841e11947f3

[3] https://hansard.parliament.uk/search?startDate=1970-02-21&endDate=2020-02-21&searchTerm=a1%20northumberland%20&partial=False

[4] http://dualthea1.com/

[5] https://hansard.parliament.uk/Commons/2020-02-11/debates/9160CC0E-C4BB-4D51-8CD9-93EB9D76F644/TransportInfrastructure?highlight=a1%20north%20newcastle#contribution-36130C58-2C94-41E8-8710-041964B5B16C

across the country to improve people's quality of life and economic productivity.

2.4 Scheme History

2.4.1 This section sets out the Scheme history and outlines the studies that have previously been undertaken into issues on the A1 to the north of Newcastle.

A1 North of Newcastle Multi Modal Study 2002

2.4.2 The A1 North of Newcastle Multi Modal Study ('A1 MMS') was published by the Government Office for the North East in December 2002 and appraised a number of scenarios to improve the corridor of the A1, between Newcastle and the Scottish border.

2.4.3 The A1 MMS considered the safety, operation and the wider potential for economic development resulting from improved transport links between Newcastle and the Scottish border, which includes the stretches of the A1 within this Scheme. The A1MMS identified the following issues within the study corridor:

a. Dispersed population;
b. Low car ownership;
c. Need to protect the environment, in particular the effect on the Northumbria Heritage Coast Line and an Area of Outstanding Natural Beauty;
d. Importance of tourism to the regional economy;
e. Need to encourage inward investment in the North East;
f. Concerns over the accident rate on the A1 in Northumberland;
g. Lack of overtaking opportunities and consequent poor journey times;
h. Restricted capacity on the East Coast Main Line railway; and
i. Limited rail, coach and bus services between main county towns.

2.4.4 Included within the recommendations of the A1 MMS was the dualling of a 13km stretch of the A1 between Morpeth and Felton and dualling to the north of Alwnick to support a reduction in accidents and provide safe overtaking opportunities along the sections of single carriageway.

A1 North of Newcastle Study (2011)

2.4.5 The A1 North of Newcastle Study was published in 2011 with the aim of considering evidence that could identify options to tackle transport challenges on the A1 corridor between Morpeth and the Scottish border.

2.4.6 Several issues were identified across a range of different transport modes. Relevant to the Scheme, the study highlighted that the mixture of highway standards on the A1 corridor impacts on the operation of the route. Analysis of journey times indicated that the route generally had good journey time reliability but that delays of up to 39 seconds were found at some points of the network. The study also found that an above average number of HGVs were also found to limit overtaking opportunities on the route as a whole.

2.4.7 As part of the study, stakeholder groups in the area were consulted. These stakeholder groups identified the following issues on the A1 to the North of Newcastle:

i. Concerns about the lack of overtaking opportunities;
ii. The belief that there is an opportunity to improve regional connectivity and to deliver regeneration opportunities in the North East by improving the A1;
iii. The belief that the A1 does not adequately cater for the region's needs and is a barrier to employment and investment in the North East of England; and
iv. That any improvement to the A1 would need to maintain access to Northumberland's key tourist sites whilst maintaining local environmental qualities.

2.4.8 Relevant to the Scheme, the study found that, overall road safety, and slow speeds on the A1 were identified as being amongst the '*most pressing issues*' for A1 corridor.

Investing in Britain's Future (2013)

2.4.9 Following the 2013 Spending Review, the Government published '*Investing in Britain's Future*' which sets out the Government's intention to build a strong UK economy by delivering infrastructure that competes with the best in the world[6].

2.4.10 Page 13 of the document confirms the Government's intention to invest over £28 billion in enhancements and maintenance of national and local roads. As part of that investment programme, the Government announced a number of feasibility studies to examine problems on the SRN and to identify potential solutions to '*some of the most notorious and longstanding road hot spots in the country*', including the A1 to the north of Newcastle.

Autumn Statement 2014

2.4.11 The Autumn Statement 2014 set out the next stage of the government's long-term economic plan, seeking to improve the UK's productivity and to invest in the UK's infrastructure as part of building a northern powerhouse.

2.4.12 Confirming that '*High quality roads are vital for productivity growth, transporting people and products between cities, towns and villages',* Chart 1.11 ('*Investment Across the UK'*) of the Autumn Statement committed to '*Dualling of the A1 as far as Ellingham.'*[7]

Road Investment Strategy

2.4.13 The Road Investment Strategy was first published in December 2014 (RIS1) and set out the Government's long-term investment plan in the road network, particularly the SRN. RIS1 was published with the intention of delivering between 2015 and 2020:

[6] 'Investing in Britain's Future' Page 5: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/209279/PU1524_IUK_new_template.pdf
[7] Page 39 of the 2014 Autumn Statement: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/382328/44695_Autumn_Statement__Print_ready_.pdf

i. £15.2 billion invested in over 100 major schemes to enhance, renew and improve the network;
ii. helping to prevent over 2500 deaths or serious injuries on the network;
iii. building over 1300 additional lane miles;
iv. improving 200 sections of the network for cyclists;
v. benefiting up to 250,000 people by reducing the noise impact of England's motorways and major roads.

2.4.14 Page 19 of the Investment Plan confirms that the A1 to the north of Newcastle, provides a "*nationally important*" connection between Newcastle and Edinburgh and that it comprises an "*essential*" link for the North East and Northumberland and needs "*substantial improvement*" to meet the needs of the local economy and to better fulfil its role in the national transport network.

2.4.15 An investment package for the A1 to the north of Newcastle worth around £290 million was confirmed. This included funding for the Scheme as part of providing: "*thirteen miles of upgrade to dual the carriageway linking the Morpeth and Alnwick bypasses with the dual carriageway near Ellingham, to create a continuous, high-quality dual carriageway from Newcastle to Ellingham*" (Page 32 of the Investment Plan).

2.4.16 The second RIS was published on 11 March 2020 which confirmed the ongoing commitment to deliver improvements to the A1 between Morpeth and Ellingham. Further details on the second RIS can be found in **Chapter 3** of this Case.

A1 North of Newcastle Feasibility Study (2015)

2.4.17 Following publication of Investing in Britain's Future and RIS1, the then Highways Agency commissioned a feasibility study to consider the A1 to the north of Newcastle, from its junction with the A19 at Seaton Burn and the Scottish border in February 2014, which included the Scheme. The Study was split into three stages:

i. Stage 1: Data Collection, Analysis and Problem Identification;
ii. Stage 2: Option Identification, Sifting and Assessment; and
iii. Stage 3: Option Affordability, Deliverability and Value for Money.

2.4.18 Stage 1 of the Study identified several key problems and issues on the whole of the A1 to the north of Newcastle using an analysis of a wide array of available data, as follows:

i. Average speeds on the single carriageway sections of the route are significantly lower that the sections that have been upgraded to dual carriageway;
ii. Relatively high proportion of HGVs (and agricultural vehicles) resulting in reduced speeds for following vehicles and potential for driver frustration; and
iii. Large number of at-grade junctions/private means of access;
iv. Lack of overtaking opportunities;
v. Lack of alternative routes;
vi. Inconsistent carriageway standards on the route;
vii. Poor junction standards/layout;
viii. Peak hour traffic speeds significantly below free flow speeds - analysis of Trafficmaster data shows that peak hour traffic speeds are significantly lower than average off-peak speeds.

2.4.19 Stage 1 of the Study split the A1 into 11 sections based on road type and geography, with Section 3 comprising Part A and Section 5 comprising Part B. An analysis of Average Route Speeds along the whole of the A1 to the north of Newcastle found that: *"The slowest section of this route is Section 3 (between Morpeth and Felton), with 12 hour average speeds of less than 50 mph on this section"* (12 hours were daily measurements from 7 am to 7pm).

2.4.20 Congestion on the A1 north of Newcastle was also assessed using the available journey time data. Part 3.6 of the Study found that: "*The data shows that Section 3 of the route (between Morpeth and Felton) suffers the most delay over its length with the majority of the links experiencing 10-20% delay*." The same paragraph also noted that in general, dual carriageway sections of the A1 North of Newcastle "*do not experience delay*".

2.4.21 While the Study concluded at paragraph 3.6.1, that there was not enough data to determine the cause of congestion, the following reasons were suggested:

a. **A High percentage of HGVs** – The A1 North of Newcastle has several sections of single carriageway and suffers from an above average percentage of HGVs. HGVs are limited to 40mph on single carriageway roads and 50mph on dual carriageways. A lack of overtaking opportunities on single carriageway sections of the route can therefore lead to vehicles "platooning" behind HGVs.
b. **Agricultural vehicles** – The A1 North of Newcastle is a rural road with many farm and field accesses directly off the route. Anecdotal evidence suggests that these vehicles are a cause of delays to other traffic, particularly at harvest times.

2.4.22 The table on Page 29 of the Study summarises the analysis of congestion, identifying Part A as the only section of the A1 to the north of Newcastle that is experiencing *"peak hour traffic speeds significantly below free flow conditions."*

2.4.23 Through the analysis of a wide array of available data. Stage 1 of the Study identified several key problems and issues on the whole of the A1 to the north of Newcastle route as a whole:

a. Lack of alternative routes;
b. Inconsistent carriageway standards on the route;
c. Poor junction standards / layout;
d. Large number of at-grade junctions / Private Means of Access;
e. Average speeds on the single carriageway sections of the route are significantly lower than sections that have been upgraded to dual carriageway;
f. Relatively high proportion of HGVs (and agricultural vehicles) resulting in reduced speeds for following vehicles and potential for driver frustration;
g. Lack of overtaking opportunities; and
h. Peak hour traffic speeds significantly below free flow speeds - analysis of Traffic Master data shows that peak hour traffic speeds are significantly lower than average off-peak speeds.

2.4.24 As illustrated in **Table 1** below, Part A is identified as the one of only three of the 11 sections (Section 3) in the Study area to suffer from every one of these identified issues: Section 5 within Table 1 highlights the issues identified on Part B.

Table 1: **Identified Problems and Issues on the A1 North of Newcastle**

	Route Section										
Problem	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
Lack of alternative routes.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Inconsistent carriageway standards on the route.						✓					
Poor junctions standards / layout.	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
Large number of at-grade junctions / Private Means of Access. This can result in delays to following vehicles and potential for accidents when vehicles slow down to exit the main carriageway or are entering the main carriageway.	✓		✓	✓	✓	✓	✓	✓			
Traffic speeds - Average speeds on the single carriageway sections of the route are significantly lower than sections that have been upgraded to dual carriageway.			✓		✓		✓	✓	✓	✓	
Relatively high proportion of HGVs (and agricultural vehicles) resulting in reduced speeds for following vehicles and potential for driver frustration.			✓	✓	✓	✓	✓	✓	✓	✓	✓
Lack of overtaking opportunities.			✓		✓		✓	✓	✓	✓	
Peak hour traffic speeds significantly below free flow speeds - analysis of Trafficmaster data shows that peak hour traffic speeds are significantly lower than average off-peak speeds.			✓				✓	✓			
Section 1 – Dual Carriageway A1/A19 Seaton Burn to Clifton Junction Section 2 – Dual Carriageway Clifton Junction to A1/A697 Section 3 – Single Carriageway Morpeth to Felton Section 4 – Dual Carriageway Felton to Alnwick Section 5 – Single Carriageway north of Alnwick Section 6 – Dual Carriageway north of Alnwick Section 7 – Single Carriageway between Ellingham and Fenwick Section 8 – Fenwick to A1/A1667 South of Berwick Section 9 – Berwick Bypass to the south of River Tweed Section 10 – Berwick Bypass north of River Tweed Section 11 – Dual Carriageway north of Berwick											

Table B – 4 on Page 5 of Appendix B of the Stage 1 Study provides more details of the issues and problems identified in relation to Part A. **Table 2** below sets out the evidence of these issues and includes – in the original – the author's views of the strength of this evidence

Table 2: Identified Problems and Issues – Part A

Problems and Issues	Evidence / Commentary	Strength of Evidence
Traffic Speeds – Low average traffic speeds relative to other sections of the route.	Traffic data on Part A suggests average daily (07:00-19:00) traffic speeds of approximately 50mph compared to the average of 65mph on dual carriageway sections of this route.	Good evidence
Higher than average proportion of HGVs	Traffic data suggests that the proportion of HGVs is slightly above the national average for this type of road. High proportions of HGVs on this type of road can affect both average traffic speeds and safety due to driver frustration due to lack of overtaking opportunities.	Good evidence
Large number of at-grade junctions along the route resulting vehicle conflict	There are a number of residential and field accesses on this 8-mile section of the A1. These junctions are of varying standards resulting in numerous conflict points as vehicles access/exit side roads.	Some evidence
Lack of overtaking opportunities	Single Carriageway route section	Good evidence
Safety	Analysis of accident records obtained via the DfT shows that the expected number of accidents over this section is marginally lower than national averages for this type of road. However, the proportion of Fatal accidents appears to be marginally higher than expected. The 2011 North of Newcastle Study[8] also found that the A1 suffers more overtaking accidents than would be expected on a road of this type.	Some evidence
Peak hour traffic speeds significantly below free flow speeds	Analysis of Traffic Master data shows that the AM and PM peak average speeds are significantly lower than the average speeds in the off peak (23:00 – 03:00).	Good evidence
Poor Junctions Standard / Layout	Junction standards and layouts vary significantly on this section	Good evidence

[8] The A1 North of Newcastle Study undertaken in 2011, which is referred to in the 2015 A1 North of Newcastle Feasibility Study

Problems and Issues	Evidence / Commentary	Strength of Evidence

2.4.25 Table B – 4 on Page 5 of Appendix B of the Stage 1 Study provides more details of the issues and problems identified in relation to Part B. **Table 3** below sets out the evidence of these issues and includes – in the original – the author's views of the strength of this evidence

Table 3: Identified Problems and Issues – Part B

Problems and Issues	Evidence / Commentary	Strength of Evidence
Traffic Speeds – Low average traffic speeds relative to other sections of the route	Traffic data suggests average daily (07:00-19:00) traffic speeds of approximately 56mph compared to the average of 65mph on dual carriageway sections of this route.	Good evidence
Higher than average proportion of HGVs	Traffic data suggests that the proportion of HGVs is significantly above the national average for this type of road. High proportions of HGVs on this type of road can affect both average traffic speeds and safety due to driver frustration due to lack of overtaking opportunities.	Good evidence
Large number of at-grade junctions along the route resulting vehicle conflict	There are 6 at-grade junctions plus a number of residential and field accesses on this nearly 5 mile section of the A1. These junctions are of varying standards resulting in numerous conflict points as vehicles access/exit side roads.	Some evidence
Safety	Analysis of accident records obtained via the DfT shows that the expected number of accidents over this section is lower than national averages for this type of road. However, the proportion of Serious and Fatal accidents appears to be higher than expected. The 2011 North of Newcastle Study also found that the A1 suffers more overtaking accidents than would be expected on a road of this type.	Some evidence
Lack of overtaking opportunities	Single Carriageway route section	Good evidence

Peak hour traffic speeds significantly below free flow speeds	Analysis of Traffic Master data shows that the AM and PM peak average speeds are significantly lower than the average speeds in the off peak (23:00 – 03:00).	Good evidence
Problems and Issues	**Evidence / Commentary**	**Strength of Evidence**
Poor Junctions Standard / Layout	Junction standards and layouts vary significantly on this section	Good evidence

2.4.26 Based on the issues identified on the A1 to the north of Newcastle, a series of key objectives for the Scheme were identified that were intended to inform Stage 2 of the Study:

i. Improve journey times on this route of strategic national importance;
ii. Improve network resilience and journey time reliability;
iii. Improve safety;
iv. Maintain access for local traffic whilst improving the conditions for strategic traffic; and
v. Facilitate future economic growth.

2.4.27 Stage 2 of the study identified network interventions that could meet these objectives and help to address the identified issues on the A1 to the north of Newcastle and an initial list of 113 options were developed. These interventions were then assessed and reduced to a list of four options to be taken forward for a more detailed assessment as part of Stage 3 of the Study, as set out in **Table 4** below

Table 4: Options to be taken forward for a more detailed assessment

Option	Description
Option A (referred to as Options 1 / 2 in Stage 2 Report)	8 miles of dualling between Morpeth and Felton (Online or Offline)
Option B (referred to as Option 3 in Stage 2 report)	Dualling remaining sections of single carriageway on the full route of the A1 between Seaton Burn and the Scottish border (37 miles of additional dualling)
Option C (referred to as Option 4 in Stage 2 report)	Dualling remaining sections of single carriageway between Seaton Burn and Ellingham (13 miles of additional dualling)
Option D (referred to as Option 7 in Stage 2 report)	Dualling remaining sections of single carriageway between Seaton Burn and Ellingham (13 miles of additional dualling). Upgrading 19 miles of single carriageway between Ellingham and Scremerston by

	means of Overtaking / Climbing lanes.

2.4.28 Stage 3 of the Study focused in more detail on these options, assessing the strategic case for each option based on the identified problems and issues. The Study found there was a clear rationale for improvements to the A1 and that each of the options would go some way to addressing the issues on the route.

2.4.29 The Study concluded that all four of the options were all considered to have a strategic fit within the local and national policy context.

Road Investment Strategy for the period 2015/16-2019/20 (RIS1)

2.4.30 In March 2015, the RIS1 was presented to Parliament. RIS1 sets out a long-term programme for motorways and major roads with funding allocated accordingly.

2.4.31 RIS1 was published shortly after the A1 North of Newcastle Feasibility Study, and endorsed the conclusions of the study set out in Table 3 of this Case by announcing an investment package worth around £290 million to provide the following interventions on the network:

i. A1 Morpeth to Ellingham – thirteen miles of upgrade to dual the carriageway linking the Morpeth and Alnwick bypasses with the dual carriageway near Ellingham, to create a continuous, high-quality dual carriageway from Newcastle to Ellingham.
ii. A1 north of Ellingham enhancements – a set of measures to enhance the performance and safety of the A1 north of Ellingham, including:
    - Three stretches of climbing lanes totaling 2.5 miles;
    - Five junctions enhanced with right-turning refuges; and
    - Better crossing facilities for pedestrians and cyclists.[9]

2.4.32 This investment package corresponds with Option D identified in Table 4 of this Case and includes the dualling of the A1 between Morpeth and Ellingham.

London to Scotland East Route Based Strategy March 2017

2.4.33 Route-Based Strategies (RBS) are used by the Applicant to inform the investment strategy for the wider SRN. RBS are intended provide a high-level view of the current performance of the SRN as well as issues perceived by relevant stakeholders that affect the network and are one of the key components of research required for development of the RIS.

2.4.34 The London to Scotland East RBS was published in March 2017 and provides a statement of the current performance of, and perceived pressures on, the London to Scotland East route to inform the planning of future investment.

[9] Page 19 of the RIS March 2015: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/408514/ris-for-2015-16-road-period-web-version.pdf

2.4.35 The RBS identified the '*current constraints and challenges'* that affect the route, stating that *'Parts of the route are single carriageway, which tends to restrict capacity and can lead to drivers taking risks when overtaking, particularly when travelling behind slow-moving traffic* '. The stretches of single carriageway referred to by the RBS include the A1 between Alnwick and Ellingham.

2.5 Identification of Route Options

2.5.1 It should be noted that in identifying options, no option representing a continuous road improvement over Part A and Part B as well as the intervening section of road has been identified for the Scheme. This is because between the two parts, dual carriageway is already in place and as **Table 1** above demonstrates, fewer issues affect Section 4 as described in that table. Hence, it would be disproportionate to have proposed an entirely new alignment offline of the existing dual carriageways purely to ensure a contiguous scheme. Where necessary, it is possible to address issues relating to the intervening section outside the Scheme.

Route Option Selection Process Following A1MMS, 2003 – 2005

2.5.2 Following the publication of A1MMS in 2003, the then Highways Agency identified five route options for dualling the A1 between Morpeth and Felton. These were:

a. **Green Route**: This route follows the existing A1 from the termination of the existing dual carriageway at Warrener's House to where it crosses Floodgate Burn. From here, the route leaves the existing A1 and heads in a north-westerly direction crossing the River Lyne, Fenrother Burn and Fenrother Road. It then continues in a generally north direction, between the properties of Tindale Hill and New Houses Farm before passing to the west of Causey Park Bridge. The route then continues in a north-westerly direction, crossing Earsdon Burn twice to Causey Park Road. The route consists of two crossings over Longdike Burn and a crossing at Bockenfield Bridge where the route would then follow the existing A1.

b. **Blue route**: This route consists predominantly of parallel widening of the existing A1, together with general geometrical alignment improvements. The route follows the existing A1 from the termination of the existing dual carriageway at Warrener's House to where the route crosses Floodgate Burn. From here, the route leaves the existing A1 and heads in a north-easterly direction to Fenrother Junction, crossing the River Lyne and Fenrother Burn. The route continues in a north-easterly direction and crosses the existing A1, and then passes to the east of Earsdon Cottage and crosses Earsdon Road before running parallel to the existing A1 for 1.1 km. The route continues in this direction and crosses Earsdon Burn, and then turns in a north-westerly direction towards Causey Park Lodge and again crosses the existing A1. From here it runs in close proximity to the existing A1 in a northwesterly direction for approximately 800m before it begins to deviate further from the existing A1 at Helm. The route stays to the east of Longdike Burn as it continues towards its tie-in point with the existing A1 at Bockenfield Bridge.

c. **The 2002 A1MMS route**: This route comprises upgrading of the A1 to dual carriageway standard between Morpeth and Felton via a predominantly offline route. All local side roads would be separated from the A1 through bridges and grade

separated junctions. The route runs roughly parallel and to the west of the existing A1 for a distance of approximately 9.4 km before joining the existing A1 south of the River Coquet at the junction to Bywell. The existing A1 along the southern section would be de-trunked and used as a local access road to Bockenfield, whilst the remaining 3km of the route would be widened online. The route would terminate at the B6345 overbridge east of Felton where the existing A1 would change from single to dual carriageway standard.

d. **Red route**: This route generally follows a similar route alignment to the 2002 A1MMS route. However, the junction layouts and certain sections of the horizontal and vertical alignment were altered.
e. **Brown Route**: This route comprises a predominantly online improvement of the existing A1 that involves parallel widening of the existing A1, together with general geometrical alignment improvements. This route involves the demolition of three residential properties and a number of outbuildings.

2.5.3 **Chapter 3: Assessment of Alternatives, Volume 1** of the ES (**Application Document Reference: TR010041/APP/6.1**) sets out that both the Red Route and the A1MMS route were not taken forward due to:

a. *Higher proportion of new offline construction, with associated environmental impacts;*
b. *Increased construction cost;*
c. *Reduced economic benefits compared with other options.*

2.5.4 The Brown route was not taken forward for the following reasons:

a. *Substantial disruption to traffic during construction;*
b. *Poor economic benefits, mainly due to disruption to traffic during construction;*
c. *Difficulty in achieving minimum standards for road alignment;*
d. *Requirement for demolition of properties.*

2.5.5 These red and brown routes are identified in **Figure 1** below and the A1 MMS route is show on **Figure 2**

Figure 1: Red and Brown Route Options Discounted in 2005

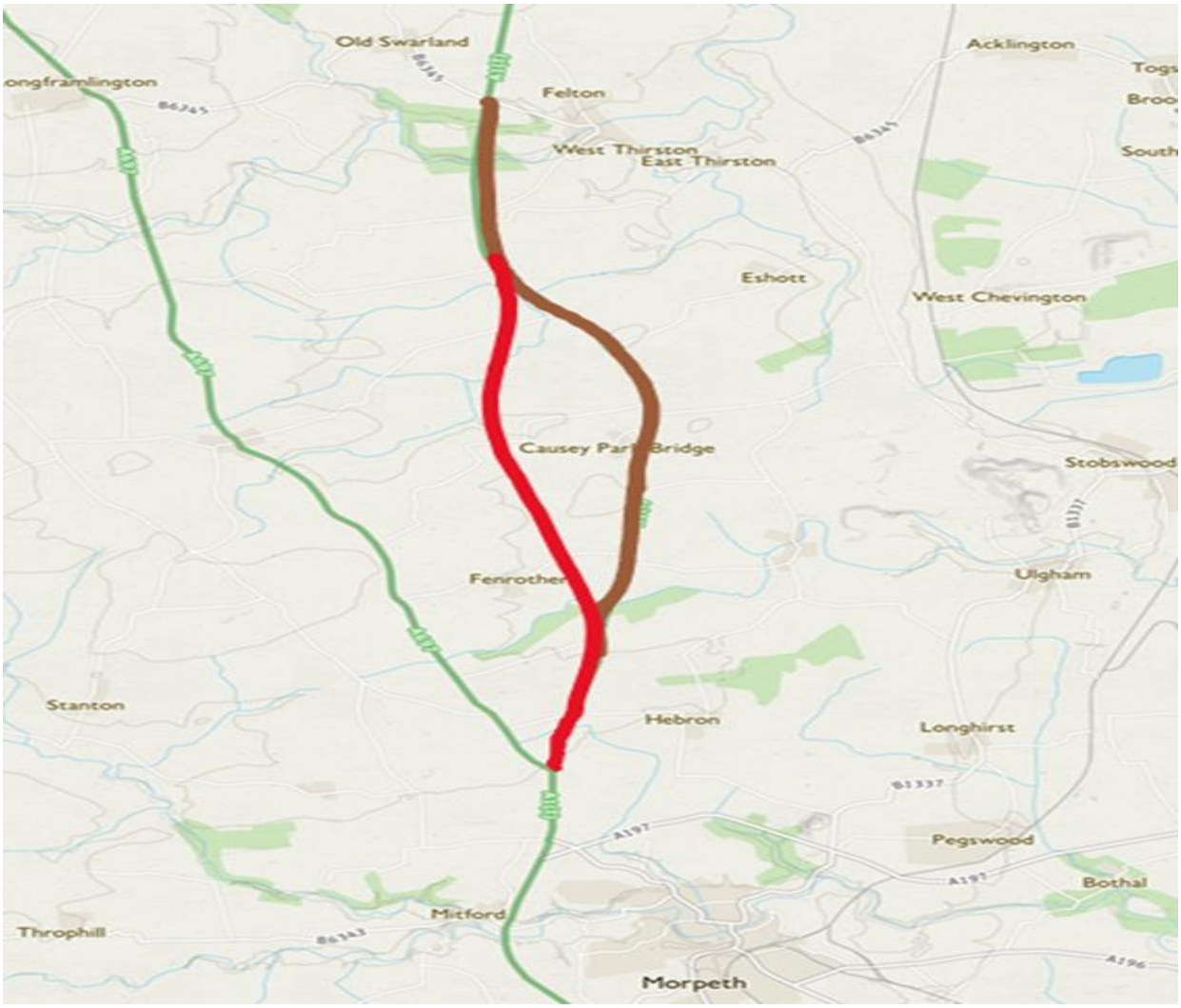


Figure 2 – A1 MMS Route

2.5.6 A public consultation was undertaken on the Green and Blue routes in September 2004. Of the people taking part 96% indicated their support for upgrading the road to dual carriageway, with 65% expressing a preference for the Green route and 24% with a preference for the Blue route.

2.5.7 In March 2005, a Preferred Route Announcement (PRA) was made based on the Green route. The decision to proceed with the Green route was a result of:

a. Public preference from consultation.
b. Regional and Local Government bodies supported the proposed dualling and expressed a preference for the Green route.
c. The Green route represents the best value for money and would be generally environmentally preferable. Furthermore, the Green route would generate less disruption to traffic during construction.

2.5.8 However, in 2006 the then interim Regional Transport Board for the North East did not identify the Scheme as a funding priority for the period up to 2016 and therefore improvements were not progressed at that time.

2.5.9 Following the publication of the A1 North of Newcastle Feasibility Study in 2015, three options were identified for the dualling the A1 for Part A and three options were identified for Part B. These options were based on the environmental constraints identified in the feasibility study, and were as follows:

Part A

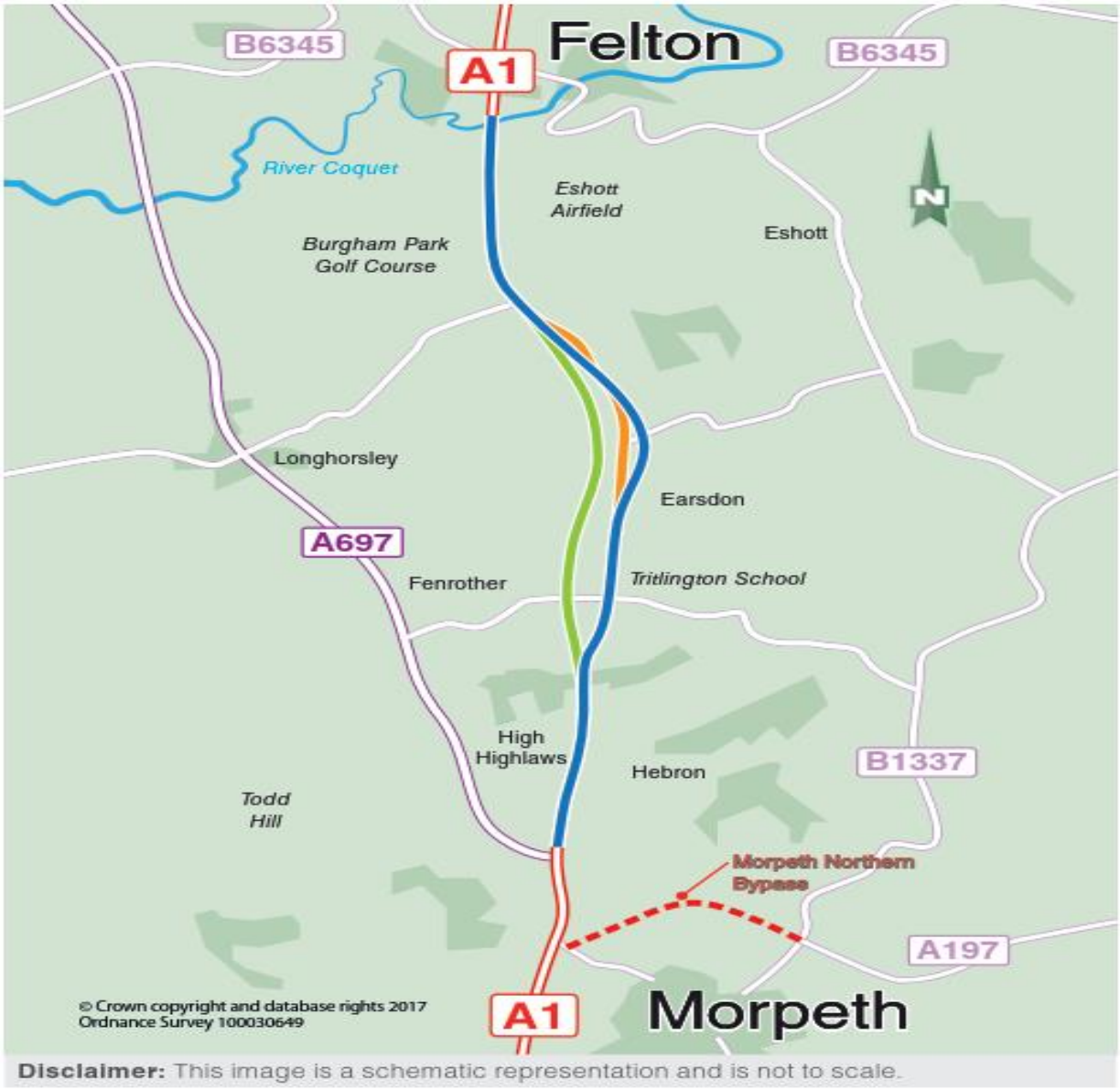
a. **Orange** (online) – This option comprised the online widening of the existing A1, four new grade separated junctions at Highlaws, Fenrother, Earsdon and West Moor and construction of a new bridge over the River Coquet parallel to the existing bridge;

b. **Blue** (hybrid) – Widening the existing A1, as with the "orange" option, except for two bypass sections of new dual carriageway; one section to the east of the existing A1 near Causey Park Bridge and one to the west of the existing A1 between Helm and Felmoor Park. Four new grade separated junctions at Highlaws, Fenrother, Earsdon and West Moor and construction of a new bridge over the River Coquet parallel to the existing bridge;

c. **Green** (offline) – As with the "orange" option, the A1 would be widened on the existing alignment to Priest's Bridge. From here, the new A1 would move west of the current road and pass west of Tindale Hill and Causey Park Bridge. Just north of Burgham Park, it would re-join the existing A1 and widening would continue along the existing road northwards until it meets the existing dual carriageway north of Felton. Three grade separated junctions were proposed at Highlaws, Fenrother and West Moor and the construction of a new bridge over the River Coquet parallel to the existing bridge.

2.5.10 The Green and Blue Options comprised the same route alignment as those identified in 2003 – 2005, whilst the Orange was a new introduction. The three route options are illustrated in **Figure 3** below.

Figure 3: Routes considered at the Option Selection Stage – Part A



2.5.11 An Environmental Assessment Report (EAR) was produced to identify the environmental impacts of the three route options and to assess the extent to which they would fulfil the Scheme Objectives. The assessments of the EAR are summarised in **Table 3-1: Summary of Options Assessment** within **Chapter 3: Assessment of Alternatives, Volume 1** of the ES (**Application Document Reference: TR010041/APP/6.1**).

2.5.12 For some environmental topics, particularly ecology and heritage, the Green Option was identified as being the most adverse option, although this difference may be relatively small. For others, such as noise impacts on residents, the Green Option was considered to be the best option as it also offered potential benefits, such as reduced visual impact and requiring fewer trees to be removed along Coronation Avenue than the other options

Part B

2.5.13 Three route options for dualling Part B were identified. These are as follows:

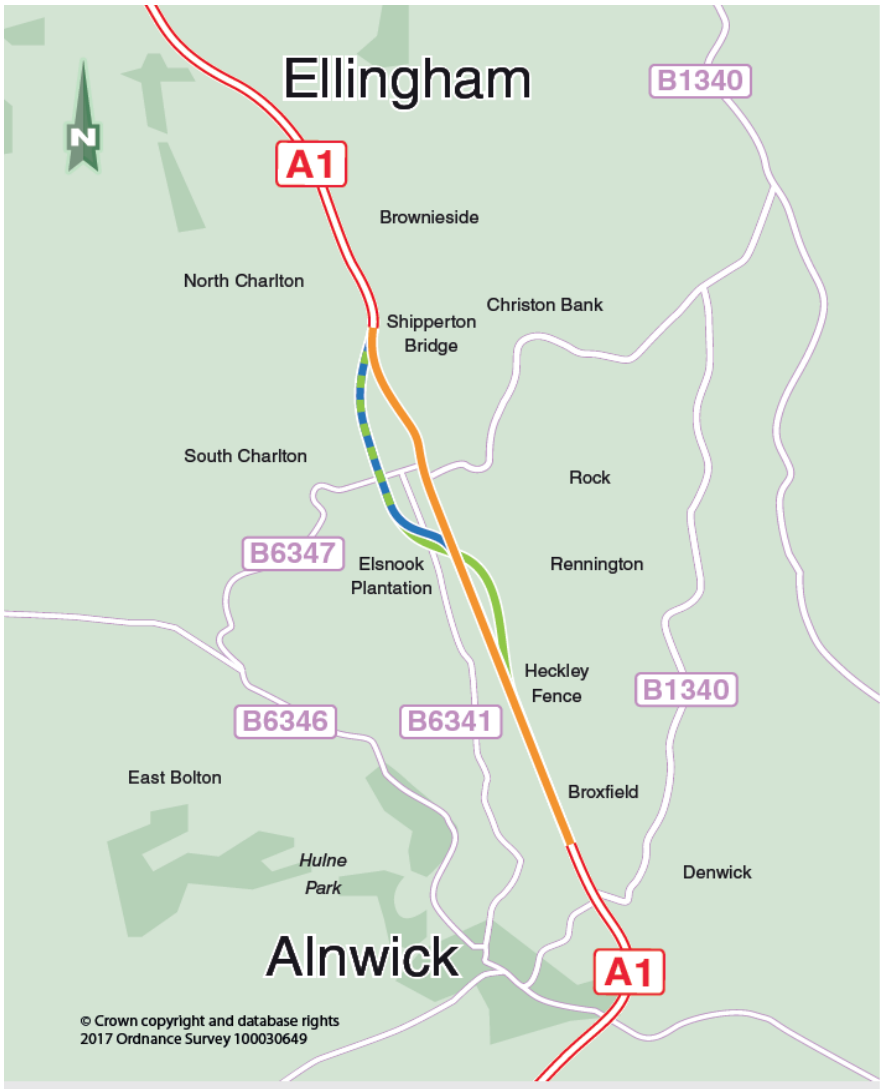
i. Orange Option: to dual the existing A1 carriageway, widening either to the east or the west depending on the local features that needed to be considered.

ii. Green Option: Upgrade approximately 1.2 miles (2 km) of existing A1 to dual carriageway and build a new carriageway to the east of the existing A1 at Heckley Fence, before crossing over to the west of the existing road at Elsnook Plantation and continuing until Shipperton Burn.

iii. Blue Option: Upgrade the majority of the existing A1 to dual carriageway, with approximately 2.2 miles (3.5 km) section of new carriageway built to the west of the existing route between Elsnook Plantation and Shipperton Burn.

2.5.14 These route options are identified in **Figure 4**, below.

Figure 4: Options considered during the Options Selection Stage – Part B



Disclaimer: This image is a schematic representation and is not to scale.

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2.5.15 An Environmental Assessment Report of the three route options was undertaken to identify and assess the environmental impacts of the three route options. The report concluded that the Orange Option would have the least adverse impact on the environment, the Blue Option would have an intermediate effect on the environment, and the Green Option would overall have the greatest adverse impact on the environment.

2.5.16 Of the three options, the Orange Option would have the least adverse impact on landscape and visual amenity, cultural heritage, ecology, the water environment as well as geology and soils. However, it was identified that the Orange Option would result in a noise increase for properties in the northern part of Part B.

2.5.17 In September 2016, and in light of the conclusions of the Environmental Assessment Report into the three route options, the Orange Option was identified as the sole viable option to take through to the Option Selection Stage because the two other options (Green Option and Blue Option) were materially more expensive, offered less value for money and would have a greater impact on the environment. As such the Green and Blue options were presented as discounted options at the public consultation.

2.6 Public consultation

2.6.1 A non-statutory public consultation on the Scheme was undertaken from November to December 2016. The consultation sought the view of various interested parties and stakeholders. Information was sent to residents living closest to the Scheme and the consultation was advertised in the local press. Six consultation exhibitions were held so that interested parties could ask questions of the project team, and further information and a feedback form posted on the Applicant's Scheme website.

2.6.2 The feedback from the consultation was collated separately for each separate part (Part A and Part B).

Part A

2.6.3 The non-statutory consultation process received responses from across the Part A area and beyond and identified strong support for the principle of dualling the A1 between Morpeth and Felton. The Green Option attracted the largest degree of public support (41% said that the Green option was their preferred option) whilst 29% preferred the Blue option, and 12% preferred the Orange option.

2.6.4 Following the consultation 41 responses were received from across the Part A area and beyond. Responses were received from a broad range of residents, with most respondents being frequent users of the A1 in Northumberland. Nearly all respondents were car drivers and lived in the local area.

Part B

2.6.5 The consultation identified that nearly half of the respondents (49%) agreed with the Orange Option, five percent disagreed, and the rest said they neither agreed nor disagreed or did not answer. Further detail on the non-statutory consultation is set out at **Chapter 2** of the Consultation Report (**Application Document Reference:**

TR010041/APP/5.1).

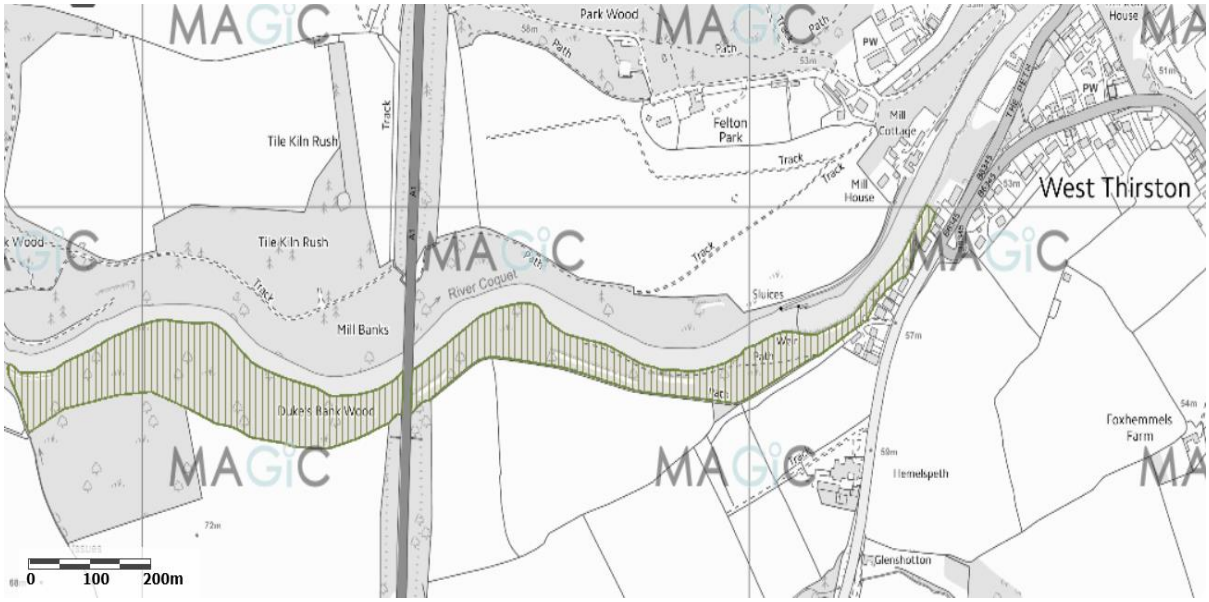
2.7 Ancient Woodland and SSSI

2.7.1 Details of these statutory and non-statutory designated sites are set out in **Chapter 9: Biodiversity, Volume 2** of the ES (**Application Document Reference: TR010041/APP/6.2**) for Part A and are illustrated in **Figure 9.3: Statutory Designated Sites** and **Figure 9.4: Non-Statutory Designated Sites, Volume 5** of the ES (**Application Document Reference: TR010041/APP/6.5**) for Part A.

2.7.2 A significant environmental constraint on the route options for the dualling of the A1 between Morpeth and Felton is the River Coquet and River Coquet Woodlands Site of Special Scientific Interest (SSSI) which includes Dukes Bank Wood Ancient Woodland.

2.7.3 Dukes Bank Wood Ancient Woodland is a linear stretch of woodland that runs on either side of the existing A1 parallel to the River Coquet. The closest point at which Dukes Bank Wood Ancient Woodland could be bypassed is over 600m to the west of the existing A1, as illustrated in **Figure 5** below. Avoiding the Ancient Woodland and achieving the objectives of the Scheme would require a significant length of additional dual carriageway, identified in **Chapter 3: Assessment of Alternatives, Volume 1** of the ES (**Application Document Reference: TR010041/APP/6.1**) as being between 3 to 4 miles.

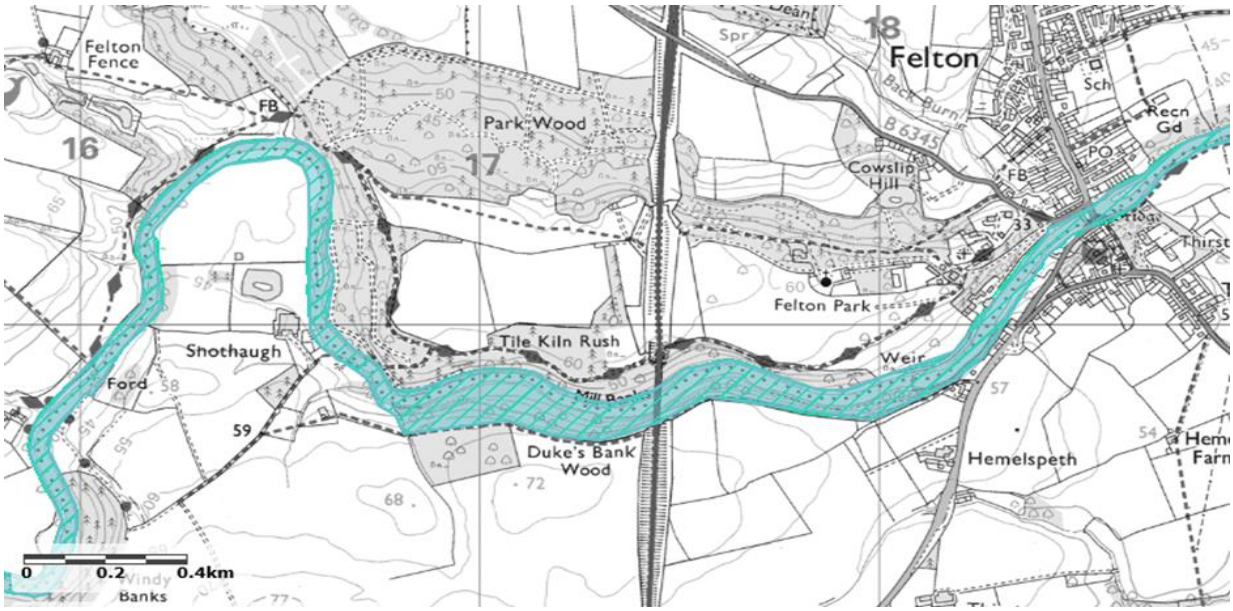
Figure 5: Dukes Bank Wood Ancient Woodland



Source: MAGIC Map Website: https://magic.defra.gov.uk/

2.7.4 The entire length of the River Coquet, from its source in the Cheviot Hills to the west to the coast at Amble, is designated as comprising the River Coquet and Coquet Valley Woodlands SSSI. The extent of the SSSI to the south of Felton is shown in **Figure 6** below, illustrating that there is no practical means of dualling the A1 between Morpeth and Felton that would avoid this SSSI.

Figure 6: Extract of the River Coquet and Coquet Valley Woodlands SSSI to the south of Felton



Source: MAGIC Map Website: https://magic.defra.gov.uk/

2.7.5 It should be noted that route corridors avoiding the River Coquet and River Coquet and Coquet Valley Woodlands SSSI and the Dukes Bank Wood Ancient Woodland were considered. However, these alternative routes would not avoid crossing the SSSI and would still require a new bridge to be constructed and as set out above, would require a large diversion to avoid the Dukes Bank Wood Ancient Woodland. As a result, no alignments to this effect were considered in the initial option selection for sifting.

2.8 Preferred Route Announcement

Part A

2.8.1 Following Option Selection, in September 2017 a Preferred Route Announcement was made to confirm the Green Option as being the preferred option to be progressed.

2.8.2 **Chapter 3: Assessment of Alternatives, Volume 1** of the ES (**Application Document Reference: TR010041/APP/6.1**) confirms that the key reasons for progressing the Green Option to the Preliminary Design stage were:

a. It was the most popular option identified by the public and stakeholders.
b. It would offer a greater level of safety due to the alignment, as it would have the greatest compliance with geometric standards and offers a high-quality alignment.
c. It presents the greatest construction efficiency and worker safety benefits.

d. It retains the existing A1 as a local road where the Scheme diverts offline, which offers an alternative route should closures be required, and provides a north-south route for local traffic.
e. It would affect fewer landowners than the Orange and Blue Options, although more agricultural land is affected by this option.

Part B

2.8.3 In September 2017, the Route Announcement confirmed the Orange route option for Part A. The identified reasons for this were that nearly half of the consultation responses that expressed a preference preferred this option, and that this option '*also provides additional network resilience and overtaking opportunities by providing a dual carriageway road standard. Additionally, this improvement provides added safety benefits by providing an overbridge junction connecting B6341, B6347 and the A1 at South Charlton. It was also noted that this improvement will require land to be developed*.' and *"having the least overall adverse impact on the environment when compared to the Green Option and Blue Option".*

2.8.4 Once the Orange Option had been identified as the route it was developed and refined through the Preliminary Design Stage which involved considering different options for certain elements of the Scheme design (e.g. the location of the accommodation overbridge to the south of the Scheme) consistent with the general route alignment of the Orange Option. The development and refinement of the Orange Option has been informed by:

- Scheme Objectives (set out at **Chapter 3** of this Case);
- Engineering design, with reference to highway, structure and drainage design standards and requirements such as requirements for statutory undertaker's diversions;
- Consideration of the potential environmental effects and opportunities as a result of the design;
- Consideration of health and safety requirements for construction workers, which influenced the location of online widening to the east of the current alignment.

2.8.5 Further information on the above key design changes and how they have been assessed can be found in **Table 3-1** within **Chapter 3: Assessment of Alternatives, Volume 1** of the **ES** (**Application Document Reference: TR010041/APP/6.1**).

3 CASE FOR THE SCHEME

3.1 Overview

3.1.1 Section 104 (2) of the 2008 Act requires that in deciding DCO applications for which an NPS has effect, the SoS must have regard to any national policy statement, any local impact report, any matters prescribed in relation to development of the description to which the application relates, and to any other matters which the SoS thinks are both important and relevant to the decision.

3.1.2 As no local impact report for the Scheme has been produced to date, and there are no prescribed matters relevant to the Scheme, this chapter therefore sets out the Case for the Scheme based on its compliance with the relevant NPS, which is the NPS NN. Section 104 (3) gives particular weight to the NPS NN, requiring that the SoS '*must decide the application in accordance with the relevant national policy statement'*, except to the extent that one or more of subsections (4) to (8) applies.

3.1.3 This Chapter also considers national and regional transport economic and planning policies, including the RIS, and the issues that are currently experienced along the Morpeth to Ellingham stretch of the A1, which are all considered matters that are important and relevant to the decision.

