

**A66 Northern Trans-Pennine Project  
TR010062**

**3.5 Habitat Regulations Assessment  
(HRA) Stage 1 Likely Significant  
Effects Report**

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

**Planning Act 2008**

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

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Planning Act 2008

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

A66 Northern Trans-Pennine Project  
Development Consent Order 2022

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**3.5 HABITAT REGULATIONS ASSESSMENT (HRA)  
STAGE 1 LIKELY SIGNIFICANT EFFECTS REPORT**

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None

## 1 Introduction

### 1.1 Purpose of this Document

1.1.1 This report details the Habitats Regulations Assessment (HRA) screening Stage 1 assessment. This report has been prepared to provide the necessary information for the competent authority to carry out an HRA under Regulation 63 of the Conservation of Habitats and Species Regulations 2017, as amended by the Conservation of Habitats and Species (amendment) (EU Exit) Regulations 2019<sup>1</sup>, hereafter referred to as the Habitats Regulations. It is informed by contemporary Defra (Department for Environment, Food and Rural Affairs and Natural England, 2021)<sup>2</sup>, and Ministry of Housing, Communities and Local Government (MHCLG) guidance (Ministry of Housing, Communities & Local Government, 2019)<sup>3</sup> and follows the methodology within Design Manual for Roads and Bridges (DMRB) *LA 115 Habitats Regulations Assessment* (Highways England, 2020a)<sup>4</sup> and The Planning Inspectorate (PINS) (Planning Inspectorate, 2017)<sup>5</sup>. For the avoidance of doubt, it takes full account of the principles of case law, both EU and domestic, including the *People Over Wind* (Judgement of the Court, 2018)<sup>6</sup> judgement. It has been prepared to inform the screening process and the competent authority on the implications of the A66 Northern Trans-Pennine (NTP) Project on European sites protected by the Habitats Regulations (hereafter referred to as 'the Project').

### 1.2 Scheme Background

1.2.1 The A66 Project covers the length of the A66 between the M6 junction 40 at Penrith to the A1(M) at Scotch Corner, which is approximately 80.5km long (see Location Plan in Figure 1.1: A66 Location and Overview Plan). Sections of the A66 have been upgraded from single carriageway to dual in a number of stages since the 1970s. However, more than 29km of single carriageway remain, making the route accident-prone and unreliable. Investment in the A66 is essential to the continued development of the economy in the north of the country. Dualling between the M6 junction 40 and the A1(M) at Scotch Corner and making other improvements along its length will support local and national economic growth and development.

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<sup>1</sup> In general, the EU Exit Regulations (see Reg. 4) retain the requirements and interpretation of, and relevance of guidance that applied to the 2017 Regulations, but with adjustments necessary to reflect the UK's exit from the European Union.

<sup>2</sup> Department for Environment, Food and Rural Affairs and Natural England (2022) Habitats regulations assessments: protecting a European site

<sup>3</sup> Ministry of Housing, Communities & Local Government (2022) Appropriate assessment.

<sup>4</sup> Highways England (2020a) Design Manual for Roads and Bridges LA 115 Habitats Regulations assessment, Revision 1.

<sup>5</sup> Planning Inspectorate (2022) Advice Note Ten: Habitat Regulations Assessment relevant to Nationally Significant Infrastructure Projects.

<sup>6</sup> Judgement of the Court (2018) Case C-323/17 *People Over Wind v Coillte Teoranta* (also referred to as the *Sweetman II* Judgement).

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## 1.3 Scope of this Report

- 1.3.1 The scope of this report is to identify relevant European sites that could potentially be impacted by the Project and to consider whether there are Likely Significant Effects (LSE) on these sites. This is intended to provide the information required by the competent authority for the HRA screening (Stage 1). As the Project is a Nationally Significant Infrastructure Project (NSIP), the competent authority for the HRA will be the Secretary of State for Transport

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## 2 Habitats Regulations Assessment

2.1.1 The following European sites are protected by the Habitats Regulations. Any proposals which could affect them will require an HRA.

- Special Areas of Conservation (SAC)
- Special Protection Areas (SPA)
- proposed SACs
- potential SPAs
- Ramsar sites (i.e. wetlands of international importance, both listed and proposed)
- areas secured as sites compensating for damage to a European site.

2.1.2 The assessment of a plan or project under the Habitats Regulations can be split into several sections as shown in Image 2-1: HRA screening process. There are effectively four stages to the assessment comprising:

- Stage 1 – Screening.
- Stage 2 – Appropriate Assessment and the Integrity Test.
- Stage 3 – Alternative Solutions.
- Stage 4 – Imperative Reasons of Overriding Public Interest (IROPI).

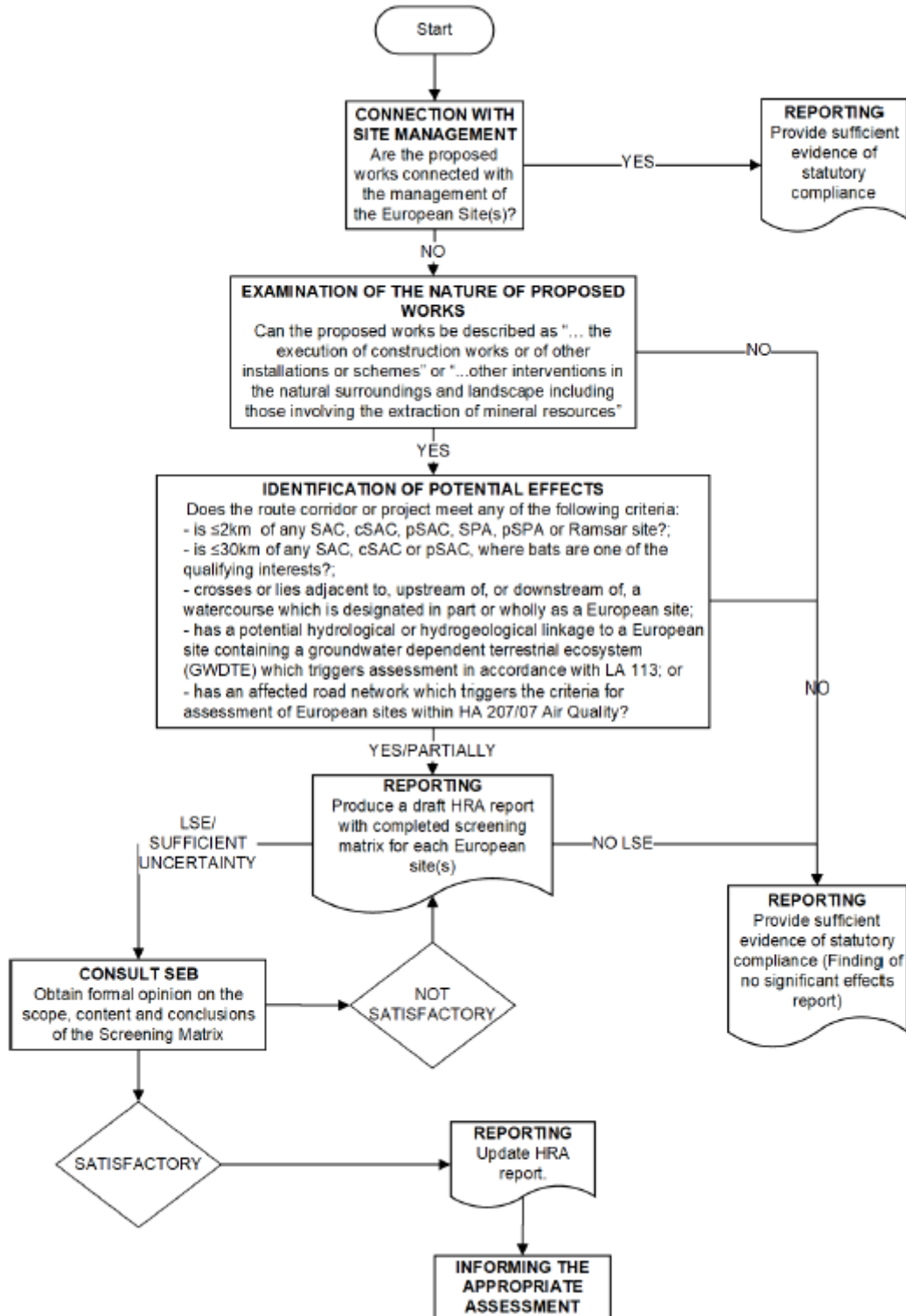


Image 2-1: HRA screening process (Highways England, 2020a)

## 2.2 Stage 1 - Screening

2.2.1 The first step in the HRA screening process is to consider whether the plan or project are connected with or necessary to the management of a European site. Plans and projects which are directly connected with or necessary to the management of a site are exempt from the HRA



process. The plan or project must be entirely connected with or necessary to the achievement of the site's conservation objectives. Such works should include those that are:

- For conservation purposes.
- Management which is 'directly connected with or necessary' to the site.
- Solely conceived for the conservation management of a site and not direct or indirect consequences.

2.2.2 Where the plans or projects are not connected with site management, the next step is to consider whether the plans or projects are defined as a 'project'. Whilst there is no legal definition of what constitutes a plan or project for the purposes of the Habitats Regulations, PINS<sup>5</sup> provides some guidance for projects in the planning permission regime, including: projects that are under construction and submitted applications that are not yet determined.

### Scoping of European sites

2.2.3 The European sites included within the scope of this HRA screening have been identified in accordance with *DMRB LA 115* screening criteria. These criteria state that European sites shall be included within the screening where the scheme meets any of the following:

- Criterion 1: Is within 2km of a European site or functionally linked land (i.e. Areas of land or sea occupied by the qualifying interests (species) of a European site that lie beyond the boundary of the site. Such areas support activities such as feeding, roosting and migration).
- Criterion 2: Is within 30km of a SAC, where bats are noted as one of the qualifying interests.
- Criterion 3: Crosses or lies adjacent to, upstream of, or downstream of, a watercourse which is designated in part or wholly as a European site.
- Criterion 4: Has a potential hydrological or hydrogeological linkage to a European site containing a groundwater dependent terrestrial ecosystem (GWDTE) which triggers the criteria for assessment of European sites in accordance with *DMRB LA 113 Road drainage and the water environment* (Highways England, 2020)<sup>7</sup>.
- Criterion 5: Has an affected road network (ARN) which triggers the criteria for assessment of European sites in *DMRB LA 105 Air quality* (Highways England, 2020)<sup>8</sup>.

2.2.4 For the purpose of this assessment, the criteria outlined in paragraph 2.2.3 above have been utilised to be in line with best practice for National Highways (formerly named 'Highways England') road schemes.

<sup>7</sup> Highways England (2020b) Design Manual for Roads and Bridges LA 113 Road drainage and the water environment

<sup>8</sup> Highways England (2019) Design Manual for Roads and Bridges LA 105 Air Quality

## Identification of LSE

- 2.2.5 Under the Habitat Regulations (Highways England, 2020a) an effect is likely if:
1. It cannot be excluded, in that it is capable of having an effect, on the basis of objective information
  2. It is likely to undermine the site's conservation objectives.
- 2.2.6 Baseline information regarding the location, designation, status, sensitivity and interest features of the European sites has been obtained and reviewed to identify designated habitats and species that may be impacted by the Project during its construction or operation phase. This has included review of Impact Risk Zones (IRZs), which are a GIS tool developed by Natural England to make a rapid initial assessment of the potential risks posed by development proposals to Sites of Special Scientific Interest (SSSIs), SACs, SPAs and Ramsar sites. They define zones around each site which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.
- 2.2.7 This HRA covers the construction and operation phases of the Project. Typically, highways projects are designed to have a materials (e.g. pavements, etc.) lifespan of between 20 and 40 years before major maintenance and upgrading is required, dependent on material properties, maintenance and usage. Elements including structural concrete and steelwork have extended design lives of up to 120 years. It is considered highly unlikely that the Project will be decommissioned as the road is likely to become an integral part of the infrastructure in the area. Decommissioning will not be either feasible or desirable and is therefore not proposed to be considered in the HRA.

## Mitigation and integral measures at LSE screening stage

- 2.2.8 In 2018 a Court of Justice of the European Union ("CJEU") ruling (referred to as the 'People over Wind' ruling) determined that 'mitigation' (i.e. measures intended to avoid or reduce the harmful effects of projects on European sites) should not be taken into account when forming a view on LSE during HRA screening. This screening assessment reflects the implications of that judgment and does not factor in mitigation measures in the screening of potential LSEs.

## Consideration of in combination LSE

- 2.2.9 Where screening concludes that significant effects are likely (alone or in combination), or that sufficient uncertainty remains then that potential effect will be taken forward to Stage 2 – Appropriate Assessment.
- 2.2.10 When considering 'in combination' effects, the competent authority should take account of:
- All current and proposed plans or projects of which it is aware (and the applicant should make the authority aware of such plans or projects).

- The effects of past plans or projects, if they have an ongoing effect on the conservation objectives of the site.

2.2.11 An in combination assessment is not included within this HRA Screening Assessment. Where LSE on a site could not be ruled out, the site has been taken forward to Appropriate Assessment (Stage 2) and subject to an in combination assessment at this stage (Stage 2). Where LSE have been ruled out during the HRA Screening, they have been ruled out alone with no residual effect or credible pathway for effect. Therefore, there are no residual effects to assess in combination with other plans or projects at the Screening stage.

### Consultation

2.2.12 Due to the programme which the Project was developed to, the Evidence Plan process (as developed by the Major Infrastructure Environment Unit (MIEU) of Defra (Major Infrastructure and Environment Unit, 2012)<sup>9</sup>) was identified as a tool that is potentially useful to aid consultation with key stakeholders and enhance agreements reached at the pre-application process.

2.2.13 National Highways adopted the principles of the Evidence Plan process to guide the consultation and development of the HRA for the Project, in relation to key areas of legislation and National Policy. The process has been led by the Integrated Project Team (IPT) (National Highways, their delivery partners and advisors).

2.2.14 The process followed in the preparation of the HRA Evidence Plan was aimed at producing a non-legally binding agreement between the developer and the relevant statutory authorities and advisers, and other relevant stakeholders. This agreement aims to cover the matters to be addressed by the impact assessments undertaken, the data that will be used to support the assessments and the methodology to be applied. The agreement can also be extended to cover the outputs of the assessment and development of proposed mitigation, as appropriate.

2.2.15 An Evidence Plan is intended to be a working document that is developed by the parties involved on an on-going basis through the development of the HRA, continuing up to the point of application. The intention is for the process to be informed by the HRA scoping processes, and for it to inform and feed into the Statements of Common Ground (SoCG).

2.2.16 The Project Evidence Plan forms Appendix 1.1 of the ES (ES Volume 1, Application Document 3.4). This document provides a summary of the consultation undertaken in the HRA Task Working Group (TWG) meetings held to date.

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<sup>9</sup> Major Infrastructure and Environment Unit (2012) Evidence plans for Nationally Significant Infrastructure Projects

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## **2.3 Stage 2 – Informing the Appropriate Assessment**

- 2.3.1 This report only addresses Stage 1 of the HRA, the Screening Report. An Appropriate Assessment (Stage 2) is a separate document (Document Reference 3.6: Habitats Regulations Assessment Stage 2: Statement to Inform Appropriate Assessment). The following information within sections 2.3 to 2.6 is for information only, in relation to stages 2 to 4 of the Habitats Regulations Assessment.
- 2.3.2 The Appropriate Assessment shall report on and provide evidence of examination of adverse effects on the integrity of a European site to inform the competent authority undertaking the Appropriate Assessment.

## **2.4 Stage 3 - Assessment of Alternative Solutions**

- 2.4.1 Formal assessment and reporting of alternative solutions shall be undertaken where the Statement to Inform the Appropriate Assessment (SIAA) concludes that there are adverse impacts of greater than negligible magnitude or contains insufficient information on any impact.

## **2.5 Stage 4 – Assessment of IROPI**

- 2.5.1 Where the alternative solutions assessment reports that there are no alternative solutions to the project and this has been agreed with the relevant Statutory Environmental Body (SEB) an assessment of IROPI shall be undertaken.

## **2.6 Assessment of Compensatory Measures**

- 2.6.1 Where IROPI are established and reported an assessment of compensatory measures shall be undertaken. An assessment of compensatory measures shall be compiled and on measures to compensate for the negative impact of the project. This should be used as basis for consultation with SEB to seek their representation of the sufficiency of the compensatory measures.

### 3 Proposed Project

#### 3.1 Overview of the Project

3.1.1 The Project comprises the improvement of the A66 between the M6 at Penrith and the A1(M) at Scotch Corner, upgrading the six existing single lane sections of the A66 to dual two lane all-purpose roads with 120km per hour (kph) design speed and a speed limit of 70mph. It also includes amendments to existing junctions and accesses within these sections, and improvements to the terminal junctions.

3.1.2 The Project has been split into eight schemes as shown in *Appendix A: European Designated Sites Location Plan and the Project*, which shows the Project and scheme locations in relation to designated sites.

#### 3.2 Scheme Descriptions

3.2.1 Some of the eight schemes involve online widening of the carriageway and some are offline (i.e. new sections of road that follow a different route but reconnect into the main A66 alignment). Along with dualling six sections of existing single carriageway, other improvements will be made along the route, such as junction improvements at the M6 Junction 40 at Penrith and minor improvements to the existing dual carriageway sections of the A66 within the existing highway boundary (for example new signs or road markings).

