A1 in Northumberland: Morpeth to Ellingham

Scheme Number: TR010041

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M2E –Preliminary Environmental Information Report (PEIR)

highways england

A1 in Northumberland: Morpeth to Ellingham

Preliminary Environmental Information Report

May 2020

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1. INTRODUCTION

1.1.1. This Preliminary Environmental Information Report (PEIR) has been produced to support consultation on Highways England's proposals for a single application for development consent on the A1 in Northumberland: Morpeth to Ellingham (the Scheme). This single application will be formed of the previous A1 in Northumberland: Morpeth to Felton scheme (Part A) and A1 in Northumberland: Alnwick to Ellingham scheme (Part B).

1.1.2. The A1 is one of the country's longest roads, connecting London and Edinburgh. The route currently consists of motorway and dual carriageways, with some sections of single carriageway between Morpeth and Ellingham. The Scheme aims to increase capacity by dualling two single carriageway sections of the A1 in Northumberland (refer to **Appendix B, Figure 1: Scheme Location Plan**) as follows:

a. Part A: is approximately a 12.6 km single carriageway section of existing A1 between Morpeth and Felton in Northumberland, which would be widened to dual carriageway in each direction. It includes approximately 6.5 km of online widening and approximately 6.1 km of new offline highway. Part A starts from the A1 junction with the A697 near Northgate Hospital and Warreners House at Morpeth and ends where the existing dual-carriageway section of the A1 west of Felton commences. A total of approximately 167 hectares of land would be permanently required; and

b. Part B: is approximately an 8 km length of single carriageway section of the existing A1 between Alnwick and Ellingham which would be widened to dual carriageway in each direction to the east of the existing alignment. The existing A1 would form the northbound carriageway and the newly constructed road the southbound carriageway. Part B is located between the villages of Alnwick and Ellingham. A total of approximately 74.6 hectares of land would be permanently required.

1.1.3. The Scheme will be pursued via a single Development Consent Order (DCO) application and this PEIR reports, both the individual environmental effects of Part A and Part B and the overall cumulative, environmental effects of the Scheme.

1.1.4. Part A would start at Warreners House (Northgate, Morpeth) and travelling in a northerly direction, the existing A1 carriageway will be widened up to Priest's Bridge. From here, the new A1 alignment will shift west of its current position and continue in a northerly direction over Tindale Hill and Causey Park. At a point north of Burgham Park, the new A1 carriageway will re-join the existing A1. The A1 will then be widened to a dual carriageway and cross the River Coquet by the means of a new bridge to tie-in with the existing dual carriageway at Felton.

1.1.5. The old section of the A1 carriageway will be de-trunked (meaning that this section of road will be owned and maintained by Northumberland County Council (NCC)) and become a local road. As well as upgrading the route to dual carriageway standard, we also propose a number of other improvements, including three new junctions at Highlaws, Fenrother and West Moor, with bridges over the A1 and the provision of access tracks.

1.1.6. Part B would start just north of Alnwick and would be online dualling of the A1 to just south of Ellingham. The A1 would be upgraded from a single carriageway to a two-lane dual carriageway to the east of the existing alignment. Part B would also include improvements to provide a new split-level junction at Charlton Mires and the associated diversions to private means of access as well as the provision of a new accommodation overbridge at Heckley Fence.

1.1.7. This PEIR has been produced in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (**Ref. 1.1**) (EIA Regulations). The aim of this PEIR is to provide the public, stakeholders and consultees with sufficient understanding of the design and environmental issues to be able to develop a good understanding of the Scheme, so that they can give informed responses as part of the statutory consultation.

1.1.8. This PEIR should be read alongside the Scoping Reports that have been produced for Part A and B. The A1 Northumberland; Morpeth to Felton EIA Scoping Report (January 2018) which can be found online here: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR010041/TR010041-000004-Scoping%20Report.pdf and the A1 in Northumberland: Alnwick to Ellingham EIA Scoping Report (November 2018) which can be found online here: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR010053/TR010053-000002-A1NB%20-%20Scoping%20Report.pdf

1.1.9. Part A's Scoping Opinion is available online here: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR010041/TR010041-000035-Scoping%20Opinion.pdf and Part B's Scoping Opinion is found here: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR010053/TR010053-000028-A1NB%20-%20Scoping%20Opinion.pdf

1.1.10. The Scoping Opinions present feedback on the Scoping Reports from the Planning Inspectorate (the Inspectorate) and prescribed consultees. These Scoping Responses have been used and stakeholders have also been consulted to inform the ES.

1.1.11. Updates to methodology and responses to the Scoping Opinion were consulted on during the statutory consultation between 18 June and 29 July 2018 for Part A and between 25 February and 15 April 2019 for Part B. The PEIR's and supporting information for those consultations can be found at the following locations:

1.1.12. Part A

https://highwaysengland.citizenspace.com/he/a1-northumberland-morpeth-to-felton/

1.1.13. Part B

https://highwaysengland.citizenspace.com/he/a2e/

1.2. ENVIRONMENTAL IMPACT ASSESSMENT

1.2.1. The Scheme is defined as a Nationally Significant Infrastructure Project (NSIP) under Section 14(1)(h) and Section 22(1)(a) and 22(1)(b) of the Planning Act 2008 as:

a. It comprises the construction and alteration of a highway.
b. The highway to be constructed and altered is wholly within England.
c. Highways England is the strategic highway authority for the highway.
d. The speed limit is 50mph or greater and the Order limits at approximately 356.5 hectares is greater than the 12.5 hectares threshold.

1.2.2. The Scheme is classified as an Annex I highway development (7(c))[1] of the EIA Directive (2014/52/EU) on the assessment of the effects of certain public and private projects on the environment (**Ref. 1.2**). EIA is required for "all projects listed in Annex I" as these are considered as having significant effects on the environment and require an EIA (e.g. motorways and express roads). The Scheme exceeds the relevant thresholds within Annex I and therefore EIA is mandatory, and an Environmental Statement (ES) needs to be prepared.

1.2.3. EIA is a process of evaluating the likely environmental impacts of a scheme, taking into account environmental and health impacts, both beneficial and adverse. EIAs for NSIPs are reported in the following stages:

a. A Scoping Report is produced to consult on the scope of, and approach to, the EIA and ES.
b. A PEIR is prepared to inform statutory consultation with the public and consultees about the Scheme.
c. Following statutory consultation with the public and consultees, an ES is prepared to accompany the application for a DCO.

1.2.4. As set out above, an ES is currently being prepared which will identify and assess the environmental impacts of the Scheme.

1.3. DOCUMENT PURPOSE

1.3.1. This PEIR presents a summary of the currently identified significant effects, for Part A and Part B and provides a summary of the anticipated effects of the combined and cumulative assessment of the Scheme as a whole. This PEIR is intended to help all consultees to develop an informed view of the likely significant environmental effects of the Scheme.

[1] Construction of a new road of four or more lanes, or realignment and/or widening of an existing road of two lanes or less so as to provide four or more lanes, where such new road or realigned and/or widened section of road would be 10 km or more in a continuous length

1.3.2. Preliminary environmental information is defined in Regulation 12(2) of the EIA Regulations as information that is reasonably required to assess the environmental effects of the development. The PEIR is based on the design information available at the time of writing.

1.3.3. Further EIA work is being undertaken to confirm the potential significant effects as a result of the combination of Part A and Part B. The final EIA work will be reported within the ES that will accompany the DCO application currently proposed to be submitted to the Inspectorate in late spring 2020.

1.4. DOCUMENT STRUCTURE

1.4.1. This PEIR is organised into several sections similar to those described in the Scoping Reports and that have been considered in the ES, and is in accordance with Regulations 12 and 14, and Schedule 4, of the EIA Regulations, which set out the information to be included in the PEIR. The bullet points below identify the content and structure of this PEIR:

a. **Section 1 –** Introduction: sets out the context to the Scheme, the purpose of the PEIR, the structure of the PEIR, the EIA team that has prepared the PEIR and also the timings for the DCO submission and construction start.
b. **Section 2 –** The Scheme: provides information on the need for the Scheme, a description of the Scheme, and the Scheme objectives that need to be met.
c. **Section 3 –** Assessment of Alternatives: details the assessment of alternative options that have been considered so far in the development of the Scheme.
d. **Section 4 –** Environmental Assessment Methodology: summarises the EIA process and explains the different elements of EIA, and also summarises limitations to this PEIR, consultation undertaken since the Scoping Reports, and further work that has been undertaken through the EIA towards producing ES.
e. **Section 5 –** Assessments: summarises the current baseline knowledge for each environmental topic, together with an indication of potential mitigation and design measures and the likely significant effects as a result of the Scheme. Further work has been undertaken through the EIA.
f. **Section 6 –** Assessment of Cumulative Effects: provides information on the assessment of Part A and B in combination and cumulatively with other developments.
g. **Section 7** – Summary: presents a summary of the assessment that have been undertaken.

1.4.2. References are presented at the end of this PEIR, and a glossary of acronyms is presented in **Appendix A**. Figures are presented in **Appendix B,** and **Appendix C** contains a summary of the likely significant environmental effects for Part A and Part B.

1.5. THE EIA TEAM

1.5.1. The EIA Regulations require that the ES is prepared by 'competent experts. On behalf of Highways England, the EIA is being undertaken by WSP.

1.5.2. WSP has been awarded the Institute of Environmental Management and Assessment (IEMA) EIA Quality Mark scheme, which demonstrates competency in undertaking EIAs and ES preparation.

1.5.3. On an individual assessment level, the EIA is being undertaken by competent experts whom have the appropriate qualifications and experience. Full details of competent experts will be included in the ES.

1.6. SCHEME PROGRAMME AND NEXT STEPS

1.6.1. The programme for the Scheme currently comprises the key Scheme milestones indicated in **Insert 1-1** below:

Insert 1-1 – Scheme Develoment Process

1.6.2. Before an application for a DCO is submitted, the local community and other stakeholders must be formally consulted on the Scheme. This PEIR will be used to inform this consultation. The responses to the consultation will inform the continuing design and development of the Scheme, and any comments received will be taken into consideration in the DCO process.

1.6.3. If the DCO application for the Scheme is accepted by the Inspectorate, there will be a pre-examination period where members of the public and stakeholders can register as Interested Parties to be kept informed through the DCO process. Following pre-examination, the application will be taken forward for examination by an independent Examining Authority appointed by the Secretary of State for Housing, Communities and Local Government. Examination of the DCO application is a process in which members of the public and Interested Parties can also participate. The examination period can last up to six months.

1.6.4. After the examination period, the Inspectorate have three months to make a recommendation to the Secretary of State for Transport, who then has a further three months to make a decision on whether or not to approve the DCO.

1.6.5. If the DCO is approved, works will start on the Scheme in late 2021 with the Scheme anticipated to be open to traffic in 2024.

2. THE SCHEME

2.1. BACKGROUND TO THE SCHEME

PRELIMINARY STUDIES

2.1.1. A number of environmental studies have been undertaken as part of the earlier design stages of the Scheme, as described in the Scoping Reports. Further details on the assessment of Scheme options can be found in **Section 3** of this PEIR.

2.1.2. Following a Feasibility Study undertaken in 2014 and published in 2015 (**Ref. 2.1**), together with traffic studies, it was considered that the Scheme should be taken forward into the Roads Investment Strategy (RIS) announced in December 2014 and was subsequently progressed in to the "Options Identification" stage.

PART A OF THE SCHEME OPTION IDENTIFICATION

2.1.3. Three route options for Part A were identified at the 'Option Identification' stage. All options included a new bridge over the River Coquet parallel to the existing bridge and new junctions at Highlaws, Fenrother and West Moor (with two options including an additional new junction at Earsdon).

2.1.4. The main difference between the options was the use of online widening (constructing the new carriageways alongside the A1's existing carriageways) and offline widening (constructing 'new' road which is separated from the existing A1).

2.1.5. These options were presented at public engagement exercises with key stakeholders during May 2016 to obtain feedback.

2.1.6. Of the options considered, the orange, blue and green options were progressed to the 'Option Selection' stage. Further details of these options can be found in **Section 3 Alternatives** of this PEIR.

2.1.7. Public consultation on the three options took place during November 2016. The consultation identified strong support for the Scheme, with the 'green' option receiving the most support from members of the public and landowners alike.

2.1.8. In September 2017 the 'green' option was announced as the Preferred Route. Details can be found at: http://roads.highways.gov.uk/projects/morpeth-to-ellingham-dualling.

PART B OF THE SCHEME OPTION IDENTIFICATION

2.1.9. Since 2014, work on Part B has been undertaken to identify solutions to the issues on the A1. Three options were identified, with each option having broadly the same design at the southern and northern sections but differing at the central section, as two options included bypassing sections of the existing A1, and the number of junctions proposed.

2.1.10. The three options summarised below:

a. **Orange Option** - Upgrade the existing road to dual carriageway, widening either to the east or the west depending on the local features that needed to be considered.

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

2.1.11. The Orange Option was the only option to be presented at public consultation as the sole viable option which met all the Scheme objectives. The two remaining options (Green Option and Blue Option) were materially more expensive and offered much lower value for money and they would have had the most adverse impact on the environment

2.1.12. The Orange Option was announced as the preferred option in the September 2017 Preferred Route Announcement.

2.2. OBJECTIVES OF THE SCHEME

2.2.1. The key objectives of the Scheme are:

a. Improve journey times on the route of strategic national importance.
b. Improve network resilience and journey time reliability.
c. Improve safety.
d. Maintain access for local traffic whilst improving conditions for strategic traffic.
e. Facilitate future economic growth.

2.2.2. In addition, the design of the Scheme would be carried out in accordance with the Performance Specification set out for Highways England in the Department for Transport's (DfT) RIS, which identified targets and requirements relating to the environment, cyclists, walkers and other vulnerable users of the network (such as horse riders). Furthermore, the Scheme would seek to support no net loss of biodiversity.

2.3. DESCRIPTION OF THE SCHEME

THE CASE FOR THE SCHEME

2.3.1. The A1 is one of the longest roads in the country; connecting London to Newcastle and Edinburgh and consists of mainly motorway and dual carriageway. However, single carriageway sections running between Morpeth and Ellingham and north of Ellingham to Berwick remain, which have less capacity for efficient traffic flows.

2.3.2. The 2015 Feasibility Study (**Ref. 2.1**) identified that users of the A1 in Northumberland currently experience a number of problems, including:

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

2.3.3. The Scheme is designed to address these issues and improve the safety and speed and resilience of journeys along the route.

Image 1 - Existing A1 at Tritlington Junction

SCHEME LOCATION

2.3.4. The Scheme is located in Northumberland on the A1, which is one of the country's longest roads, connecting London and Edinburgh. The route currently consists of motorway and dual carriageways, with some sections of single carriageway between Morpeth and Ellingham. The Scheme aims to complete the dualling of two single carriageway sections of the A1 between Morpeth and Felton and between Alnwick and Ellingham.

2.3.5. Part A is located in Northumberland, between Warreners House Interchange at Morpeth and the dual carriageway of the A1 west of Felton. The length of Part A is approximately 12.6 km. Part B is located between Alnwick and Ellingham and would be approximately 5 miles (8 km) in length.

ORDER LIMITS

2.3.6. The Order Limits comprises all land (both temporary and permanent) required to build and operate the Scheme. It has been developed to allow for some flexibility in the design process and the EIA will consider a worst-case footprint. The Order Limits is illustrated on **Figure 1: Scheme Location Plan** in **Appendix B** of the PEIR.

2.3.7. Since the submission of the Scoping Reports to the Inspectorate, changes to the Order Limits have been made. These were consulted on during the previous consultation period between 18 June and 29 July 2018 for Part A and between 25 February and 15 April 2019 for Part B.

THE SCHEME

2.3.8. The Scheme is described under the headings of Part A and Part B, below,

Part A

2.3.9. Part A is approximately 8 miles (12.6 km) in length. It would consist of widening the existing single carriageways to dual carriageway (two lanes in each direction) by constructing new carriageways parallel to the existing carriageways (online widening) and constructing new dual-carriageway (offline widening). Part A starts from the A1 junction with the A697 near Northgate Hospital and Warreners House at Morpeth and ends where the existing dual-carriageway section of the A1 west of Felton commences. A total of approximately 167 hectares (ha) of land, including areas which are already owned by the Applicant, would be permanently required for Part A.

Image 2 – Existing Junction at Warreners House

2.3.10. From the southern extent at the A697 junction to Priest's Bridge, Part A would be online widening by constructing the new carriageways parallel to the west of the existing A1.

2.3.11. North from Priest's Bridge, the route runs offline; moving west away from the existing A1, by constructing approximately 6.1 km (3.8 miles) of new dual-carriageway. This new section would pass to the west of Earsdon Moor, east of Fenrother, New Houses Farm and Causey Park and meet the existing A1 near Burgham Park on the west and Felmoor Park on the east. The section of the existing A1 which would be bypassed would remain open but no longer form part of the trunk-road network. The bypassed section would be used as a local access road and would be owned and maintained by NCC.

2.3.12. The new section of dual carriageway would join the existing A1 east of Burgham Park. From this point northwards for the remainder of Part A the A1 would be widened by constructing new carriageways parallel to the existing carriageway.

2.3.13. Part A would provide three new junctions at Highlaws, Fenrother and West Moor. Each junction would provide access from side roads onto the A1 and would include a bridge over

the A1 to allow the side roads to cross over without disrupting the flow of A1 traffic.

Image 3 – West Moor Junction

2.3.14. Three new bridges would be constructed to maintain the continuity of side roads where they are crossed by the Scheme. East of Causey Park Hag, a bridge would carry Causey Park Road over the A1. West of Felmoor Park a bridge would take Burgham Park Road under the A1. A new bridge would be constructed over the River Coquet, on the east and parallel to the existing bridge which would carry A1 southbound traffic.

2.3.15. Demolition of a residential property, Northgate House (opposite Northgate Farm on the western side of the A1 approximately 100m north of the A697 Junction), would be required to construct the Scheme.

2.3.16. The existing bus stops north and southbound near Warreners House, Strafford House, and Low Espley would be removed. On the A697 at Espley (outside of the Order Limits), bus stops would be formalised including the provision of new bus stop signs. The existing bus stops on each side of Felton Road, at its western extent, would be removed. Two new bus stops, one on each side of the road, would be provided further to the east along Felton Road.

2.3.17. Drainage systems would also be provided as part of Part A, to manage the surface water running off the carriageways. This would include various sustainable methods to channel

the water from the carriageways, slow down the rate of flow and seek to minimise sediment and pollutants entering existing watercourses.

2.3.18. Part A would install new traffic signage and update road markings where required to reflect the new layout of the roads and to bring the existing signage up to current standards, where required.

2.3.19. To allow the construction of Part A, some existing utilities such as telecommunications, water, gas and electricity equipment would require diversion. This includes a high-pressure underground gas pipeline near Causey Park.

2.3.20. As part of Part A's improvements to safety, all direct accesses to the A1 would be removed, resulting in alterations to these access points. A number of new, safer private means of access, such as access tracks, are proposed for each property which currently has direct access onto the A1.

2.3.21. A landscape strategy accompanies Part A. This strategy seeks to mitigate landscape and ecological effects and has focused on the retention or replacement of vegetation, ecological enhancement, protected species mitigation and landscape integration. The landscape strategy would include hedgerows, woodland blocks, scattered shrubs and trees and species-rich grassland. Additionally, a strategy is proposed to address the loss of ancient woodland, as a result of works required to construct the new bridge over the River Coquet, by providing compensatory habitat.

2.3.22. If the proposed DCO is approved by the Secretary of State for Transport, works would start on Part A in late 2021 with the Scheme anticipated to be open to traffic in 2024.

Construction

2.3.23. In addition to the approximately 167 ha of land permanently required for Part A, approximately 75 ha would be temporarily required for the construction of Part A for the construction compounds, working areas, storage and access areas. The main compound would be located at the northern end of Part A, adjacent to the proposed West Moor Junction and accessed off Felton Road. A smaller compound would be located in the southern area of Part A adjacent to the proposed Fenrother Junction and would be accessed off Fenrother Lane. An additional temporary compound would also be required just south of the River Coquet and would be used for the construction of the new bridge over the River Coquet.

2.3.24. Before main construction works for Part A can commence, some works (referred to as 'advanced works') are required. This includes works to divert some key utilities, which are expected to be carried out by National Grid before the A1 dualling works start, though to ensure these works are undertaken they will be included in the draft DCO application. These diversion works would require further temporary construction compounds south of Causey Park, which would be used for these advanced works only. It is also anticipated that certain environmental surveys would commence in 2020, where possible, in order to inform

protected species licence applications (for great crested newt, badger and bat) and to meet the proposed programme of works.

2.3.25. Part A's construction works would be divided into 6 phases to ensure that two-way traffic is maintained on the A1 as much as possible. The exceptions to this would be for a limited number of activities, for example bridge construction, in which case alternative diversion routes would be provided.

2.3.26. **Table 2-1** provides an overview of the anticipated construction programme.

Table 2-1 - Overview of Part A's Anticipated Construction Schedule

Activities	Anticipated Start and End Year
Construction preparation and mobilisation	November 2021 – December 2021
Online dualling works	November 2021 – March 2024
Offline dualling works	November 2021 – July 2023
Bypassed section of A1	March 2023 – July 2023
Scheme open to traffic	March 2024

Part B

2.3.27. Part B is approximately 5 miles (8 km) in length. It would consist of widening the existing single carriageway to dual carriageway (two lanes in each direction) by constructing new carriageways to the east of the existing A1 (online widening). The existing A1 would form the northbound carriageway and the newly constructed road the southbound carriageway. Part B is located between the villages of Alnwick and Ellingham. A total of approximately 74.6 hectares (ha) of land, including areas which are already owned by the Applicant, would be permanently required for Part B.

2.3.28. Part B would provide one new junction at Charlton Mires and a bridge near to Heckley Fence for agricultural vehicles as well as walkers, cyclist and horse riders. The junction at Charlton Mires would provide access from side roads (B6347 and B6341) and new access roads onto the A1. The new junction would include a bridge over the A1 to allow the side roads and new access roads to cross over without disrupting the flow of A1 traffic. The junction would remove direct access from B6341 and B6347 on to the A1, improving safety for drivers. A footway to provide safe, pedestrian access would be included as part of the junction.

Image 4 – Existing Junction at Charlton Mires

2.3.29. To construct the junction at Charlton Mires two properties would need to be demolished. These are East Cottage and Charlton Mires Farm, which are both located to the east of the existing junction between the A1 and B6347 at Charlton Mires.

2.3.30. Three existing bus stops (two informal and one formal) would be removed as part of Part B , which are located around the existing Charlton Mires junction. To replace these bus stops, two new bus stops are proposed along the B6341 to the west of the A1. One bus stop would be on the southbound lane and one on the northbound lane. No new bus stops are proposed along the route of the A1 for safety reasons.

2.3.31. Drainage systems would be provided as part of Part B, to manage the surface water running off the carriageways. This would include various sustainable methods to channel the water from the carriageways, slow down the rate of flow and seek to minimise sediment and pollutants entering existing watercourses.