3.1.4 As set out above, the full dualling of the A1 to Ellingham is a '*committed Scheme*' within the RIS1 as part of an £290 million investment package. The investment package recognises that the A1 in Northumberland *'needs substantial improvement to meet the needs of the local economy and to better fulfil its role in the national transport network*[10]*'* and consists of the following:

i. A1 Morpeth to Ellingham – thirteen miles of upgrade to dual the carriageway linking the Morpeth and Alnwick bypasses with the dual carriageway near Ellingham, to create a continuous, high quality dual carriageway from Newcastle to Ellingham;

ii. A1 north of Ellingham enhancements – a set of measures to enhance the performance and safety of the A1 north of Ellingham, including:

— Three stretches of climbing lanes totaling 2.5 miles

— Five junctions enhanced with right-turning refuges

— Better crossing facilities for pedestrians and cyclists.

3.1.1 The Scheme was also confirmed as a *"committed"* Scheme in the recent RIS2 announced in March 2020 which confirmed *"upgrading multiple sections of the A1 to dual carriageway to provide continuous high quality dual carriageway from Newcastle to Ellingham"*.

[10] Page 19 of the RIS: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/408514/ris-for-2015-16-road-period-web-version.pdf

3.1.2 The enhancements to the A1 North of Ellingham were not part of the RIS2 announcement as these are now in place.

3.1.3 For these reasons the benefits of the Scheme are set out within their context of being an essential part of the wider RIS investment programme to improve the A1 in Northumberland as a whole.

3.2 Relationship between the NPS NN and the RIS

3.2.1 The relationship between the RIS and NPS NN is explained in the Strategic Vision section of the RIS, which confirms that: *'the NN NPS is a high level planning document, which is non-spatially specific. The RIS outlines where decisions have been made on particular schemes and investments over this Road Period.'* Paragraph 1.21 of the NPS NN confirms that the RIS is intended to sit '*alongside'* the NPS NN.

3.2.2 As the NPS NN is intended to sit alongside the RIS and the two documents cross refer to each other, it is considered that as a matter of principle the investment programme set out in the RIS is consistent with the aims of the NPS NN, and that delivering '*committed*' schemes within the RIS is a key part of meeting the aims of the NPS NN.

3.3 National and Regional Role of the A1 in Northumberland

3.3.1 The A1 is an important route nationally between England and Scotland, especially for long distance travel along the eastern side of the country and is part of the Strategic Road Network (SRN). The SRN as a whole is the most heavily used part of the road network, carrying over 4 million vehicles a day. The importance of the SRN nationally is illustrated by the statistic that despite only accounting for 2% of the overall road network it carries one third of all traffic and over two thirds of all freight traffic. Demand on the SRN is predicted to increase, with forecasts indicating that traffic on the SRN will continue to grow across the short, medium, and long term.[11]

3.3.2 At a regional level The A1 north of Newcastle through Northumberland forms an important route between England and Scotland and provides a strategic link between the key economic centres within the North East and Scotland.[12] It also plays an important role providing a local route for commuters, holiday makers and agricultural traffic, as well as accommodating a relatively high level of HGV users.

3.4 National Policy Statement for National Networks (NPS NN)

3.4.1 The NPS NN was published by the DfT in December 2014 and sets out the need for, and Government's policies for delivering NSIP developments on the national road network. The compliance of the Scheme with the environmental requirements NPS NN is considered in detail in the NPS NN Accordance Table (**Application Document Reference: TR010041/APP/7.2**) that is submitted with this application. This section of the Case is not intended to replicate this assessment, but rather sets out how the Scheme is consistent with the aims of the NPS NN at a strategic level.

[11] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/383145/dft-ris-strategic-vision.pdf
[12] A1 North of Newcastle Feasibility Study (2015) Part 1, Page 33.

3.4.2 Paragraph 2.2 of the NPS NN recognises that there is a *'critical need'* to improve the national road and rail networks to address road congestion and crowding on railways; to provide safe, expeditious and resilience networks that better support social and economic activity; and to provide a transport network that is capable of stimulating and supporting economic growth.

3.4.3 Paragraph 2.6 of the NPS NN confirms that the development of the national networks helps to support national and local economic growth, and that *'improved and new transport links can facilitate economic growth by bringing businesses closer to their workers, their markets and each other'*.

3.4.4 The Government has concluded that at a strategic level there is a *'compelling need'* for development on the national networks, as confirmed in paragraph 2.10 of the NPS NN. The same paragraph confirms that '*The Examining Authority and the Secretary of State should therefore start their assessment of applications for infrastructure covered by this NPS on that basis'*.

3.4.5 Identifying the need for development on the national road network, paragraph 2.13 of the NPS NN, confirms that the SRN provides critical links between cities and joins up communities, playing a vital role in people's journeys and drives prosperity by supporting new and existing development, encouraging trade and attracting investment. Paragraph 2.13 also confirms that a well-functioning SRN is *'critical in enabling safe and reliable journeys and the movement of goods in support of national and regional economies*.'

3.4.6 Paragraph 2.22 of the NPS NN confirms the importance of improving the road network as without doing so *'it will be difficult to support further economic development, employment and housing and this will impede economic growth and reduce people's quality of life. The Government has therefore concluded that at a strategic level there is a compelling need for development of all national road networks.'*

3.4.7 The Government's policy is of making enhancements to the existing national road network is set out in paragraph 2.23 as including:

i. junction improvements, new slip roads and upgraded technology to address congestion and improve performance and resilience at junctions which are a major source of congestion;

ii. implementing 'smart motorways' to increase capacity and improve performance;

iii. improvements to trunk roads in particular dualling of single carriageway strategic trunk roads and additional lanes on existing dual carriageways to increase capacity and to improve performance and resilience.

3.4.8 The NPS NN sets out that, subject to the detailed policies and protections contained in the NPS and the legal constraints set out in the 2008 Act, there is a *'presumption in favour'* of granting development consent for national network NSIPs that fall within the need for infrastructure established in the NPS NN.

3.4.9 Paragraph 4.3 of the NPS NN states that:

'in considering any proposed development, and in particular, when weighing its adverse impacts against its benefits, the Examining Authority and Secretary of State should consider:

- *Its potential benefits including the facilitation of economic development, including job creation, housing and environmental improvements and any long-term or wider benefits; and*
- *Its potential adverse effects, including any longer-term and cumulative adverse impacts, as well as measures to avoid, reduce or compensate for any adverse impacts'*.

3.4.10 Further details of the Scheme's conformity with the NPS NN can be found in **Table 5** of this Case and the **NPS NN Accordance Table** (**Application Document Reference: TR010041/APP/7.2**)

3.5 Road Investment Strategy and National Strategy Documents

RIS 1

3.5.1 The Roads Investment Strategy was originally published in December 2014 (RIS1) to set out the Government's investment programme for the major road network. Section 3 (6) of the Infrastructure Act 2015 places a duty on the SoS to comply with the provisions of the RIS. The dualling of the A1 between Morpeth and Ellingham is '*committed*' within the RIS.

3.5.2 RIS1 confirmed that the SRN required upgrading and improving and that this investment in the SRN is considered to be *'critical'* if the SRN is to deliver the performance needed to support the nation throughout the 21st century. The RIS commits to investing a total of £15.2 billion to the enhancements and long-term maintenance of the network between 2015/16 and 2020/21 which includes 127 major enhancements.

3.5.3 RIS1 contains four strategic goals that are required to deliver improvements to the SRN, as follows:

i. Providing capacity and connectivity to support national and local economic activity;
ii. Supporting and improving journey quality, reliability and safety;
iii. Joining our communities and linking effectively to each other; and
iv. Supporting delivery of environmental goals and the move to a low carbon economy.

3.5.4 These strategic goals are consistent with the policies of the NPS NN and contain the same objectives (page 9 of the NPS NN 'Summary of need'), and the compliance of the Scheme with these objectives is set out in **Table 5**, below.

3.5.5 The RIS1 Performance Strategy sets out eight areas that the Applicant is required to focus on in delivering the RIS as follows:

i. Making the network safer;
ii. Improving user satisfaction;
iii. Supporting the smooth flow of traffic;

iv. Encouraging economic growth;
v. Delivering better environmental outcomes;
vi. Helping cyclists, walkers and other vulnerable users of the network;
vii. Achieving real efficiency; and
viii. Keeping the network in good condition.

3.5.6 RIS1 has been informed by three factors that have informed how investment is targeted. These are as follows:

i. Considering how the SRN can best support economic growth;
ii. How the network and the Applicant can do more to work with local partners; and
iii. How there can be a strong focus on protecting the environment throughout the Investment Plan.

3.5.7 Part 2 of the RIS comprises the Investment Plan for period up to 2021. The Investment Plan element of the RIS outlines how the Applicant will deliver improvements to the SRN in the short term and put them on course to deliver the long-term vision of revolutionising the road network.

3.5.8 Page 19 of the Investment Plan confirmed that the A1 to the north of Newcastle, provides a *'nationally important'* connection between Newcastle and Edinburgh and that it comprises an *'essential'* link for the North East and Northumberland and needs *'substantial improvement'* to meet the needs of the local economy and to better fulfill its role in the national transport network.

3.5.9 An investment package worth around £290 million was confirmed, which includes funding *for 'thirteen miles of upgrade to dual the carriageway linking the Morpeth and Alnwick bypasses with the dual carriageway near Ellingham, to create a continuous high-quality dual carriageway from Newcastle to Ellingham'* (Page 9 of the RIS).

RIS 2

3.5.10 The second RIS announced by the Government on 11 March 2020 sets a long-term strategic vision for the network. RIS2 commits the Government to spend £27.4 billion during the period between 2020 and 2025. RIS2 has been developed on the back of an extensive round of public engagement and consultation, research and evidence gathering begun in 2016. It has been the biggest exercise ever undertaken to inform the national road investment.

3.5.11 Part 3 of RIS 2 comprises the Investment Plan. Page 72 of the Investment Plans sets out the Government's priorities for RIS2 which includes *"Completing RIS1 Enhancements*". RIS2 recognises that RIS1 set in train a transformational programme of investment in strategic roads. RIS2 also recognises that the average road project takes around eight years to get from inception to opening and the newest commitments made in RIS1 were always expected to be under construction during the period covered by RIS2. This includes *"key regional connections such as the A30 in Cornwall and the A1 north from Newcastle will see their disparate sections of dual carriageway linked together into joined-up, high quality roads"*

3.5.12 Page 95 of RIS2 confirms the ongoing commitment to deliver the Scheme as follows:

"A1 Morpeth to Ellingham – upgrading multiple sections of the A1 to dual carriageway to provide continuous high quality dual carriageway from Newcastle to Ellingham, north of Alnwick".

Highways England Delivery Plan

3.5.13 The Highways England Delivery Plan was published by the Applicant in March 2015 as part of its role to operate, maintain and modernise the SRN. The Delivery Plan is intended to show how the Applicant will achieve the Government's objectives and long-term vision for the SRN, as set out in the RIS1 and RIS2, and funding has been committed to the Scheme, making it a very deliverable scheme, as set out in the Funding Statement (**Application Document TR010041/APP/4.2**).

3.5.14 The Delivery Plan sets out the following strategic objectives:

i. Delivering a safe and serviceable road network;
ii. Supporting economic growth – through a modernised and reliable network that reduces delay, creates jobs and helps business compete, and opens up new areas for development;
iii. Safe and serviceable network – where no one should be harmed when working or travelling on the network;
iv. More free-flowing network – where routine delays are more infrequent, where journeys are safer and more reliable;
v. Improved environment – where the impact of our activities is further reduced ensuring a long term and sustainable benefit to the environment; and
vi. More accessible and integrated network – that gives people the freedom to choose their mode of transport and enable safe movement across and alongside the network.

3.5.15 Annex 1 of the Delivery Plan[13] identifies major improvement schemes that the Applicant is seeking to deliver. This includes a scheme for '*thirteen miles of upgrade to dual the carriageway linking the Morpeth and Alnwick bypasses with the dual carriageway near Ellingham, to create a continuous high-quality dual carriageway from Newcastle to Ellingham'*.

3.5.16 A Delivery Plan setting out how the Applicant intends to deliver the Investment Plan set out in RIS2 has yet to be published. It is expected the Delivery Plan will be published in the summer of 2020 and in each subsequent year during RIS2.

The National Infrastructure Delivery Plan (NIDP)

3.5.17 The NIDP was published by the Treasury in March 2016. The Document is intended to bring together Government's plans for economic infrastructure over the next five years with those to support delivery of housing and social infrastructure.

3.5.18 The NIDP identifies the importance of investing in infrastructure – '*infrastructure is the foundation upon which our economy is built'* and confirms that delivering better

[13]https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/818656/Delivery_Plan_2019-20.pdf

infrastructure will help *'grow the economy and improve opportunities for people across the country'*.

3.5.19 The investment identified in the NIDP is intended to drive wider economic benefits, and will help by:

i. Supporting growth and creating jobs in the short term as projects are built – especially where public investment is used to attract private investment;

ii. Raising the productive capacity of the economy in the long term as the benefits of new infrastructure are felt, reduced transaction costs; larger and more integrated labour and product markets; and better opportunities to collaborate and innovate;

iii. Driving efficiency – enabling greater specialisation and economies of scale; and

iv. Boosting international competitiveness – attracting inward investment and enabling trade with foreign partners.

3.5.20 Paragraph 1.20 of the NIDP confirms that *'economic infrastructure networks are vital to improving quality of life but also integral to the creation of new places to live and work alongside plans for major housing and regeneration schemes and social infrastructure*'.

3.5.21 Chapter 3 of the NIDP relates to essential road infrastructure, confirming that the SRN *'is vital to businesses and the successful functioning of the economy'* and that *'it helps to put more people within reach of a wider range of jobs'*.

3.5.22 Paragraph 3.1 sets out that *'Roads are fundamental to modern society'* confirming that roads are the backbone of the transport system and that the '*network brings communities closer together, providing users with freedom and flexibility that is unrivalled by other modes of transport'*. The Government's aims of *'delivering a step-change in investment in the SRN and to introducing significant additional road capacity'* is also confirmed at paragraph 3.7 of the NIDP.

3.5.23 Paragraph 3.12 confirms that for the period up to 2020/21 the Government is committed to *'increasing capacity on the SRN'* and that key projects and programmes will be delivered to add 1,300 extra lane miles and to improve over 60 problem junctions, to address existing bottlenecks and transform regional connectivity across the UK.

3.5.24 The key schemes that are central to delivering this objective include *'the start of construction on the dualling of the section north of Newcastle between Morpeth and Ellingham'* as part of a package of over £1 billion of investment for the A1 (North). This includes the route of the Scheme which will therefore help to fulfil the objectives of the NIDP.

Summary

3.5.25 There is considerable strategic policy support for the dualling of the A1 between Morpeth and Ellingham at a national level. It comprises part of a *'committed scheme'* in RIS1 and RIS2 and forms part of the investment programme that is intended to be delivered. The investment programme is intended to deliver '*substantial improvement*' to the A1 north of Newcastle. Section 3(6) of the Infrastructure Act 2015 places a duty on the relevant

Secretary of State to comply with the provisions of the RIS.

3.5.26 Annex 1 of the Highways England Delivery Plan 2015 – 2020 also specifically supports '*thirteen miles of upgrade to dual the carriageway linking the Morpeth and Alnwick bypasses with the dual carriageway near Ellingham'* to *'create a continuous high-quality dual carriageway from Newcastle to Ellingham'* and this Scheme is an integral part of delivering that improvement. The NIDP also identifies the dualling of the section north of Newcastle between Morpeth and Ellingham, as being one of the '*key projects.*'

3.6 Local Planning and Transport Policies

3.6.1 The dualling of the A1 to the North of Newcastle, is a long-standing aspiration for the region. This section of the Case considers the local planning and transport policy context that is relevant to the Scheme in **Chapter 6** of this Case.

Castle Morpeth District Local Plan

3.6.2 Part of the Scheme is within the former local planning authority area of Castle Morpeth, from the southernmost extent of the Scheme (the A1 Warreners House Interchange at Morpeth) to where the Scheme reaches the River Coquet.

3.6.3 The Castle Morpeth Local Plan was adopted in February 2003 and although the local authority itself is no longer in existence, the Local Plan has not yet been replaced. It therefore comprises part of the current development plan and sets out the then District Council's proposals for the development of land and buildings.

3.6.4 Page iv of the Local Plan ("*Summary of Proposals*") confirms that the Council supports: "*the dualling of the A1 north of Morpeth and junction improvements throughout the length of the A1 within the Borough*."

3.6.5 This support for the dualling of the A1 is re-confirmed at Paragraph 8.14.2 of the Local Plan which notes that: "*a great deal of continuing concern is expressed about road safety and the inadequate standards on the single carriageway stretches of the A1 trunk route between Newcastle and Edinburgh."*

3.6.6 The same paragraph confirms that the District Council thought there to be a "*strong case*" for pressing the Scottish Office and the Department for Transport to adopt a policy of improving the A1 to dual carriageway standard between Newcastle and Edinburgh and that that the Council "*fully supports"* this proposal and will, through the policies of the Local Plan, *"assist in the realisation of this objective."*

Alnwick District Wide Local Plan

3.6.7 The Alnwick District Wide Local Plan, published in April 1997, comprises a strategy to maintain and enhance the environmental quality of the District whilst accommodating the new development necessary for the economic wellbeing of residents.

3.6.8 Recognising that Alnwick was a district council, and not a highway authority, which would have had the power to deliver improvements to the strategic highway network, the plan contains a number of transport '*aims'* rather than policies.

3.6.9 Aim TT6 of the Local Plan, sets out at paragraph 5.2 to encourage the "*Highways Agency"* (now Highways England) to upgrade the A1 to dual carriageway standard throughout the district *'at the earliest opportunity'*.

3.6.10 Paragraph 5.4.1 states *'the importance of good road links in the District cannot be overstated. It is by means of such road links that the District can compete with other areas in attracting inward investment of new industrial, commercial and tourist developments. Many residents rely on principal roads to meet their everyday requirements when travelling to and from more populated areas of south Northumberland and Tyneside for business and pleasure'.*

3.6.11 Paragraph 5.4.3 confirms *'the Government is committed to upgrading the A1 to dual carriageway standard'*, the same document notes *'this will be carried out in a piecemeal manner and as yet no comprehensive timetable has been fixed for the entire length between Newcastle and Edinburgh'*.

3.6.12 Local Plan Policy TT2 *('Protection of route of A1 dualling from development')* supports the dualling of the A1 by stating that planning permission will not be granted for development likely to prejudice the line of the proposed dual carriageway improvements to the A1 Trunk Road.

Alnwick District Core Strategy

3.6.13 The Alnwick District Core Strategy was published in October 2007 and was intended to replace part of the Local Plan. The district council's strategy for transport, set out in Figure 5 of the Core Strategy, includes *'Supporting the strengthening of the core elements of the transport system to promote economic regeneration through support of A1 dualling'.*

3.6.14 This policy support illustrates the longstanding and ongoing support for the aim of dualling the A1 in Northumberland, which the Scheme will help to meet.

Emerging Northumberland Local Plan

3.6.15 NCC is in the process of preparing the Northumberland Local Plan (the 'Local Plan'). The Local Plan will include the planning policies to be used to guide and determine future planning applications in Northumberland, and when it is adopted it will detail the scale and distribution of new development in Northumberland and include land allocations and designations.

3.6.16 The Local Plan was submitted to the Secretary of State for Housing, Communities and Local Government for independent examination in May 2019. Phase 1 of the examination hearings took place in October 2019 and February 2020, and the Inspector has cofimed that further hearing sessions will be necessary for Phase 2 of the examination. The Inspector will be issuing Matters, Issues and Questions in advance of these. As the Local Plan is at a relatively early stage in the adoption process it is considered that only limited weight can be attached to the policies that it contains.

3.6.17 Chapter 3 of the Local Plan sets out the Spatial Vision, Objectives and Outcomes for the plan period and confirms that the required level of growth across Northumberland *'will increase demand on local infrastructure services and facilities. The Local Plan ensures that infrastructure requirements are appropriately planned, secured and implemented to ensure the timely delivery of development proposals.'*

3.6.18 A '*Key Outcome'* for connections in the plan area, set out at paragraph 3.11 of the Local Plan is to deliver *'improvements to transport and communications infrastructure and the County's gateway to international growth'* which specifically includes the dualling of the A1.

3.6.19 Chapter 4 of the Local Plan (*'Delivering the Vision')* sets out the strategy for sustainable economic growth across Northumberland. Paragraph 4.16 states that the Local Plan will assist in delivering this growth by supporting *'improvements to the strategic highway corridors'* including the A1. Paragraph 4.32 of the Local Plan confirms that with the proposed improvements to the A1, by including the Scheme, *'Alnwick and Berwick-upon-Tweed will be more accessible and attractive to the market'*.

3.6.20 Policy TRA 3 *('Improving Northumberland's core road network')* supports:

'1. In assessing the development proposals, support will be given to the maintenance and improvement of Northumberland's core road network by:

a) The creation of additional capacity and improvement measures on the Strategic Road network, including for….

i) Any improvement measures emanating from Highways England's Road Investment Strategies and other strategic assessment of the highway network'

3.6.21 Criteria b) of Policy TRA 3 reiterates the planning policy commitment to:

'Supporting and identifying acceptable lines and areas of improvements through the plan period including for the:

i. Full dualling of the A1 through Northumberland and improved local links / junctions to the A1'.

3.6.22 The supporting text to NCC's emerging transport policies, at paragraph 9.19, notes that the core road network plays an important economic role in facilitating the movement of people and freight across Northumberland, whilst providing connections to the neighbouring authorities and the wider region and that it is therefore *'critical that the network is fit for purpose'*.

3.6.23 Paragraph 9.20 of the emerging Local Plan confirms that future improvements to the SRN currently include an upgrade to dual the carriageway between Morpeth and Ellingham and that *'This will create a continuous, high-quality dual carriageway from Newcastle to Ellingham enabling greater access to and from Northumberland'.* There is

support for the dualling of the A1 in Northumberland in the emerging Northumberland Local Plan. On this basis, the Scheme will help to deliver the vision of the emerging Local Plan.

Evidence Base to the Emerging Northumberland Local Plan

3.6.24 As part of the evidence base to the emerging Local Plan, a Housing and Economic Growth Option Report was published in June 2018. Table 3.1 of the report identifies the *'dualling of the A67 and the A1'* as being one of the priority projects for Northumberland.

3.6.25 The Northumberland Employment Land Review was published by NCC in January 2011. Paragraph 2.64 of the review notes that at the time that the review was published by DfT has also produced a consultation document on the possible future dualling of the A1 in Northumberland and that *'clearly this would represent a significant opportunity for the County, particularly the north, by enhancing the strategic accessibility of the area*[14]*'*. Similarly, page 24 of the Employment Land and Premises Demand Study that was published on behalf of NCC in July 2015 confirms that: '*the continuous dualling of the A1 between Morpeth and Alnwick would have a positive impact on employment markets'*[15].

3.6.26 The evidence base for the emerging local plan shows that the dualling of the A1 is one of the priority schemes for the region and will comprise a '*significant opportunity'* for economic development within the area.

Northumberland Local Transport Plan

3.6.27 NCC's third local transport plan (LTP) was published in April 2011 and covers the period April 2011 to 2026. The document sets out a 15-year transport strategy for Northumberland, identifying issues on the road network and setting out solutions.

3.6.28 In relation to the SRN, Paragraph 3.29 of the LTP identifies that *'Most of the road freight traffic originating in Northumberland is destined for Tyne & Wear and Scotland and uses the A1 to get there. Much of the A1 to the north of Morpeth is single carriageway, restricting HGVs to a 40mph speed limit. On a regional level, freight originating in Northumberland accounts for 12% of regional freight movement, suggesting that it is vital to the economy of the North East'*.

3.6.29 The reliability of the single carriageway parts of the A1 is identified as an *'Emerging Challenge'* for the road network in Northumberland as sets out on page 38 of the LTP as follows: *'The A1 is a key route for freight being transported through Northumberland. This route is predominantly single carriageway. This will have implications on journey time reliability for other road users'.*

3.6.30 The *'Supporting Sustainable Economic Growth'* chapter of the LTP identifies the single carriageway sections of the A1 north of Morpeth causing delays and unreliable journeys as a weakness. The same chapter confirms that the proposed improvements to the SRN

[14] https://www.northumberland.gov.uk/NorthumberlandCountyCouncil/media/Planning-and-Building/planning%20policy/Northumberland-Employment-Land-Review.PDF
[15]https://www.northumberland.gov.uk/NorthumberlandCountyCouncil/media/Planning-and-Building/planning%20policy/Studies%20and%20Evidence%20Reports/Economy%20Retail%20Studies/3.%20Employment%20Land%20Premises/Employment-Land-and-Premises-Demand-Study-July-2015.pdf

including the A1 north of Morpeth as an *'opportunity'* to help support sustainable economic growth in the area.

3.6.31 The Economic Strategy of the LTP sets out priorities for investment in the strategic transport network to increase the connectivity in the county. These priorities include *'the upgrading of the A1 to dual carriageway standard'*.

3.6.32 This priority is expanded upon at paragraph 6.49 of the LTP as follows: *'The evidence base has identified the unreliability of road journeys to Scotland and the importance of upgrading the A1 to dual carriageway standard throughout Northumberland. The current arrangement of mainly single carriageway road is impacting on the ability of Northumberland to reach its economic potential. A fully dualled A1 throughout Northumberland would improve journey time reliability for all road users whilst improving efficiency for freight transport. Consultation is currently ongoing by the Government to decide whether the road should be categorised as a road of national importance which the Council will fully support'*.

3.6.33 There is evidence within the LTP that the dualling of the A1 will help the region fulfil its economic potential.

Northumberland Economic Strategy 2015 – 2020

3.6.34 The Northumberland Economic Strategy was formally approved by NCC in February 2015 and sets out a vision for securing prosperity in Northumberland founded on quality local jobs and connected communities.

3.6.35 The strategy confirms that one of the 'priorities for growth' for Northumberland should *be "connecting our economy and that of the region, major investment is needed in transport, mobile and broadband connectivity, completing the dualling of the A1 north of Morpeth. Dualling the A1 is identified as an important intervention that will deliver infrastructure and connectivity and support successful towns and communities"* (page 59 of the strategy).

3.6.36 The strategy also confirms the benefits of the Scheme at Page 62 – *'the complete dualling of the A1 continues to be a priority for Northumberland. It will reduce journey times north and south, improve road safety and support enterprise in the north of the county and on the coast; Berwick, in particular, will benefit'*.

Summary

3.6.37 There is longstanding policy support at all levels of planning, transport and economic policy for the principle of dualling the A1 in Northumberland.

3.6.38 One of the aims of the Alnwick Wide District Local Plan is to encourage '*the Highways Agency*' to upgrade the A1 trunk road to dual carriageway standard throughout the district *'at the earliest opportunity'.*

3.6.39 The support for the dualling of the A1 is also contained in the emerging Local Plan. Policy TRA 3 contains specific planning policy support for the creation of additional capacity and improvement to the SRN, including for any improvement measures emanating from the RIS. The same policy supports the *'full dualling of the A1 throughout*

Northumberland' which is also identified as a *'Key Outcome'* of the emerging Local Plan. The Economic Strategy of the LTP identifies *'the upgrading of the A1 to dual carriageway standard'* as one of the investment priorities for the region, and the Northumberland Economic Strategy 2015 – 2020 similarly confirms that *'it continues to be a priority for Northumberland'*.

3.6.40 There is specific support for the Scheme which will also help to meet the objectives and goals of planning, economic and transport policy documents.

3.7 Scheme Objectives

3.7.1 The Scheme objectives have been identified and developed in response to the planning and environmental context and the need for the Scheme. Under Part 5 of the Infrastructure Act 2015, the Applicant must in exercising its functions have regard to their effect on the environment and on the safety of highway users. The Scheme objectives have been designed to be consistent with this duty and are to:

- Improve journey times on this route of strategic national importance;
- Improve network resilience and journey time reliability;
- Improve safety;
- Maintain access for local traffic whilst improving the conditions for strategic traffic;
- Facilitate future economic growth.

3.7.2 The Scheme objectives are consistent with those identified in the 2015 A1 North of Newcastle Feasibility Study Report. The performance of the Scheme against these objectives is assessed below.

Objective: Improve journey times on this route of strategic national importance

3.7.3 The Scheme will improve journey times on the A1 between Morpeth and Ellingham. As set out in **Chapter 4** of this Case, the Scheme is forecast to have a significant beneficial impact on journey times and a reduction in travel times along the route.

3.7.4 In 2038 in a 'without Part A' scenario, the model forecasts show that it would take users around 10½ minutes to travel along the route in both directions. By 2051 this is predicted to increase to 12 minutes travelling northbound and 11½ minutes travelling southbound.

3.7.5 With Part A in place, the journey times in 2023 are forecast to reduce to around 7 minutes in either direction. In 2051, Part A is forecast to have a significant beneficial impact on journey times, reducing the travel time to just under 7½ minutes when travelling northbound and slightly over 7 minutes for trips southbound.

3.7.6 In 2023, without Part B the model forecasts show that it takes users around 6½ minutes to travel along Part B in either direction. This is predicted to increase to 7 minutes in 2038 and 7 minutes in either direction in 2051.

With Part B in place, the journey times in 2023, 2038 and 2051 are forecast to reduce to around 5½ minutes in either direction.

3.7.7 As set out above, the A1 plays an important national role, as part of the SRN and on the London to Scotland route and is also an important link for traffic in the region, and the Scheme would help to deliver quicker journey times and reduced travel times along the route.

3.7.8 The Scheme will deliver a "*substantial improvement to meet the needs of the local economy and to better fulfil its role in the national transport network*" as confirmed in RIS1.

Objective: Improve network resilience and journey time reliability

3.7.9 As set out in **Chapter 4** of this Case, there is a relative lack of resilience and a related lack of journey time reliability on this stretch of the A1

3.7.10 A lack of resilience is a problem if a transport network is unable to cope with disruptive events such as surges in demand, extreme weather conditions or road works. The more common the event, the more important it is for the network to be able to recover quickly to restore an acceptable level of service and avoid compounding the problem.

3.7.11 Chapter 4 of this Case confirms that the route currently lacks resilience due to:

a. *"Current lack of safe over-taking opportunities and high volume of HGV traffic, leading to reduced journey time reliability. The proportion of HGV traffic on the A1 is considerably higher than for other comparable roads, at around 11% across the day.*
b. *Driver frustration and high frequency of junctions and accesses creates more potential for vehicular conflicts. There are currently 55 private accesses and 13 minor at grade junctions which access the A1. Higher daily traffic flows during the summer months exacerbate these problems. Daily traffic flows during July and August are around 18%-22% higher than those in a neutral month (i.e. outside of the school summer holidays)".*

3.7.12 Providing an additional lane on the A1 in this location will improve network resilience by providing more capacity on the network that will enable the network to recover more quickly to normal levels of service following an incident. It will also provide an extra lane that can be used in the event of a break down or blockage to ensure that traffic can continue to flow along the stretch. This additional capacity will also minimise disruption when future maintenance activities are undertaken, where a lane closure would be required.

3.7.13 Providing a dual carriageway will provide earlier and safer overtaking opportunities for vehicles looking to overtake slower moving vehicles. The de-trunked section of the A1 will also provide an alternative route that vehicles making local journeys can use.

Objective: Improve safety

3.7.14 As described in **Chapter 4** of this Case, a Cost and Benefit to Accidents – Light Touch (COBALT) assessment forecasts that the Scheme will provide an accident reduction benefit of **£32 million** and that the Scheme will save 414 accidents when compared to

the 'without Scheme' scenario. This reduction in accidents is forecast to reduce the number of casualties by 708 over the 60-year appraisal period, of which 17 are predicted to be fatal.

3.7.1 The Scheme includes some changes to bus stops which have been discussed and agreed with the main operator Arriva in order to ensure all bus stops are safely located. For example, the proposal to move the bus stops on the A1 at the Charlton Mires Junction to the informal pick up point off the A1 will improve the visibility and therefore safety of this stop to users with a bus stop flag to formally mark the location.

3.7.2 The Scheme includes some changes to PRoWs including diversions. It provides suitable overbridges and diversions for walkers, cyclists and horse riders (WCH) that do not involve crossing the A1 at grade which will reduce the risk of accidents for these users.

Objective: Maintain access for local traffic whilst improving the conditions for strategic traffic

3.7.3 The Scheme would extend the length of consistent dual carriageway on the A1 from Morpeth to Ellingham, which supports the RIS1 strategic goal of joining our communities and linking effectively to each other and the RIS2 strategic vision of a more integrated road network designed and managed as an integral part of the wider road network. The Scheme would remove the multiple private accesses and rationalise the side road junctions to ensure access is maintained for local traffic whilst improving conditions for strategic traffic by removing turning conflicts on the mainline A1 contributing to the reduction in accidents.

3.7.4 The junctions comprised in the Scheme have been designed to achieve up to date relevant standards and the Scheme includes clear signage to guide drivers. Four new grade separated junctions to be provided as part of the Scheme, will assist in maintaining the free flow of mainline traffic and remove turning conflicts, which contribute to the forecast journey time and accident savings.

3.7.5 The traffic modelling demonstrates that the Scheme can accommodate the forecast future traffic flows at an acceptable level of service, both along the mainline and at the junctions. The reduction in junctions and private accesses removes potential vehicle turning conflicts and the de-trunked A1 will provide an alternative local route for some of these vehicles.

3.7.6 Local traffic will also benefit from the additional capacity on the highway network and the removal of private means of access onto the A1 would also provide those users of the network a safer and more reliable access onto the wider road network.

Objective: Facilitate future economic growth

3.7.7 The Scheme would provide improved physical linkages between Morpeth and Ellingham and would improve access to new and planned employment sites. The economic importance of dualling the A1 in Northumberland is confirmed in the emerging Northumberland Local Plan and the supporting evidence base for this emerging Local Plan and the Northumberland Economic Strategy 2015 – 2020.

3.7.8 The Scheme will also help to support the delivery of Policy ECN 4 of the emerging Northumberland Local Plan. This policy seeks to support the delivery of Fairmoor Enterprise Zone, a Round 2 Enterprise Zone that comprises nine hectares of greenfield land located to the north of Morpeth, on the new junction between the A1 and the northern bypass link to South East Northumberland. The Enterprise Zone is intended to "*support knowledge intensive growth, drawing on a highly-skilled labour pool, by developing an innovation park with new office, light industrial and incubator premises."*

3.7.9 The Wider Impacts for the Scheme have been calculated using WSP's Wider Impacts in Transport Appraisal (WITA) tool and is submitted as **Appendix C** of this Case. It is forecast that the Scheme would produce **£24 million** of Wider Impact Benefits.

3.7.10 Providing improved transport links to the north of Morpeth will help to support the delivery of this Enterprise Zone and to support economic growth in the area in accordance with the objective of Policy ECN 4 of the emerging Northumberland Local Plan.

3.7.11 An extension to the Lionheart Enterprise Park is proposed in the emerging Northumberland Local Plan and the impact of the Scheme in improving journey times and reliability will help to support the aims of this planning policy. The Scheme will also help Alnwick to fulfil its role as a '*main town'*, which is envisaged in the emerging Local Plan.

3.7.12 The A1 north of Newcastle provides a nationally important connection, and the Scheme is part of a RIS investment programme designed to deliver a '*substantial improvement*' *to meet the needs of the local economy and to better fulfil its role in the national transport network.'*

3.7.13 This investment package is consistent with the aims of the NPS NN that confirms, at paragraph 2.2, there is a '*critical need'* to improve the national road networks. Without doing so '*it will be difficult to support further economic development, employment and housing and this will impede economic growth and reduce people's quality of life*' (paragraph 2.22).

3.7.14 Paragraph 2.13 of the NPS NN confirms that a well-functioning SRN is '*critical in enabling safe and reliable journeys and the movement of goods in support of national and regional economies*' and the Scheme responds well to the strategic need to invest in the SRN. A well-functioning SRN is '*critical in enabling safe and reliable journeys and the movement of goods in support of national and regional economies*' and the Scheme responds well to the strategic need to invest in the SRN.

3.7.15 At a regional level, page 24 of the Employment Land and Premises Demand Study confirms that: '*the continuous dualling of the A1 between Morpeth and Alnwick would have a positive impact on employment markets'* and the Northumberland Economic Strategy 2015 – 2020 confirms on page 62 – *'the complete dualling of the A1 continues to be a priority for Northumberland. It will reduce journey times north and south, improve road safety and support enterprise in the north of the county and on the coast; Berwick, in particular, will benefit'*.

3.8 Conclusion

3.8.1 **Table 5** illustrates how the Scheme will respond to this identified need by fulfilling the strategic objectives of the NPS NN.

Table 5 – Scheme objectives and the NPS NN strategic objectives

NPS NN Vision and Strategic Objectives	Conformity of the Scheme
Networks with the capacity, connectivity and resilience to support national and local economic activity and facilitate growth and create jobs	**Chapter 4** of this Case confirms that the Scheme will improve capacity, journey times and network resilience on this stretch of the A1. Improving journey times and network resilience on the A1 between Morpeth and Ellingham will support local economic activity and facilitate growth and create jobs and responds directly to this identified need. The *'significant role'* that the national road network plays in supporting economic growth, as well as existing economic activity and productivity, is identified in paragraph 2.1 of the NPS NN. The de-trunked stretch of the A1 will also remain as an alternate route between Morpeth and Felton that can be used in the event of an accident or other disturbance to the local highway network. This will improve the resilience of the highway network in the region. Chapter 4 of this Case confirms that: *"The provision of the Scheme would increase the resilience of the A1 between Morpeth and Felton* The Scheme will help respond to need to support local economic activity. Improving journey times, connectivity and network reliability will help Morpeth and Alnwick to fulfil their role as a 'main town', which is envisaged in the emerging Local Plan, and will also support the aim of extending the Lionheart Enterprise Park, which is proposed in the emerging Northumberland Local Plan. The wider benefits of the Scheme in supporting economic activity and growth are set out in the Employment Land and Premises Demand Study which confirms that: '*the continuous dualling of the A1 between Morpeth and Alnwick would have a positive impact on employment markets'* and the Northumberland Economic Strategy 2015 – 2020 confirms on page 62 that '*the complete dualling of the A1 continues to be a priority for Northumberland. It will reduce journey times north and south, improve road safety and support enterprise in the north of the county and on the coast; Berwick, in particular, will benefit'.* In total, it is forecast that the Scheme would produce £24 million

	of wider impact benefits resulting from agglomeration, output change and tax revenues over the 60 year assessment period.
Networks which support and improve journey time quality, reliability and safety	The Scheme will support and improve journey quality by providing a continuous stretch of dual carriageway between Morpeth and Ellingham, which will help support the free-flow of traffic on the A1. The new carriageways will be built to consistent modern standards that removes the existing private accesses will improve journey quality and safety. The additional capacity and resilience that are being provided will also improve journey reliability The addition of new lanes will contribute to the free-flow of traffic on the A1 reducing driver delays and time lost for business users whilst reducing stress for all users. As well as directly benefiting users of the A1 between Morpeth and Ellingham, the Scheme will also have wider benefits to users of the A1. The full dualling of the A1 up to Ellingham will deliver a '*substantial improvement' to the network that will help the A1 better fulfil its role in the national transport network*'. As described in **Chapter 4** of this Case, a Cost and Benefit to Accidents – Light Touch (COBALT) assessment forecasts that the Scheme will provide an accident reduction benefit of £32 million and that the Scheme will save 414 accidents when compared to the 'without Scheme' scenario. This reduction in accidents is forecast to reduce the number of casualties by 708 over the 60-year appraisal period, of which 17 are predicted to be fatal.
Networks which support the delivery of environmental goals and move to a low carbon economy	The Scheme is designed to mitigate the environmental impacts by incorporating improved landscaping, water management (through Sustainable Urban Drainage Systems (SuDS) and other measures), and noise reduction (through improved carriageway surfacing). The current A1 is a source of noise for nearby residents and other sensitive receptors within the designated areas such as hospitals, schools, community facilities, SSSI, and PRoW. **Chapter 6: Noise and Vibration, Volume 2** of the ES (**Application Document Reference: TR010041/APP/6.2**) for Part A and **Volume 3** of the ES (**Application Document Reference: TR010041/APP/6.3**) for Part B confirms that based on the proposed mitigation and noise level predictions, the Scheme is policy compliant in relation to noise.

	The current water environment would be improved through the provision of SuDS surface water management features and a reduction in the use of culverts to carry watercourses across the A1. The Water Framework Directive (WFD) Assessment that is submitted as **Appendix 10.2, Volume 5** of the ES (**Application Document Reference: TR010041/APP/6.5**) for Part A and Appendix 10.2, Volume 6 of the ES (**Application Document Reference: TR010041/APP/6.6**) for Part B concludes that the Scheme is compliant with WFD objectives. The assessment of effects on the environment, including climate change, is set out in **Chapter 14: Climate, Volume 2** of the ES (**Application Document Reference: TR010041/APP/6.2**) for Part A and **Chapter 14: Climate, Volume 3** of the ES (**Application Document Reference: TR010041/APP/6.3**) for Part B which concludes that the Scheme is expected to have a "*slight adverse effect*" on climate (i.e. one that is not significant.) In relation to air quality, **Chapter 5: Air Quality, Volume 2** of the ES (**Application Document Reference: TR010041/APP/6.2**) for Part A and **Chapter 5: Air Quality, Volume 3** of the ES (**Application Document Reference: TR010041/APP/6.3**) for Part B concludes that the effects of the air quality impacts of the Scheme and cumulative scenarios are "*not significant*". It is considered that the Scheme is compatible with the objective of supporting the move towards a low carbon economy because the assessment of effects on the environment, including climate change, is set out in **Chapter 14: Climate, Volume 2** of the ES (**Application Document Reference: TR010041/APP/6.2**) for Part A and **Chapter 14: Climate, Volume 3** of the ES (**Application Document Reference: TR010041/APP/6.3**) These assessments identify that GHG emissions associated with the construction and operation of Part A and Part B will reduce emissions where possible and that the inclusion of footways, cycleway and bus stops (as described in **Chapter 2: The Scheme**, **Volume 1** of this ES (A**pplication Document Reference: TR010041/APP/6.1**)) align Part A and Part B to sustainable and integrated transport objectives
Networks which join up our communities and link effectively to each other	The Scheme would help to join up communities and reduce journey times on this section of the A1. The Scheme would retain existing connectivity between communities on either side of the A1 by providing overbridges for pedestrians and cyclists.

	Providing a network with greater capacity and journey time reliability will also help join up communities by improving the experience of local users of the A1 and supporting Morpeth and Alnwick in their role as a 'main town' in the region. **Chapter 12: Population and Human Health, Volume 2** of the ES (**Application Document Reference: TR010041/APP/6.2**) for Part A and **Chapter 12: Population and Human Health, Volume 3** of the ES (**Application Document Reference: TR010041/APP/6.3**) for Part B confirms that the proposed cycle paths and routes would provide a "*permanent beneficial effect*" of slight significance for cyclists. for Part A and "slight beneficial slight effect" for WCH users for Part B. As set out above, the Scheme will improve journey times and network reliability in the area, which will also help to improve links between communities in the area.

4 TRANSPORT CASE FOR THE SCHEME

4.1 Introduction

4.1.1 This chapter of the Case comprises a transport assessment that has been produced to support the DCO application. The purpose of this chapter is to provide information about the transport assessment undertaken for Part A and Part B as part of the development of the Scheme.

4.2 Transport Policy

4.2.1 This section outlines the national and local policies and provides a summary of the Scheme's compatibility with the relevant planning policy framework and transport strategies.

Northumberland Local Transport Plan

4.2.2 NCC's third local transport plan (LTP) was published in April 2011 and covers the period April 2011 to 2026. The document sets out a 15-year transport strategy for Northumberland, identifying issues on the road network and setting out solutions.

4.2.3 In relation to the SRN, Paragraph 3.29 of the LTP identifies that *'Most of the road freight traffic originating in Northumberland is destined for Tyne & Wear and Scotland and uses the A1 to get there. Much of the A1 to the north of Morpeth is single carriageway, restricting HGVs to a 40mph speed limit. On a regional level, freight originating in Northumberland accounts for 12% of regional freight movement, suggesting that it is vital to the economy of the North East'*.

4.2.4 The reliability of the single carriageway parts of the A1 is identified as *'Emerging Challenge'* for the road network in Northumberland as set out on page 38 of the LTP as follows: *'The A1 is a key route for freight being transported through Northumberland. This route is predominantly single carriageway. This will have implications on journey time reliability for other road users'.* This includes the sections of single carriageway of the A1 between Morpeth and Ellingham.

NPPF

4.2.5 The NPPF, originally published by the Department for Communities and Local Government (now known as the Ministry for Housing, Communities and Local Government) in March 2012 and revised in February 2019, sets out the Government's economic, environmental and social planning policies for England. These policies articulate a national strategy for sustainable development. Government intends that this vision should be interpreted and applied to meet local aspirations.

4.2.6 Paragraph 80 of the NPPF states that '*Planning policies and decisions should help create the conditions in which businesses can invest, expand and adapt. Significant weight should be placed on the need to support economic growth and productivity, taking into account both local business needs and wider opportunities for development. The approach taken should allow each area to build on its strengths, counter any weaknesses and address the challenges of the future*'.

4.2.7 An important function of the NPPF is to embed the principles of sustainable development with local plans prepared under it. The NPPF also provides an important and relevant consideration in decisions on NSIPs, but only to the extent '*relevant to that project*'.

4.2.8 The Scheme supports the principles of the NPPF by providing increased capacity through the provision of dualling in each direction on the single carriageway sections of the A1 between Morpeth and Ellingham; and by providing better connections to the economic centres in the North East and Scotland, such as Newcastle and Edinburgh, allowing economic growth in the region.

NPS NN

4.2.9 Published by DfT in December 2014, this document sets out the need and Government policies for nationally significant rail and road projects for England. It is used by the SoS as the primary basis for making decisions on development consent applications related to such projects.

4.2.10 The NPS NN states the Government will deliver national networks that meet the country's long-term needs; supporting a prosperous and competitive economy and improving overall quality of life, as part of a wider transport system. The NPS NN has four strategic objectives as follows:

i. Networks with the capacity, connectivity and resilience to support national and local economic activity and facilitate growth and create jobs;
ii. Networks which support and improve journey time quality, reliability and safety;
iii. Networks which support the delivery of environmental goals and move to a low carbon economy; and
iv. Networks which join up our communities and link effectively to each other.

4.2.11 Further details of the Scheme's compliance with the NPS NN objectives can be found in **Chapter 3** of this Case. General compliance with the NPS NN can be found in the NPS NN Accordance Table **(Application Document Reference: TR010041/APP/7.2)** which accompanies the application**.**

National Transport Policy

4.2.12 National emphasis on transport focuses on meeting goals identified in 'Delivering a Sustainable Transport System (DaSTS)' DfT 2008.

4.2.13 The DaSTS outlines five goals for transport, which focus particularly on the challenge of delivering strong economic growth while at the same time reducing greenhouse gas emissions, as recommended through the Stern Review on the Economics of Climate Change (October 2006) and the Eddington Transport Study Report (2006).

4.2.14 In the overall process, objectives set achievable targets that reflect the wider goals of NCC to deliver National objectives in terms of:

i. Contributing to improved safety, security and health;
ii. Supporting economic growth;
iii. Tackling climate change;

iv. Promoting equality of opportunity; and
v. Improving quality of life and a healthy natural environment.

4.3 Existing Situation

4.3.1 The A1 in Northumberland forms part of the SRN between England and Scotland and is an important route especially for long distance traffic travelling the eastern side of the country. The route also caters for local commuters, tourists and agricultural traffic.

4.3.2 While the M6 remains the main strategic traffic route to Scotland, the A1 is an essential link for the North East and Northumberland. Improving the A1 has been a long-standing call from businesses and communities. Further details can be found in **Chapter 3** of this Case.

4.3.3 The A1 between Morpeth and Felton is currently an all-purpose trunk road with a single carriageway in each direction. The southern section lies approximately 2.4km from the town centre of Morpeth. There are approximately 40 accesses onto the A1 from minor local roads and private means of access from nearby properties along this section.

4.3.4 The A1 between Alnwick and Ellingham is currently an all-purpose trunk road with a single carriageway in each direction. The southern section lies approximately 2.1km from the town centre of Alnwick. There are approximately 23 accesses and 4 at-grade junctions onto the A1 from minor local roads and private means of access from nearby properties along this section.

4.3.5 The main issues affecting traffic along the route as identified in the A1 North of Newcastle Feasibility Study published in 2015 are summarised as follows:

a) A lack of overtaking opportunities along the single carriageway:

(i) due to a significant level of HGVs using the route which means overall speed is reduced and it is not safe for other vehicles to overtake;
(ii) which leads to driver frustration and potential for unsafe manoeuvres being undertaken; and
(iii) a significant level of variability in journey times which reduces the reliability of the network.

b) The local road network does not provide sufficient alternative routes to the A1 as the vast majority of these routes head east-west. When incidents occur on the A1 between Morpeth and Felton or between Alnwick and Ellingham, impacts on strategic north-south traffic and local road users include significant delays on the A1 or the requirement to undertake longer distance diversions on the local road network. For example, trips between Morpeth and Alnwick would likely divert to the A697 and B6341, which result in an increase in journey distance and time of approximately 3.5 miles and 5 minutes respectively. Alternative routes would also add additional traffic, including HGVs, through the many villages within the area.

c) The significant number of junctions and private means of access along Part A and Part B can result in increases in delays and increased likelihood of accidents as vehicles enter the main carriageway or slow down to exit.

4.3.6 Further detail about the outcome of the Feasibility Study published in 2015 can be found in **Chapter 3** of this Case.