3.2.2 The eight individual schemes are as follows and are described in Table 3-1: Summary of key scheme features:

- M6 Junction 40 to Kemplay Bank
- Penrith to Temple Sowerby
- Temple Sowerby to Appleby
- Appleby to Brough
- Bowes Bypass
- Cross Lanes to Rokeby
- Stephen Bank to Carkin Moor
- A1(M) Junction 53 Scotch Corner

Table 3-1: Summary of key scheme features

Scheme	Key Features
M6 Junction 40 to Kemplay Bank	<p>The alignment and design of this scheme in the context of the SAC and functionally linked watercourses are shown in HRA Appendix A: European Designated Sites Location Plan and the Project.</p> <p>A full description of this scheme is provided in Chapter 2 of the ES (ES Volume 1, Application Document 3.2). Key features of this scheme include:</p> <p>Three-lane circulatory carriageway with spiral markings, within the footprint of the current roundabout at M6 Junction 40.</p> <p>Widening of the A66 eastern arm from two to three lanes in each direction between the Junction 40 and Kemplay Bank Roundabout.</p> <p>Widening of the following five approach arms to M6 Junction 40 to provide additional lanes and a dedicated left turn facility, each controlled under its own signal phase: M6 North, M6 South, A66 East, A66 West, and A592 Ullswater Road.</p>

Scheme	Key Features
	<p>New on-slip and off-slip roads at the A6 and A686.</p> <p>New underpasses beneath Kemplay Bank Roundabout.</p> <p>The underpass off Carleton Avenue will be retained and extended to accommodate the widening of the A66.</p> <p>New signal controlled crossings for existing shared cycle/footway connections on the western side</p> <p>All existing accesses and cycleways and footways will be accommodated either through being retained or will be rerouted close by.</p> <p>Reduced speed limit to 50mph between Junction 40 and Kemplay Bank Roundabout.</p> <p>Key features of this scheme with respect to the River Eden SAC and functionally linked watercourses include:</p> <p>Three temporary construction compound areas located between the existing A66 and the SAC boundary to the south. At their closest point the compounds are located at a distance of approximately 225m, 115m and 25m from the SAC boundary respectively.</p> <p>Three attenuation basins for the purposes of treatment of road run-off, with associated discharges to the River Eamont / River Eden SAC.</p> <p>Extension (by approximately 26m) of Thacka Beck at Carlton Hall underpass south of existing A66.</p> <p>Widening of existing cuttings and embankments.</p>
<p>Penrith to Temple Sowerby</p>	<p>The alignment and design of this scheme in the context of the SAC and functionally linked watercourses are shown in HRA Appendix A: European Designated Sites Location Plan and the Project.</p> <p>A full description of this scheme is provided in Chapter 2 of the ES (ES Volume 1, Application Document 3.2). <u>Key features of this scheme include:</u></p> <p>Full dualling of the existing 5.2km length of single carriageway A66 between Penrith and Temple Sowerby. This would involve widening of the existing carriageway to form one side of the new dual carriageway and constructing the second side of the carriageway north of the existing A66.</p> <p>Removal of existing at-grade crossing points of the A66. An overpass and one underpass have been included to facilitate the safe crossing of the A66. The overbridge would serve as an agricultural access and as a Public Right of Way.</p> <p>New junction to replace the Center Parks junction.</p> <p>The existing access serving Whinfell Holme Wastewater Treatment Works would be converted to left-in/left-out.</p> <p>The existing farm buildings at High Barn would be demolished to accommodate the offline section of the A66 to the east of the new grade-separated junction. The proposals also include the demolition of the Lightwater Cottages to the south of the A66 to facilitate and accommodate a replacement left-in/left-out access to the Winderwarth Estate.</p> <p><u>Key features of this scheme with respect to the River Eden SAC and functionally linked watercourses include:</u></p> <p>Minor extension of existing Light Water culvert; 5m of extension to the north, 3.5m extension to the south.</p> <p>One additional minor (7m in length) watercourse crossing of Light Water to the north of the A66, to enable access to the attenuation ponds for maintenance and the temporary construction effects.</p>

Scheme	Key Features
	<p>Two attenuation basins for the purposes of treating of road run-off, with associated discharges to Light Water which flows into the SAC.</p> <p>A temporary compound storage area construction compound adjacent to Light Water, south of the existing A66.</p> <p>One attenuation basin for the treatment of road run-off, with associated discharges to Unnamed Tributary of River Eamont 3.3 which flows into the SAC.</p> <p>One attenuation basin for the treatment of road run-off, with associated discharges to Unnamed Tributary of River Eamont 3.5 which flows into the SAC.</p> <p>One attenuation basin for the treatment of road run-off, with associated discharges to Swine Gill which flows into the SAC.</p> <p>The Whinfall Park Underpass which may require cutting into the underlying Penrith Sandstone in this scheme.</p>
<p>Temple Sowerby to Appleby</p>	<p>The alignment and design of this scheme in the context of the SAC and functionally linked watercourses are shown in HRA Appendix A: European Designated Sites Location Plan and the Project.</p> <p>A full description of this scheme is provided in Chapter 2 of the ES (ES Volume 1, Application Document 3.2). <u>Key features of this scheme include:</u></p> <p>A new offline bypass around the north of Kirkby Thore, and then pass to the north of Crackenthorpe parallel to the old Roman road before tying into the existing Appleby Bypass. This route would include a number of new junctions and improvements throughout its length to connect the scheme to the existing road network. The existing 8.5km A66 would be de-trunked.</p> <p>A multi-span viaduct over the Trout Beck and its floodplain.</p> <p><u>Key features of this scheme with respect to the River Eden SAC include:</u></p> <p>A multi-span viaduct over the Trout Beck and its floodplain, consisting of seven bridge piers located in the Trout Beck floodplain; three piers located to the north of the watercourse and four located to the south.</p> <p>Temporary bridge crossing of Trout Beck to facilitate the construction of the permanent works.</p> <p>A cutting associated with the Kirkby Thore Bypass.</p> <p>Four construction compounds in close proximity to the SAC, and one that lies within the SAC boundary in the vicinity of the proposed Trout Beck crossing.</p> <p>One attenuation basin for the treatment of road run-off, with associated discharges to Unnamed Tributary of River Eden 4.0 which flows into the SAC.</p> <p>Four attenuation basins for the treatment of road run-off, with associated discharges to Trout Beck.</p> <p>One attenuation basin for the treatment of road run-off, with associated discharges to Unnamed Tributary of Trout Beck 4.6 which flows into the SAC.</p> <p>One attenuation basin for the treatment of road run-off, with associated discharges to Unnamed Tributary of Trout Beck 4.2 which flows into the SAC.</p> <p>One attenuation basin for the treatment of road run-off, with associated discharges to Unnamed Tributary of Trout Beck 4.3 which flows into the SAC.</p> <p>One attenuation basin for the treatment of road run-off, with associated discharges to Unnamed Tributary of River Eden 4.2 which flows into the SAC.</p> <p>One attenuation basin for the treatment of road run-off, with associated discharges to Unnamed Tributary of River Eden 4.3 which flows into the SAC.</p>

Scheme	Key Features
<p>Appleby to Brough</p>	<p>The alignment and design of this scheme in the context of the SAC and functionally linked watercourses are shown in HRA Appendix A: European Designated Sites Location Plan and the Project.</p> <p>A full description of this scheme is provided in Chapter 2 of the ES (ES Volume 1, Application Document 3.2). <u>Key features of this scheme include:</u></p> <p>Dualling an 8.3km length of single carriageway between Coupland Beck and Brough and a number of junction improvements.</p> <p>The western extent of the scheme comprises 2.6km of online widening with a new eastbound carriageway to the north of the existing carriageway. The westbound carriageway would follow the line of the existing A66. The dualled section includes junction improvements to enable access on and off the A66 to improve user safety and reduce congestion.</p> <p>De-trunking of sections of the existing A66.</p> <p>An improved left-in/left-out junction from the eastbound carriageway would be provided at Café 66.</p> <p>A new compact grade-separated junction would provide a link to the B6259 to Sandford/Warcop as well as providing links for Public Rights of Way. A new underpass is proposed to facilitate access to agricultural land on the south side of the new A66 and for footpath connectivity to be provided adjacent to Wheatsheaf Farm.</p> <p>New left-in/left-left out priority junctions at Warcop on the westbound and eastbound carriageways.</p> <p>A left-only T-junction at Langrigg with appropriate diverge and merge tapers on the westbound carriageway.</p> <p>New local roads to the south of the new A66 alignment to link with Flitholme and to the south of the new A66 from Langrigg Lane to the west to link with a new overbridge.</p> <p>Replacement underpasses at New Hall Farm, Far Bank End and Wheatsheaf Farm.</p> <p><u>Key features of this scheme with respect to the River Eden SAC and functionally linked habitats include (west to east):</u></p> <p>Widening of the existing A66 culvert that conveys Unnamed Tributary of Mire Sike 6.12 under the road.</p> <p>Two attenuation basins for the purposes of treating of road run-off, with associated discharges to Unnamed Tributary of Mire Sike 6.12.</p> <p>New open span watercourse crossing of Cringle Beck and its floodplain.</p> <p>One attenuation basin for the purposes of treating of road run-off, with associated discharge to Cringle Beck.</p> <p>New viaducts over the Moor Beck and Cringle Beck and their associated floodplains.</p> <p>Two flood storage area adjacent to Moor Beck, north of Warcop that will fill in major flood events.</p> <p>One attenuation basin for the purposes of treating of road run-off, with an associated discharge to Moor Beck.</p> <p>Two open span bridges of Moor Beck; one upstream of the heritage railway and confluence with Eastfield Sike and a second upstream of the Warcop village access road.</p> <p>Replacement and widening the existing A66 culvert on Eastfield Sike.</p>



Scheme	Key Features
	<p>Three attenuation basins for the purposes of treating of road run-off, with associated discharge to Lowgill Beck.</p> <p>New culvert and minor channel realignment of Unnamed Tributary of Lowgill Beck 6.1.</p> <p>Extension of the existing A66 culvert at the confluence with Woodend Sike, Yosgill Sike and Lowgill Beck and minor channel realignment to shift the confluence of these watercourses slightly north and upstream of the extended culvert.</p> <p>A series of cuttings, that are typically extensions of existing cuttings, will be required in this scheme.</p>
Bowes Bypass	<p>Widening of the existing A66 to the north of Bowes.</p> <p>A new adjacent eastbound carriageway to the north between the Clint Lane Overbridge and the eastern scheme extents.</p> <p>Widening of the A67 to create a staggered junction and a right turn lane for the eastbound slip road.</p> <p>Realign the existing eastbound slip road to the north.</p> <p>Minor improvements to the existing westbound slip road.</p> <p>Upgrade of the Bowes Junction to a grade-separated junction.</p> <p>Extension of Lyndale Farm Underpass and Blacklodge Farm Underpass.</p> <p>New access overpass at East Bowes.</p>
Cross Lanes to Rokeby	<p>Dualling of the A66 with a new adjacent westbound carriageway to the south between the B6277 junction at Cross Lanes and the existing Tutta Beck Cottage access.</p> <p>New carriageways will be routed to the south of The Old Rectory and St Mary's Church, re-joining the existing A66 at Rokeby.</p> <p>Upgrade of the existing Cross Lanes junction to a new compact grade-separated junction.</p> <p>Realigning of the B6277 Moorhouse Lane to connect to the new Cross Lanes junction.</p> <p>De-trunking of the existing A66 west of St Mary's Church to Barnard Castle Road.</p> <p>A new compact grade-separated junction at Barnard Castle Road.</p> <p>A new junction at to the west of The Old Rectory and St Mary's Church.</p> <p>A new culvert to accommodate Tutta Beck.</p> <p>A new link road west of the existing Cross Lanes priority junction to link Rutherford Lane to the south and the B6277 Moorhouse Lane to the north.</p> <p>Realigning of a section of Rutherford Lane.</p> <p>Another new link road to connect Moorhouse Lane to the proposed link road west of Cross Lanes.</p> <p>A new culvert to accommodate Tutta Beck.</p> <p>A66 alignment leaves the existing A66 carriageway diverting south around The Old Rectory.</p> <p>A new junction to pass underneath the A66 to the Barnard Castle Road.</p> <p>A new eastbound slip road (merge) on the north side to connect the de-trunked A66 to the A66 mainline.</p> <p>Modification of the existing priority junction (to the north) to accommodate new slip road.</p>

Scheme	Key Features
Stephen Bank to Carkin Moor	<p>A new dual carriageway section between Stephen Bank and Carkin Moor Farm to the north of the existing A66.</p> <p>A new access underpass to the north of Dick Scott Lane.</p> <p>A new bridleway underpass to the north of Warrener Lane.</p> <p>De-trunking of the existing A66 to be used as a collector road with a new overbridge to facilitate the revised vertical realignment of Collier Lane.</p> <p>A new grade-separated junction to the western boundary of the existing alignment of Moor Lane.</p> <p>Realigning of the southern section of Moor Lane and placed into a cutting beneath the proposed mainline to connect to the de-trunked existing A66.</p> <p>Rerouting of the existing bridleway rerouted along the proposed realigned section of Moor Lane and along the Western Boundary of Mainsgill Farm.</p> <p>A new link road to Moor Lane grade-separated junction.</p>
A1(M) Junction 53 Scotch Corner	<p>Widening of the Middleton Tyas Lane approach to the A1(M) Junction 53 at Scotch Corner roundabout, from one lane to two lanes.</p>

### 3.3 Programme

3.3.1 Construction works are expected to commence in 2024, with all schemes targeted for a 2029 completion or sooner depending on traffic management interface challenges. Some of the smaller or less complex schemes will be completed in a shorter duration. It is assumed that the worst-case scenario is that all of the schemes will be under construction at the same time.

## 4 Screening Assessment Results

### 4.1 Determination of Connection with Site Management

4.1.1 The Project does not comprise works that are connected with or necessary to the management of a European site.

### 4.2 Examination of the Nature of Proposed Works

4.2.1 The Project consisting of the eight schemes is considered to comprise the definition of a 'project' in HRA terms. The potential construction and operation phase impact pathways identified for the HRA are described on a scheme-by-scheme basis for ease, and to enable cross referencing to the wider Environmental Statement (Application Document 3.2). However, it should be noted that this HRA Screening assesses all of the schemes as a single Project when identifying the potential for LSE.

### 4.3 Scoping of European Sites

4.3.1 The following European sites meet the screening criteria in Section 2.2: Stage 1 – Screening, paragraph 2.2.3, and are included in this screening assessment:

- River Eden SAC (meets criteria 1, 3 and 5).
- Helbeck and Swindale Woods SAC (meets criteria 1).
- Moor House-Upper Teesdale SAC (meets criteria 1).
- North Pennines Moors SAC (meets criteria 1 and 5).
- North Pennine Moors SPA (meets criteria 1 and 5).

4.3.2 Plans indicating the locations of the above listed European sites, the scheme boundary and the ARN are provided within *Appendix A: European Designated Sites Location Plan and the Project*. Conservation objectives for each European site are included within Table 4-2: Screening matrix River Eden SAC to Table 4-6: Screening matrix: North Pennine Moors SPA. Citations for the European sites discussed in this report are provided within *Appendix C: European Designated Sites Citations*.

4.3.3 It should be noted that Asby Complex SAC does not meet the screening criteria therefore is not discussed further in this Stage 1 Screening Report. Asby Complex SAC was previously screened into a previous iteration of this Stage 1 Screening Report (*Draft Habitat Regulations Screening Report, 17/09/21*, shared during Statutory Consultation) as it was considered at that time to meet DMRB criterion 5 (i.e has an ARN which triggers the criteria for assessment of European sites in DMRB LA 105 Air quality, Highways England, 2020). However, the updated traffic modelling now predicts a reduction (as opposed to an increase) in traffic volume and nitrogen deposition adjacent to this site, and as such the site no longer meets the screening criteria. The predicted reduction in nitrogen deposition adjacent to Asby Complex is described in Appendix 5.4 of ES Chapter 5 Air Quality (ES Application Document 3.4).

4.3.4 The Project and all European sites listed above are located entirely within England and their boundaries do not overlap with areas of

devolved administrations or with those of other European Economic Area (EEA) States.

## 4.4 Identification of likely Significant Effects

4.4.1 As detailed in paragraph 3.2.2 the Project has been split into eight schemes for the purpose of design. Table 4-2: Screening matrix River Eden SAC to Table 4-6: Screening matrix: North Pennine Moors SPA sets out the screening matrices for each European site, in accordance with the reporting requirements of *DMRB LA 115*. Each impact pathway has been screened on a scheme-by-scheme basis to inform the HRA, which is assessed on a routewide scale.

4.4.2 In addition, *Appendix B: PINS Screening Matrices details the PINS Screening Matrices* as required by PINS Advice Note 10.

Table 4-2: Screening matrix River Eden SAC

<b>Project Name:</b>		A66 Northern Trans-Pennine	
European Site under consideration:		River Eden SAC	
Date:	Author (Name/Organisation):	Verified (Name/Organisation):	
April 2022	Tom House/Arup Yan-Yee Lau/Arup	Bernie Fleming/Fleming Ecology Ltd	
<b>Description of Project</b>			
Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the European Site by virtue of:			
Size and scale (road type and probable traffic volume)	<p>The Project includes upgrading the existing single lane sections of the A66 to dual two lane all-purpose roads with 120kph design speed and a speed limit of 70mph. The Project also includes amendments to existing junctions and accesses within these sections, and improvements to the terminal junctions.</p> <p>The traffic flow is anticipated to increase for the without Project scenarios from the base by an average of 35% between 2019 and 2044 across the scheme locations. The average additional growth on the A66 due to the scheme (i.e. with Project compared to without Project) is between 29% and 34% across all years.</p>		
Land take <i>Land take / resource requirements / reduction of habitat area</i>	<p>No land take / resource requirements / reduction of habitat area in the SAC (or functionally linked habitats connected to the SAC) is required in the following schemes (<i>Appendix A European Designated Sites Location Plan and the Project</i>):</p> <ul style="list-style-type: none"> <li>• Bowes Bypass</li> <li>• Cross Lanes to Rokeby</li> <li>• Stephen Bank to Carkin Moor</li> <li>• A1(M) Junction 53 Scotch Corner.</li> </ul> <p><u>M6 Junction 40 to Kemplay Bank</u></p> <p><b>LSE(s) alone cannot be ruled out</b></p> <p>A small section (approximately 26m) of Thacka Beck (functionally linked to the SAC) will be impacted/degraded as a result of shading associated with the extension of the existing Carlton Hall underpass. There would also be alteration of the riparian zone as a result of three attenuation</p>		

Project Name:	A66 Northern Trans-Pennine
	<p>basin discharges to the River Eamont (within the SAC) that would enter the SAC through the riparian zone (<i>Appendix A European Designated Sites Location Plan and the Project</i>).</p> <p><u>Penrith to Temple Sowerby</u></p> <p><b>LSE(s) alone cannot be ruled out</b></p> <p>A small section (approximately 5m of extension to the north, 3.5m extension to the south) of Light Water (functionally linked to the SAC and supporting Annex I habitat watercourses of plain to montane levels with the <i>Ranunculus fluitantis</i> and Callitriche-Batrachion vegetation) and its riparian zone will be impacted/degraded as a result of shading associated with the extension of the existing A66 culvert and one additional minor (7m in length) watercourse crossing of Light Water. Alteration of riparian habitats in Light Water will also occur, as a result of two open ditch discharges, which will deliver treated runoff from the two attenuation basins in Light Water (<i>Appendix A European Designated Sites Location Plan and the Project</i>).</p> <p><u>Temple Sowerby to Appleby</u></p> <p><b>LSE(s) alone cannot be ruled out</b></p> <p>The approximate area of Trout Beck that would be shaded as a result of the proposed crossing point is 608m<sup>2</sup> (0.06ha). There would also be alteration of the riparian zone as a result of attenuation basin discharges to the Trout Beck that would enter the SAC through the riparian zone (<i>Appendix A European Designated Sites Location Plan and the Project</i>).</p> <p><u>Appleby to Brough</u></p> <p><b>LSE(s) alone cannot be ruled out</b></p> <p>Areas of river habitat considered functionally linked to the SAC will be impacted through shading as a result of the proposed crossings of Unnamed Tributary of Mire Sike 6.12, Cringle Beck, Moor Beck, Eastfield Sike, Lowgill Beck, Woodend Sike and Yosgill Sike (<i>Appendix A: European Designated Sites Location Plan and the Project</i>).</p>
<p>Distance from the European Site or key interests of the site (from edge of the Project assessment corridor)</p>	<p>The location of Project Scheme and ARN are shown in <i>Appendix A: European Designated Sites Location Plan and the Project</i>. Distances from the European Site or key interests of the site are as follows:</p> <ul style="list-style-type: none"> <li>• M6 Junction 40 to Kemplay Bank – within, immediately north</li> <li>• Penrith to Temple Sowerby – within, immediately south</li> <li>• Temple Sowerby to Appleby – within, scheme crosses SAC</li> <li>• Appleby to Brough - 375m east, within functionally linked habitats</li> <li>• Bowes Bypass – 15.9km west</li> <li>• Cross Lanes to Rokeby – 21.6km west</li> <li>• Stephen Bank to Carkin Moor – 28.9km west A1(M) Junction 53 Scotch Corner – 40km west</li> <li>• ARN – crosses the SAC in numerous places</li> </ul>
<p>Resource requirements (from the European Site or from areas in proximity to the site,</p>	<p>No resource requirements from the SAC (or functionally linked habitats connected to the SAC) in the following schemes (<i>Appendix A: European Designated Sites Location Plan and the Project</i>):</p> <ul style="list-style-type: none"> <li>• Bowes Bypass</li> </ul>