2.3.32. Part B would install new traffic signage and update road markings where required to reflect the new layout of the roads and to bring the existing signage up to current standards, where required. No lighting would be provided along Part B.

2.3.33. To allow the construction of Part B, some existing utilities such as telecommunications, water, gas and electricity equipment would require diversion. This includes Extra High Voltage cables that run between Middlemoor Wind Farm and Denwick Primary Substation.

2.3.34. As part of Part B's improvements to safety, all direct accesses to the A1, between Alnwick and Ellingham, would be removed, resulting in alterations to these access points. A number of new, safer private means of access, such as access tracks, are proposed for each property which currently has direct access onto the A1.

2.3.35. A landscape strategy accompanies Part B. This strategy seeks to mitigate landscape and ecological effects and has focused on the retention or replacement of vegetation, ecological enhancement, protected species mitigation and landscape integration. The landscape strategy would include hedgerows, woodland blocks, scattered shrubs and trees and species-rich grassland.

Construction

2.3.36. In addition to the approximately 74.6 ha of land permanently required for Part B, an additional approximately 120.0 ha of land would be temporarily required for the construction of Part B for the construction compounds, working areas, storage and access areas. A shared compound would be located to the south of Part B, adjacent to the proposed West Moor Junction (within Part A) and accessed off Felton Road.

2.3.37. A compound would also be located next to Highways England's maintenance depot at Lionheart Enterprise Park, to the south of Alnwick. A smaller compound would be located to the east of the existing A1, in a field to the south of Charlton Mires to facilitate construction of the new junction at Charlton Mires.

2.3.38. It is anticipated that construction would commence in late 2021, and construction of Part B would last for approximately 17 months with works planned to be completed by spring 2023.

2.3.39. Construction works would be divided into 6 phases to ensure that two-way traffic is maintained on the A1 as much as possible. The exceptions to this would be for a limited number of activities, for example bridge construction, in which case alternative diversion routes would be provided.

2.3.40. **Table 2-2** provides an overview of the anticipated construction programme.

Table 2-2 - Overview of Part B's Construction Schedule

Activities	Anticipated Start and End Year
Construction preparation and mobilisation	November 2021 to December 3
Construction of carriageway to the east of the A1	December 2021 to September 2022
Construction of junction at Charlton Mires	January 2022 to December 2022
Construction of bridge at Heckley Fence	January 2022 to December 2022
Landscaping works	January 2023 to March 2023
Scheme open to traffic	March 2023

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN FOR THE SCHEME

2.3.41. The main contractor would manage the sites for the Scheme under a Construction Environmental Management Plan (CEMP), which would ensure that the commitments made in the ES are met and to:

a. Protect sensitive environmental assets
b. Prevent pollution
c. Set protocols for the delivery, storage and handling of fuels and materials
d. Control emissions of dust
e. Minimise disturbance from noise

3. ASSESSMENT OF ALTERNATIVES

3.1.1. This Section of the PEIR considers the assessment of alternatives for the Scheme and is split into Part A and B.

PART A

3.1.2. Various alternative options have been considered for Part A prior to determining that the 'Green Option' would be taken forward as the preferred route as shown in **Figure 3-1** below.

3.1.3. The EIA Regulations require a comparison of environmental effects of the reasonable alternatives that have been studied when providing an indication of the main reasons for selecting the chosen option.

3.1.4. The following three options were shortlisted at the "Option Selection" stage and presented during public consultation in November 2016:

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

3.1.5. The 'green' option was taken forward as the preferred option because it:

a. Was the most popular option expressed through public consultation responses.
b. Offers a greater level of safety due to the alignment and the retention of the A1 as an alternative route.
c. Presents the greatest construction efficiency and worker safety benefits.
d. Retains the existing A1 as a local road where the Scheme diverts offline, which offers an alternative route should closures be required, and also provides a north-south route for local traffic.
e. It has the greatest compliance with geometric standards and offers a high quality alignment.
f. Affects fewer landowners, although more agricultural land is affected by this option.

3.1.6. Taking into account analysis of the options, together with feedback from the public consultation, the 'green' option was announced as the Preferred Route in September 2017.

3.1.7. As part of the EIA, alternative design options will be considered, and the findings reported in the ES. This would include consideration of technology, design, size, scale, demand, delivery, scheduling and mitigation, as appropriate.

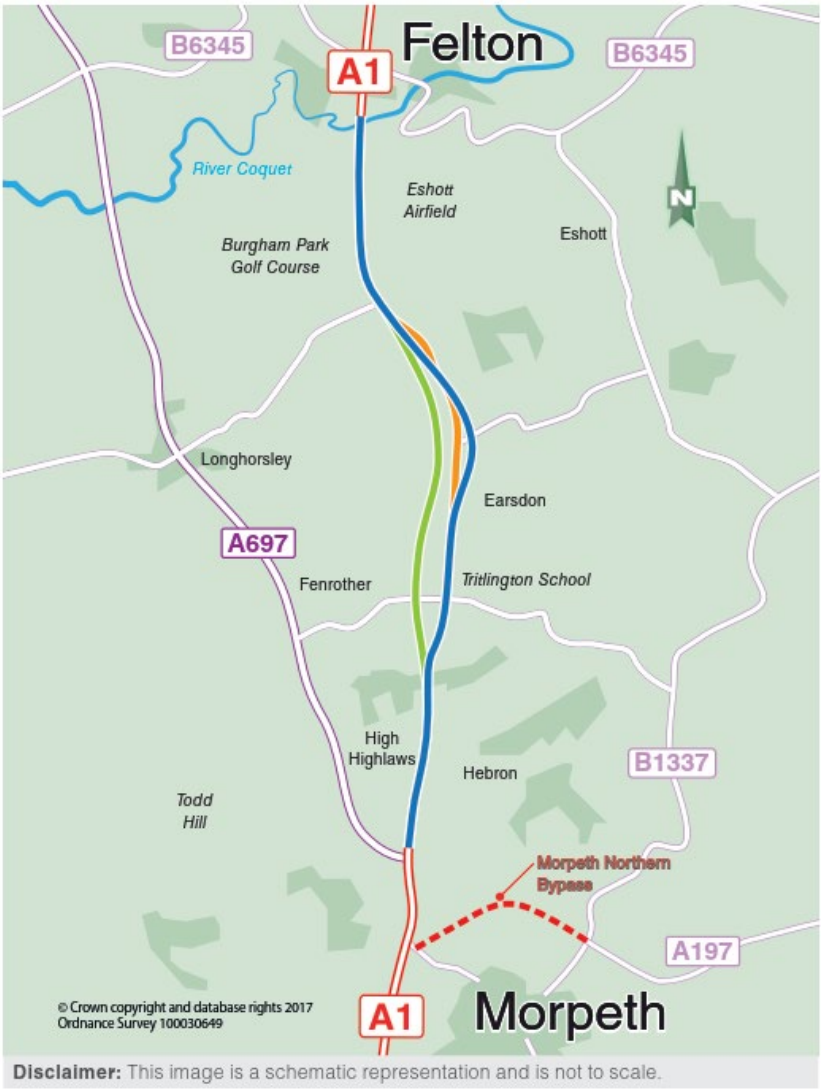


Figure 3-1 - Part A Options Considered during the Options Selection Stage

PART B

3.1.8. Since 2014, work has been undertaken to identify solutions to the issues on the A1. Three options were identified for Part B, with each option having broadly the same design at the southern and northern sections but differing at the central section, as two options included bypassing sections of the existing A1, and the number of junctions proposed. The three options are summarised below and shown in **Figure 3-2**.

3.1.9. The following three design Options were considered for Part B:

a. **Orange Option** - Upgrade the existing road to dual carriageway, widening either to the east or the west depending on the local features that needed to be considered.
b. **Green Option** - Upgrade approximately 1.2 miles (2 km) of existing road to dual carriageway and build a new carriageway to the east of the existing road at Heckley Fence, before crossing over to the west of the existing road at Elsnook Plantation and continuing until Shipperton Burn.
c. **Blue Option** - Upgrade the majority of the existing road 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.

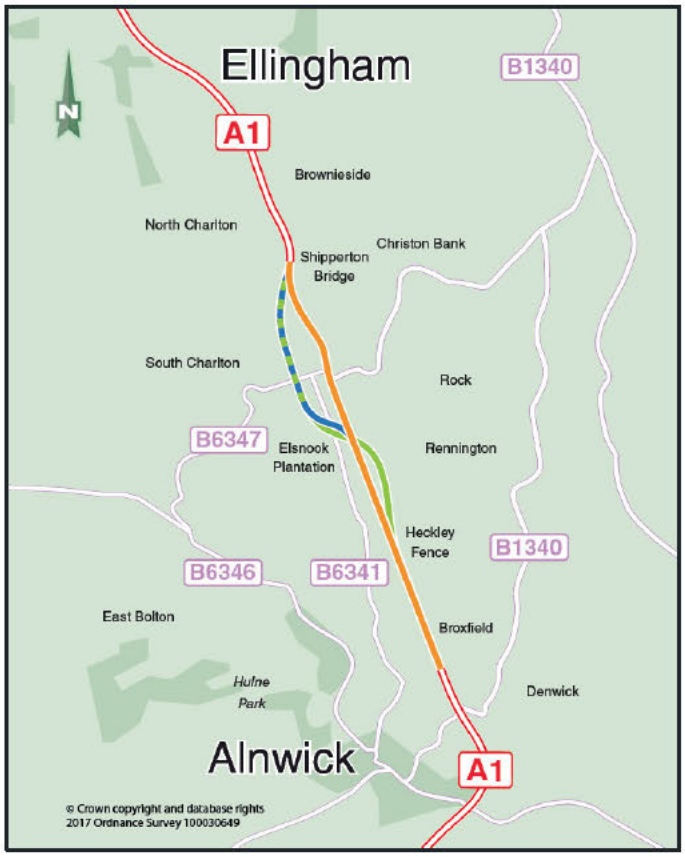


Figure 3-2 - Part B Options Considered during the Options Selection Stage

3.1.10. The Orange Option was the only option to be presented at public consultation as it was the sole viable option which met all of the Scheme objectives. The two other options (Green Option and Blue Option) were materially more expensive and offered much lower value for money and would have had the most adverse impact on the environment.

3.1.11. The Orange Option was announced as the preferred route in September 2017.

4. ENVIRONMENTAL ASSESSMENT METHODOLOGY

4.1. EIA PROCESS

4.1.1. The development and design of major highway schemes is governed by guidance set out in the Design Manual for Roads and Bridges (DMRB). Volume 11 (**Ref. 4.1**) of DMRB provides guidance on producing an EIA that is specifically applicable to highway projects and that has been followed for this Scheme. Volume 10 of DMRB (**Ref. 4.2**) covers environmental mitigation. Relevant Interim Advice Notes (IANs) have also been used, where relevant.

4.1.2. The EIA has been undertaken in line with the guidance in the DMRB and IANs, the EIA Regulations, and additional best practice guidance where appropriate. Where DMRB has recently been updated, a sensitivity test is currently being undertaken and where necessary additional assessment is being carried out to ensure the most up to date guidance is being followed and that the potential effects of the Scheme are reported appropriately. The outcome of the sensitivity analysis and any additional assessment will be reported in the ES

4.1.3. The National Policy Statement for National Networks (NPS NN) sets out the need for NSIPs on the national road and rail networks in England, together with the policies to deliver them. The NPS NN is used by the Secretary of State as the primary basis for making decisions on DCO applications for NSIPs. As the Scheme is a highway NSIP, the EIA approach adopted is in accordance with the NPS NN.

SCOPING

4.1.4. As set out above, the scoping process has been used to identify the environmental topics that need to be assessed and the level of detail that should be included in the EIA. The Scoping Reports and the Scoping Opinions are available, see links in **Section 1.1**.

4.1.5. Updates to methodology and responses to the scoping opinion were consulted on during the statutory consultation between 18 June and 29 July 2018 for Part A and between 25 February and 15 April 2019 for Part B. The PEIR's for those consultations are available, see links in **Section 1.1**.

PREDICTED ENVIRONMENTAL IMPACTS

4.1.6. The EIA process predicts the potential impacts that might arise as a result of the Scheme. Impacts are changes to the environment, compared with the baseline environment, attributable to the construction and operation of the Scheme and may be adverse or beneficial, direct or indirect, temporary or permanent. The methods of predicting impacts vary by topic. The assessment will be undertaken for the following years:

a. Baseline Year
b. Opening Year of the Scheme, i.e. when traffic can use it
c. Future Year of the Scheme, i.e. 15 years after opening which is typically considered to be the time when the Scheme would be operating at its most efficient or mitigation measures would be fully effective by this time.

SIGNIFICANCE

4.1.7. The EIA process then provides an evaluation of how significant the impacts as a result of the Scheme are likely to be. Residual effects are those that are likely to remain after mitigation and design measures have been implemented.

4.1.8. The significance of an impact is determined by taking account of the sensitivity of the environmental receptor, the magnitude of the impact (i.e. amount of change) and whether it can be mitigated through good design or management. The greater the environmental sensitivity of the receptor and the greater the magnitude of impact, the more significant the effect.

4.1.9. The approach to assessment will be based on the guidance in DMRB Volume 11 Section 2 Part 5 (HA205/08) (**Ref. 4.3**) Assessment and Management of Environmental Effects. Tables 2.1, 2.2, 2.3 and 2.4 of this guidance provide specific advice on determining the significance of an impact, although professional judgement needs to be used. Some environmental topics use different guidance to ensure best practice.

4.1.10. Since scoping and the start of preparation of the ES a programme of updates to DMRB guidance on assessment methodology has been undertaken; for some topics the changes are presentational, i.e. the same information is presented but in different locations or under different headings, for other's the guidance changes the method or requires additional assessment. In order to ensure the ES follows reports all significant effects in line with updated DMRB guidance a sensitivity test is being carried to ensure that the updates do not change the significant effects of the Scheme. The findings of the sensitivity tests will be reported in the ES and where the reporting of significant effects changes the ES will be updated and the effects reported.

MITIGATION AND ENHANCEMENT

4.1.11. The EIA process has been used to identify adverse effects, and the ES will set out the proposed mitigation measures that are intended to remove, reduce or offset the impacts. The EIA professionals and stakeholders that are involved in the process will use the process to identify and recommend enhancement opportunities for a scheme in order to achieve improved environmental outcomes. The EIA process will take place alongside the development of the Scheme design in order to make the most of such opportunities.

LIMITATIONS

4.1.12. The ES will identify any limitations on the information that is available or on the conclusions of the ES.

CONSULTATION AND RESPONSES

4.1.13. A further public consultation exercise to those already undertaken separately for Part A and Part B will be undertaken from 16 April 2020 to 14 May 2020. This consultation will seek to obtain views on the approach to submitting one application for development consent on Part A and Part B as oppose to two separate DCO applications as previously proposed.

PART A POST SCOPING CONSULTATIONS

4.1.14. Since the Scoping Report was issued by the Inspectorate a number of consultations have been undertaken to invite consultees to participate and respond to the proposals.

4.1.15. Highways England has held a statutory period of consultation in accordance with section 42 and section 47 of the 2008 Act for a period of 42 days from 18 June 2018 to 29 July 2018. Responses were taken into consideration throughout the development of Part A's design and in preparing the ES.

4.1.16. A statutory consultation notice (newspaper notices) was published during June 2018 via publications in local (2 week publication) and national newspapers, and the London Gazette (1 week publication).

4.1.17. Where relevant, since the production of the Scoping Report, additional non-statutory consultation and ongoing engagement have been conducted on a continual basis throughout the EIA as follows:

a. Local Lead Flood Authority (NCC), in relation to the Road Drainage and Water Environment assessment.
b. Environment Agency in relation to the Road Drainage and Water Environment assessment and the Biodiversity assessment (relating to ecology surveys and mitigation).
c. Natural England in relation to ecology surveys undertaken, assessment/ methodology, potential impacts upon ecology and mitigation (including the measures proposed to address the potential impacts upon ancient woodland.
d. NCC County Archaeologist and Historic England in relation to the Cultural Heritage assessment, specifically in relation to the Desk-Based Assessment (DBA) and mitigation.
e. Environmental Health Officer in relation to the Air Quality assessment and the Noise and Vibration Assessment.
f. NCC Landscape Officers in relation to the Landscape and Visual assessment, specifically proposed viewpoints and methodology.
g. The Forestry Commission in relation to the measures proposed to address the potential impacts upon ancient woodland.
h. The Woodland Trust in relation to the measures proposed to address the potential impacts upon ancient woodland.
i. Northumbria Bird Ringing Group in relation to barn owl mitigation.
j. NCC Public Rights of Way (PRoW) Officer in relation to the Population and Human Health assessment methodology.
k. Northumberland Wildlife Trust in relation to the Biodiversity assessment and regarding barn owl mitigation and Local Wildlife Site citations.
l. The Ramblers Association in relation to the Population and Human Health assessment.
m. Sustrans in relation to the Population and Human Health assessment.
n. The British Horse Society in relation to the Population and Human Health assessment.

PART B POST SCOPING CONSULTATIONS

4.1.18. For Part B a statutory period of consultation in accordance with section 42 and section 47 of the 2008 Act was carried out for a period of 45 days from 25 February 2018 to 15th April 2019. Responses have been taken into consideration throughout the development of the Part B's design and in preparing the ES.

4.1.19. A statutory consultation notice (newspaper notices) was published during February 2019 via publications in one local (Northumberland Gazette) (2-week publication) and one national newspaper (The Times) (2-week publication), and during August 2019 in the London Gazette (1-week publication).

4.1.20. Where relevant, since the production of the Scoping Report, additional non-statutory consultation and ongoing engagement has been conducted on a continual basis throughout the EIA as follows:

a. LLFA (NCC), in relation to the Road Drainage and Water Environment assessment.
b. Environment Agency in relation to the Road Drainage and Water Environment assessment and the Biodiversity assessment (relating to water borne ecology surveys).
c. Natural England in relation to ecology surveys undertaken, assessment and methodology, potential impacts upon ecology, and mitigation.
d. NCC County Archaeologist and Historic England in relation to the Cultural Heritage assessment, specifically in relation to pre-application trial trenching, Desk-Based Assessment (DBA) and mitigation.
e. NCC Environmental Protection Officer in relation to the Air Quality assessment, Noise and Vibration assessment.
f. NCC in relation to an Environmental Information Request for the Geology and Soils assessment.
g. NCC Landscape Officers, Natural England, Northumberland National Park Authority and Historic England in relation to the Landscape and Visual assessment, specifically proposed viewpoints, and methodology.
h. NCC PRoW Officer in relation to the Population and Human Health assessment methodology.
i. NCC in relation to the assessment methodology for the cumulative assessment.

4.1.21. Further details of the post scoping consultations that have been carried out for Part A and B will be set out in the relevant ES Chapters.

4.2. FURTHER WORK FOR THE EIA

4.2.1. The following paragraphs provide information in response to comments received from the Inspectorate.

MAJOR ACCIDENTS AND HAZARDS

4.2.2. The ES will include a description of the potential vulnerability of the Scheme to risks of major accidents and / or disasters, including a clear explanation of the scope and method of assessment.

4.2.3. Schedule 4 Part 5 of the EIA Regulations details the requirement for a description of the likely significant effects on the environment resulting from, amongst others, the risks to human health, cultural heritage or the environment (for example due to disasters).

4.2.4. An assessment of the vulnerability of the Scheme to major events identified has been undertaken. A qualitative assessment will be carried out and reported within the relevant individual environment topics in the ES.

TRANSBOUNDARY EFFECTS

4.2.5. On 2 May 2018, the Inspectorate published a transboundary screening for Part A based on information set out in the Scoping Report (for the purposes of Regulation 32 of the EIA Regulations). This concluded that Part A is unlikely to generate a significant effect either alone or cumulatively on the environment in relation to any European Economic Area (EEA) state. This screening can be found at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR010041/TR010041-000040-TR010041%20-%20Regulation%2032%20Transboundary%20Screening.pdf .

4.2.6. Transboundary screening for Part B was published by the Inspectorate on 18 March 2019. This concluded that Part B is unlikely to generate a significant effect either alone or cumulatively on the environment in relation to any EEA state. A copy can be found online at:

https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR010053/TR010053-000092-TR010053%20Regulation%2032%20Transboundary%20Screening%2018_03_19.pdf

5. ASSESSMENTS

5.1. INTRODUCTION

5.1.1. This chapter considers the Scheme environmental impacts and their effects. These impacts and their effects are assessed based on Part A and Part B: with the Scheme cumulative impacts and their effects reported in the Section 6 of this PEIR. Key constraints are shown on the **Constraints Plan**, **Figure 2** in **Appendix B**.

5.2. AIR QUALITY

PART A OVERVIEW

5.2.1. The air quality assessment considers Part A's potential to impact local and regional air quality during construction and once Part A is open to traffic (operation). Part A is not located within an Air Quality Management Area - areas that do not meet an air quality objective indicating that air quality in these areas requires improvement. Data from NCC, the government and monitoring of nitrogen dioxide undertaken as part of the EIA show that existing air quality across the area of Part A is good, with no exceedances of national air quality objectives and low risk of non-compliance with the European limit for annual mean nitrogen dioxide.

Construction

5.2.2. Part A would temporarily affect local air quality as a result of emissions from construction activities. The potential air quality impacts due to construction traffic and temporary diversions are considered unlikely to cause a significant effect. However, measures would be put in place during construction to avoid the potential impacts from construction dust causing a significant effect. This would be done by incorporating industry best practice measures into the CEMP, which the main contractor will be required to follow. Examples of such measures include covering dusty materials, limiting construction vehicle speeds on site and switching off vehicle engines and plant motors when not in use.

Operation

5.2.3. Once Part A is open there would be no new, or worsening of an existing, exceedance of an air quality objective at relevant locations such as residential premises and Tritlington Church of England Aided First School. Part A would pose a low risk of non-compliance with the European limit value for annual mean nitrogen dioxide.

5.2.4. For ecological receptors, there would be no exceedance of the objective for annual average nitrogen oxides at sites of national and international nature conservation importance, including the River Coquet and Coquet Valley Woodlands and Longhorsley Moor Sites of Special Scientific Interest (SSSI). The likely effects on the most sensitive ecological features of these sites would not be significant. The air quality impacts at ancient woodland and non-statutory ecological sites were also assessed and determined as not significant.

PART B OVERVIEW

5.2.5. The air quality assessment considers Part B's potential to impact local and regional air quality during construction and once Part B is open to traffic (operation). Part B is not located within an AQMA. Data from NCC, the government and monitoring of nitrogen dioxide undertaken as part of the EIA show that existing air quality across the area of Part B is good, with no exceedances of national air quality objectives and low risk of non-compliance with the European limit for annual mean nitrogen dioxide.

Construction

5.2.6. Part B would temporarily affect local air quality as a result of emissions from construction activities. The potential air quality impacts due to construction traffic and temporary diversions are considered unlikely to cause a significant effect. However, measures would be put in place during construction to avoid the potential impacts from construction dust causing a significant effect. This would be done by incorporating industry best practice measures into the CEMP, which the main contractor would be required to follow. Examples of such measures include covering dusty materials, limiting construction vehicle speeds on site and switching off vehicle engines and plant motors when not in use.