4.3.7 Traffic flows on Part A and Part B are highly seasonal and the issues described above are further exacerbated during the summer months. An analysis of observed daily traffic flows shows that daily traffic flows during July and August on Part A are 18% and 22% higher and on Part B are 19% and 32% higher than the average annual daily traffic flows respectively.

4.4 Existing Traffic Flows

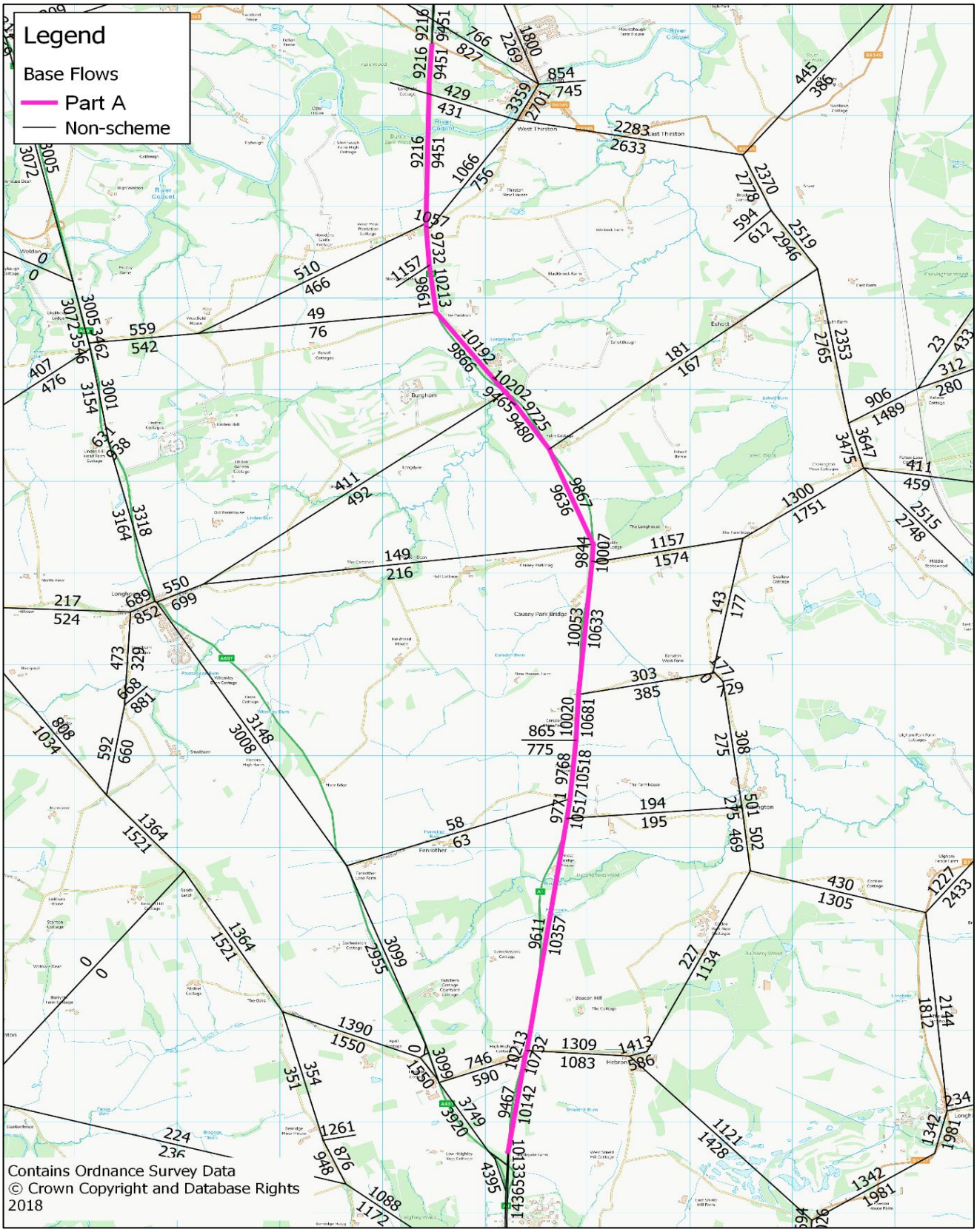
Part A

4.4.1 **Figure 7** below shows the Average Annual Daily Traffic (AADT) flows for the A1 between Morpeth and Felton. Around 10,000 vehicles a day use the route in each direction of which approximately 11% are identified as HGVs. It is noted that the percentage of HGVs is significantly higher than the average figure for rural A roads of around 6% as reported by DfT[16]. In 2017, there were 6.2 billion miles travelled by HGVs on rural A roads, compared with 97.1 billion miles in total.

4.4.2 From **Figure 7** it is clear that the local roads in the surrounding area have much lower traffic flows, emphasising the importance of the A1 as the key route for long distance traffic in the area.

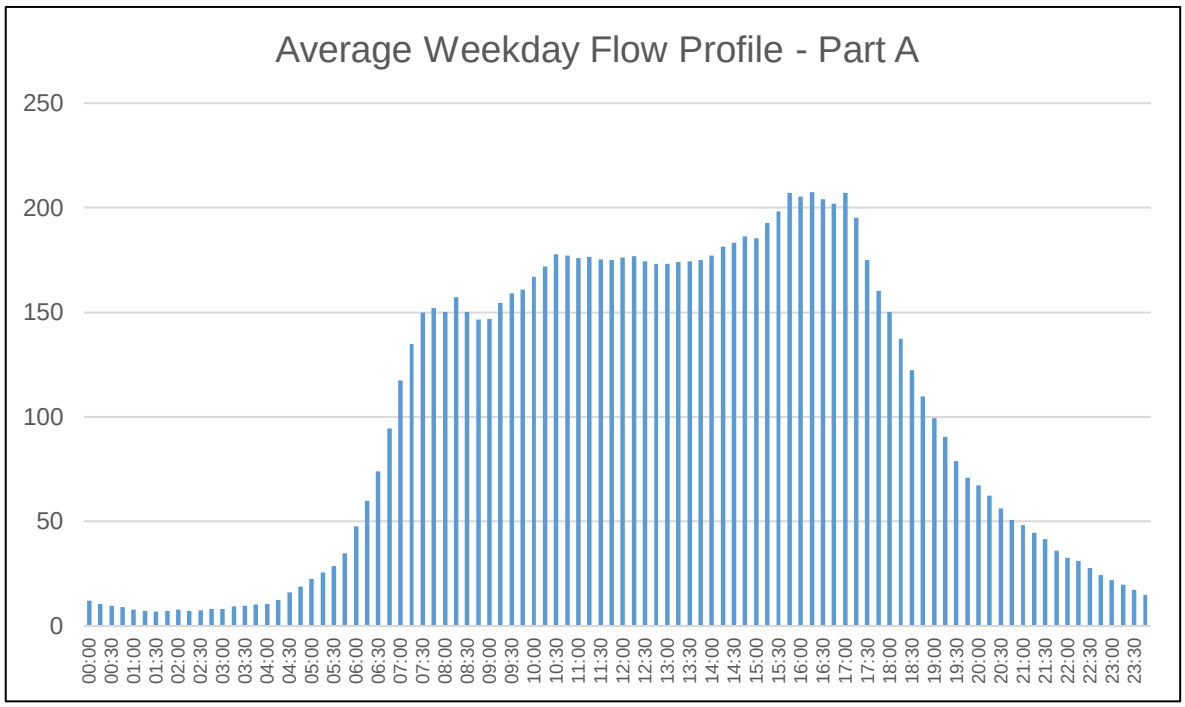
[16] DfT Table TRA 2503a Car and goods vehicle traffic (vehicle miles) by road class in Great Britain, rolling annuals from 1994

Figure 7: Average Annual Daily Traffic (AADT) Flows – Part A



4.4.3 To better understand how the traffic using the A1 on Part A is distributed throughout the day, and average weekday flow profile has been derived using observed traffic counts. The count data has been downloaded from Highways England's WebTRIS[17] website which contains data for permanent count sites on the SRN. The count sites selected were 9755/1 and 9755/2 which are located on the A1 within Part A just to the south of the Burgham Park junction. The profile has been derived for 2017 is shown in **Figure 8** below.

Figure 8: Average 2017 Weekday Two-Way Flow Profile (WebTRIS Counts) – Part A



4.4.4 From this analysis it is clear that traffic volumes on Part A of the A1 do not follow the profile of peaks in the AM and PM with lower volumes during the Inter-Peak that might ordinarily be expected. Instead, the A1 shows higher volumes of traffic in the Inter-Peak than in the AM which can be explained by the fact that the A1 is used for a variety of purposes including commuting, transport of goods and leisure trips and that there is a significant amount of long distance trips that route via the A1.

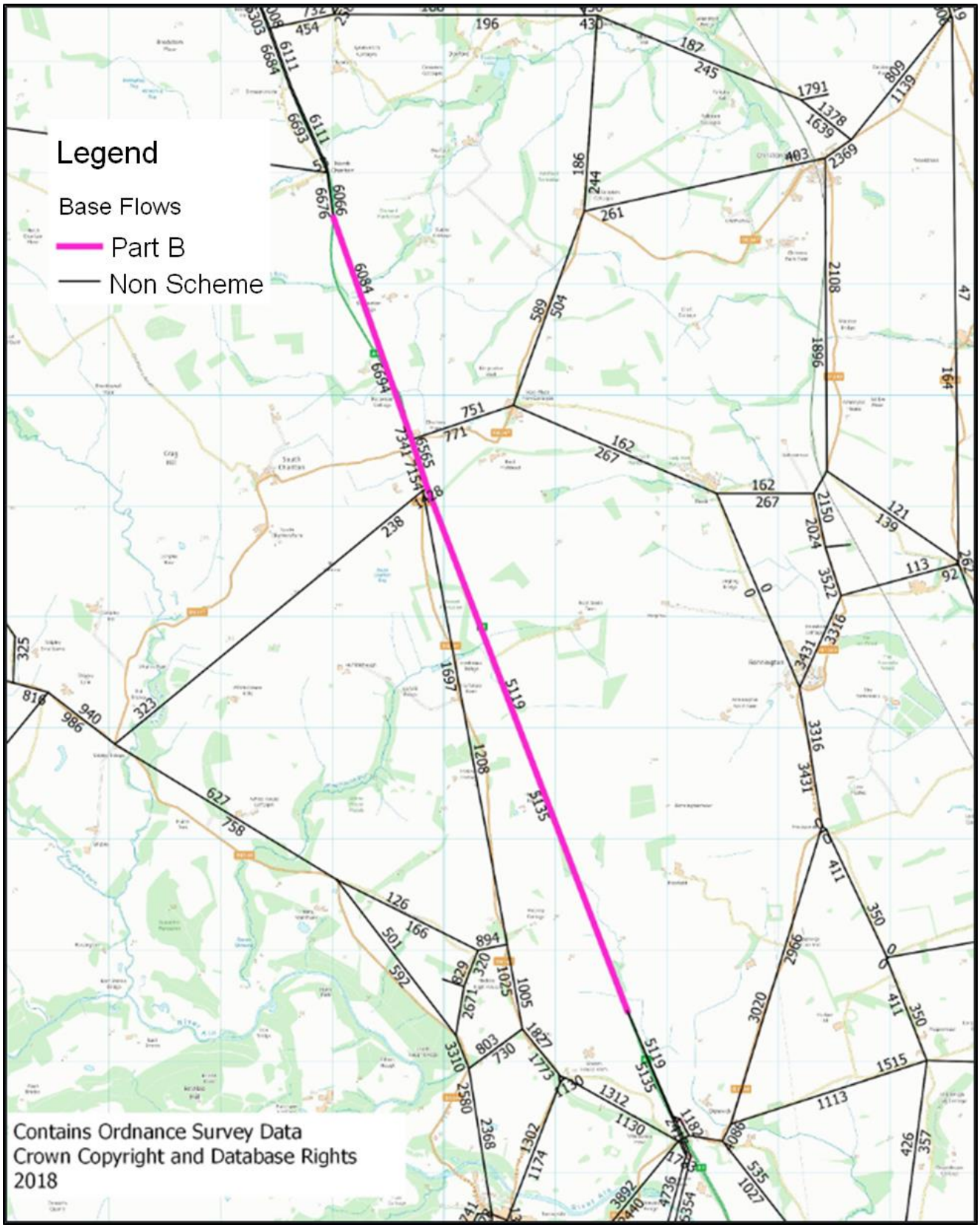
Part B

4.4.5 **Figure 9** below shows AADT flows for Part B. Around 5,000 vehicles a day use the route in each direction of which approximately 15% are identified as HGVs. Again, this is a higher percentage than the average for rural A roads.

4.4.6 As with Part A and as shown in **Figure 9** it is clear that the local roads in the surrounding area have much lower traffic flows, emphasising the importance of the A1 as the key route for long distance traffic in the area.

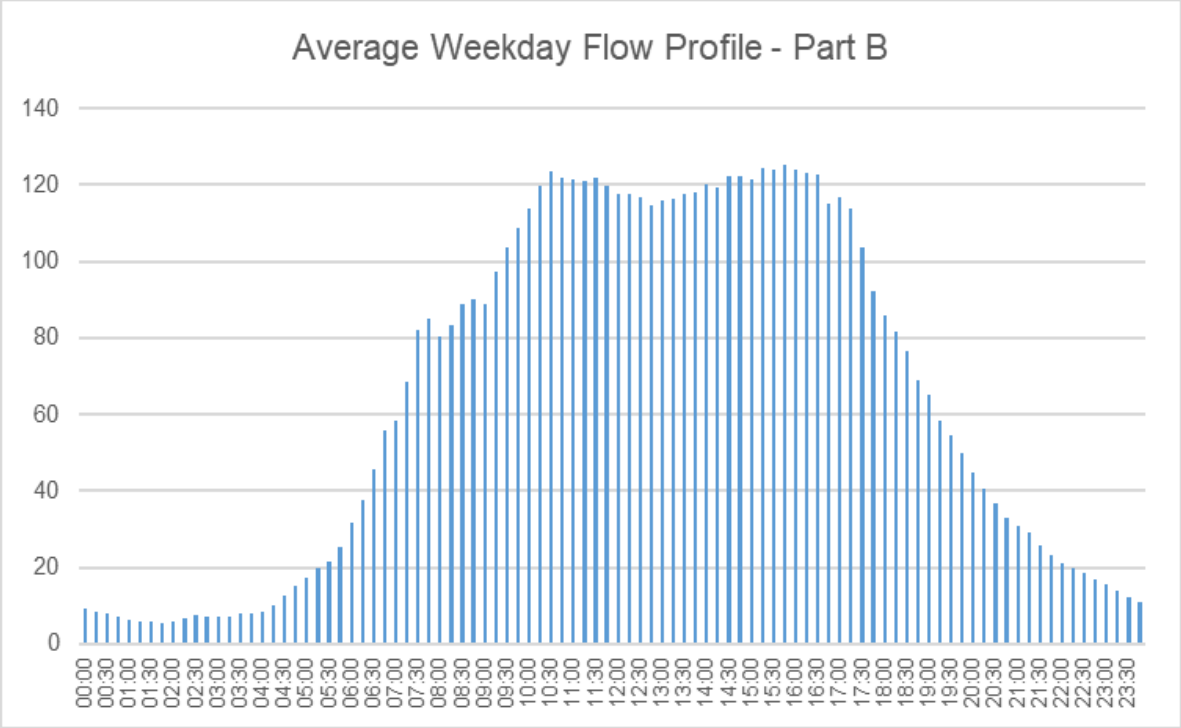
[17] http://webtris.highwaysengland.co.uk/

Figure 9: Average Annual Daily Traffic (AADT) Flows – Part B



4.4.7 To better understand how the traffic using the A1 on Part B is distributed throughout the day, an average weekday flow profile has been derived using observed traffic counts. The count data have been downloaded from Highways England's WebTRIS database which contains data for permanent count sites on the SRN. The count sites selected were 9754/1 and 9754/2 which are located on the A1 within Part B just to the south of the B6347 junction, which lies near the northern end of Part B. The profile has been derived for 2017 and is shown in **Figure 10** below.

Figure 10: Average 2017 Weekday Two-Way Flow Profile (WebTRIS Counts) – Part B



4.4.8 As with Part A from this analysis it is clear that traffic volumes on Part B of the A1 do not follow the standard profile of peaks in the AM and PM with lower volumes during the Inter-Peak. Instead, the A1 shows higher volumes of traffic in the Inter-Peak than in the AM which can be explained by the fact that the A1 is used for a variety of purposes including commuting, transport of goods and leisure trips, and that there is a significant amount of long distance trips that route via the A1

4.5 Baseline Data and Development of Model

4.5.1 This section describes the model development process and data sources used for the A1 in Northumberland Traffic Model. This process has been undertaken in line with WebTAG guidance and agreed with Highways England's Transport Planning Group.

4.5.2 The development of the A1 in Northumberland Traffic Model followed the same process for Part A and Part B. As such, the description of the model development process and data sources in this section applies equally to Part A and Part B, and is described with reference to the Scheme as a whole.

4.5.3 The data sources used for the development of the A1 in Northumberland Traffic Model

include:

i. Model development process;
ii. Forecast years and scenarios;
iii. Local and national growth assumptions; and
iv. Local development

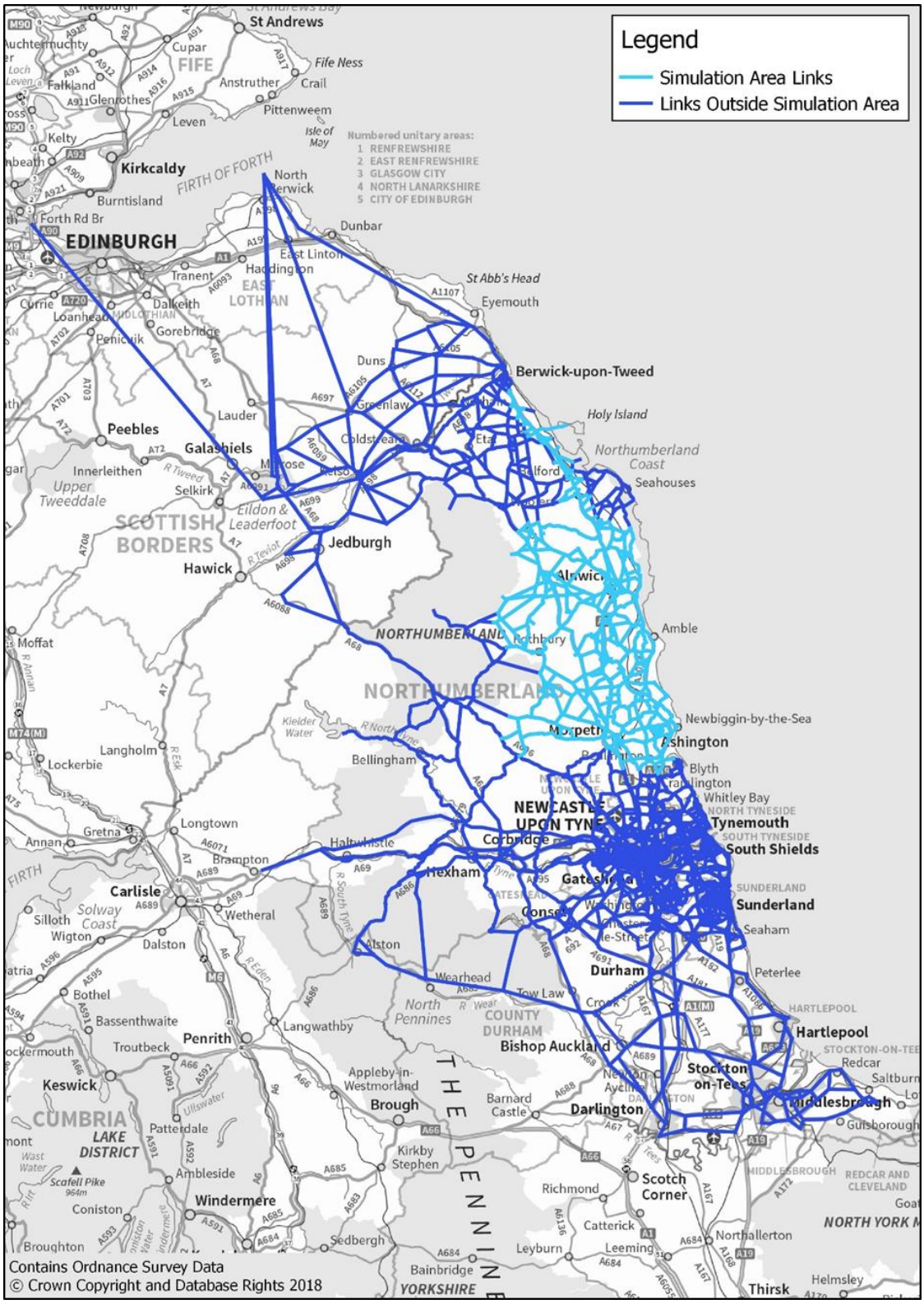
4.5.4 A summary of the model convergence, calibration and validation results are provided within this chapter.

4.5.5 The overall impact of Part A and Part B and the resulting traffic flows have been derived from this model. Further details are presented in the following sections.

Model Area

4.5.6 The A1 in Northumberland Traffic Model extents are illustrated in **Figure 11** below. The model comprises a simulation area and a buffer area. The simulation area includes the full length of the A1 in Northumberland, the main parallel routes and the local road network in the vicinity of the Scheme. The simulation area is coded with a high level of detail to assess the impacts of the Scheme. The buffer area is coded in less detail, as its main purpose is to enable traffic to be fed in and out of the simulation area on the appropriate links.

Figure 11: Model Network Coverage and Simulation Area



Baseline Data Collection

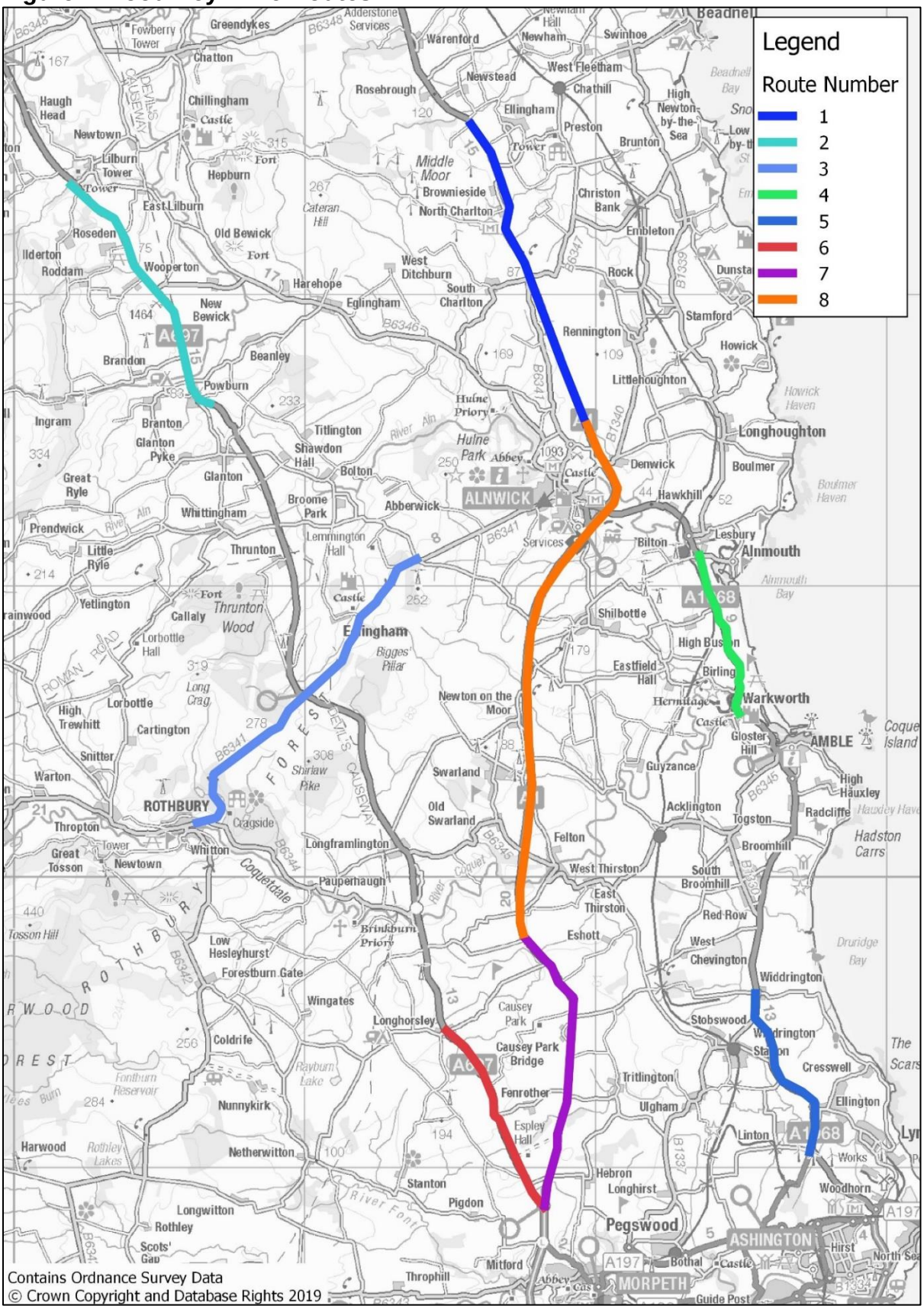
4.5.7 To develop the 2015 base for the A1 Northumberland Traffic Model, extensive traffic data collection gathering, and modelling has taken place. The following data collection sources have been used:

- **Mobile Phone Origin Destination (MPOD)** data from Telefonica sourced in March 2015 was used for the development of the modelled travel demand in the Options Selection stage. A review was undertaken for Preliminary Design comparing this dataset to the more recent 2016 data. These were the most recent available data at that stage. This review found that there were no significant changes between the results and as such, the 2015 data have been retained for Preliminary Design.

- **Existing Automatic Traffic Counts (ATC)** and **Manual Classified Counts (MCC)** were collated from various sources including local highway authorities and consultants involved in other model builds in the area. The existing data sources were complimented by a series of new ATCs and MCCs undertaken in July 2015. These surveys focused on locations not covered by the existing data.

- **Journey Time data** from 2016 has been extracted from Trafficmaster along eight key routes in the study area. This information has been used for model validation to assess the accuracy of model speeds against observed. The journey time routes included for validation are shown in **Figure 12** below

Figure 12: Journey Time Routes



Approach to Modelling

4.5.8 The A1 in Northumberland Traffic Model has been built to a base year of 2016, as this was the most recent complete year at the time of the model build. The model consists of three modelled time periods:

i. Morning peak hour: 08:00–09:00;
ii. Inter-peak hour: average hour between 10:00–16:00;
iii. Evening peak hour: 16:00- 17:00.

4.5.9 Additionally, forecast years are represented as follows:

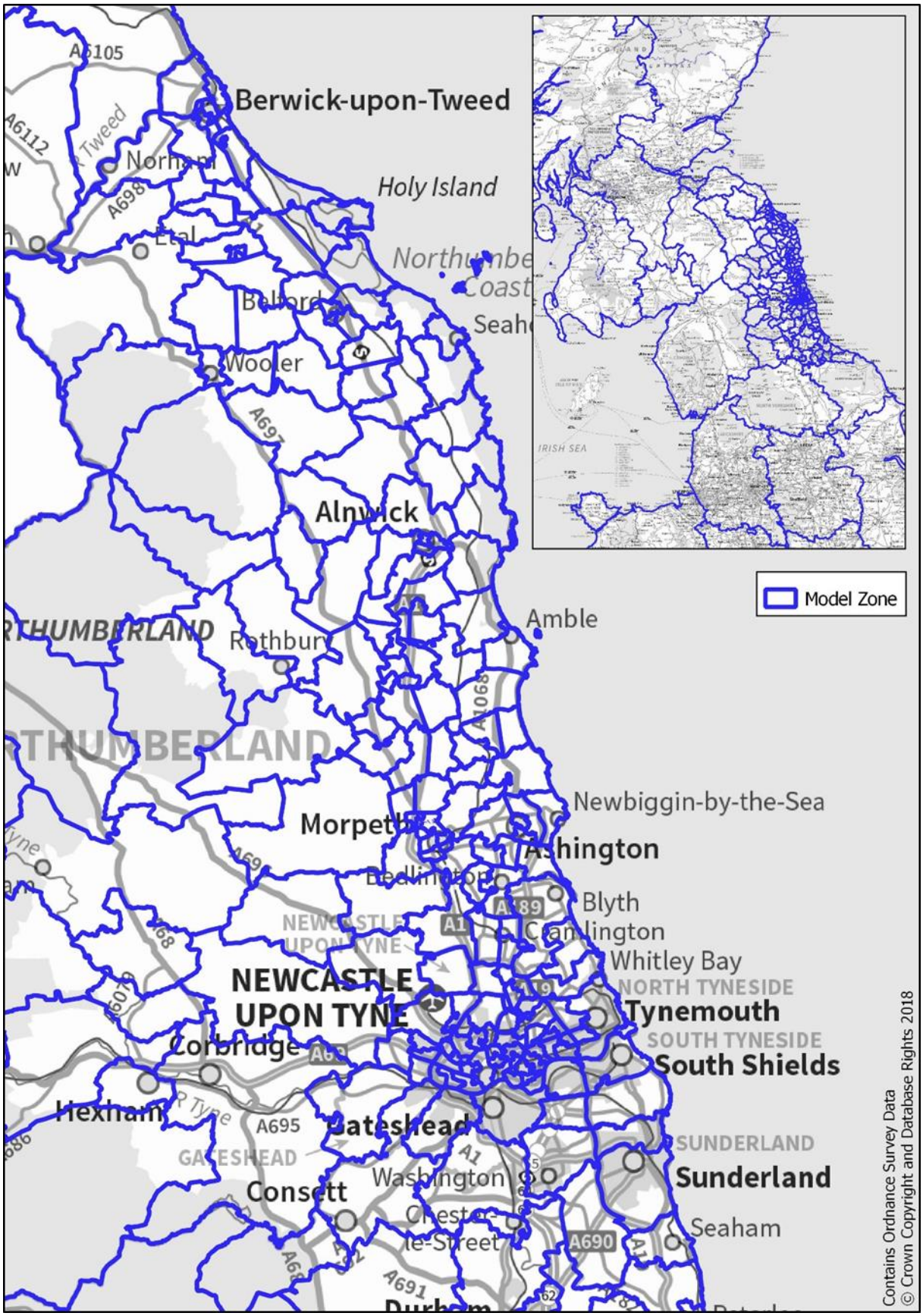
i. 2023 Opening Year;
ii. 2038 Design Year;
iii. 2051 Horizon Year (latest year traffic growth forecasts are available for).

Demand Development

4.5.10 The model is split into a number of zones representing geographic areas. The model demand comprises matrices of trip numbers between each zone pair. The demand derived from the MPOD data is assigned to the model network in an initial assignment. Adjustments are then made during a matrix estimation process in order to reflect observed traffic flows more accurately.

4.5.11 The final zone system is shown in **Figure 13** below.

Figure 13: Model Zone System



Network Development

4.5.12 A review of the network from the Options Selection stage undertaken for the Preliminary Design stage found that the network extended only 20km over the Scottish Border.

4.5.13 In correspondence with Highways England's Transport Planning Group, it was decided that in order to improve routing into the study area, additional key cross border links were required in the model. Therefore, the following links have been included for the Preliminary Design stage:

i. A1 Berwick to Edinburgh;
ii. A697 Morpeth to Edinburgh via Wooler and Coldstream;
iii. A696 / A68 Newcastle via Carter Bar and Jedburgh;
iv. A7 Galashiels to Edinburgh;
v. A72 / A721 Selkirk to Glasgow.

4.5.14 Additional refinements were made to the network at the Preliminary Design stage in the form of model speed amendments and adjustments to the Tyne Tunnel toll charges.

Model Validation Results

4.5.15 Following the review and refinement of the demand matrices and network for the highway model, the model was validated to the standards required by Highways England. The link flow validation has been undertaken in accordance with the criteria as stated in WebTAG, DfT's modelling and appraisal guidance documentation, as summarised in **Table 6.**

Table 6: WebTAG Link Flow Criteria

Criteria	Description	Acceptability Guideline
1	Individual flows within 100 veh/h of counts for flows less than 700 veh/h	> 85% of cases
	Individual flows within 15% of counts for flows from 700 to 2,700 veh/h	> 85% of cases
	Individual flows within 400 veh/h of counts for flows more than 2,700 veh/h	> 85% of cases
2	GEH < 5 for individual flows	> 85% of cases

4.5.16 Screenlines are a group of traffic count sites which represent traffic travelling in a similar direction. WebTAG guidance states that the validation criteria for screenlines is that differences between the modelled flows and counts should be less than 5% and that screenlines should normally be made up of 5 links or more. Due to the sparse road network and low flow volumes observed in Northumberland it is difficult to construct meaningful screenlines that encompass 5 links or more that represent traffic from similar directions. These problems in constructing proper screenlines with 5 links, together with low levels of flow, make passing the 5% WebTAG criteria difficult to achieve. A

proportionate approach utilising 'relaxed' criteria has therefore been used as a second indication of validation level. The relaxed criteria consist of applying the link criteria set out in **Table 6** above to the screenline observed and modelled totals.

4.5.17 A summary of the validation results is presented below, with further details in **Appendix A** of this Case:

i. The model meets WebTAG criteria for journey time validation for all time periods;
ii. The model performs well for individual link validation with all but the AM validation counts meeting WebTAG criteria;
iii. The models generally perform poorly against the WebTAG criteria for screenline flows (within 5% of observed flows);
iv. The models perform well against the 'relaxed' criteria for screenline flows.

4.5.18 This demonstrates that although the model does not meet the criteria set out in WebTAG for screenline flows, it is still fit for purpose for this assessment given the difficulties in forming screenlines with a significant number of counts in this area.

Variable Demand Model

4.5.19 The A1 in Northumberland demand model uses DIADEM v5.0 issued on behalf of DfT for the purpose of producing traffic forecasts for the A1 Northumberland Traffic Model.

4.5.20 There are three variable demand mechanisms in DIADEM, namely: trip frequency; mode choice; and trip distribution. The variable demand model has only included the impact of Part A and Part B on trip frequency and destination and has excluded mode choice as it was decided that the limited access to public transport in Northumberland meant that the journey time savings of Part A and Part B were not significant enough to change the mode choice for trips.

Uncertainty in Forecasting

4.5.21 An Uncertainty Log was compiled to identify developments in the area which should be included in the forecast models. The Uncertainty Log is presented in **Appendix B** of this Case. The derivation of the Uncertainty Log has been based on DfT guidance[18] and updated forecasting guidance issued by the Highways England's Transport Planning Group on 17 January 2018 regarding the inclusion of RIS schemes in the Core scenario. This guidance now states that published RIS 1 and 2 schemes should also be included – previously only schemes at Preliminary Design or beyond were included. RIS 1 comprises strategic highway network schemes which were due for delivery between 2015 and 2020 whilst RIS 2 schemes are due for delivery post 2020.

4.5.22 A change from the Option Selection stage Uncertainty Log which covered Northumberland only, was to widen the geographical coverage for Preliminary Design to allow for developments from neighbouring authorities that generate traffic with potential to impact on the Scheme. This enables greater accuracy in traffic demand forecasts.

[18] DfT Transport Analysis Guidance Unit M4 Table A2

4.5.23 Developments from the following local authorities were included in the Uncertainty Log.

i. Northumberland County Council;
ii. Scottish Borders Council;
iii. North Tyneside Council;
iv. Newcastle City Council;
v. Gateshead Council.

4.5.24 The Northumberland National Park Authority was also included in the scope but there were no planned residential or employment developments within their area.

4.5.25 Future developments identified within each of the districts identified were categorised in accordance with the uncertainty log classifications set out in TAG Unit M4 (Table A2). Abbreviations for Probability are summarised as follows:

i. RF = Reasonably Foreseeable;
ii. NC = Near Certain;
iii. MTL = More Than Likely.

4.5.26 The criteria for developments to be included in the Uncertainty Log is presented in **Table 7** below.

Table 7: Thresholds of Proximity and Scale of Development for Inclusion into the Uncertainty Log

Authority	Maximum Distance (km)	Minimum Residential Dwellings	Minimum Employment Land (Ha)
Newcastle/ Gateshead	2km from A1	1,000	2
North Tyneside	2km from A1, A19 or A1068	1,000	2
Scottish Borders	2km from A1	1,000	2
Northumberland National Park	Within boundary	150	1
Northumberland – Criteria 1	10km from A1	150	1
Northumberland – Criteria 2	Elsewhere in county	500	5

4.5.27 The number of residential and employment sites is summarised in **Table 8** below.

Table 8: Summary of Development Log Sites

Authority	Residential Sites	Employment Sites
Near Certain	20	12
More Than Likely	1	0
Reasonably Foreseeable	21	46

4.5.28 The number of trips generated by each development has been calculated using trip rates derived from the Trip Rate Information Computer System (TRICS) database. TRICS contains observed trip rates for a range of different land uses. The model distributes development trips similarly to those of a similar land use and location in the base model.

Highway Schemes

4.5.29 The Do Minimum (without the Scheme) scenario networks were created by amending the base year modelled network. Two sets of new links were added to the base year network to represent future year conditions without the Scheme.

4.5.30 The first set of links to be added, represented highway improvements that had been opened since the Base Year and were already 'on the ground', for example the recently opened Morpeth Northern Bypass. In addition, the re-opening in 2016 of the B6342 bridge over the River Coquet in Rothbury, following a landslip in 2012 which effectively severed this road, has been included in the forecast model.

4.5.31 The second set comprises the RIS 1 and RIS 2 schemes or significant local authority schemes within the area of interest.

4.5.32 Accordingly, the following schemes were added to the base year network to create the forecast Do Minimum (without the Scheme) network:

i. A1 Coal House to Metro Centre (open);
ii. Re-opening of B6342 bridge over River Coquet in Rothbury (open);
iii. Morpeth Northern Bypass (open);
iv. A1 Scotswood to North Brunton;
v. A1 Birtley to Coal House;
vi. A19 / A1058 Coast Road Junction improvements;
vii. A19 Testos and Downhill Lane Junction improvements;
viii. A19 Norton to Wynyard;
ix. Blyth Relief Road; and
x. Junction 12 A1 North Brunton improvements.

4.6 Overview of Journey Times

4.6.1 Journey times from along Part A and Part B have been analysed to establish what impact the single carriageway section of the A1 is having on network speeds. This investigation has been undertaken using 2016 Trafficmaster data. Trafficmaster data

contains Global Positioning System (GPS) derived journey times of vehicles. The results show that the average journey speeds for the A1 between Morpeth and Felton are 50mph; and between Alnwick and Ellingham were between 50mph and 60mph for all time periods.

4.6.2 This partly reflects the lack of opportunities to overtake slower vehicles and although these speeds are not unusual for rural roads, along some sections the average speed is much slower than the 65+mph experienced on a standard dual carriageway. It is of note that observed average speeds on the M6 to the south of the Scottish border are in excess of 65mph.

4.7 Future Network Performance

4.7.1 As described in section 4.4.6, forecast models have been developed for 2023 (opening year), 2038 (design year) and 2051 (horizon year). The opening and design year models provide information for the assessment of the operational performance of the Scheme, whilst the horizon year model outputs are used alongside the opening and design year outputs for the economic assessment.

4.7.2 To assess the impact of the Scheme, Do Minimum (without the Scheme) and Do Something (with the Scheme) models have been developed for each modelled year. This section provides analysis of the impact of future traffic growth on traffic flows and journey times for the Scheme. The Do Something models are analysed to understand how traffic flows and journey times will alter with the Scheme in place.

4.7.3 Since forecast models were developed, the opening year the Scheme has been deferred to 2024. Updated Goods Vehicle Growth from DfT Road Traffic Forecasts (2018) have also become available. Therefore, the Applicant has considered whether the predictions, assessments and economic analyses made using an opening year of 2023 are materially affected by this change. A sensitivity analysis was carried out, in order to test whether these predicted traffic levels would materially affect the outputs of models for the revised opening year and design year. The result of this sensitivity analysis was that there would be increases in vehicle movements (up to 4%) in the opening year (2024), and a decrease in predicted vehicle movements (up to 3%) in the design year (2038). The impact of the sensitivity analysis upon the forecast models is that there is no material change to the outputs of the models. In this chapter, references to the opening year and the design year are to those contained in the assessment.

4.7.4 Details of the sensitivity testing undertaken for 2024 opening year can be found in **Appendix D** of this Case.

4.7.5 In addition to the review of the forecast model outputs, this section also details the junction capacity assessments that have been undertaken at key junctions along the Scheme.

Overview of Traffic Forecasts

Part A

4.7.6 The impact of Part A on the traffic flows has been assessed. The key observations from

the A1 in Northumberland Traffic Model are described below.

4.7.7 With Part A, there is a significant increase in traffic volumes on the A1 in both directions in all modelled periods, of between approximately 300 and 600 vehicles per hour in each direction with smaller changes on the A1 beyond Part A. This is due to the increased speeds following the increase in speed limit and reduction in delays once Part A is operational.

4.7.8 However, due to the relatively low levels of traffic on the side roads Part A is not forecast to make a significant difference to queuing at junctions, and both queues and delays at junctions within Part A are forecast to be minimal.

4.7.9 The forecast AADT traffic volumes are given in **Table 9** below.

Table 9: Annual Average Daily Traffic Forecasts

Location	Do Minimum Opening Year (2023)	With Part A Opening Year (2023)	Do Minimum Design Year (2038)	With Part A Design Year (2038)
A1 (A697 to Highlaws) Northbound	10,603	14,575	12,491	18,500
A1 (A697 to Highlaws) Soutbound	11,299	14,898	12,930	18,577
A1 (Highlaws to Fenrother) Northbound	10,710	15,814	12,531	20,217
A1 (Highlaws to Fenrother) Southbound	11,536	15,907	12,997	19,741
A1 (Causey Park to Burgham) Northbound	10,777	14,973	12,619	19,158
A1 (Causey Park to Burgham) Southbound	10,948	14,554	12,544	18,118
Distance-weighted Average Northbound (Part A Length)	10,723	15,239	12,564	19,468
Distance-weighted Average Southbound (Part A Length)	11,234	15,138	12,783	18,826

4.7.10 **Table 9** shows there is a significant increase in the AADT traffic due to Part A in both the opening (2023) and design year (2038).

4.8 Overview of Journey Times and Reliability

Part A

4.8.1 The traffic model outputs have been used to assess how the journey times along the A1 are forecast to change in the future and how they are affected by Part A.

4.8.2 In 2023 without Part A, the model forecasts show that it takes users around 10½ minutes to travel along Part A in either direction. This is predicted to increase to 12 minutes travelling northbound and 11½ minutes travelling southbound by 2051.

4.8.3 With Part A in place, the journey times in 2023 are forecast to reduce to around 7 minutes in either direction. In 2051, Part A is forecast to have a significant beneficial impact on journey times, reducing the travel time to just under 7½ minutes when travelling northbound and slightly over 7 minutes for trips southbound.

4.8.4 It can be seen from the results discussed in this section that Part A is forecast to have a significant impact on reducing travel times along this section of the A1, taking around 4½ minutes off journeys in 2051.

4.8.5 TAG Unit A1.3 'User and Provider Impacts' provides specific guidance on how impacts on transport users and providers (including travel time and vehicle operating cost savings) should be estimated, valued and reported in transport appraisal.

4.8.6 It sets out a number of methods to estimate journey time reliability on roads depending on whether they are inter urban motorways and dual carriageways, urban roads, or other roads. For journeys predominantly on single carriageways outside urban areas, WebTAG suggests that changes in a broad indication of reliability can be based on changes in 'stress'.

4.8.7 Therefore the 'stress' based approach as outlined in Appendix C of WebTAG Unit 1.3 was applied. Stress is defined as the ratio of the Annual Average Daily Traffic (AADT) flow to the Congestion Reference Flow (CRF):

$$Stress = \frac{AADT}{CRF}$$

4.8.8 The CRF is a theoretical measure of the capacity of a link, beyond which congestion effects occur. A number of factors contribute toward the Congestion Reference Flow, including:

- (Cap.) Capacity;
- (NL) Number of Lanes (in one direction);
- (Wf) Width Factor;
- (PkF) Peak Hour Flow as a proportion of Total Daily Flow;
- (PkD) The Directional Split of Peak Hour flow;
- (AADT) Annual Average Daily flow; and,

  (AAWT) Annual Average Weekday Traffic flow.

4.8.9 The relationship between these factors is provided in Volume 5 of the Design Manual for Roads and Bridges (DMRB). The stress calculation was undertaken for the Do Minimum (without Part A) and Do Something (with Part A) scenarios, with the stress values restricted to a range of 75% - 125%. The impact on Journey Time Reliability is the sum of the product of flow and the difference in stress, and has been calculated for each of

the forecast years.

4.8.10 The results of the stress test are presented as a textual score. The parameters presented in **Table 10** provide the context for the results and the corresponding uplift to the Transport User Benefits Appraisal (TUBA) Journey Time Savings that is used to monetise the Journey Time Reliability.

Table 10: Impact on Journey Time Reliability and the Corresponding Uplifts to Journey Time Savings

Impact on Reliability		Uplift applied to JTS
> 3 Million	Large Effects (+/- indicating positive and negative)	10%
1 – 3 Million	Moderate	5%
200,000 – 1 Million	Slight	2.5%
< 200,000	Neutral	-

4.8.11 The impacts of Part A in each of the modelled years (2023, 2038 and 2051) are shown in **Table 11** below. The results show that JTR benefits are forecast, with higher benefits towards the latter forecast years when there is greater stress in the Do Minimum (without Part A) scenario. The results in 2051 shows a 'Moderate' impact on Reliability (between £1 and £3 million).

Table 11: Journey Time Reliability Results

		2023 (Opening Year)	2038 (Design Year	2051 (Horizon Year)
CORE	Do Minimum Stress (a)	86%	95%	103%
	Do Something Stress (b)	75% (38%)	75% (45%)	75% (54%)
	Difference in Stress (c=a-b)	11%	20%	28%
	With Part A AADT (d)	29,932	37,773	43,961
	Overall Impact (e=c*d)	338,808	737,505	1,226,641

Note: Figures in brackets are calculated stress values, which must be shown as 75% in line with DMRB guidance

4.9 Operational Assessment

4.9.1 As part of the operational assessment of Part A, junction capacity assessments have

been undertaken on the new compact grade separated junctions proposed as part of Part A. The junctions that have been assessed are as follows:

- Highlaws West: a priority junction off the western Highlaws A1 slip road connecting to High Highlaws Road.
- Highlaws East: a priority junction connecting the eastern side of the Highlaws A1 overbridge to Hebron Road.
- Fenrother West: a priority junction off the western Fenrother A1 slip road connecting to Fenrother Lane (West).
- Fenrother East: a priority junction connecting the eastern side of the Fenrother A1 overbridge to Fenrother Lane (East).
- West Moor West: a priority junction off the western West Moor A1 slip road connecting to West Moor Road.
- West Moor East: a priority roundabout just off the eastern side of the West Moor A1 overbridge, linking the bridge to Felton Road, the new link road and the eastern A1 slip road.

4.9.2 Capacity assessments have been undertaken using industry standard Junctions 8 software developed by the Transport Research Laboratory (TRL). This software uses junction geometry measurements taken from the latest design drawings and turning flows from the latest core scenario models at design year (2038). It produces a forecast of the operation of the junction, including delays and queues on each junction approach arm.

4.9.3 The results of this assessment are presented in **Table 12** to **Table 17** The Ratio of Flow to Capacity (RFC) value represents the level of congestion on each junction approach – a value of 0.85 or less indicating an acceptable level of operation. The forecast queues are shown as a number of PCU (passenger car units), which is a standard capacity unit used in highway engineering which is the equivalent of an average car. It can be seen that the proposed new junctions are forecast to operate well within capacity, with RFC values well below 0.85 and minimal queuing in all time periods.

Table 12: Capacity Assessment Results, Highlaws West

Movement	AM		IP		PM	
	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)
High Highlaws Rd Left Turn	0.02	0.02	0.05	0.05	0.11	0.14
High Highlaws Rd Right Turn	0.07	0.07	0.02	0.02	0.04	0.04
A1 sliproad right turn	0.03	0.03	0.03	0.03	0.06	0.07

Table 13: Capacity Assessment Results, Highlaws East

Movement	AM		IP		PM	
	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)
Over-bridge Left Turn	0.1	0.11	0.06	0.07	0.19	0.27
Over-bridge Right Turn	0	0	0	0	0	0
Hebron Rd Right Turn	0.37	0.62	0.23	0.32	0.18	0.27

Table 14: Capacity Assessment Results, Fenrother West

Movement	AM		IP		PM	
	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)
Fenrother Lane (west) Left Turn	0.02	0.02	0.04	0.04	0.01	0.01
Fenrother Lane (west) Right Turn	0.07	0.07	0.09	0.1	0.04	0.04
A1 sliproad right turn	0.03	0.03	0.03	0.03	0.05	0.05

Table 15: Capacity Assessment Results, Fenrother East

Movement	AM		IP		PM	
	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)
Over-bridge Left Turn	0.06	0.06	0.04	0.04	0.03	0.03
Over-bridge Right Turn	0.19	0.25	0.16	0.19	0.19	0.25
Fenrother Lane (east) Right Turn	0.01	0.01	0.04	0.04	0.03	0.03

Table 16: Capacity Assessment Results, West Moor West

Movement	AM		IP		PM	
	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)
West Moor Rd Left turn	0.1	0.12	0.1	0.11	0.15	0.17
West Moor Rd Right turn	0.2	0.25	0.12	0.14	0.11	0.12
A1 sliproad Right Turn	0.04	0.05	0.16	0.19	0.13	0.15

Table 17: Capacity Assessment Results, West Moor East

Movement	AM		IP		PM	
	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)
Felton Road	0.05	0.05	0.05	0.05	0.06	0.07
New Link Road	0.01	0.01	0.02	0.02	0.02	0.02
A1 Slip Road	0.01	0.01	0.05	0.05	0.04	0.04
A1 Over-bridge	0.12	0.14	0.1	0.11	0.19	0.27

Part B

4.9.4 The impact of Part B on the traffic flows has been assessed. The key observations from the traffic model are described below.