Project Name:	A66 Northern Trans-Pennine
<p>where of relevance to consideration of impacts)  <u>Land take / resource requirements / reduction of habitat area</u></p>	<ul style="list-style-type: none"> <li>• Cross Lanes to Rokeby</li> <li>• Stephen Bank to Carkin Moor</li> <li>• A1(M) Junction 53 Scotch Corner</li> </ul> <p><i>Construction and Operation</i>  <b>LSE(s) alone ruled out for the schemes outlined above</b>            No resource requirement from the River Eden SAC is required within the schemes above as they are a significant distance from the SAC and are not hydrologically or functionally linked to the SAC. There is no credible pathway for effect on the SAC.</p> <p><u>M6 Junction 40 to Kemplay Bank</u>  <i>Construction</i>  <b>LSE(s) alone cannot be ruled out</b>            A small section (approximately 26m) of Thacka Beck (functionally linked to the SAC) will be impacted/degraded as a result of shading associated with the extension of the existing Carlton Hall underpass. There would also be alteration of the riparian zone as a result of three attenuation basin discharges to the River Eamont (within the SAC) that would enter the SAC through the riparian zone (<i>Appendix A European Designated Sites Location Plan and the Project</i>).</p> <p><u>Penrith to Temple Sowerby</u>  <i>Construction</i>  <b>LSE(s) alone cannot be ruled out</b>            A small section (approximately 5m of extension to the north, 3.5m extension to the south) of Light Water (functionally linked to the SAC and supporting Annex I habitat watercourses of plain to montane levels with the <i>Ranunculus fluitantis</i> and Callitriche-Batrachion vegetation) and its riparian zone will be impacted/degraded as a result of shading associated with the extension of the existing A66 culvert and one additional minor (7m in length) watercourse crossing of Light Water. Alteration of riparian habitats in Light Water will also occur, as a result of two open ditch discharges, which will deliver treated runoff from the two attenuation basins in Light Water. This area does not form part of the River Eden SAC, however the habitat is considered to be functionally linked (<i>Appendix A: European Designated Sites Location Plan and the Project</i>).</p> <p><u>Operation</u>  <b>LSE(s) alone cannot be ruled out</b>            In the absence of suitable watercourse crossing design and/or mitigation, the extension of the existing Light Water crossing, and the additional minor crossing, could restrict the free movement of SAC qualifying species.</p> <p><u>Temple Sowerby to Appleby:</u>  <i>Construction</i>  <b>LSE(s) alone cannot be ruled out</b>            The approximate area of Trout Beck that would be shaded as a result of the proposed crossing point is 608m<sup>2</sup> (0.06ha). There would also be alteration of the riparian zone as a result of attenuation basin discharges to the Trout Beck that would enter the SAC through the riparian zone.</p>

Project Name:	A66 Northern Trans-Pennine
	<p>The bridge designs are anticipated to be clear span and the bridge supports would be located outside of the River Eden SAC boundary and designed/spaced to allow natural river processes to continue. The crossing will not require construction of any in channel structures and the natural bed and banks will be maintained but shaded by the new crossing. This could give rise to LSE on the River Eden SAC.</p> <p><u>Operation</u></p> <p><b>LSE(s) alone cannot be ruled out</b></p> <p>As stated above. The bridge designs are anticipated to be clear span and the bridge supports will be located outside of the River Eden SAC boundary and designed/spaced to allow natural river processes to continue and therefore not effect resource requirements. However, in the absence of the design mitigation described (i.e. clear span watercourse crossings that allow natural river processes to continue) and detailed fluvial geomorphological modelling to evidence efficacy of the design, LSE on the River Eden SAC cannot be ruled out.</p> <p><u>Appleby to Brough</u></p> <p><u>Construction</u></p> <p><b>LSE(s) alone cannot be ruled out</b></p> <p>The Project includes crossings of watercourses that are functionally linked to the River Eden SAC (<i>Appendix A European Designated Sites Location Plan and the Project</i>). It is anticipated that watercourse crossings of functionally linked rivers will open span and maintain the natural river bed and banks and therefore not effect resource requirements. However, in the absence of the design mitigation described (i.e. clear span watercourse crossings that allow natural river processes to continue), LSE on the River Eden SAC as a result of effects to functionally linked watercourses cannot be ruled out.</p> <p><u>Operation</u></p> <p><b>LSE(s) alone cannot be ruled out</b></p> <p>This Scheme includes crossings of watercourses that are functionally linked to the River Eden SAC. The watercourse crossings are anticipated to be designed such that natural river processes will continue and the natural bed and banks will be maintained but shaded. However, in the absence of the design mitigation described (i.e. clear span watercourse crossings that allow natural river processes to continue) and detailed fluvial geomorphological modelling to evidence efficacy of the design, LSE on the River Eden SAC cannot be ruled out.</p>
<p>Emissions (e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution)</p> <p><u>Changes to surface and groundwater quality, quantity, and hydrogeology</u></p>	<p><u>Water quality</u></p> <p>The following schemes are not hydrologically or functionally connected to the River Eden SAC (<i>Appendix A: European Designated Sites Location Plan and the Project</i>):</p> <ul style="list-style-type: none"> <li>• Bowes Bypass</li> <li>• Cross Lanes to Rokeby</li> <li>• Stephen Bank to Carkin Moor</li> <li>• A1(M) Junction 53 Scotch Corner</li> </ul> <p><u>Construction and Operation</u></p> <p><b>LSE(s) alone ruled out for the schemes listed above.</b></p>

Project Name:	A66 Northern Trans-Pennine
<p><u>Changes in air quality</u></p>	<p>Habitat within these schemes are not hydrologically or functionally linked to the SAC, consequently LSE(s) are ruled out alone with no residual effects. There is no credible pathway for effect on the SAC</p> <p>The following schemes are hydrologically or functionally connected to the River Eden SAC (<i>Appendix A: European Designated Sites Location Plan and the Project</i>):</p> <ul style="list-style-type: none"> <li>• M6 Junction 40 to Kemplay Bank</li> <li>• Penrith to Temple Sowerby</li> <li>• Temple Sowerby to Appleby</li> <li>• Appleby to Brough</li> </ul> <p><i>Construction</i></p> <p><b>LSE(s) alone cannot be ruled out</b></p> <p>Construction activities have the potential to generate water-borne pollution (e.g. fine sediment, fuels and oils), which could give rise to a LSE on the River Eden SAC.</p> <p><i>Operation</i></p> <p><b>LSE(s) alone cannot be ruled out</b></p> <p>Road runoff during operation of the road has the potential to generate water-borne pollution (e.g. trace metals, hydrocarbons and other organic pollutants resulting from oil/petrol spills and tyre and brake wear), which could give rise to a LSE on the River Eden SAC.</p> <p><u>Air quality</u></p> <p><b>LSE(s) alone cannot be ruled out</b></p> <p><i>Construction and Operation</i></p> <p>The Project ARN intersects, or comes in close proximity (&lt;200m), to the River Eden SAC at various locations. SAC qualifying habitat sensitive to changes in air quality (3260 watercourses) within the SAC that is intersected by the ARN, or within 200m to the ARN, could be adversely affected by increased deposition of air pollutants from construction and operation of the road.</p>
<p>Excavation requirements (e.g. impacts of local hydrogeology)</p> <p><u>Changes to surface and groundwater quality, quantity, and hydrogeology</u></p>	<p>The following schemes are not hydrologically or functionally connected to the River Eden SAC (<i>Appendix A: European Designated Sites Location Plan and the Project</i>):</p> <ul style="list-style-type: none"> <li>• Bowes Bypass</li> <li>• Cross Lanes to Rokeby</li> <li>• Stephen Bank to Carkin Moor</li> <li>• A1(M) Junction 53 Scotch Corner</li> </ul> <p><i>Construction and Operation</i></p> <p><b>LSE(s) alone ruled out</b></p> <p>Habitat within these schemes are not hydrologically or functionally linked to the SAC and as such there is no credible pathway for effect. Consequently LSE(s) are ruled out alone with no residual effects.</p> <p><u>The following schemes are hydrologically or functionally connected to the River Eden SAC (<i>Appendix A: European Designated Sites Location Plan and the Project</i>):</u></p> <ul style="list-style-type: none"> <li>• M6 Junction 40 to Kemplay Bank</li> <li>• Penrith to Temple Sowerby</li> </ul>



<b>Project Name:</b>	<b>A66 Northern Trans-Pennine</b>
	<ul style="list-style-type: none"> <li>• Temple Sowerby to Appleby</li> <li>• Appleby to Brough.</li> </ul> <p><i>Construction</i>  <b>LSE(s) alone cannot be ruled out</b>          Construction activities have the potential to impact on the water environment including surface water, groundwater quality and quantity, floodplain utilisation and floodplain extents.</p> <p><i>Operation</i>  <b>LSE(s) alone ruled out</b>          No excavation requirements proposed for the operation stage. Consequently LSE(s) are ruled out alone with no residual effects.</p>
Transportation requirements	See emissions above.
Duration of construction, operation, etc.	See Section 3.3: Programme
Non-native species <i>Introduction and/or spread of invasive non-native species</i>	Non-native species constitute a major threat to many river systems and in the absence of mitigation could be introduced and/or spread during construction adversely affecting 3260 watercourses and the aquatic SAC qualifying species it supports, both within the SAC and functionally linked watercourses.
<b>Description of avoidance and/or mitigation measures</b>	
Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:	
Nature of proposals	No specific mitigation measures to mitigate impacts to the River Eden SAC are included in this assessment, in line with the People Over Wind case.
Location	N/A
Evidence for effectiveness	N/A
Mechanism for delivery (legal conditions, restrictions or other legally enforceable obligations)	N/A
<b>Characteristics of European Site(s)</b>	
A brief description of the European Site to be produced, including information on:	
Name of European Site and its EU code	River Eden SAC (UK0012643) ( <i>Appendix A: European Designated Sites Location Plan and the Project</i> ).
Location and distance of the European Site from the proposed works	See details in “Distance from the European Site or key interests of the site (from edge of the Project assessment corridor)”

Project Name:	A66 Northern Trans-Pennine
European Site size	2430.39 ha (Joint Nature Conservation Committee, 2021a) <sup>10</sup>
Key features of the European Site including the primary reasons for selection and any other qualifying interests	<p>Annex I habitats that are a primary reason for selection of this site:</p> <ul style="list-style-type: none"> <li>• Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or of the <i>Isoëto-Nanojuncetea</i> (refers to Ullswater which is outside of the biodiversity study area)<sup>11</sup>.</li> <li>• Watercourses of plain to montane levels with the <i>Ranunculion fluitantis</i> and Callitriche-Batrachion vegetation.</li> <li>• Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae)<sup>12</sup>.</li> </ul> <p>Annex II species that are a primary reason for selection of this site:</p> <ul style="list-style-type: none"> <li>• Atlantic salmon (<i>Salmo salar</i>)</li> <li>• Brook lamprey (<i>Lampetra planeri</i>)</li> <li>• Bullhead (<i>Cottus gobio</i>)</li> <li>• Otter (<i>Lutra lutra</i>)</li> <li>• River lamprey (<i>Lampetra fluviatilis</i>)</li> <li>• Sea lamprey (<i>Petromyzon marinus</i>)</li> <li>• White-clawed crayfish (<i>Austropotamobius pallipes</i>)</li> </ul>
Vulnerability of the European Site – any information available from the standard data forms on potential effect pathways	<p>The <i>Natura 2000 Data Form</i> (Joint Nature Conservation Committee, 2015)<sup>13</sup> identified the following threats, pressures and activities with high negative effect on the European site:</p> <ul style="list-style-type: none"> <li>• A01 Cultivation</li> <li>• J02 Human induced changes in hydraulic conditions</li> <li>• I01 Invasive non-native species</li> <li>• M02 Changes in biotic conditions</li> <li>• H02 Pollution to groundwater (point sources and diffuse sources)</li> </ul> <p>The following threats and pressures are taken from the Natural England Site Improvement Plan (Natural England, 2014a)<sup>14</sup> for the European Site:</p> <ul style="list-style-type: none"> <li>• Water pollution</li> <li>• Agricultural management practices</li> <li>• Physical modification</li> </ul>

<sup>10</sup> Joint Nature Conservation Committee (2022a) River Eden Designated Special Area of Conservation

<sup>11</sup> Ullswater is approximately 7.5km upstream of the Project and there is considered to be no credible risk of LSE on this standing water as result of the project either alone or in combination. This was agreed with Natural England, based on their consultation comments on the Stage 1 HRA Screening Assessment, received as part of their statutory consultation response (22/10/21).

<sup>12</sup> This habitat type is not considered further in this HRA Screening as a) no alluvial forest was recorded within the SAC during surveys as described in Appendix 6.20 Aquatic Macrophyte and River Corridor Survey Technical Appendix (ES Volume 3, Application Document Number 3.4,) and b) this habitat type is absent from the SSSI units affected by the Project according to the *designated sites viewer* (see Natural England, 2022)

<sup>13</sup> Joint Nature Conservation Committee (2015a) Natura 2000 Standard Data Form: River Eden SAC (UK0012643)

<sup>14</sup> Natural England (2014a) Site Improvement Plan River Eden

<b>Project Name:</b>	<b>A66 Northern Trans-Pennine</b>
	<ul style="list-style-type: none"> <li>• Invasive species</li> <li>• Changes in species distributions</li> <li>• Forestry and woodland management</li> <li>• Hydrological changes</li> <li>• Disease</li> <li>• Air pollution: risk of atmospheric nitrogen deposition.</li> </ul>
European Site conservation objectives – where these are readily available	<p>The conservation objectives aim to:</p> <p>Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the favourable conservation status of its qualifying features, by maintaining or restoring:</p> <p>The extent and distribution of qualifying natural habitats and habitats of qualifying species</p> <p>The structure and function (including typical species) of qualifying natural habitats</p> <p>The structure and function of the habitats of qualifying species</p> <p>The supporting processes on which qualifying. natural habitats and the habitats of qualifying species rely</p> <p>The populations of qualifying species</p> <p>The distribution of qualifying species within the site.</p>
<b>Assessment criteria</b>	
Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the European Site.	
X See below	
<b>Initial assessment in relation to River Eden SAC</b>	
The key characteristics of the site and the details of the European Site to be considered in identifying potential impacts. Describe any likely changes to the site arising as a result of:	
Reduction of habitat area <i>Land take / resource requirements / reduction of habitat</i>	<p><u>No land take / resource requirements / reduction of habitat area in the SAC (or functionally linked habitats connected to the SAC) is required in the following schemes:</u></p> <ul style="list-style-type: none"> <li>• Bowes Bypass</li> <li>• Cross Lanes to Rokeby</li> <li>• Stephen Bank to Carkin Moor</li> <li>• Cross Lanes to Rokeby</li> <li>• Stephen Bank to Carkin Moor</li> <li>• A1(M) Junction 53 Scotch Corner.</li> </ul> <p><u>M6 Junction 40 to Kemplay Bank</u></p> <p><b>LSE(s) alone cannot be ruled out</b></p> <p>A small section (approximately 26m) of Thacka Beck (functionally linked to the SAC) will be impacted/degraded as a result of shading associated with the extension of the existing Carlton Hall underpass. There would also be alteration of the riparian zone as a result of three attenuation basin discharges to the River Eamont (within the SAC) that would enter the SAC through the riparian zone.</p> <p><u>Penrith to Temple Sowerby</u></p> <p><b>LSE(s) alone cannot be ruled out</b></p>

Project Name:	A66 Northern Trans-Pennine
	<p>A small section (approximately 5m of extension to the north, 3.5m extension to the south) of Light Water (functionally linked to the SAC and supporting Annex I habitat watercourses of plain to montane levels with the <i>Ranunculion fluitantis</i> and Callitricho-Batrachion vegetation) and its riparian zone will be impacted/degraded as a result of shading associated with the extension of the existing A66 culvert and one additional minor (7m in length) watercourse crossing of Light Water. Alteration of riparian habitats in Light Water will also occur, as a result of two open ditch discharges, which will deliver treated runoff from the two attenuation basins in Light Water.</p> <p><u>Temple Sowerby to Appleby</u></p> <p><b>LSE(s) alone cannot be ruled out</b></p> <p>The approximate area of Trout Beck that would be shaded as a result of the proposed crossing point is 608m<sup>2</sup> (0.06ha). There would also be alteration of the riparian zone as a result of attenuation basin discharges to the Trout Beck that would enter the SAC through the riparian zone.</p> <p><u>Appleby to Brough</u></p> <p><b>LSE(s) alone cannot be ruled out</b></p> <p>Areas of river habitat considered functionally linked to the SAC will be impacted through shading as a result of the proposed crossings of Unnamed Tributary of Mire Sike 6.12, Cringle Beck, Moor Beck, Eastfield Sike, Lowgill Beck, Woodend Sike and Yosgill Sike (<i>Appendix A: European Designated Sites Location Plan and the Project</i>).</p>
<p>Disturbance to key species</p> <p>Disturbance of mobile species and species fragmentation</p>	<p>LSE(s) alone ruled out for the following schemes:</p> <ul style="list-style-type: none"> <li>• Bowes Bypass</li> <li>• Cross Lanes to Rokeby</li> <li>• Stephen Bank to Carkin Moor</li> <li>• A1(M) Junction 53 Scotch Corner</li> </ul> <p><i>Construction and Operation</i></p> <p>These schemes are located in excess of 15km from the SAC and are not hydrologically connected or functionally linked to the SAC (<i>Appendix A: European Designated Sites Location Plan and the Project</i>). As such there is no credible pathway for disturbance of qualifying species. Therefore, LSE as a result of disturbance to key species can be ruled out alone with no residual effect.</p> <p>The following schemes are hydrologically connected or functionally linked to the SAC (<i>Appendix A: European Designated Sites Location Plan and the Project</i>):</p> <ul style="list-style-type: none"> <li>• M6 Junction 40 to Kemplay Bank</li> <li>• Penrith to Temple Sowerby</li> <li>• Temple Sowerby to Appleby</li> <li>• Appleby to Brough</li> </ul> <p><i>Construction</i></p> <p>LSE(s) alone cannot be ruled out</p> <p>During the construction phase, potential noise, vibration and lighting disturbance may impact on all Annex II species i.e. Atlantic salmon, brook lamprey, bullhead, river lamprey, sea lamprey, white-clawed crayfish and otter may occur as a result of in channel works, or works</p>

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	<p>within close proximity of the river channel and river banks. Physical disturbance of migration routes could also occur as a result of temporary dewatering and/or over-pumping in functionally linked watercourses (but not with the SAC itself).</p> <p><i>Operation</i></p> <p>LSE(s) alone cannot be ruled out</p> <p>There is the potential for LSE as a result of noise, vibration and lighting disturbance on Annex II aquatic species during operational phase i.e. Atlantic salmon, brook lamprey, bullhead, river lamprey, sea lamprey or white-clawed crayfish, as a result of the Project.</p>
<p>Habitat or species fragmentation</p> <p><u>Disturbance of mobile species and species fragmentation</u></p>	<p><b>LSE(s) alone ruled out for the following schemes:</b></p> <ul style="list-style-type: none"> <li>• Bowes Bypass</li> <li>• Cross Lanes to Rokeby</li> <li>• Stephen Bank to Carkin Moor</li> <li>• A1(M) Junction 53 Scotch Corner</li> </ul> <p><i>Construction and Operation</i></p> <p>These schemes are located in excess of 15km from the SAC and are not hydrologically connected or functionally linked to the SAC (<i>Appendix A: European Designated Sites Location Plan and the Project</i>). As such there is no credible pathway for habitat or species fragmentation. Therefore, LSE as a result of disturbance to key species can be ruled out alone with no residual effect.</p> <p><i>Construction and Operation</i></p> <p><b>LSE(s) alone ruled out</b></p> <p>Habitat within these schemes are not hydrologically or functionally linked to the SAC and as such there is no credible pathway for habitat or species fragmentation. Consequently LSE(s) are ruled out alone with no residual effects.</p> <p>The following schemes are hydrologically connected or functionally linked to the SAC (<i>Appendix A: European Designated Sites Location Plan and the Project</i>):</p> <ul style="list-style-type: none"> <li>• M6 Junction 40 to Kemplay Bank</li> <li>• Penrith to Temple Sowerby</li> <li>• Temple Sowerby to Appleby</li> <li>• Appleby to Brough</li> </ul> <p><i>Construction</i></p> <p><b>LSE(s) alone cannot be ruled out</b></p> <p>During the construction phase, potential noise, vibration and lighting disturbance may impact on all Annex II species i.e. Atlantic salmon, brook lamprey, bullhead, river lamprey, sea lamprey, white-clawed crayfish and otter may occur as a result of in channel works, or works within close proximity of the river channel and river banks. Physical disturbance of migration routes could also occur as a result of temporary dewatering and/or over-pumping. These activities could lead to habitat or species fragmentation.</p> <p><i>Operation</i></p> <p><b>LSE(s) alone cannot be ruled out</b></p>