Operation

5.2.7. Once Part B is open, there would be no new, or worsening of an existing exceedance of an air quality objective at relevant locations such as residential properties. Part B would pose a low risk of non-compliance with the European limit value for annual mean nitrogen dioxide.

5.2.8. For ecological receptors, there would be no exceedance of the objective for annual average nitrogen oxides at sites of national and international nature conservation importance. The likely effects on the most sensitive ecological features of these sites would not be significant. No air quality impacts on ecological receptors were identified.

5.3. NOISE AND VIBRATION

PART A OVERVIEW

5.3.1. Part A runs through a rural landscape surrounded predominantly by agricultural land, with few dwellings close to the road. A noise survey was undertaken to measure the existing noise levels at various locations along Part A. There are two Noise Important Areas (defined as areas along roads which have been identified through high-level noise mapping as having high noise levels) within the area of Part A. These are adjacent to the existing A1 carriageway at Northgate Farm and Causey Park.

5.3.2. Computer modelling has been undertaken using the data from the noise survey and data on the predicted future traffic flows to calculate the potential impact of Part A on the existing noise levels.

Construction

5.3.3. Construction activities which could cause noise and vibration impacts include:

a. Earthworks
b. Compound Construction
c. Verge Clearance
d. Signage Works
e. Road Surface Laying
f. Road Marking Works
g. Construction of junctions, bridges and drainage
h. Installation of noise barriers, signage and road markings
i. Construction plant, vehicles and equipment
j. Traffic from road diversions as a result of road closures

5.3.4. The majority of the construction activities for Part A are linear activities (such as road surfacing) or short-term activities which are unlikely to impact individual receptors for prolonged periods of time. The two activities most likely to cause an impact are bridge construction and earthworks. Mitigation measures to reduce noise impact during construction would be detailed in the CEMP and would include using plant, vehicles and machinery with the lowest noise levels, using electrically powered machinery, switching off equipment and machinery when not in use, using low noise construction methods, using temporary noise barriers and ensuring residents are informed of the works.

5.3.5. In areas where noise levels from construction are likely to be high enough to affect health and/or quality of life, additional measures would be implemented in order to minimise noise levels to acceptable levels. This includes measures such as programming works so the requirement for working outside normal hours is reduced and ensuring exposure to high noise or vibration levels does not exceed 10 days/nights in any consecutive 15 days/nights or does not exceed 40 days/nights in any consecutive 6 months. With these measures in place, no significant effects during construction are predicted.

Operation

5.3.6. Part A has included measures to reduce noise levels including installation of a low noise surface for the majority of the A1 carriageways.

5.3.7. Noise barriers (fence-like barriers designed to reduce noise levels) are proposed along the carriageway of the A1 to reduce noise levels from the operation of Part A at residential properties. These barriers are proposed near Causey Park, New Houses Farm. Noise barriers are also proposed at Northgate Farm and Felmoor park and Bockenfield Holiday parks, although further investigation would be undertaken at the next stage of design to determine whether there is sufficient space to build these barriers. Earth mounds have been proposed to lessen the visual impact of the road; however, these would also serve as mitigation for noise. With these measures, during operation of Part A is predicted to result in a significant beneficial effect (reduction in noise levels) at 13 properties and a significant adverse effect (increase in noise levels) at three properties.

PART B OVERVIEW

5.3.8. Part B runs through a rural landscape surrounded predominantly by agricultural land, with few dwellings close to the road. A noise survey was undertaken to measure the existing noise levels at various locations along Part B. There are no Noise Important Areas within the area of Part B, the closest being 2.1 km to the north.

5.3.9. Computer modelling has been undertaken using the data from the noise survey and data on the predicted future traffic flows to calculate the potential impact Part B on the existing noise levels.

Construction

5.3.10. Construction activities which could generate and affect noise and vibration include:

a. Earthworks;
b. Compound Construction;
c. Verge Clearance;
d. Signage Works;
e. Road Surface Laying;
f. Road Marking Works;
g. The demolition of residential properties (Charlton Mires Farm and East Cottage), existing structures and carriageway;
h. Excavation, compaction and foundations works (including piling works required for the new Heckley Fence bridge);
i. Construction of junctions (including the new Charlton Mires Junction) and drainage;
j. Construction plant, vehicles and equipment;
k. Traffic from road diversions as a result of road closures

5.3.11. The majority of the construction activities for Part B are linear activities (such as road surfacing) or short-term activities which are unlikely to impact individual receptors for prolonged periods of time. The two activities most likely to cause an impact are bridge construction and earthworks. Mitigation measures to reduce noise impact during construction would be detailed in the CEMP. This would include using plant, vehicles and machinery with the lowest noise levels, using electrically powered machinery, switching off equipment and machinery when not in use, using low noise construction methods, using temporary noise barriers and ensuring residents are informed of the works.

5.3.12. In areas where noise levels from construction are likely to be high enough to affect health and/or quality of life, additional measures would be implemented in order to minimise noise levels to acceptable levels. This includes measures such as programming works so the requirement for working outside normal hours is reduced and ensuring exposure to high noise or vibration levels does not exceed 10 days/nights in any consecutive 15 days/nights or does not exceed 40 days/nights in any consecutive 6 months. With these measures in place, no significant effects during construction are predicted.

5.3.13. For the majority of the construction phase, there would be no significant effects resulting from vibration. The exception to this would be where percussive piling and heavy operations are to be used nearby to dwellings. However, these effects are expected to be temporary and of short duration. Vibration monitoring and environmental management controls would minimise potential effects.

Operation

5.3.14. Part B has included measures to reduce noise levels including installation of a low noise surface for the majority of the A1 between Alnwick and Ellingham. These measures would result in a significant beneficial effect (reduction in noise levels) across Part B with the properties that benefit the most being those within the vicinity of Patterson Cottage and West Link Hall Cottages.

5.4. LANDSCAPE AND VISUAL

PART A OVERVIEW

5.4.1. The surrounding landscape is generally open with arable and pasture farmland enclosed by hedgerows (some tree-lined and some stone walls) and crossed by the A1 and the A697 to Coldstream; the county's two major roads. The landscape surrounding Part A is predominantly undeveloped; the largest settlement, Morpeth, is located approximately 2 km to the south-east of Part A and Felton approximately 2 km east of the northern extent of Part A, with scattered farms and hamlets comprising the settlement pattern within the rest of the area around Part A. There are numerous areas of woodland, notably an area to the south of the River Coquet which is designated as ancient woodland as shown on **Figure 2: – Constraints Plan** in **Appendix B**. A distinctive row of individual trees to the north east of Morpeth running parallel to the A1 is known locally as Coronation Avenue, as they were planted in 1936 to celebrate the coronation of George VI. There are also several watercourses in the area of Part A, the most prominent of which are the River Coquet and the River Lyne. Part A cross's areas designated through local planning policy as 'High Landscape Value' and the southern area of Part A passes through an area of Green Belt. Several PRoWs also run throughout the area of Part A.

5.4.2. The assessment has considered impacts of Part A on the local landscape character and visual impacts for existing residents, road users and other users, such as walkers, cyclists and horse riders.

Construction

5.4.3. Construction works would require the removal of landscape features such as hedges, trees and woodland (including some of the trees that make up the Coronation Avenue) that contribute to the vegetation cover. This would result in the removal of features which contribute to the local landscape character and therefore there would be newly exposed views of the wider landscape and the construction activity. Temporary heaps of material from excavation, material storage and site compounds would generate changes in the landscape. New structures, embankments and signage would result in a reduction of the

sense of openness in the predominantly agricultural landscape, which is a key feature of the Green Belt designation that covers the southern area of the Part A.

5.4.4. Construction activities would result in temporary adverse visual impacts. The presence of construction compounds and activity of construction machinery and vehicles, artificial lighting, demolition works including North Gate House, traffic management equipment and the storage heaps of excavated material would all result in adverse visual impacts. As a result, the occupiers of 30 residential property locations (or groups of properties), Users of 10 PRoWs and the occupants of three commercial and/or community facilities would experience significant adverse visual effects during construction.

5.4.5. Measures to mitigate construction impacts include; retaining existing vegetation wherever possible; using temporary soil mounds to restrict views of construction activities; locating machinery and material storage areas to avoid landscape and visual impacts; avoiding works during hours of darkness wherever possible and generally maintaining a tidy construction site.

Operation

5.4.6. The assessment considers the landscape and visual effects, both when Part A opens and, in the future, (15 years after opening), to account for when the landscape planting proposed as part of Part A would have matured. The design of Part A has sought to retain existing vegetation wherever possible. Landscape features proposed include 32 km of hedgerow, 37 ha of woodland, 1 ha of ecological mitigation areas, 61 ha of conservation grassland, 12 ha of grass verges, 7 ha of marginal planting and wetland areas, 2.5 ha of arable field margins, and 0.75 ha of amenity grassland. A new area of woodland is proposed to compensate for the loss of 0.68 ha of ancient woodland at the River Coquet with 8.16 ha of woodland planting. This new area of planting would be located next to the remaining ancient woodland.

5.4.7. The offline section of Part A would significantly affect a local landscape character as it would reduce the sense of the existing landscape being a tranquil, unspoilt agricultural landscape. Once the landscape planting matures (15 years after opening), and visually integrated into the landscape, this effect would not be significant.

5.4.8. The visual impacts of Part A would typically occur within short range views (less than 500 m) as well as some long-range views up to 1 km, though the appearance would improve as landscape planting matures and begins to integrate Part A into the landscape. Consequently, the occupants of 19 residential properties or groups of properties are anticipated to experience significant visual effects once Part A opens. This is anticipated to reduce for the occupants of 10 residential properties as the landscape planting matures. Part A would also visually impact upon users of 5 PRoWs such as walkers, horse riders and cyclists when it opens, reducing to 3 when planting has matured. Significant visual effects are expected on occupants of two commercial facilities once Part A opens, but none would be significantly affected once landscape planting matures. Regular inspection of Part A's

landscape planting would be carried out to ensure its effectiveness and to remedy any defects while it establishes.

PART B OVERVIEW

5.4.9. The surrounding landscape is generally open with arable and pasture farmland, enclosed by hedgerows (some tree-lined and some stone walls) and crossed by the A1. A number of plantation woodlands and waterbodies are within the area surrounding Part B. Northumberland Coast Area of Outstanding Natural Beauty (AONB) lies approximately 5 km to the east as shown on **Figure 2: – Constraints Plan** in **Appendix B**. Alnwick Castle Registered Park and Garden is located approximately 1 km to the south-west of Part B. Areas of high and intermediate landscape value are located within 1 km of Part B (e.g. Kyloe Hills and Glendale). Several PRoWs also run throughout the area of Part B, connecting smaller hamlets and scattered communities. Isolated residential dwellings, commercial properties and several farms lie next to and within Part B. Wind turbines of Middlemoor and Wandylaw wind farms are a noticeable skyline feature of the landscape to the west of Part B. With the exception of the landscape immediately adjacent to the existing A1, the landscape is relatively tranquil in nature.

5.4.10. The assessment has considered impacts of Part B on the local landscape character and visual impacts for existing residents, road users and other users, such as walkers, cyclists and horse riders.

Construction

5.4.11. The construction of Part B would affect both the landscape and visual amenity for residential properties, users of PRoWs and people travelling along the A1.

5.4.12. Construction works would require the removal of landscape features such as hedges, trees and woodland that contribute to the vegetation cover. This would result in the removal of features which contribute to the local landscape character and therefore there would be newly exposed views of the wider landscape and the construction activity. Temporary heaps of material from excavation, material storage and construction compounds would also generate changes in the landscape. New structures, embankments and signage would result in a reduction of the sense of openness in the predominantly agricultural landscape, specifically in the areas surrounding the new Charlton Mires Junction and Heckley Fence bridge. The assessment identifies significant landscape effects within both the Charlton Ridge Landscape Character Area and the North East Farmed Coastal Plain Landscape Character Area during construction. However, the construction impacts would be temporary and short term, and the effects would not be significant once mitigation planting measures have been established during operation.

5.4.13. These construction activities would result in temporary adverse visual impacts, which would be significant depending on the location of the visual receptors (visual receptors include residential properties, users of PRoW and people travelling along the A1). The presence of construction compounds, movement and activity of construction machinery and vehicles, artificial lighting, demolition works, traffic management equipment and the storage heaps of

excavated material would all result in adverse visual impacts. Alteration to topography, due to the raised embankment at the Charlton Mires Junction and the new bridge at Heckley Fence, would restrict views for residents in nearby properties.

5.4.14. Measures to mitigate construction impacts would be detailed in the CEMP and include retaining existing vegetation wherever possible; using temporary soil mounds to restrict views of construction activities; locating machinery and material storage areas to avoid landscape and visual impacts; avoiding works during hours of darkness wherever possible and generally maintaining a tidy construction site.

Operation

5.4.15. The assessment considers the landscape and visual effects, both when Part B opens and, in the future, (15 years after opening) to account for when the proposed landscape planting would have matured.

5.4.16. Once Part B is operational there would be some changes to the character of the surrounding areas, for example to the Landscape Character Areas affected during construction however, these changes would not result in any significant effects on landscape character as a result of Part B.

5.4.17. Due to the increased visual presence of the A1 and change of landform near the new Heckley Fence bridge and Charlton Mires Junction, the assessment predicts some significant visual effects on people living in properties with views to the east during the operation of the Scheme Part B. Advanced screening planting around Charlton Mires Junction and the Heckley Fence bridge would be implemented to lessen the negative views. Significant visual effects are also anticipated for users of several PRoWs one year after Part B is operational however, none would experience significant effects 15 years later once mitigation planting has established.

5.4.18. Mitigation measures would be further developed during the detailed design process and form part of the landscape design of Part B which would include minimising the loss of vegetation and replacement or planting of new vegetation and retaining views of local landmarks (including Heiferlaw Tower to the east, and Middlemoor and Wandylaw Moor Windfarms to the north west).

5.5. CULTURAL HERITAGE

PART A OVERVIEW

5.5.1. The assessment considers the potential effects of Part A upon cultural heritage assets, such as archaeological remains, historic buildings or structures, conservation areas and historic landscapes. A total of 149 heritage assets surround Part A including built heritage assets (such as listed buildings), two conservation areas (Felton Conservation Area and West Thirston Conservation Area) and a Scheduled Monument (Felton Old Bridge). Part A also crosses regionally and locally valued historic landscape character areas. A survey has also indicated that there are archaeological remains of regional and local importance across the area of Part A.

Construction

5.5.2. It is anticipated that any effects on below ground archaeological remains due to disturbance from construction would vary, depending upon the value of the asset, but could be significant if encountered. The presence of archaeological assets (and therefore impacts upon them) would be established through a programme of archaeological evaluation, through excavation of sample trenches, as agreed with NCC. This would be undertaken prior to construction works commencing, and the results of the evaluation would inform any requirements for mitigation during construction.

5.5.3. Where below-ground remains are present within Part A, mitigation would seek to either preserve them in place or preserve them by record. Preservation in place typically involves altering construction methods or the design to leave the asset in place and undisturbed, meaning no significant effects would be expected. Preservation by record would include an archaeological survey and recording of the asset in place before altering or disturbing it, which would reduce the effects upon most assets, but the effects upon some archaeological remains would still be significant.

5.5.4. Construction works would temporarily impact the setting of some built heritage assets through noise and visual disturbance, however mitigation measures to reduce these impacts would be included in the CEMP following which, no significant effects are predicted. Areas of historic landscape character would be impacted through the loss of land required to construct Part A, changing the character of the land and altering field patterns. Hedgerows with historic value would also need to be removed. However, no historic landscape character areas are predicted to be significantly affected.

Operation

5.5.5. Part A would result in changes to local groundwater levels which would impact any nearby buried archaeological assets, however as Part A would be built with a robust drainage system no significant effects are predicted.

5.5.6. Nine built heritage assets would experience a change in their setting as a result of either Part A moving closer to the asset or an increase in noise, light levels or pollution. However, when also considering the landscape design proposed as part of Part A which would limit views and the noise barriers, the effects are not considered to be significant.

PART B OVERVIEW

5.5.7. The assessment considers the potential effects of Part B upon cultural heritage assets, such as archaeological remains, historic buildings or structures, conservation areas and historic landscapes.

5.5.8. A total of 111 heritage assets surround Part B including eight Scheduled Monuments (e.g. North Charlton Medieval Village), 52 Listed Buildings, one Registered Park and Garden (Alnwick Castle), one Conservation Area (the Rock Conservation Area) and 51 non-designated assets. Within Part B there are three non-designated below ground assets, two non-designated built heritage assets, and nine historic landscape character types. There

was also one area containing geophysical features which could have been of archaeological origin at West Linkhall, however no heritage assets were found during the trial trenching which was undertaken in August 2019 at this site. Trial trenching was also undertaken at North Charlton in October 2019, but similarly no heritage assets were found.

Construction

5.5.9. There would be some temporary impacts upon the setting of some Scheduled Monuments (North Charlton Medieval village and open field system, Camp at West Linkhall, Prehistoric Burial Mound, 420m north west of East Linkhall and Ellsnook Round Barrow, 175m north east of Heiferlaw, however it is not considered that the effects from Part B would be significant.

5.5.10. Construction activities could significantly affect sensitive below ground assets in the immediate vicinity of Part B by partially or wholly disturbing them during activities such as topsoil stripping or installation of drainage pipes. Potential significant effects on specific buried archaeology are set out in paragraphs 5.5.11 to 5.5.13:

5.5.11. Site of two Bronze Age cist burials. Located at the northern end of Part B adjacent to the existing highway. The known burials have been removed but there is potential for the presence of additional funerary remains around the site, and therefore potential for their disturbance. If present, they would be of high importance due to the relationship with the Scheduled Monument Prehistoric burial mound, 430m north west of East Linkhall.

5.5.12. Findspot of two flint flakes of Neolithic and Bronze Age date at Charlton Mires may be indicative of additional buried remains in the area, which would be damaged or destroyed (a permanent, direct impact) by ground disturbance work.

5.5.13. Earthworks east of Heckley House. The site of the earthworks remains would be impacted by the establishment of the temporary access tracks required during the construction phase which could require the levelling of the land and the removal of the earthworks.

5.5.14. Currently unknown below ground remains. There is a potential for currently unknown below ground heritage assets to be present throughout Part B of Prehistoric, Medieval, Post-Medieval, Industrial and Modern date based on the results of the Historic Environment Desk Based Assessment and geophysical survey.

5.5.15. To prevent damage to buried archaeological assets, an area of potential archaeological origin to the west of the potential Iron Age Camp at East Link Hall would be excluded from any planting and cordoned off to ensure no intrusive ground works are carried out in this location.

5.5.16. A programme of archaeological trial trenching will be presented in a Draft Written Scheme of Investigation (WSI). The aim of the trial trenching would be to determine the presence, extent and value of the archaeological resource and to inform a subsequent programme of mitigation to be undertaken either before or during construction. A WSI would be devised in consultation with NCC and potentially Historic England (depending on the nature of the assets) to mitigate for any unknown archaeological remains which may be encountered

during construction. Should below-ground archaeological remains be found during construction, options would include preservation in-situ (which may require any amendment to the Scheme design or diversion or reburial and protection) or those of lesser importance may be recorded in an archive. The mitigation measures adopted would be dependent on the nature and material of heritage assets identified.

5.5.17. The construction of Part B requires the demolition of the Grade II Listed Charlton Mires Farmhouse, which would occur during the construction phase. A programme of Historic Building Recording will be presented in a Draft WSI. The aim of the Historic Building Recording would be to ensure the preservation in record and archive of the Charlton Mires Farmhouse prior to its demolition.

5.5.18. Construction works would temporarily impact the setting of some built heritage assets through noise and visual disturbance, including the Grade II Listed Building Heckley House, the Grade II Listed Building Dovecote, the Grade II Listed Building Patterson Cottage and the Grade II Listed Building West Linkhall Farmhouse located in the immediate vicinity of Part B.

5.5.19. However, mitigation measures to reduce these impacts would be included in the CEMP following which, no significant effects are predicted. Areas of historic landscape character would be impacted through the loss of land required to construct Part B, changing the character of the land and altering field patterns. Hedgerows with historic value would also need to be removed. However, no historic landscape character areas are predicted to be significantly affected.

Operation

5.5.20. During operation there would be permanent impacts on the setting of the Scheduled Monument Camp at West Linkhall due to the extension of the A1 which would bring it substantially closer to its boundary, however the effects would not be significant.

5.5.21. There would also be permanent impacts on the setting of the Grade II Listed Building Dovecote to the east of Heckley Fence Farmhouse with Attached Wall due to the visual intrusion of the bridge and the diversion of the Byway past the dovecote, with a significant adverse impact anticipated.

5.5.22. Impacts on built heritage assets during operation would be minimised through the use of visual screening, such as landscape planting.

5.6. BIODIVERSITY

PART A OVERVIEW

5.6.1. The assessment considered the impacts of Part A on the natural environment, including protected species, habitats and ecologically designated sites.

5.6.2. The natural environment around Part A comprises a variety of grasslands, hedgerows, woodland and waterbodies and rivers. There are several areas within 2 km of Part A designated for their environmental value, such as Local Wildlife Sites (LWS), Local Nature

Reserves and SSSI. The most notable of these are the River Coquet and Coquet Valley Woodlands SSSI and the Coquet River Felton Park LWS as Part A crosses these areas. Dukes Bank Wood (which is within the SSSI) is designated as an ancient woodland (areas that have been wooded since 1600A.D.) Field surveys found various wildlife species including great crested newt, bat, badger, birds (including barn owl), otter, invertebrates, fish, and invasive species.

Construction

5.6.3. Part would result in the loss of a 0.68 ha area of ancient woodland to allow for the construction of the River Coquet Bridge. However, a larger area of compensatory woodland planting amounting to 8.16 ha would be provided. This would take time to re-establish a woodland of similar ecological function as the area of woodland to be lost and therefore would be a significant effect. Vegetation clearance to make way for working areas and construction would result in the loss of habitat such as woodland, grassland and running water. However, replacement habitat would be provided through the landscape planting as part of Part A. Works to drainage culverts would result in both temporary and permanent loss of watercourse habitat which may also impact upon fish and aquatic invertebrates (small insects which live in water). However, with measures such as an ecologist supervising works, creating temporary channels for the watercourse and seasonal restrictions on works for certain watercourses, the effects would not be significant. Measures to mitigate the impacts of Part A include obtaining appropriate licenses, permits or consents where required, a pre-commencement walkover survey of the works and surrounding area undertaken by an ecologist and keeping vegetation clearance to a minimum and undertaking such works outside of the bird nesting period. Further mitigation measures are proposed for specific species, habitats or construction activities where a particular risk is identified. With mitigation measures in mind, no other impacts are predicted to result in a significant effect.

Operation

5.6.4. Although there would be changes in air quality pollutant levels at nearby designated sites once Part A is operational changes are not predicted to result in a significant effect.