4.9.5 With Part B, there is an increase in traffic volumes on the A1 in both directions in all modelled periods of up to 200 vehicles per hour in each direction. This is due to the increased speeds following the increase in speed limit and reduction in delays once Part B is operational.

4.9.6 However, due to the relatively low levels of traffic on the side roads, Part B is not forecast to make a significant difference to queueing at junctions and both queues and delays at junctions within Part B are forecast to be minimal. The forecast AADT traffic volumes are given in **Table 18** below.

Table 18: Annual Average Daily Traffic Forecasts

Location	Do Minimum Opening Year (2023)	With Part B Opening Year (2023)	Do Minimum Design Year (2038)	With Part B Design Year (2038)
A1 (Broxfield to South Charlton) Northbound	6,158	7,559	7,905	10,001
A1 (Broxfield to South Charlton) Southbound	5,847	7,629	7,131	10,151
A1 (South Charlton to North Charlton) Northbound	7,893	9,256	10,005	12,008
A1 (South Charlton to North Charlton) Southbound	6,885	7,623	8,344	10,354
Distance-weighted Average Northbound (Part B Length)	6,715	8,104	8,579	10,645
Distance-weighted Average Southbound (Part B Length)	6,180	7,627	7,521	10,216

4.9.7 **Table 18** shows that there are increases in the AADT traffic due to Part B, in both directions, in the opening year (2023) and design year (2038).

Overview of Journey Times

4.9.8 The traffic model outputs have been used to assess how the journey times along the A1 are forecast to change in the future and how they are affected by Part B.

4.9.9 In 2023, without Part B the model forecasts show that it takes users around 6½ minutes to travel along Part B in either direction. This is predicted to increase to 6½ to 7 minutes in 2038 and 7 minutes in either direction in 2051.

4.9.10 With Part B in place, the journey times in 2023, 2038 and 2051 are forecast to reduce to around 5½ minutes in either direction.

4.9.11 It can be seen from the results discussed in this section that Part B is forecast to have a positive impact on travel times along this section of the A1, taking between 1 and 1½ minutes off journeys in all modelled future years.

4.9.12 As with Part A, a 'stress' based approach as outlined in Appendix C of WebTAG Unit 1.3 has been applied to Part B. The results of the stress test are presented as a textual score. The parameters presented in **Table 10** above provide the context for the results and the corresponding uplift to the TUBA Journey Time Savings that is used to monetise the Journey Time Reliability.

4.9.13 The impact of Part B in each of the modelled years (2023, 2038 and 2051) is shown in **Table 19** below. It shows that some JTR benefits are realised along this section with the highest benefits in 2051. However as both the Do-Minimum and Do-Something stress values are below the WebTAG range of 75-125% for all forecast years (presented in brackets), they have been revised upwards to 75% in line with WebTAG guidance. This implies a 'neutral' impact with no uplift factors applied to TUBA journey time saving benefits.

Table 19: Journey Time Reliability Results

		2023 (Opening Year)	2038 (Design Year)	2051 (Horizon Year)
Core	Do Minimum Stress (a)	75% (46%)	75% (55%)	75% (60%)
	Do Something Stress (b)	75% (18%)	75% (23%)	75% (29%)
	Difference in Stress (c=a-b)	0%	0%	0%
	With Part B AADT (d)	15,783	20,924	24,382
	Overall Impact (e =c-d)	-	-	-

Operational Assessment

4.9.14 As part of the operational assessment of Part B, junction capacity assessments have been undertaken on the new grade separated junction at Charlton Mires proposed as part of Part B. To provide a comparison against existing operation, the existing junctions have also been assessed:

i. South Charlton west: a priority roundabout connecting to the B6347 to the west of the A1;
ii. South Charlton east: a priority junction connecting to the B6347 to the east of the A1.

4.9.15 Capacity assessments have been undertaken using industry standard Junctions 8 software developed by the Transport Research Laboratory (TRL). This software uses junction geometry measurements taken from the latest design drawings and turning flows from the latest core scenario traffic models at design year (2038). It produces a forecast of the operation of the junction, including delays and queues on each junction approach arm.

4.9.16 The results of this assessment are presented in **Table 20** and **Table 21** below. The RFC value represents the level of congestion on each junction approach – a value of 0.85 or less indicating an acceptable level of operation. The forecast queues are shown as a number of PCU (passenger car units), which is a standard capacity unit used in highway engineering which is the equivalent of an average car. It can be seen that the proposed new junctions are forecast to operate well within capacity, with RFC values well below 0.85 and minimal queuing in all time periods.

Table 20: Capacity Assessment Results, South Charlton west

Movement	AM		IP		PM	
	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)
A1 Slip Road	0	0			0	0
B6341	0.09	0.09			0.13	0.15
B6347	0.03	0.03			0.03	0.03
A1 Over-bridge	0.05	0.05			0.07	0.08

Table 21: Capacity Assessment Results - South Charlton east

Movement	AM		IP		PM	
	RFC	Queue (PCU)	RFC	Queue (PCU)	RFC	Queue (PCU)
A1 Over-bridge Left turn	0.04	0.04			0.08	0.08
A1 Over-bridge Right turn	0.00	0.00			0.00	0.00
B6347	0.05	0.06			0.08	0.09

Right Turn						

Conclusion

4.9.17 With the Scheme, the A1 in Northumberland Traffic Model shows there is an increase in traffic volumes on the A1 in both directions in all modelled periods. The highest northbound increase is forecast in the 2038 AM peak with an increase of 750 vehicles and the highest southbound increase is forecast in the 2038 PM with an increase of 545 vehicles.

Network Resilience

4.9.18 Resilience in the transport network has been defined[19] as '*the ability to absorb shocks gracefully*'. It may be understood in terms of the way different components of the network complement each other:

i. Redundancy - Different components serving the same function;
ii. Diversity - Components are functionally different;
iii. Efficiency - Network performance is optimized;
iv. Autonomy - Components are able to function separately;
v. Strength - Ability to withstand a disruptive event;
vi. Collaboration - Information and resources shared amongst components;
vii. Adaptability - Flexible, able to learn from past experiences;
viii. Mobility - Ability to reach a chosen destination with an acceptable level of service;
ix. Safety - Exposes fewer users to hazards;
x. Recovery - Level of service can be restored quickly.

4.9.19 Lack of resilience is a problem if a transport network is unable to cope with disruptive events such as surges in demand, extreme weather conditions, accidents or road works. The more common the event, the more important it is for the network to be able to recover quickly to restore an acceptable level of service and avoid compounding the problem.

4.9.20 Lack of resilience is a problem on the single carriageway sections of the A1 between Morpeth and Ellingham, due to:

i. Current lack of safe over-taking opportunities and high volume of HGV traffic, leading to reduced journey time reliability. The proportion of HGV traffic on the A1 is considerably higher than for other comparable roads, at around 11% between Morpeth to Felton and 15% between Alnwick and Ellingham across the day; and

ii. Driver frustration and high frequency of junctions and accesses creates more potential for vehicular conflicts. There are currently 55 private accesses and 13

[19] Resilience Theory and System Evaluation, Verification and Validation of Complex Systems: Human Factor Issues, Vol 110, p35-60, Harold Foster (1993)

minor at grade junctions on the A1 between Morpeth and Ellingham. Higher daily traffic flows during the summer months exacerbate these problems. As noted above, daily traffic flows during July and August are around 18% to 22% higher between Morpeth and Felton; and 19-32% higher between Alnwick to Ellingham than those in a neutral month (i.e. outside of the school summer holidays).

4.9.21 The provision of the Scheme would increase the resilience of the A1 between Morpeth and Ellingham as follows:

i. **Efficiency:** Shorter journey times. paragraph 4.8.3 for Part A and paragraph 4.9.10 for Part B presents the forecast improvements in journey times and paragraph 4.9.3 for Part A and paragraph 4.9.16 for Part B demonstrates that the proposed junctions are forecast to operate within capacity and without significant queues;
ii. **Strength**: the new carriageway and junction will be designed to modern standards, reducing the need for maintenance;
iii. **Adaptability**: The Scheme has been designed to accommodate both present and forecast future traffic flows;
iv. **Safety**: Removal of junctions and private accesses and provision of dual carriageway reduces potential vehicle conflicts. The Scheme benefits forecast is included in **Chapter 5** of this Case; and
v. **Recovery**: Increased capacity will enable the network to recover more quickly to normal levels of service following an incident.

Wider Benefits

4.9.22 The NPS NN paragraph 2.2 confirms that there is a '*critical need*' to improve the national networks to address road congestion and crowding on railways to provide safe, expeditious and resilient networks that better support social and economic activity; and to provide a transport network that is capable of stimulating and supporting economic growth.

4.9.23 The RIS is referred to in the NPS NN and the two documents are mutually compatible. Page 19 of the RIS1 confirms that the A1 north of Newcastle provides '*a nationally important*' connection between Newcastle and Edinburgh and that it comprises and '*essential*' link for the North East and Northumberland. RIS1 confirms the route needs '*substantial improvement*' to meet the needs of the local economy and to better fulfil its role in the national transport network.

4.9.24 RIS2 published on 11 March 2020 sets out a long-term strategic vision for the SRN building on the commitments made in RIS1. RIS2 states *"the average road project takes around eight years to get from inception to opening and the newest commitments made in RIS1 were always expected to be under construction during the period covered by RIS2"*. This includes *"key regional connections, such as the A30 in Cornwall and the A1 north from Newcastle, will see their disparate sections of dual carriageway linked together into joined-up high quality roads".*

4.9.25 The NPS NN, RIS and NIDP all set out a strong position of support in delivering national networks that meet the country's long-term transport needs, whilst supporting a prosperous and competitive economy and improving the quality of life for all.

4.9.26 DfT defines in TAG Unit A2.1'*wider impacts*' as the economic impacts of transport schemes that are additional to the transport user benefits. Transport schemes are likely to have impacts in markets other than transport (such as the labour market, product market and land market). These impacts can be large and form an important element of the overall appraisal of a transport scheme. The types of Wider Impacts DfT include in transport appraisals are:

- Agglomeration

"Agglomeration" refers to the concentration of economic activity over an area. Transport can alter the accessibility of firms in an area to other firms and works, thereby affecting the level of agglomeration. Businesses derive benefits from being located close to one another and being located in large labour markets. Transport investment can bring firms closer together and to their labour markets, thereby generating an increase in labour productivity beyond that would be expected from the direct user benefits alone.

- Output change in imperfectly competitive markets

A reduction in transport costs (to business and/or freight) allows firms to profitably increase output of the goods or services that require use of transport in their production. A transport intervention that leads to increased output of goods and services will deliver a welfare gain as consumers' willingness to pay for the increased output will exceed the cost of producing it.

- Tax revenues arising from labour market impacts (from labour supply impacts and moves to more or less productive jobs)

Changes in transport provision and costs can affect labour market decisions. Two main types of labour market impacts have been identified. These are referred to as "labour supply" impacts, and "moves to more or less productive jobs" impacts.

4.9.27 Transport costs are likely to affect the overall costs and benefits to an individual from working. In deciding whether or not to work, an individual will weigh the costs associated with work, including travel costs such as public transport fares, vehicle running costs and journey time, against the wage rate of the job travelled to. A change in transport costs alters the net financial return to individuals from employment. This is likely to affect the incentives of individuals to work, and therefore the numbers choosing to work and the overall amount of labour supplied in the economy.

4.9.28 Transport can also affect the decisions made by firms and workers about where to locate and work. Employment growth or decline in different areas is likely to have implications for productivity, as workers are often more or less productive in different locations. Some of the economic effects of these impacts are captured in commuter user benefits. However, commuter user benefits do not include the change in tax revenues received by the government. Changes in tax revenues are excluded from commuter user benefits because commuters value benefits in terms of post-tax incomes.

4.9.29 The Wider Impacts for the Scheme have been calculated using WSP's Wider Impacts

in Transport Appraisal (WITA) tool. The spreadsheet tool emulates the methodology set out in WebTAG A2.1 and has previously been accepted for use by Highways England, Transport for the North and the DfT for assessment of wider impact benefits for the Trans-Pennine Tunnel and the M60 North West Quadrant. The WITA tool assesses all three types of Wider Impacts listed above.

4.9.30 Further details of the methodology are included in **Appendix C** of this Case and a summary is presented in **Table 22** below. In total, it is forecast that the Scheme would produce £24.157m of Wider Impact Benefits over the 60 year appraisal period.

Table 22: DS2 Core WITA Results Summary

Price Base: 2010, discounted to 2010 Appraisal Period: 60 years Unit: £ (000)				
Wider Impact	**2023**	**2038**	**2051**	**Full Appraisal Period**
Agglomeration				
· Manufacturing	51	33	30	1,853
· Construction	45	27	22	1,463
· Consumer Services	124	110	100	5,830
· Producer Services	234	252	235	13,184
· **Total**	**454**	**421**	**388**	**22,330**
Output in Imperfectly Competitive Markets	-	-	-	1,081
Labour Supply Impact (No resident relocation)	11	14	14	745
Total	**465**	**435**	**402**	**24,157**

4.10 Road Safety (including Accident Analysis and expected level of savings)

4.10.1 A review of accident data has been undertaken along the Scheme using five years of data between 2012 and 2016. This analysis used STATS19 data, provided by DfT, which provides a record of personal injury accidents on public roads that are reported to the police. It must be noted that this data does not include records for accidents that did not result in personal injury (damage only accidents).

4.10.2 Accident data for the A1 on the single carriageway sections between Morpeth and Ellingham has been reviewed against national statistics for collision rates, severity ratio and casualty rates. The recorded locations of accidents on these sections of the A1 have also been used to identify clusters of accidents and analysis has been undertaken to establish potential contributing factors to these clusters.

4.10.3 To establish the impact of the Scheme on accidents, a COBALT assessment has been

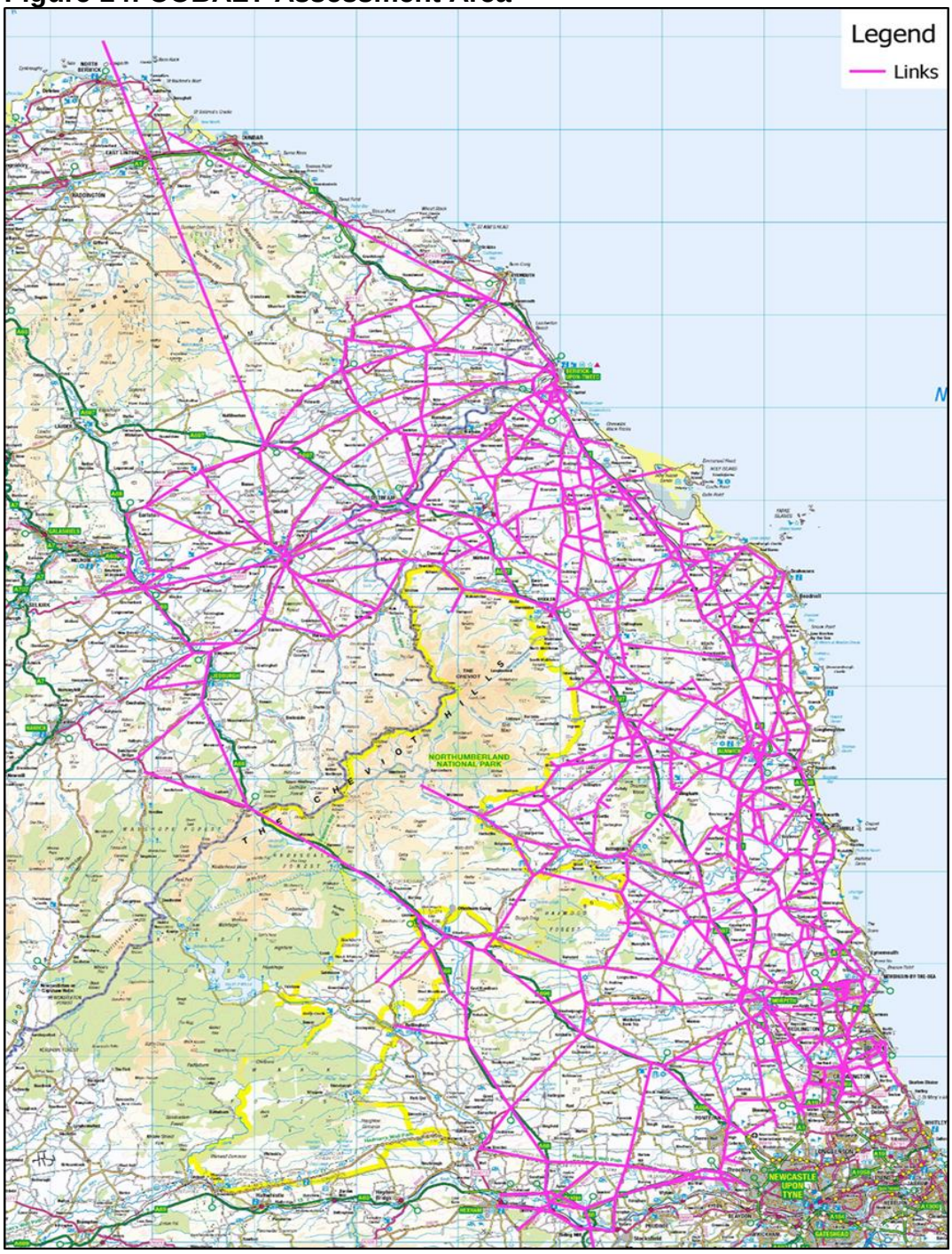
undertaken which uses forecast traffic data from the traffic model to predict the number of accidents that will occur, with (Do Something) and without the Scheme (Do Minimum), over a standard 60-year appraisal period[20]. The observed accidents from STATS19 have been incorporated into the assessment to provide the existing accident rates.

Affected Road Network

4.10.4 For the COBALT assessment, the study area should include any links that are affected by the Scheme. For this assessment, the area was defined to include links with AADT flow differences over 10% when comparing the with and without Scheme scenarios. The links included in the COBALT assessment are shown in **Figure 14** below.

[20] DfT Transport Analysis Guidance (TAG) Unit 1.1 paragraph 2.3.3

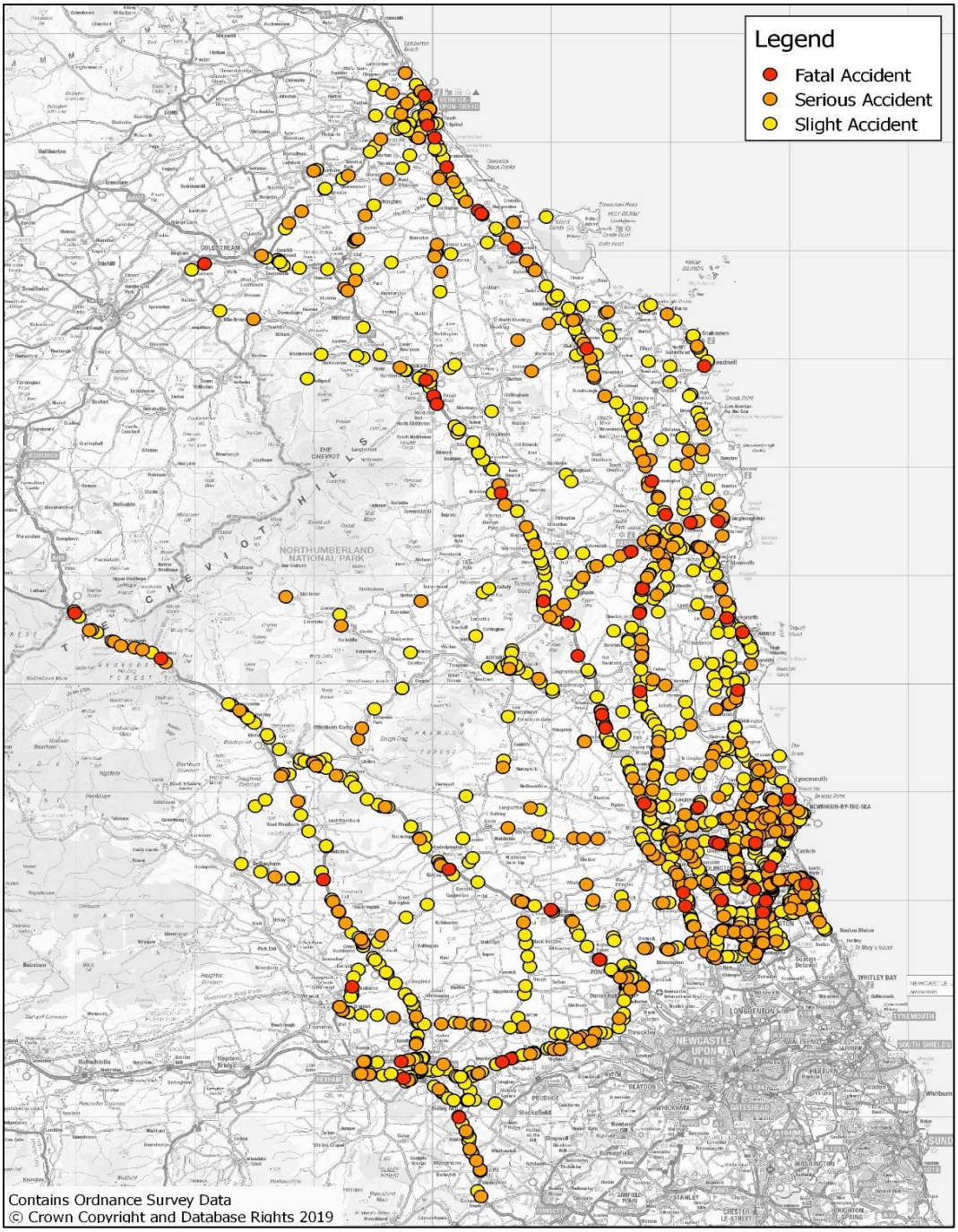
Figure 14: COBALT Assessment Area



Observed Accident Data

4.10.5 The accident rates for the existing network were calculated using observed accident data and base year traffic flows. Accident data were obtained from Tyne and Wear Road and Traffic Accident Data Unit (TADU) for the 5-year period between January 2012 and December 2016. These accidents were assigned to the relevant network link using GIS software. The observed accidents used in the COBALT assessment are shown in **Figure 15** below.

Figure 15: Observed Accident Locations



Observed Accidents in the Scheme Area

4.10.6 To better understand the accidents that occur along the Scheme, STATS19 data have been analysed in detail for this area. The tables below present a comparison of values along the Scheme against national statistics for collision rates, severity ratio and casualty rates.

4.10.7 The collision rate along the Scheme, per billion vehicle miles has been calculated using AADT flows from Highways England WebTRIS data[21] and the observed collisions as recorded in STATS19. The results of this calculation are presented in **Table 23** below.

Table 23: Collision Rate on the Scheme, 2012-2016

Year	Total Collisions	Collision Rate (per billion vehicle miles)
2012	16	236
2013	13	187
2014	9	128
2015	14	191
2016	8	108
Total/Average	**60**	**169**

4.10.8 **Table 23** above shows that the average collision rate between 2012 and 2016 is 169 collisions per billion vehicle miles. The national average rate for all A Roads is 466 collisions per billion vehicle miles and for rural A Roads, this value drops to 270 collisions per billion vehicle miles[22]. This analysis shows that along the Scheme, the average collision rate is lower than the national average between 2012 and 2016.

4.10.9 Each recorded collision from STATS19 is given a severity (Fatal, Serious or Slight) based on the level of injury that was sustained as a result of the collision. **Table 24** above presents the total number of collisions for each severity by year, along with the KSI (Killed or Seriously Injured) ratio which indicates the percentage of recorded collisions that result in serious injury or a fatality

Table 24: Collisions by Severity and KSI Ratio on the Scheme, 2012-2016

Year	Fatal	Serious	Slight	Total	KSI
2012	1	1	14	16	13%
2013	0	5	8	13	38%
2014	1	2	6	9	33%
2015	1	0	13	14	7%
2016	0	3	5	8	38%
Total	**3**	**11**	**46**	**60**	**23%**

4.10.10 It can be seen from **Table 24** above the average KSI for the Scheme is 23%. This is above the national average for A Roads (16%) and above the national average for rural A Roads (20%)[23]. This demonstrates that accidents are more likely to result in a

[21] WebTRIS data was missing for January-March 2013 which would have resulted in skewing of the Average Annual Daily Traffic value. Instead the value for 2013 has been approximated by interpolation between 2012 & 2014.

[22] National Average Collision Rate: Department for Transport Reported Road Accident Statistics Tables, RAS10002

[23] National Average KSI Ratio: Department for Transport Reported Road Accident Statistic Tables, RAS10002

fatality or serious injury than national average.

4.10.11 **Table 25** below provides a summary of the total casualties along the Scheme between 2012 and 2016 along with the casualty rate per billion vehicle miles. Using the same methodology as for the collision rates in **Table 24** above, the casualty rate has been calculated using AADT flows from Highways England WebTRIS data[24] and records of the casualties resulting from accidents listed in the STATS19 dataset.

Table 25: Casualty Rate on the Scheme & National, 2012-2016

Year	Total Casualties	Casualty Rate - Scheme Area (per billion vehicle miles)	Casualty Rate - National (per billion vehicle miles)
2012	27	399	666
2013	27	389	624
2014	22	313	649
2015	27	368	611
2016	18	242	584
Total	**121**	**341**	**627**

4.10.12 The average rate between 2012 and 2016 for the Scheme is 341 casualties per billion vehicle miles which is significantly less than the national average (over all roads) of 627 casualties per billion vehicles.

4.10.13 The final step in analysing observed accidents along the Scheme was to identify clusters of accidents and potential common themes for accidents in this area. This analysis is split between Part A and Part B.

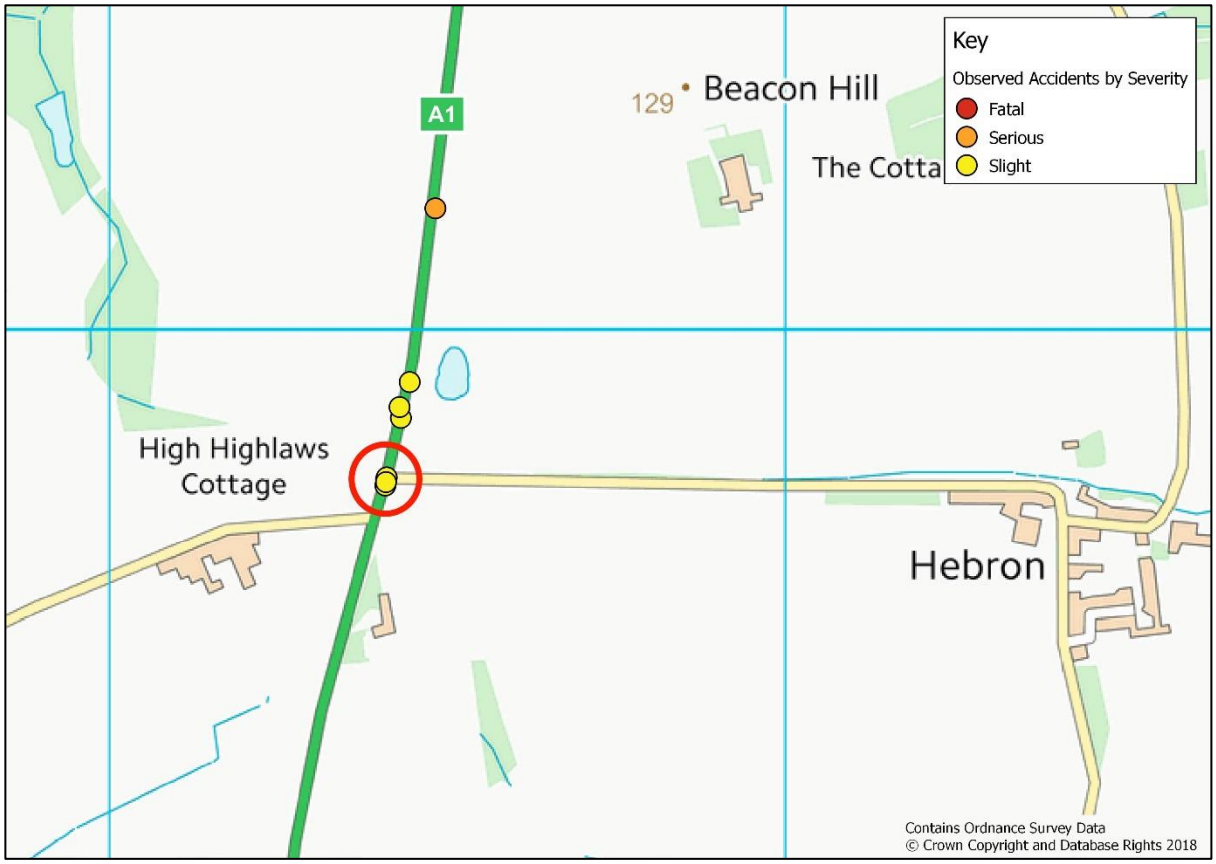
Part A

4.10.14 The first cluster of accidents was found at the T-junction that provides access from the A1 to the hamlet of Hebron, as shown in **Figure 16.** Five accidents (all of slight severity) have been recorded at this junction in the period between 2012 and 2016 and all the recorded accidents have involved a vehicle turning in or out of the junction. Of the five accidents, one involved a vehicle turning right off the A1, one involved a vehicle turning left onto the A1 and three occurred as a vehicle turned right onto the A1.

4.10.15 The STATS19 records suggest common contributing factors to these accidents are driver failure to judge the path/speed of other vehicles, poor turning/manoeuvre by the driver and failure to look properly before moving.

[24] WebTRIS data was missing for January-March 2013 which would have resulted in skewing of the Average Annual Daily Traffic value. Instead the value for 2013 has been approximated by interpolation between 2012 & 2014.

Figure 16: Accident Cluster at Hebron Junction



4.10.16 The second cluster of accidents was identified at the T-junction of the A1 and Chevington Road, as shown in **Figure 17.** Four accidents (all of slight severity) have been recorded at this junction in the period between 2012 and2016, two involved a vehicle turning at the junction (one right turn off the A1 and one left turn onto the A1) and two occurred while a vehicle was queueing at the give way on Chevington Road.

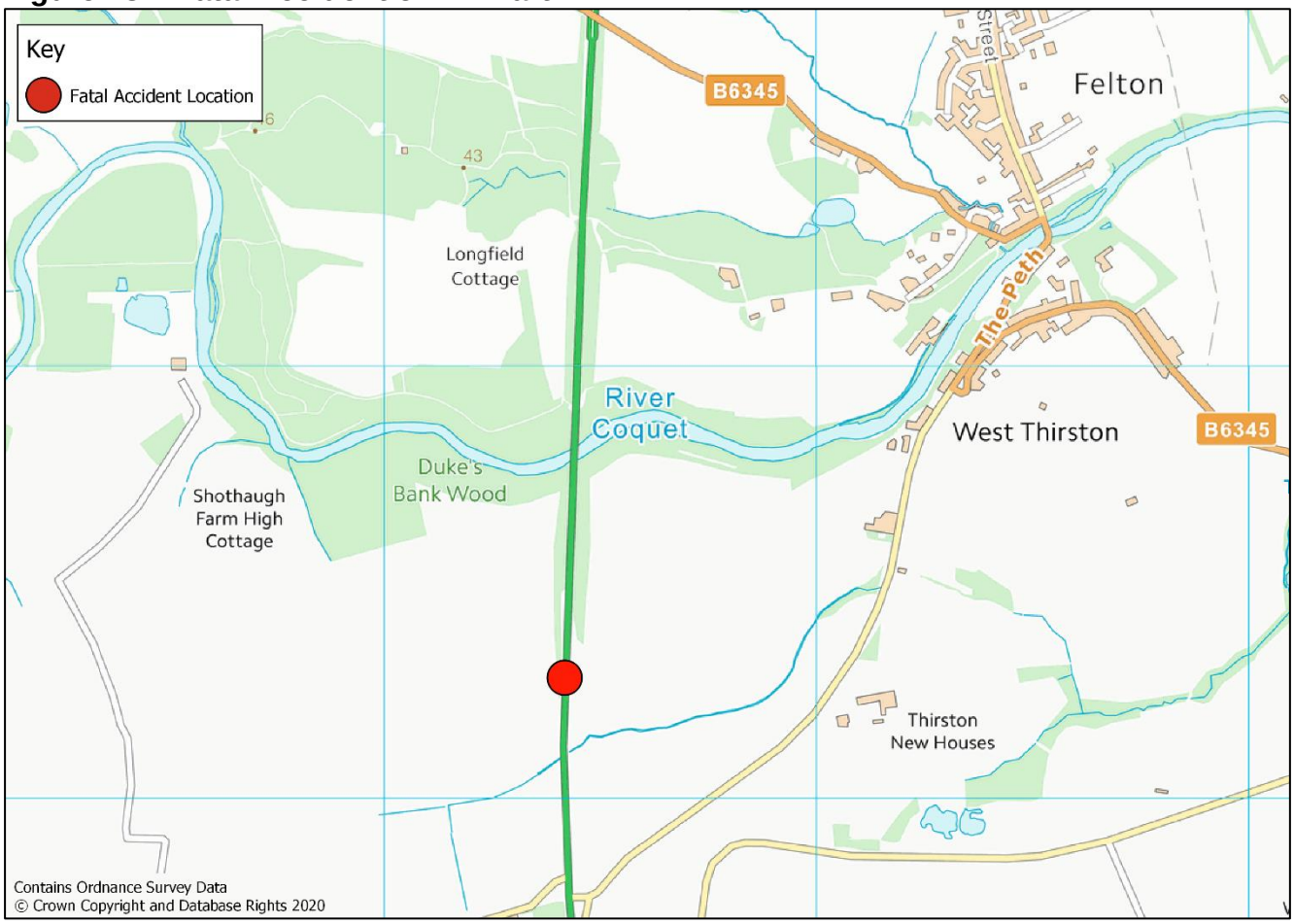
4.10.17 The STATS19 records suggest that potential contributing factors to these accidents include driver failure to look properly and driver failure to judge the path/speed of other vehicles.

Figure 17: Accident Cluster at Chevington Road

4.10.18 In addition to the analysis of accident clusters presented above, accidents along Part A have been considered in order to identify any common themes in accidents over the whole section. This investigation found that 31% of accidents that occurred on this length of Part A were as a result of drivers failing to stop when in/ approaching a queue and 23% of all accidents occurred when a vehicle was joining/leaving the A1 carriageway. It was also noted that there were four accidents (8% of total) involving vehicles entering the wrong side of the carriageway, one of which resulted in a fatality.

4.10.19 The location of the fatal accident is shown in **Figure 18** below. The STATS19 record for this accident indicates that a vehicle collided with vehicles travelling in the opposite direction due to the vehicle travelling on the wrong side of the road. The record suggests contributing factors to this accident were driver failure to look properly, a poor turn or manoeuvre and swerving/loss of control

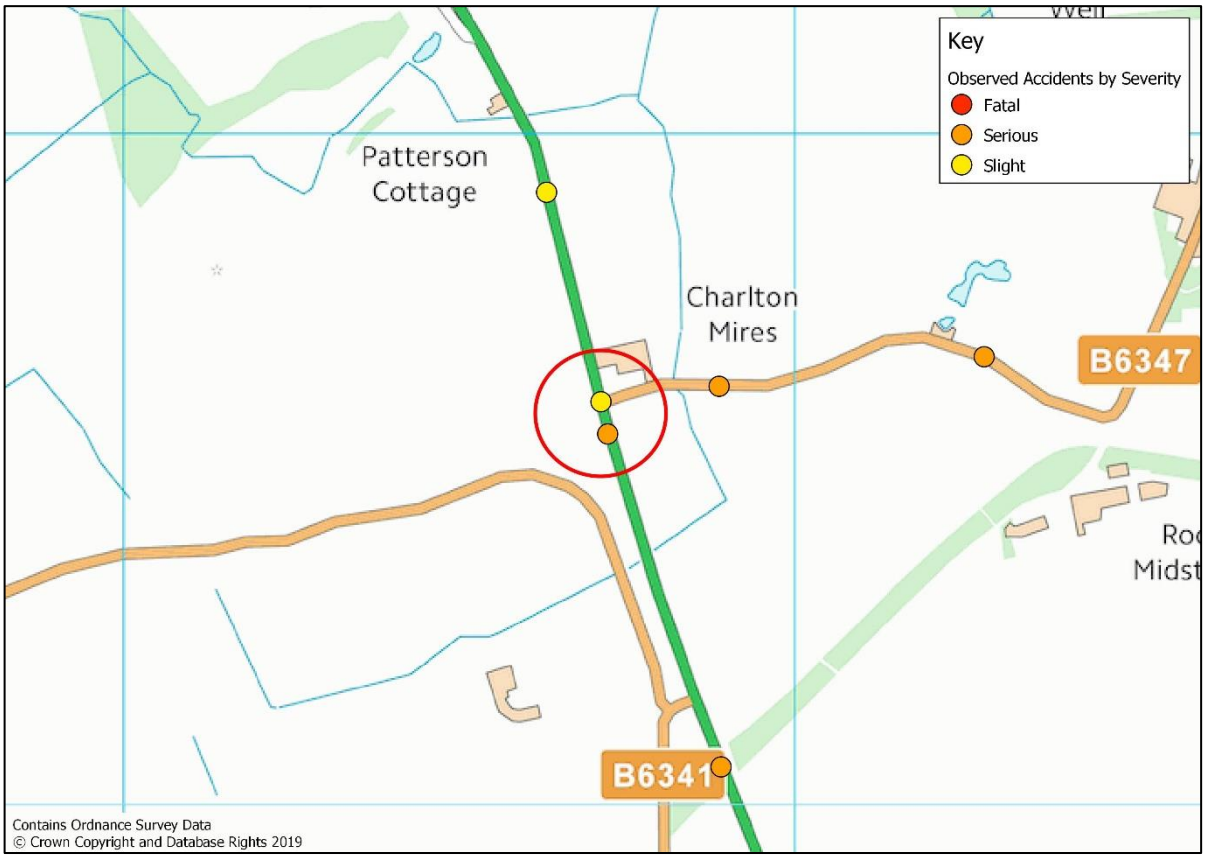
Figure 18 – Fatal Accident on A1 Part A



Part B

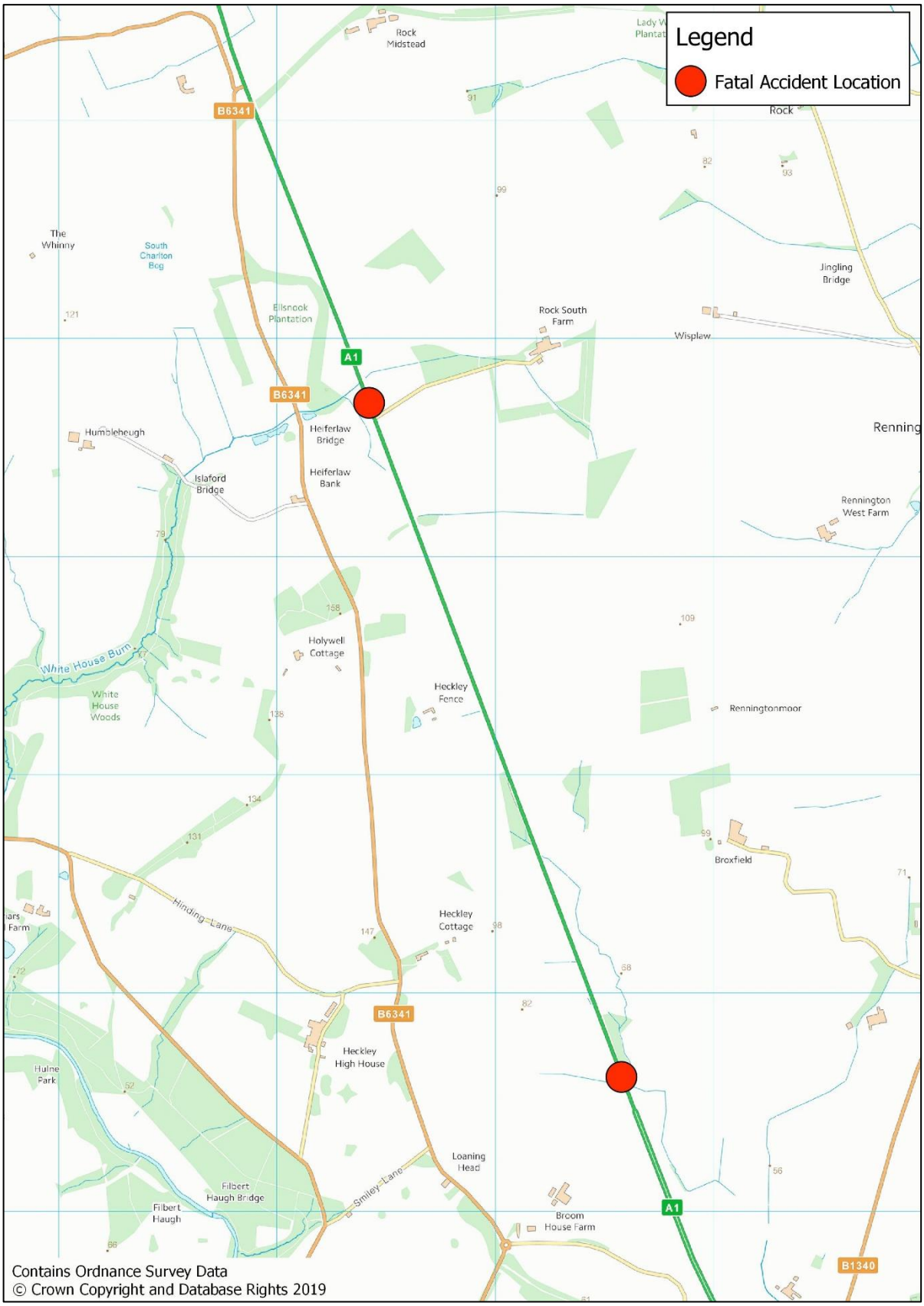
4.10.20 This analysis found that two accidents had occurred at the T-junction of the A1 and B6347 at Charlton Mires, as shown in **Figure 19**. Two accidents (one serious, one slight severity) had been recorded at this junction in the period between 2012 and 2016 and both occurred when a vehicle turning right from the A1 to the B6347 collided with a vehicle travelling in the opposite direction along the A1. The STATS19 records suggest that contributing factors to these accidents are driver failure to look properly and poor turn / manoeuvre by the driver.

Figure 19: Accident Cluster at Charlton Mires Junction



4.10.21 Two fatal accidents have occurred along Part B from 2012-2016, as shown in **Figure 20.** These accidents were both caused by a vehicle colliding with another vehicle travelling in the opposing direction, one driver was overtaking at high speed and the other veered into the opposing lane, possibly due to loss of control or a slippery road surface. The differing locations and natures of these accidents does not suggest that there is a particular reason they occurred along this section of the A1.

Figure 20: Fatal Accidents on A1 Part B



4.10.22 In addition to the analysis of accident clusters and fatal accidents above, accidents along the whole section of Part B have been considered in order to identify any common themes in accidents over the whole section. This investigation found that:

i. 25% of accidents that occurred on this length of the A1 were as a result of drivers failing to stop when approaching a queue or slower moving vehicle;
ii. 25% of accidents occurred as a result of drivers leaving the carriageway to the nearside;
iii. 25% of accidents were due to vehicles drifting into the opposing lane;
iv. 17% of accidents occurred at the junction with the B6347 when vehicles were making right turn movements onto the B6347;
v. The remaining 8% of accidents (one accident) occurred when a vehicle was overtaking and collided with an oncoming vehicle at speed.

Accident Rates

4.10.23 COBALT calculates the number of accidents over 60 years from either default accident rates (national average) or observed (local) accident rates. Accident rates for existing network links were calculated from the observed data discussed at paragraph 4.10.6 above. Default accident rates have been used for the proposed off-line section of the Scheme.

Accident Analysis Results

4.10.24 The COBALT assessment was run for the Scheme to establish the forecast changes in accidents as a result of the Scheme. The change in accidents and casualties are summarised in **Table 26** below, along with the monetised benefit of the reduction in accidents. **Figure 21** below demonstrates which links have accident benefits and disbenefits as a result of the Scheme.

Figure 21: COBALT Results

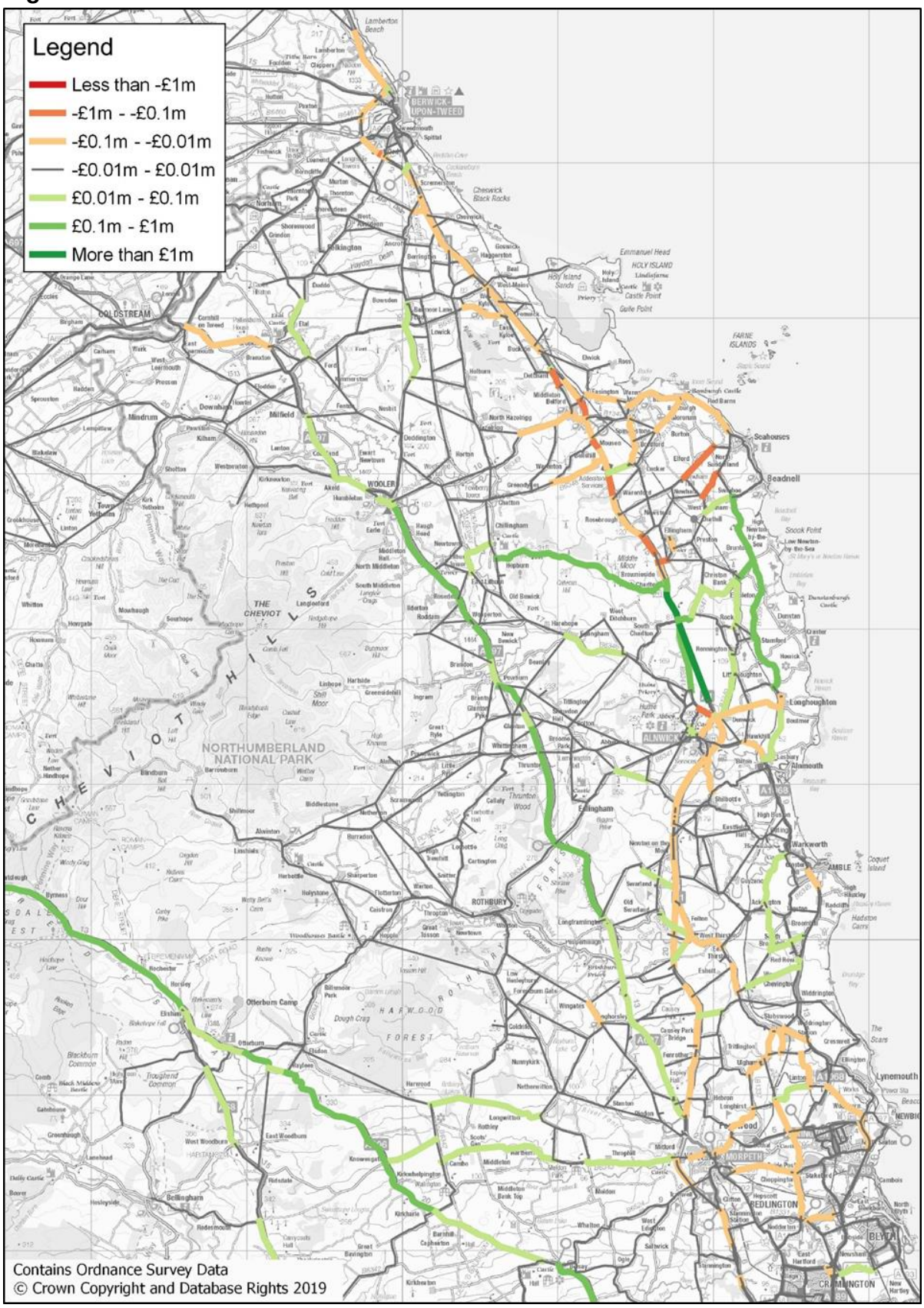


Table 26: Scheme Safety – Total COBALT Benefit of Accidents Savings

Scenario	Number of Accidents (60-Year)	Number of Casualties (60-Year)				Monetary Value of Accidents (£000s)
		Fatal	Serious	Slight	Total	
Do Minimum	20,937	442	3,530	26,104	30,076	1,100,013
Do Something	20,523	425	3,405	25,538	29,368	1,067,523
Change	414	17	125	566	708	32,489

4.10.25 From **Figure 21,** it can be seen that there are considerable accident savings along the on-line sections of the Scheme which is as a result of the current single carriageway being replaced by a dual carriageway. In addition, there are savings on the de-trunked section of the A1 due to the considerable decrease in traffic forecast. Overall, there are forecast to be accident savings along the Scheme links compared to the without Scheme scenario. Accident benefits are also forecast on parallel routes to the Scheme including the A1068, A697, A696 and A68. These benefits are a result of reductions in traffic on these roads as traffic switches to using the A1 on completion of the Scheme.

4.10.26 There are some dis-benefits on the A1 to the north and south of the Scheme which can be attributed to the general increase in traffic flows that are being drawn onto the A1 as a result of the Scheme.