Project Name:	A66 Northern Trans-Pennine
	<p>There is the potential for operations phase impacts as a result of noise and light disturbance. These activities could lead to habitat or species fragmentation.</p>
<p>Reduction in species density  <u>Land take / resource requirements / reduction of habitat area</u>  <u>Species injury and mortality</u></p>	<p>The following schemes are hydrologically connected or functionally linked to the SAC (<i>Appendix A: European Designated Sites Location Plan and the Project</i>):</p> <ul style="list-style-type: none"> <li>• M6 Junction 40 to Kemplay Bank</li> <li>• Penrith to Temple Sowerby</li> <li>• Temple Sowerby to Appleby</li> <li>• Appleby to Brough</li> </ul> <p><i>Construction</i>  <b>LSE(s) alone cannot be ruled out</b>            Vibration can cause damage or mortality of eggs and embryos in spawning gravels which could give rise to LSE's on the populations or density of lamprey, salmon and bullhead, and their distribution within the SAC.            Dewatering could give rise to LSEs on lamprey, salmon and bullhead through stranding and suffocation, or entrainment into the pumping arrangement used during dewatering.</p> <p><i>Operation</i>  <b>LSE(s) alone cannot be ruled out</b>            No reduction in species density is anticipated as the design of watercourse crossings will avoid impacts to in-channel habitats and enable the natural river processes which control their distribution to be maintained. However, in the absence of the design mitigation described above (i.e. clear span watercourse crossings that allow natural river processes to continue) and detailed fluvial geomorphological modelling to evidence efficacy of the design, a reduction in species density as a result of a reduction in habitat area cannot be ruled out.</p>
<p>Changes in key indicators of conservation value (water quality, etc)  <u>Changes in surface and groundwater quality, quantity, and hydrogeology</u>  <u>Changes in hydrology and fluvial geomorphological processes</u></p>	<p>The impact pathways described in this section are relevant to the following schemes which are hydrologically connected or functionally linked to the SAC:</p> <ul style="list-style-type: none"> <li>• M6 Junction 40 to Kemplay Bank</li> <li>• Penrith to Temple Sowerby</li> <li>• Temple Sowerby to Appleby</li> <li>• Appleby to Brough</li> </ul> <p><i>Construction</i>  <b>LSE(s) alone cannot be ruled out</b>            Changes in key indicators of conservation value may give rise to LSE. Further assessment is required at the Appropriate Assessment stage on potential changes in surface and groundwater quality, quantity, and hydrogeology and how this may impact on the conservation value and integrity of the site and the habitats it supports.            In addition, further assessment of the potential for changes in hydrology and fluvial geomorphological processes as a result of the Project and how this may impact on the conservation value and integrity of the site</p>

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	<p>and the habitats it supports is required. In the absence of appropriate watercourse crossing design, this could give rise to LSE.</p> <p><i>Operation</i></p> <p><b>LSE(s) alone cannot be ruled out</b></p> <p>Road runoff during operation of the road has the potential to generate water-borne pollution (e.g. trace metals, hydrocarbons and other organic pollutants resulting from oil/petrol spills and tyre and brake wear), which could give rise to a LSE on the River Eden SAC.</p> <p><b>LSE(s) alone ruled out for the following schemes:</b></p> <ul style="list-style-type: none"> <li>• Bowes Bypass</li> <li>• Cross Lanes to Rokeby</li> <li>• Stephen Bank to Carkin Moor</li> <li>• A1(M) Junction 53 Scotch Corner</li> </ul> <p><i>Construction and Operation</i></p> <p>These schemes are located in excess of 15km from the SAC and are not hydrologically connected or functionally linked to the SAC (<i>Appendix A: European Designated Sites Location Plan and the Project</i>). As such there is no credible pathway for changes in key indicators of conservation value. Therefore, LSE as a result of changes in key indicators of conservation value can be ruled out alone with no residual effect for these schemes.</p>
Climate change	<p><b>LSE(s) alone ruled out</b></p> <p>Future climate projections taken from the UK Climate projections 2018 (UKCP18)<sup>15</sup> are presented in ES Chapter 7: Climate (Application Document 3.2) and provide a future baseline for how global climate change is likely to affect the study area. These projections indicate an increased likelihood of warmer, wetter winters and hotter, drier summers, in addition to an increase in the frequency of extreme weather throughout the period of operation. Climate projections for wind have the highest level of uncertainty but an increase in near surface wind speeds over the UK for the second half of the 21st century for the winter season is projected. The overall vulnerability of the SAC to climate change has been assessed by (Natural England, 2015)<sup>16</sup> as being moderate taking into account the sensitivity, fragmentation, topography and management of its habitats.</p> <p>For the purpose of this assessment, climate change will be a consideration in respect of any proposed mitigation, where required, at the Appropriate Assessment stage.</p>
<b>Describe any likely impacts on the European Site as a whole in terms of:</b>	
Interference with the key relationships that define the structure of the site	<p><b>LSE(s) alone cannot be ruled out</b></p> <p>LSE on the key relationships that define the structure of the SAC cannot be ruled out as a result of potential changes in surface and groundwater quality, quantity, and hydrogeology and potential changes in hydrology and fluvial geomorphological processes. Further analysis is required to</p>

<sup>15</sup> Met Office (2018) UK Climate Projections (UKCP)

<sup>16</sup> Natural England (2015) Climate Change Theme Plan and supporting National Biodiversity Climate Change Vulnerability assessments ('NBCCVAs') for SACs and SPAs in England

<b>Project Name:</b>	<b>A66 Northern Trans-Pennine</b>
<u>Changes in surface and groundwater quality, quantity, and hydrogeology</u>	determine the impact the Project may have on the relationships that define the structure of the SAC during both the construction and operation of the road.
<u>Changes in hydrology and fluvial geomorphological processes</u>	
Interference with key relationships that define the function of the site <u>Changes in surface and groundwater quality, quantity, and hydrogeology</u>  <u>Changes in hydrology and fluvial geomorphological processes</u>	<b>LSE(s) alone cannot be ruled out</b> LSE on the key relationships that define the function of the SAC cannot be ruled out as a result of potential changes in surface and groundwater quality, quantity, and hydrogeology and potential changes in hydrology and fluvial geomorphological processes. Further analysis is required to determine the impact the Project may have on the relationships that define the function of the SAC during both the construction and operation of the road.
Indicate the significance as a result of the identification of impacts set out above in terms of:	
Reduction of habitat area	<b>LSE(s) alone cannot be ruled out</b>
Disturbance to key species	<b>LSE(s) alone cannot be ruled out</b>
Habitat or species fragmentation	<b>LSE(s) alone cannot be ruled out</b>
Loss	<b>LSE(s) alone cannot be ruled out</b>
Fragmentation	<b>LSE(s) alone cannot be ruled out</b>
Disruption	<b>LSE(s) alone cannot be ruled out</b>
Disturbance	<b>LSE(s) alone cannot be ruled out</b>
Change to key elements of the site (e.g. water quality, hydrological regime, geomorphological processes etc.)	<b>LSE(s) alone cannot be ruled out</b>
Describe from the above those elements of the project, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.	
Emissions (water and air quality) Construction activities and road runoff during operation of the road have the potential to generate water-borne pollution which could give rise to LSE on the River Eden SAC.	



<b>Project Name:</b>	<b>A66 Northern Trans-Pennine</b>
<p>The Project ARN intersects, or comes in close proximity (&lt;200m), to the River Eden SAC at various locations. SAC qualifying habitat 3260 watercourse within the SAC that is intersected by the ARN, or within 200m of the ARN, could be adversely affected by increased deposition of nutrient nitrogen air pollutants from construction and operation of the road. LSE(s) from changes in water and air quality cannot be ruled out at this stage.</p> <p>Reduction of habitat area/Resource requirements</p> <p>Loss of riparian habitat, anticipated as a result of shading of Trout Beck (within the River Eden SAC) associated with the proposed crossing and crossings of functionally linked watercourses is undefined at this stage, pending detailed fluvial geomorphological modelling to evidence efficacy of the design.</p> <p>Disturbance to species</p> <p>The construction and operation phases have the potential for noise, vibration and lighting disturbance to cause LSEs on qualifying species of the River Eden SAC.</p>	
Outcome of screening stage	LSEs alone cannot be ruled out
Are the appropriate statutory environmental bodies in agreement with this conclusion	The statutory environmental bodies (SEBs) have been consulted via a series of TWGs using an Evidence Plan approach (see Appendix 1.1 of the ES, ES Volume 1, Application Document 3.4). The SEBs have been formally consulted regarding the outcome of previous screening assessment, presented at Statutory Consultation. This document provides an update to that screening assessment, and is submitted as part of the DCO application.

Table 4-3: Screening matrix Helbeck and Swindale Woods SAC

<b>Project Name:</b>	<b>A66 Northern Trans-Pennine</b>	
European Site under consideration:	Helbeck and Swindale Woods SAC	
Date:	Author (Name/Organisation):	Verified (Name/Organisation):
April 2022	Tom House/Arup Yan-Yee Lau/Arup	Bernie Fleming/Fleming Ecology
<b>Description of Project</b>		
Describe any likely direct, indirect or secondary impacts of the Project (either alone or in combination with other plans or projects) on the European Site by virtue of:		
Size and scale (road type and probable traffic volume)	<p>The Project includes upgrading the existing single lane sections of the A66 to dual two lane all-purpose roads with 120kph design speed and a speed limit of 70mph. The Project also includes amendments to existing junctions and accesses within these sections, and improvements to the terminal junctions.</p> <p>The traffic flow is anticipated to increase for the without project scenarios from the base by an average of 35% between 2019 and 2044 across the scheme locations. The average additional growth on the A66 due to the scheme (i.e. with Project compared to without Project) is between 29% and 34% across all years.</p>	
Land take <u>Land take / resource requirements /</u>	None within the Helbeck and Swindale Woods SAC boundary	

Project Name:	A66 Northern Trans-Pennine
<u>reduction of habitat area</u>	
Distance from the European Site or key interests of the site (from edge of the Project assessment corridor)	M6 Junction 40 to Kemplay Bank – 27.6km northwest Penrith to Temple Sowerby – 21.7km northwest Temple Sowerby to Appleby - 10.5km northwest Appleby to Brough: 430m north Bowes Bypass – 17.4km west Cross Lanes to Rokeby – 23km west Stephen Bank to Carkin Moor – 31km west A1(M) Junction 53 Scotch Corner – 41.6km west ARN – closest section of the ARN lies 555m south
Resource requirements (from the European Site or from areas in proximity to the site, where of relevance to consideration of impacts) <u>Land take / resource requirements / reduction of habitat area</u>	<u>All schemes</u> <b>LSE(s) alone ruled out</b> No direct habitat loss required within the Helbeck and Swindale Woods SAC boundary. Consequently LSE(s) are ruled out alone with no residual effects.
Emissions (e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution) <u>Changes in air quality</u>  <u>Changes in surface and groundwater quality, quantity, and hydrogeology</u>	<u>Air Quality</u> <b>LSE(s) alone ruled out for all schemes:</b> <i>Construction and Operation</i> All schemes are located over 200m from Helbeck and Swindale Woods SAC. In line with LA 105 DMRB standards, LSE from a change in air quality are ruled out. Consequently, LSE(s) are ruled out alone with no residual effects.  <u>Water Quality</u> <b>LSE(s) alone can be ruled out for the following schemes:</b> <ul style="list-style-type: none"> <li>• M6 Junction 40 to Kemplay Bank</li> <li>• Penrith to Temple Sowerby</li> <li>• Temple Sowerby to Appleby</li> <li>• Appleby to Brough</li> <li>• Bowes Bypass</li> <li>• Cross Lanes to Rokeby</li> <li>• Stephen Bank to Carkin Moor</li> <li>• A1 (M) Junction 53 Scotch Corner</li> </ul> <i>Construction and Operation</i> LSE(s) alone are ruled out for these schemes based on their distance to Helbeck and Swindale Woods SAC and because they do not interact with habitats that are hydrologically connected or functionally linked to the SAC. Consequently LSE(s) are ruled out alone with no residual effects.

Project Name:	A66 Northern Trans-Pennine
	<p>Changes to the Water Environment including surface water and groundwater quality and quantity, floodplain utilisation and floodplain extents are also ruled out as the scheme is located downstream of Helbeck and Swindale Woods SAC. No groundwater Source Protection Zone (SPZ) have been identified within the Appleby to Brough scheme. The Appleby to Brough scheme is located downstream of the SAC (the surface water WFD catchment Low Gill (Crooks Beck) starts to the west of the SAC and flows south toward the scheme) and as such there is no surface water connectivity between Appleby to Brough scheme and the SAC. Consequently LSE(s) are ruled out alone with no residual effects.</p>
<p>Excavation requirements (e.g. impacts of local hydrogeology)</p> <p><u>Changes in surface and groundwater quality, quantity, and hydrogeology</u></p>	<p><u>All schemes</u></p> <p><i>Construction</i></p> <p><b>LSE(s) alone can be ruled out</b></p> <p>No groundwater SPZ have been identified within Appleby to Brough, which is the closest lying scheme to the site. In addition, no surface water WFD catchments provide connectivity between Appleby to Brough and the site. Due to the distance of the site from the other schemes LSE are ruled out from potential excavation requirements. Consequently LSE(s) are ruled out alone with no residual effects.</p> <p><i>Operation</i></p> <p><b>LSE(s) alone can be ruled out</b></p> <p>No excavation required during operation, consequently LSE(s) are ruled out alone with no residual effects.</p>
Transportation requirements	See emissions above.
Duration of construction, operation, etc.	See Section 3.3 Programme
Non-native species	<p><u>All schemes</u></p> <p>Construction and Operation</p> <p>LSE(s) alone can be ruled out</p> <p>Non-native species constitute a major threat to many habitats. No works are required within the SAC therefore there is no risk of introduction and/or spread of invasive non-native species within the SAC. The closest construction area of the Project is 430m south with no impact pathways e.g. functionally linked watercourses within the Project are downstream of the SAC.</p>
<p><b>Description of avoidance and/or mitigation measures</b>          Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:</p>	
Nature of proposals	No specific mitigation measures to mitigate impacts to the Helbeck and Swindale Woods SAC are included in this assessment, in line with the <i>People Over Wind</i> case.
Location	N/A
Evidence for effectiveness	N/A

<b>Project Name:</b>	<b>A66 Northern Trans-Pennine</b>
Mechanism for delivery (legal conditions, restrictions or other legally enforceable obligations)	N/A
<b>Characteristics of European Site(s)</b>	
A brief description of the European Site to be produced, including information on:	
Name of European Site and its EU code	<b>Helbeck and Swindale Woods SAC (UK0030167)</b> ( <i>Appendix A: European Designated Sites Location Plan and the Project</i> )
Location and distance of the European Site from the proposed works	See details in “Distance from the European Site or key interests of the site (from edge of the Project assessment corridor)”
European Site size	136.9 ha (Joint Nature Conservation Committee, 2021b) <sup>17</sup>
Key features of the European Site including the primary reasons for selection and any other qualifying interests	Annex I habitats that are a primary reason for selection of this site: <ul style="list-style-type: none"> <li>• <i>Tilio-Acerion</i> forests of slopes, screes and ravines (mixed woodland on base-rich soils associated with rocky slopes)</li> </ul>
Vulnerability of the European Site – any information available from the standard data forms on potential effect pathways	The <i>Natura 2000 Data Form</i> (Joint Nature Conservation Committee, 202b) <sup>18</sup> identified the following threats, pressures and activities with high negative effect on the European site: <ul style="list-style-type: none"> <li>• K04 Interspecific floral relations</li> <li>• H04 Air pollution, air-borne pollutants</li> <li>• B02 Forest and plantation management and use</li> </ul> The following threats and pressures are taken from the Natural England Site Improvement Plan (Natural England, 2014b) <sup>19</sup> for the European Site: <ul style="list-style-type: none"> <li>• Forest and woodland management</li> <li>• Disease</li> <li>• Air pollution: impact of atmospheric nitrogen deposition</li> </ul>
European Site conservation objectives – where these are readily available	The conservation objectives aim (Joint Nature Conservation Committee, 2018a) <sup>20</sup> to: Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the favourable conservation status of its qualifying features, by maintaining or restoring: <ul style="list-style-type: none"> <li>• The extent and distribution of qualifying natural habitats</li> <li>• The structure and function (including typical species) of qualifying natural habitats</li> </ul>

<sup>17</sup> Joint Nature Conservation Committee (2022b) Helbeck and Swindale Woods Designated Special Area of Conservation

<sup>18</sup> Joint Nature Conservation Committee (2015b) Natura 2000 Standard Data Form: Helbeck and Swindale Woods SAC (UK0030167)

<sup>19</sup> Natural England (2014b) Site Improvement Plan Helbeck & Swindale Woods (SIP102)

<sup>20</sup> Joint Nature Conservation Committee (2018a) European Site Conservation Objectives for Helbeck and Swindale Woods Special Area of Conservation Site code: UK0030167 (2018, version 3)]

<b>Project Name:</b>	<b>A66 Northern Trans-Pennine</b>
	<ul style="list-style-type: none"> <li>The supporting processes on which qualifying natural habitats rely.</li> </ul>
<b>Assessment criteria</b>	
Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the European Site.	
See below	
<b>Initial assessment in relation to Helbeck and Swindale Woods SAC</b>	
The key characteristics of the site and the details of the European Site to be considered in identifying potential impacts. Describe any likely changes to the site arising as a result of:	
Reduction of habitat area  <u>Land take / resource requirements / reduction of habitat area</u>	<p><u>All schemes</u></p> <p><b>LSE(s) alone ruled out for all schemes</b></p> <p><i>Construction and Operation</i></p> <p>No direct habitat loss is required within the Helbeck and Swindale Woods SAC boundary for any of the schemes.</p>
Disturbance to key species	N/A
Habitat or species fragmentation  <u>Land take / resource requirements / reduction of habitat area</u>	<p><u>All schemes</u></p> <p><b>LSE(s) alone can be ruled out</b></p> <p><i>Construction and Operation</i></p> <p>No habitat or species fragmentation is anticipated. Consequently, LSE(s) are ruled out alone with no residual effects.</p>
Reduction in species density	N/A
Changes in key indicators of conservation value (water quality, etc)  <u>Changes in surface and groundwater quality, quantity, and hydrogeology</u>	<p><u>All schemes</u></p> <p><b>LSE(s) alone can be ruled out</b></p> <p><i>Construction and Operation</i></p> <p>See “Emissions (e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution)” row regarding air quality and water quality.</p>
Climate change	<p><b>All schemes</b></p> <p><b>LSE(s) alone can be ruled out</b></p> <p>Future climate projections taken from the UK Climate projections 2018 (UKCP18)<sup>15</sup> are presented in Chapter 7: Climate (Application Document 3.2) and provide a future baseline for how global climate change is likely to affect the study area. These projections indicate an increased likelihood of warmer, wetter winters and hotter, drier summers, in addition to an increase in the frequency of extreme weather throughout the period of operation. Climate projections for wind have the highest level of uncertainty but an increase in near surface wind speeds over the UK for the second half of the 21st century for the winter season is projected. The overall vulnerability of the SAC to climate change has been assessed by (Natural England,</p>

<b>Project Name:</b>	<b>A66 Northern Trans-Pennine</b>
	<p>2015)<sup>16</sup> as being moderate taking into account the sensitivity, fragmentation, topography and management of its habitats.</p> <p>For the purpose of this assessment, climate change will be a consideration in respect of any proposed mitigation, where required, at the Appropriate Assessment stage.</p>