5.6.5. Bats and barn owls have been identified in the area and therefore vehicles using Part A would present a risk of collision. To mitigate this, roadside bunds are being incorporated in specific locations to encourage barn owl to fly high and over the road and a number of culverts to provide a way for bats to fly under the road, to maintain flight paths across Part A. Culverts have also been designed to mitigate impacts upon fish and mammals by incorporating natural beds and ledges, where possible. Four culverts are also proposed solely to provide crossing points for badgers and other mammals.

5.6.6. The Biodiversity assessment also considered whether Part A would result in an overall loss of biodiversity. This concluded that Part A is in line to deliver a considerable net gain in biodiversity units (the value measured in a biodiversity assessment) of area-based Habitats of Principal Importance (those most threatened and requiring conservation). However

overall, Part A would result in a net loss of biodiversity due to the loss of ancient woodland (which is an irreplaceable habitat) as well as other habitat types such as hedgerows, although more hedgerows would be planted as part of Part A than would be lost.

PART B OVERVIEW

5.6.7. The assessment considered the impacts of Part B on the natural environment, including protected species (such as bats) habitats and ecologically designated sites. The natural environment around Part B of the Scheme comprises a variety of grasslands, hedgerows, woodland and waterbodies and rivers. Field surveys found various wildlife species including bat, badger, birds (including barn owl), aquatic invertebrates (insects which live in water), fish, and invasive species (such as Himalayan balsam).

Construction

5.6.8. Vegetation clearance to make way for working areas and construction of Part B would result in the loss of habitat such as woodland, grassland and running water. However, replacement habitat would be provided through the landscape planting. This clearance may result in the disturbance of nesting birds, and the loss of habitat which could support nesting birds, which could result in a significant effect. However, provided a series of measures are in place during construction, for instance by undertaking works outside of the nesting period, there would be no significant effect on nesting birds.

5.6.9. Part B would result in the permanent loss of bats roosts associated with the demolition of buildings and the removal of woodland which contains bat boxes. However, as these bat boxes would be moved to nearby woodland and further bat boxes would be installed throughout suitable habitat across Part B, the effects would not be significant.

5.6.10. Works to drainage culverts would result in both temporary and permanent loss of watercourse habitat which may also impact upon fish and aquatic invertebrates. However, with measures such as an ecologist supervising works, creating temporary channels for the watercourse and seasonal restrictions on works for certain watercourses, the effects would not be significant. Measures to mitigate the impacts of Part B include obtaining appropriate licenses, permits or consents where required, a pre-commencement walkover survey of the works and surrounding area undertaken by an ecologist, keeping vegetation clearance to a minimum and undertaking such works outside of the bird nesting period. Further mitigation measures are proposed for specific species, habitats or construction activities where a particular risk is identified. With mitigation measures in mind, no impacts are predicted to result in a significant effect.

Operation

5.6.11. Once Part B is operational, there are only predicted to be impacts on biodiversity within the immediate vicinity of the new carriageway. However, hedge, shrub and tree planting has been designed to encourage birds, barn owl and bats to fly above the height of traffic in order to reduce these impacts. The inclusion of tall trees and shrubs (as opposed to short grass) has also been designed to discourage barn owls from feeding adjacent to the

carriageway, as they usually feed in shorter grass. This should reduce the number of collisions and deaths resulting from traffic.

5.6.12. Naturalised beds have also been incorporated into the design of the river culverts which would encourage fish passage and support aquatic life. Also, the southern tributary of Kittycarter Burn would be diverted and realigned to the east of the new Charlton Mires Junction. Realigning Kittycarter Burn would reduce the length of culvert required at this location.

5.6.13. The Biodiversity assessment also considered whether Part B would result in an overall loss of biodiversity. This concluded that Part B of the Scheme is in line to deliver net gain in areas that are not habitats of principal importance but an overall net loss in biodiversity through the permanent loss of habitat including established hedgerows and areas of woodland.

5.6.14. Although there would be changes in air quality pollutant levels in a small area immediately adjacent to Part B, planting along the roadside may provide added benefits to air quality and capture any water-based pollution.

5.6.15. Overall, with mitigation measures in place, it is not anticipated that there would be any significant effects on ecology once the road is open to traffic.

5.7. ROAD DRAINAGE AND THE WATER ENVIRONMENT

PART A OVERVIEW

5.7.1. This assessment considers the impact of Part A on road drainage and the water environment, including surface and groundwater and flood risk.

5.7.2. Part A's alignment would cross ten watercourses, the most notable of which are Longdike Burn and the River Coquet which are shown on **Figure 2: – Constraints Plan** in **Appendix B**. The majority of the geology of the area is permeable rock capable of supporting water at a local, rather than regional scale. Much of Part A is within areas of low flood risk, though some areas are within medium or high flood risk. Currently, surface water from the A1 is collected by a system of gullies and transported via an underground piped system to various watercourses near to Part A where the water is discharged.

Construction

5.7.3. Potential impacts during construction include impacts to water quality due to any spillages of fuel, oil, chemicals, concrete and increased sediment from across the ground surface from construction works areas to watercourses. Works within watercourses would also be needed to extend and create new culverts, bridge crossings and channel realignments which would increase the amount of sediment in the water, increase the risk of pollutant spillage and may change the characteristics of the flow of water within the watercourse. Also, whilst the works may cause increased localised flood risk, there are no properties located close to the proposed construction areas and therefore impacts are unlikely.

5.7.4. Measures to protect the water environment during construction would be included in the CEMP. Such measures include storing potentially polluting substances at least 10 m away from watercourses, locating topsoil storage areas away from watercourses and covering or seeding them until needed, refuelling vehicles away from water, checking construction plant regularly for oil and fuel leaks particularly when working near waterbodies, signing up to the Environment Agency's flood warning service and applying for appropriate consents. With these measures in place, it is not anticipated that there would be any significant effects on the water environment during construction.

Operation

5.7.5. Potential impacts during operation of Part A include impacts from polluted surface runoff and quality of nearby water features, changes in natural overland flow, increased rates and volumes of surface water runoff from increased impermeable areas and a permanent increase in flood risk. Part A includes mitigation measures within a drainage strategy which incorporates various types of drains and channels to collect surface water runoff from the highway and transport it to areas designed to manage the flow during periods of heavy rainfall; and by slowing the rate of flow of water allowing any sediment and pollutants to settle to the bottom of the areas rather than entering the watercourses. With these design and mitigation measures in place there would be no significant adverse effects on the water environment.

PART B OVERVIEW

5.7.6. This assessment considers the impact of Part B on road drainage and the water environment, including surface and groundwater and flood risk.

5.7.7. Part B's alignment would cross five watercourses and associated tributaries which are shown on **Figure 2: – Constraints Plan** in **Appendix B.** The majority of the geology of the area is permeable rock capable of supporting water at a local, rather than regional scale. Much of Part B is within areas of low flood risk, though some areas are within medium or high flood risk particularly the southern section near Denwick Burn.

Construction

5.7.8. Potential impacts during construction include impacts to the water quality of receiving water bodies as a result of spillages of fuel, oil, chemicals, concrete or grout, sediment laden runoff reaching watercourses, increased runoff to surface water drainage systems with potential impacts on flood risk and potential impacts on groundwater as a result of dewatering, piling, stabilisation of mineshafts or spillages.

5.7.9. Measures to protect the water environment during construction would be included in the CEMP. Such measures include storing potentially polluting substances at least 10 m away from watercourses, locating topsoil storage areas away from watercourses and covering or seeding them until needed, refuelling vehicles away from water, checking construction plant regularly for oil and fuel leaks particularly when working near waterbodies, signing up to the Environment Agency's flood warning service and applying for appropriate consents. With

these measures in place, it is not anticipated that there would be any significant effects on the water environment during construction.

Operation

5.7.10. Potential impacts during operation of Part B include impacts from polluted surface runoff and quality of nearby water features, changes in natural overland flow, increased rates and volumes of surface water runoff from increased impermeable areas and a permanent increase in flood risk. Part B includes mitigation measures within a drainage strategy which incorporates various types of drains and channels to collect surface water runoff from the highway and transport it to areas designed to manage the flow during periods of heavy rainfall; and by slowing the rate of flow of water allowing any sediment and pollutants to settle to the bottom of the areas rather than entering the watercourses. With these design and mitigation measures in place there would be no significant adverse effects on the water environment.

5.8. GEOLOGY AND SOILS

PART A OVERVIEW

5.8.1. The different types of land use and soil conditions within Part A have been surveyed to understand the quality of the existing soil and assess the effects the Part A would have on geology, soils, groundwater, landforms, mineral resource and surface water. Approximately 9% of the area of Part A lies within what is considered high-quality agricultural land. Two areas of past coal mining have been identified at Causey Park Hagg and adjacent to Eshott Airfield.

Construction

5.8.2. The construction of Part A would temporarily require the use of approximately 63 ha of agricultural land for working space and access, which could reduce the quality of the soil. This would not have a significant effect as the areas to be temporarily used would be reinstated to agricultural use following construction, in line with a ‘Soil Handling Strategy’ which would be developed to detail measures on how to preserve soil and land quality. Potential sources of contamination have been identified in parts of Part A, notably near to Eshott Airfield, which could impact construction workers. However, the CEMP would include measures such as suitable risk assessments and respirators for construction staff working in confined spaces (such as maintenance chambers associated with the drainage infrastructure) and procedures for encountering any unexpected contamination to ensure the safety of construction workers. Construction vehicles and the storage of fuels and chemicals also present the risk of leaks or spillages, as well as earthworks generating silt, which could enter surface water courses and groundwater. However, the CEMP would outline requirements for construction activities with a greater risk of spillage (such as vehicle maintenance areas) to be carefully located, refuelling would take place on impermeable surfaces, secure storage of fuels, oil and chemicals and loose materials would be covered when stored. Earthworks close to sensitive watercourses near Part A, notably the River

Coquet, would also be carefully managed. Shallow worked coal seams and several historical mine shafts also present a risk of collapse; however, all construction staff would be made aware of their presence, a risk assessment undertaken, and mine shafts would be made safe if found, therefore no significant effects are predicted.

Operation

5.8.3. Agricultural land temporarily required would be reinstated on completion of the works, however Part A would result in the permanent loss of approximately 109 ha of agricultural land. There would be a significant effect due to the loss of 9 ha of agricultural land which is categorised as best and most versatile agricultural land and 73 ha which is considered of moderate quality. The loss of the remainder of agricultural land would not be a significant effect. All other aspects of the geology and soils assessment, such as impacts to surface and ground water, human health and ground stability, are not considered to have a significant effect once Part A is operational.

PART B OVERVIEW

5.8.4. The different types of land use and soil conditions within Part B have been surveyed to understand the quality of the existing soil and to assess the effects Part B would have on geology, soils, groundwater, landform, mineral resource and surface water.

5.8.5. Approximately 43% of the area of Part B lies within what is considered high-quality agricultural land. Thirteen areas of past coal mining have been identified within 250 m of Part B.

5.8.6. Potential sources of contamination have been identified along Part B including, for example, from the existing A1, historical quarries, limekilns and coal pits. Historical coal mining shafts are located along the southern end of Part B.

Construction

5.8.7. The construction of Part B would temporarily require the use of agricultural land for construction compounds, construction working space and access which could reduce the quality of the soil. This would not have a significant effect as the areas to be temporarily used would be reinstated to agricultural use following construction, in line with a ‘Soil Handling Strategy’ which would be developed to detail measures on how to preserve soil and land quality.

5.8.8. Part B would result in the permanent loss of approximately 39 ha of agricultural land. There would be a significant effect due to the loss of 25 ha of agricultural land which is categorised as best and most versatile agricultural land and 14 ha which is considered of moderate quality.

5.8.9. Potential sources of contamination have been identified in parts of Part B which could impact construction workers. However, the CEMP would include measures such as suitable risk assessments and respirators for construction staff working in confined spaces (such as maintenance chambers associated with the drainage infrastructure) and procedures for encountering any unexpected contamination to ensure the safety of construction workers.

Construction vehicles and the storage of fuels and chemicals also present the risk of leaks or spillages, as well as earthworks generating silt, which could enter surface watercourses and groundwater. However, the CEMP would outline requirements for construction activities with a greater risk of spillage (such as vehicle maintenance areas) to be carefully located, refuelling would take place on impermeable surfaces, secure storage of fuels, oil and chemicals and loose materials would be covered when stored. Earthworks close to ponds and watercourses would also be carefully managed. Thirteen areas of past coal mining also present a risk of collapse; however, all construction staff would be made aware of their presence, a risk assessment undertaken, and mine shafts would be made safe if found, therefore no significant effects are predicted.

Operation

5.8.10. Impacts to surface and ground water, human health and ground stability are not considered to have a significant effect once Part B is operational.

5.9. POPULATION AND HUMAN HEALTH

PART A OVERVIEW

5.9.1. The population and human health' assessment considers the effects of Part A on pedestrians, cyclists, horse-riders, vehicle travellers, the local economy and human health.

5.9.2. Part A is set within a rural landscape and is sparsely populated. Morpeth and Felton comprise the main settlements with villages and hamlets scattered between. There are several PRoW, communities and community facilities within the vicinity of Part A which are used for walking, cycling and horse-riding (WCH). This includes St Oswald's Way (a long-distance footpath, north of the River Coquet).

Construction

5.9.3. To allow construction works to take place 12 PRoWs require temporary diversion, and a further two would be closed, which is likely to cause significant disruption to some users. Where PRoW remain open and are near to construction works, users would experience visual intrusion, noise and dust emissions which would have negative effects on users. To reduce the effects upon WCHs, NCC would be consulted on any temporary diversionary works or closure of WCH routes and the public would be informed of the nature, timing and duration of particular activities during the construction stage by newsletter or other forms of appropriate communication.

5.9.4. Reduction in the amenity value (noise, dust and disruption to existing views) of the River Coquet in proximity to Part A has the potential to affect the recreational value of activities such as angling, boating and general use of the River Coquet area.

5.9.5. Some minor beneficial economic effects have been identified due to the creation of construction related jobs and support to local businesses, for example, through expenditure on materials for Part A.

5.9.6. The community is expected to continue to be able to access community facilities during construction, therefore no significant effects are predicted.

5.9.7. One private residence (Northgate House) would be demolished during the construction of Part A which would be a significant effect. Access to other affected private residences would be maintained or temporarily or permanently diverted during construction with no further significant effects.

5.9.8. There may be some reduction in access for commercial properties, including to farm holdings and agricultural land, during construction, but measures would be put in place to reduce the impacts of this and maintain access where practical. However, three farm holdings would experience temporary significant effects during construction due to temporary land loss and restricted access.

5.9.9. During construction, traffic management systems and diversion routes may lead to some traffic being rerouted onto local roads, in particular the A697. These diversions, and any associated congestion, could potentially worsen existing severance of communities along that route. This would be managed by a Construction Traffic Management Plan which would include measures such as clear signage and clear notification of the diversion; however, the effects are not considered to be significant. Driver views from the road during construction would be significantly worse due to removal of areas of roadside vegetation and visibility of construction activities. Effects upon driver stress during construction would not be significant. The removal of three bus stops would increase journey times for public transport users, but this is unlikely to cause significant disruption.

5.9.10. Impacts upon human health would be managed by measures discussed in the other assessments within this PEIR to minimise impacts such as dust, noise, air quality, flooding and effects are not expected to be significant.

Operation

5.9.11. A part of the Scheme objectives to improve safety, once Part A is open, WCHs would no longer be able to directly cross the A1 at road level; instead, connectivity would be maintained by new footways provided on the bridges of the proposed new junctions. Therefore, some PRoWs would be diverted to these crossings or would be closed. In addition, the east-west PRoW south of the River Coquet would be routed under the existing and proposed River Coquet bridges. These would be detailed in the PRoW Management Plan, to be produced by the main contractor. The changes would result in a slight beneficial effect for some PRoW users where safety is improved. For other users, the effects would be adverse in relation to the amenity of the journey and the separation of residents from facilities and services, but these effects would only be significant for the users of one footpath. Improved safety would also benefit residents, despite slightly increasing journey times.

5.9.12. There would be significant effects on three farm holdings during operation due to land take and impacts on farm businesses. No significant effects are expected to other commercial properties as accesses would be maintained.

5.9.13. A new segregated shared footway and cycleway would be provided along the length of the eastern side of the proposed road linking the bypassed section of A1 and Felton Road. This would improve access and safety for cyclists alongside the A1, resulting in a beneficial but not significant effect. Part A would also benefit vehicle users, as the improved traffic flows and reduction in fear of accidents would decrease driver stress.

5.9.14. Views for users of the A1 after construction are unlikely to change significantly, especially once planting has matured.

5.9.15. Once operational, the change in traffic flows would result in a minor, not significant, effect on human health, relating to noise and air quality pollution.

PART B OVERVIEW

5.9.16. The population and human health assessment consider the effects from Part B on walkers, cyclists, horse-riders, vehicle travellers, the local economy and human health.

5.9.17. Alnwick is the largest community near to Part B, with various other smaller villages and hamlets in the area including Denwick, South Charlton, North Charlton and Brownieside. A number of residential properties, businesses and community and recreational facilities are located adjacent or close to the existing A1. The Scheme would predominantly pass through agricultural land.

5.9.18. A network of PRoW extends within and around Part B, serving a wide range of users. Surveys noted the most popular PRoW to be a bridleway at West Linkhall. In addition to PRoWs, there are footways along several sections of the existing A1.

Construction

5.9.19. A number of PRoW require closure to allow construction works to take place, which would increase community severance and / or require lengthy diversions. This would have a significant adverse effect on most affected PRoW both during the construction and operation of Part B. Users of PRoW and existing informal cyclepaths / footpaths that would remain open and would be near to construction works would experience a temporary reduction of journey pleasantness as a result of visual intrusion, noise and dust emissions. Some of the affected receptors would experience a significant effect depending on their location. To reduce the impacts upon WCHs NCC would be consulted on any temporary diversionary works and have been consulted on the closure of WCH routes. The public would also be informed of the nature, timing and duration of particular activities during the construction stage by newsletter or other forms of appropriate communication. There may be an effect on the views from the road too, with reduction in roadside vegetation predicted during construction.

5.9.20. Charlton Mires Farm and East Cottage would be demolished during construction to enable the new Charlton Mires Junction to be constructed. Overall, there would be a significant effect on residents of these properties.

5.9.21. Some minor beneficial economic effects have been identified from the creation of construction related jobs and support to local businesses through expenditure from direct spend on materials for Part B, although these effects would not be significant. The community is expected to continue to access community facilities and private residences during construction, so no significant effects are predicted. There may be some reduction in access for commercial properties during construction, but measures would be put in place to reduce the impacts of this and maintain access where practical, including to farm holdings and agricultural land.

5.9.22. There is not likely to be a significant effect on most of the farm holdings as a result of Part B, however, there is likely to be permanent severance / disruption to East Cottage farm holding, and both temporary and permanent severance / disruption to Charlton Mires farm holding, including impacts on the success of farm businesses. The effects on these two farm holdings would lead to a significant adverse effect due to a range of factors, including temporary and permanent loss of land and buildings, changes in access and changes to soil quality at the affected farms. Some measures would be implemented to reduce negative effects where possible, such as the new Heckley Fence bridge which would allow farm traffic to move across the A1 safely. Despite the majority of farm holdings not experiencing a significant effect, overall there remains a significant effect on agricultural businesses owing to the severity of the impacts of Part B on the two affected farms.

5.9.23. During construction, traffic management systems and diversion routes may lead to some traffic being rerouted onto local roads. These diversions, and any associated congestion, could potentially worsen existing problems of the severance of communities along these routes. This would be managed by a Construction Traffic Management Plan which would include measures such as clear signage and clear notification of any diversions. Therefore, with the implementation of these measures the effects are not considered to be significant.

5.9.24. Views from the road for drivers during construction would change due to removal of areas of roadside vegetation and visibility of construction activities, which would result in a significant effect. There is likely to be an increase in confusion and disruption on the road network during construction, leading to a potentially significant temporary effect upon driver stress. Effects upon human health would be managed in line with best practice measures to manage air quality, noise and flooding. This would include measures such as controlling dust and wheel washing to reduce impacts on air quality, careful management of the timing of construction activities to reduce the impact of noise and vibration and ensure good storage of fuels away from watercourses to prevent water pollution. Effects on human health during construction are therefore not expected to be significant.

Operation

5.9.25. Once Part B is open, WCHs would no longer be able to cross the A1 at road level, as part of the Scheme objectives to improve safety; instead, connectivity would be maintained by new footways provided on the bridges at the new Charlton Mires Junction and Heckley Fence. Therefore, some PRoWs would be diverted to these crossings or would be closed. These

would be detailed in the PRoW Management Plan, to be produced by the main contractor. The changes would result in some significant adverse effects in relation to the amenity of the journey, and the separation of residents from facilities and services. However, improved safety would benefit residents, despite slightly increasing journey times.

5.9.26. Part B would also benefit vehicle users because it would improve traffic flows, reduce fear of accidents and decrease driver stress. No significant effects are expected for commercial properties as all existing accesses would be retained.

5.9.27. Views of the surrounding area from Part B are unlikely to change significantly from existing views from the A1, especially once planting adjacent to Part B has matured.

5.9.28. Once operational, the change in traffic flows would not have a significant effect on human health, relating to noise or air quality pollution.

5.10. MATERIAL RESOURCES

PART A OVERVIEW

5.10.1. The materials and waste assessment considers the impacts and effects of Part A on the consumption of material resources (including products offering sustainability benefits, recycled or renewable sources) and the generation and use of material recovered from site. It also considers the production and disposal of waste to landfill.

5.10.2. The current operation and maintenance of the existing A1 assets consumes a small number of components such as light bulbs, signage, steelwork for replacement barriers, as well as asphalt for minor re-surfacing for routine works and repairs of the highway. Minimal volumes of waste from such routine maintenance activities are generated.

Construction

5.10.3. Construction would require materials such as steel, concrete and asphalt to be used which may consume materials which are scarce or in limited supply. Waste would also be generated from activities such as demolition and widening of the carriageways which, if sent to landfill, would impact upon regional landfill capacity.

5.10.4. The consumption of construction materials for Part A would not have a significant effect on the regional and national market resources; that is, there would be sufficient materials available for construction. It is intended that the majority of material from earthworks, demolition of existing structures, for the tie-in of new structures and the removal of road surfacing for the widening works would be, wherever possible, reused on-site, or recovered and diverted from landfill. Although, any wastes which cannot be diverted from landfill, such as contaminated earth material, would have an adverse impact on landfill capacity in the region. The CEMP would state the requirement for the main contractor to produce management plans to monitor material reuse and to manage and monitor site waste to reduce waste and potential harm to the environment. Based upon estimated quantities of required material, and the capacity of the regional landfill site to accept the waste, the effect of Part A is not considered to be significant.

Operation

5.10.5. The operation and maintenance of Part A assets would require only a small number of components for example, light bulbs and steelwork for replacement barriers. Similarly, there would only be small volumes of waste generated for example from routine bridge maintenance. As such operational effects are not considered significant.