4.10.27 Overall, the COBALT assessment forecasts that the Scheme will provide an accident reduction benefit of **£32.489 million** and that the Scheme will save 414 accidents when compared to the without Scheme scenario. This reduction in accidents is forecast to reduce the number of casualties by 708 over the 60-year period, of which 17 are predicted to be fatal. Further details on the economic benefits and dis-benefits the Scheme will bring can be found in **Chapter 5** of this Case.

4.11 Walking, Riding and Horse-riders (WCH) Assessment

4.11.1 This section provides details of the existing public transport and WCH provision in the area and analysis of how the Scheme will impact each of these facilities. This chapter should be read in conjunction with **Chapter 12: Population and Human Health, Volume 2** of the **ES** (**Application Document Reference: TR010041/APP/6.2**) for Part A and **Chapter 12: Population and Human Health, Volume 3** of the ES (**Application Document Reference: TR010041/APP/6.3**) for Part B.

Bus Services

4.11.2 The X15 bus is the only service which travels along the A1 between Morpeth and Ellingham as part of the route between Newcastle and Berwick upon Tweed. There are existing bus stops located along each side of the existing A1. Other routes that service the local area are the X14 from Newcastle to Thropton, the X16 from Newcastle to Morpeth Kirkhill and the X18 from Newcastle to Berwick upon Tweed.

4.11.3 The routes of the local bus services are shown in **Figure 22** with frequencies and timings

detailed in **Table 27.**

Table 27: Local Bus Service Frequencies

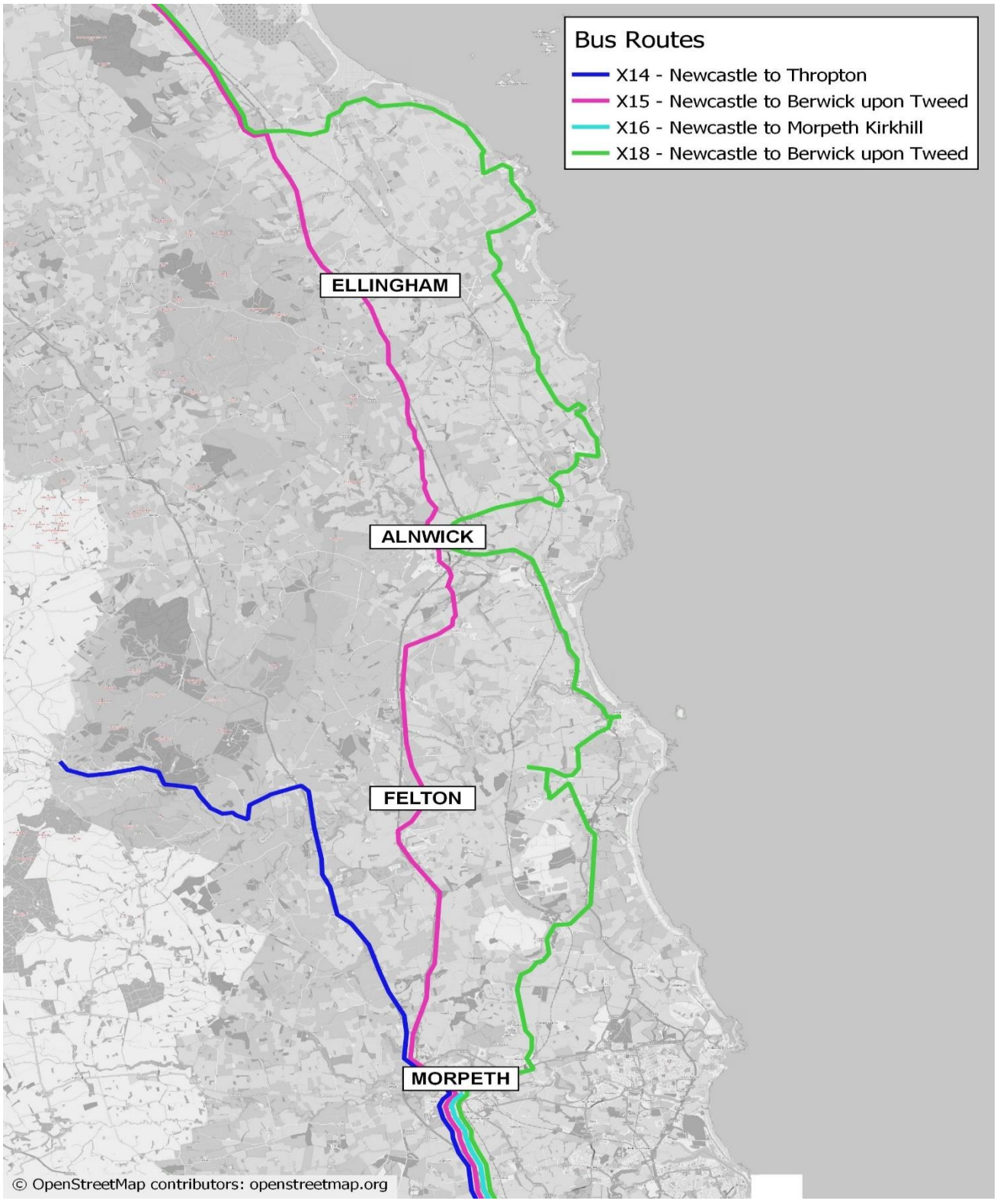
Service	Stop / Direction	Average Headway		
		Monday-Friday	Saturday	Sunday
X14	Newcastle Bus Station to Thropton	Hourly from 08:13 to 18:28 between Newcastle and Morpeth with a 1-2 hour frequency for the Morpeth to Thropton section.	Hourly from 09:18 to 18:28 between Newcastle and Morpeth with a 1-2 hour frequency for the Morpeth to Thropton section.	Every two hours from 10:43 to 18:43.
X14	Thropton to Newcastle Bus Station	1-2 hour frequency from 06:34 to 18:59 for the Thropton to Morpeth section with an hourly frequency from Morpeth to Newcastle.	1-2 hour frequency from 07:49 to 18:59 for the Thropton to Morpeth section with an hourly frequency from Morpeth to Newcastle.	Every two hours from 10:14 to 18:14.
X15	Newcastle Bus Station to Berwick Railway Station	Hourly from 07:23 to 19:43 between Newcastle and Alnwick then every 2 hours from Alnwick to Berwick.	Hourly from 08:33 to 19:43 between Newcastle and Alnwick then 1-2 hour frequency from Alnwick to Berwick.	Every two hours from 09:43 to 17:43 between Newcastle and Alnwick. No service between Alnwick and Berwick.
X15	Berwick Railway Station to Newcastle Bus Station	Every two hours from 07:16 to 19:11 between Berwick and Alnwick then hourly from Alnwick to Newcastle.	Every two hours from 07:01 to 19:11 between Berwick and Alnwick then hourly from Alnwick to Newcastle.	Every two hours from 09:14 to 17:14 between Alnwick and Newcastle. No service between Alnwick and Berwick.

Service	Stop / Direction	Average Headway		
		Monday-Friday	Saturday	Sunday
X16	Morpeth Kirkhill to Newcastle Bus Station	Every half hour between Morpeth Kirkhill and Morpeth Bus Station from 06:43 to 18:48 then every hour until 22:48. The service from Morpeth to Newcastle runs hourly from 06:53 to 18:18.	Every half hour between Morpeth Kirkhill and Morpeth Bus Station from 07:58 to 18:48 then every hour until 22:48. The service from Morpeth to Newcastle runs hourly from 08:08 to 18:18.	Every hour between Morpeth Kirkhill and Morpeth Bus Station from 09:48 to 22:48. No service between Morpeth and Newcastle.
X16	Newcastle Bus Station to Morpeth Kirkhill	Every hour between Newcastle and Morpeth from 07:38 to 17:58 and every half hour between Morpeth and Morpeth Kirkhill from 06:35 to 22:40.	Every hour between Newcastle and Morpeth from 08:48 to 17:58 and every half hour between Morpeth and Morpeth Kirkhill from 07:50 to 22:40.	Every hour between Morpeth Bus Station and Morpeth Kirkhill from 09:40 to 22:40. No service between Morpeth and Newcastle.
X18	Berwick Railway Station to Newcastle	Services start from Morpeth to Newcastle at 05:56, services from Alnwick start at 06:50 and services from Berwick start from 10:01. Services from Berwick to Alnwick run every 2 hours until 18:11 and services from Alnwick to Newcastle run every hour until 21:14.	Services start from Amble to Newcastle at 06:34, services from Alnwick start at 07:05 and services from Berwick start from 10:01. Services from Berwick to Alnwick run every 2 hours until 18:11 and services from Alnwick to Newcastle run every hour until 21:14.	Services start from Amble to Newcastle at 8:45, services from Alnwick start at 09:14 and services from Berwick start from 10:11. Services from Berwick to Alnwick run every 4 hours until 18:11 and services from Alnwick to Newcastle run every hour until 21:14.

Service	Stop / Direction	Average Headway		
		Monday-Friday	Saturday	Sunday
X18	Newcastle to Berwick Railway Station	Services start from Morpeth at 06:30 and Newcastle at 06:43. Services from Newcastle to Alnwick run every hour until 21:13 and services from Alnwick to Berwick run every 2 hours until 15:57.	Services start from Morpeth at 07:30 and Newcastle at 08:03. Services from Newcastle to Alnwick run every hour until 21:13 and services from Alnwick to Berwick run every 2 hours until 16:02.	Services start from Alnwick at 08:12, Morpeth at 08:50 and Newcastle at 09:13. Services from Newcastle to Alnwick run every hour until 21:13 and services from Alnwick to Berwick run every 4 hours until 16:12.

Note: Information correct at time of writing

Figure 22: Local Bus Service



4.11.4 The existing bus route for the X15 service along the Scheme is shown in **Figure 23. Figure 24** and **Figure 25.**

Figure 23: Morpeth to Oak Inn Existing and Proposed Bus Stops – Part A

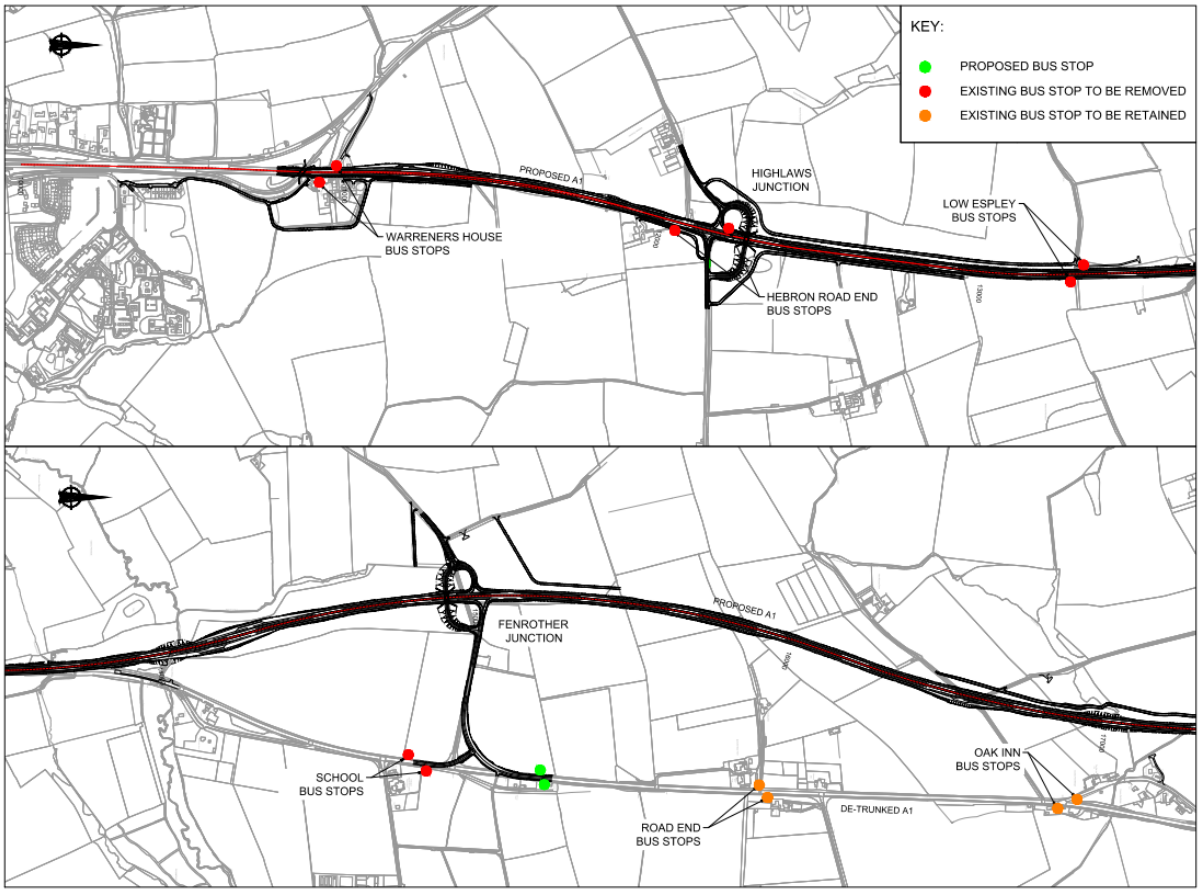
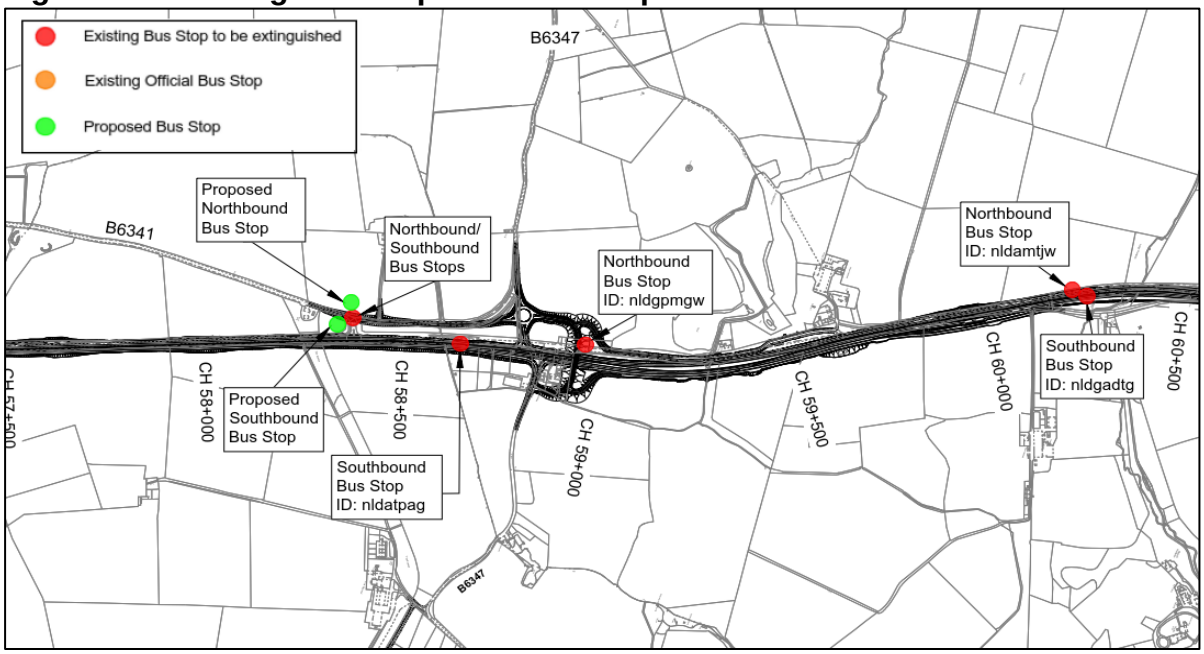


Figure 24: Oak Inn to Morpeth Existing and Proposed Bus Stops – Part A

Figure 25: Existing and Proposed Bus Stops – Part B



4.11.5 Three meetings with Arriva Bus (service provider) have taken place on 1 November 2017, 21 December 2017 and 13 September 2018 to discuss the bus routes affected by the Scheme. Development of the Preliminary Design concluded that it would not be practicable to provide safe access to the northbound bus stop at Warreners House as part of the Scheme, with the only feasible option being to remove the northbound bus stop completely.

4.11.6 Arriva confirmed through correspondence on 13 August 2018, that if the northbound bus stop is removed, then they would not want to retain the southbound stop and so this would also be removed. Arriva has no objections to this and the other proposals as detailed in **Table 28** below**.**

4.11.7 There are also existing bus stops on the A1 at the Charlton Mires junction which are not used by bus passengers and passengers are more often collected at an informal bus stop nearby at the junction of the B6341 and B6347 (outside of Rock Lodge). Following the meeting with Arriva in September 2018, it is proposed that the existing stops will be combined into northbound and southbound stops at the current informal stop location on the B6341.

4.11.8 The proposal to move the bus stops on the A1 at the Charlton Mires Junction to the informal pick up point off the A1 will improve the visibility of this stop to users with a bus stop flag to mark the location.

4.11.9 The Scheme is forecast to reduce delays and improve journey time reliability which should contribute to improved bus journey times and bus service reliability.

Table 28 – New Bus Stop Locations

Stop Location	Proposal
Warreners House	It is proposed that these bus stops will be removed due to safety concerns and a lack of access as a result of the A1 widening. These stops have a low usage therefore their removal is expected to result in a small impact to the local community.
Highlaws Junction (Hebron Road End)	It is proposed that these bus stops will be removed as the need for turning loops would result in longer travel times that outweigh the benefits of the stop. These stops have a low usage and therefore their removal is expected to result in a small impact to the local community.
Espley Road End	It is proposed that the stop on the A1 is removed with an alternative designated stop installed on the A697 to service Espley.
The Old School (Tritlington)	It is proposed that the existing bus stop be moved further north, to be located just to the north of the link road connecting the Fenrother Junction to the de-trunked section of the A1. This will avoid the need for buses to turn around at the school.
Earsdon Moor Farm	This stop on the de-trunked A1 will remain as existing.
Causey Park	The existing stop at Causey Park Bridge will remain.
Helm Cottage	The current bus stop has no bus stop infrastructure. It is proposed that bus stop flag poles should be added. The stop will remain in the same location.
West Moor Junction	It is proposed that the stops at this junction are retained with a new alignment which should reduce journey times through the junction by removing the right turn movement. The stops will be relocated a short distance to the east in order to accommodate the new junction alignment.

Charlton Mires Junction	It is proposed that the existing bus stops will be combined into northbound and southbound stops at the current informal stop location on the B6341.

Rail Services

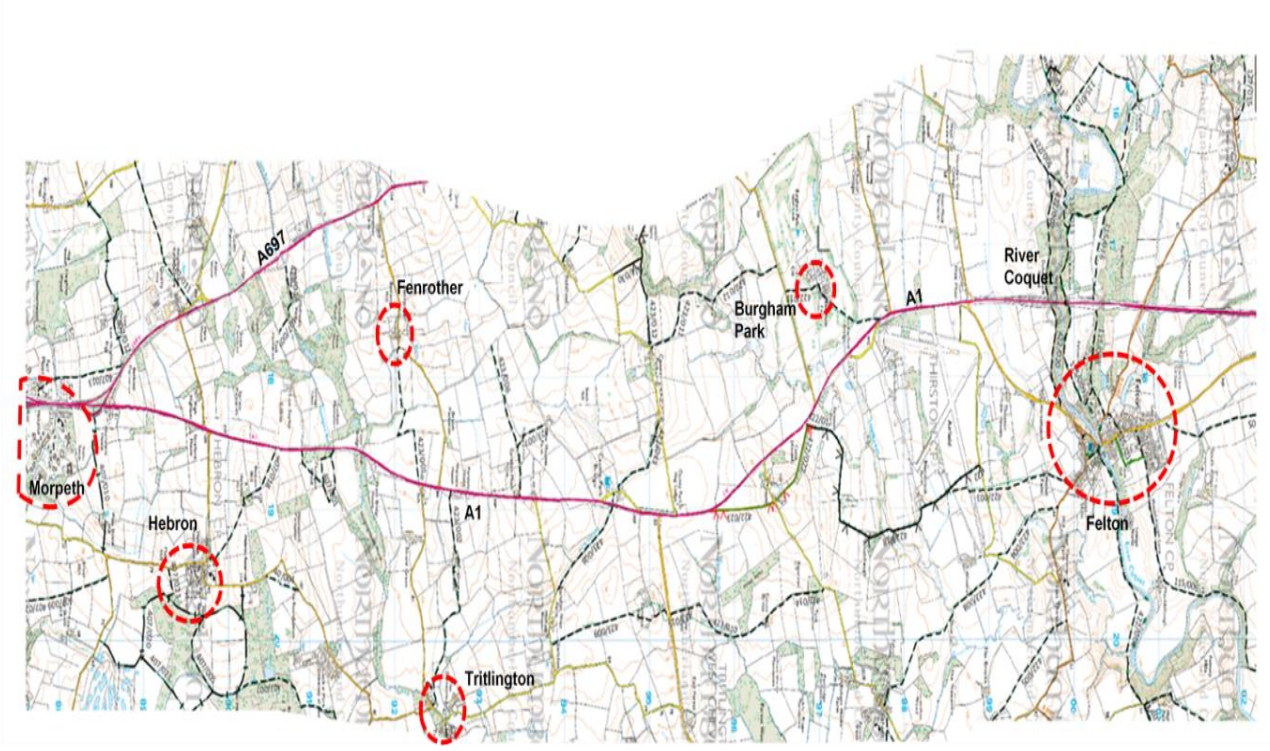
4.11.10 The Scheme will not result in a significant impact on rail users as the closest stations are Morpeth (which lies over 1km from Part A); and Chathill and Alnmouth (which are located around 5km from Part B). The Scheme will have negligible impact on traffic flows and journey times as it does affect current routes to the stations.

WCH Users

4.11.11 To identify issues affecting WCHs along the Scheme, consultation has been undertaken with local groups and the wider public by the Applicant as part of the non-statutory and statutory consultation exercises. Further details can be found in the Consultation Report (**Application Document Reference: TR010041/APP/5.1**).

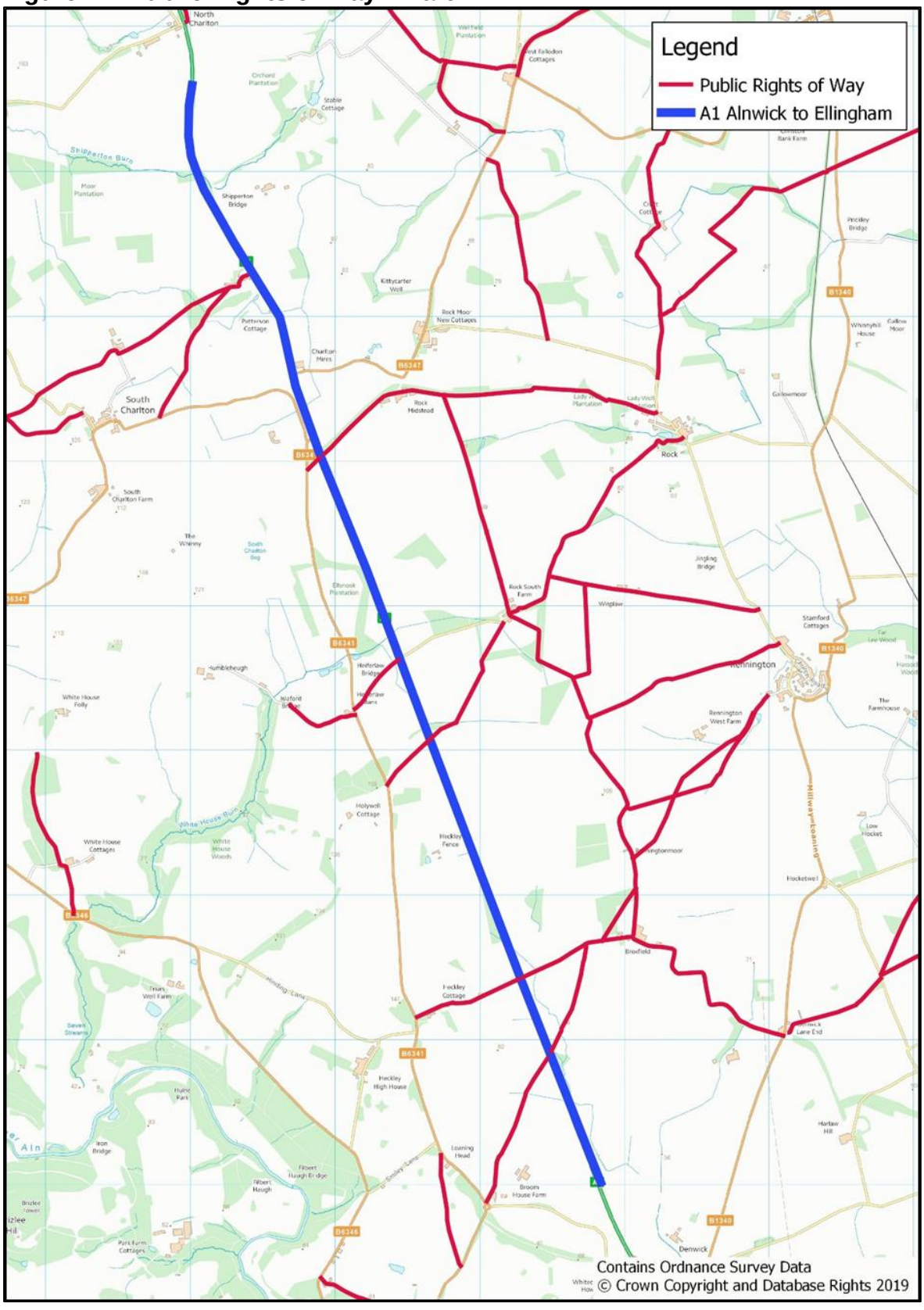
4.11.12 A number of PRoWs provide access between residential properties and recreational routes in the area around the Scheme. In particular, in the vicinity of the River Coquet where there is connected network providing access across the A1 and along the banks of the River Coquet. A map of the PRoWs in the local area is given in **Figure 26** for Part A and **Figure 27** for Part B.

Figure 26: Public Rights of Way – Part A



Source: Northumberland Public Rights of Way Internet Mapping (19th April 2018

Figure 27: Public Rights of Way – Part B



4.11.13 There are no National Trails located in close proximity to the Scheme, with the nearest (Hadrian's Wall) located 21km to the south. Therefore, National Trails are not considered further.

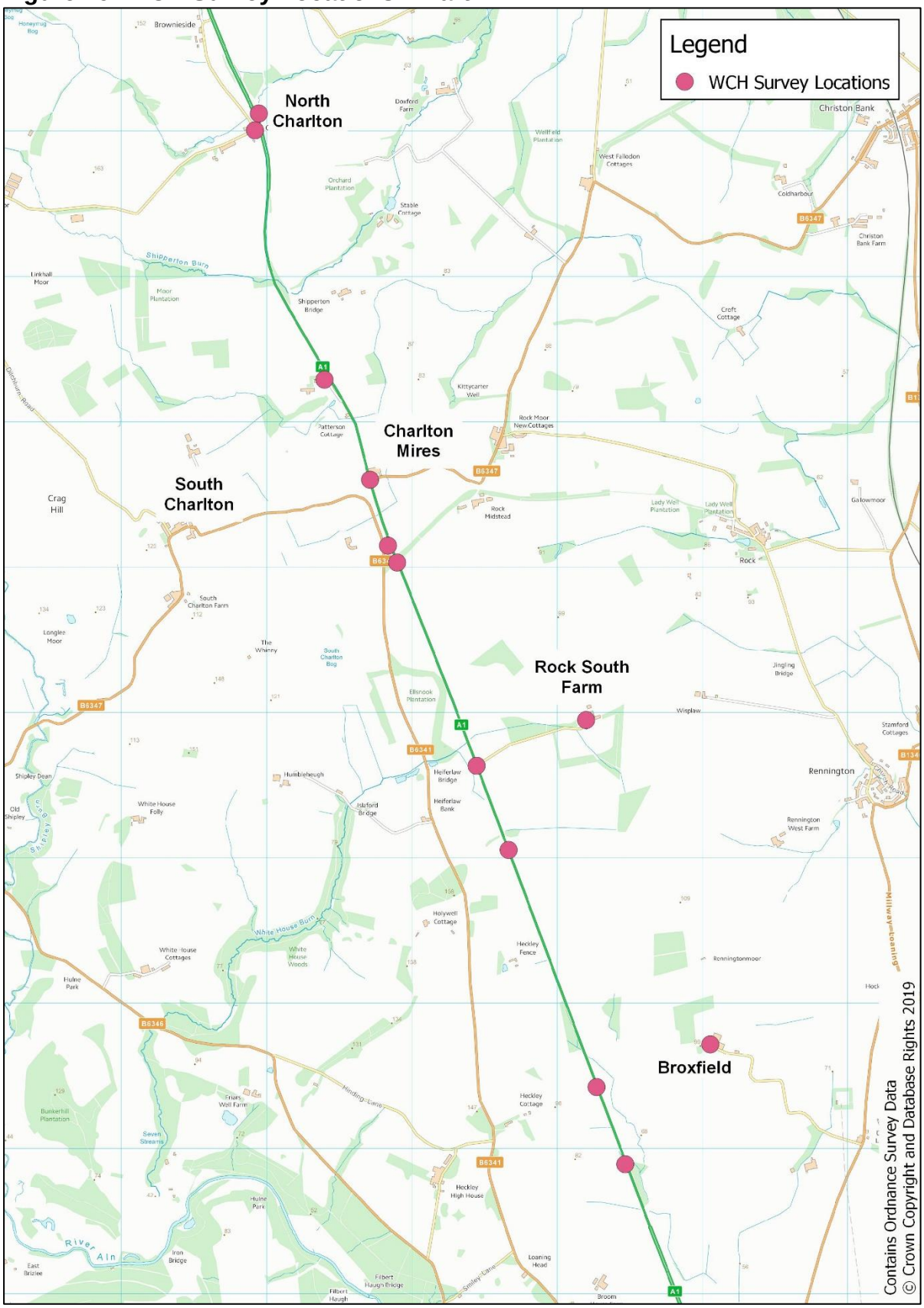
4.11.14 St Oswald's Way is a long-distance pedestrian route between St Cuthbert's Way at the Holy Islands and the Hadrian's Wall Path at Heavenfield. A portion of St Oswald's Way follows the northern bank River Coquet and is crossed by the Scheme (Part A).

4.11.15 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 the Scheme with the nearest (National Cycle Route 155 – Morpeth to Newbiggin-by-the-sea) located approximately 2.3km south west of the Scheme (Part A). As such, National Cycle Routes are not considered further.

4.11.16 Surveys have been undertaken to establish which pathways and junctions were commonly used by WCH users. Pedestrian, cyclist and equestrian movements were recorded at 12 locations, shown in **Figure 28** for Part A and **Figure 29** for Part B.

Figure 28: WCH Survey Locations – Part A

Figure 29: WCH Survey Locations – Part B



4.11.17 The results of the survey are split out between Part A and Part B.

Part A

4.11.18 The key results from this study were:

- There were 374 (73%) pedestrian movements, 131 (25%) cyclists and 2 (2%) equestrian movements recorded.
- The most popular pedestrian routes were Causey Park Bridge/Footpath 423/013 with 41 pedestrian movements, Byway 422/018 with 82 recorded pedestrian movements, West Moor Junction which recorded 84 movements and Footpath 115/009, which passes under River Coquet Bridge, with 79 recorded pedestrian movements.
- The most popular cycling routes are Highlaws/Hebron Junction with 21 recorded cyclist movements, Causey Park Bridge/Footpath 423/013 which recorded 10 cyclist movements and West Moor Junction with 50 recorded cyclist movements.
- There were 2 recorded movements of equestrians over the 6-day period at the Highlaws/Hebron Junction at the southern end of the scheme. At both locations equestrians were moving away from the A1.

Part B

4.11.19 The key results from this survey were:

i. There were 168 (66.7%) pedestrian movements, 80 (31.7%) cyclists and 4 (1.6%) equestrian movements recorded;
ii. The majority of PRoW users were concentrated at four locations: Broxfield (excluding movements crossing the A1); Rock South Farm (excluding movements crossing the A1); North Charlton West; and North Charlton East.
iii. The greatest numbers of cyclists were also recorded in the North Charlton east and west areas;
iv. In the area within and adjacent to the Order Limits, equestrian use was observed to be low with only four equestrian users recorded in the WCH survey at Broxfield Farm and Rock South Farm. Equestrians were noted to be moving away from the A1 and did not cross the A1.

4.11.20 **Chapter 12: Population and Human Health, Volume 2** of the ES (**Application Document Reference: TR010041/APP/6.2**) assesses the potential changes to the amenity of PRoW users and WCH (both spatially and temporally) through the new alignment of Part A; and **Chapter 12: Population and Human Health, Volume 3** of the ES (**Application Document Reference: TR010041/APP/6.3**) assesses the same for Part B.

4.11.21 There are a number of PROW that would be directly affected by the Scheme and would be permanently closed or diverted during operation. The PRoWs that will be closed as a result of the Scheme are not frequently used with less than five users

observed at each site over the six survey days.

4.11.22 Users of PRoWs within a 500m study area of the Order Limits of the Scheme could experience loss or reduction of amenity due to noise and air quality effects, particularly for any that pass within 100m of the Scheme.

4.11.23 Conversely, the Scheme design also includes the following elements which are considered to be beneficial for WCHs:

i. The de-trunked section of the A1 is likely to see beneficial effects for WCH users due to less vehicular traffic on the road;
ii. Two of the existing PROW which cross the Scheme would be rerouted over the Fenrother and Causey Park overbridges. This would improve safety by removing at grade crossings over the A1
iii. A footway to facilitate safe pedestrian access across the new Charlton Mires Junction would be provided. The footway would tie into a diverted footpath to the east of the Scheme, extend across the A1 and along the improved B6341 to the west of the Scheme, to approximately Rock Lodge;
iv. A footway to facilitate safe pedestrian access across the new Heckley Fence Accommodation Overbridge would be provided. The footway would link to a diverted PRoW to the east of the Scheme across the A1 to a PRoW on the other side;
v. Use of best practice design with regards to the safety of WCHs would improve the amenity of users of the footpaths in the surrounding areas. Additionally, landscape planting would provide screening of the A1.

4.11.24 Although there are closures of PRoWs as a result of the Scheme, with increased walking times in some cases, these closures are not expected to have a substantial impact due to the low usage of the PRoWs. Improvements to facilities for WCHs through the inclusion of footways crossing the A1 will provide benefits to WCHs. Overall, the Scheme is considered to have a slight beneficial to moderate adverse impact on WCHs.

5 ECONOMIC CASE OVERVIEW

5.1 Introduction

5.1.1 This chapter outlines the economic assessment of the Scheme. It presents the expected benefits and dis-benefits associated with the Scheme and sets out overall value for money.

5.2 Overview of Economic Assessment and Methodology Used

5.2.1 The economic assessment of the Scheme has been based on a 60-year appraisal period in accordance with the DfT guidance set out in TAG Unit A1-1 ('Cost Benefit Analysis').

5.2.2 The assessment considers the calculation of impacts, both positive and negative, that are typically expressed in monetary terms. This includes the capital cost of the Scheme and any tax revenue generated by the Scheme and compares them against benefits such as travel time and accident savings.

5.2.3 Costs and benefits occur throughout the duration of the assessment period; the construction costs occur before the Scheme opens whilst benefits occur in the 60 years following completion of the Scheme. Costs and benefits are discounted to present values (i.e. benefits accrued today are of greater value than those realised further into the future). As such the stream of costs and benefits are discounted to 2010 using the DfT standard discount rate.

5.2.4 Scheme costs and monetised impacts (costs and benefits) are summed to produce a Benefit Cost Ratio (BCR).

5.2.5 Once impacts that can be expressed in monetary terms have been calculated the assessment captures the remaining impacts that cannot be monetised with an Appraisal Summary Table (AST). The AST is a summary for decision makers containing key economic, environmental and other information drawn from existing documents such as cost benefit analysis and **Volume 2** of the **ES** (**Application Document Reference: TR010041/APP/6.2**) for Part A and **Volume 3** of the ES (**Application Document Reference: TR010041/APP.6.3**) for Part B. Together this information can be used to determine the value for money of the Scheme.

5.3 Monetised Benefits

5.3.1 An assessment and monetisation of the expected economic, environmental and social benefits associated with the Scheme has been undertaken in accordance with DfT guidelines. This Chapter presents the adjusted BCR for the Scheme which includes all monetised benefits, including those associated with journey time reliability as well as those defined as wider economic benefits.

5.3.2 A summary of the monetised economic, environmental and social benefits of the Scheme is provided in **Table 29** below.

Table 29 – Monetised economic, environmental and social benefits of the Scheme

Benefits			Monetised Value (£)
Economic Benefits	Business User Benefits	Travel Time	68,043,000
		Vehicle Operating Costs	-44,527,000
		Delays During Construction	-377,000
		Delays During Maintenance	2,698,000
		User Charges	-2,057,000
		Net Business User Benefits	23,780,000
	Journey Time Reliability		8,095,000
	Private Sector Provider Impacts		1,622,000
	Regeneration		N/A
	Wider Impacts		24,157,000
Environmental Benefits	Greenhouse Gas Emissions		-61,558,000
	Noise		389,000
	Air Quality		-6,222,000
Social Benefits	Consumer - Commuting User Benefits	Travel Time	21,074,000
		Vehicle Operating Costs	-8,174,000
		Delays During Construction	-174,000
		Delays During Maintenance	784,000
		User Charges	37,000
		Net Consumer - Commuting User Benefits	13,547,000
	Consumer - Other User Benefits	Travel Time	72,785,000
		Vehicle Operating Costs	-31,996,000
		Delays During Construction	-640,000
		Delays During Maintenance	4,211,000
		User Charges	356,000
		Net Consumer - Other User Benefits	44,717,000

	Accident Benefits	32,489,000
Public Accounts	Indirect Tax Revenues	49,330,000
Total		**130,339,000**

5.3.3 It should be noted that the regeneration benefits only consider the effects of a scheme on regeneration areas. There is no single definition of regeneration areas, but these areas will have been designated for specific policy purposes relation to economic development under the UK Government's or European Union's regeneration programmes. The Scheme does not have an effect on the regeneration areas in which it is located.

Economic benefits

5.3.4 The Scheme is a '*committed scheme'* in RIS2 announced on 11 March 2020 which sets out a £27.4 billion investment in the road network in England. The importance of the SRN to the economy is confirmed on Page 9 of RIS2 which sets out *"A good transport network is not an end to itself, rather it is the means through which people and businesses live their lives and achieve their ambitions. The provision of a safe, reliable, resilient, responsive and efficient transport network can significantly expand the opportunities for success and encourage greater ambitions. Conversely, a failing network that lacks capacity and performs poorly will limit what people can achieve".*

5.3.5 The Scheme would increase the capacity of the A1 on the single carriageway sections between Morpeth and Ellingham. The additional capacity will reduce travel times and increase robustness and resilience within the highway network. Business users and transport service providers are therefore likely to benefit from the Scheme through:

a. Reduced travel times and increased journey time reliability;

b. Improved access for suppliers and customers; and

c. Reduced vehicle operating costs, such as fuel, vehicle maintenance and mileage-related depreciation.

5.3.6 **Chapter 12: Population and Human Health, Volume 2** of the ES (**Application Document Reference: TR010041/APP/6.2**) for Part A and **Chapter 12: Population and Human Health, Volume 3** of the ES (**Application Document Reference: TR010041/APP/6.3**) for Part B identifies that the construction phase of the Scheme would commence in late 2021 and would bring social and economic benefits to the area through construction activity by providing better access to job opportunities through improving links between Morpeth and Ellingham. The dualling of the A1 in Northumberland is also an identified aim of the Northumberland Economic Strategy 2015 – 2020. The Scheme is modelled to reduce the number of accidents along this stretch of the A1, which will be both a positive economic and social benefit.

5.3.7 For Part A the estimated total construction cost of Part A is £173 million, and construction is likely to take 30 months. This is estimated to generate direct employment

opportunities for approximately 354 workers per year. 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.

5.3.8 For Part B the estimated total construction cost of Part B is approximately £81 million and construction is likely to take approximately 22 months. This is estimated to generate direct employment opportunities for approximately 226 workers per year. The number of indirect and induced employment opportunities at a 'regional level' (Northumberland) per year is 113 construction workers. Therefore, the estimated, direct employment associated with Part B equates to approximately 3.6% of the economically active population in full-time employment in the construction industry in Northumberland. The estimated indirect and induced employment associated with Part B equates to approximately 1.8% of the economically active population in the construction industry in Northumberland.

5.3.9 After accounting for impacts associated with delays during construction and maintenance the combined monetised value of these benefits is forecast to be **£13.4 million** commuting user benefit and **£44.7 million** "other user" benefit, which includes benefits relating to journey time improvements with the Scheme or impacts on journey times as a result of construction.

Environmental Benefits

5.3.10 Detailed assessment and appraisal have been undertaken to consider the full environmental impacts associated with the Scheme, full details of which are set out in **Volume 2** of the ES (**Application Document Reference: TR010041/APP/6.1**) for Part A and **Volume 3** of the ES (**Application Document Reference: TR010041/APP/6.3**) for Part B. The following is a summary of the topics found to provide environmental benefits.

5.3.11 The Scheme has been designed to provide environmental benefits wherever possible including the improvement of water management (through SUDS and other measures); a reduction in noise levels along sections of the existing A1 where traffic is moved away from receptors and benefits from the incorporation of noise barriers and low noise road surfacing along the Scheme; and provision of wildlife access and improvement of fish passage within culverts, where possible.

5.3.12 The Scheme works towards biodiversity no net loss but delivers a biodiversity net gain for certain habitats including neutral grassland, semi-improved grassland, broadleaved woodland and linear hedgerow length. Additionally, the inclusion of the grade-separated junctions and changes to PRoW would improve connectivity and safety, and therefore benefit users.

Noise

5.3.13 Noise impacts have been assessed and further details can be found in **Chapter 6: Noise and Vibration, Volume 2** of the ES (**Application Document Reference: TR010041/APP/6.1**) for Part A and **Chapter 6: Noise and Vibration, Volume 3** of the ES (**Application Document Reference: TR010041/APP/6.3**) for Part B.

5.3.14 For Part A there are 383 residential dwellings, with an estimated population of 881, and seven other sensitive receptors within the Calculation Area for Part A Four noise barriers have been proposed for the Scheme. There are two noise important areas (NIAs) within the Calculation Area of the Scheme. In the short-term, noise levels are predicted to decrease at the residential properties within these two NIAs as a result of the Scheme. Three residential properties are predicted to experience significant adverse effects as a result of the Scheme. The majority of properties are predicted to experience no change or a negligible increase in noise levels from the Scheme. The noise levels, and by association, changes are influenced by a number of factors, including the new alignment of the A1, the four proposed noise barriers, the low noise road surface which will be laid for the entire Scheme and the predicted traffic flow, speed and percentage of heavy vehicles on the road network in the opening and forecast years.

5.3.15 Part B when operational, would result in beneficial effects on sensitive receptors. The Scheme would move the A1 to the east and away from the existing A1 alignment near Patterson Cottage and West Link Hall Cottages; benefits are predicted in this locality. Predicted benefits are also due to Low Noise Road Surfacing along the full length of Part B.

5.3.16 The preliminary assessment indicates that no properties are eligible for noise insulation, albeit that this would be reviewed at the detailed design stage. The monetised value of the impact on noise for the Scheme is forecast to be **£389,000**.

Air Quality

5.3.17 Detailed assessment and appraisal has been undertaken to consider the local air quality impacts of the Scheme. The air quality assessment has also considered the impact on greenhouse gas emissions. Overall there is a negative impact on local air quality and regional emissions in monetary terms (rather than absolute terms) with the Scheme. This can be attributed to the increase in flow and speed of traffic on the A1. The monetised value of the predicted changes in local air quality is forecast to be **minus £6.2 million**

5.3.18 However, the Scheme is not predicted within **Chapter 5: Air Quality, Volume 2** of the ES (**Application Document Reference: TR010041/APP/6.2**) for Part A and **Chapter 5: Air Quality, Volume 3** of the ES (**Application Document Reference TR010041/APP/6.3**) for Part B to result in any air quality exceedances and it is concluded that its effect is not significant. The monetary assessment differs from the ES as it looks at all the changes in air quality and classifies them as to whether there

are significant effects at receptors or not according to a defined set of criteria. It then reaches a conclusion based on whether or not there are significant effects.

5.3.19 There is a net improvement in local air quality at properties within Part A; however, regional emissions of NOx and PM2.5 increase in-line with increased total vehicle kilometres travelled.

5.3.20 There is a net improvement in local air quality at properties within Part B; however, regional emissions of NOx and PM2.5 increase in-line with increased total vehicle kilometres travelled.

5.3.21 For the Scheme there is a net worsening in local air quality at properties. Regional emissions of NOx and PM2.5 increase in-line with increased total vehicle kilometres travelled. There is no worsening of any existing or new exceedances of standards. There are no PCM links with EU limit value compliance risk.

5.3.22 The monetary calculation is based on absolute quantities of emissions across all receptors that doesn't take into account whether or not there are significant effects but places a monetary value based on absolute changes from current levels. It gives a numerical figure to include in the cost-benefit analysis but one which is often more pessimistic than the picture emerging the EIA, hence the high dis-benefit monetised value set out at paragraph 5.3.17 above.

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Social Benefits

5.3.23 As previously noted within this Case, the Scheme will provide additional capacity and improve journey times and reliability on the SRN. The monetised user benefits for commuters and other users (for example, leisure) are forecast to be **£58.2 million**.

5.3.24 The Scheme is also modelled to have a positive impact on road safety. The largest accident benefits occur along the mainline of the Scheme, where the current single carriageway is replaced by a dual carriageway. Dual carriageways have considerably lower accident rates than single carriageways. The accident benefits could also be as a result of the removal of the current single carriageway stretches of the A1 and a number of private means of access on to the road. The monetised value of these benefits is forecast to be **£32.4 million**.

5.4 Non-Monetised Benefits

5.4.1 An assessment of anticipated non-monetised benefits associated with the Scheme has been undertaken and is outlined below.

Environmental and Social Non-Monetised Benefits

5.4.2 The effects and presence of the Scheme on the environment and local communities are summarised in this section taking into account mitigation measures including those

proposed in order to overcome any site-specific issues remaining after design principles and environmental measures have been applied.

Landscape

5.4.3 The assessment of the Scheme upon the landscape is assessed in **Chapter 7: Landscape and Visual, Volume 2** of the ES (**Application Document Reference: TR010041/APP/6.2**) for Part A and **Chapter 7: Landscape and Visual, Volume 3** of the ES (**Application Document Reference: TR010041/APP/6.3**) for Part B.

Part A

5.4.4 The assessment concludes that during the construction phase of Part A Landscape Character Areas 38b (Lowland Rolling Farmland – Longhorsley) and 35a (Broad Lowland Valley – Coquet Valley) would experience moderate adverse (significant) direct landscape effects during the construction of the Scheme. Along the remainder of the route the impacts of the construction phase are predicted to range from neutral to slight adverse (not significant) landscape effects.

5.4.5 During the operational phase it is anticipated that Landscape Character Area (LCA) 38b (Lowland Rolling Farmland – Longhorsley), 35a (Broad Lowland Valley – Coquet Valley) and 17 (Coquet Valley) would all experience a moderate adverse landscape effects at the winter of Year 1 of Part A. However, through the construction of the proposed River Coquet Bridge, there would be high levels of magnitude of impact locally, which would result in large adverse landscape effects at the winter of Year 1 of Part A. The bridge has been designed to reflect the same alignment of piers and bridge deck as the existing bridge and would be constructed in parallel to the eastern side of the existing bridge. It is assessed as comprising an additional, large scale, built form within the local landscape of the River Coquet valley.

5.4.6 Landscape effects during Year 1 Winter phase are predicted within the other LCAs that are directly impacted by Part A. As landscape sensitivity in these character areas is low, the resulting landscape effects would range from neutral to slight adverse (not significant). In Year 15, Part A is predicted to have effects that range from slight adverse (not significant) landscape effects to neutral (not significant) landscape effects.

Part B

5.4.7 The assessment concludes that during the construction phase of Part B Landscape Character 8c Charlton Ridge, 3c Rock and 6 North East Farmed Coastal Plain would experience moderate adverse (significant) direct landscape effects during the construction of the Scheme. Along the remainder of the route the impacts of the construction phase are predicted to be slight adverse (not significant) landscape effects.

5.4.8 During the year 1 and the operational phase it is anticipated that there would be no significant effects on Landscape Character Areas, effects ranging from Slight Adverse to Neutral.

5.4.9 Visual impacts on sensitive receptors including residential properties have been assessed in **Chapter 7: Landscape and Visual, Volume 2** of the ES (**Application Document Reference: TR010041/APP/6.2**) for Part A and **Chapter 7: Landscape and Visual, Volume 3** of the ES (**Application Document Reference: TR010041/APP/6.3**) for Part B.

5.4.10 **Chapter 7: Landscape and Visual, Volume 2** of the ES (**Application Document Reference: TR010041/APP/6.2**) for Part A confirms that upon completion of the construction phase, the number of properties, or groups of properties anticipated to be subject to a significant adverse effect would have reduced to 19. It is anticipated that by the summer of year 15 (2038) of the Scheme this number would have reduced to ten properties, all of which are anticipated to be subject to a significant adverse effect at the lower end of the scale, that being moderate adverse.

5.4.11 **Chapter 7: Landsacape and Visual, Volume 3** of the ES (**Application Document Reference: TR010041/APP/6.3**) for Part B lconfirms that upon completion of the construction phase, the number of groups of properties anticipated to be subject to a significant adverse effect would be 8 in year 1. It is anticipated that by the summer of year 15 (2038) of the Scheme this number would have reduced to 3 properties, all of which are anticipated to be subject to a moderate adverse (significant) effect, the remainder ranging from Slight Adverse to Neutral.