Describe any likely impacts on the European Site as a whole in terms of:	
<p>Interference with the key relationships that define the structure of the site</p> <p><u>Land take / resource requirements / reduction of habitat area</u></p> <p><u>Changes in air quality</u></p>	<p><b>LSE(s) alone can be ruled out</b></p> <p>No direct land take is required within the SAC therefore no direct impacts to relationships that define the structure of the site are anticipated. The SAC is located over 200m from the road. In line with LA105 DMRB standards, LSE from a change in air quality are ruled out due to distance of the site from the road.</p>
<p>Interference with key relationships that define the function of the site</p> <p><u>Land take / resource requirements / reduction of habitat area</u></p> <p><u>Changes in air quality</u></p>	<p><b>LSE(s) alone can be ruled out</b></p> <p>No direct habitat loss is required within the SAC therefore no direct impacts to the key relationships that define the function of the site are anticipated. The SAC is located over 200m from the road. In line with LA105 DMRB standards, LSE from a change in air quality are ruled out due to distance of the site from the road.</p>
Indicate the significance as a result of the identification of impacts set out above in terms of:	
Reduction of habitat area	<b>LSE(s) alone can be ruled out</b>
Disturbance to key species	<b>N/A</b>
Habitat or species fragmentation	<b>LSE(s) alone can be ruled out</b>
Loss	<b>LSE(s) alone can be ruled out</b>
Fragmentation	<b>LSE(s) alone can be ruled out</b>
Disruption	<b>LSE(s) alone can be ruled out</b>
Disturbance	<b>LSE(s) alone can be ruled out</b>
Change to key elements of the site (e.g. water quality, hydrological regime etc.)	<b>LSE(s) alone can be ruled out</b>

Describe from the above those elements of the Project, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.	
<b>None</b>	
Outcome of screening stage	LSE(s) alone can be ruled out
Are the appropriate statutory environmental bodies in agreement with this conclusion	The SEBs have been consulted via a series of TWGs using an Evidence Plan approach (Appendix 1.1 of the ES, ES Volume 1, Application Document 3.4). The SEBs have been formally consulted regarding the outcome of previous screening assessment, presented at Statutory Consultation. This document provides an update to that screening assessment, and is submitted as part of the DCO application

Table 4-4: Screening matrix: Moor House-Upper Teesdale SAC

<b>Project Name:</b>	<b>A66 Northern Trans-Pennine</b>	
European Site under consideration:	Moor House-Upper Teesdale SAC	
Date:	Author (Name/Organisation):	Verified (Name/Organisation):
April 2022	Tom House/Arup Yan-Yee Lau/Arup	Bernie Fleming/Fleming Ecology Ltd
<b>Description of Project</b>		
Describe any likely direct, indirect or secondary impacts of the Project (either alone or in combination with other plans or projects) on the European Site by virtue of:		
Size and scale (road type and probable traffic volume)	<p>The Project includes upgrading the existing single lane sections of the A66 to dual two lane all-purpose roads with 120kph design speed and a speed limit of 70mph. The Project also includes amendments to existing junctions and accesses within these sections, and improvements to the terminal junctions.</p> <p>The traffic flow is anticipated to increase for the without project scenarios from the base by an average of 35% between 2019 and 2044 across the scheme locations. The average additional growth on the A66 due to the scheme (i.e. with Project compared to without Project) is between 29% and 34% across all years.</p>	
Land take <i>Land take / resource requirements / reduction of habitat area</i>	None within the Moor House-Upper Teesdale SAC boundary	
Distance from the European Site or key interests of the site (from edge of the Project assessment corridor)	M6 Junction 40 to Kemplay Bank – 12.7km west Penrith to Temple Sowerby – 7km southwest Temple Sowerby to Appleby – 4.1km southwest Appleby to Brough – 1.4km south Bowes Bypass – 11.2km southeast Cross Lanes to Rokeby – 14.2km southeast Stephen Bank to Carkin Moor – 21.8km southeast A1(M) Junction 53 Scotch Corner – 32.9km southeast	

Project Name:	A66 Northern Trans-Pennine
	ARN – closest section of the ARN lies 1km southwest
<p>Resource requirements (from the European Site or from areas in proximity to the site, where of relevance to consideration of impacts)</p> <p><u>Land take / resource requirements / reduction of habitat area</u></p>	<p><b>LSE(s) alone can be ruled out</b></p> <p><u>All schemes</u></p> <p>No direct habitat loss required within the Moor House-Upper Teesdale SAC boundary. Consequently, LSE(s) are ruled out alone with no residual effects.</p>
<p>Emissions (e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution)</p> <p><u>Changes in air quality</u></p> <p><u>Changes in surface and groundwater quality, quantity, and hydrogeology</u></p>	<p><u>Air Quality</u></p> <p><b>LSE(s) alone ruled out for all schemes:</b></p> <p><i>Construction and Operation</i></p> <p>All schemes and the ARN are located over 200m from Moor House-Upper Teesdale SAC. In line with LA 105 DMRB standards, LSE from a change in air quality are ruled out. Consequently, LSE(s) are ruled out alone with no residual effects.</p> <p><u>Water Quality</u></p> <p><b>LSE(s) alone can be ruled out for the following schemes:</b></p> <ul style="list-style-type: none"> <li>• M6 Junction 40 to Kemplay Bank</li> <li>• Penrith to Temple Sowerby</li> <li>• Temple Sowerby to Appleby</li> <li>• Appleby to Brough</li> <li>• Bowes Bypass</li> <li>• Cross Lanes to Rokeby</li> <li>• Stephen Bank to Carkin Moor</li> <li>• A1(M) Junction 53 Scotch Corner</li> </ul> <p><i>Construction and Operation</i></p> <p>LSE(s) alone are ruled out for these schemes based on their distance to Moor House-Upper Teesdale SAC and because they do not interact with habitats that are hydrologically connected or functionally linked to the SAC.</p> <p>LSE(s) as a result of changes in the Water Environment including surface water and groundwater quality and quantity, floodplain utilisation and floodplain extents are also ruled out as the scheme is located downstream of Moor House-Upper Teesdale SAC. No groundwater SPZ have been identified within the Appleby to Brough scheme. The Appleby to Brough scheme is located downstream of the SAC (the surface water WFD catchment Hilton Beck starts within the SAC and flows south toward the scheme) and as such there is no surface water connectivity between Appleby to Brough scheme and the SAC. Consequently, LSE(s) are ruled out alone with no residual effects.</p>
<p>Excavation requirements (e.g.</p>	<p><u>All schemes</u></p> <p><i>Construction</i></p>



<b>Project Name:</b>	<b>A66 Northern Trans-Pennine</b>
impacts of local hydrogeology)  <i>Changes in surface and groundwater quality, quantity, and hydrogeology</i>	<b>LSE(s) alone can be ruled out</b> No groundwater SPZ have been identified within Appleby to Brough, which is the closest lying scheme to the site. In addition, no surface water WFD catchments provide connectivity between Appleby to Brough and the site. Due to the distance of the site from the other schemes LSE are ruled out from potential excavation requirements. <i>Operation</i> <b>LSE(s) alone can be ruled out</b> No excavation required during operation, consequently LSE alone ruled out.
Transportation requirements	See emissions above.
Duration of construction, operation, etc.	See Section 3.3 Programme
Non-native species	<u>All schemes</u> Construction and Operation LSE(s) alone can be ruled out Non-native species constitute a major threat to many habitats. No works are required within the SAC therefore there is no risk of introduction and/or spread of invasive non-native species within the SAC. The closest construction area of the Project is 1.4m south with no impact pathways e.g. functionally linked watercourses within the Project are downstream of the SAC.

<b>Description of avoidance and/or mitigation measures</b> Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:	
Nature of proposals	No specific mitigation measures to mitigate impacts to the Moor House-Upper Teesdale SAC are included in this assessment, in line with the <i>People Over Wind</i> case.
Location	N/A
Evidence for effectiveness	N/A
Mechanism for delivery (legal conditions, restrictions or other legally enforceable obligations)	N/A
<b>Characteristics of European Site(s)</b> A brief description of the European Site to be produced, including information on:	
Name of European Site and its EU code	Moor House-Upper Teesdale SAC (UK0014774) ( <i>Appendix A: European Designated Sites Location Plan and the Project</i> )
Location and distance of the European Site	See details in "Distance from the European Site or key interests of the site (from edge of the Project assessment corridor)"

Description of avoidance and/or mitigation measures	
Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:	
from the proposed works	
European Site size	38,803.22 ha (Joint Nature Conservation Committee, 2021c) <sup>21</sup>
Key features of the European Site including the primary reasons for selection and any other qualifying interests	<p><u>Qualifying Habitats:</u></p> <p>The site supports the following habitats listed in Annex I:</p> <ul style="list-style-type: none"> <li>• Alkaline fens</li> <li>• Alpine and boreal heaths (alpine and subalpine heaths)</li> <li>• Alpine pioneer formations of the (<i>Caricion bicoloris-atrofuscae</i>) (high-altitude plant communities associated with areas of water seepage)</li> <li>• Blanket bogs</li> <li>• Calaminarian grasslands of the (<i>Violetalia calaminariae</i>) (grasslands on soils rich in heavy metals)</li> <li>• Calcareous and calcshist screes of the montane to alpine levels (<i>Thlaspietea rotundifolii</i>) (base-rich scree)</li> <li>• Calcareous rocky slopes with chasmophytic vegetation (plants in crevices in base-rich rocks)</li> <li>• European dry heaths</li> <li>• Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. (calcium-rich nutrient-poor lakes, lochs and pools)</li> <li>• Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels (tall herb communities) <i>Juniperus communis</i> formations on heaths or calcareous grasslands (juniper on heaths or calcareous grasslands)</li> <li>• Limestone pavements</li> <li>• <i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) (purple moor-grass meadows)</li> <li>• Mountain hay meadows</li> <li>• Petrifying springs with tufa formation (<i>Cratoneurion</i>). Hard-water springs depositing lime</li> <li>• Semi-natural dry grasslands and scrubland facies: on calcareous substrates (<i>Festuco-Brometalia</i>) (dry grasslands and scrublands on chalk or limestone)</li> <li>• Siliceous alpine and boreal grasslands (montane acid grasslands)</li> <li>• Siliceous rocky slopes with chasmophytic vegetation (plants in crevices on acid rocks)</li> <li>• Siliceous scree of the montane to snow levels (<i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladani</i>)</li> </ul> <p><u>Qualifying species:</u></p> <ul style="list-style-type: none"> <li>• Round-mouthed whorl snail (<i>Vertigo genesii</i>)</li> </ul>

<sup>21</sup> Joint Nature Conservation Committee (2022c) Moor House – Upper Teesdale Designated Special Area of Conservation

Description of avoidance and/or mitigation measures	
Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:	
	<ul style="list-style-type: none"> <li>Marsh saxifrage (<i>Saxifraga hirculus</i>)</li> </ul>
Vulnerability of the European Site – any information available from the standard data forms on potential effect pathways	<p>The <i>Natura 2000 Data Form</i> (Joint Nature Conservation Committee, 2015c)<sup>22</sup> identified the following threats, pressures and activities with high negative effect on the European site:</p> <ul style="list-style-type: none"> <li>K05 Reduced fecundity/ genetic depression</li> <li>K04 Interspecific floral relations</li> <li>J01 Fire and fire suppression</li> <li>A04 Grazing</li> <li>A02 Modification of cultivation practices</li> </ul> <p>The following threats and pressures are taken from the Natural England Site Improvement Plan (Natural England 2014c)<sup>23</sup> for the European Site:</p> <ul style="list-style-type: none"> <li>Low breeding success/poor recruitment</li> <li>Managed rotational burning</li> <li>Inappropriate grazing</li> <li>Change in land management</li> <li>Disease</li> <li>Hydrological changes</li> <li>Game management: grouse moors</li> <li>Direct land take from development</li> <li>Air pollution: risk of atmospheric nitrogen deposition</li> <li>Fertiliser use</li> <li>Inappropriate cutting/mowing</li> <li>Invasive species</li> <li>Agricultural management practices</li> <li>Vehicles</li> <li>Vehicles: illicit</li> <li>Public access/disturbance</li> <li>Deer</li> <li>Feature location/extent/condition unknown</li> <li>Climate change</li> </ul>
European Site conservation objectives – where these are readily available	<p>The conservation objectives aim (Natural England, 2018)<sup>24</sup> to: Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the favourable conservation status of its qualifying features, by maintaining or restoring:</p> <ul style="list-style-type: none"> <li>The extent and distribution of qualifying natural habitats and habitats of qualifying species</li> </ul>

<sup>22</sup> Joint Nature Conservation Committee (2015c) *Natura 2000 Standard Data Form* (2015): Moor House-Upper Teesdale SAC (UK0014774)

<sup>23</sup> Natural England (2014c) *Site Improvement Plan North Pennines Group*

<sup>24</sup> Natural England (2018) *European Site Conservation Objectives for Moor House – Upper Teesdale Special Area of Conservation Site Code: UK0014774 (version 3)*

Description of avoidance and/or mitigation measures	
Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:	
	<ul style="list-style-type: none"> <li>• The structure and function (including typical species) of qualifying natural habitats</li> <li>• The structure and function of the habitats of qualifying species</li> <li>• The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely</li> <li>• The populations of qualifying species, and,</li> <li>• The distribution of qualifying species within the site.</li> </ul>
Assessment criteria	
Describe the individual elements of the Project (either alone or in combination with other plans or projects) likely to give rise to impacts on the European Site.	
See below	
Initial assessment in relation to Moor House-Upper Teesdale SAC	
The key characteristics of the site and the details of the European Site to be considered in identifying potential impacts. Describe any likely changes to the site arising as a result of:	
Reduction of habitat area <i>Land take / resource requirements / reduction of habitat area</i>	<p><u>All schemes</u></p> <p><b>LSE(s) alone ruled out for all schemes</b></p> <p><i>Construction and Operation</i></p> <p>All schemes are located over 200m from Moor House-Upper Teesdale SAC. In line with LA 105 DMRB standard, LSE from a change in air quality are ruled out. LSE(s) are ruled out alone with no residual effects.</p>
Disturbance to key species <i>Changes in surface and groundwater quality, quantity, and hydrogeology</i>	<p><u>All schemes</u></p> <p><b>LSE(s) alone can be ruled out</b></p> <p><i>Construction and Operation</i></p> <p>No anticipated impacts to hydrology within the site as a result of the Project, consequently no LSE for disturbance on round-mouthed whorl snail. LSE(s) are ruled out alone with no residual effects.</p>
Habitat or species fragmentation <i>Land take / resource requirements / reduction of habitat area</i>	<p><u>All schemes</u></p> <p><b>LSE(s) alone can be ruled out</b></p> <p><i>Construction and Operation</i></p> <p>No habitat or species fragmentation is anticipated. Consequently, LSE(s) are ruled out alone with no residual effects.</p>
Reduction in species density <i>Land take / resource requirements / reduction of habitat area</i>	<p><u>All schemes</u></p> <p><b>LSE(s) alone cannot be ruled out</b></p> <p><i>Construction and Operation</i></p> <p>No reduction in species density is anticipated. Consequently, LSE(s) are ruled out alone with no residual effects.</p>
Changes in key indicators of conservation value (water quality, etc)	<p><u>All schemes</u></p> <p><b>LSE(s) alone can be ruled out</b></p> <p><i>Construction and Operation</i></p>

Description of avoidance and/or mitigation measures	
Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:	
<u>Changes in surface and groundwater quality, quantity, and hydrogeology</u>	See “Emissions (e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution)” row regarding air quality and water quality.
Climate change	<p><u>All schemes</u></p> <p><b>LSE(s) alone ruled out</b></p> <p>Future climate projections taken from the UK Climate projections 2018 (UKCP18)<sup>15</sup> are presented in Chapter 7: Climate (Application Document 3.2) and provide a future baseline for how global climate change is likely to affect the study area. These projections indicate an increased likelihood of warmer, wetter winters and hotter, drier summers, in addition to an increase in the frequency of extreme weather throughout the period of operation. Climate projections for wind have the highest level of uncertainty but an increase in near surface wind speeds over the UK for the second half of the 21st century for the winter season is projected. The overall vulnerability of the SAC to climate change has been assessed by (Natural England, 2015)<sup>16</sup> as being moderate taking into account the sensitivity, fragmentation, topography and management of its habitats. For the purpose of this assessment, climate change will be a consideration in respect of any proposed mitigation, where required, at the Appropriate Assessment stage.</p>
Describe any likely impacts on the European Site as a whole in terms of:	
<p>Interference with the key relationships that define the structure of the site</p> <p><u>Land take / resource requirements / reduction of habitat area</u></p> <p><u>Changes in air quality</u></p>	<p><b>LSE(s) alone can be ruled out</b></p> <p>No direct land take is required within the SAC therefore no direct impacts to relationships that define the structure of the site are anticipated. The SAC is located over 200m from all schemes. In line with LA 105 DMRB standards, LSE from a change in air quality are ruled out.</p>
<p>Interference with key relationships that define the function of the site</p> <p><u>Land take / resource requirements / reduction of habitat area</u></p> <p><u>Changes in air quality</u></p>	<p><b>LSE(s) alone can be ruled out</b></p> <p>No direct habitat loss is required within the SAC therefore no direct impacts to the key relationships that define the function of the site are anticipated. The SAC is located over 200m from all schemes. In line with LA 105 DMRB standards, LSE from a change in air quality are ruled out.</p>
Indicate the significance as a result of the identification of impacts set out above in terms of:	

Description of avoidance and/or mitigation measures	
Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:	
Reduction of habitat area	<b>LSE(s) alone can be ruled out</b>
Disturbance to key species	<b>LSE(s) alone can be ruled out</b>
Habitat or species fragmentation	<b>LSE(s) alone can be ruled out</b>
Loss	<b>LSE(s) alone can be ruled out</b>
Fragmentation	<b>LSE(s) alone can be ruled out</b>
Disruption	<b>LSE(s) alone can be ruled out</b>
Disturbance	<b>LSE(s) alone can be ruled out</b>
Change to key elements of the site (e.g. water quality, hydrological regime etc.)	<b>LSE(s) alone can be ruled out</b>
Describe from the above those elements of the Project, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.	
<b>None</b>	
Outcome of screening stage	<b>LSE(s) alone can be ruled out</b>
Are the appropriate statutory environmental bodies in agreement with this conclusion	The SEBs have been consulted via a series of TWGs using an Evidence Plan approach (Appendix 1.1 of the ES, ES Volume 1, Application Document 3.4). The SEBs have been formally consulted regarding the outcome of previous screening assessment, presented at Statutory Consultation. This document provides an update to that screening assessment, and is submitted as part of the DCO application.