PART B OVERVIEW

5.10.6. The material resources assessment considers the impacts and effects of Part B on the consumption of material resources (including products offering sustainability benefits, recycled or renewable sources) and the generation and use of material recovered from site. It also considers the production and disposal of waste to landfill.

5.10.7. The current operation and maintenance of the existing A1 assets consumes a small number of components such as light bulbs, signage, steelwork for replacement barriers, as well as asphalt for minor re-surfacing for routine works and repairs of the highway. Minimal volumes of waste from such routine maintenance activities are generated.

Construction

5.10.8. Construction would require materials such as steel, concrete and asphalt to be used which may consume materials which are scarce or in limited supply. Waste would also be generated from activities such as demolition and provision of the additional carriageways, which, if sent to landfill, would impact upon regional landfill capacity.

5.10.9. The consumption of construction materials for Part B would not have a significant effect on the regional and national market resources; that is, there would be sufficient materials available for construction. It is intended that the majority of material from earthworks, demolition of existing structures, for the tie-in of new structures and the removal of road surfacing for the widening works would be, wherever possible, reused on-site, or recovered and diverted from landfill. Although, any wastes which cannot be diverted from landfill, such as contaminated earth material, would have an adverse impact on landfill capacity in the region. The CEMP states the requirement for the main contractor to produce management plans to monitor material reuse and to manage and monitor site waste to reduce waste and potential harm to the environment. Based upon estimated quantities of required material, and the capacity of the regional landfill site to accept the waste, the effect of Part B is not considered to be significant.

Operation

5.10.10. The operation and maintenance of Part B assets would require only a small number of components for example, light bulbs and steelwork for replacement barriers. Similarly, there would only be small volumes of waste generated for example from routine bridge maintenance. As such operational effects are not considered significant.

5.11. CLIMATE

PART A OVERVIEW

5.11.1. The climate assessment considers how Part A could affect climate, for example by releasing more greenhouse gases (GHG) during construction and operation and their contribution to global warming and climate change; and considers the vulnerability of Part A to climate change, in particular impacts on Part A from extreme weather and long-term climate change during construction and operation. GHG are natural and man-made gases occurring in the atmosphere, which retain the sun's energy within the earth's atmosphere. The assessment considers that GHG emissions occur constantly and widely due to human and natural activity therefore the assessment only considers where Part A results in additional or avoidable emissions compared to the existing scenario and its assumed evolution.

Construction

5.11.2. During construction, the main source of GHG emissions would be carbon inherently within construction materials, the majority of which relates to road surfacing (specifically, asphalt and aggregate). Other sources include waste generation, disposal and the transportation of materials. Measures to mitigate the generation of GHG would be set out in the CEMP and include, amongst others, minimising waste and maximising material reuse, sourcing materials locally to minimise transportation, re-using material from earthworks and demolition and using pre-fabricated elements and off-site construction to optimise efficiency. The construction of Part A is predicted to have a slight adverse impact upon GHG emissions, which is considered not significant. Furthermore, the total estimated GHG emissions arising from Part A (both construction and operation) would be less than 0.01% of the overall UK National Carbon Budget. The climate vulnerability assessment has identified that hazards including extreme weather events (such as extreme rainfall, drought, wetter winters and flooding, extreme temperatures and wind) have the potential to impact construction workers, business continuity, materials and equipment and structures. However, when considered with Part A's resilience and the mitigation measures below, no significant effects are predicted.

5.11.3. Mitigation measures would be implemented during construction to manage the risks, for example, structure drainage systems would have maintenance access built in to ensure blockages are reduced as much as practically possible to eliminate build-up of water and flood risk is managed. Other measures include avoiding concreting in the middle of the day and avoiding working at heights or use of cranes during high wind events. With mitigation in place, there would not be a significant effect from the vulnerability of Part A to climate change.

Operation

5.11.4. During operation, the main source of GHG emissions would be from the vehicles using Part A. Another, lesser, source of emissions is those associated with the repair and

refurbishment (resurfacing) of Part A. Additional road use as a result of Part A would account for over 90% of the total GHG emissions overall (considering construction and operation phases). The change in land use as a result of Part A is predicted to result in a reduction in GHG emissions due to an increase in forest area. However, as with the construction phase, although the operation of Part A is predicted to have an adverse impact upon GHG emissions, the magnitude of GHG emissions and the context of Part A, using professional judgement, it is considered that the slight adverse effect of Part A is not significant.

5.11.5. The potential impacts of climate change to Part A are similar to that during construction. The most notable are damage to carriageway, bridge structures from extreme weather conditions (rainfall, drought, storms), reduced opportunities for maintenance owing to extreme rainfall events and temperatures, increased skid and accident risk due to extreme rainfall events and safety risks to road users due to storms and associated damage (such as falling trees). However, no significant effects are predicted when considering Part A's resilience and mitigation measures.

PART B OVERVIEW

5.11.6. The climate assessment considers how Part B could affect climate, for instance through the release of greenhouse gases (GHG) during construction and operation which would contribute to global warming and climate change. The assessment also considers the vulnerability of Part B to climate change, in particular, impacts on Part B from extreme weather and long-term climate change during construction and operation. The assessment considers that GHG emissions occur constantly and widely due to human and natural activity therefore the assessment only considers where Part B results in additional or avoidable emissions compared to the existing scenario and its assumed evolution.

Construction

5.11.7. During construction, the main source of GHG emissions would be carbon inherently within construction materials, the majority of which relates to road surfacing (specifically, asphalt and aggregate). Other sources include waste generation, disposal and the transportation of materials. Measures to mitigate the generation of GHG would be set out in the CEMP and include, amongst others, minimising waste and maximising material reuse, sourcing materials locally to minimise transportation, re-using material from earthworks and demolition and using prefabricated elements and off-site construction to optimise efficiency. The construction of Part B is predicted to have a minor adverse impact upon GHG emissions, which is not considered significant. Furthermore, the total estimated GHG emissions arising from Part B (both construction and operation) would be less than 0.01% of the overall UK National Carbon Budget.

5.11.8. The climate vulnerability assessment has identified that hazards including extreme weather events (such as extreme rainfall, drought, storms and flooding, extreme temperatures and wind) have the potential to impact construction workers, business continuity, materials and

equipment and structures. However, when considered with Part B's resilience and the mitigation measures below, no significant effects are predicted.

5.11.9. Mitigation measures would be implemented during construction to manage the risks, for example, structure drainage systems would have maintenance access built in to ensure blockages are reduced as much as practically possible to eliminate build-up of water and ensure flood risk is managed. Other measures include avoiding concreting in middle of day and avoiding working at heights or use of cranes during high wind events. With mitigation in place, there would not be a significant effect from the vulnerability of Part B to climate change.

Operation

5.11.10. During operation, the main source of GHG emissions would be from the vehicles using Part B. Another, lesser, source of emissions is those associated with the repair and refurbishment (resurfacing) of Part B. Additional road use as a result of Part B would account for over 90% of the total GHG emissions overall (considering construction and operation phases). However, as with the construction phase, although the operation of Part B is predicted to have an adverse impact upon GHG emissions, the magnitude of GHG emissions and the context of Part B, using professional judgement, it is considered that the slight adverse effect of Part B is not significant.

5.11.11. The potential impacts of climate change to Part B are similar to that during construction. The most notable are damage to carriageway, bridge structures from extreme weather conditions (rainfall, drought, storms), reduced opportunities for maintenance owing to extreme rainfall events and temperatures, increased skid and accident risk due to extreme rainfall events and safety risks to road users due to storms and associated damage (such as falling trees). However, no significant effects are predicted when considering Part B's resilience and mitigation measures.

5.12. COMBINED EFFECTS

PART A OVERVIEW

5.12.1. An assessment has been undertaken to consider how multiple impacts at the same time may affect a receptor. This could occur due to multiple impacts of Part A from different environmental topics combining to cause an effect on the same receptor within Part A which is different than the effect of an impact from one topic alone. This is known as combined effects, and can occur for example, if a residential receptor is affected by noise, air quality and visual effects from Part A. Combined effects between Part A and B and Cumulative effects are dealt with within **Section 6** of this PEIR**.**

Construction

5.12.2. Combined effects during construction would affect receptors such residents, amenity areas, road users, ecological sites, commercial properties and agricultural land. The anticipated combined effects vary for each receptor, but include such effects as changes in air quality, increased noise levels, loss of trees and vegetation, and changes in views, amongst others.

Mitigation measures for Part A, for instance the installation of portable noise screens, suitable material storage away from receptors, and the adherence to strict working hours (among others) would minimise the potential for combined effects. However, significant combined effects upon some residential receptors and Tritlington Church of England Aided First School (due to visual, noise and air quality effects) and users of some footpaths and PRoWs (due to the closure or diversion of some paths and impacts upon amenity) are predicted during construction.

Operation

5.12.3. Combined effects during operation would affect residents, surrounding amenity areas, road users, users of footpaths, ecological sites and agricultural land. The effects vary by receptor but include impacts on air quality, traffic, noise and changes to views. Some effects would be beneficial while others would be adverse. Significant combined effects are predicted for some residential properties (due to visual and noise effects) and users of some PRoWs and footpaths (due to visual, amenity effects and changes to the journey time).

PART B OVERVIEW

5.12.4. An assessment has been undertaken to consider how multiple impacts at the same time may affect a receptor. This could occur due to multiple impacts of Part B from different environmental topics combining to cause an effect on the same receptor within Part B which is different than the effect of an impact from one topic alone. This is known as combined effects, and can occur for example, if a residential receptor is affected by noise, air quality and visual effects from Part B. Combined effects between Part A and B and Cumulative effects are dealt with within **Section 6** of this PEIR**.**

Construction

5.12.5. Combined effects during construction would affect receptors such as residents, amenity areas, road users, users of PRoW, ecological sites, commercial properties and agricultural land. The anticipated combined effects vary for each receptor, but include such effects as changes in air quality, increased noise levels, loss of trees and vegetation, and changes in views, amongst others. Mitigation measures for Part B, for instance maintaining construction machinery and vehicles to reduce noise generation, suitable material storage away from receptors, and the adherence to strict working hours (among others) would minimise the potential for combined effects. However, significant combined effects upon some residential receptors (due to visual, noise, air quality, population and human health effects), farming businesses (due to loss of farmland and severance / disruption to farm holdings), road users (due to visual, air quality, population and human health effects) and users of some footpaths and PRoW (due to the closure or diversion of some paths and impacts upon amenity) are predicted during construction.

Operation

5.12.6. Combined effects during operation would affect residents, surrounding amenity areas, road users, users of PRoW, ecological sites, commercial properties and agricultural land. The

effects vary by receptor but include impacts on air quality, noise and changes to views. Some effects would be beneficial while others would be adverse. Significant combined effects are predicted for some residential receptors (due to visual, noise, air quality, population and human health effects) and users of some footpaths and PRoW (due to the closure or diversion of some paths and impacts upon amenity).

5.13. LIKELY SIGNIFICANT EFFECTS OF PARTS A AND B

5.13.1. Appendix C of this PEIR identifies the likely significant effects of the Scheme based on the work done to date. Refer to **Figure 3: Viewpoint Location Plan, Figure 4: Designated Heritage Assets** and **Figure 5: Non-Designated Heritage Assets** in **Appendix B** of this **PEIR** for the locations of environmental receptors discussed in **Appendix C**.

6. ASSESSMENT OF CUMULATIVE EFFECTS

6.1. INTRODUCTION

6.1.1. This section considers the cumulative effects of the Scheme during construction and operation and details any potentially significant effects both as a result of "combined effects" and "cumulative effects" defined as follows:

a. "Combined effects" are defined as cumulative impacts from a single project or parts of the same project (for example, visual impacts may arise for the same receptor from both Part A and Part B i.e. 'within topic,' or the Scheme may result in noise and visual impacts upon the same receptor 'cross topic').

b. "Cumulative effects" are from different projects in combination with the scheme being assessed.

6.1.2. While the assessment of combined 'cross topic' effects within Part A and Part B is completed and a summary presented in Section 5, the combined effects of the Scheme, both within topic and cross topic are currently being assessed, as are the cumulative effects of the Scheme; however, the current understanding of potential effects is presented in this section.

6.2. COMBINED EFFECTS OF THE SCHEME

6.2.1. The combined effects of Part A and B are currently being assessed, the following represents the findings of an initial appraisal of potential in combination effects. A full assessment will be presented within the ES.

WITHIN TOPIC

6.2.2. Within topic combined effects represent the effects of the Scheme, this assessment is being carried out to ensure that, while the assessments within Part A and B have been carried out, there are no additional effects arising from the combination of Part A and B.

Table 6-1 - Assessment of Potential Combined Effects Within Topic

Topic	Summary	Potential Effects
Air Quality	Construction: Due to the distance between Part A and B (12 km) no additional effects of the Scheme are likely and the effects described in Part A and B are the potential Scheme effects. Operation: The assessment of Parts A and B represent the potential effects of the Scheme.	No additional significant effects are predicted.
Noise and Vibration	Construction: Due to the distance between Part A and B (12 km) no additional effects of the Scheme are likely and the effects described in Part A and B (Section 5 of this PEIR) are the potential Scheme effects. Operation: No additional effects of the Scheme are likely, and it is considered that the findings for Part A and B described in Section 5 of this PEIR represent the potential significant effects of the Scheme. However, further assessment is being carried out ensure that there is no change when assessed across a common affected road network (ARN) as they are different study areas for Part A and Part B. Any changes in effects will be presented in the ES.	No additional significant effects are predicted.
Landscape and Visual	Construction: The construction of Part A and B coincide and the effect on landscape character would be noticeably greater than that arising from any Part on its own, but not sufficiently to be considered significant: there would be a Minor Adverse (not significant) landscape effect of the Scheme. There would be no cumulative visual effects on static receptors but given the scale of the construction phase for both Part A and Part B the visual impact on users of the A1 would give rise to a Moderate Adverse (significant) cumulative visual effect on users of main roads during the period when construction works overlap. All other potential effects are as reported for Landscape in Part A and B within Section 5 of this PEIR. Operation: The visual effect on users of the A1 would remain Moderate Adverse in the short term, reducing to Slight Adverse by year 15 as the mitigation planting matures. The effect on landscape character would be greater than that arising from the Scheme alone but not sufficient to change the level of effect. All other potential effects are as reported for Landscape in Part A and B within Section 5 of this PEIR.	Potential for Minor Adverse (not significant) cumulative landscape character effects. Potential for Moderate Adverse visual effects for users of the A1. Moderate Adverse effects for users of the A1 in the short term. Neutral in the long term.
Cultural Heritage	Construction: Due to the distance between Part A and B (12 km) no additional effects of the Scheme are likely and the effects described in Part A and B (Section 5 of this PEIR) are the potential Scheme effects. Operation: Due to the distance between Part A and B (12 km) no additional effects of the Scheme are likely and the effects described in Part A and B (Section 5 of this PEIR) are the potential Scheme effects.	No additional significant effects are predicted.

Topic	Summary	Potential Effects
Biodiversity	Construction: Due to the distance between Part A and B (12 km) no additional effects of the Scheme are likely and the effects described in Part A and B (Section 5 of this PEIR) are the potential Scheme effects. Operation: Due to the distance between Part A and B (12 km) no additional effects of the Scheme are likely and the effects described in Part A and B (Section 5 of this PEIR) are the potential Scheme effects.	No additional significant effects are predicted.
Road Drainage and Water Environment	Construction: Due to the distance between Part A and B (12 km) no additional effects of the Scheme are likely and the effects described in Part A and B (Section 5 of this PEIR) are the potential Scheme effects. Operation: Due to the distance between Part A and B (12 km) no additional effects of the Scheme are likely and the effects described in Part A and B (Section 5 of this PEIR) are the potential Scheme effects.	No additional significant effects are predicted.
Geology and Soils	Construction: Due to the distance between Part A and B (12 km) no additional effects of the Scheme are likely and the effects described in Part A and B (Section 5 of this PEIR) are the potential Scheme effects. Operation: Due to the distance between Part A and B (12 km) no additional effects of the Scheme are likely and the effects described in Part A and B (Section 5 of this PEIR) are the potential Scheme effects.	No additional significant effects are predicted.
Population and Human Health	Construction: Construction: There is likely to be a positive socio-economic effect associated with direct temporary construction employment generated. Multiple effects are anticipated during the construction stage, both in terms of the sourcing of local supplies (indirect employment across wider supply chains), and local spend by on-site workers (induced employment). Potential effects on landowners with land across both Part A and B are being considered. All other significant effects of the Scheme are the effects described in Part A and B (Section 5 of this PEIR). Operation: No additional effects of the Scheme are likely, and the effects described in Part A and B (Section 5 of this PEIR) are the potential Scheme effects.	Moderate beneficial effects to local economy during construction. Potential combined effects on landowners with land across Part A and B during construction unlikely to be significant.
Material Resources	Construction: Both Parts of the Scheme consider the use of Materials and provide mitigation as appropriate, with this in place it is considered that the significant effects presented in Part A and B (Section 5 of this PEIR) represent the potential effects of the Scheme Operation: The significant effects presented in Part A and B (Section 5 of this PEIR) represent the potential effects of the Scheme	No additional significant effects are predicted.

Topic	Summary	Potential Effects
Climate	Construction: The effects of Part A and B are represented in Section 5 of this PEIR however, further assessment is being carried out to determine the effects of the Scheme as a whole. Operation: The effects of Part A and B are represented in Section 5 of this PEIR however, further assessment is being carried out to determine the effects of the Scheme as a whole.	No additional significant effects are predicted.

CROSS TOPIC

6.2.3. The cross topic combined assessment considers the changes in baseline conditions at common sensitive receptors when considering Part A and Part B together. For the purpose of this assessment, common sensitive receptors are those receptors that would be affected by more than one technical topic in the ES during construction and operation of the Scheme. Common sensitive receptors identified within Part A and Part B have been grouped based upon their shared attributes, characteristics or features i.e. residents, road users or agricultural land. The findings are shown in **Table 6-2**.

Table 6-2 - Matrix of Combined Effect Interactions

Common Sensitive Receptors	Impacts	Air Quality	Noise and Vibration	Landscape and Visual	Cultural Heritage	Biodiversity	Road Drainage and Water	Geology and Soils	Population and Human Health	Material Resources	Combined Effect
Construction											
Residents	– Changes to air quality within 200 m of Main Compound. – Increased noise and vibration levels within 300 m of construction activities. – Changes to views due to temporary reduction changes to views due to the Main Compound. – Potential for socio-economic benefits for residents during construction. – Impacts to human health e.g. inhalation of construction dust and increase in driver stress.	✓	✓	✓					✓		The Scheme would not have any significant effects in relation to air quality as well as noise and vibration with the implementation of mitigation measures. The Scheme would have moderate adverse visual residual effects on residents closest to the Scheme during construction and a slight adverse effect on residents due to temporary disruption and community severance. There would also be a moderate beneficial effect from socio-economic effects during construction. When considering the air quality, noise and vibration as well as population and human health effects along with the visual effects, the Scheme would have a combined temporary, residual effect of **moderate adverse** to **moderate beneficial** significance (**significant**) on residents closest to the Scheme during construction.
Road users	– Changes to views because of temporary reduction in roadside vegetation screening and construction activities. – Changes to driver stress due to the implementation of traffic management systems along the A1 and connecting side roads and an increase in Heavy Goods Vehicles on the road network due to the construction works.	✓		✓							The Scheme would have moderate adverse visual residual effects on road users and no overall change to the level of driver stress during construction. When considering population and human health and visual effects together, the Scheme would have a combined temporary effect of **moderate adverse** significance (**significant**) on road users during construction.
Operation											
Road users	– Exposure to increased pollution (NO_2 and PM_{10}) from changes to traffic flow, mix and speed.	✓		✓					✓		The Scheme would have moderate adverse visual residual effects on road users in the short-term and no significant change to driver stress. The Scheme would have no

Common Sensitive Receptors	Impacts	Air Quality	Noise and Vibration	Landscape and Visual	Cultural Heritage	Biodiversity	Road Drainage and Water	Geology and Soils	Population and Human Health	Material Resources	Combined Effect
	– Changes to views along the existing and surrounding road network, due to the loss of existing vegetation, newly established structures and proposed vegetation planting as part of the Scheme. – Reduced traffic congestion along the carriageway is likely to improve safety, journey times and improving driver/user stress for route users.										significant air quality effects. When considering the air quality, population and human health and visual effects together, the combined effect would be **moderate adverse** significance (**significant**) effects on road users during operation.

6.3. CUMULATIVE EFFECTS

EXISTING BASELINE KNOWLEDGE

6.3.1. Planning applications have been collated relevant to Part A and Part B. The applications taken forward for assessment are shown in **Table 6-3**. The planning applications collated are based on the ARN plus a buffer for the Scheme; In order to be consistent in the approach for the assessment of the Scheme a 2 km study area from the Order limits, which is based on the largest study area, the landscape Zone of Visual Influence (ZVI), has been used. Where the ARN extends beyond the 2 km buffer, a 200 m buffer has been used to identify developments adjacent, this buffer aligns with the potential area affected by air quality.