Heritage

5.4.12 For Part A during construction the assessment concluded that there would be a slight adverse effect on one Grade II Listed Building, a milestone, as it would need to be temporarily removed during construction and repositioned in a location nearby. There would be temporary moderate to slight adverse impacts on built heritage assets (designated and non-designated) during construction and permanent slight adverse impacts during operation. There would be permanent moderate to slight adverse impacts on known below-ground archaeological assets after mitigation. There is a potential for large to negligible significance effects (on balance moderate) on currently unknown below-ground archaeological assets.

5.4.13 For Part B during construction, the demolition of a non-designated asset (a farm complex) is required, resulting in slight adverse effect. There would be temporary moderate to slight adverse effects on the settings of built heritage assets (designated and non-designated) during construction. There is the potential for currently unknown below ground heritage assets to be present throughout the Part B of Prehistoric, Medieval, Post-Medieval and Modern date based on the results of the desk based assessment and geophysical survey. The significance of the assets is dependent on their date and form, but could be of medium to high value for Prehistoric and Roman, medium for Early to Late Medieval remains, low for Post-Medieval remains and negligible for Modern remains. There is a potential for moderate adverse to slight adverse significance effects on currently unknown below-ground archaeological assets, depending on the significance of the assets impacted and with mitigation measures in

place. There is a low potential for archaeological remains to be present which are of high or very high value.

5.4.14 The assessment concluded that while there are potential significant adverse effects during construction of the Scheme, that in operation there would be no significant effects for Part A and only one significant effect in Part B. This would be to The Grade II listed Dovecote to the east of Heckley Fence Farmhouse due to visual intrusion and increased noise from vehicles using the overbridge and access road. Full details are set out in **Chapter 8: Cultural Heritage, Volume 2** of the ES (**Application Document Reference: TR010041/APP/6.1**) for Part A and **Chapter 8: Cultural Heritage, Volume 3** of the ES (**Application Document Reference: TR010041/APP/6.3**) for Part B.

Biodiversity

5.4.15 There are no anticipated impacts to European designated sites as a result of the Scheme, although there are potential hydrological links. This is primarily because of distance from them and inherent dispersion of any pollutants. Full details are set out in **Chapter 9: Biodiversity, Volume 2** of the ES (**Application Document Reference: TR010041/APP/6.2**) for Part A. and **Chapter: Biodiversity, Volume 3** of the ES (**Application Document Reference: TR010041/APP/6.3**) for Part B.

Part A

5.4.16 Due to the loss of ancient woodland, an irreplaceable habitat, located within the River Coquet and Coquet Valley Woodlands SSSI (Duke's Bank Wood), a large adverse effect is anticipated. However, an Ancient Woodland Strategy has been developed in consultation and agreement with Natural England to provide woodland planting and monitoring/management proportionate to the impacts. Part A would result in slight adverse effects to two locally designated sites (single LNR and single LWS) and one ancient woodland as a result of aerial emissions during operation. Landscape mitigation provides compensatory habitat for Habitats of Principle Importance, resulting in neutral or beneficial effects with the exception of arable field margins and running water (slight adverse). The ecological mitigation proposed results in neutral effects to protected and notable species, with the exception of bats and fish (both slight adverse).

Part B

5.4.17 There are no anticipated impacts to designated sites as a result of Part B. Part B would result in slight adverse effects to hedgerows and watercourses (running water) due to the net loss of habitat. Potential impacts on ecological receptors include habitat loss / damage, disturbance, fragmentation, and injury and mortality. The ecological mitigation proposed results in neutral effects to protected and notable species, with the exception of bats, fish and aquatic macroinvertebrates (all slight adverse). Ecological mitigation includes, for example, habitat creation, species compensation (e.g. bat boxes) and species protection plans.

Road Drainage and Water Environment

5.4.18 The impacts of the Scheme on the Water environment are assessed in **Chapter 10: Road Drainage and the Water Environment, Volume 2** of the ES (**Application Document Reference: TR010041/APP/6.2**) for Part A and **Chapter 10: Road Drainage and the Water Environment, Volume 3** of the ES (**Application Document Reference: TR010041/APP/6.3**) for Part B.

Part A

5.4.19 Part A includes embedded mitigation, notably the Construction Environment Management Plan, watercourse crossings and the surface water drainage strategy which ensure that the potential impacts on the water environment are insignificant. The Highways Agency [now Highways England] Water Risk Assessment Tool (HAWRAT) (see **Appendix 10.3: Drainage Network Water Quality Assessment, Volume 7** of the ES (**Application Document Reference: TR010041/APP/6,7**) has been used to assess the risks to water quality during the operation of the Scheme which indicates that the proposed surface water drainage system will provide appropriate treatment prior to discharge. The design of the new bridge over the River Coquet and culverts has taken hydromorphological and ecological considerations into account. Review of the EA's Flood Map for Planning (Rivers and Sea) indicates that the majority of the Scheme's alignment is located in the low-risk Flood Zone 1. However, the Scheme does include sections located in the medium risk Flood Zone 2 and the high-risk Flood Zone 3. The development of the proposals for each watercourse crossed by the Scheme has been dictated by the baseline flood risk situation and whether the design is an extension of an existing culvert, replacement of an existing culvert or the construction of a new structure where an open channel is currently present. Hydraulic modelling shows that there will be no increase in fluvial flood risk to any upstream or downstream receptors. A review of the EA's Flood Risk from Surface Water map indicates that sections of the Scheme are at high, medium and low risk of flooding from surface water sources and existing surface water flow paths have been incorporated into the Scheme.

Part B

5.4.20 Part B includes embedded mitigation, notably the Construction Environment Management Plan, watercourse crossings and the surface water drainage strategy which ensure that the potential impacts on the water environment are insignificant. The Highways Agency [now Highways England] Water Risk Assessment Tool (HAWRAT) (see **Appendix 10.3: Drainage Network Water Quality Assessment, Volume 8** of the ES (**Application Document Reference: TR010041/APP/6.8**) has been used to assess the risks to water quality during the operation of the Scheme which indicates that the proposed surface water drainage system will provide appropriate treatment prior to discharge. Review of the EA's Flood Map for Planning (Rivers and Sea) indicates that the majority of Part B's alignment is located in the low-risk Flood Zone 1. However, Part B does include sections located in close proximity to the medium risk Flood Zone 2 and the high-risk Flood Zone 3 associated with Denwick Burn. The development of the proposals for each watercourse crossed by the Scheme has been dictated by the baseline flood risk situation and whether the

design is an extension or the replacement of an existing culvert. Hydraulic modelling shows that there will be no increase in fluvial flood risk to any upstream or downstream receptors. A review of the EA's Flood Risk from Surface Water map indicates that sections of the Scheme are at high, medium and low risk of flooding from surface water sources and existing surface water flow paths have been incorporated into Part B.

Walkers Cyclists and Horse-riders (WCH)

5.4.21 Across the Scheme during operation, twenty-one public rights of way (PRoW) would be affected by the Scheme both positively and negatively, some would be stopped up and others diverted from directly crossing the A1 so that a safer crossing is available.

Part A

5.4.22 During construction eighteen of the thirty PRoWs identified within the Study Area would be directly affected by Part A and would be temporarily closed. 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

5.4.23 During operation eleven PRoWs would be directly affected by Part A, only one having significant adverse effects, two with non-significant adverse effects and eight with non-significant beneficial effects. 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. There would be benefits to public rights of way; where PRoW currently cross at grade, these are diverted to nearby bridge crossings to improve safety.

Part B

5.4.24 Twelve PRoWs are proposed to be permanently or temporarily closed during the construction period, and one may be temporarily affected by construction vehicles. Permanent diversions utilising the Charlton Mires Junction or the Heckley Fence Accommodation Overbridge may become available to WCH during the construction period, depending on the phasing of works. These diversions and closures, although not likely to sever WCH and communities within the Study Area from community facilities, are likely to cause severance on PRoW and routes used recreationally, routes crossing the A1 in between communities and also routes used to access bus stops within the Part B.

5.4.25 A number of PRoWs are proposed to be permanently diverted or amended during the operation period and there would be significant effects on ten PRoWs as a result of Part B. Although this is not likely to sever WCH and communities within the Study Area from community facilities, it would likely to cause severance on PRoW and routes used

recreationally, routes crossing the A1 in between communities and also routes used to access bus stops within Part B.

5.4.26 WCH provision is proposed over the Heckley Fence Accommodation Overbridge and Charlton Mires Junction. Although these facilities are an improvement to the existing cycle and footpath provision, there are diversions of existing PRoW which are required for WCHs to access these, which are likely to increase journey length for the majority of WCH users. WCHs would have to take longer routes if utilising the PRoW network both to the east and west of Part B.

5.5 Value for Money

5.5.1 The assessment and monetisation of expected economic, environmental and social benefits associated with the Scheme has been undertaken in accordance with DfT guidelines. The results of TUBA have been combined with the results of the accident analysis, the construction travel time dis-benefits, the wider economic benefits, the DMRB greenhouse gas analysis and DMRB noise analysis to provide a combined Present Value of Benefits (PVB).

5.5.2 The PVB is then taken forward to be compared with the Present Value of Costs (PVC) to create a BCR as part of the Analysis of Monetised Costs and Benefits (AMCB). The results are shown in **Table 30** below which demonstrates an adjusted BCR of 0.8 for the Scheme.

Table 30 – Adjusted BCR

Description	Benefits/Costs	Total (£000)
Adjusted BCR - Including Journey Time Reliability (JTR) Benefits and Wider Economic Benefits (WEBs)	PVB (including JTR and WEBS)	130,346
	PVC	156,792
	NPV	-26,446
	Adjusted BCR	0.8

6 CONFORMITY WITH PLANNING POLICY

6.1 Introduction

6.1.1 Section 104(2)(d) of the 2008 Act states that in addition to the relevant NPS, the SoS must also have regard to any other matters which the SoS thinks are '*both important and relevant*' to the decision. These important and relevant matters include national planning policy, the aims, objectives and policies of the development plan, as well as any economic and transport development strategies and objectives that are relevant to the Scheme. This chapter therefore assesses the Scheme against these important and relevant considerations.

6.2 NPPF 2019

6.2.1 The NPPF was first published by the Department for Communities and Local Government (now the Ministry for Housing, Communities and Local Government) in March 2012, and most recently updated in February 2019. The NPPF sets out the Government's economic, environmental and social policies for England and comprises a national strategy for sustainable development.

6.2.2 The NPPF explicitly accepts that under the 2008 Act, the relevant NPS as being the primary decision-making document for NSIPs. Paragraph 5 of the NPPF states that:

'This Framework does not contain specific policies for national significant infrastructure. These are determined in accordance with the decision-making framework set out in the Planning Act 2008 (as amended) and relevant national policy statements for major infrastructure, as well as any other matter that are relevant (which may include the National Planning Policy Framework)'.

6.2.3 Paragraph 1.17 of the NPS NN states that the NPS and NPPF are consistent with paragraph 1.18 stating that the NPPF is an important and relevant consideration *'but only to the extent relevant to the project'*.

6.2.4 The NPPF confirms that the purpose of the planning system is to contribute to the achievement of sustainable development, and that a presumption in favour of sustainable development lies at the heart of the NPPF.

6.2.5 Paragraph 8 of the NPPF confirms that the planning system is to contribute to the achievement of sustainable development; economic, social and environmental. These objectives are interdependent and need to be pursued in mutually supportive ways.

6.2.6 The Scheme would improve the quality of the SRN by improving connectivity, reliability, safety and resilience on the A1 between Morpeth and Ellingham. The provision of the Scheme would support the NPPF economic objective and strategic policy to make adequate provision for transport infrastructure and support the key Scheme objective to facilitate future economic growth in the area. The Scheme accords with the key aims of the NPPF, notably by improving the conditions in which people travel and providing improved infrastructure to support economic growth.

6.2.7 The Scheme would also be built to contribute towards ensuring the country has an SRN

that drives growth through a better designed network and is considered to be consistent with the principles of sustainable development contained in the NPPF.

6.3 The Development Plan

6.3.1 The Scheme is located entirely within the administrative boundary of the unitary planning authority of NCC. The development plan for NCC currently comprises the saved planning policies of the seven former local planning authorities that were merged to form NCC in April 2009. As the Scheme is located within the former local planning authority area of Morpeth and Alnwick District Councils, the development plan for this district still comprises part of the development plan.

6.3.2 The Northumberland Consolidated Planning Policy Framework document confirms that the development plan for the Scheme comprises the following saved policies:

i) The Northumberland Minerals Local Plan (March 2000);
ii) Northumberland Waste Local Plan (December 2001).

6.3.3 The Northumberland Consolidated Planning Policy Framework document confirms that there are a number of other documents that support the development plan and are material considerations for determining planning applications:

i) Recently adopted Local Development Framework documents that form part of the Statutory Development Plan;
ii) Relevant Neighbourhood Plans that have been made by NCC and form part of the Statutory Development Plan for Northumberland;
iii) Northumberland Local Transport Plan.

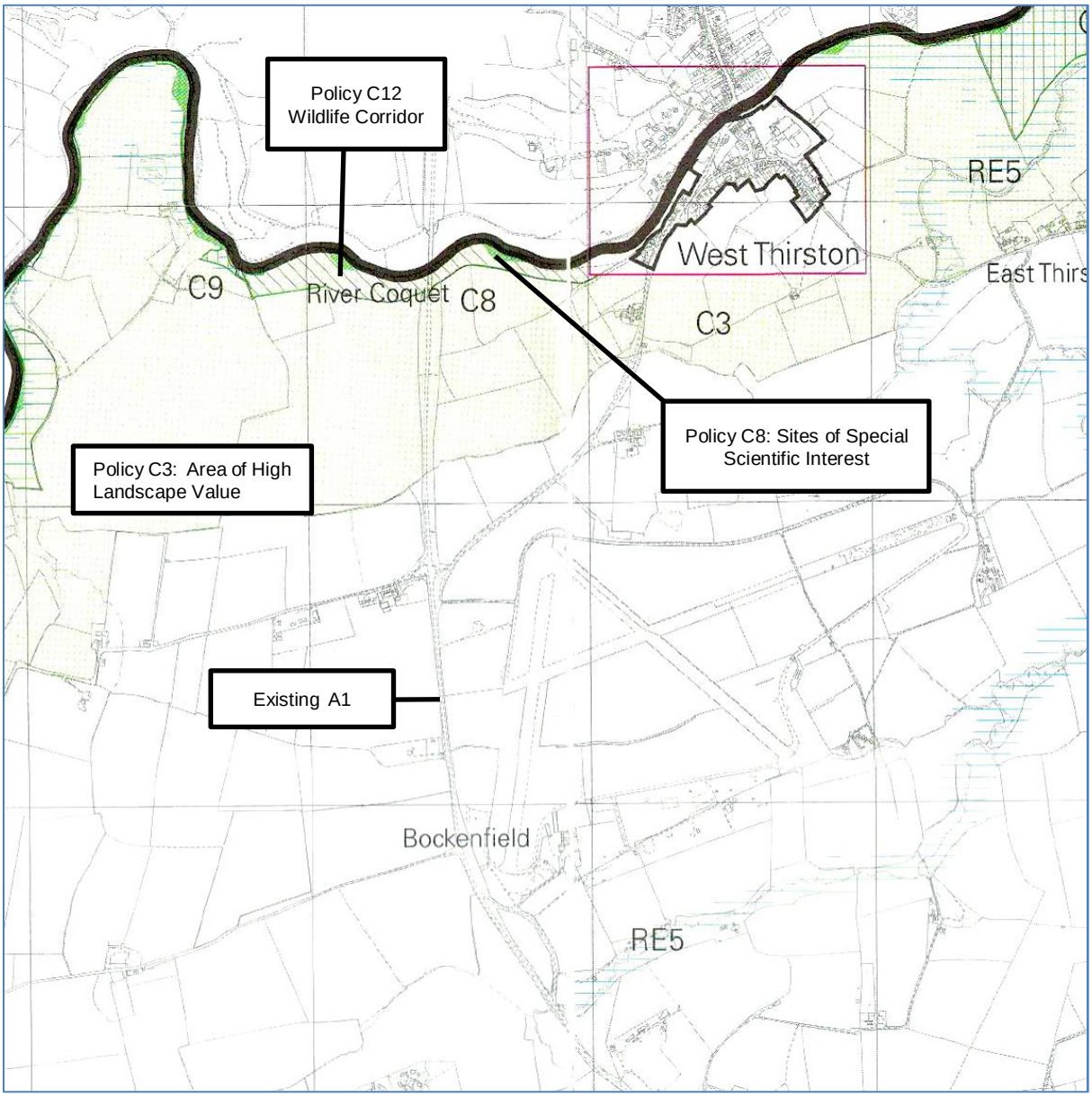
6.3.4 The relevant policy and policy aims and objectives are assessed below.

Castle Morpeth District Local Plan

6.3.5 Part A from the southernmost extent (the A1 Warreners House Interchange at Morpeth) to where it reaches the River Coquet is within the former local planning authority area of Castle Morpeth District Council. Therefore, the Castle Morpeth District Local Plan is relevant to Part A only.

6.3.6 The planning policy allocations of direct relevance to Part A in the former Castle Morpeth district are identified in **Figure 5**, below. Part A passes through the area identified by Policy C3 as an Area of High Landscape Value. The land adjacent to the River Coquet is an identified SSSI under Policy C8 (Sites of Special Scientific Interest). The route of the River Coquet itself is a Wildlife Corridor under the provisions of Policy C12.

Figure 30 - Extract from the Castle Morpeth Local Plan



Castle Morpeth Local Plan, Published February 2003

6.3.7 The stretch of Part A that is within the AHLV comprises online widening of the existing A1, as well as works to facilitate a new bridge over the River Coquet. Policy C3 confirms that:

> "*The council has identified areas of high landscape value and will not permit development which will have a detrimental effect on such areas. They are defined on the Proposals Map and Insets, and are as follows: …*
>
> - *Those parts of the Tyne and Coquet Valleys which lie within the Plan area*."

6.3.8 **Chapter 7: Landscape and Visual, Volume 2** of the ES (**Application Document**

Reference: TR010041/APP/6.2) assess the landscape and visual impacts of Part A against the relevant policies, including Policy C3.

6.3.9 **Chapter 7: Landscape and Visual, Volume 2** of the ES **(Application Document Reference: TR010041/APP/6.2)** specifically considers the landscape and visual impacts of Part A on the AHLV, noting that: *"Part A would dissect those AHLV, at the northern extent of Part A, from north to south, where the Scheme would cross the River Coquet. During construction, vegetation clearance along the eastern side of the existing carriageway, to facilitate the construction of the proposed additional River Coquet Bridge and online widening, would result in an increased width to the road corridor, providing greater physical and visual separation between those areas to the east and west. Short term temporary increase to the visual presence of the A1 road corridor as it travels through the area is anticipated. To the south, a smaller AHLV to the west of the A1 and associated with Espley Hall, would also be temporarily impacted by Part A, due to an access track running from east to west through it, providing connectivity between the existing A1 and A697. The presence of construction machinery along the track would increase the visual awareness of the track within the AHLV.".*

6.3.10 Whilst Part A would result in a temporary detrimental effect on the AHLV these impacts would reduce over time, and Part A is broadly compliant with Policy C3 of the Castle Morpeth District Local Plan.

6.3.11 Part A is also within the River Coquet and River Coquet Valley Woodlands SSSI Policy C8 does not seek to prevent all developments that might impact on this SSSI, including the dualling of the A1, stating that: *"The Council will not permit development which would affect the integrity of Sites of Special Scientific Interest either directly or indirectly unless it can be demonstrated that the development is of national importance and no alternate site is available…. Where development is to be permitted which could adversely affect any such site, the developers will be required to include measures to conserve and enhance the nature conservation interest and, where practicable to provide replacement habitats and features where damage is unavoidable."*

6.3.12 **Chapter 9: Biodiversity, Volume 2** of the ES (**Application Document Reference: TR010041/APP/6.2**) assesses the ecological impacts of Part A. In relation to Policy C8, it is assessed that: *"Part A would result in the loss of a relatively small area of the River Coquet and Coquet Valley Woodlands SSSI to allow construction of the new bridge over the River Coquet. The development is of national importance and there is no alternative practical solution available." and that "The Ancient Woodland Strategy ensures that the policy tests are engaged and met, providing measures to conserve and enhance the nature conservation interest of the SSSI, compensation habitat to address the loss and a long-term management plan. Therefore, it is considered that Part A adheres to the policy."*

6.3.13 Following the publication of updated DMRB Guidance, the operational nitrogen deposition has been remodelled in accordance with LA 105 Air Quality (**Ref. 9.31**) and is presented in **Appendix 5.8: Air Quality DMRB Sensitivity Test**, **Volume 7** of the ES (**Application Document Reference: TR010041/APP/6.7**). Full details of the

updated biodiversity assessment in relation to operational air quality (nitrogen deposition) are presented in **Appendix 9.27: Biodiversity DMRB Sensitivity Test**, **Volume 7** of this ES (**Application Document Reference: TR010041/APP/6.7**).

6.3.14 . In summary, the test determined that the application of the updated DMRB guidance would not change the likely significance of effects and therefore the conclusions of the assessment would remain unchanged. On a purely precautionary basis, it is proposed to provide replacement habitats and features meaning that a conclusion can be reached that the Part A aligns with policy C8.

6.3.15 Part A also crosses an area identified as a Wildlife Corridor by Policy C12. This policy states that:

> "*Where development is proposed which would affect identified Wildlife Corridors, the council will require proposals for the protection, maintenance or enhancement of the corridor through the appropriate landscaping and habitat creation or re-creation as part of the development proposals. The council will take account of Wildlife Corridors identified by adjoining authorities*."

6.3.16 **Chapter 9: Biodiversity, Volume 2** of the ES (**Application Document Reference: TR010041/APP/6.2**) confirms that: "*The landscape design for the Scheme has incorporated linear and connective habitat throughout to maintain and, where possible, improve connectivity of habitats and green infrastructure. Connectivity has also been considered within the ecological mitigation plan, informing the design of the Scheme, such as maintaining passage for fish and mammals through culverts. Therefore, it is considered that the Scheme adheres to the policy*."

6.3.17 The route of Part A lies outside the defined Settlement Boundaries. Policy C1 (*Settlement Boundaries*) is therefore of general relevance to Part A, which sets out a general presumption against development outside of the settlement boundary:

> "*Development in the Open Countryside beyond settlement boundaries will not be permitted unless proposals can be justified as essential to the needs of agriculture or forestry or are permitted by Policies H8, H16, E1, E4, E5, E10, E11, E12, E14, E15*."

6.3.18 Policy H8 relates to affordable housing on allocated site, and Policy H16 sets out the circumstances in which new homes in the Open Countryside will be permitted. Policies E1, E4 and E5 relate to the provision of new employment sites and Policies E10, E11 E12 and E14 relate to tourist facilities and caravan sites, whilst Policy E15 sets out the circumstances in which new roadside facilities will be permitted.

6.3.19 Whilst Part A does not fall within one of the defined categories it is clearly not the intention of the policy to resist or restrict essential transport infrastructure that, by its very nature, cannot be accommodated within defined settlement boundaries, particularly as [*other policies in the plan promote the improvement of this section of the A1*]. It is therefore considered that Part A would not conflict with the aims and objectives of Policy C1.

6.3.20 Overall Part A (and Part B) would fulfil the aim of dualling the A1 which, as set out above, is an identified objective of the Local Plan. **Volume 2** of the ES (**Application Document Reference: TR010041/APP/6.1**) considers the environmental impacts of Part A including landscape and visual impacts and the impacts on features of ecological and biodiversity value. Whilst Part A would have some degree of conflict with Policy C3 (Areas of High Landscape Value) these conflicts will be temporary.

6.3.21 It is considered that Part A is in accordance with the aims, objectives and policies of the former Castle Morpeth District Plan and that whilst there are some areas of conflict, these conflicts are unavoidable and have been minimised as far as it is practical to do so. In any case the benefits of Part A significantly outweigh any conflicts with the development plan.

Former Alnwick District development plan

6.3.22 Part B is within the former local planning authority area of Alnwick District Council. The development plan for the former District of Alnwick comprises the Alnwick District Wide Local Plan (adopted in April 1997) as well as the policies of the Alnwick District, Core Strategy (2007). The former Alnwick District development plan is relevant to Part B only.

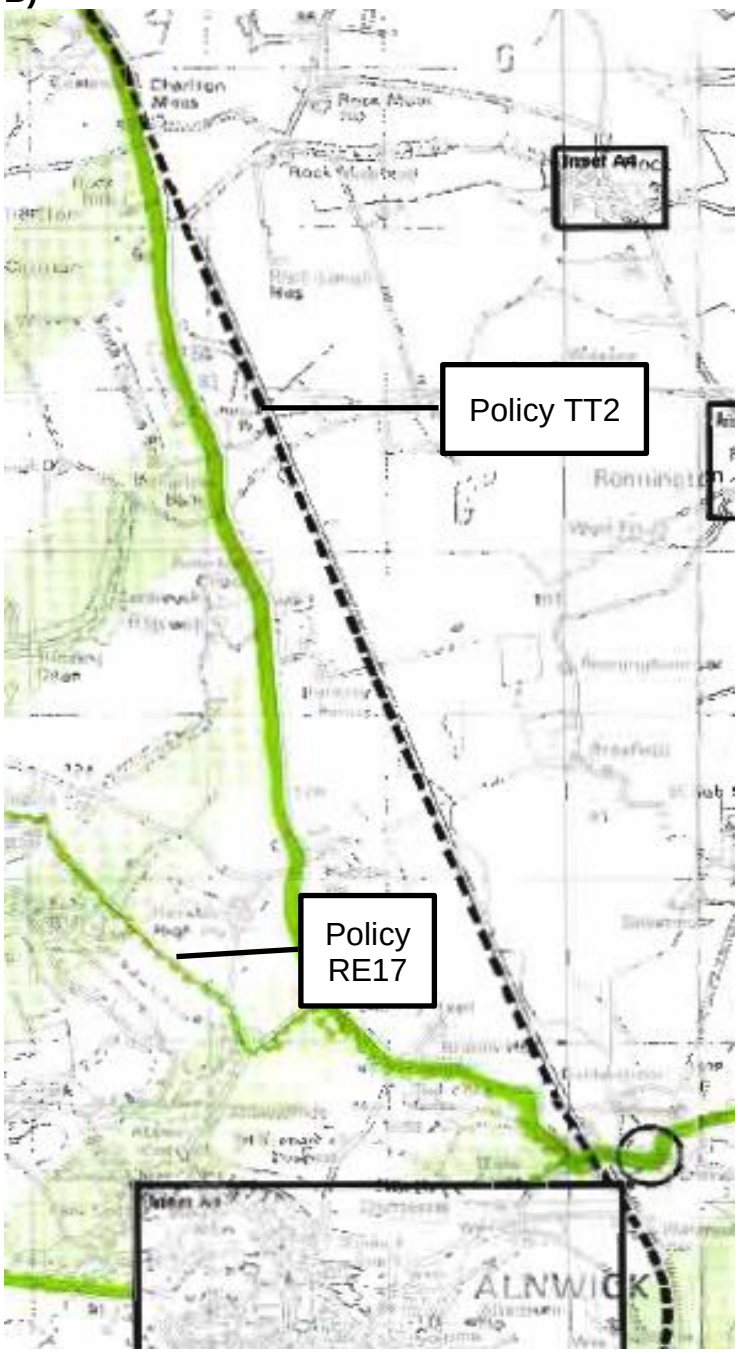
6.3.23 The Alnwick District Core Strategy was adopted in October 2007 and was intended to set a structure that subsequent local development framework documents would be produced in accordance with. The polices of the Core Strategy superseded only some of the policies contained in the Local Plan. For this reason, the policies of the Core Strategy and relevant retained policies of the Local Plan are both considered in this section.

6.3.24 The Alnwick District Wide Local Plan Proposal Map identifies the route of the Scheme for the '*upgrading of the A1 Trunk Road*' under policy TT2 that safeguards the route from development that would prejudice the proposed dualling of the A1.

6.3.25 Part B is adjacent to an identified AHLV. Policy RE17 ('*Protection of Areas of High Landscape Value*') states that planning permission would not normally be granted for development which would have a significant and adverse effect on the appearance of the AHLV, Registered Parks and Gardens of Special Historic Interest or the fringe of the Northumberland National Park. Where development is to be permitted, the proposal would be required to demonstrate high standards of design and landscaping consistent with functional requirements. The fact that the dualling of the A1 is promoted and safeguarded in the Local Plan means that the two policies must, as a matter of principle, be mutually compatible. Were the landscape and visual impacts of the dualling of the A1 considered to be unacceptable against the requirements of Policy RE17 then clearly both policies would not have been adopted equally and in parallel.

6.3.26 Relevant planning policy designations to Part B are illustrated in **Figure 31**, below.

Figure 31: Extract from the Alnwick District Local Plan (policies relevant to Part B)



6.3.27 **Chapter 7: Landscape and Visual, Volume 3** of the ES (**Application Document Reference: TR010041/APP/6.3**) for Part B assesses the landscape and visual impacts of Part B against the relevant policies, including Policy RE17. The assessment concludes that Part B would comprise an addition to an existing linear feature, already present within the AHLV, and therefore is not anticipated to have long term impacts. Part B would result in a temporary detrimental effect on the AHLV, but these impacts would reduce over time as the mitigation scheme matures. The wording of the policy does allow for development in the AHLV and it is considered that Part B is compatible with this policy.

6.3.28 The dualling of the A1 is a policy objective in its own right and enjoys planning policy support in the form of Policy TT2 which specifically safeguards the route of Part B. Part B is considered compatible with Policy RE17, and it is considered that Part B is in accordance with the aims, objectives and policies of the former Alnwick District development plan.

Other development plan documents

6.3.29 The Northumberland Minerals Local Plan (March 2000) and the Northumberland Waste Local Plan (December 2001) still comprise part of the development plan within Northumberland, but there are no policies of either site specific or general relevance to the Scheme, and as such they do not comprise important and relevant considerations in the determination of the application.

Emerging Local Development Framework

6.3.30 NCC is in the process of preparing the Northumberland Local Plan that will include the planning policies that will be used to guide and determine future planning applications in Northumberland, detail the scale and distribution of new development and include land allocations and designations

6.3.31 The Local Plan was submitted to the Secretary of State for Housing, Communities and Local Government for independent examination in May 2019. Phase 1 of the examination hearings took place in October 2019 and February 2020, and the Inspector has confirmed that further hearing sessions will be necessary for Phase 2 of the examination. The Inspector will be issuing Matters, Issues and Questions in advance of these.

6.3.32 As the Local Plan is at a relatively early stage in the adoption process it is considered that only limited weight can be attached to the policies that it contains.

6.3.33 Local Plan (December 2001) still comprise part of the development plan within Northumberland, but there are no policies of either site specific or general relevance to the Scheme, and as such they do not comprise important and relevant considerations in the determination of the application.

6.3.34 The Local Plan proposes building on existing strengths whilst diversifying and realising the potential of the rural and visitor economy. At paragraph 4.22 the Plan sets out a series of objectives that it will help to deliver improvements to the strategic highways '*including the dualling of the A1'* identified as '***essential'*** in order to deliver the economic objectives of the Local Plan.

6.3.35 Policy TRA 3 ('*Improving Northumberland's core road network'*) states that:

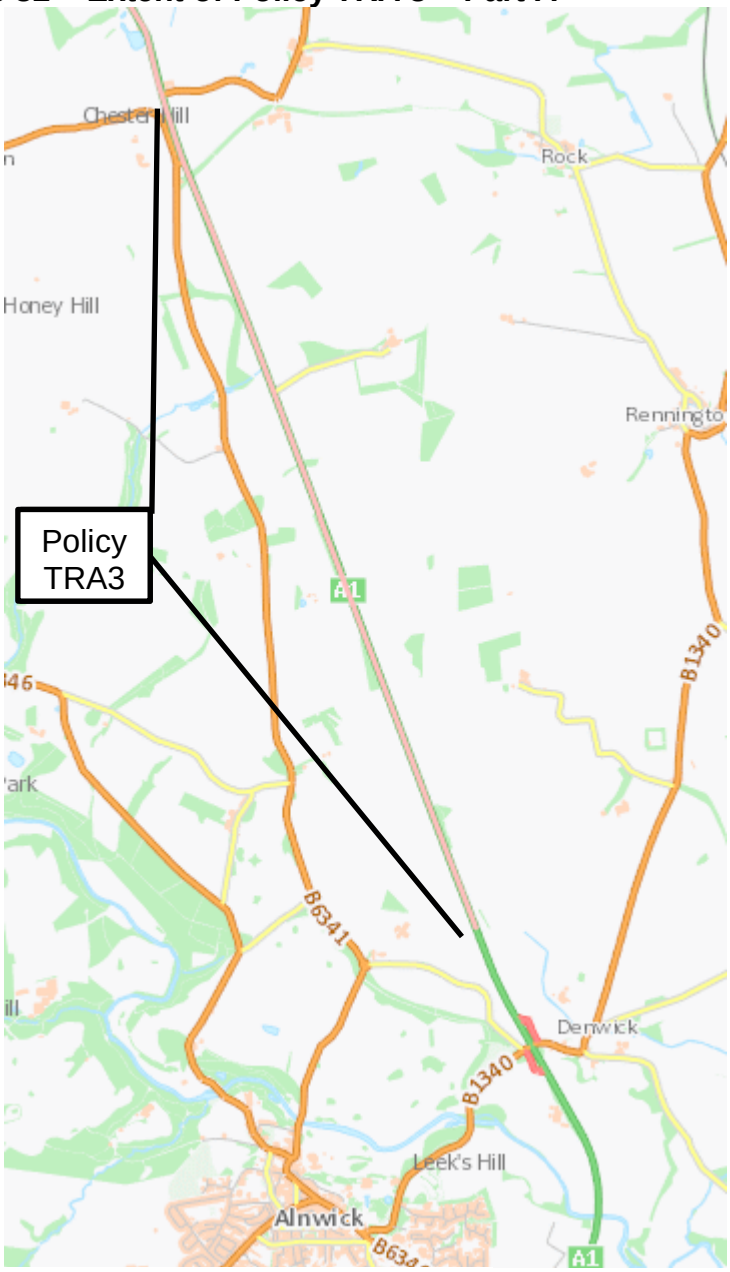
'1 In assessing development proposals, support will be given to the maintenance and improvement of Northumberland's core road network by:

a) The creation of additional capacity and improvement measures on the Strategic Road network.'

6.3.36 The policy is specifically worded to positively support '*Any improvement measures emanating from Highways England's Road Investment Strategies and other strategic assessment of the highway network*.' As set out in Chapter 3 of this Report, the RIS includes the dualling of the A1 between Morpeth and Ellingham. The same policy also supports the *'full dualling of the A1 through Northumberland and improved local links/junctions to the A1*.'

6.3.37 The extent of Policy TRA3 for Part A and Part B is illustrated in **Figure 32 snd Figure 33**, below.

Figure 32 – Extent of Policy TRA 3 – Part A



Policy TRA 3 - A1 and A69 Dualling

Figure 33: Extent of Policy TRA3 – Part B

Policy TRA 3 - A1 and A69 Dualling

6.3.38 The Scheme would be in compliance with the aims of the emerging plan. The Scheme is the only practical means of fulfilling part of the stated objective of emerging Policy TRA 3 and would also fulfil one of the identified Spatial Vision, Objectives and Outcomes.

Emerging Local Development Framework

6.3.39 The Northumberland Infrastructure Delivery Plan (IDP) was published in December 2018 and comprises part of the evidence base that is intended to inform the Local Plan. The document defines different types of infrastructure that are required and identifies the dualling of the A1 between Morpeth and Ellingham as being an "*important scheme*", stating that the dualling the A1 north of Newcastle to Berwick: *'could improve safety, ease congestion and unlock growth*.'

Scheme Conformity with the Local Development Framework

6.3.40 The Scheme would help to address the above issues that have been identified in the Northumberland IDP and is generally in accordance with the aims of the emerging Local Development Framework.

Summary

6.3.41 Overall the Scheme will deliver one of the key polocies of the emerging local plan. There is specific planning policy support for the dualling fo the A1, along the proposed route, and the dualling of the A1 will help to fulfil some of the aims and objectives of the current and the emerging development plan.

6.4 Green Belt Policy

6.4.1 The Scheme would involve development within the Green Belt as defined in Policy S5 of the Structure Plan and in the emerging NCC Local Plan. However, the section of the Scheme which involves development within the Green Belt is limited to Part A in the area near to Morpeth

6.4.2 Both the NPPF and the NPS NN contain guidance on assessing development within the Green Belt so, with the caveat that the NPS NN is identified by the Government as being the primary basis on which to determine NSIP applications, both documents are considered here.

6.4.3 The NPS NN states at paragraph 5.178: "*When located in the Green Belt national networks infrastructure projects may comprise inappropriate development. Inappropriate development is by definition harmful to the Green Belt and there is a presumption against it except in very special circumstances. The Secretary of State will need to assess whether there are very special circumstances to justify inappropriate development. Very special circumstances will not exist unless the potential harm to the Green Belt by reason of inappropriateness, and any other harm, is clearly outweighed by other considerations. In view of the presumption against inappropriate development, the Secretary of State will attach substantial weight to the harm to the Green Belt, when considering any application for such development.*"

Inappropriate Development

6.4.4 The Paragraph 146 of the NPPF confirms that there are some forms of development that are *"not inappropriate in the Green Belt provided they preserve its openness and do not conflict with the purposes of including land within it"*. This definition includes

"*local transport infrastructure which can demonstrate a requirement for a Green Belt location"* (paragraph 146 (c)).

6.4.5 The Scheme is able to demonstrate a requirement for a Green Belt location, which forms a part of the test under NPPF paragraph 146, since there is no available route option for the dualling of the A1 between Morpeth and Felton that avoids the Green Belt. Indeed, to connect with the rest of the A1, Part A must pass through the Green Belt in any event. As such, the Scheme can demonstrate a requirement for a Green Belt location.

6.4.6 The Scheme is however a part of the SRN, and the application is for a NSIP. Whilst the modelling data shows that there will be a benefit to local traffic through providing additional capacity on the A1 it may be said in a strict sense to fall outside the term of "*local transport infrastructure"* contained at paragraph 146 of the NPPF.

6.4.7 It should be noted that to be defined as a NSIP a project must meet all the three criteria set out at sections 14(1)(h) and 22(1) of the 2008 Act. One of these criteria is that the applicant for a scheme should be a strategic highway authority, which in this context is Highways England, so the same scheme with a different applicant may not be treated as a NSIP. In assessing the impacts of the Scheme on Green Belt it is an important consideration that the same application made by NCC would be likely to be treated as "*local transport infrastructure"* that can demonstrate a requirement for a Green Belt location and would be treated as appropriate development within the Green Belt.

6.4.8 Therefore, taking a conservative reading of the expression "*local transport infrastructure*", it is only the identity of the Applicant for the DCO that causes the question of whether the Scheme is "*inappropriate development"* to arise at all.

6.4.9 The Scheme would also include engineering operations, which NPPF paragraph 146 states would not be inappropriate provided it preserves the openness of the Green Belt. The Scheme also includes a new stretch of trunk road and above ground structures such as new bridges, and embankments. Such above ground structures may be considered to have a detrimental effect on the openness of the Green Belt.

6.4.10 Additional effects on the openness of the Green Belt are likely to arise during the construction phase. During construction there would be a need for temporary buildings and structures, including construction compounds, and the storage of materials, large plant and machinery. Such facilities, albeit temporary, would be unlikely to preserve the openness of the Green Belt.

Requirement to Demonstrate Very Special Circumstances

6.4.11 It is acknowledged by the Applicant that on a strict interpretation the Scheme represents "*inappropriate development*" within the Green Belt as defined in the NPPF. Paragraph 143 of the NPPF confirms that: "*Inappropriate development is, by definition, harmful to the Green Belt and should not be approved except in very special circumstances*." Paragraph 144 requires that when considering any planning application, local planning authorities should ensure that *"substantial weight"* is given to any harm to the Green Belt and that: "*Very special circumstances will not exist unless the potential harm to the Green Belt by reason of inappropriateness, and any other harm resulting from the*

proposal, is clearly outweighed by other considerations."

Extent of Harm to the Green Belt

6.4.12 The extent of potential harm that would be caused to the Green Belt by the Scheme is relatively limited. The five purposes of including land in the Green Belt are set out in paragraph 134 of the NPPF and are as follows:

i. to check the unrestricted sprawl of large built up areas;
ii. to prevent neighbouring towns merging into one another;
iii. to assist in safeguarding the countryside from encroachment;
iv. to preserve the setting and special character of historic towns; and
v. to assist in urban regeneration, by encouraging the recycling of derelict and other urban land.

6.4.13 Whilst encroachment on the surrounding countryside by the Scheme would be limited in extent, there would nevertheless be an expansion of the A1 beyond its current confines within the Green Belt and through the construction of 6.1 km of the new offline section. As this will comprise new development within areas of the Green Belt that are currently undeveloped farm land then the Scheme cannot be said to safeguard the countryside from encroachment. Consequently, the Scheme will conflict with the purpose of safeguarding the countryside from encroachment.

6.4.14 The Scheme would not lead to the unrestricted sprawl of large urban areas, and it is also compatible with preventing neighbouring towns from merging in to one another. The evidence of the ES and specifically in **Chapter 7: Landscape and Visual** and **Chapter 8: Cultural Heritage, Volume 2** of the ES (**Application Document Reference: TR010041/APP/6.2**) is that Part A will not undermine the setting and special character of historic towns and Part A is also consistent with the aim of assisting urban regeneration. For these reasons, the Scheme would not conflict with the other four purposes of including land in the Green Belt.

6.4.15 The NPS NN in paragraph 5.171 specifically acknowledges: *"Linear infrastructure linking an area near a Green Belt with other locations will often have to pass through Green Belt land."*

Very Special Circumstances

6.4.16 For the purposes of demonstrating that very special circumstances exist in relation to the Scheme, the following key issues are considered relevant:

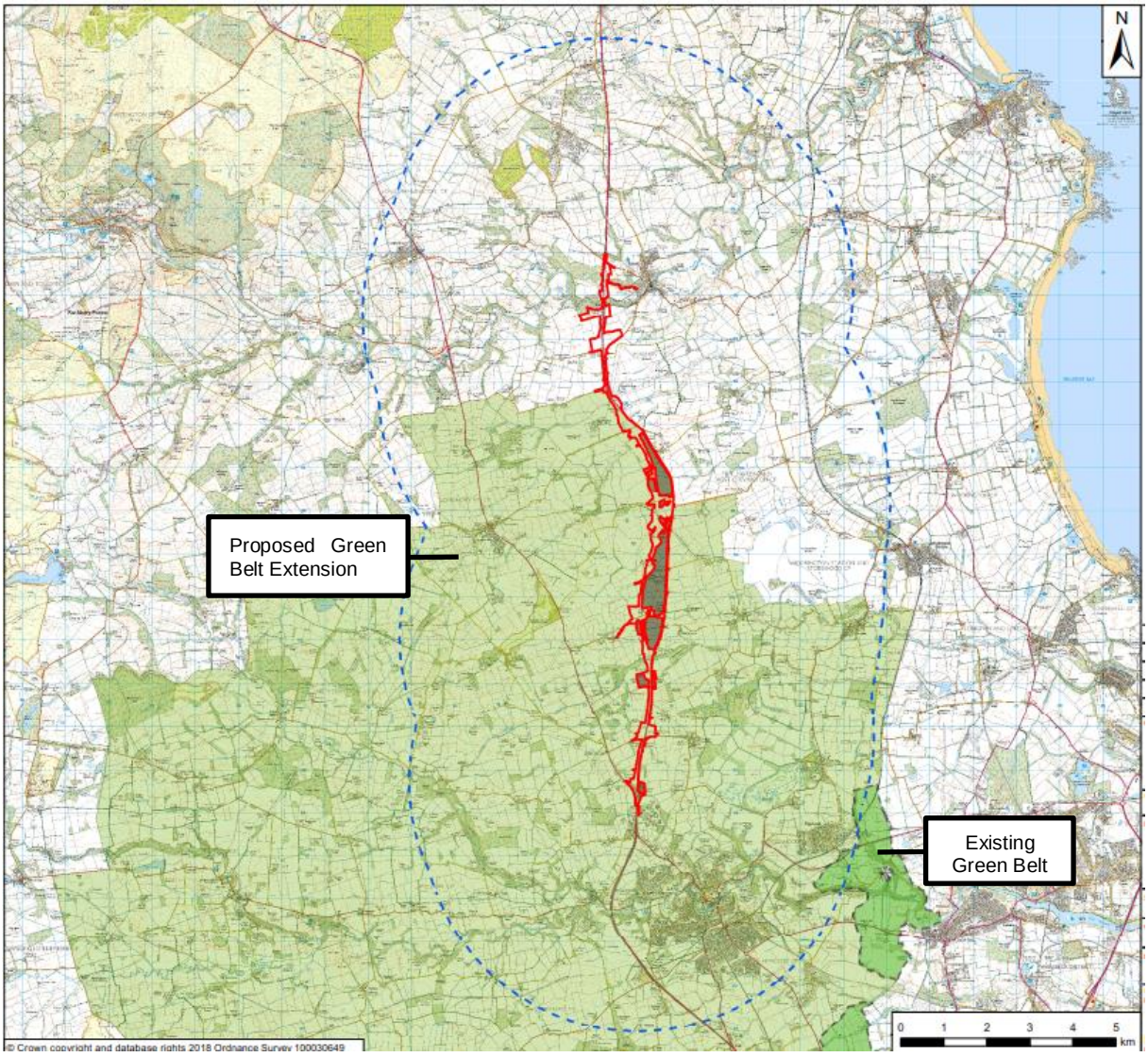
a. Compatibility of the Scheme with Planning Policy;
b. Delivery of government policy and programmes;
c. Delivery of local planning policy and transport programmes;
d. Objectives of Green Belt policy;
e. Availability of alternatives;
f. Delivery of Planning Policy.

6.4.17 These key issues are given more detailed consideration below.

Compatibility of the Scheme with Planning Policy

6.4.18 **Figure 7.10: Green Belt, Volume 5** of the ES (**Application Document Reference: TR010041/APP/7.2**) illustrates Part A in relation to both the existing Green Belt and the proposed extension, as illustrated in **Figure 34**, below.

Figure 34 - Inner and Outer Green Belt Boundary Preferred Options Map



Source: NCC Morpeth Outer Green Belt Boundary Report, published October 2013

6.4.19 As illustrated above, the proposed Green Belt extension includes the current A1, including the single carriageway sections of it within Part A and any dualling of the A1 must involve development in the Green Belt.

6.4.20 The Structure Plan includes planning policy support (Policy T16) for the dualling of the A1. This support is promoted alongside the Green Belt designation which demonstrates that the authors of the policy did not intend the Green Belt allocation to prevent the dualling of the A1 between Morpeth and Felton. The fact that the two policies were adopted in parallel indicates that the dualling of the A1 between Morpeth and Felton was considered to be entirely compatible with the aims and objectives of the Green Belt policy.

6.4.21 There is also no guidance in the wording of the policy to explain the approach that should be taken in the event of a conflict between the aims of the two policies, which further indicates that there is no inherent conflict between the two policies.

6.4.22 The policy was adopted in 2008 with full knowledge of the preferred route announcement for an offline dualling of the A1 between Morpeth and Felton that was made in 2006, and the wording of the policy did not seek to prevent the dualling of the A1 between Morpeth and Felton.

6.4.23 For these reasons it is considered that there is no inherent incompatibility between the dualling of the A1 between Morpeth and Felt and Green Belt policy.

Delivery of Government Policy and Programmes

6.4.24 The Scheme forms part of the Government's vision and strategic objectives for improving the UK's transport infrastructure as set out in detail in **Chapter 3** of this Statement. The Scheme would meet the identified need to provide safe, expeditious and resilient networks that better support social and economic activity; and to provide a transport network that can stimulate and supporting economic growth as set out in the NPS NN.

6.4.25 There is a requirement in the Infrastructure Act 2015 for both the Applicant and the SoS to comply with the RIS, which includes the dualling of the A1 between Morpeth and Ellingham as a committed scheme. The Scheme is similarly required to fulfil the aims of the Highways England Delivery Plan and the NIDP.

Delivery of Local Planning Policy and Transport Programmes

6.4.26 The Scheme will also deliver the aims of the existing development plan and will also deliver development plan policies. It is one of the "Key Objectives" of the emerging Northumberland Local Plan. As set out below, this is the only viable means of delivering the dualling of the A1 and fulfilling the planning policy objectives of both the current and emerging development plan.

Objectives of Green Belt Policy

6.4.27 The dualling of the A1 in Northumberland is a longstanding planning policy objective that pre-dates the adoption of the Structure Plan that introduced the Green Belt. From this, it is clear that it is not the intention of Green Belt policy to prevent the dualling of the A1 between Morpeth and Felton. The dualling of the A1 is a planning policy contained in the emerging Local Plan and is promoted alongside the proposed designation of Green Belt to the North of Morpeth. Both policies must be compatible.

Availability of Alternatives

6.4.28 The assessment of the three route options confirmed that the Green Option is the best available option to deliver Part A as it would deliver the greatest benefits during construction, in terms of building efficiency and worker safety, as most of the improvement is constructed away from the existing road. It also has the best road alignment for improving safety on the route. Additionally, it also retains the existing A1 to act as a local road after Scheme completion, which can be utilised to reduce delays during future routine maintenance.