Table 4-5: Screening matrix: North Pennines Moors SAC

Project Name:	A66 Northern Trans-Pennine	
European Site under consideration:	North Pennine Moors SAC	
Date:	Author (Name/Organisation):	Verified (Name/Organisation):
April 2022	Tom House/Arup Yan-Yee Lau/Arup	Bernie Fleming/Fleming Ecology Ltd
Description of Project		
Describe any likely direct, indirect or secondary impacts of the Project (either alone or in combination with other plans or projects) on the European Site by virtue of:		

Project Name:	A66 Northern Trans-Pennine
<p>Size and scale (road type and probable traffic volume)</p>	<p>The Project includes upgrading the existing single lane sections of the A66 to dual two lane all-purpose roads with 120kph design speed and a speed limit of 70mph. The Project also includes amendments to existing junctions and accesses within these sections, and improvements to the terminal junctions.</p> <p>The traffic flow is anticipated to increase for the without project scenarios from the base by an average of 35% between 2019 and 2044 across the scheme locations. The average additional growth on the A66 due to the scheme (i.e. with Project compared to without Project) is between 29% and 34% across all years.</p>
<p>Land take</p> <p><u>Land take / resource requirements / reduction of habitat area</u></p>	<p>None within the SAC boundary</p>
<p>Distance from the European Site or key interests of the site (from edge of the Project assessment corridor)</p>	<p>M6 Junction 40 to Kemplay Bank – 28.1km west          Penrith to Temple Sowerby – 21.7km west          Temple Sowerby to Appleby – 12.3km west          Appleby to Brough – 6.7km southwest          Bowes Bypass – 255m south          Cross Lanes to Rokeby – 5.6km east          Stephen Bank to Carkin Moor – 15.5km southeast          A1(M) Junction 53 Scotch Corner – 24.4km southeast          ARN – within North Pennine Moors SAC</p>
<p>Resource requirements (from the European Site or from areas in proximity to the site, where of relevance to consideration of impacts)</p> <p><u>Land take / resource requirements / reduction of habitat area</u></p>	<p><u>All schemes</u>  <b>LSE(s) alone can be ruled out</b>  <u>Construction and Operation</u>          No direct habitat loss required within the SAC boundary. Consequently, LSE(s) are ruled out alone with no residual effects.</p>
<p>Emissions (e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution)</p> <p><u>Changes in air quality</u></p>	<p><b>LSE(s) alone ruled out for the following schemes:</b></p> <ul style="list-style-type: none"> <li>• M6 Junction 40 to Kemplay Bank</li> <li>• Penrith to Temple Sowerby</li> <li>• Temple Sowerby to Appleby</li> <li>• Appleby to Brough</li> <li>• Bowes Bypass</li> <li>• Cross Lanes to Rokeby</li> <li>• Stephen Bank to Carkin Moor</li> </ul>

Project Name:	A66 Northern Trans-Pennine
	<ul style="list-style-type: none"> <li>A1(M) Junction 53 Scotch Corner</li> </ul> <p><u>Construction and Operation</u></p> <p>Due to the distance of these schemes from North Pennine Moors SAC, LSE(s) are ruled out alone with no residual effects.</p> <p><b>LSE(s) alone cannot be ruled out for the following:</b></p> <ul style="list-style-type: none"> <li>ARN</li> </ul> <p><u>Construction and Operation</u></p> <p>The SAC is adjacent to the ARN. Potential impacts may arise from an increase in air pollution locally as a result of construction activities and an increase in road traffic during operation. Consequently, LSE(s) alone cannot be ruled out for the ARN.</p>
Excavation requirements (e.g. impacts of local hydrogeology)	<p><u>All schemes</u></p> <p><b>LSE(s) alone can be ruled out</b></p> <p><u>Construction and Operation</u></p> <p>No groundwater SPZ were identified within Bowes Bypass which is the closest scheme. One surface water WFD catchment was identified within Bowes Bypass; Greta from Sleightholme Beck to Eller Beck, however this is located south of the existing A66 and does not have any hydrological connectivity to the SAC. Consequently, LSE(s) are ruled out alone with no residual effects.</p>
<u>Changes in surface and groundwater quality, quantity, and hydrogeology</u>	
Transportation requirements	See emissions above.
Duration of construction, operation, etc.	See Section 3.3 Programme
Non-native species	<p><u>All schemes</u></p> <p>Construction and Operation</p> <p>LSE(s) alone can be ruled out</p> <p>Non-native species constitute a major threat to many habitats. No works are required within the SAC therefore there is no risk of introduction and/or spread of invasive non-native species within the SAC. The closest construction area of the Project is 255m south with no impact pathways e.g. functionally linked watercourses.</p>
Description of avoidance and/or mitigation measures	
Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:	
Nature of proposals	No specific mitigation measures to mitigate impacts to the North Pennine Moors SAC are included in this assessment, in line with the <i>People Over Wind</i> case.
Location	N/A
Evidence for effectiveness	N/A
Mechanism for delivery (legal conditions, restrictions or other)	N/A



<b>Project Name:</b>	<b>A66 Northern Trans-Pennine</b>
legally enforceable obligations)	
<b>Characteristics of European Site(s)</b>	
A brief description of the European Site to be produced, including information on:	
Name of European Site and its EU code	North Pennine Moors SAC (UK0030033) ( <i>Appendix A: European Designated Sites Location Plan and the Project</i> )
Location and distance of the European Site from the proposed works	See details in “Distance from the European Site or key interests of the site (from edge of the project assessment corridor)”
European Site size	103,014.48 ha (Joint Nature Conservation Committee, 2021c) <sup>25</sup>
Key features of the European Site including the primary reasons for selection and any other qualifying interests	<p><u>Qualifying habitats: the site hosts the following habitats listed in Annex I:</u></p> <ul style="list-style-type: none"> <li>• European dry heaths</li> <li>• <i>Juniperus communis</i> formations on heaths or calcareous grasslands</li> <li>• Blanket bogs (*if active bog)</li> <li>• Petrifying springs with tufa formation (<i>Cratoneurion</i>)</li> <li>• Siliceous rocky slopes with chasmophytic vegetation</li> <li>• Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles</li> <li>• Northern Atlantic wet heaths with <i>Erica tetralix</i></li> <li>• Calaminarian grasslands of the <i>Violetalia calaminariae</i></li> <li>• Siliceous alpine and boreal grasslands</li> <li>• Semi-natural dry grasslands and scrubland facies on calcareous substrates <i>Festuco Brometalia</i> (*important orchid sites)</li> <li>• Alkaline fens</li> <li>• Siliceous scree of the montane to snow levels <i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladani</i></li> <li>• Calcareous rocky with slopes with chasmophytic vegetation</li> </ul> <p><u>Qualifying species:</u></p> <ul style="list-style-type: none"> <li>• Marsh saxifrage (<i>Saxifraga hirculus</i>)</li> </ul>
Vulnerability of the European Site – any information available from the standard data forms on potential effect pathways	<p>The <i>Natura 2000 Data Form</i> (Joint Nature Conservation Committee, 2015c)<sup>26</sup> identified the following threats, pressures and activities with high negative effect on the European site:</p> <ul style="list-style-type: none"> <li>• A04 Grazing</li> <li>• J01 Fire and fire suppression</li> <li>• A02 Modification of cultivation practices</li> <li>• J02 Human induced changes in hydraulic conditions</li> <li>• K04 Interspecific floral relations</li> </ul>

<sup>25</sup> Joint Nature Conservation Committee (2022d) North Pennine Moors Designated Special Area of Conservation

<sup>26</sup> Joint Nature Conservation Committee (2015d) Natura 2000 Standard Data Form: North Pennine Moors (UK0030033)

<b>Project Name:</b>	<b>A66 Northern Trans-Pennine</b>
	<p>The following threats and pressures are taken from the Natural England <i>Site Improvement Plan</i> (Natural England, 2014d)<sup>27</sup> for the European Site:</p> <ul style="list-style-type: none"> <li>• Low breeding success/poor recruitment</li> <li>• Managed rotational burning</li> <li>• Inappropriate grazing</li> <li>• Change in land management</li> <li>• Disease</li> <li>• Hydrological changes</li> <li>• Game management: grouse moors</li> <li>• Direct land take from development</li> <li>• Air pollution: risk of atmospheric nitrogen deposition</li> <li>• Fertiliser use</li> <li>• Inappropriate cutting/mowing</li> <li>• Invasive species</li> <li>• Agricultural management practices</li> <li>• Vehicles</li> <li>• Vehicles: illicit</li> <li>• Public access/disturbance</li> <li>• Deer</li> <li>• Feature location/extent/condition unknown</li> <li>• Climate change</li> </ul>
European Site conservation objectives – where these are readily available	<ul style="list-style-type: none"> <li>• The conservation objectives aim (Natural England, 2018)<sup>28</sup> to: Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the favourable conservation status of its qualifying features, by maintaining or restoring:</li> <li>• The extent and distribution of qualifying natural habitats and habitats of qualifying species</li> <li>• The structure and function (including typical species) of qualifying natural habitats</li> <li>• The structure and function of the habitats of qualifying species</li> <li>• The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely</li> <li>• The populations of qualifying species</li> <li>• The distribution of qualifying species within the site.</li> </ul>
<p><b>Assessment criteria</b>          Describe the individual elements of the Project (either alone or in combination with other plans or projects) likely to give rise to impacts on the European Site.</p>	
<p>See below</p>	
<p><b>Initial assessment in relation to North Pennine Moors SAC</b>          The key characteristics of the site and the details of the European Site to be considered in identifying potential impacts. Describe any likely changes to the site arising as a result of:</p>	

<sup>27</sup> Natural England (2014d) Site Improvement Plan North Pennines Group (SIP154)

<sup>28</sup> Natural England (2018b) European Site Conservation Objectives for North Pennine Moors Special Area of conservation Site Code: UK0030033 (version 3)

Project Name:	A66 Northern Trans-Pennine
<p>Reduction of habitat area</p> <p><u>Reduction of habitat area and reduction of species density (as a result of changes in air quality)</u></p>	<p><b>LSE(s) alone ruled out for the following schemes:</b></p> <ul style="list-style-type: none"> <li>• M6 Junction 40 to Kemplay Bank</li> <li>• Penrith to Temple Sowerby</li> <li>• Temple Sowerby to Appleby</li> <li>• Appleby to Brough</li> <li>• Bowes Bypass</li> <li>• Cross Lanes to Rokeby</li> <li>• Stephen Bank to Carkin Moor</li> <li>• A1(M) Junction 53 Scotch Corner</li> </ul> <p><u>Construction and Operation</u></p> <p>Due to the distance of these schemes from North Pennine Moors SAC, LSE(s) are ruled out alone with no residual effects.</p> <p><b>LSE(s) alone cannot be ruled out for the:</b></p> <ul style="list-style-type: none"> <li>• ARN</li> </ul> <p><u>Construction and Operation</u></p> <p>No direct habitat loss is required within the SAC boundary for any of the schemes. However, potential LSEs arising from nutrient enrichment as a result of nutrient nitrogen deposition and subsequent reduction of habitat areas cannot be excluded at this stage, as a result of changes in air quality within the ARN.</p>
<p>Disturbance to key species</p>	<p>N/A</p>
<p>Habitat or species fragmentation</p> <p><u>Land take / resource requirements / reduction of habitat area</u></p>	<p><u>All schemes</u></p> <p><b>LSE(s) alone can be ruled out</b></p> <p><u>Construction and Operation</u></p> <p>No habitat or species fragmentation is anticipated. Consequently, LSE(s) are ruled out alone with no residual effects.</p>
<p>Reduction in species density</p> <p><u>Reduction of habitat area and reduction of species density (as a result of changes in air quality)</u></p>	<p><b>LSE(s) alone cannot be ruled out</b></p> <p>See 'Reduction of habitat area' which may subsequently impact on habitat which supports marsh saxifrage.</p>
<p>Changes in key indicators of conservation value (water quality, etc)</p> <p><u>Changes in air quality</u></p>	<p><b>LSE(s) alone ruled out for the following schemes:</b></p> <ul style="list-style-type: none"> <li>• M6 Junction 40 to Kemplay Bank</li> <li>• Penrith to Temple Sowerby</li> <li>• Temple Sowerby to Appleby</li> <li>• Appleby to Brough</li> <li>• Bowes Bypass</li> <li>• Cross Lanes to Rokeby</li> <li>• Stephen Bank to Carkin Moor</li> </ul>

Project Name:	A66 Northern Trans-Pennine
	<ul style="list-style-type: none"> <li>A1(M) Junction 53 Scotch Corner</li> </ul> <p><u>Construction and Operation</u></p> <p>Due to the distance of these schemes from North Pennine Moors SAC, LSE(s) are ruled out alone with no residual effects.</p> <p><b>LSE(s) alone cannot be ruled out for the:</b></p> <ul style="list-style-type: none"> <li>ARN</li> </ul> <p><u>Construction and Operation</u></p> <p>Further assessment is required to determine baseline habitat type and condition adjacent to the ARN and subsequently how potential changes in air quality may impact on the conservation value and integrity of the site and the habitat it supports. LSE(s) associated with changes in air quality and associated nitrogen deposition cannot be excluded at this stage.</p>
Climate change	<p><u>All schemes</u></p> <p><b>LSE(s) alone can be ruled out</b></p> <p>Future climate projections taken from the UK Climate projections 2018 (UKCP18)<sup>15</sup> are presented in Chapter 7: Climate (Application Document 3.2) and provide a future baseline for how global climate change is likely to affect the study area. These projections indicate an increased likelihood of warmer, wetter winters and hotter, drier summers, in addition to an increase in the frequency of extreme weather throughout the period of operation. Climate projections for wind have the highest level of uncertainty but an increase in near surface wind speeds over the UK for the second half of the 21st century for the winter season is projected. The overall vulnerability of the SAC to climate change has been assessed by (Natural England, 2015)<sup>16</sup> as being moderate taking into account the sensitivity, fragmentation, topography and management of its habitats.</p> <p>For the purpose of this assessment, climate change will be a consideration in respect of any proposed mitigation, where required, at the Appropriate Assessment stage.</p>
<b>Describe any likely impacts on the European Site as a whole in terms of:</b>	
<p>Interference with the key relationships that define the structure of the site</p> <p><u>Changes in air quality</u></p> <p><u>Reduction of habitat area and reduction of species density (as a result of changes in air quality)</u></p>	<p><b>LSE(s) alone cannot be ruled out</b></p> <p>Further analysis is required before the risk of a significant effect (alone or in combination) may have on the structure of the SAC. Air quality is listed as a supporting process upon which the qualifying habitats rely.</p>
<p>Interference with key relationships that define the function of the site</p> <p><u>Changes in air quality</u></p>	<p><b>LSE(s) alone cannot be ruled out</b></p> <p>Further analysis is required before the risk of a significant effect (alone or in combination) may have on the function of habitats within the SAC. Air quality is listed as a supporting process upon which the qualifying habitats rely.</p>

<b>Project Name:</b>	<b>A66 Northern Trans-Pennine</b>	
<i>Reduction of habitat area and reduction of species density (as a result of changes in air quality)</i>		
<b>Indicate the significance as a result of the identification of impacts set out above in terms of:</b>		
Reduction of habitat area	<b>LSE(s) alone cannot be ruled out</b> Further survey work to determine habitat present within the SAC adjacent to the ARN and assessment of potential impacts is required.	
Disturbance to key species	<b>LSE(s) alone can be ruled out</b>	
Habitat or species fragmentation	<b>LSE(s) alone can be ruled out</b>	
Loss	<b>LSE(s) alone cannot be ruled out</b> Further survey work to determine habitat present within the SAC adjacent to the ARN and assessment of potential impacts is required.	
Fragmentation	<b>LSE(s) alone can be ruled out</b>	
Disruption	<b>LSE(s) alone can be ruled out</b>	
Disturbance	<b>LSE(s) alone can be ruled out</b>	
Change to key elements of the site (e.g. water quality, hydrological regime etc.)	<b>LSE(s) alone cannot be ruled out</b> Further survey work to determine habitat present within the SAC adjacent to the ARN and assessment of potential impacts is required.	
<b>Describe from the above those elements of the Project, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.</b>		
Emissions (air quality), reduction of habitat area and reduction in species density. Further analysis of air quality data at the appropriate assessment stage is required before the risk of LSE (alone or in combination) can be determined.		
Outcome of screening stage	LSE(s) alone cannot be ruled out	
Are the appropriate statutory environmental bodies in agreement with this conclusion	The SEBs have been consulted via a series of TWGs using an Evidence Plan approach (Appendix 1.1 of the ES, ES Volume 1, Application Document 3.4). The SEBs have been formally consulted regarding the outcome of previous screening assessment, presented at Statutory Consultation. This document provides an update to that screening assessment, and is submitted as part of the DCO application	

Table 4-6: Screening matrix: North Pennine Moors SPA

<b>Project Name:</b>	<b>A66 Northern Trans-Pennine</b>	
European Site under consideration:	North Pennine Moors SPA	
Date:	Author (Name/Organisation):	Verified (Name/Organisation):

<b>Project Name:</b>		<b>A66 Northern Trans-Pennine</b>	
April 2022	Tracey McLean/Arup Tom House/Arup Yan-Yee Lau/Arup	Bernie Fleming/Fleming Ecology Ltd	
<b>Description of Project</b>			
Describe any likely direct, indirect or secondary impacts of the Project (either alone or in combination with other plans or projects) on the European Site by virtue of:			
Size and scale (road type and probable traffic volume)	<p>The Project includes upgrading the existing single lane sections of the A66 to dual two lane all-purpose roads with 120kph design speed and a speed limit of 70mph. The Project also includes amendments to existing junctions and accesses within these sections, and improvements to the terminal junctions.</p> <p>The traffic flow is anticipated to increase for the without project scenarios from the base by an average of 35% between 2019 and 2044 across the scheme locations. The average additional growth on the A66 due to the scheme (i.e. with Project compared to without Project) is between 29% and 34% across all years.</p>		
Land take <u>Land take / resource requirements / reduction of habitat area</u>	None within the SPA boundary		
Distance from the European Site or key interests of the site (from edge of the Project assessment corridor)	<p>M6 Junction 40 to Kemplay Bank – 28.1km west          Penrith to Temple Sowerby – 21.7km west          Temple Sowerby to Appleby – 12.3km west          Appleby to Brough – 6.7km southwest          Bowes Bypass – 255m south          Cross Lanes to Rokeby – 5.6km east          Stephen Bank to Carkin Moor – 15.5km southeast          A1(M) Junction 53 Scotch Corner – 24.4km southeast          ARN – within North Pennine Moors SPA</p>		
Resource requirements (from the European Site or from areas in proximity to the site, where of relevance to consideration of impacts) <u>Land take / resource requirements / reduction of habitat area</u>	<p><u>All schemes</u>  <b>LSE(s) alone can be ruled out</b>  <i>Construction and Operation</i>          No direct habitat loss required within the SPA boundary.          Consequently, LSE(s) are ruled out alone with no residual effects.</p>		
Emissions (e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution) <u>Changes in air quality</u>	<p><u>All schemes</u>  <b>LSE(s) alone cannot be ruled out</b>  <i>Construction and Operation</i>          The SPA is located over 200m from the Order Limits. However, the site is located immediately adjacent to the ARN. Potential impacts may</p>		

<b>Project Name:</b>	<b>A66 Northern Trans-Pennine</b>
	arise from an increase in air pollution locally as a result of construction activities and an increase in road traffic during operation.
Excavation requirements (e.g. impacts of local hydrogeology)  <i>Changes in surface and groundwater quality, quantity, and hydrogeology</i>	<u>All schemes</u> <b>LSE(s) alone can be ruled out</b> <i>Construction and Operation</i> No groundwater SPZ were identified within Bowes Bypass which is the closest scheme. One surface water WFD catchment was identified within Bowes Bypass; Greta from Sleightholme Beck to Eller Beck, however this is located south of the existing A66 and does not have any hydrological connectivity to the SAC. Consequently, LSE(s) are ruled out alone with no residual effects.
Transportation requirements	See emissions above.
Duration of construction, operation, etc.	See Section 3.3 Programme
Non-native species	<u>All schemes</u> Construction and Operation LSE(s) alone can be ruled out Non-native species constitute a major threat to many habitats. No works are required within the SPA therefore there is no risk of introduction and/or spread of invasive non-native species within the SPA. The closest construction area of the Project is 255m south with no impact pathways e.g. functionally linked watercourses.
<b>Description of avoidance and/or mitigation measures</b> Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:	
Nature of proposals	No specific mitigation measures to mitigate impacts to the North Pennine Moors SPA are included in this assessment, in line with the <i>People Over Wind</i> case.
Location	N/A
Evidence for effectiveness	N/A
Mechanism for delivery (legal conditions, restrictions or other legally enforceable obligations)	N/A
<b>Characteristics of European Site(s)</b> A brief description of the European Site to be produced, including information on:	
Name of European Site and its EU code	North Pennine Moors SPA (UK9006272) ( <i>Appendix A: European Designated Sites Location Plan and the Project</i> )
Location and distance of the European Site	See details in “ <i>Distance from the European Site or key interests of the site (from edge of the Project assessment corridor)</i> ”