Table 6-3 - List of Applications taken forward for Consideration of Cumulative Effects

Application Ref	Site Description	Application Description	Decision Issue Date	Approx. Distance from Order Limits	EIA required (y/n)
16/00138/FUL	Land to the East of Main Street and north of Benlaw Grove, Felton, Northumberland	Development of 80 residential dwellings including associated access, infrastructure, open space and landscaping (as amended)	06/09/2016	0.86 km east of Part A Order Limits	N
18/00779/FUL	Potland Burn, West Ashington	Application for 143 no. Dwellings incorporating new site access and internal access road, provision of SUDS, open space and landscaping	Unknown	0.64 km east of Part A ARN, 7.2 km east of Part A Order Limits	N
17/04453/FUL	Land north of Eshott Airfield Aircraft hangar, Felton, Northumberland, NE65 9QJ	Change of use of land within part of airfield for outdoor recreational activities including corporate team building and experience days, and off-road motor vehicle driving experiences together with construction of associated activity centre off-road motor vehicle course, screen mounding, car parking area, internal site access track and landscaping	21/03/2018	0.27 km east of Part A Order Limits	N
16/00078/OUT	Land west of Lancaster Park, Pinewood Drive, Morpeth, Northumberland	A mixed use development comprising of trunk road service area incorporating a hotel, restaurant/public house petrol filling station and amenity building including retail (circa 650 m²), hot food (circa 400 m²) and supporting facilities (circa 400 m²), B1 employment (circa 2100 m² in the form of an Innovation Centre), residential (up to 150 units of which 30% would be affordable), open space, SUDs, allotments and landscaping, countryside park including car parking, foul pumping station and creation of new access off Morpeth Northern By-Pass. ***Note - Also 14.54ha of site listed on Northumberland SHLAA (site 3073) - site under construction with completion forecast for 2021/2022.***	28/11/2016	1 km south of Part A Order Limits, adjacent to Part A ARN	N
17/02588/FUL	Former Morpeth Police Station Castle Square Morpeth Northumberland NE61 1YH	Proposed development of a total of 32 residential units and associated access and external works. Development consists of the refurbishment and change of use of the former police building, garages and stables into 6 houses, and the demolition of workshops, rear police building and former police houses for the new build construction of 7 houses and 19 apartments	Unknown	2.9 km south east of Part A Order Limits, 200m from Part A ARN	N

Application Ref	Site Description	Application Description	Decision Issue Date	Approx. Distance from Order Limits	EIA required (y/n)
17/01942/FUL	Fulbeck Grange Fulbeck Morpeth NE61 3JU	Demolition of existing buildings and development of 13 no. homes with infrastructure and landscaping, including bat house	21/03/2018	0.9 km south east from Part A Order Limits, 0.4 km east of Part A ARN	N
16/00994/FULES	Land West of St Georges Hospital Morpeth Northumberland	Hybrid planning application comprising: Detailed application for construction of link road and junction to connect to Morpeth Northern Bypass. Outline application for development of up to 875no. dwellings (C3), local centre (A1, A2, A3, A4, A5, D1, D2, B1), restaurant/public house (A3, A4) and associated open space, with all matters reserved except for site access. **Also listed on Northumberland SHLAA (site 3074) - large scale strategic site permitted for development in May 2018. 90 units to be delivered in first 5 years.**	04/05/2018	1.1 km south east of Part A Order Limits	Y
16/00524/REM	Land South West of Northgate Hospital A192 District Boundary to Northgate Roundabout Morpeth Northumberland	Reserved Matters Application seeking consent for; Appearance, Landscaping, Layout and Scale for 218 dwellings following outline approval of application ref 13/02105/OUT- (Outline Planning Application for the proposed development of approximately 255 residential dwellings with associated access.) ***Note - Also listed on Northumberland SHLAA (site 3050) allocated for 218 dwellings***	07/10/2016	300 m south of Part A Order Limits, adjacent to ARN	N
16/03770/FUL	Allerburn House Denwick Lane Alnwick Northumberland NE66 1YY	Proposal for 20 no dwelling houses through conversion of existing buildings (10 units) and erection of 10 new build units	27/02/2017	1 km west of Part A ARN, adjacent to Part B ARN and 1.6 km south west of Part B Order Limits.	N
16/02824/OUT	Alnwick Golf Club Swansfield Park Road Alnwick NE66 2AB	Outline application for 10 dwellings, including all ancillary works, with all matters reserved apart from access (Amended Access Design Plan received 29th September 2016)	07/12/2016	1.2 km north west of Part A ARN, 340 m south east of Part B ARN, 1.6 km north west of Lionheart Enterprise Park Compound	N
18/03647/FUL	Land At Swarland Equestrian Centre Old Park Road Swarland Morpeth Northumberland NE65 9HJ	Erection of indoor riding arena for riding of horses.	25/03/2019	540 m west of ARN, 2 km north of Part A Order Limits	N

Application Ref	Site Description	Application Description	Decision Issue Date	Approx. Distance from Order Limits	EIA required (y/n)
18/03203/FUL & 17/04565/FUL	Acton Caravan Site Felton Morpeth Northumberland NE65 9NS	Proposed camping pods, camping lodges and treehouse along with amenities and services (Amended 24th September 2018)	26/02/2019	1.5 km north east of Part A Order Limits, 190 m east of Part B ARN	N
18/03231/FUL	Land North Of Fairfields Longframlington Northumberland	Construction of 58 residential units with associated access, landscaping and amenity space.	12/09/2019	4.7 km west of northern extent of Part A Order Limits, adjacent to ARN	N
18/03489/OUT	Former Quarry Land East Of Framhill Farm Longframlington Morpeth Northumberland	Outline permission for change of use from disused quarry to holiday park comprising 35 units of accommodation (luxury chalets, static caravans and camping pods).	31/05/2019	5.2 km west of Part A Order Limits, within 200m of ARN	N
18/03736/FUL	Felmoor Holiday Park Reception Building Felmoor Park Felton Northumberland NE65 9QH	Proposed siting of 24 timber holiday lodges, 10 static caravans including associated site access roads and construction of miniature golf course	Unknown	Adjacent (east) to Part A Order Limits	N
18/04481/FUL	Land West Of Surgery Grange Road Widdrington Station Northumberland (sits on site boundary)	Erection of 179 residential dwellings with associated landscaping and infrastructure, including the diversion of existing public footpath to alternative route	Unknown	5 km east of Part A Order Limits, within 200m of ARN	N
18/03650/OUT	St Georges Park Hospital Drive From Cottingwood Lane to St Georges Hospital Morpeth NE61 2NU	Outline planning application with some matters reserved for residential development of up to 50 dwellings (adjacent to **16/00994/FULES**)	Unknown	1.89 km south east of Part A Order Limits	N
19/00500/FUL	Alnwick The Dukes Middle School The Dunterns Alnwick Northumberland NE66 1UN	Conversion of Duke's School to residential apartments (27no.), including demolition and rebuild of the modern rear extension, development of specialist elderly living accommodation (49no. apartments) and residential dwellings (22no.), creation of a landscaped open area, all ancillary works including car parking, access and drainage.	Unknown	1.18 km west of Part A ARN, 1km from Part B Order Limits	N
19/04296/FUL	Land At Willowburn Trading Estate Alnwick Northumberland NE66 2PF	Demolition of existing buildings and construction of 3 storey building for hotel (C1) with restaurant/bar at ground floor (A3/A4), associated car parking, landscaping and other ancillary works.	Unknown	30 m north of Part B ARN, 480 m north of Lionheart Enterprise Park Compound	N
19/04235/CCD	Car Park On Former Library Site Gas House Lane Low Stanners Morpeth Northumberland	Construction of new leisure and community centre with associated parking, pedestrian access, landscaping and public realm.	N/A	50 m from ARN, 3 km from Part A Order Limits	N

Application Ref	Site Description	Application Description	Decision Issue Date	Approx. Distance from Order Limits	EIA required (y/n)
19/04025/FUL	Northgate Hospital Northgate Morpeth Northumberland NE61 3BP	Hybrid Application incorporating: Detailed application for demolition of hospital buildings (excl. medical directorate, Tweed, Tyne, Hebron, Hepscott, Mitford unit, Gees Club, Chapel (PMVA), Bothal, Cambo and Belsay Villas), Development of medium secure in-patient unit and ancillary facilities; Refurbishment of Gees club (Villa 34), Hebron, Medical directorate and Belsay, Bothal and Cambo villas and Hepscott 1-4; Associated parking and landscape works across masterplan area; and, Outline application for residential development.	N/A	20 m from ARN, 200 m from Part A Order Limits	N
19/01008/FUL	Land To North Of Fairmoor Centre A192 District Boundary To Northgate Roundabout Morpeth Northumberland	Construction of 61no. dwellings with associated landscaping, access and infrastructure works.	N/A	40 m from ARN, 610 m from Part A Order Limits	N
19/04531/FUL	Land North Of Fairfields Longframlington Northumberland	Construction of 47 residential dwellings with associated access, landscaping and amenity space	N/A	20 m from ARN, 4.65 km from Part A Order Limits	N
19/02085/OUT	Land South Of Lightpipe Farm Longframlington Northumberland	Resubmission: Outline application for development of approximately 40 dwellings - amended 09/08/19	N/A	Adjacent to ARN, 4.5 km from Part A Order Limits	N
16/04486/FUL	Land North Of The Garth Pottery Bank Morpeth Northumberland	Detailed planning proposal for 53 residential dwellings and associated infrastructure on land North of The Garth, Pottery Bank, Morpeth.	02/03/2018	Adjacent to ARN, 1.72 km from Part A Order Limits	N
19/00944/FUL	Land At West Of Greensfield Weavers Way Alnwick Northumberland, NE66 2DH	Creation of new sports facilities with associated features including new artificial grass pitch with maintenance/equipment store, ball stop fencing, pitch perimeter barrier and floodlights; new pavilion; extended vehicle parking; hard standing areas; high standing circulation areas with lighting; new cycle shelter with stands; surface water detention basin.	Unknown	660 m north west of Lionheart Enterprise Park Compound	N
19/00673/FUL	Heckley House Alnwick Northumberland NE66 2LD	Proposed single storey glazed side extension with terrace seating area, tennis court and lighting.	Unknown	Adjacent to Part B Order Limits	N
19/00500/FUL	Alnwick The Dukes Middle School The Dunterns Alnwick Northumberland NE66 1UN	Conversion of Duke's School to residential apartments (27no.), including demolition and rebuild of the modern rear extension, development of specialist elderly living accommodation (49no. apartments) and residential dwellings (22no.),	Unknown	1.6 km north west of Lionheart Enterprise Park Compound	N

Application Ref	Site Description	Application Description	Decision Issue Date	Approx. Distance from Order Limits	EIA required (y/n)
		creation of a landscaped open area, all ancillary works including car parking, access and drainage.			
18/00079/FUL	Land North Of The Treehouse The Alnwick Garden Denwick Lane Alnwick Northumberland NE66 1YU	Play village comprising cabins, chapel, Main hall, play structure and ancillary accommodation in a landscaped setting – Amended 19 June 2018.	Unknown	Adjacent to ARN, 1.6 km south of Part B Order Limits	N
17/04374/FUL	Land south of Greensfield Industrial Estate, Willowburn Avenue, Alnwick, Northumberland	Retail Development of A1 (retail) and A3 (cafe) Uses - Amended 5 June 2018.	26/06/2018	Adjacent to ARN, 360 m north west of Lionheart Enterprise Park Compound	N
17/04143/FUL	Land North East Of Windy Edge Alnmouth Road Alnwick Northumberland	Hybrid Application Full planning permission: 81 Dwellings & Temporary Construction Access from Denwick Lane Outline Permission with All Matters Reserved: 189 Dwellings – Amended 15/06/18.	26/10/2018	Adjacent to ARN, 1.5 km south of Part B Order Limits	N
17/02424/FUL	Land At West Of Greensfield Weavers Way Alnwick Northumberland, NE66 1BG	Proposal to create a new external sports pitch with associated features including: new pavilion; Artificial Grass Pitch; maintenance / sports equipment store; fencing; perimeter barrier; vehicle parking with lighting; floodlight system; hard standing areas; high standing circulation areas.	14/12/2017	600 m west of ARN, 900 m west of Lionheart Enterprise Park Compound	N
17/03582/CCM 16/00353VAREIA	Belford Quarry Easington Northumberland	Proposed ready mixed concrete plant and asphalt plant under Condition 24 of approved planning permission 16/00353/VAREIA. Variation of condition 2 of planning permission 14/02432/VARCCM to extend the duration of mineral extraction and restoration until December 2032 to extract the remaining 3 million tonnes of whinstone.	Not decided 29/6/2016	Adjacent to Part B ARN	Y
17/03128/CCM	Hazeldean Quarry Ditchburn Road South Charlton Northumberland	Lateral and vertical extensions to the existing extraction area alongside other minor changes to working practices on site.	07/02/2018	1.9 km west of Part B Order Limits	N
16/03284/CCM	Longhoughton Quarry Longhoughton Alnwick Northumberland NE66 3LS	County Matter application for relocation of recycled aggregate processing facility.	02/02/2018	2km from Part B Order Limits	N

Application Ref	Site Description	Application Description	Decision Issue Date	Approx. Distance from Order Limits	EIA required (y/n)
18/01285/CCMEIA	Longhoughton Quarry Longhoughton Alnwick Northumberland NE66 3LS	Lateral extension to extraction area to provide an additional 1.75m tonnes of dolerite and limestone and an extension of time for the extraction of mineral to 2029 with final restoration in 2030.	Unknown	2km from Part B Order Limits	Y
18/03233/FUL	Doxford Hall Walled Garden Doxford Northumberland	Construction of a new wedding venue comprising of a wedding pavilion, ancillary building for catering, and 13 no. lodges including a bridal pavilion with conversion of existing gardener's room to bridal changing room and associated car parking on land within the Walled Garden and adjacent to it.	Unknown	1.9 km east of Part B Order Limits	N
18/03208/FUL	Land North Of Garden Cottage Charlton Hall Ellingham Chathill Northumberland NE67 5DZ	Restoration of Walled Garden, including visitor shop and facilities, cafe, restaurant and venue space including bar, events room, ceremony and ancillary spaces including kitchen, toilets, storage, office, gardeners store and car parking.	Unknown	630 m east of Part B Order Limits	N
18/02990/FUL	Farm Cottage And Agricultural Buildings Charlton Hall Ellingham Chathill Northumberland NE67 5HS	Change of use and conversion, and demolition and rebuild of agricultural buildings to C1 Hotel Use. New build dwelling house to be used for associated staff accommodation (Amended Site Location Plan received 3 October 2018).	Unknown	Adjacent to Part B Order Limits	N
17/04588/FUL	Farm Buildings East Of North Farm Rennington Village Rennington Northumberland	Demolition of modern portal frame buildings, construction of 8 new houses and 4 detached garage blocks and conversion of listed traditional farm buildings into 2 dwelling houses.	29/08/2018	1.64 km east of Part B Order Limits	N
16/03075/SCREEN	Brownieside Quarry Brownieside Chathill Northumberland NE67 5HW	Proposed re-opening and extension to quarry.	15/09/2016	630 m north of Part B Order Limits	N
18/00672/FUL	Allerburn House Denwick Lane Alnwick Northumberland NE66 1YY	Development of 14 Dwellings; Conversion of Allerburn House to 3 Apartments including demolition of later extensions and Refurbishment of Lodge - Amended 27 March 2018.	20/04/2018	1.7 km south of Part B Order Limits, 110 m west of Part B ARN	N
18/01020/OUT	Land North East Of Stoney Hills Alnwick Northumberland	Outline Application (With Layout) – 15 Dwellings (100% Self Build Plots) & Landscaped Area – Amended 18 August 2018.	21/12/2018	1.4 km north west of Lionheart Enterprise Park Compound	N

https://publicaccess.northumberland.gov.uk/online-applications/search.do?action=simple&searchType=Application

6.3.2. Based upon other developments listed in **Table 6-3** above and the preliminary assessment, **Table 6-4** indicates the applications which have potential cumulative effects.

Table 6-4 - Preliminary Assessment of Potential Cumulative Effects

Application	Anticipated Cumulative Effects	Justification and Commentary
18/03736/FUL	Air Quality	If the construction phase coincides with construction of Part A, construction activities have the potential to result in a minor negative temporary cumulative effect. Risk of additive adverse cumulative effects where works on concurrent schemes, with application of good construction pollution prevention control practices mean the cumulative effect should be Negligible.
	Biodiversity	If the construction phase coincides with construction of Part A, construction activities have the potential to result in a minor negative temporary cumulative effect to nesting birds as a result of disturbance. However, given the availability of suitable habitat within the wider area and the implementation of mitigation, the impact is not likely to be significant.
	Population and Human Health	There is considered to be the potential for an in-combination cumulative effect associated with direct, indirect and induced employment opportunities of minor beneficial significance. The significance of this effect will depend on the construction period of the development. Additionally, there is a potential for disruption to access to the new businesses (again dependent on whether it will be built, before, after or during the construction of Part A). However, as impacts from disruption to access, noise, dust and potential vibration effects can adequately be managed through a Construction and Environmental Management effects, this is considered to be of negligible adverse significance.
	Road Drainage and the Water Environment	There is a risk of additive adverse cumulative effects where construction works are concurrent with Part A. With the application of good construction pollution prevention control practices however, the cumulative effect should be Negligible.
17/04453/FUL	Cultural Heritage	The construction phase has the potential to impact on the setting of Grade II Listed Building Thirston New House (NHL 1156136), located approximately 400 m to the north, through a slight increase in noise. No Cultural Heritage assessment has been undertaken, however due to the distance and nature of the construction phase, the impacts are predicted to be negligible and temporary.
	Biodiversity	If the construction phase coincides with the construction of Part A, construction activities have the potential to result in a minor negative temporary cumulative effect to breeding birds as a result of disturbance. However, given the availability of suitable habitat within the wider area and the implementation of mitigation, the impact is not likely to be significant.
	Population and Human Health	There is likely to be a positive socio-economic effect associated with direct temporary construction employment generated. In addition, multiple effects are anticipated during the construction stage, both in terms of the sourcing of local supplies (indirect employment across wider supply chains), and local spend by on-site workers (induced employment). This is considered to be an in-combination cumulative effect associated with direct, indirect and induced employment opportunities of Minor Beneficial significance (not significant). However, the significance of this effect would depend on the construction period of the development.
	Road Drainage and the Water Environment	There is a risk of additive adverse cumulative effects where construction works are concurrent with Part A. With the application of good construction pollution prevention control practices however, the cumulative effect should be Negligible.
19/00673/FUL	Cultural Heritage	The construction phase has the potential to have a direct permanent adverse impact on below ground archaeological remains including Earthworks east of Heckley House (WSP 016) which are currently of unknown importance. Should this be confirmed to be of Medieval date, this asset could be up to medium importance. The construction phase could also result in temporary adverse impacts on the setting of the Grade II Listed Heckley House (NHLE 1042044) of medium value associated with the construction activity. Any loss of below ground remains directly associated with those within Part B would result in a cumulative significant effect. The magnitude of effects would be dependent on the value of the assets identified. The impacts during the construction on the setting of the medium value asset would be minor and the effects temporary Slight Adverse (not significant).
	Landscape and Visual	If the construction phase coincides with Part B's construction phase there would be noticeable construction activity occurring in in close proximity to each other. At a worse-case receptor would experience close proximity views of both construction sites. Should the development proceed in parallel with Part B there would be no change to the overall landscape effects, which would remain Moderate Adverse. there would be a small increase visual effects but

Application	Anticipated Cumulative Effects	Justification and Commentary
		not sufficient to change the level of significance, which would remain Large Adverse (significant). There therefore would be no significant cumulative effect
	Biodiversity	If the construction phase coincides with Part B's construction phase, there would be noticeable construction activity occurring in two locations within close proximity (within 100 m) with potential construction traffic to both being within 30 m of a bat roost of Regional value (noctule maternity roost within tree G02). The development be constructed concurrently with Part B may cause disturbance to the roost present, due to increased construction traffic. Roosts of local value are also present within the buildings which could be potentially disturbed by both works. If the construction period coincides with the Part B's construction period, there would be a Slight Adverse cumulative effect (not significant). This would be due to the disturbance to a roost of Regional value located within 100 m of the development and Part B with access roads being within 30 m. There would also be possible disturbance to Local valued roosts within the building.
	Road Drainage and the Water Environment	There is a risk of additive adverse cumulative effects where construction works are concurrent with Part B. With the application of good construction pollution prevention control practices however, the cumulative effect should be Negligible.
19/04025/FUL	Landscape and Visual	Given the proximity of the proposed development to the A1 road corridor, there will be intervisibility between the development and Part A during operation. Following screen planting along the A1 road corridor cumulative visual impact will be reduced. Visual cumulative effects will be restricted to those properties located along the northern edge of Morpeth itself. Visual awareness of the Part A will decrease following plant establishment, resulting in negligible cumulative effects over time. Negligible impacts have been identified associated with landscape character, given the scale of the developments in comparison to that of the character area as a whole. No significant cumulative landscape or visual effects are anticipated following plant establishment.
	Biodiversity	Risk of temporary adverse impacts to breeding birds. Risk of temporary adverse impacts to foraging/commuting bats as a result of disturbance from construction activities. Application would result in the loss of common pipistrelle day roosts and therefore risk of temporary adverse impacts to local roosting common pipistrelle population, due to the proximity to building B4a (approximately 680 m). If the construction phase coincides with the construction of Part A, construction activities and loss of suitable habitat have the potential to result in a minor negative temporary cumulative effect to birds and bats. However, given the availability of suitable habitat within the wider area and the implementation of mitigation, the impact is not likely to be significant.
	Population and Human Health	There is likely to be a positive socio-economic effect associated with direct temporary construction employment generated. In addition, multiple effects are anticipated during the construction stage, both in terms of the sourcing of local supplies (indirect employment across wider supply chains), and local spend by on-site workers (induced employment). This is considered to be an in-combination cumulative effect associated with direct, indirect and induced employment opportunities of moderate beneficial significance.
	Road Drainage and the Water Environment	There is a risk of additive adverse cumulative effects where construction works are concurrent with Part A. With the application of good construction pollution prevention control practices however, the cumulative effect should be Negligible.
19/01008/FUL	Landscape and Visual	Given the proximity of the proposed development to the A1 road corridor, there will be intervisibility between the development and Part A during operation. Following screen planting along the A1 road corridor cumulative visual impact will be reduced. Visual cumulative effects will be restricted to those properties located along the northern edge of Morpeth itself. Visual awareness of the Part A will decrease following plant establishment, resulting in negligible cumulative effects over time. Negligible impacts have been identified associated with landscape character, given the scale of the developments in comparison to that of the character area as a whole. No significant cumulative landscape or visual effects are anticipated following plant establishment.
	Biodiversity	If the construction phase coincides with the construction of Part A, construction activities and loss of suitable habitat have the potential to result in a very minor negative temporary cumulative effect to breeding birds. However, given the availability of suitable habitat within the wider area and the implementation of mitigation, the impact is not likely to be significant.