6.4.29 An online dualling of the existing A1 that would limit the encroachment into the Green Belt was considered, and discounted, through the optioneering process. That option, (the "orange option") would not deliver the benefits to the resilience of the local road network that the preferred option would, and it would also not deliver the benefits during construction, in terms of building efficiency and worker safety as this Scheme. As set out above, the Green Option has the best road alignment for improving safety on the route.

6.4.30 Mitigation measures have been identified as set out in **Chapters 5 to 15, Volume 2** of the ES (**Application Document Reference: TR010041/APP/6.2**) for Part A to ensure that the harm is reduced as far as possible.

Delivery of Planning Policy

6.4.31 The dualling of the A1 has support in the development plan and as set out above is also an objective of the emerging Northumberland Local Plan. Emerging Policy TRA 3 seeks to secure the delivery of "*Any improvement measures emanating from Highways England's Road Investment Strategies",* which the Scheme comprises.

6.4.32 The Scheme therefore represents a means of fulfilling the objectives and fulfilling the Planning Policy of the emerging Northumberland Local Plan and the current development plan.

Green Belt Policy Conclusion

6.4.33 It is acknowledged that the Scheme may on a strict interpretation represent inappropriate development in the Green Belt as defined within the NPPF if the term "*local transport infrastructure*" in the NPPF is construed narrowly. If the term is construed more broadly then the Scheme is not inappropriate development. As set out above, the same Scheme by a different applicant could also be viewed as *"appropriate development"*.

6.4.34 Notwithstanding this, and as set out above, if the Scheme is inappropriate development then the very special circumstances required to justify the Scheme's development within Green Belt have been demonstrated, even allowing for the "*great weight*" that has to be attached to any harm to the Green Belt.

6.5 Planning Balance

6.5.1 In considering any proposed NSIP and when weighing its adverse impacts against its

benefits, the ExA and the SoS should consider:

i. its potential benefits, including the facilitation of economic development, including job creation, housing and environmental improvement, and any long-term or wider benefits;

ii. its potential adverse impacts, including any longer-term and cumulative adverse impacts, as well as any measures to avoid, reduce or compensate for any adverse impacts.

6.5.2 The benefits of the Scheme are demonstrated by its inclusion within the RIS and within national, regional and local transport and planning policy. As set out above, Section 3(6) of the Infrastructure Act 2015 places a duty on the SoS to comply with the provisions of the RIS. The route of the Scheme is safeguarded for the dualling of the A1 in the current development plan, so the Scheme will help fulfil the aims of existing planning policy. The upgrading of the A1 between Morpeth and Ellingham is also a policy in the emerging Northumberland Local Plan.

6.5.3 The Scheme will help to support economic development, provide better access to jobs and will tackle a range of identified issues along this stretch of the A1. As set out in **Table 5** of this Case, the Scheme has been designed to meet the objectives of the NPS NN. It has been designed to improve traffic flows, improve resilience, support economic growth and improve journey quality, reliability and safety.

6.5.4 These benefits must be weighed against the adverse impacts that are identified in Volume 2 the ES (Application Document Reference: TR010041/APP/6.2) for Part A and Volume 3 of the ES (Application Document Reference: TR010041/APP/6.3) for Part B. It is acknowledged that, for example, the Scheme will result in some adverse landscape and visual impacts, some loss of below ground heritage assets, and disruption to existing PRoW. Part A would have some degree of conflict with Policy C3 (Areas of High Landscape Value) these conflicts will be temporary. Suitable mitigation is proposed to manage these impacts and the benefits of the Scheme are considered to outweigh adverse effects.

6.5.5 The Scheme is considered by the Applicant to be the best available option for the dualling of the A1 between Morpeth and Ellingham. The Scheme is fully funded as illustrated in the **Funding Statement** (**Application Document Reference: TR010041/APP/4.2**), and if granted the DCO will include the compulsory acquisition powers required to deliver the Scheme.

6.5.6 Development consent would also avoid the uncertainty over how to deliver the RIS, and the aims and policies of the emerging Northumberland Local Plan.

6.5.7 The Scheme therefore comprises an opportunity to secure a deliverable and fully funded Scheme in accordance with the RIS, and current and emerging planning policies.

7 CONCLUSIONS

7.1.1 The dualling of the stretch of the A1 between Morpeth and Ellingham is a committed scheme in the RIS. Under Section 3 of the Infrastructure Act 2015, both the Secretary of State and the Applicant are required to comply with the RIS.

7.1.2 Under the 2008 Act, the NPS NN is the primary basis on which to determine NSIP applications for transport related development. The NPS NN Accordance Table (**Application Document Reference: TR010041/APP/7.2**) accompanying this application confirms that the Scheme is in accordance with the NPS NN.

7.1.3 The NPS NN paragraph 2.2 confirms that there is a '*critical need'* to improve the national networks to address road congestion and crowding on railways to provide safe, expeditious and resilient networks that better support social and economic activity; and to provide a transport network that can stimulate and supporting economic growth. The overriding strategic need to invest in the SRN that is set out in both the RIS and the NPS NN. The RIS is referred to in the NPS NN and the two documents are considered to be mutually compatible.

7.1.4 The Scheme is an integral part of dualling the A1 up to Ellingham, which is a *'committed scheme*' within RIS1 and re-confirmed in RIS2 and part of a programme of investment into the A1 in Northumberland that is designed to deliver a '*substantial improvement'* that will allow the network to meet the needs of the local economy and to better fulfil its role in the national transport network.

7.1.5 The NPS NN, RIS and NIDP all set out a strong position of support in delivering national networks that meet the country's long-term transport needs, whilst supporting a prosperous and competitive economy and improving the quality of life for all.

7.1.6 The Scheme will fulfil the Scheme objectives identified by the Applicant and will respond to the need to invest in the highway network and the SRN that is identified in the Highways England Delivery Plan for the period 2015 – 2020.

7.1.7 The Scheme will improve journey times; improve safety; increase resilience; improve connectivity between Morpeth and Ellingham, which is part of the SRN in the North-East region; provide better transport links; and improve opportunities for economic activity.

7.1.8 There is a clear case for the Scheme grounded in national and local planning policy. The dualling of the A1 enjoys support at local, regional and national level and is supported in both the Northumberland Economic Strategy 2015 – 2020 and the Northumberland Local Transport Plan. It will help to fulfil an objective of the emerging Northumberland Local Plan.

7.1.9 The Scheme is supported by an EIA to establish the impacts and mitigation measures required to meet the Scheme objectives and this is reported in **Volume 2** of the ES (**Application Document Reference: TR010041/APP/6.2**) for Part A and **Volume 3** of the ES (**Application Document Reference: TR010041/APP/6.3**) for Part B.

7.1.10 There are some adverse effects associated with the Scheme, potentially including the impact of inappropriate development within the Green Belt (if the NPPF policy is

construed very strictly). However, in any event, the benefits of the Scheme outweigh these acknowledged impacts and comprise the very special circumstances required justify development within the Green Belt.

7.1.11 There would also be landscape and visual impacts, and impacts on cultural heritage. However, it is considered that, on balance, the benefits of the Scheme in fulfilling planning policy and improving journey time, capacity and resilience on this stretch of the A1 outweigh these acknowledged impacts.

7.1.12 This Case has demonstrated the Scheme's overall compliance with relevant national and local policies, local transport plans and associated supplementary plans.

APPENDIX A: A1 NORTHUMBERLAND TRAFFIC MODEL VALIDATION RESULTS

Table 1 AM Peak Calibration and Validation Link Flow results – Full WebTAG compliance

Calibration	All Vehicles						Cars						
Observed Flow Volume	sites	number passing flow	number passing GEH	% passing GEH	number passing flow or GEH	% passing flow or GEH	sites	number passing flow	% passing flow	number passing GEH	% passing GEH	number passing flow or GEH	% passing flow or GEH
Flow Criteria													
<700	146	140	131	90%	140	96%	152	149	98%	142	93%	149	98%
700-2700	26	26	25	96%	26	100%	20	20	100%	20	100%	20	100%
>2700	0	0	0	0%	0	0%	0	0	0%	0	0%	0	0%
Total	172	166	156	91%	166	97%	172	169	98%	162	94%	169	98%
Validation	**All Vehicles**						**Cars**						
Observed Flow Volume	sites	number passing flow	number passing GEH	% passing GEH	number passing flow or GEH	% passing flow or GEH	sites	number passing flow	% passing flow	number passing GEH	% passing GEH	number passing flow or GEH	% passing flow or GEH
Flow Criteria													
<700	39	37	30	77%	37	95%	40	37	93%	32	80%	37	93%
700-2700	1	1	1	100%	1	100%	0	0	0%	0	0%	0	0%
>2700	0	0	0	0%	0	0%	0	0	0%	0	0%	0	0%
Total	40	38	31	78%	38	95%	40	37	93%	32	80%	37	93%

Table 2 AM Peak Calibration and Validation Screenline Results – Full WebTAG compliance

Calibration			All Vehicles		Cars Only	
Screenline Data by Time Period	% by All vehicles	% by Car	Number passing	total screenlines	Number passing	total screenlines
Total Screenlines within Flow target	40%	50%	17	42	21	42
Total Screenlines within GEH target	90%	93%	38	42	39	42
Total Screenlines within Flow or GEH target	90%	93%	38	42	39	42

Validation			All Vehicles		Cars Only	
Screenline Data by Time Period	% by All vehicles	% by Car	Number passing	total screenlines	Number passing	total screenlines
Total Screenlines within Flow target	25%	17%	3	12	2	12
Total Screenlines within GEH target	67%	75%	8	12	9	12
Total Screenlines within Flow or GEH target	67%	75%	8	12	9	12

Table 3 IP Calibration and Validation Link Flow results – Full WebTAG compliance

Calibration	All Vehicles							Cars Only						
Observed Flow Volume	sites	number passing flow	% passing flow	number passing GEH	% passing GEH	number passing flow or GEH	% passing flow or GEH	sites	number passing flow	% passing flow	number passing GEH	% passing GEH	number passing flow or GEH	% passing flow or GEH
Flow Criteria														
<700	152	149	98%	141	93%	149	98%	163	162	99%	156	96%	162	99%
700-2700	20	20	100%	20	100%	20	100%	9	9	100%	9	100%	9	100%
>2700	0	0	0%	0	0%	0	0%	0	0	0%	0	0%	0	0%
Total	172	169	98%	161	94%	169	98%	172	171	99%	165	96%	171	99%

Validation	All Vehicles							Cars Only						
Observed Flow Volume	sites	number passing flow	% passing flow	number passing GEH	% passing GEH	number passing flow or GEH	% passing flow or GEH	sites	number passing flow	% passing flow	number passing GEH	% passing GEH	number passing flow or GEH	% passing flow or GEH
Flow Criteria														
<700	40	39	98%	33	83%	39	98%	40	39	98%	33	83%	39	98%
700-2700	0	0	0%	0	0%	0	0%	0	0	0%	0	0%	0	0%
>2700	0	0	0%	0	0%	0	0%	0	0	0%	0	0%	0	0%
Total	40	39	98%	33	83%	39	98%	40	39	98%	33	83%	39	98%

Table 3 IP Calibration and Validation Link Flow results – Full WebTAG compliance

Calibration	All Vehicles							Cars Only						
Observed Flow Volume	sites	number passing flow	% passing flow	number passing GEH	% passing GEH	number passing flow or GEH	% passing flow or GEH	sites	number passing flow	% passing flow	number passing GEH	% passing GEH	number passing flow or GEH	% passing flow or GEH
Flow Criteria														
<700	152	149	98%	141	93%	149	98%	163	162	99%	156	96%	162	99%
700-2700	20	20	100%	20	100%	20	100%	9	9	100%	9	100%	9	100%
>2700	0	0	0%	0	0%	0	0%	0	0	0%	0	0%	0	0%
Total	172	169	98%	161	94%	169	98%	172	171	99%	165	96%	171	99%

Validation	All Vehicles							Cars Only						
Observed Flow Volume	sites	number passing flow	% passing flow	number passing GEH	% passing GEH	number passing flow or GEH	% passing flow or GEH	sites	number passing flow	% passing flow	number passing GEH	% passing GEH	number passing flow or GEH	% passing flow or GEH
Flow Criteria														
<700	40	39	98%	33	83%	39	98%	40	39	98%	33	83%	39	98%
700-2700	0	0	0%	0	0%	0	0%	0	0	0%	0	0%	0	0%
>2700	0	0	0%	0	0%	0	0%	0	0	0%	0	0%	0	0%
Total	40	39	98%	33	83%	39	98%	40	39	98%	33	83%	39	98%

Table 4 Inter Peak Calibration and Validation Results – Full WebTAG compliance

Calibration			All Vehicles		Cars Only	
Screenline Data by Time Period	**% by All vehicles**	**% by Car**	**Number passing**	**total screenlines**	**Number passing**	**total screenlines**
Total Screenlines within Flow target	48%	60%	20	42	25	42
Total Screenlines within GEH target	98%	100%	41	42	42	42
Total Screenlines within Flow or GEH target	98%	100%	41	42	42	42

Validation			All Vehicles		Cars Only	
Screenline Data by Time Period	**% by All vehicles**	**% by Car**	**Number passing**	**total screenlines**	**Number passing**	**total screenlines**
Total Screenlines within Flow target	42%	33%	5	12	4	12
Total Screenlines within GEH target	83%	83%	10	12	10	12
Total Screenlines within Flow or GEH target	83%	83%	10	12	10	12

Table 5 PM Calibration and Validation Link Flow results – Full WebTAG compliance

Calibration	All Vehicles							Cars Only						
Observed Flow Volume	sites	number passing flow	% passing flow	number passing GEH	% passing GEH	number passing flow or GEH	% passing flow or GEH	sites	number passing flow	% passing flow	number passing GEH	% passing GEH	number passing flow or GEH	% passing flow or GEH
Flow Criteria														
<700	146	141	97%	133	91%	141	97%	151	148	98%	140	93%	148	98%
700-2700	26	26	100%	26	100%	26	100%	21	21	100%	21	100%	21	100%
>2700	0	0	0%	0	0%	0	0%	0	0	0%	0	0%	0	0%
Total	172	167	97%	159	92%	167	97%	172	169	98%	161	94%	169	98%

Validation	All Vehicles							Cars Only						
Observed Flow Volume	sites	number passing flow	% passing flow	number passing GEH	% passing GEH	number passing flow or GEH	% passing flow or GEH	sites	number passing flow	% passing flow	number passing GEH	% passing GEH	number passing flow or GEH	% passing flow or GEH
Flow Criteria														
<700	38	37	97%	33	87%	37	97%	40	39	98%	33	83%	39	98%
700-2700	2	2	100%	2	100%	2	100%	0	0	0%	0	0%	0	0%
>2700	0	0	0%	0	0%	0	0%	0	0	0%	0	0%	0	0%
Total	40	39	98%	35	88%	39	98%	40	39	98%	33	83%	39	98%

Table 5 PM Calibration and Validation Link Flow results – Full WebTAG compliance

Calibration	All Vehicles							Cars Only						
Observed Flow Volume	sites	number passing flow	% passing flow	number passing GEH	% passing GEH	number passing flow or GEH	% passing flow or GEH	sites	number passing flow	% passing flow	number passing GEH	% passing GEH	number passing flow or GEH	% passing flow or GEH
Flow Criteria														
<700	146	141	97%	133	91%	141	97%	151	148	98%	140	93%	148	98%
700-2700	26	26	100%	26	100%	26	100%	21	21	100%	21	100%	21	100%
>2700	0	0	0%	0	0%	0	0%	0	0	0%	0	0%	0	0%
Total	172	167	97%	159	92%	167	97%	172	169	98%	161	94%	169	98%

Validation	All Vehicles							Cars Only						
Observed Flow Volume	sites	number passing flow	% passing flow	number passing GEH	% passing GEH	number passing flow or GEH	% passing flow or GEH	sites	number passing flow	% passing flow	number passing GEH	% passing GEH	number passing flow or GEH	% passing flow or GEH
Flow Criteria														
<700	38	37	97%	33	87%	37	97%	40	39	98%	33	83%	39	98%
700-2700	2	2	100%	2	100%	2	100%	0	0	0%	0	0%	0	0%
>2700	0	0	0%	0	0%	0	0%	0	0	0%	0	0%	0	0%
Total	40	39	98%	35	88%	39	98%	40	39	98%	33	83%	39	98%

Table 6 PM Peak Calibration and Validation Screenline Results – Full WebTAG compliance

Calibration			All Vehicles		Cars Only	
Screenline Data by Time Period	% by All vehicles	% by Car	Number passing	total screenlines	Number passing	total screenlines
Total Screenlines within Flow target	52%	62%	22	42	26	42
Total Screenlines within GEH target	95%	95%	40	42	40	42
Total Screenlines within Flow or GEH target	95%	95%	40	42	40	42

Validation			All Vehicles		Cars Only	
Screenline Data by Time Period	% by All vehicles	% by Car	Number passing	total screenlines	Number passing	total screenlines
Total Screenlines within Flow target	25%	33%	3	12	4	12
Total Screenlines within GEH target	75%	92%	9	12	11	12
Total Screenlines within Flow or GEH target	75%	92%	9	12	11	12

Table 7 AM Peak Calibration and Validation Screenline Results – Relaxation of Criteria

Calibration			All Vehicles		Cars Only	
Screenline Data by Time Period	% by All vehicles	% by Car	Number passing	total screenlines	Number passing	total screenlines
Total Screenlines within Flow target	83%	88%	35	42	37	42
Total Screenlines within GEH target	93%	95%	39	42	40	42
Total Screenlines within Flow or GEH target	93%	95%	39	42	40	42
Validation			**All Vehicles**		**Cars Only**	
Screenline Data by Time Period	**% by All vehicles**	**% by Car**	**Number passing**	**total screenlines**	**Number passing**	**total screenlines**
Total Screenlines within Flow target	75%	92%	9	12	11	12
Total Screenlines within GEH target	83%	83%	10	12	10	12
Total Screenlines within Flow or GEH target	83%	92%	10	12	11	12

Table 8 Inter Peak Calibration and Validation Screenline Results – Relaxation of Criteria

Calibration			All Vehicles		Cars Only	
Screenline Data by Time Period	% by All vehicles	% by Car	Number passing	total screenlines	Number passing	total screenlines
Total Screenlines within Flow target	88%	88%	37	42	37	42
Total Screenlines within GEH target	98%	100%	41	42	42	42
Total Screenlines within Flow or GEH target	98%	100%	41	42	42	42
Validation			**All Vehicles**		**Cars Only**	
Screenline Data by Time Period	**% by All vehicles**	**% by Car**	**Number passing**	**total screenlines**	**Number passing**	**total screenlines**
Total Screenlines within Flow target	83%	92%	10	12	11	12
Total Screenlines within GEH target	100%	92%	12	12	11	12
Total Screenlines within Flow or GEH target	100%	92%	12	12	11	12

Table 7 AM Peak Calibration and Validation Screenline Results – Relaxation of Criteria

Calibration			All Vehicles		Cars Only	
Screenline Data by Time Period	% by All vehicles	% by Car	Number passing	total screenlines	Number passing	total screenlines
Total Screenlines within Flow target	83%	88%	35	42	37	42
Total Screenlines within GEH target	93%	95%	39	42	40	42
Total Screenlines within Flow or GEH target	93%	95%	39	42	40	42
Validation			**All Vehicles**		**Cars Only**	
Screenline Data by Time Period	**% by All vehicles**	**% by Car**	**Number passing**	**total screenlines**	**Number passing**	**total screenlines**
Total Screenlines within Flow target	75%	92%	9	12	11	12
Total Screenlines within GEH target	83%	83%	10	12	10	12
Total Screenlines within Flow or GEH target	83%	92%	10	12	11	12

Table 8 Inter Peak Calibration and Validation Screenline Results – Relaxation of Criteria

Calibration			All Vehicles		Cars Only	
Screenline Data by Time Period	% by All vehicles	% by Car	Number passing	total screenlines	Number passing	total screenlines
Total Screenlines within Flow target	88%	88%	37	42	37	42
Total Screenlines within GEH target	98%	100%	41	42	42	42
Total Screenlines within Flow or GEH target	98%	100%	41	42	42	42
Validation			**All Vehicles**		**Cars Only**	
Screenline Data by Time Period	**% by All vehicles**	**% by Car**	**Number passing**	**total screenlines**	**Number passing**	**total screenlines**
Total Screenlines within Flow target	83%	92%	10	12	11	12
Total Screenlines within GEH target	100%	92%	12	12	11	12
Total Screenlines within Flow or GEH target	100%	92%	12	12	11	12

Table 9 PM Peak Calibration and Validation Screenline Results – Relaxation of Criteria

Calibration			All Vehicles		Cars Only	
Screenline Data by Time Period	**% by All vehicles**	**% by Car**	**Number passing**	**total screenlines**	**Number passing**	**total screenlines**
Total Screenlines within Flow target	86%	90%	36	42	38	42
Total Screenlines within GEH target	95%	95%	40	42	40	42
Total Screenlines within Flow or GEH target	95%	95%	40	42	40	42
Validation			**All Vehicles**		**Cars Only**	
Screenline Data by Time Period	**% by All vehicles**	**% by Car**	**Number passing**	**total screenlines**	**Number passing**	**total screenlines**
Total Screenlines within Flow target	83%	100%	10	12	12	12
Total Screenlines within GEH target	92%	92%	11	12	11	12
Total Screenlines within Flow or GEH target	92%	100%	11	12	12	12

Table 10 AM Peak Journey Time Data

Route	Direction	Distance (km)		Journey Time (hh:mm:ss)				
		Observed	Modelled	Observed	Modelled	Diff	%Diff	WebTAG
1	A - NB	10.105	10.105	00:07:34	00:06:28	-00:01:06	-14.5%	✓
	B - SB	10.113	10.113	00:06:46	00:06:21	-00:00:25	-6.2%	✓
2	A - NB	8.761	8.761	00:06:27	00:07:03	00:00:36	9.4%	✓
	B - SB	8.761	8.761	00:07:01	00:07:02	00:00:01	0.2%	✓
3	A - NB	12.754	12.754	00:11:42	00:12:01	00:00:18	2.6%	✓
	B - SB	12.758	12.758	00:11:30	00:12:08	00:00:38	5.5%	✓
4	A - NB	5.891	5.891	00:06:10	00:04:45	-00:01:25	-22.9%	×
	B - SB	5.891	5.891	00:06:55	00:04:43	-00:02:13	-31.9%	×
5	A - NB	6.187	6.187	00:05:15	00:04:40	-00:00:35	-11.2%	✓
	B - SB	6.156	6.156	00:04:59	00:04:29	-00:00:31	-10.3%	✓
6	A - NB	7.001	7.001	00:05:22	00:05:19	-00:00:03	-0.8%	✓
	B - SB	7.001	7.001	00:05:35	00:05:22	-00:00:13	-3.9%	✓
7	A - NB	9.768	9.768	00:07:33	00:07:56	00:00:23	5.1%	✓
	B - SB	9.768	9.768	00:07:28	00:08:04	00:00:36	8.0%	✓
8	A - NB	18.845	18.848	00:11:25	00:10:43	-00:00:42	-6.2%	✓
	B - SB	18.847	18.850	00:11:49	00:11:05	-00:00:44	-6.2%	✓

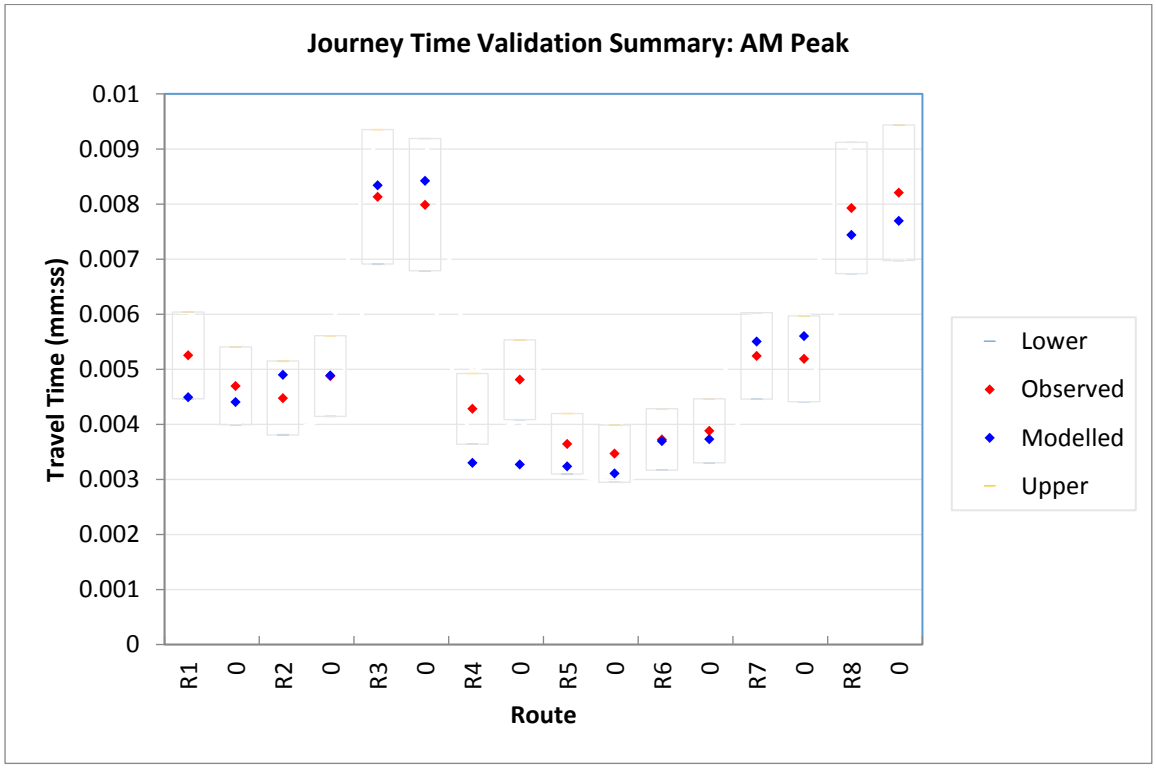


Table 11 Inter Peak Journey Time Data

Route	Direction	Distance (km)		Journey Time (hh:mm:ss)				
		Observed	Modelled	Observed	Modelled	Diff	% Diff	WebTAG
1	A - NB	10.105	10.105	00:06:50	00:06:28	-00:00:22	-5.3%	✓
	B - SB	10.113	10.113	00:06:38	00:06:29	-00:00:09	-2.2%	✓
2	A - NB	8.761	8.761	00:06:34	00:07:02	00:00:28	7.2%	✓
	B - SB	8.761	8.761	00:06:39	00:07:02	00:00:23	5.8%	✓
3	A - NB	12.754	12.754	00:11:55	00:12:04	00:00:09	1.2%	✓
	B - SB	12.758	12.758	00:11:19	00:12:12	00:00:53	7.8%	✓
4	A - NB	5.891	5.891	00:07:04	00:04:22	00:02:42	-38.2%	×
	B - SB	5.891	5.891	00:06:27	00:04:22	-00:02:05	-32.3%	×
5	A - NB	6.187	6.187	00:05:01	00:04:25	-00:00:36	-12.1%	✓
	B - SB	6.156	6.156	00:04:58	00:04:26	-00:00:33	-10.9%	✓
6	A - NB	7.001	7.001	00:05:45	00:05:18	-00:00:27	-7.8%	✓
	B - SB	7.001	7.001	00:05:49	00:05:18	-00:0031	-8.8%	✓
7	A - NB	9.768	9.768	00:07:28	00:07:12	00:00:16	-3.6%	✓
	B - SB	9.768	9.768	00:07:13	00:07:25	00:00:12	2.7%	✓
8	A - NB	18.845	18.848	00:11:21	00:10:34	-00:00:47	-6.9%	✓
	B - SB	18.847	18.850	00:11:20	00:11:04	-00:00:16	-2.4%	✓

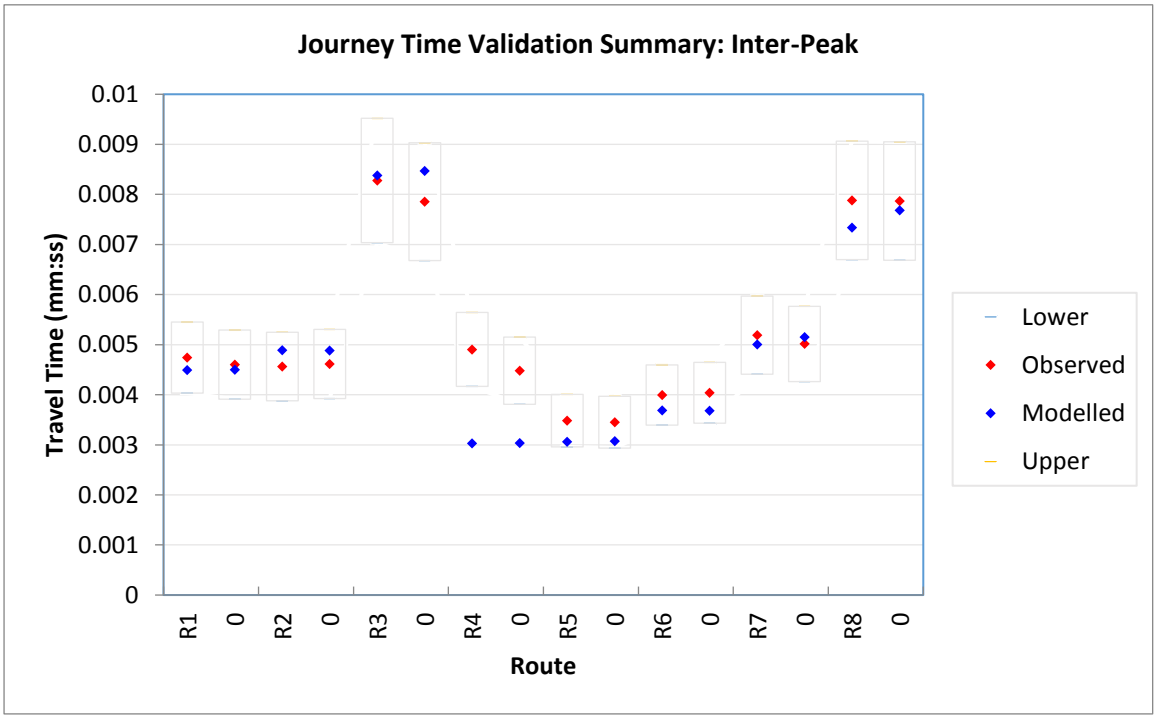


Table 12 PM Peak Journey Time Data

Route	Direction	Distance (km)		Journey Time (hh:mm:ss)				
		Observed	Modelled	Observed	Modelled	Diff	%Diff	WebTAG
1	A - NB	10.105	10.105	00:06:32	00:06:32	00:00:00	0.0%	✓
	B - SB	10.113	10.113	00:06:29	00:06:33	00:00:04	1.0%	✓
2	A - NB	8.761	8.761	00:06:21	00:07:02	00:00:41	10.8%	✓
	B - SB	8.761	8.761	00:06:22	00:07:03	00:00:41	10.6%	✓
3	A - NB	12.754	12.754	00:11:21	00:12:10	00:00:49	7.3%	✓
	B - SB	12.758	12.758	00:11:53	00:12:17	00:00:24	3.4%	✓
4	A - NB	5.891	5.891	00:07:36	00:04:25	-00:03:11	-41.9%	×
	B - SB	5.891	5.891	00:06:15	00:04:22	-00:01:52	-30.0%	×
5	A - NB	6.187	6.187	00:05:17	00:04:35	-00:00:43	-13.5%	✓
	B - SB	6.156	6.156	00:05:07	00:04:49	-00:00:18	-5.8%	✓
6	A - NB	7.001	7.001	00:05:24	00:05:27	00:00:02	0.7%	✓
	B - SB	7.001	7.001	00:05:42	00:05:21	-00:00:21	-6.3%	✓
7	A - NB	9.768	9.768	00:07:21	00:08:19	00:00:58	13.0%	✓
	B - SB	9.768	9.768	00:07:35	00:07:50	00:00:14	3.1%	✓
8	A - NB	18.845	18.848	00:10:52	00:10:43	-00:00:08	-1.3%	✓
	B - SB	18.847	18.850	00:11:05	00:11:09	00:00:04	0.6%	✓

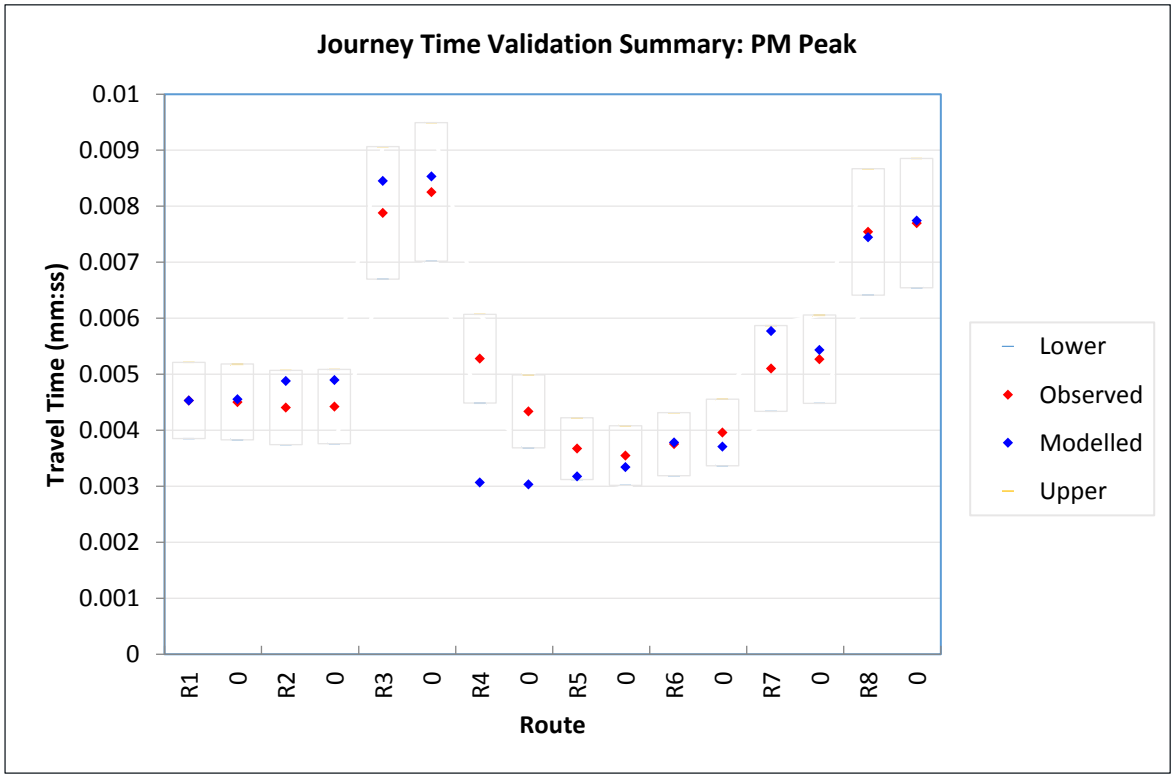


Table 13 - Total Journey Time Route Performance

Journey times	All Routes		
	Total	**Pass**	**% Pass**
AM	16	14	88
IP	16	14	88
PM	16	14	88

APPENDIX B: UNCERTAINTY LOG

HE551459-WSP-GEN-M2F-TN-TP-0042– STAGE 3 UNCERTAINTY LOG

Project:	A1 in Northumberland	**Date:**	13th April 2018
		TN Reference:	TN42
Subject:	Stage 3 Uncertainty Log		
Author:	Abdul Ali	**Project Reference:**	62240303-014
Reviewer:	Paul Smith		

1 INTRODUCTION

WSP has been appointed by Highways England to update the existing A1 in Northumberland model to provide updated and robust forecasts for the proposed A1 Morpeth to Felton dualling scheme.

This technical note outlines the methodology used to derive the Uncertainty Log for future traffic movements within the study area to feed into the demand forecasting process. The methodology used to derive the uncertainty log has been based on the guidance from WebTAG Unit M4, and also makes use of the updated forecasting guidance issued by the Highways England Transport Planning Group (TPG) on 17 January 2018 with regards to the inclusion of RIS schemes.

2 PCF STAGE 2 UNCERTAINTY LOG

During Stage 2, Jacobs developed an uncertainty log which included future residential and employment developments, and highway schemes, only within Northumberland. Future development information was obtained from Northumberland County Council and Northumberland National Park Authority. As it was not practical to consider every potential development within the area, developments only over a minimum threshold were selected as follows:

- Residential
    - 200 dwellings
- Employment
    - B1 'Office Development' – 10,000m^2 GFA (1 Hectare);
    - B2 'Industrial Estate' – 1,500m^2 GFA;
    - B8 'Warehosuing' – 5,000m^2 GFA
    - Other - >100 trips

Using the above thresholds, a total of 28 housing developments were identified, along with employment land across 26 sites.

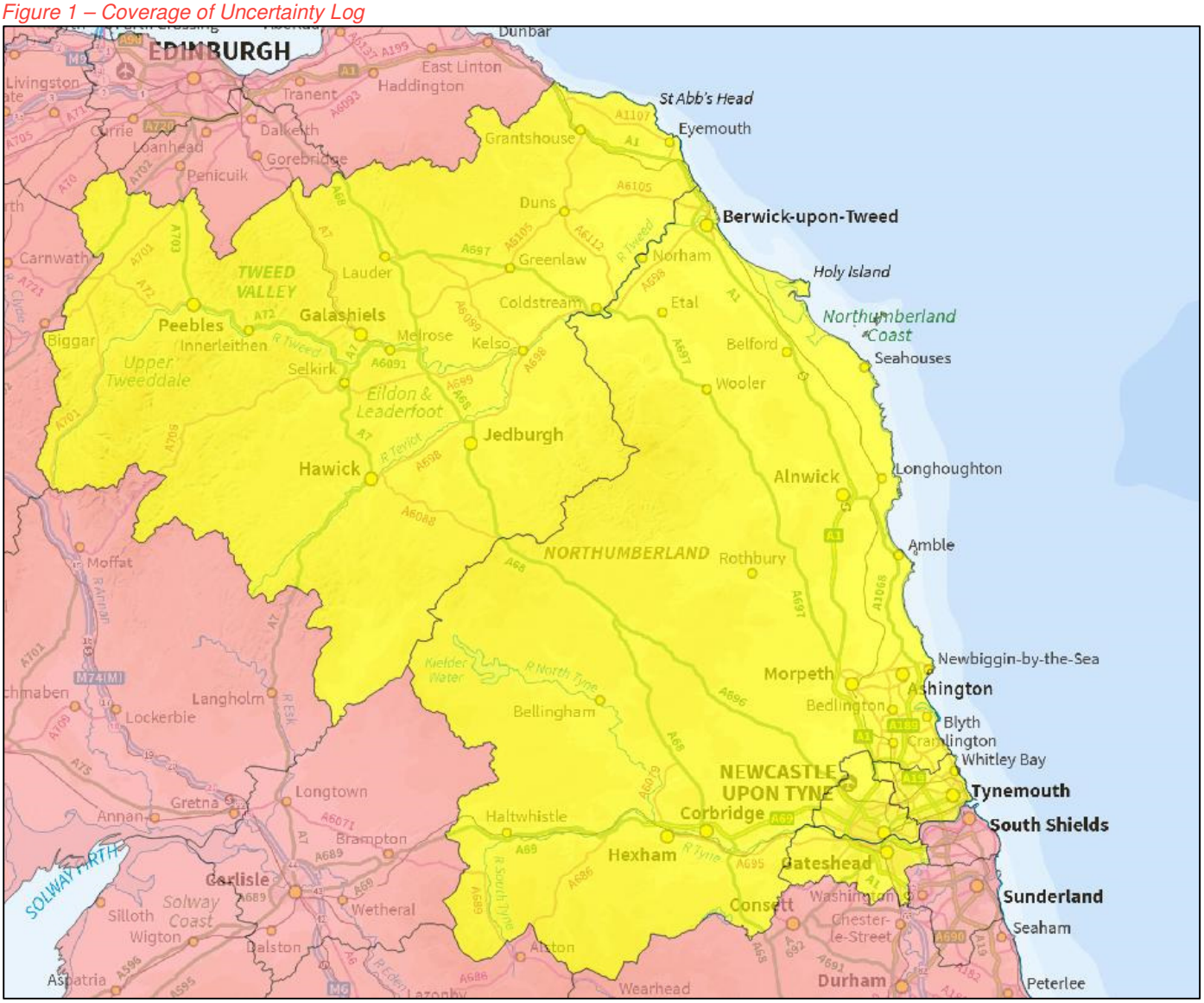
3 SCOPE OF STAGE 3 UNCERTAINTY LOG

In order to develop more robust forecasts, the Stage 3 uncertainty log has identified developments coming forward not just in the detailed modelled area in Northumberland, but also the surrounding districts adjacent to the A1. Future development information has been obtained for the following local authorities:

- Northumberland County;
- Northumberland National Park Authority;
- Scottish Borders Council;
- North Tyneside Council;
- Newcastle City Council;
- Gateshead Council.

The coverage of the Stage 3 uncertainty log is presented in Figure 1.

Figure 1 – Coverage of Uncertainty Log



4 FORECAST YEARS

The scenario years for the uncertainty log and the forecast modelling are as follows:

- 2023 – Opening Year;
- 2038 – Design Year;
- 2051 – TEMPro further forecast year.

5 UNCERTAINTY LOG METHODOLOGY

Likely future developments identified within each of the districts identified within Section 3 were categorised in accordance with the uncertainty log classifications set out in TAG Unit M4 (Table A2) and reproduced in Figure 2. Both the Residential and Employment developments have thus been classified as 'near certain', 'more than likely', 'reasonably foreseeable' and 'hypothetical.'

Figure 2 – WebTAG Uncertainty Log Classifications

Table A2 Classification of Future Inputs

Probability of the Input	Status	Core Scenario Assumption
Near certain: The outcome will happen or there is a high probability that it will happen.	Intent announced by proponent to regulatory agencies. Approved development proposals. Projects under construction.	This should form part of the core scenario
More than likely: The outcome is likely to happen but there is some uncertainty.	Submission of planning or consent application imminent. Development application within the consent process.	This could form part of the core scenario [Refer to Section Developing the Core Scenario]
Reasonably foreseeable: The outcome may happen, but there is significant uncertainty	Identified within a development plan. Not directly associated with the transport strategy/scheme, but may occur if the strategy/scheme is implemented. Development conditional upon the transport strategy/scheme proceeding. Or, a committed policy goal, subject to tests (e.g. of deliverability) whose outcomes are subject to significant uncertainty	These should be excluded from the core scenario but may form part of the alternative scenarios
Hypothetical: There is considerable uncertainty whether the outcome will ever happen.	Conjecture based upon currently available information. Discussed on a conceptual basis. One of a number of possible inputs in an initial consultation process. Or, a policy aspiration	These should be excluded from the core scenario but may form part of the alternative scenarios

It is not practical to consider every potential development within the defined area and TAG Unit M4 does not require this. Many developments will be too minor to have any bearing on the forecasts and a judgement is required as to what should and should not be included within the uncertainty log. Therefore minimum thresholds were used to select which residential and employment developments to include in the uncertainty log as are presented in Table 1.

For developments outside of Northumberland, only those developments within 2km of the A1 (and also A19 and A1068 in the case of North Tyneside) and with a minimum of 200 dwellings or 2 hectares of employment land were selected. This was consistent with the uncertainty log developed for the A1 Birtley to Coal House and A1 Scotswood to North Brunton schemes. Within Northumberland, the threshold criteria was loosened (as it was felt that developments further away would also be affected by the A1iN widening schemes) to include developments within 10km of the A1 and with a minimum of 150 dwellings or 1 hectare of employment land. For those developments more

than 10km away from the A1 but which were deemed strategically significant to Northumberland, an alternative criteria was used with a minimum of 500 residential dwellings and 5 hectares of employment land.

Table 1 – Uncertainty Log Thresholds

Authority	Maximum Distance (km)	Minimum Residential Dwellings	Minimum Employment Land (Ha)
Newcastle/ Gateshead	2km from A1	1,000	2
North Tyneside	2km from A1, A19 or A1068	1,000	2
Scottish Borders	2km from A1	1,000	2
Northumberland National Park	Within boundary	150	1
Northumberland – Criteria 1	10km from A1	150	1
Northumberland – Criteria 2	Elsewhere in county	500	5

6 RESIDENTIAL DEVELOPMENT

Northumberland County Council

The following documents were used to obtain details on future residential developments within Northumberland:

- Northumberland Strategic Housing Land Availability Assessment (Feb 17)
    - Appendix 7 – Deliverable and Developable Sites

Using the thresholds specified in Table 1, 45 residential sites were identified, and are presented in Appendix A.

Northumberland National Park Authority

The following document was used to obtain details on future residential developments within Northumberland National Park:

- Northumberland National Park – Strategic Housing Market Assessment (2017)

Northumberland National Park Authority has historically seen very low levels of residential development, with 62 dwellings built between 2002-15, an average of 4.8 dwellings per year. Therefore no future developments were identified which met the threshold criteria in Table 1.

Scottish Borders Council

The following document was used to obtain details on future residential developments within the Sottish Borders:

- Scottish Borders Council Local Development Plan (2016)

From a total of 146 sites allocated within the LDP, no sites met the threshold criteria specified in Table 1.

North Tyneside Council

The following documents were used to obtain details on future residential developments within North Tyneside:

- North Tyneside Local Plan (July 2017)
    - Supporting Statement 9: Housing Sites Schedule

Using the thresholds specified in Table 1, only 2 residential sites were identified, and are presented in Appendix A.

Newcastle County Council / Gateshead Council

The A1 Birtley to Coal House (A1 B2C) uncertainty log includes future developments within Newcastle and Gateshead that are significant to the scheme. A copy of the uncertainty log was obtained for this study. From the residential sites, only 5 sites met the threshold criteria specified in Table 1, and are presented in Appendix A.

7 EMPLOYMENT DEVELOPMENT

Northumberland County Council

The following document was used to obtain details on future employment development sites (including developments that had received planning permission but not yet built) within Northumberland:

- Northumberland Employment Site Schedule 2016-17

Using the thresholds specified in Table 1, 41 residential sites were identified, and are presented in Appendix B.

Northumberland National Park Authority

The following document was used to obtain details on future employment developments within Northumberland National Park:

- Northumberland National Park – Housing and Economic Land Availability Assessment – June 2017

No proposed employment developments were identified which met the threshold criteria in Table 1.

Scottish Borders Council

The following document was used to obtain details on future employment developments within the Sottish Borders:

- Scottish Borders Council Local Development Plan (2016)

From a total of 84 sites allocated within the LDP, only 6 sites met the threshold criteria specified in Table 1, and are presented in Appendix B.

North Tyneside Council

The following documents were used to obtain details on future employment developments within North Tyneside:

- North Tyneside Local Plan (July 2017)
    - Supporting Statement 8: Employment Sites Schedule

Using the thresholds specified in Table 1, 7 employment land sites were identified, and are presented in Appendix B.

Newcastle County Council / Gateshead Council

As with the future residential sites, the A1 B2C uncertainty log also includes future employment developments within Newcastle and Gateshead. From the employment sites identified, 4 sites met the threshold criteria specified in Table 1 and are presented in Appendix B.

8 HIGHWAY SCHEMES

The uncertainty log also includes ‘significant’ highway schemes that have been developed since 2015 (which is the Base Year of the A1iN SATURN model), and proposed highway schemes upto 2038 (A1iN scheme design year).

As mentioned in Section 1, Highways England Transport Planning Group issued updated forecasting guidance on 17 January 2018 with regards to the inclusion of RIS schemes. It stated that published RIS1 schemes only (and not RIS2) should be considered ‘more than likely’ and included in the Core scenario. Therefore, a number of Highways England RIS1 schemes in the North East were categorised as ‘more than likely’ and included in the uncertainty log. These schemes included:

- A1 Coal House to Metro Centre (open)
- A1 Scotswood to North Brunton
- A1 Birtley to Coal House
- A19 Coast Road
- A19 Testos
- A19 Norton to Wynyard

In addition, a number of 'significant' local schemes within the Northumberland/North East were also included including:

- Morpeth Northern Bypass (open)
- Reopening of B6342 bridge over River Coquet in Rothbury (open)
- Blyth Relief Road
- A1 North Brunton roundabout improvements (construction complete)

All the above schemes will form part of the forecast Do-Minimum networks.

Both the A1iN widening schemes (A1 Morpeth to Felton and A1 Alnwick to Ellingham), were also included in the uncertainty log and form part of the forecast Do-Something networks. A summary of all highway schemes included in the uncertainty log is provided in Appendix C.

9 MODELLING SCENARIOS

A total of three forecast scenario assessments will be included in the forecast modelling as set out in WebTAG Unit M4. These include:

- **Scenario 1 – Core Scenario** – Near certain and more than likely development with TEMPro Growth. Development tested in this scenario would include 'near certain' and 'more than likely' developments identified in the sections above.
- **Scenario 2 - High Growth Scenario (Optimistic)** –Core Scenario with a proportion of the base year demand added, equal to $p*\sqrt{n}$ where p is the mode parameter and n is the number of years after the base year.
- **Scenario 3 – Low Growth Scenario (Pessimistic)** – Core Scenario with a proportion of the base year demand subtracted, equal to $p*\sqrt{n}$ where p is the mode parameter and n is the number of years after the base

The three scenarios are summarised below in Table 2. Therefore, the developments and highway schemes categorised as 'near certain', 'more than likely' and 'reasonably foreseeable' within the uncertainty log, will be included within the core, low or high growth scenarios.