<b>Project Name:</b>	<b>A66 Northern Trans-Pennine</b>
from the proposed works	
European Site size	147,276.11 ha (Joint Nature Conservation Committee, 2022e) <sup>29</sup>
Key features of the European Site including the primary reasons for selection and any other qualifying interests	<p>Includes parts of the Pennine moorland massif between the Tyne Gap (Hexham) and the Ribble-Aire corridor (Skipton). Encompasses extensive tracts of semi-natural moorland habitats including upland heath and blanket bog.</p> <p><u>Qualifying species (breeding):</u></p> <ul style="list-style-type: none"> <li>• Golden plover (<i>Pluvialis apricaria</i>)</li> <li>• Hen harrier (<i>Circus cyaneus</i>)</li> <li>• Merlin (<i>Falco columbarius</i>)</li> <li>• Peregrine (<i>Falco peregrinus</i>)</li> </ul> <p><u>Non-qualifying species of interest (breeding):</u></p> <ul style="list-style-type: none"> <li>• Montagu's harrier (<i>Circus pygargus</i>)</li> <li>• Short-eared owl (<i>Asio flammeus</i>)</li> </ul>
Vulnerability of the European Site – any information available from the standard data forms on potential effect pathways	<p>The Natura 2000 Data Form (Natural England, 2014b)<sup>29</sup> identified the following threats, pressures and activities with high negative effect on the European site:</p> <ul style="list-style-type: none"> <li>• A04 Grazing</li> <li>• J01 Fire and fire suppression</li> <li>• J02 Human induced changes in hydraulic conditions</li> <li>• F03 Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.)</li> <li>• K05 Reduced fecundity/ genetic depression</li> </ul> <p>The following threats and pressures are taken from the Natural England Site Improvement Plan (Natural England, 2014e)<sup>30</sup> for the European Site:</p> <ul style="list-style-type: none"> <li>• Low breeding success/poor recruitment</li> <li>• Managed rotational burning</li> <li>• Inappropriate grazing</li> <li>• Change in land management</li> <li>• Disease</li> <li>• Hydrological changes</li> <li>• Game management: grouse moors</li> <li>• Direct land take from development</li> <li>• Air pollution: risk of atmospheric nitrogen deposition</li> <li>• Fertiliser use</li> <li>• Inappropriate cutting/mowing</li> <li>• Invasive species</li> </ul>

<sup>29</sup> Joint Nature Conservation Committee (2022e) North Pennine Moors Designated Special Protection Area

<sup>30</sup> Natural England (2014e) Site Improvement Plan North Pennines Group



<p><b>Project Name:</b></p>	<p><b>A66 Northern Trans-Pennine</b></p> <ul style="list-style-type: none"> <li>• Agricultural management practices</li> <li>• Vehicles</li> <li>• Vehicles: illicit</li> <li>• Public access/disturbance</li> <li>• Deer</li> <li>• Feature location/extent/condition unknown</li> <li>• Climate change</li> </ul>
<p>European Site conservation objectives – where these are readily available</p>	<p>The conservation objectives aim (Natural England, 2019)<sup>31</sup> to: Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the wild bird’s directive, by maintaining or restoring:</p> <ul style="list-style-type: none"> <li>• The extent and distribution of the habitats of the qualifying features</li> <li>• The structure and function of the habitats of the qualifying features</li> <li>• The supporting processes on which the habitats of the qualifying features rely</li> <li>• The population of each of the qualifying features</li> <li>• The distribution of the qualifying features within the site.</li> </ul>
<p><b>Assessment criteria</b>          Describe the individual elements of the Project (either alone or in combination with other plans or projects) likely to give rise to impacts on the European Site.</p>	
<p>See below</p>	
<p><b>Initial assessment in relation to North Pennine Moors SPA</b>          The key characteristics of the site and the details of the European Site to be considered in identifying potential impacts. Describe any likely changes to the site arising as a result of:</p>	
<p>Reduction of habitat area</p> <p><i><u>Reduction of habitat area and reduction of species density (as a result of changes in air quality)</u></i></p>	<p><u>All schemes</u>  <b>LSE(s) alone cannot be ruled out</b>  <i>Construction and Operation</i>          No direct habitat loss is required within the SPA boundary for any of the schemes. However, LSEs associated with the reduction of habitat areas cannot be excluded at this stage as a result of changes in air quality associated with the ARN.</p>
<p>Disturbance to key species</p> <p><i><u>Disturbance to Annex I species</u></i></p>	<p><u>All schemes</u>  <b>LSE(s) alone can be ruled out</b>  <i>Construction and Operation</i>          Following breeding bird surveys in 2021, one single golden plover (possibly breeding) was recorded utilising suitable habitat of the SPA located approximately 500m north west to Bowes Bypass. No further records of golden plover were recorded across the Project during the breeding bird surveys. The numbers of recorded golden plover pairs is &lt;1% of the SPA population. No other qualifying bird species were recorded during the surveys.          Less than 1% of the SPA population is defined as:</p> <ul style="list-style-type: none"> <li>• 28 individual golden plover.</li> </ul>

<sup>31</sup> Natural England (2019) European Site Conservation Objectives for North Pennine Moors SPA Site Code: UK9006272 (version 3)

Project Name:	A66 Northern Trans-Pennine
	<ul style="list-style-type: none"> <li>• One hen harrier.</li> <li>• Two Merlin.</li> <li>• One Peregrine.</li> <li>• Disturbance to a larger number of birds (i.e. &gt;1% SPA population) would be considered a significant impact.</li> </ul> <p>No other scheme is located within proximity where potential disturbance impacts may occur as a result of construction or operation. The next closest scheme is Appleby to Brough (Warcop) which is approximately 900m south. Consequently, LSE as a result of disturbance to key species can be ruled out along with no residual effects.</p>
<p>Habitat or species fragmentation</p> <p><u>Reduction of habitat area and reduction of species density (as a result of changes in air quality)</u></p>	<p>All schemes</p> <p><b>LSE(s) alone cannot be ruled out</b></p> <p><i>Construction and Operation</i></p> <p>Further analysis is required on potential air quality impacts as a result of the Project ARN which could result in a decrease in habitat quality within the SPA. Air pollution has the potential to decrease the quality of available breeding habitat by altering the plant species composition.</p>
<p>Reduction in species density</p> <p><u>Reduction of habitat area and reduction of species density (as a result of changes in air quality)</u></p>	<p>All schemes</p> <p><b>LSE(s) alone cannot be ruled out</b></p> <p><i>Construction and Operation</i></p> <p>Further analysis is required to determine habitat type and condition adjacent to the ARN and subsequently how potential changes in air quality may impact on habitat quality and extent.</p>
<p>Changes in key indicators of conservation value (water quality, etc)</p> <p><u>Changes in air quality</u></p>	<p>All schemes</p> <p><b>LSE(s) alone cannot be ruled out</b></p> <p><i>Construction and Operation</i></p> <p>Further analysis is required to determine habitat type and condition adjacent to the ARN and subsequently how potential changes in air quality may impact on the conservation value and integrity of the site and the habitat it supports</p>
<p>Climate change</p>	<p>All schemes</p> <p><b>LSE(s) alone can be ruled out</b></p> <p>Future climate projections taken from the UK Climate projections 2018 (UKCP18)<sup>15</sup> are presented in Chapter 7: Climate (Application Document 3.2) and provide a future baseline for how global climate change is likely to affect the study area. These projections indicate an increased likelihood of warmer, wetter winters and hotter, drier summers, in addition to an increase in the frequency of extreme weather throughout the period of operation. Climate projections for wind have the highest level of uncertainty but an increase in near surface wind speeds over the UK for the second half of the 21st century for the winter season is projected. The overall vulnerability of the SAC to climate change has been assessed by (Natural England,</p>

<b>Project Name:</b>	<b>A66 Northern Trans-Pennine</b>
	2015) <sup>16</sup> as being moderate taking into account the sensitivity, fragmentation, topography and management of its habitats. For the purpose of this assessment, climate change will be a consideration in respect of any proposed mitigation, where required, at the Appropriate Assessment stage.
<b>Describe any likely impacts on the European Site as a whole in terms of:</b>	
Interference with the key relationships that define the structure of the site	<b>LSE(s) alone cannot be ruled out</b> Further analysis of air quality impacts is required before the risk of a significant effect (alone or in combination) can be determined on the structure of the site.
Interference with key relationships that define the function of the site	<b>LSE(s) alone cannot be ruled out</b> Further analysis of air quality impacts is required before the risk of a significant effect (alone or in combination) can be determined on the function of the site.
<b>Indicate the significance as a result of the identification of impacts set out above in terms of:</b>	
Reduction of habitat area	<b>LSE(s) alone cannot be ruled out</b> Further survey work to determine habitat present within the SPA adjacent to the ARN and assessment of potential impacts is required.
Disturbance to key species	<b>LSE(s) alone can be ruled out</b> One golden plover was recorded within proximity to Bowes Bypass. LSE(s) alone can be ruled out with no residual effects.
Habitat or species fragmentation	<b>LSE(s) alone cannot be ruled out</b> Further survey work to determine habitat present within the SPA adjacent to the ARN and assessment of potential impacts is required.
Loss	<b>LSE(s) alone cannot be ruled out</b> Further survey work to determine habitat present within the SPA adjacent to the ARN and assessment of potential impacts is required.
Fragmentation	<b>LSE(s) alone cannot be ruled out</b> Further survey work to determine habitat present within the SPA adjacent to the ARN and assessment of potential impacts is required.
Disruption	<b>LSE(s) alone cannot be ruled out</b>
Disturbance	<b>LSE(s) alone can be ruled out</b> <b>As 'Disturbance to key species' above</b>
Change to key elements of the site (e.g. water quality, hydrological regime etc.)	<b>LSE(s) alone cannot be ruled out</b> Further survey work to determine habitat present within the SPA adjacent to the ARN and assessment of potential impacts is required.
<b>Describe from the above those elements of the Project, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.</b>	
Emissions (air quality), disturbance to key species and reduction of habitat area Further analysis of air quality data at the appropriate assessment stage is required before the risk of LSE (alone or in combination) can be determined.	

Project Name:	A66 Northern Trans-Pennine
Outcome of screening stage	LSE(s) alone cannot be ruled out
Are the appropriate statutory environmental bodies in agreement with this conclusion	The SEBs have been consulted via a series of TWGs using an Evidence Plan approach (Appendix 1.1 of the ES, ES Volume 1, Application Document 3.4). The SEBs have been formally consulted regarding the outcome of previous screening assessment, presented at Statutory Consultation. This document provides an update to that screening assessment, and is submitted as part of the DCO application.

## **5 Summary**

### **5.1 River Eden SAC**

- 5.1.1 LSE(s) alone cannot be ruled out in relation to:
- Land take / resource requirements / reduction of habitat
  - Disturbance of mobile species and species fragmentation
  - Species injury and mortality
  - Introduction and/or spread of invasive non-native species
  - Changes in surface and groundwater quality, quantity, and hydrogeology
  - Changes in hydrology and fluvial geomorphological processes
  - Changes in air quality
- 5.1.2 Further analysis is required before the risk of a significant effect (alone or in combination) can be determined from these elements of the Project.

### **5.2 Helbeck and Swindale Woods SAC**

- 5.2.1 LSE(s) can be ruled out alone with no residual effects for Helbeck and Swindale Woods SAC.
- 5.2.2 Habitats within the Project are not hydrologically or functionally linked to the SAC, consequently LSE(s) are ruled out alone and in combination. There is no credible pathway for effect on the SAC.

### **5.3 Moor House-Upper Teesdale SAC**

- 5.3.1 LSE(s) can be ruled out alone with no residual effects for Moor House-Upper Teesdale SAC.
- 5.3.2 Habitats within the Project are not hydrologically or functionally linked to the SAC, consequently LSE(s) are ruled out alone and in combination. There is no credible pathway for effect on the SAC.

### **5.4 North Pennine Moors SAC**

- 5.4.1 LSE(s) alone cannot be ruled out in relation to:
- Air quality
  - Reduction of habitat area and reduction of species density (as a result of changes in air quality)
- 5.4.2 Further analysis is required before the risk of a significant effect (alone or in combination) can be determined from these elements of the Project.

### **5.5 North Pennine Moors SPA**

- 5.5.1 LSE(s) alone cannot be ruled out in relation to:
- Air quality
  - Reduction of habitat area (as a result of changes in air quality)

5.5.2 Further analysis is required before the risk of a significant effect (alone or in combination) can be determined from these elements of the Project.

## 5.6 Conclusion

5.6.1 The following European sites are taken forward to Stage 2 Appropriate Assessment:

- River Eden SAC
- North Pennine Moors SAC
- North Pennine Moors SPA

## 5.7 References

Department for Environment, Food and Rural Affairs and Natural England (2022) Habitats regulations assessments: protecting a European site

Ministry of Housing, Communities & Local Government (2022) Appropriate assessment

Highways England (2020a) Design Manual for Roads and Bridges LA 115 Habitats Regulations assessment, Revision 1.

Planning Inspectorate (2022) Advice Note Ten: Habitat Regulations Assessment relevant to Nationally Significant Infrastructure Projects

Judgement of the Court (2018) Case C-323/17 People Over Wind v Coillte Teoranta (also referred to as the Sweetman II Judgement).

Highways England (2020b) Design Manual for Roads and Bridges LA 113 Road drainage and the water environment

Highways England (2019) Design Manual for Roads and Bridges LA 105 Air Quality

Major Infrastructure and Environment Unit (2012) Evidence plans for Nationally Significant Infrastructure Projects

Joint Nature Conservation Committee (2022a) River Eden Designated Special Area of Conservation, available at: <https://sac.jncc.gov.uk/site/UK0012643> [accessed: 27/04/2]

Natural England (2022b) Designated Site Viewer

Joint Nature Conservation Committee (2015a) Natura 2000 Standard Data Form: River Eden SAC (UK0012643)

Natural England (2014a) Site Improvement Plan River Eden

Met Office (2018) UK Climate Projections (UKCP)

Natural England (2015) Climate Change Theme Plan and supporting National Biodiversity Climate Change Vulnerability assessments ('NBCCVAs') for SACs and SPAs in England

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Joint Nature Conservation Committee (2022b) Helbeck and Swindale Woods  
Designated Special Area of Conservation

Joint Nature Conservation Committee (2015b) Natura 2000 Standard Data Form:  
Helbeck and Swindale Woods SAC (UK0030167)

Natural England (2014b) Site Improvement Plan Helbeck & Swindale Woods  
(SIP102)

Joint Nature Conservation Committee (2018a) European Site Conservation  
Objectives for Helbeck and Swindale Woods Special Area of Conservation Site  
code: UK0030167 (2018, version 3)

Joint Nature Conservation Committee (2022c) Moor House – Upper Teesdale  
Designated Special Area of Conservation

Joint Nature Conservation Committee (2015c) Natura 2000 Standard Data Form  
(2015): Moor House-Upper Teesdale SAC (UK0014774)

Natural England (2014c) Site Improvement Plan North Pennines Group [accessed:  
27/04/22]

Natural England (2018) European Site Conservation Objectives for Moor House –  
Upper Teesdale Special Area of Conservation Site Code: UK0014774 (version 3),

Joint Nature Conservation Committee (2022d) North Pennine Moors Designated  
Special Area of Conservation

Joint Nature Conservation Committee (2015d) Natura 2000 Standard Data Form:  
North Pennine Moors (UK0030033)

Natural England (2014d) Site Improvement Plan North Pennines Group (SIP154)

Natural England (2018b) European Site Conservation Objectives for North Pennine  
Moors Special Area of conservation Site Code: UK0030033 (version 3)

Joint Nature Conservation Committee (2022e) North Pennine Moors Designated  
Special Protection Area

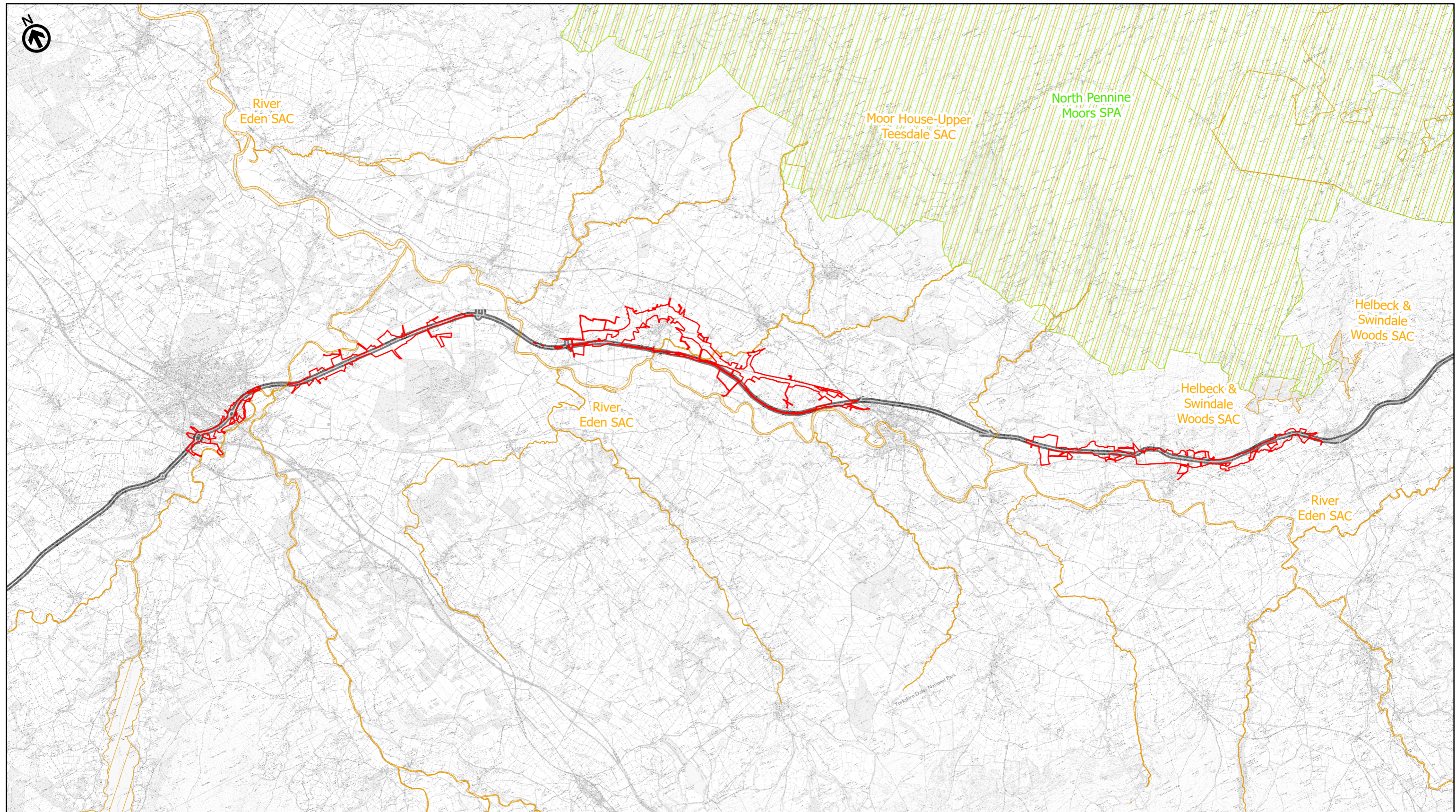
Natural England (2014e) Site Improvement Plan North Pennines Group

Natural England (2019) European Site Conservation Objectives for North Pennine  
Moors SPA Site Code: UK9006272 (version 3)