Application	Anticipated Cumulative Effects	Justification and Commentary
	Population and Human Health	There is likely to be a positive socio-economic effect associated with direct temporary construction employment generated. In addition, multiple effects are anticipated during the construction stage, both in terms of the sourcing of local supplies (indirect employment across wider supply chains), and local spend by on-site workers (induced employment). This is considered to be an in-combination cumulative effect associated with direct, indirect and induced employment opportunities of moderate beneficial significance.
	Road Drainage and the Water Environment	There is a risk of additive adverse cumulative effects where construction works are concurrent with Part A. With the application of good construction pollution prevention control practices however, the cumulative effect should be Negligible.
16/04486/FUL	Landscape and Visual	The development site is within the A1 corridor, north west of Morpeth. The proposed development is anticipated to result in a larger settlement associated with Morpeth, with a perceptible change in land use and the presence of more housing west of the town along the existing A1 road and Morpeth Northern Bypass, within local landscape character area 38b Lowland Rolling Farmland - Longhorsley. (At a specific level the development and Part A reside within landscape character area 35b2 Northgate). Given the proximity of the proposed development to the A1 road corridor, there will be intervisibility between the development and Part A. Following screen planting along the A1 road corridor cumulative visual impact will be reduced. Visual cumulative effects will be restricted to those properties located along the northern edge of Morpeth itself. Visual awareness of the Part A will decrease following plant establishment, resulting in negligible cumulative effects over time. Negligible impacts have been identified associated with landscape character, given the scale of the developments in comparison to that of the character area as a s whole. No significant cumulative landscape or visual effects are anticipated following plant establishment.
	Biodiversity	If the construction phase coincides with the construction of Part A, construction activities and loss of suitable habitat have the potential to result in a minor negative temporary cumulative effect to breeding birds and commuting/foraging bats. However, given the availability of suitable habitat within the wider area and the implementation of mitigation, the impact is not likely to be significant.
18/03208/FUL	Landscape and Visual	If the construction phase coincides with the Part A's construction phase, construction traffic would be noticeable for nearby receptors. Should the development and Part A proceed in parallel there would be no change to the overall landscape effects, which would remain Slight Adverse (not significant). There would be a small increase in visual effects but not sufficient to change the level of significance, which would remain Moderate Adverse (significant). There therefore would be no significant cumulative effect.
	Population and Health	There is likely to be a positive socio-economic effect associated with direct temporary construction employment generated. In addition, multiple effects are anticipated during the construction stage, both in terms of the sourcing of local supplies (indirect employment across wider supply chains), and local spend by on-site workers (induced employment). There is also the potential to impact on access to and from existing properties that share the same access as this property which would be developed as part of the scheme although this would be temporary. This is considered to result in an in-combination cumulative effect associated with direct, indirect and induced employment opportunities of Minor Beneficial significance (not significant). However, the significance of this effect would depend on the construction period of the development. No further significant cumulative effects are anticipated.
	Road Drainage and the Water Environment	There is a risk of additive adverse cumulative effects where construction works are concurrent with the Part A. With the application of good construction pollution prevention control practices however, the cumulative effect should be Negligible.
18/02990/FUL	Landscape and Visual	If the construction phase coincides with the Part B's construction phase, construction traffic would be noticeable for nearby receptors. Should the development and Part B proceed in parallel there would be no change to the overall landscape effects, which would remain Slight Adverse (not significant). There would be a small increase in visual effects but not sufficient to change the level of significance, which would remain Moderate Adverse (significant). There therefore would be no significant cumulative effect.
	Biodiversity	As part of Part B, all trees within the woodland at OS Grid Ref: NU 17110 21927 will be felled. This woodland contains bat boxes which are to be relocated. Two of these bat boxes contain a maternity roost of Natterer's bat Myotis nattereri. This woodland is within 1 km of this proposed development which

Application	Anticipated Cumulative Effects	Justification and Commentary
		was also found to have a maternity roost of bats within during the ecology surveys undertaken as part of that development. When the woodland is felled and the boxes are relocated, there will be a period of disorientation for the bats and they will likely seek new roosting opportunities towards this development which is well connected by a woodland and watercourse. Also, when construction at the development starts there is the possibility of the bats roosting within the development, to use the bat boxes within the Part B. Depending on where construction starts first (the development or Part B, including felling of the trees) the survey results could become invalid due to the roosting opportunities changing within this area. This will cause the bats using the roosts to seek different roosting locations which could include areas in the development or Part B. Also, if both the development and the felling of the trees take place at the same time this will cause a larger number of bats seeking new roosting opportunities at the same time within the same area, meaning that the compensation provided for the loss of roosting locations would need to be significant enough to support the influx of bats seeking new roosting opportunities. If the construction period coincides with Part B's construction period, there is the potential that a number of roosting bats would seek new roosting opportunities within the same area. However, the development includes a purpose built bat barn that would be erected prior to demolition of the property. Therefore, as the effect is adequately mitigated for both the development and Part B there would be a Negligible cumulative effect.
	Population and Human Health	There is likely to be a positive socio-economic effect associated with direct temporary construction employment generated. In addition, multiple effects are anticipated during the construction stage, both in terms of the sourcing of local supplies (indirect employment across wider supply chains), and local spend by on-site workers (induced employment). There may also be temporary disruption on users of Blossom Plantation Pods (holiday cabins) due to reduction in amenity. There is considered to be an in-combination cumulative effect associated with direct, indirect and induced employment opportunities of Minor Beneficial significance (not significant). However, the significance of this effect would depend on the construction period of the development. As impacts from disruption to access, noise, dust and potential vibration effects can adequately be managed through the CEMP, this is considered to be of Negligible adverse significance.
	Geology and soils	There is a risk of additive adverse cumulative effects where construction works are concurrent on the development and Part B and are within 250 m of each other. However, application of good construction pollution prevention control practices means the cumulative effect would be Negligible.
16/00078/OUT	Biodiversity	There is a risk of temporary adverse impacts to birds (breeding and wintering) and foraging/commuting bats as a result of disturbance from construction activities; loss of arable habitat suitable for wintering birds; and potential reduction in water quality of the River Wansbeck as a result of run off (cumulative with the impacts of air quality as a result of Part A (Wansbeck and Hartburn Woods LWS)). If the construction phase coincides with the construction of Part A, construction activities and loss of suitable habitat have the potential to result in a minor negative temporary cumulative effect to birds and bats. However, given the availability of suitable habitat within the wider area and the implementation of mitigation, the impact is not likely to be significant. Application of good construction pollution prevention control practices as part of the application would be expected. If implemented, there would be no cumulative impacts with Part A and the impact significance would be as a result of Part A alone (i.e. air quality). If not implemented, the development and Part A have the potential to result in a minor negative permanent cumulative effect. This effect extends to the aquatic fauna and flora of the River Wansbeck.
18/03897/FUL	Biodiversity	There is the potential for slight adverse effects to the River Coquet (River Coquet and Coquet Valley Woodlands SSSI) as a result of water abstraction. When combined with the impacts of air quality, there is the potential for cumulative effects with Part A (River Coquet and Coquet Valley Woodlands SSSI). During operation, there is a risk of additive adverse cumulative effects where works are concurrent on the development and Part A to impact the water quality of the River Coquet. The development and Part A have the potential to result in a minor negative permanent cumulative effect. This effect extends to the aquatic fauna and flora of the River Coquet.

Application	Anticipated Cumulative Effects	Justification and Commentary
18/03650/OUT	Biodiversity	If the construction phase coincides with the construction of Part A, construction activities have the potential to result in a minor negative temporary cumulative effect to breeding birds as a result of disturbance. However, given the availability of suitable habitat within the wider area and the implementation of mitigation, the impact is not likely to be significant.
19/00530/OUT	Geology and Soils	There is a risk of additive adverse cumulative effects where construction works on the development and Part A are within 250 m of each other but application of good construction pollution prevention control practices means the cumulative effect would be Negligible.
	Population and Health	There is likely to be a positive socio-economic effect associated with direct temporary construction employment generated. In addition, multiple effects are anticipated during the construction stage, both in terms of the sourcing of local supplies (indirect employment across wider supply chains), and local spend by on-site workers (induced employment). This is considered to be an in-combination cumulative effect associated with direct, indirect and induced employment opportunities of Minor Beneficial significance (not significant). However, the significance of this effect would depend on the construction period of the development.
	Road Drainage and the Water Environment	Cumulative effects relate to impacts to surface and ground water receptors from site derived physical and chemical pollutants where works are concurrent for the development and Part A. There is a risk of additive adverse cumulative effects where construction works are concurrent with Part A. With the application of good construction pollution prevention control practices however, the cumulative effect should be Negligible.
16/00138/FUL	Population and Human Health	There is likely to be a positive socio-economic effect associated with direct temporary construction employment generated. In addition, multiple effects are anticipated during the construction stage, both in terms of the sourcing of local supplies (indirect employment across wider supply chains), and local spend by on-site workers (induced employment). The significance of this will depend on the construction staging which is not currently known (although construction appears to have already commenced based on aerial photography). There is considered to be the potential for an in-combination cumulative effect associated with direct, indirect and induced employment opportunities of minor beneficial significance. The significance of this effect will depend on the construction period of the development and the total number of construction workers required which is not detailed in the application.
	Road Drainage and the Water Environment	Cumulative effects relate to impacts to surface and ground water receptors from site derived physical and chemical pollutants where works are concurrent for the development and Part A. There is a risk of additive adverse cumulative effects where construction works are concurrent with Part A. With the application of good construction pollution prevention control practices however, the cumulative effect should be Negligible.
16/00524/REM	Population and Human Health	There is likely to be a positive socio-economic effect associated with direct temporary construction employment generated. In addition, multiple effects are anticipated during the construction stage, both in terms of the sourcing of local supplies (indirect employment across wider supply chains), and local spend by on-site workers (induced employment). There is considered to be an in-combination cumulative effect associated with direct, indirect and induced employment opportunities of minor beneficial significance.
	Road Drainage and the Water Environment	Cumulative effects relate to impacts to surface and ground water receptors from site derived physical and chemical pollutants where works are concurrent for this development and Part A. There is a risk of additive adverse cumulative effects where construction works are concurrent with Part A. With the application of good construction pollution prevention control practices however, the cumulative effect should be Negligible.
19/00944/FUL	Population and Human Health	There is likely to be a positive socio-economic effect associated with direct temporary construction employment generated. In addition, multiple effects are anticipated during the construction stage, both in terms of the sourcing of local supplies (indirect employment across wider supply chains), and local spend by on-site workers (induced employment). There is considered to be an in-combination cumulative effect associated with direct, indirect and induced employment opportunities of Minor Beneficial significance (not significant). However, the significance of this effect would depend on the construction period of the development.
19/00500/FUL	Population and Human Health	There is likely to be a positive socio-economic effect associated with direct temporary construction employment generated. In addition, multiple effects are anticipated during the construction stage, both in terms of the sourcing of local supplies (indirect employment across wider supply chains), and local spend by on-site workers (induced employment). There is considered to be an in-combination cumulative effect associated with direct, indirect and

Application	Anticipated Cumulative Effects	Justification and Commentary
		induced employment opportunities of Minor Beneficial significance (not significant). The significance of this effect would depend on the construction period of the development, but it is unlikely to be significant due to the scale of the development.
17/04374/FUL	Population and Human Health	There is likely to be a positive socio-economic effect associated with direct temporary construction employment generated. In addition, multiple effects are anticipated during the construction stage, both in terms of the sourcing of local supplies (indirect employment across wider supply chains), and local spend by on-site workers (induced employment). During operation, due to the requirement of employees (130 equivalent number of full-time jobs) to run the facility proposed by the development, there is permanent employment to be generated. There is considered to be an in-combination cumulative effect associated with direct, indirect and induced employment opportunities of Minor Beneficial significance (not significant) during construction. However, the significance of this effect would depend on the construction period of the development. During operation, there is considered to be an in-combination cumulative effect associated with direct, indirect and induced permanent employment opportunities of Minor Beneficial significance (not significant).
	Road Drainage and the Water Environment	Cumulative effects relate to impacts to surface and ground water receptors from site derived physical and chemical pollutants where works are concurrent for this development and Part B. There is a risk of additive adverse cumulative effects where construction works are concurrent with Part B. With the application of good construction pollution prevention control practices however, the cumulative effect should be Negligible.
17/04143/FUL	Population and Human Health	There is likely to be a positive socio-economic effect associated with direct temporary construction employment generated. In addition, multiple effects are anticipated during the construction stage, both in terms of the sourcing of local supplies (indirect employment across wider supply chains), and local spend by on-site workers (induced employment). There is considered to be an in-combination cumulative effect associated with direct, indirect and induced employment opportunities of Minor Beneficial significance (not significant). However, the significance of this effect would depend on the construction period of the development.
16/03770/FUL	Population and Human Health	There is likely to be a positive socio-economic effect associated with direct temporary construction employment generated. In addition, multiple effects are anticipated during the construction stage, both in terms of the sourcing of local supplies (indirect employment across wider supply chains), and local spend by on-site workers (induced employment). Construction: This is considered to be an in-combination cumulative effect associated with direct, indirect and induced employment opportunities of Minor Beneficial significance (not significant). However, the significance of this effect would depend on the construction period of the development.
16/03284/CCM	Population and Human Health	There is likely to be a positive socio-economic effect associated with direct temporary construction employment generated. In addition, multiple effects are anticipated during the construction stage, both in terms of the sourcing of local supplies (indirect employment across wider supply chains), and local spend by on-site workers (induced employment). Therefore, there is considered to be an in-combination cumulative effect associated with direct, indirect and induced employment opportunities of Minor Beneficial significance (not significant). However, the significance of this effect would depend on the construction period of the development.
18/01285/CCMEIA	Population and Human Health	There is likely to be a positive socio-economic effect associated with direct temporary construction employment generated. In addition, multiple effects are anticipated during the construction stage, both in terms of the sourcing of local supplies (indirect employment across wider supply chains), and local spend by on-site workers (induced employment). Therefore, there is considered to be an in-combination cumulative effect associated with direct, indirect and induced employment opportunities of Minor Beneficial significance (not significant). However, the significance of this effect would depend on the construction period of the development.
18/03233/FUL	Population and Human Health	There is likely to be a positive socio-economic effect associated with direct temporary construction employment generated. In addition, multiple effects are anticipated during the construction stage, both in terms of the sourcing of local supplies (indirect employment across wider supply chains), and local spend by on-site workers (induced employment). Therefore, there is considered to be an in-combination cumulative effect associated with direct, indirect

Application	Anticipated Cumulative Effects	Justification and Commentary
		and induced employment opportunities of Minor Beneficial significance (not significant). However, the significance of this effect would depend on the construction period of the development.
18/03647/FUL	Population and Human Health	There is likely to be a positive socio-economic effect associated with direct temporary construction employment generated. In addition, multiple effects are anticipated during the construction stage, both in terms of the sourcing of local supplies (indirect employment across wider supply chains), and local spend by on-site workers (induced employment). Therefore, there is considered to be an in-combination cumulative effect associated with direct, indirect and induced employment opportunities of Minor Beneficial significance (not significant). However, the significance of this effect would depend on the construction period of the development.
18/03203/FUL & 17/04565/FUL	Population and Human Health	There is likely to be a positive socio-economic effect associated with direct temporary construction employment generated. In addition, multiple effects are anticipated during the construction stage, both in terms of the sourcing of local supplies (indirect employment across wider supply chains), and local spend by on-site workers (induced employment). Therefore, there is considered to be an in-combination cumulative effect associated with direct, indirect and induced employment opportunities of Minor Beneficial significance (not significant). However, the significance of this effect would depend on the construction period of the development.
16/03075/SCREEN	Population and Human Health	There is likely to be a positive socio-economic effect associated with direct temporary construction employment generated. In addition, multiple effects are anticipated during the construction stage, both in terms of the sourcing of local supplies (indirect employment across wider supply chains), and local spend by on-site workers (induced employment). Therefore, there is considered to be an in-combination cumulative effect associated with direct, indirect and induced employment opportunities of Minor Beneficial significance (not significant). However, the significance of this effect would depend on the construction period of the development.
	Road Drainage and the Water Environment	Cumulative effects relate to impacts to surface and ground water receptors from site derived physical and chemical pollutants where works are concurrent for this development and Part B. There is a risk of additive adverse cumulative effects where construction works are concurrent with Part B. With the application of good construction pollution prevention control practices however, the cumulative effect should be Negligible.
19/04296/FUL	Population and Human Health	There is likely to be a positive socio-economic effect associated with direct temporary construction employment generated. In addition, multiple effects are anticipated during the construction stage, both in terms of the sourcing of local supplies (indirect employment across wider supply chains), and local spend by on-site workers (induced employment). During operation, there is likely to be positive, direct, indirect, and induced socio-economic effects associated with permanent employment opportunities generated both by the development and Part B. It should be noted that the 'other development' would not result in the loss of existing employment opportunities because the existing site includes a series of vacant old industrial building which are largely in a state of repair. Therefore, there is considered to be an in-combination cumulative effect associated with direct, indirect and induced employment opportunities of Minor Beneficial significance (not significant) during construction. However, the significance of this effect would depend on the construction period of the development. During operation, there is considered to be an in-combination cumulative effect associated with direct, indirect and induced permanent employment opportunities of Negligible Beneficial significance (not significant).
	Road Drainage and the Water Environment	Cumulative effects relate to impacts to surface and ground water receptors from site derived physical and chemical pollutants where works are concurrent for this development and Part B. There is a risk of additive adverse cumulative effects where construction works are concurrent with Part B. With the application of good construction pollution prevention control practices however, the cumulative effect should be Negligible.
18/00672/FUL	Population and Human Health	There is likely to be a positive socio-economic effect associated with direct temporary construction employment generated. In addition, multiple effects are anticipated during the construction stage, both in terms of the sourcing of local supplies (indirect employment across wider supply chains), and local spend by on-site workers (induced employment). Therefore, there is considered to be an in-combination cumulative effect associated with direct, indirect

Application	Anticipated Cumulative Effects	Justification and Commentary
		and induced employment opportunities of Minor Beneficial significance (not significant). However, the significance of this effect would depend on the construction period of the development.

6.3.3. The list of applications will be updated, and a full assessment of the potential cumulative effects will be undertaken as part of the EIA and reported in the ES.

DESIGN, MITIGATION AND ENHANCEMENT MEASURES

6.3.4. Where significant cumulative effects are identified during the EIA, mitigation will be specified to avoid, reduce or offset such effects.

6.4. FURTHER WORK FOR THE EIA

6.4.1. A detailed assessment of the cumulative effects during construction and operation will be reported in the ES. This will follow the guidance contained in DMRB HA 205/08 Volume 11, Section 2, Part 5 “Assessment and Management of Environmental Effects” (**Ref. 4.3**).

6.4.2. Where DMRB has recently been updated a sensitivity test will be carried out to understand if the change would affect the potential significant effects; where it is identified that there could be a change in significant effects due to the change in methodology, this will be highlighted, and additional assessment will be carried out and reported within the ES.

6.4.3. In addition, where Part A or Part B do not either consider the full impact of the Scheme in combination, further assessment will be carried out to ensure that the significant effects of the Scheme are fully reported.

7. SUMMARY

7.1.1. This PEIR informs the public and stakeholders about the EIA process and the likely environmental effects of the Scheme as part of the statutory consultation. The PEIR precedes the EIA and as such is "preliminary" and is based on the most up to date information available at the time of writing. This PEIR has been informed by the Scoping Report and Scoping Opinion received from the Inspectorate and follows on from the previous PEIRs issued for Part A and B. Any comments received during the consultation, where relevant, will be taken into consideration in both the design of the Scheme and the EIA. The assessments carried out for the EIA will be reported within the ES, which will be submitted as part of the DCO application in late spring 2020.

7.1.2. The Scheme is classified within Annex I of the EIA Directive (**Ref. 1.2**). EIA is mandatory for the Scheme, in line with the EIA Directive and the EIA Regulations. The Scheme is likely to result in significant environmental effects.

7.1.3. EIA will be undertaken in line with DMRB, the EIA Regulations and some environmental disciplines following additional best practice guidance.

7.1.4. The NPPF and NPS NN will be considered throughout the development of the Scheme.

LIKELY SIGNIFICANT EFFECTS

7.1.5. Part A and B

7.1.6. A Summary of the assessment and its findings to date for each topic area for Part A and B can be found in **Section 5** of this PEIR, together with the identified significant effects in **Appendix C**. A high level summary of potential significant effects based on the current findings of the Scheme is given below, significant effects would arise due to:

a. Adjacent and/or nearby residential properties, other physical assets (e.g. businesses or community facilities e.g. Tritlington Church of England Aided First School) – adverse noise, visual and access disruption effects during construction.
b. Loss of Ancient Woodland (Dukes Bank Wood) during construction, resulting in a loss of habitat and landscape feature.
c. Residential receptors adjacent or near to the off line section of the Scheme – adverse noise and visual effects once the Scheme is operational, due to the introduction of road traffic in close proximity.
d. River Coquet and Coquet Woodlands SSSI – Construction works, and activities may cause adverse impacts from the risk from spillage of fuels or other harmful substances release of physical and chemical contaminants, increased sedimentation caused by surface water runoff and direct habitat loss, fragmentation and loss of biodiversity.
e. A number of PRoWs, recreational resources, road users, residential receptors and community facilities within the vicinity of the Scheme could experience adverse impacts as a result of increased noise and air quality pollution as well as visual intrusion, during both construction and operation.

f. Local businesses could also experience adverse impacts as a result of increased noise levels and visual intrusion, during both construction and operation.

CUMULATIVE EFFECTS

7.1.7. The initial findings for the Cumulative assessment can be found in **Section 6** of this PEIR Based upon the current findings of the preliminary assessments, the following potentially significant combined effects are anticipated **within topic** for the Scheme:

a. During construction and in the short term during operation, significant visual effects to users of the A1
b. Beneficial effects to the local economy from spend by workers during construction.

7.1.8. Based upon the current findings of the preliminary assessments, the following potentially significant combined effects are anticipated **cross topic** for the Scheme:

a. During construction to residents due to the combined effects of reduced air quality, increased noise and vibration and changes to views. But with economic benefits due to increased spend in the area.
b. During construction to road users due to reduced quality of views and driver stress as a result of traffic management.
c. During operation in the short term due to reduced quality of views and an increase in air quality pollution, but a benefit due to reduced congestion

7.1.9. Based upon the current findings of the preliminary cumulative assessment, the following potentially significant **cumulative** effects are anticipated:

a. There are potential cumulative local economic beneficial effects as a result of other development within the study area.

REFERENCES

Ref 1.1 UK Government (2017) Infrastructure Planning (EIA) Regulations 2017 No. 572.

Ref 1.2 European Commission (2014) Environmental Impact Assessment Directive (EIA) 2014/52/EU.

Ref 2.1 Jacobs (2014) A1N Feasibility Study, B1980200 Rev 1.

Ref 4.1 Highways Agency (1993, updated 2008). The Design Manual for Roads Bridges: Volume 11, Environmental Assessment.

Ref 4.2 Highways Agency (2001). Design Manual for Roads and Bridges: Volume 10, Environmental Design and Management.

Ref 4.3 Highways England (2008) Design Manual for Roads and Bridges (DMRB) Volume 11 Section 2 Part 5 (HA 205/08) Assessment and Management of Environmental Effects.