Table 2 – Low, Core & High Scenario Matrix

Scenario	Supply	Demand	TEMPro Constraint
Core	Near Certain and More Than Likely Schemes	Near Certain and More Than Likely Developments	Standard TEMPro
High Growth (Optimistic)	Near Certain, More Than Likely and Reasonably Foreseeable Schemes	Near Certain, More Than Likely and Reasonably Foreseeable Developments	High Growth TEMPro
Low Growth (Pessimistic)	Near Certain and More Than Likely Schemes	Near Certain and More Than Likely Developments	Low Growth TEMPro

APPENDIX A: RESIDENTIAL SITES

Site Ref	Development	Location	Dwellings	Probability
AOC2	MetroGreen	Newcastle	1859	RF
5203, AOC1	Newburn, Riverside	Newcastle	1000	RF
3106	Scotswood Development Area (Phases 2 to 5)	Newcastle	1422	NC
2644	Newcastle Great Park Cell A (South of Coach Lane)	Newcastle	1200	RF
5143	Upper Callerton	Newcastle	1200	RF
22	Killingworth Moor (strategic site)	North Tyneside	2000	RF
35	Murton (strategic site)	North Tyneside	3600	RF
284	Greensfield Farm, S of Fairfield	Alnwick	294	NC
350	W of A1068 & S of Marks Bridge	Amble	260	NC
3007	Loansdean (land adj)	Morpeth	200	NC
3050	Northgate Hospital (south)	Morpeth	218	NC
3079	Northgate Hospital (North), Fairmoor	Morpeth	225	NC
3188	Stobhill (land at)	Morpeth	396	NC
3318	St Mary's Hospital, Green Lane	Delivery Area Central	270	NC
3397	St Georges Hospital	Morpeth	375	NC
3427	Police HQ, Smallburn	Ponteland	263	NC
4573	Former Bates Colliery Site (Phase/Area 1)	Blyth	257	NC
4633	Land at Newsham	Blyth	349	NC
4694	Land at South West Newsham	Blyth	275	NC
4701	Land North of Station Road	Cramlington	480	NC
4703A	Land at South West Sector	Cramlington	250	NC
4755	Wellesley Childrens Home, Links Road	Blyth	395	NC
4760	Land at West Blyth (accessed from Chase Farm)	Blyth	713	NC
5118	Plot B, North Seaton Ind Est	Ashington	240	NC
6775	Land west of Bedlington	Bedlington	132	NC
6778	Land South of B1326 at East Cramlington	Cramlington	192	NC
1	South-East of Coquet High School	Amble	500	NC
22	Land NW of Hauxley Moorhouse Farm	Amble	166	MTL
38	Land East of Allerburn Lea	Alnwick	270	RF
1008	Land west of Etal Road at Prior Hill House, East Ord	Berwick upon Tweed	150	RF
1067	Land to rear of Roddam & Callers Court, Hiveacres, East Ord	Berwick upon Tweed	150	RF
3013	Lynemouth Road (Land to rear)	Delivery Area South East	172	RF
3073	Lancaster Park (South West)	Morpeth	150	NC
3157	Hadston Farm (The Steadings) (land at)	Delivery Area South East	180	RF
4627	New Hartley Area 1, Land to the East of Seaburn Avenue	Seaton Delaval	212	NC
5015	Land South of Scotland Gate	Guidepost	150	RF
5016	Land north of Scotland Gate	Guidepost	327	NC
5098	Vald Birn UK Ltd, C403 South View to Unity Terrace	Bedlington	180	RF
5123	Land South of High Street, Whinney Hill Farm	Guidepost	250	RF
5156	Land to the North, Grange Park Avenue	Bedlington	200	RF
5157	Land to the South, Underhill Drive	Guidepost	220	RF
5158	Land to the South of Glebe Farm and the West of Choppington Roa	Bedlington	200	NC
6755	Land South of Morpeth Road Ashington	Ashington	270	RF
6774	Land west of Glebe Farm, Bedlington	Bedlington	180	NC
6823	Land to the West of Gloster Park Amble	Amble	181	RF
1059	West and South of the Meadows	Belford & Seahouses	197	RF
1187	Land west of Tweedmouth Cemetery, Tweedmouth	Berwick upon Tweed	150	RF
4622	Land at Newsham, South of Blyth Golf Course	Blyth	412	RF
3074	St. George's Hospital (land north)	Morpeth	875	NC
4652	South West Sector Application Site	Cramlington	706	NC
4703B	Land at South West Sector	Cramlington	1600	NC
5078	Land to the West, A189 between N.Seaton Rd and Woodhorn Rou	Ashington	600	NC

APPENDIX B: EMPLOYMENT SITES

Site Ref	Development	Location	Land Use	Land (HA)	Probability
E115	Princesway North	Gateshead	B1, B2, B8, B1a	4.41	NC
AOC2	Metrogreen	Gateshead	B1a	3.75	RF
G49	Site of Former Huwoods Factory, Kingsway North	Gateshead	B1, B2, B8, B1a	2.87	NC
5321	Kingfisher Boulevard North, Newburn Riverside	Newcastle	B2/B8	2.54	NC
E003	Wheetslade	North Tyneside	B1/B2/B8	31.86	RF
E019	A19 Corridor Killingworth Moor	North Tyneside	B1/B2/B8	17.00	RF
E021	Cobalt Business Park	North Tyneside	B1/B2/B8	6.25	RF
E029	Tyne Tunnel Trading Estate	North Tyneside	B1/B2/B8	19.48	RF
E030	Brewers Lane	North Tyneside	B1/B2/B8	2.67	RF
E032	East Howdon	North Tyneside	B1/B2/B8	3.10	RF
E050	Esso	North Tyneside	B1/B2/B8	20.85	RF
zEL6	Hawk's Ness	Scottish Borders	B2,B8	2.4	RF
BEYEM001	Gunsgreenhill	Scottish Borders	B2,B8	6.3	RF
zEL47	Acredale Industrial Estate	Scottish Borders	B2,B8	8.5	RF
zEL63	Eyemouth Industrial Estate	Scottish Borders	B2,B8	3.5	RF
MEYEM001	Gunsgreen Mixed Use	Scottish Borders	B1,B2,B8	6.1	RF
MREST001	Auction Mart	Scottish Borders	B1,B2,B8	4.0	RF
C10	Stannington - Whitehouse Business Centre	Northumberland	B1,B2,B8	1.01	RF
C11	Morpeth - Fairmoor (Northgate)	Northumberland	B1,B2,B8	1.86	RF
N10	Swarland - Kitswell Dene	Northumberland	B1,B2,B8	3.96	RF
N14	Alnwick - West Cawledge	Northumberland	B1,B2	2.88	RF
N15	Alnwick - Lionheart Enterprise Park Phase 2	Northumberland	B1,B8	1.71	RF
N16	Alnwick - Greensfield Moor	Northumberland	B1	2.21	RF
N21	Berwick - Tweedside	Northumberland	B8	1.61	RF
N31	Berwick - Spittal Point	Northumberland	B1,B2,B8	2.98	RF
SE03	Blyth - Riverside Business Park (Cowley Road)	Northumberland	B1	4.24	RF
SE14	Seghill	Northumberland	B1,B2,B8	2.51	RF
SE19	Cramlington - Crosland Park	Northumberland	B1,B2	3.06	RF
SE21	Cramlington - South Nelson	Northumberland	B1	2.69	RF
SE24	Hadston	Northumberland	B1,B2,B8	1.59	RF
SE36	Ashington - Wansbeck Business Park	Northumberland	B1,B2	4.21	RF
SE39	Cambois - West Sleekburn Industrial Estate	Northumberland	B2	1.72	RF
C17	Morpeth - Adjacent to A1 at Fairmoor	Northumberland	B1,B2,B8	8.67	RF
C24	Prudhoe - Low Prudhoe	Northumberland	B1,B2,B8	5.49	RF
C34	Newlands - Marley Tile Co	Northumberland	B1,B2,B8	9.93	RF
N29	Berwick - Ramparts Business Park	Northumberland	B1,B2	6.15	RF
N30	Berwick - NW of A698 Ord Road	Northumberland	B1,B2,B8	8.44	RF
SE01	Amble - Coquet Enterprise Park	Northumberland	B1,B2,B8	9.78	RF
SE04	Blyth - Riverside Business Park (Coniston Road)	Northumberland	B2	6.48	RF
SE08	Cramlington - Bassington	Northumberland	B2	6.40	RF
SE10	Cramlington - Northumberland Business Park	Northumberland	B1,B2,B8	14.62	RF
SE15	Blyth - Bates	Northumberland	B1,B2	6.98	RF
SE17	Cramlington - Nelson Park West	Northumberland	B1,B2	6.19	RF
SE22	Cramlington - SW Sector off Fisher Lane	Northumberland	B1,B2,B8	21.44	RF
SE23	Cramlington - West Hartford Farm	Northumberland	B2	32.37	RF
SE26	Ellington - Former Colliery	Northumberland	B2	7.73	RF
SE28	Ashington - North Seaton Industrial Estate	Northumberland	B1,B2,B8	6.40	RF
SE33	Cambois - Zone of Economic Opportunity	Northumberland	B1,B2,B8	8.68	RF
SE38	Ashington - Ashwood Business Park	Northumberland	B1,B2,B8	16.13	RF
14/03502/FUL	Coastal Grains - New Silos	Northumberland	B2,B8	1.16	NC
12/00915/FUL	Land East Of Egger Anick, Grange Road, Hexham	Northumberland	B1,B2	7.66	NC
10/S/00247/VARYCO	Northumberland Business Park, Broad Law, Annitsford	Northumberland	B1	7.63	NC
B/08/00206/REM	Land West Of Apex Business Village, Broad Law, Annitsford	Northumberland	B1	3.78	NC
14/02914/FUL	Procter And Gamble, Avenue Road, Seaton Delaval	Northumberland	B2	1.15	NC
14/02174/VARYCO	Land North East Of Enterprise Park, Crossland Park, Cramlington	Northumberland	B1,B2,B8	1.19	NC
07/00620/OUT	Land East Of Enterprise Court, Crossland Park, Cramlington	Northumberland	B2,B8	1.13	NC
16/00299/FUL	Plot 3, Baker Road, Nelson Park, West Cramlington	Northumberland	B1,B2,B8	1.02	NC
16/02082/OUT	Land South Of Regents Drive, Prudhoe	Northumberland	A1	4.92	NC

APPENDIX C: HIGHWAY SCHEMES

LA	Improvement Scheme	Completion	Probability
Highways England	A19/ A1058 Coast Road roundabout	2019	NC
Highways England	A19 Testos/ Downhill Lane roundabout	2021	NC
Highways England	A1 Scotswood to North Brunton	2022	NC
Highways England	A1 Birtley to Coal House widening	2023	NC
Highways England	A19 Norton to Wynyard	2022	NC
Highways England	A1 Coal House to Metro Centre	2016	OPEN
Newcastle	A1 North Brunton Interchange improvements	2020	MTL
Northumberland	Morpeth Northern Bypass	2017	OPEN
Northumberland	Reopening of B6342 bridge over River Coquet (Rothbury)	2017	OPEN
Northumberland	Blyth Relief Road	2021	MTL
Northumberland	A1 Morpeth to Felton widening scheme (M2F)	2023	NC
Northumberland	A1 Alnwick to Ellingham widening scheme (A2E)	2023	NC

APPENDIX C: WIDER IMPACTS IN TRANSPORT APPRAISAL (WITA) TOOL

HE551459-WSP-GEN-M2F-TN-TP-0049– STAGE 3 COBALT BENEFITS

Project:	A1 'Morpeth to Felton' and 'Alnwick to Ellingham' Dualling	**Date:**	23rd July 2018
		TN Reference:	TN50
Subject:	Stage 3 WITA Benefits		
Author:	Ben Hope	**Project Reference:**	62240303-014
Reviewer:	Paul Smith		

1 INTRODUCTION

WSP has been appointed by Highways England to update the existing A1 in Northumberland model to provide current and robust forecasts for the proposed A1 Alnwick to Ellingham dualling scheme. As part of the economic assessment of the schemes, an analysis of the wider economic impacts benefits has been undertaken. The analysis has been undertaken using WSP's Wider Impacts in Transport Appraisal (WITA) tool. This technical note provides an overview of the Stage 3 WITA assessment for the scheme.

2 WIDER IMPACTS IN TRANSPORT APPRAISAL

The Department for Transport (DfT) defines "wider impacts" as the economic impacts of transport schemes that are additional to the transport user benefits. Transport schemes are likely to have impacts in markets other than transport (such as the labour market, product market and land market). These impacts can be large and form an important element of the overall appraisal of a transport scheme. The types of Wider Impacts DfT includes in transport appraisals are:

- **WI1 – Agglomeration**

  "Agglomeration" refers to the concentration of economic activity over an area. Transport can alter the accessibility of firms in an area to other firms and works, thereby affecting the level of agglomeration. Businesses derive benefits from being located close to one another and being located in large labour markets. Transport investment can bring firms closer together and to their labour markets, thereby generating an increase in labour productivity beyond that would be expected from the direct user benefits alone.

- **WI2 – Output change in imperfectly competitive markets**

  A reduction in transport costs (to business and/or freight) allows firms to profitably increase output of the goods or services that require use of transport in their production. A transport intervention that leads to increased output of goods and services will deliver a welfare gain as consumers' willingness to pay for the increased output will exceed the cost of producing it.

- **WI3 – Tax revenues arising from labour market impacts (from labour supply impacts and moves to more or less productive jobs)**

  Changes in transport provision and costs can affect labour market decisions. Two main types of labour market impacts have been identified. These are referred to as "labour supply" impacts, and "moves to more or less productive jobs" impacts.

Transport costs are likely to affect the overall costs and benefits to an individual from working. In deciding whether or not to work, an individual will weigh the costs associated with work, including travel costs, against the wage rate of the job travelled to. A change in transport costs alters the net financial return to individuals from employment. This is likely to affect the incentives of individuals to work, and therefore the numbers choosing to work and the overall amount of labour supplied in the economy.

Transport can also affect the decisions made by firms and workers about where to locate and work. Employment growth or decline in different areas is likely to have implications for productivity, as workers are often more or less productive in different locations.

Some of the economic effects of these impacts are captured in commuter user benefits. However, commuter user benefits do not include the change in tax revenues received by the government. Changes in tax revenues are excluded from commuter user benefits because commuters value benefits in terms of post-tax incomes.

3 METHODOLOGY

The Wider Impacts for the scheme have been calculated using WSP's Wider Impacts in Transport Appraisal (WITA) tool. The spreadsheet tool emulates the methodology set out in WebTAG A2.1 and has previously been accepted for use by Highways England, Transport for the North and the DfT for assessment of wider impact benefits for the Trans-Pennine Tunnel and the M60 North West Quadrant. The WITA tool assesses all three types of Wider Impacts discussed above.

Data Requirements

The data required for Wider Impacts analysis falls into two categories:

- **Economic data**: this includes productivity of labour, employment numbers in an area, agglomeration elasticities representing productivity impacts from changes in level of effective density
- **Transport model data**: this includes generalised cost and travel demand information for different users with and without the scheme being appraised

The inputs required for each component of the Wider Impacts analysis are:

WI1 – Agglomeration

- Average daily generalised cost of business journeys and commuting journeys for each origin/destination journey pair, with and without scheme for each modelled year by Local Authority District (LAD)
- GDP per worker by LAD
- Employment level forecasts broken down by construction, consumer services, manufacturing, producer services and others by LAD

WI2 – Output change in imperfectly competitive markets

- Total user benefits for business journeys. This is estimated to be 10% of business user benefits calculated using Transport User Benefits Appraisal (TUBA)

WI3 – Tax revenues arising from labour market impacts (Labour Market)

- Change in average generalised cost for workers commuting from each origin (home) zone to each destination (employment) zone by LAD
- Average workplace earnings by LAD
- Average National GDP per worker by forecast year

- Index of Productivity per worker by LAD

WI4 – Tax revenues arising from labour market impacts (Move to More or Less Productive Jobs)

- Not assessed. WebTAG A2.1 advises that the impact on location on employment should be calculated only when a Land Use Transport Interaction (LUTI) model is used to forecast employment and residential location consequences of the scheme

Definition of Assessment Area

The WITA study area includes all zones in the following Local Area Districts (LADs):

- Northumberland
- North Tyneside
- Newcastle

The above study area is considered appropriate as it captures the main Travel to Work destinations of the resident population of Northumberland. WebTAG Unit A2.1 (para 6.1.5) warns against considering too small an area as it is likely to exaggerate the impact of the scheme appraised. The study area is consistent with that used at Stage 2.

Economic Data

The economic and employment data were obtained from the latest WebTAG Wider Impacts dataset v2.5, released in July 2013. These data are available by Local Authority Districts (LAD) from 2016 to 2061 in five years intervals. The values for the relevant LADs are presented in Appendix A.

The assessment also requires the following information from the WebTAG data book:

- Value of Time (VoT) for business users
- Forecast growth in VoT
- Discount rates
- Reliability parameters
- Generalised cost parameters
- Vehicle occupancies
- Proportion of travel in work and non-work time
- Fuel Costs and VAT rates
- Vehicle operating cost parameters

Values from the above were obtained from the latest WebTAG data book (v1.10.1 released in May 2018).

Scheme Data

Scheme data is required in a similar format to the TUBA input file. To be consistent with the TUBA benefits, calculations of Wider Impact benefits adopts the same parameters as below:

- Opening Year: 2023
- Modelled Years: 2023, 2038 and 2051
- Horizon Year: 2082 (60 years from the Opening year)

The modelled time periods are the same as used in the TUBA as summarised below:

- 08:00-09:00 (AM peak)
- 10:00-16:00 (Inter peak)

- 16:00-17:00 (PM peak)

The above time periods were expanded to represent a full weekday using the same annualisation factors used in the TUBA. These factors are detailed in TN-48 'TUBA Benefits'.

The Wider Impacts assessment only applies to car commuting and business trips. Freight has not been included as it is not well known how changes in generalised costs for freight affect changes in destination choice, time of day or mode (WebTAG A2.1, Dec 2014, para 4.1.4). The modes used in the WITA calculations are summarised in Table 1.

Table 1 WITA User Classes

Model User Class	TUBA User Class	Veh / submode	Purpose
1	2	Car	Commuting
2	1	Car	Business

The assessment also requires a 24-hour commute Production-Attraction (PA) matrix indicating level of trips between households and employment for each assessment year in the Do-Something scenario. This was derived from the car-commute Origin-Destination (OD) matrices and the average proportion of trips ending and originating from households obtained from the National Travel Survey data (2010 – 2014) for the Northeast (see Table 2). The process involves:

- Applying the proportions in Table 2 to the OD matrices to obtain "From Home" and "To Home" matrices
- Transposing the "To Home" matrices and adding them to the "From Home" matrices to produce PA matrices for the modelled time periods
- Applying relevant hour to time period expansion factors to the PA matrices for each time period
- Sum the PA matrices across all time periods to produce a 24-hour PA matrix and then divide by two to remove double counting of home-employment and employment-home trips

Table 2 North East Proportion of Commute Trips Originating and Ending at Home

Time Period	From Home	To Home
AM	0.86	0.14
IP	0.46	0.54
PM	0.32	0.68

Source: National Travel Survey (2010 - 2014)

Agglomeration Adjustments

The WSP WITA Tool is designed to take account of public transport and walking trips in the calculation of agglomeration benefits even in the event of a unimodal analysis (car) ebing conducted. In this instance changes in public transport and walking trips have not been modelled thus the tool is likely to overestimate the agglomeration benefits. In order to adjust the agglomeration benefits so that dampening effect of a full multimodal analysis are considered the results have been factored using the proportion of business and commute trips undertaken by car to limit impacts. Car trips proportions have been derived from TEMPRO 7.2 for each LAD included in the assessment. The resulting proportions have been applied to the calculated agglomeration benefits for the relevant LAD. The car trip

proportions used are summarised in Table 3. In this way the Northumberland benefits have been reduced to only 79.5% of computed values to account for multimodal effects. This represents a conservative but defensible assumption.

Table 3 Proportion of North East Commute and Business Trips by Car

LAD	From Home
Northumberland	79.5%
Newcastle	65.0%
North Tyneside	73.5%

Source: TEMPRO 7.2

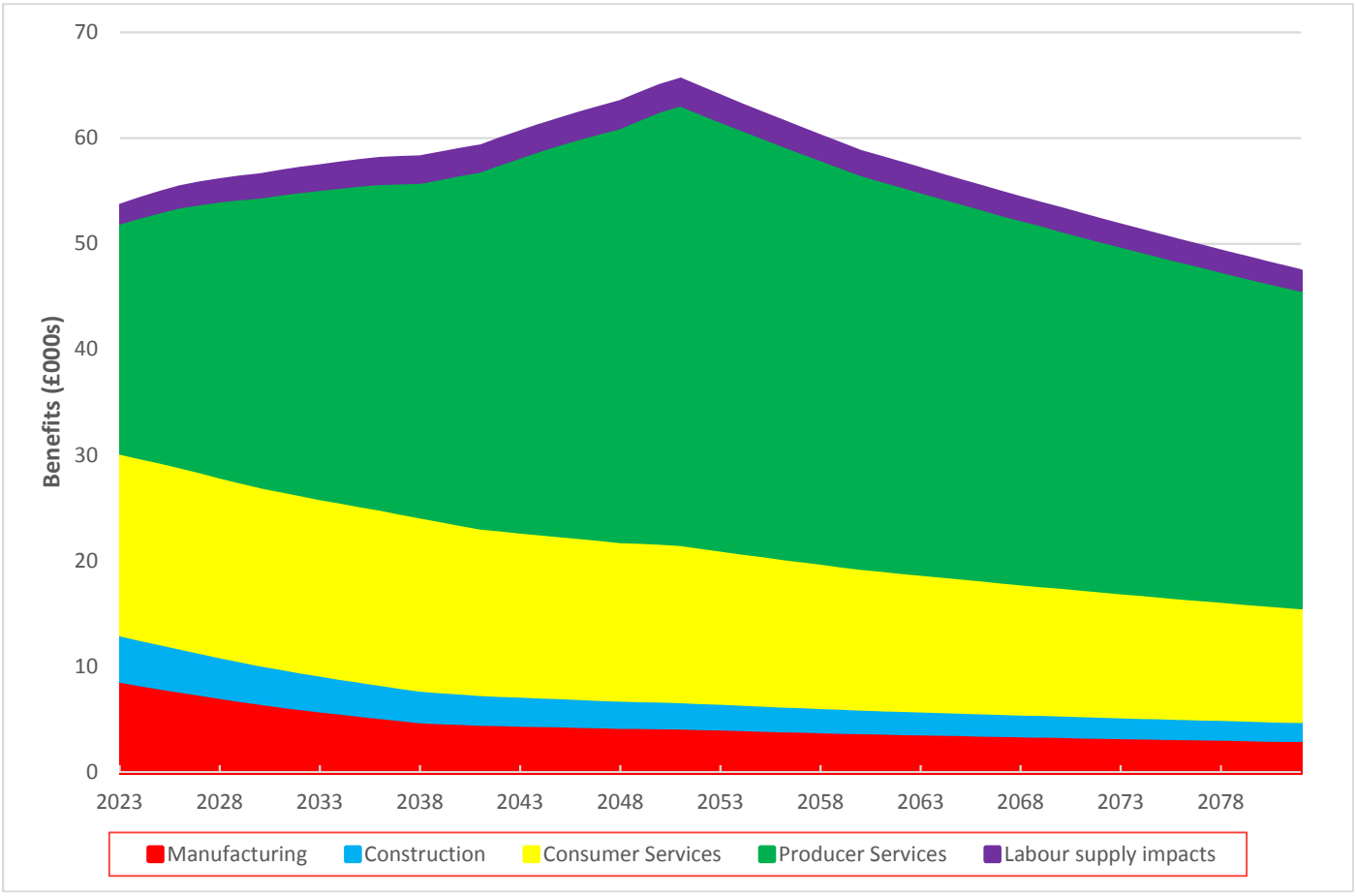
4 WITA RESULTS

- The results of the WITA using the Core Scenario models are summarised in Table 4. The profile of benefits is illustrated in Figure 1. The total Wider Impact benefits for the scheme are in the order of £3.6m.

Table 4 A2E Core WITA Results Summary

Price Base: 2010, discounted to 2010 **Appraisal Period: 60 years** **Unit: £ (000)**				
Wider Impact	**2023**	**2038**	**2051**	**Full Appraisal Period**
Agglomeration				
• Manufacturing	9	5	4	278
• Construction	4	3	2	158
• Consumer Services	17	16	15	858
• Producer Services	22	32	42	2,004
• **Total**	**52**	**56**	**63**	**3,298**
Output in Imperfectly Competitive Markets	-	-	-	187
Labour Supply Impact (No resident relocation)	1	2	2	118
Total	**54**	**58**	**65**	**3,602**

Figure 2 DS3 Core WITA Results Profile



APPENDIX D: TRANSPORT ASSESSMENT SENSITIVITY TECHNICAL NOTE

HE551459-WSP-GEN-M2F-TN-TP-0075– OPENING YEAR 2024 SENSITIVITY TEST

Project:	A1 'Morpeth to Felton' and 'Alnwick to Ellingham' Dualling	**Date:**	22/04/2020
		TN Ref:	74
Subject:	Opening year 2024 Sensitivity Test		
Author:	Arjuna Kulupana	**Project Ref:**	70038286
Reviewed:	Paul Smith		

INTRODUCTION

The A1 in Northumberland transport modelling and appraisal has assumed an opening year for the scheme of 2023. Accordingly, analysis was conducted for the years 2023, 2038 and 2051 and appraisals were undertaken for a 60 year appraisal period from 2023 to 2082.

The actual opening year is now likely to be 2024. It is expected that opening a year later will have a small impact on the overall benefits. A sensitivity test has been undertaken to assess the effect of the opening year change. The sensitivity test includes the following aspects:

- Modelling the Year 2024;
- TUBA user benefits appraisal from 2024 to 2083;
- COBALT accident benefits appraisal from 2024 to 2083;
- WITA appraisal from 2024 to 2083; and
- Journey Time Reliability from 2024 to 2083

The sensitivity tests were undertaken for all 3 scheme variants. The process is described below.

THE MODELLING OF YEAR 2024

The 2024 model demand was created using the same forecasting methodology as used for 2023 and 2038, as described in Technical Note 44 (Forecast Matrix Development). The steps are as follows:

- Estimate 2024 development trips from uncertainty log (interpolate between 2023 and 2038 where applicable)
- Obtain growth factors from 2015 to 2024 from TEMPRO for car background growth
- Combine the development trip growth and TEMPRO background growth applied to the base demand to estimate total 2024 Reference Demand

The Reference Demand is given in **Table 1**.

Table 1: Reference Matrices (RTF 2018)

User Class	AM 2023	AM 2024	change	IP 2023	IP 2024	change	PM 2023	PM 2024	change
Car Commute	19593	19723	0.7%	10276	10334	0.6%	25884	26045	0.6%
Car Business	3950	3978	0.7%	5980	6018	0.6%	6318	6360	0.7%
Car Other	29991	30227	0.8%	46905	47284	0.8%	64775	65286	0.8%
LGV	20064	20285	1.1%	36481	36897	1.1%	15652	15830	1.1%
HGV	10879	10877	0.0%	18193	18186	0.0%	13154	13151	0.0%

The trip totals given in **Table 1** show that, as expected, the 2024 totals are slightly higher than the equivalent 2023 totals.

Variable Demand Modelling was applied to the reference demand

Table 2: VDM Matrices vs Reference Matrices – DM and M2F

Time Period	User Class	Matrix Totals (PCU)			Difference	
		Ref.	DM	M2F	DM – Ref.	M2F – Ref
AM Peak	Car Business	19,723	19,849	19,864	0.6%	0.7%
	Car Commute	3,978	3,978	3,978	0.0%	0.0%
	Car Others	30,227	30,364	30,384	0.5%	0.5%
	LGV	20,285	20,285	20,285	0.0%	0.0%
	HGV	10,877	10,877	10,877	0.0%	0.0%
	Total	85,090	85,353	85,388	0.3%	0.4%
Inter-Peak	Car Business	10,334	10,389	10,394	0.5%	0.6%
	Car Commute	6,018	6,018	6,018	0.0%	0.0%
	Car Others	47,284	47,492	47,507	0.4%	0.5%
	LGV	36,897	36,897	36,897	0.0%	0.0%
	HGV	18,186	18,186	18,186	0.0%	0.0%
	Total	118,719	118,982	119,002	0.2%	0.2%
PM Peak	Car Business	26,045	26,186	26,203	0.5%	0.6%
	Car Commute	6,360	6,360	6,360	0.0%	0.0%
	Car Others	65,286	65,467	65,487	0.3%	0.3%
	LGV	15,830	15,830	15,830	0.0%	0.0%
	HGV	13,151	13,151	13,151	0.0%	0.0%
	Total	126,672	126,994	127,031	0.3%	0.3%

Table 3: VDM Matrices vs Reference Matrices – A2E and M2E

Time Period	User Class	Matrix Totals (PCU)			Difference	
		Ref.	A2E	M2E	A2E – Ref.	M2E – Ref
AM Peak	Car Business	19,723	19,853	19,867	0.7%	0.7%
	Car Commute	3,978	3,978	3,978	0.0%	0.0%
	Car Others	30,227	30,366	30,385	0.5%	0.5%
	LGV	20,285	20,285	20,285	0.0%	0.0%
	HGV	10,877	10,877	10,877	0.0%	0.0%
	Total	85,090	85,359	85,392	0.3%	0.4%
Inter-Peak	Car Business	10,334	10,391	10,396	0.6%	0.6%
	Car Commute	6,018	6,018	6,018	0.0%	0.0%
	Car Others	47,284	47,495	47,510	0.4%	0.5%
	LGV	36,897	36,897	36,897	0.0%	0.0%
	HGV	18,186	18,186	18,186	0.0%	0.0%
	Total	118,719	118,987	119,007	0.2%	0.2%
PM Peak	Car Business	26,045	26,190	26,206	0.6%	0.6%
	Car Commute	6,360	6,360	6,360	0.0%	0.0%
	Car Others	65,286	65,469	65,489	0.3%	0.3%
	LGV	15,830	15,830	15,830	0.0%	0.0%
	HGV	13,151	13,151	13,151	0.0%	0.0%
	Total	126,672	127,000	127,036	0.3%	0.3%

Table 2 and **Table 3** show that the changes in matrix totals due to VDM are confined to the Car Business and Car Other user classes. The changes are small, ranging from 0.2% to 0.7%.

The differences in traffic flow between the year 2024 and 2023 are given in Figure 1 to **Figure 3** for the Do Minimum (LGV and HGV based on RTF 2018).

Figure 1: AM Peak 2024 vs 2023 difference plot – Do Minimum

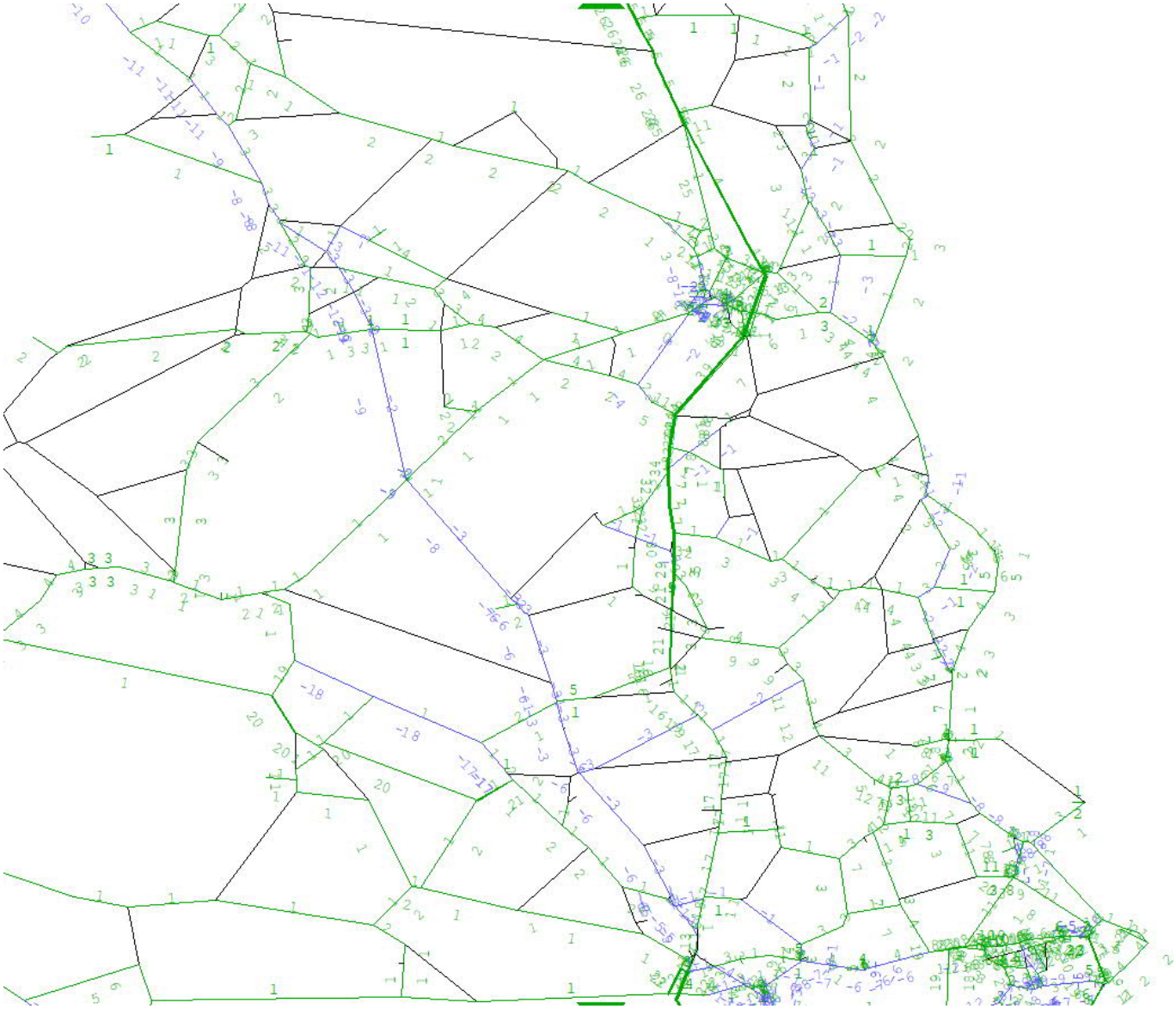


Figure 2: Inter Peak 2024 vs 2023 difference plot – Do Minimum

Figure 3: PM Peak 2024 vs 2023 difference plot – Do Minimum

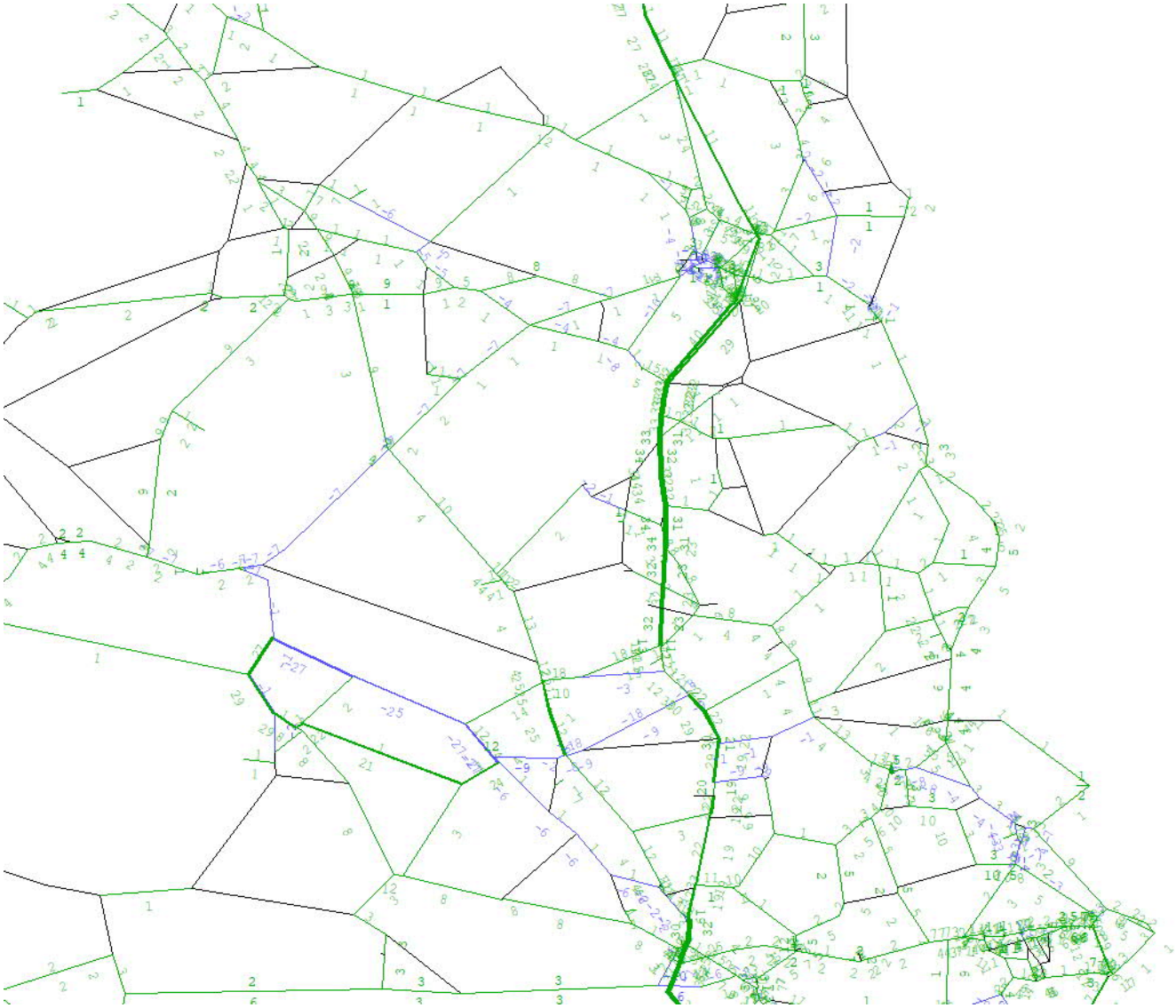


Figure 1 to **Figure 3** above show that the flow differences between 2023 and 2024 are small, ranging from 10 PCU to about 30 PCU per direction on the A1 and less elsewhere on the network.

TUBA

The TUBA appraisal for the 2024 Opening Year utilised the latest version of TUBA, version 1.9.13. The data from model years 2024, 2038 and 2051 were used in the appraisal. The appraisal period was 60 years from 2024 to 2083. The results are compared with the Core assessment benefits and with the existing RTF 2018 sensitivity test in Table 4, Table 5 and Table 6.

Table 4: M2F TUBA Benefits

Benefit Type	2023 Opening – TUBA 1.9.10 – RTF 2015 (£000) A	2023 Opening -TUBA 1.9.13 – RTF 2018 (£000) B	2024 Opening – TUBA 1.9.13 – RTF 2018 (£000) C	% change C vs A	% change C vs B
Time Saving Benefits	129,610	125,487	126,487	-2%	1%
Vehicle Operating Costs	-65,063	-35,193	-37,875	-42%	8%
User Charges	-36	-20	-15	-58%	-25%
Indirect Taxes	39,561	18,937	20,766	-48%	10%
Total	**104,072**	**109,211**	**109,363**	**5%**	**0%**

Table 5: A2E TUBA Benefits

Benefit Type	2023 Opening - TUBA 1.9.10 – RTF 2015 (£000) A	2023 Opening -TUBA 1.9.13 – RTF 2018 (£000) B	2024 Opening -TUBA 1.9.13 – RTF 2018 (£000) C	% change C vs A	% change C vs B
Time Saving Benefits	29,263	29,827	29,174	0%	-2%
Vehicle Operating Costs	-20,173	-10,627	-10,051	-50%	-5%
User Charges	-25	-14	-16	-36%	14%
Indirect Taxes	11,664	5,469	-4,963	-143%	-191%
Total	**20,729**	**24,655**	**24,070**	**16%**	**-2%**

Table 6: M2E TUBA Benefits

Benefit Type	2023 Opening -TUBA 1.9.10 – RTF 2015 (£000) A	2023 Opening -TUBA 1.9.13 – RTF 2018 (£000) B	2024 Opening -TUBA 1.9.13 – RTF 2018 (£000) C	% change C vs A	% change C vs B
Time Saving Benefits	161,902	158,709	160,987	-1%	1%
Vehicle Operating Costs	-84,697	-46,162	-46,323	-45%	0%
User Charges	-49	-24	-20	-59%	-17%
Indirect Taxes	51,226	24,738	24,852	-51%	0%
Total	**128,382**	**137,257**	**139,496**	**9%**	**2%**

The results in Table 4 to Table 6 show that the change in benefits due to the change in Opening Year are small, between 0 and 2%, though the total difference with the Core scenario is larger (due to changes in TUBA version which change the Values of Time/Distance and other parameters and differing versions of the RTF forecasts).

COBALT

An accident benefit assessment, using the COBALT program was undertaken, with an opening year of 2024, and using the model flows from the 2024 SATURN assignments. The results of this assessment are given in Table 7.

Table 7: COBALT benefits

Scheme	2023 Opening – RTF 2015 (£000) A	2023 Opening – RTF 2018 (£000) B	2024 Opening– RTF 2018 (£000) C	% change C vs A	% change C vs B
M2F	30,519	28,574	29,756	-3%	4%
A2E	4,044	3,402	3,370	-17%	-1%
M2E	32,490	29,988	31,156	-4%	4%

The results in Table 7 above show that the change in accidents due to updating the opening year to 2024 is 4% for the M2F and M2E schemes and 1% for the A2E schemes.

WITA

The WITA benefits with a 2024 opening are compared with those for a 2023 opening in Table 8 to Table 10.

Table 8: WITA – M2F Scheme

Benefit Type	2023 Opening – RTF 2015 (£000) A	2023 Opening – RTF 2018 (£000) B	2024 Opening – RTF 2018 (£000) C	% change C vs A	% change C vs B
Agglomeration	19,473	18,670	19,555	0%	5%
Increased Competition	0	0	0	0%	0%
Output Change in imperfectly competitive markets	870	870	946	9%	9%
Tax Revenue from labour market impacts	633	691	621	-2%	-10%
Total	20,975	20,158	21,122	1%	5%

Table 9: WITA – A2E Scheme

Benefit Type	2023 Opening – RTF 2015 (£000) A	2023 Opening – RTF 2018 (£000) B	2024 Opening – RTF 2018 (£000) C	% change C vs A	% change C vs B
Agglomeration	3,298	2,395	2,417	-27%	1%
Increased Competition	0	0	0	0%	0%
Output Change in imperfectly competitive markets	187	187	226	21%	21%
Tax Revenue from labour market impacts	118	131	121	3%	-8%
Total	3,602	2,713	2,764	-23%	2%

Table 10: WITA – M2E Scheme

Benefit Type	2023 Opening – RTF 2015 (£000) A	2023 Opening – RTF 2018 (£000) B	2024 Opening – RTF 2018 (£000) C	% change C vs A	% change C vs B
Agglomeration	22,330	22,157	22,083	-1%	0%
Increased Competition	0	0	0	0%	0%
Output Change in imperfectly competitive markets	1,081	1,081	1,193	10%	10%
Tax Revenue from labour market impacts	745	837	769	3%	-8%
Total	24,157	24,075	24,045	0%	0%

JOURNEY TIME RELIABILITY

The Journey Time Reliability was calculated as a proportion of the time saving benefits and given in Table 11.

Table 11: Journey Time Reliability

Scheme	2023 Opening – RTF 2015 (£000) A	2023 Opening – RTF 2018 (£000) B	2024 Opening – RTF 2018 (£000) C	% change C vs A	% change C vs B
M2F	6,481	3,137	3,162	-51%	1%
A2E	0	0	0	0%	0%
M2E	8,095	3,967	4,025	-50%	1%

The differences in Journey Time Reliability due to changing the opening year to 2024 are small, between 0 and 1% when compared with the equivalent (i.e. RTF 2018 based forecasts) for an opening year of 2023, though they differ significantly from the Core Scenario.

CORE BENEFIT TOTALS

The benefits from the TUBA, COBALT, WITA and Journey Time Reliability assessments have been combined for the 3 schemes in Table 12, Table 13 and Table 14.

Table 12: Core Benefits – M2F Scheme

Benefit Type	2023 Opening - TUBA 1.9.10 – RTF 2015 (£000) A	2023 Opening - TUBA 1.9.13 – RTF 2018 (£000) B	2024 Opening - TUBA 1.9.13 – RTF 2018 (£000) C	% change C vs A	% change C vs B
TUBA	104,072	109,211	109,363	5%	0%
COBALT	30,519	28,574	29,756	-3%	4%
WITA	20,975	20,158	21,122	1%	5%
JTR	6,481	3,137	3,162	-51%	1%
TOTAL	162,047	161,080	163,403	1%	1%

Table 12 shows that the combined benefits for the M2F scheme with a 2024 opening year differ by 1% from the core benefits (with RTF 2015 based growth and 2023 opening year) and also by 1% from the RTF 2018 sensitivity test (with 2023 opening year).

Table 13: Core Benefits – A2E Scheme

Benefit Type	2023 Opening -TUBA 1.9.10 – RTF 2015 (£000) A	2023 Opening -TUBA 1.9.13 – RTF 2018 (£000) B	2024 Opening -TUBA 1.9.13 – RTF 2018 (£000) C	% change C vs A	% change C vs B
TUBA	20,729	24,655	24,070	16%	-2%
COBALT	4,044	3,402	3,370	-17%	-1%
WITA	3,602	2,713	2,764	-23%	2%
JTR	0	0	0	0%	0%
TOTAL	28,375	30,770	30,204	6%	-2%

Table 13 shows that the combined benefits for the A2E scheme with a 2024 opening year differ by 6% from the core benefits (with RTF 2015 based growth and 2023 opening year) and also by 2% from the RTF 2018 sensitivity test (with 2023 opening year).

Table 14: Core Benefits – M2E Scheme

Benefit Type	2023 Opening -TUBA 1.9.10 – RTF 2015 (£000) A	2023 Opening -TUBA 1.9.13 – RTF 2018 (£000) B	2024 Opening -TUBA 1.9.13 – RTF 2018 (£000) C	% change C vs A	% change C vs B
TUBA	128,382	137,257	139,496	9%	2%
COBALT	32,490	29,988	31,156	-4%	4%
WITA	24,157	24,075	24,045	0%	0%
JTR	8,095	3,967	4,025	-50%	1%
TOTAL	193,124	195,287	198,722	3%	2%

Table 14 shows that the combined benefits for the M2E scheme with a 2024 opening year differ by 3% from the core benefits (with RTF 2015 based growth and 2023 opening year) and also by 2% from the RTF 2018 sensitivity test (with 2023 opening year).

Table 12, Table 13 and Table 14 show that the difference due to changing the opening year to 2024 is small. The difference with the Core Scenario is 1% for the M2F, 6% for the A2E and 3% for the M2E. These differences are partly due to other changes including the change in RTF from 2015 to 2018.

The difference due to changing the opening year to 2024 only can be seen by comparing with the RTF 2018 sensitivity test. This shows that the difference for the M2F is 1%, for the A2E is 2% and for the M2E is 2%.

CONCLUSION

Sensitivity tests on the the economic benefits have been undertaken with an opening year of 2024 and contrasted with those for 2023. The sensitivity test shows that the changes in overall benefits due to the change in opening year are minor.

APPENDIX E – LIST OF ABBREVIATIONS

List of Abbreviations

Acronym	Definition
AADT	Annual Average Daily Traffic
AHLV	Area of High Landscape Value
AQ	Air Quality
AQMA	Air Quality Management Area
AQS	Air Quality Strategy
ARN	Affected Road Network
AW	Ancient Woodland
CEMP	Construction Environmental Management Plan
CRTN	Calculation of Road Traffic Noise
CTMP	Construction Traffic Management Plan
dB	Decibels
DBA	Desk Based Assessment
DCO	Development Consent Order
DfT	Department for Transport
DMRB	Design Manual for Roads and Bridges
EA	Environment Agency
EIA	Environmental Impact Assessment
ES	Environmental Statement
EU	European Union
FRA	Flood Risk Assessment
HE	Highways England
HP	High Pressure
HPGM	High Pressure Gas Main
LCA	Landscape Character Area
LLCA	Local Landscape Character Area
LLFA	Lead Local Flood Authority
LNS	Low Noise Surface
LOAEL	Lowest Observed Adverse Effect Level
LoD	Limits of Deviation

Acronym	Definition
LPA	Local Planning Authority
LTP	Local Transport Plan
LVIA	Landscape and Visual Impact Assessment
LWS	Local Wildlife Site
MAGIC	Multi Agency Geographic Information for the Countryside
NCC	Northumberland County Council
NIA	Noise Important Area
NMU	Non-Motorised User
NPPF	National Planning Policy Framework
NPS	National Policy Statement
NPS NN	National Policy Statement for National Networks
NSIP	Nationally Significant Infrastructure Project
ONS	Office for National Statistics
OS	Ordnance Survey
PEA	Preliminary Ecological Appraisal
PEIR	Preliminary Environmental Information Report
PINS	Planning Inspectorate
PMA	Private Means of Access
RIGS	Regionally Important Geological Site
RIS	Road Investment Strategy
SAM	Scheduled Ancient Monument
SRN	Strategic Road Network
SSSI	Site of Special Scientific Interest
SUDS	Sustainable Drainage System
TCPO	The Town and Country Planning (Development Management Procedure) (England) Order 2015
WCH	Walking, Cycling and Horse Riding
WCHAR	Walking, Cycling and Horse Riding Assessment and Review
WFD	Water Framework Directive
WSI	Written Scheme of Investigation

APPENDIX F: REFERENCES

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