M2E – PEIR Appendix A: Glossary of Acronyms

Appendix A

GLOSSARY OF ACRONYMS

Acronym	Description
A	
AADT	Annual Average Daily Traffic
ALC	Agricultural Land Classification
AOD	Above Ordnance Datum
AONB	Area of Outstanding Natural Beauty
AQMA	Air Quality Management Area
ARN	Affected Road Network
B	
BGS	British Geological Survey
BMV	Best and Most Versatile
C	
CEMP	Construction Environmental Management Plan
CO_2	Carbon Dioxide
CIEEM	Chartered Institute of Ecology and Environmental Management
CL:AIRE	Contaminated Land: Applications in Real Environments
D	
dB	Decibels
DCO	Development Consent Order
DMRB	Design Manual for Roads and Bridges

Acronym	Description
DfT	Department for Transport
DWP	Diffuse Water Pollution
E	
EAR	Environmental Assessment Report
eDNA	Environmental DNA
EEA	European Economic Area
EIA	Environmental Impact Assessment
ES	Environmental Statement
F	
FRA	Flood Risk Assessment
G	
GCN	Great Crested Newts
GHG	Greenhouse Gas
GI	Ground Investigation
GLVIA	Guidelines for Landscape and Visual Impact Assessment
H	
ha	Hectares
HADDMS	Highways England Drainage Data Management System
HDV	Heavy Duty Vehicle

Acronym	Description
HER	Historic Environment Record
HLT	Historic Landscape Type
HIS	Habitat Suitability Index
HPI	Habitats of Principal Importance
HRA	Habitat Regulations Assessment
I	
IAN	Interim Advice Note
IEMA	Institute of Environmental Management and Assessment
IUCN	International Union for Conservation of Nature
J	
K	
L	
LBAP	Local Biodiversity Action Plan
LCA	Landscape Character Area
LCT	Landscape Character Type
LLFA	Lead Local Flood Authority
LNR	Local Nature Reserve
LOAEL	Lowest Observed Adverse Effect Level
LVIA	Landscape and Visual Impact Assessment

Acronym	Description
LWS	Local Wildlife Site
M	
Mm^3	Million metres cubed
MMP	Material Management Plan
Mt	Million tonnes
N	
NCA	National Character Area
NCC	Northumberland County Council
NIAs	Noise Important Areas
NMR	National Monument Record
NMUs	Non-Motorised Users
NO_2	Nitrogen Dioxide
NOx	Nitrogen Oxides
NPPF	National Planning Policy Framework
NPS NN	National Policy Statement for National Networks
NRMM	Non-Road Mobile Machinery
NSIP	Nationally Significant Infrastructure Project
NVC	National Vegetation Classification
O	

Acronym	Description
P	
Part A	A1 Morpeth to Felton
Part B	A1 Alnwick to Ellingham
PCBs	Polychlorinated biphenyl
PCM	Pollution Climate Mapping
PEIR	Preliminary Environmental Information Report
$PM_{2.5}$ and PM_{10}	Particulate Matter
PPE	Personal Protection Equipment
PRoW	Public Right of Way
PSSR	Preliminary Sources Study Report
Q	
R	
RIS	Roads Investment Strategy
RPE	Respiratory Protective Equipment
S	
SAC	Special Area of Conservation
SOAEL	Significant Observed Adverse Effect Level
SPA	Special Protection Area
SPI	Species of Principal Importance

Acronym	Description
SPZ	Source Protection Zone
SoCC	Statement of Community Consultation
SSSI	Site of Special Scientific Interest
SUDS	Sustainable Drainage System
SWMP	Site Waste Management Plan
T	
TMP	Traffic Management Plan
TSCS	Thin Surface Course System
U	
µg/m^3	Micrograms per cubic meter
UXO	Unexploded Ordnance
V	
VES	Visual Effect Schedules
W	
WCHRA	Walking, Cycling and Horse Riding Assessment
WFD	Water Framework Directive
Z	
ZTV	Zone of Theoretical Visibility

M2E – PEIR Appendix B: Figures
-Scheme Location Plan
-Constraints Plans

Appendix B

FIGURES

River Coquet Bridge
River Coquet
River Coquet Bridge Construction Area
Ancient Woodland Creation Area
Temporary Construction Compound
West Moor Junction
Start/Finish of A1 to be De-trunked
Burgham Park Underbridge
Included for Easement Rights
Proposed Alignment of A1
National Grid Diversion and Associated NPG and NGN Diversions
Causey Park Overbridge
Existing A1 to be De-trunked
Temporary Construction Compound
Fenrother Junction
Start/Finish of A1 to be De-trunked
Included for Easement Rights
Highlaws Junction
Warreners House

N

Key
- Order Limits
- Areas Excluded from Order Limits

0 1 2 3 4 km

Rev	Date	Description	By	Chk'd	App'd
P02	05/07/19	Second Issue	GH	NM	KS
P01	01/04/19	First Issue	GH	NM	KS

Client: highways england

Project Title: A1 in Northumberland: Morpeth to Felton

Drawing Title: Figure 1 Scheme Location Plan Part A of the Scheme

Scale	Drawn	Checked	Approved	Authorised
1:75,000	GH	NM	KS	DM
Original Size	Date	Date	Date	Date
A3	01/04/19	01/04/19	01/04/19	01/04/19

Drawing Status: For Information

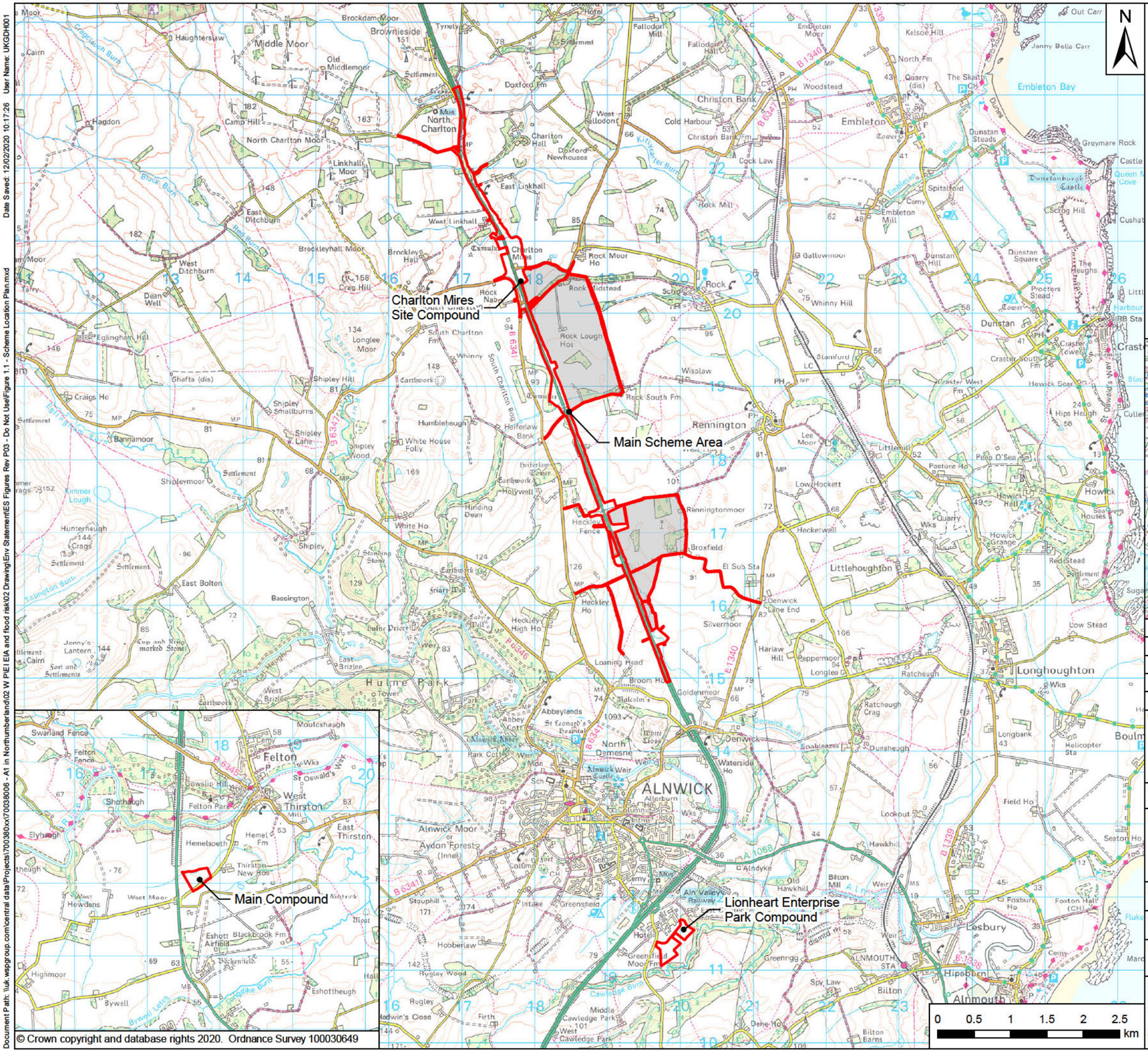
Suitability: S1

Drawing Number: Project HE551459 | Originator WSP | Volume 6.2 | Location M2F | Type | Role | Number

Project Ref. No.: 70044136

Revision: P02

Document Path: \\uk.wspgroup.com\central data\Projects\70038oxx\70038006 - A1 in Northumberland\02 WP\EIA and flood risk\02 Drawing\Env Statement\ES Figures Rev P03 - Do Not Use\Figure 1.1 - Scheme Location Plan.mxd Date Saved: 12/02/2020 10:17:26 User Name: UKGDH001



Rev	Date	Description	By	Chk'd	App'd
P03	07/02/20	Third Issue	GH	LM	KS
P02	09/12/19	Second Issue	GH	LM	JM
P01	31/07/19	First Issue	GH	LM	JM

Client: highways england

Project Title: A1 in Northumberland: Alnwick to Ellingham

Drawing Title: Figure 1 - Scheme Location Plan Part B of the Scheme

Scale	Drawn	Checked	Approved	Authorised
1:50,000	GH	LM	KS	NR
Original Size	**Date**	**Date**	**Date**	**Date**
A3	31/07/19	31/07/19	31/07/19	31/07/19

Drawing Status: For Information

Suitability: S1

Drawing Number Project	Originator	Volume	Project Ref. No.
HE551459	WSP	EGN	70044137
A2E Location	**RP Type**	**LE Role**	**2130 Number**

Revision: P03

Key

- Order Limits
- Areas Excluded from Order Limits
- 1km Study Area
- Ancient Woodland Inventory
- Site of Special Scientific Interest
- Local Nature Reserve
- Local Wildlife Sites
- Tree Preservation Order
- Area of High Landscape Value
- Listed Building
- Non-Designated Heritage Assets
- Statutory Main Rivers
- Surface Watercourses
- Surface Water Bodies

Source Protection Zones

- Zone I - Inner Protection Zone
- Zone III - Total Catchment
- Flood Zone 3
- Flood Zone 2
- Noise Important Area (NIA)
- Public Rights of Way

Tritlington School
Coronation Avenue (Start/End)
Jackson G K & Sons Garage
Milepost
Milepost
Coronation Avenue (Start/End)
NIA 10003
Northgate Hospital
Fair Moor
NIA 6608
NIA 10005
NIA 10004
NIA 10026
Fenrother
Hebron
Longhirst
Pegswood
Pigdon
MORPETH

0 0.5 1 1.5 km

Fig 2: Constraints Plan Part A

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Thirston Airfield
Bockenfield Farmhouse
Milepost
Shooting Ground
Longdike Burn
Coquet Cottages
Burgham Park Golf Club
Campsite at Felmoor
Milepost
The Oak Inn
NIA 10002
Milepost
Milepost
Tritlington School
Coronation Avenue (Start/End)
Jackson G K & Sons Garage
Milepost

Key
- Order Limits
- Areas Excluded from Order Limits
- 1km Study Area
- Ancient Woodland Inventory
- Site of Special Scientific Interest
- Local Wildlife Sites
- Area of High Landscape Value
- Listed Building
- Non-Designated Heritage Assets
- Statutory Main Rivers
- Surface Watercourses
- Surface Water Bodies
- Flood Zone 3
- Flood Zone 2
- Mine Entry Locations
- Landfill
- Noise Important Area (NIA)
- Public Rights of Way

0 0.5 1 1.5 km

Fig 2: Constraints Plan Part A

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Key

- Order Limits
- 1km Study Area
- Ancient Woodland Inventory
- Site of Special Scientific Interest
- Local Wildlife Sites
- Area of High Landscape Value
- ScheduledMonuments
- Conservation Area
- Listed Building
- Non-Designated Heritage Assets
- Statutory Main Rivers
- Surface Watercourses
- Surface Water Bodies
- Flood Zone 3
- Flood Zone 2
- Mine Entry Locations
- Public Rights of Way

Church of St Michael and All Angels

St Oswald's Way

Greenhouse 120m East of Felton Park with Potting Shed at Rear

River Coquet

Milepost

Thirston Airfield

Bockenfield Farmhouse

Milepost

Shooting Ground

Longdike Burn

Coquet Cottages

Burgham Park Golf Club

0 0.5 1 1.5 km

Fig 2: Constraints Plan Part A

N

Key

- Order Limits
- Areas Excluded from Order Limits
- 1km Study Area
- Listed Building
- Non-Designated Heritage Assets
- Public Rights of Way
- Statutory Main Rivers
- Surface Watercourses
- Area of High Landscape Value
- Local Wildlife Sites
- Scheduled Monument
- Site of Special Scientific Interest
- Area of Outstanding Natural Beauty
- Surface Water Bodies
- Flood Zone 3
- Flood Zone 2

0 0.5 1 1.5 km

Fig 2: Constraints Plan Part B

N

Key

- Order Limits
- Areas Excluded from Order Limits
- 1km Study Area
- Listed Building
- Non-Designated Heritage Assets
- Public Rights of Way
- Surface Watercourses
- Area of High Landscape Value
- Intermediate Area of Landscape Value
- Scheduled Monument
- Surface Water Bodies
- Flood Zone 3
- Flood Zone 2
- Ancient Woodland Inventory
- Bus Stops

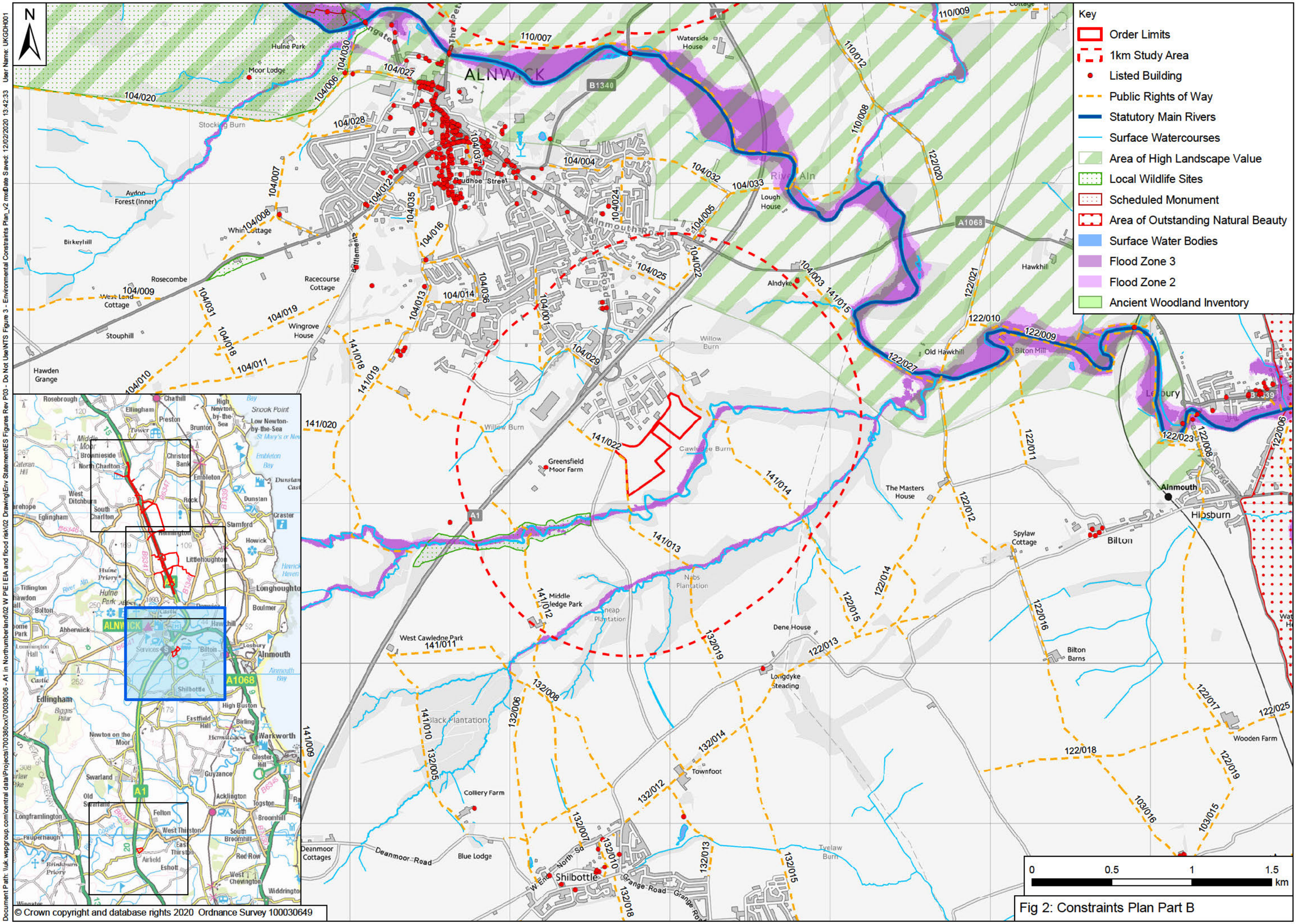
Brockdam Farm
Brockdam Moor
Tynely House
Doxford
Burnhouses
Fallodon Mill
Foresters Cottages
Brownieside
Tynely Moor
Middle Moor
Camp Hill
North Charlton
Doxford Farm
Middlemoor Farmhouse
Middlemoor
North Charlton Moor
Garden Cottage
West Lodge
Doxford Newhouses
Christon Bank Farm
Shipperton Burn
Edington Burn
East Linkhall
Kittycutter Burn
Embleton Burn
Newton Retreat
West Linkhall
Patterson Cottage
Drythropple
Rock Moor Farm
Charlton Mires
Crag Hill
South Charlton
The Old House
Rock Lodge
Rock Midstead
Rock
Gallowmoor
South Charlton Farm
The Whinny
Gull Ha
Jingling Burn

218/005 218/004 218/024 218/023 112/037 112/007 112/041 112/006 126/026 126/021 126/023 126/024 126/025 126/027 126/029 114/013 129/003 129/001 112/008 112/009 129/004 129/005 129/024 129/006 129/008

B6347 B1340 B6341 A1

0 0.5 1 1.5 km

Fig 2: Constraints Plan Part B


Key
Order Limits
1km Study Area
Listed Building
Public Rights of Way
Statutory Main Rivers
Surface Watercourses
Area of High Landscape Value
Local Wildlife Sites
Scheduled Monument
Area of Outstanding Natural Beauty
Surface Water Bodies
Flood Zone 3
Flood Zone 2
Ancient Woodland Inventory
N
ALNWICK
B1340
A1068
A1
Hulne Park
Moor Lodge
Stockeld Burn
Aydon Forest (Inner)
Birkeyhill
Whin Cottage
Rosecombe
West Land Cottage
Stouphill
Hawden Grange
Racecourse Cottage
Wingrove House
Pittiemenie
Prudhoe Street
Alnmouth Road
Waterside House
Lough House
River Aln
Aldyke
Hawkhill
Old Hawkhill
Bilton Mill
Willow Burn
Cawledge Burn
Greensfield Moor Farm
The Masters House
Spylaw Cottage
Bilton
Alnmouth
Hipsburn
Middle Ledge Park
Nabs Plantation
West Cawledge Park
Dene House
Longdyke Steading
Bilton Barns
Wooden Farm
Black Plantation
Colliery Farm
Townfoot
Deanmoor Cottages
Deanmoor Road
Blue Lodge
Shilbottle
Grange Road
Tyelaw Burn
0
0.5
1
1.5
km
Fig 2: Constraints Plan Part B
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Document Path: \\uk.wspgroup.com\central data\Projects\70038oxx\70038006 - A1 in Northumberland\02 W P\EI EIA and flood risk\02 Drawing\Env Statement\ES Figures Rev P03 - Do Not Use\WTS Figure 3 - Environmental Constraints Plan_v2 mxd Date Saved: 12/02/2020 13:42:33 User Name: UKGDH001

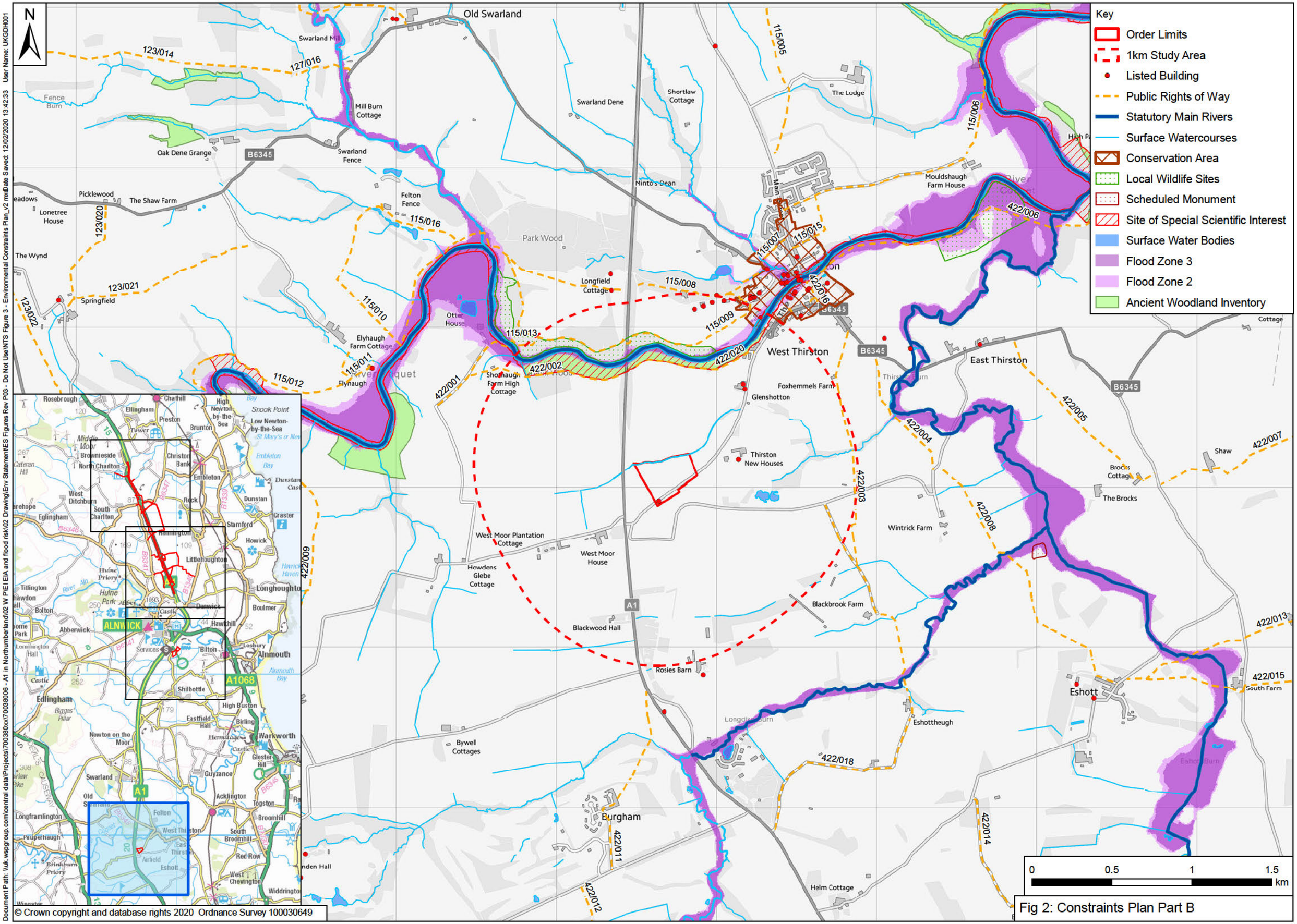

Fig 2: Constraints Plan Part B