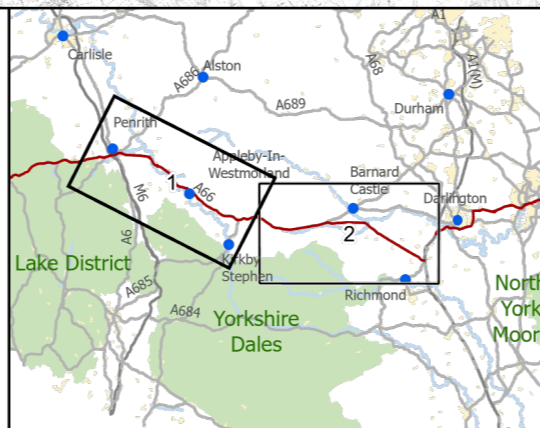
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## Appendix A European Designated Sites Location Plan and the Project





Order Limits  
 Existing A66  
**Statutory Designated Sites**  
 Special Protection Areas (SPA)  
 Special Area of Conservation (SAC)



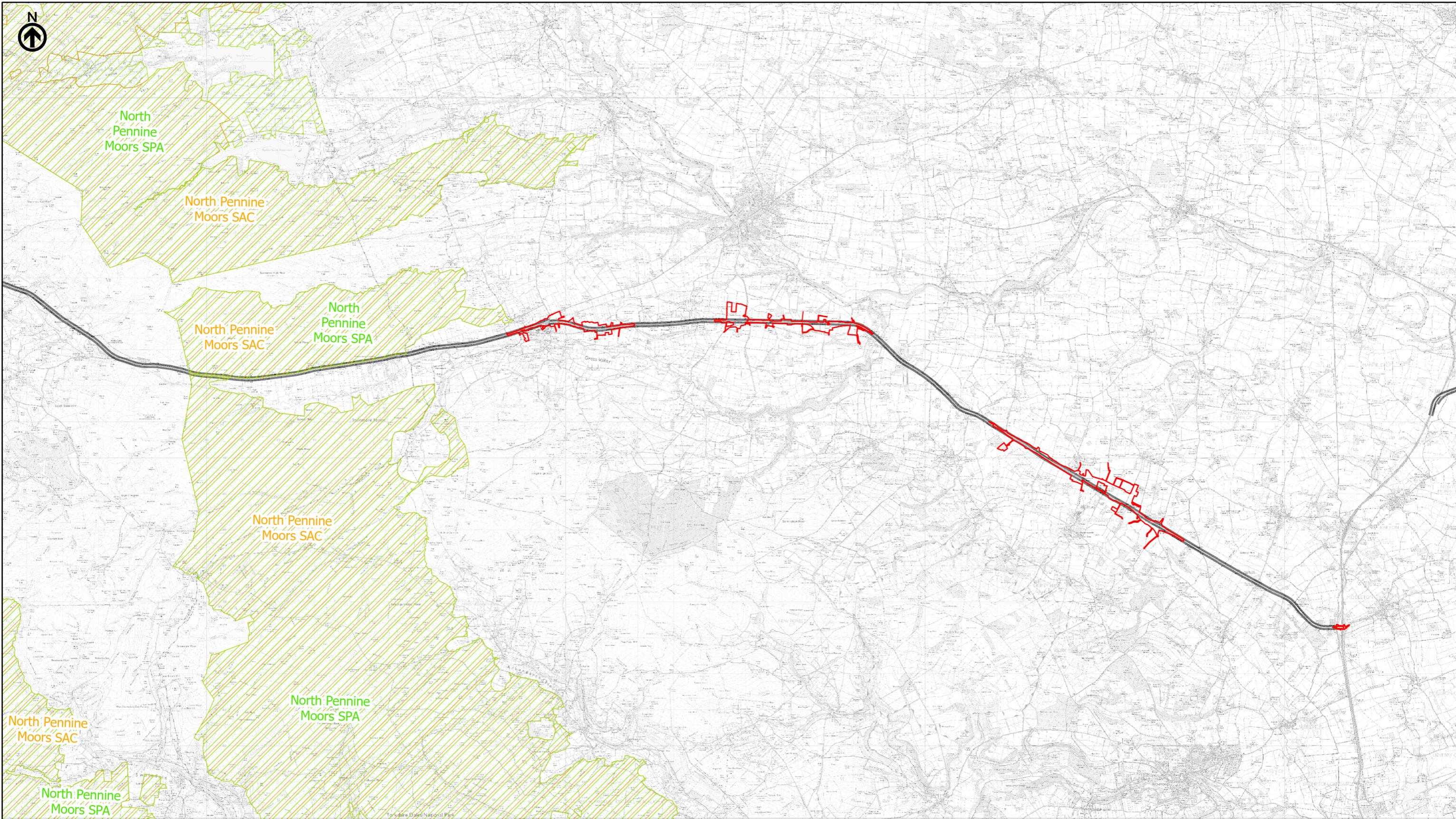
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Manchester  
M1 3BN

P02	First Issue				
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	10/03/22	14/03/22	21/03/22	20/04/22	20/04/22
Revision	Created	Checked	Reviewed	Approved	Authorised

Kilometres

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Project Name <b>A66 Northern Trans-Pennine Project</b>			
Map Title Figure 1.1 Appendix A European Designated Sites Location Plan and the Project Scheme: 0106, M6 Junction 40 to Brough Sheet 1 of 13			
Map Number Project	Originator	Volume	
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Suitability S4	Suitability Description FIT FOR STAGE APPROVAL	Revision P02	

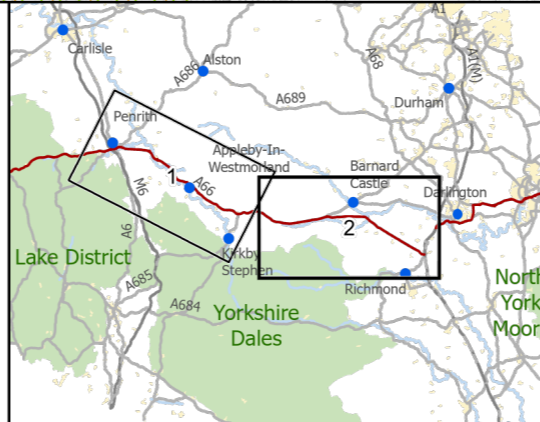


**Order Limits**

Existing A66

**Statutory Designated Sites**

- Special Protection Areas (SPA)
- Special Area of Conservation (SAC)



**national highways**

3 Piccadilly Place  
Manchester  
M1 3BN

P02	First Issue				
	KBIG	PKEL	THOU	AMIT	KWHA
	10/03/22	14/03/22	21/03/22	20/04/22	20/04/22
Revision	Created	Checked	Reviewed	Approved	Authorised

Kilometres

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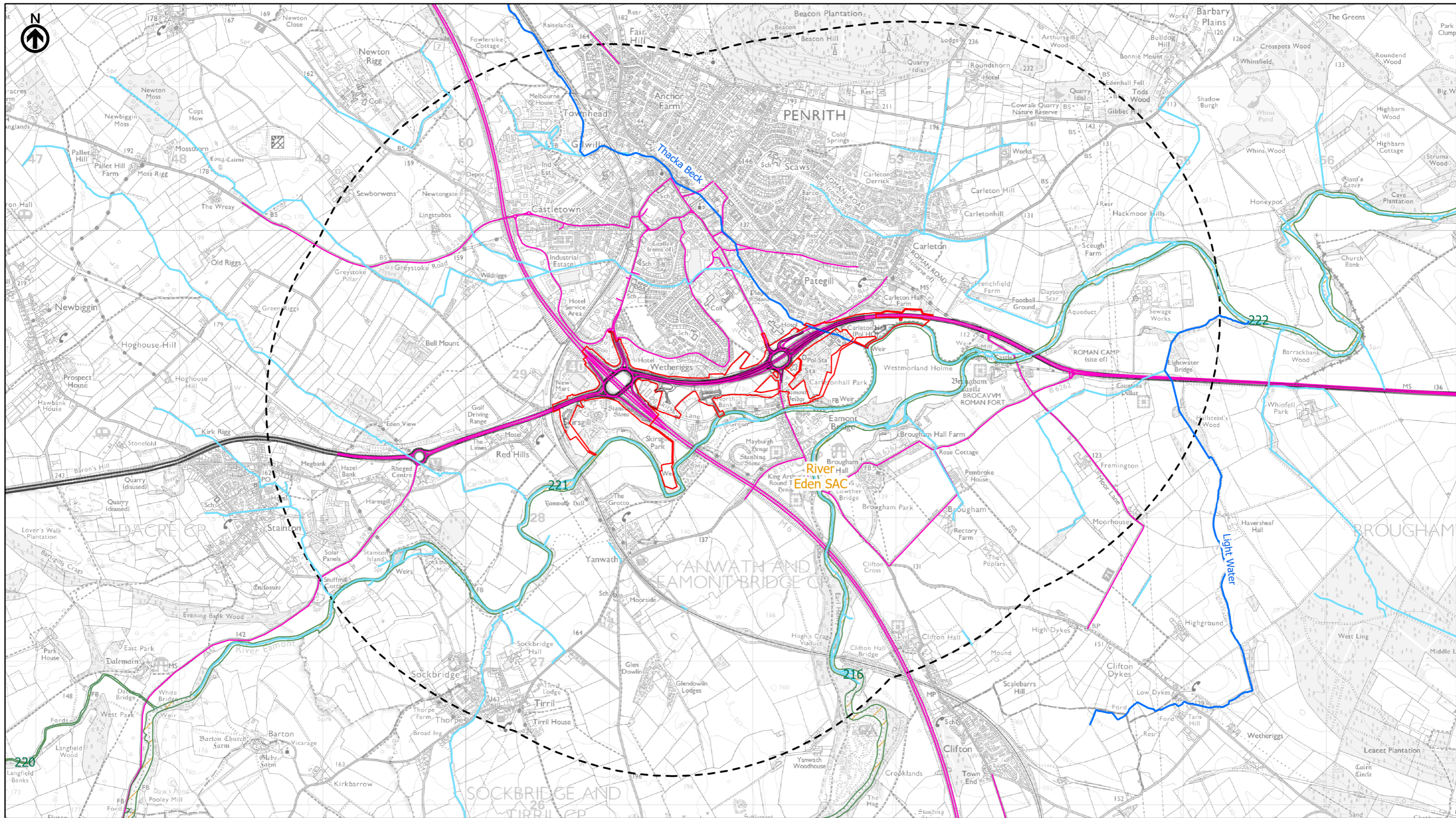
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Project Name  
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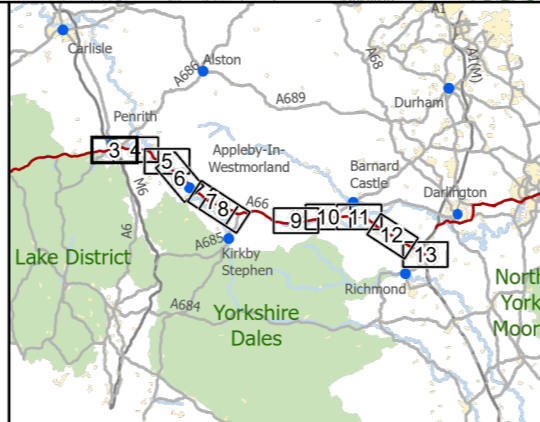
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Appendix A European Designated Sites Location Plan  
and the Project  
Scheme: 0711, Bowes Bypass to A1(M) Junction 53 Scotch Corner  
Sheet 2 of 13

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HE565627	-	AMY	-
S00	-	MP - LB	-
Location		Type	Role
			Number

Suitability	Suitability Description	Revision
S4	FIT FOR STAGE APPROVAL	P02



— Route Alignment  
 — Existing A66  
 — Affected Road Network ES  
 — Order Limits  
 - - - Study Area 2000m  
**Statutory Designated Sites**  
 Special Protection Areas (SPA)  
 Special Area of Conservation (SAC)  
 Site of Special Scientific Interest Units (With IDs)  
**Watercourses**  
 Watercourses Functionally Linked To The SAC That Interact With The Project  
 Other Watercourse



**national highways**  
 3 Piccadilly Place  
 Manchester  
 M1 3BN

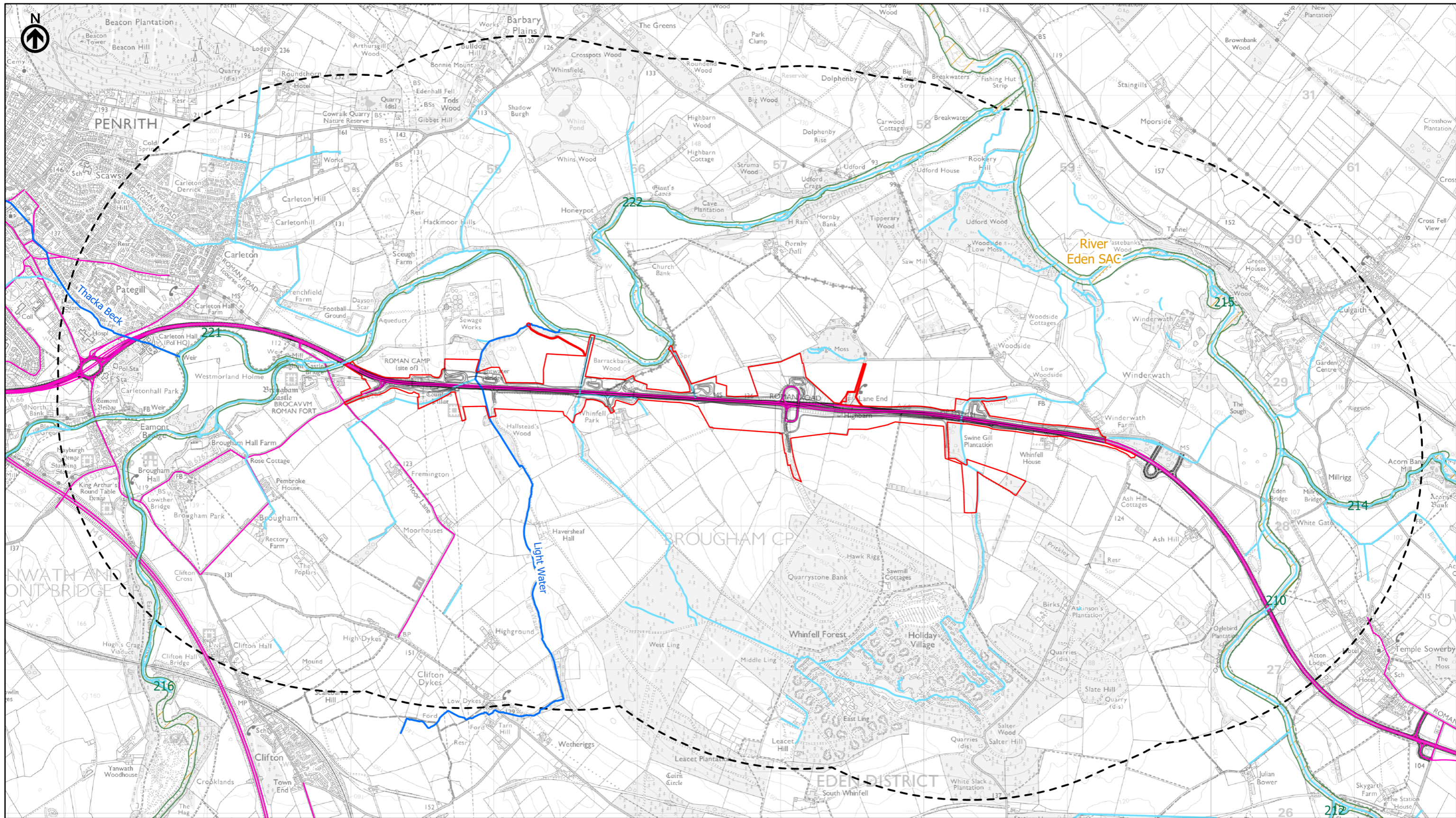
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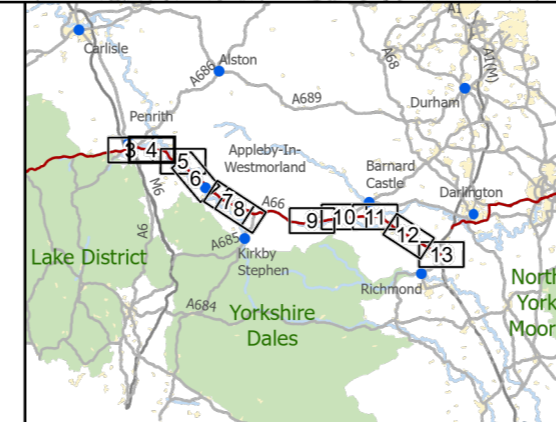
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**Map Title**  
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 Appendix A European Designated Sites Location Plan  
 and the Project  
 Scheme: 0102, M6 Junction 40 to Kemplay Bank  
 Sheet 3 of 13

Map Number	Project	Originator	Volume
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Location	S00	- MP - LB -	003315
		Type	Role
Suitability	S4	Location	Number

**Suitability Description**  
 FIT FOR STAGE APPROVAL  
**Revision**  
 P02



— Route Alignment  
 — Existing A66  
 — Affected Road Network ES  
 — Order Limits  
 - - - Study Area 2000m  
**Statutory Designated Sites**  
 Special Protection Areas (SPA)  
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 Site of Special Scientific Interest Units (With IDs)  
**Watercourses**  
 Watercourses Functionally Linked To The SAC That Interact With The Project  
 Other Watercourse



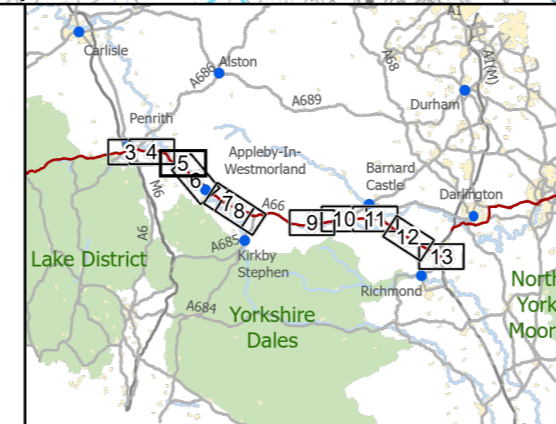
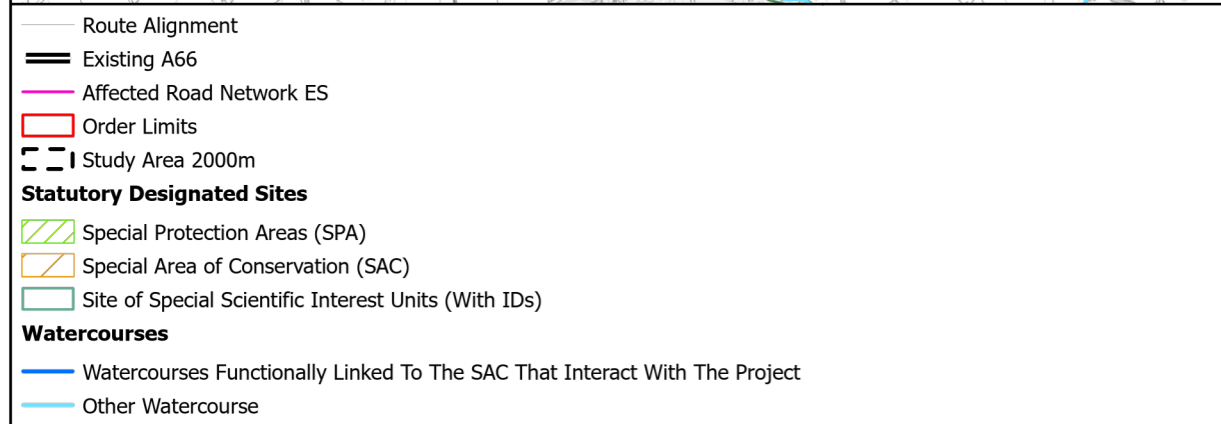
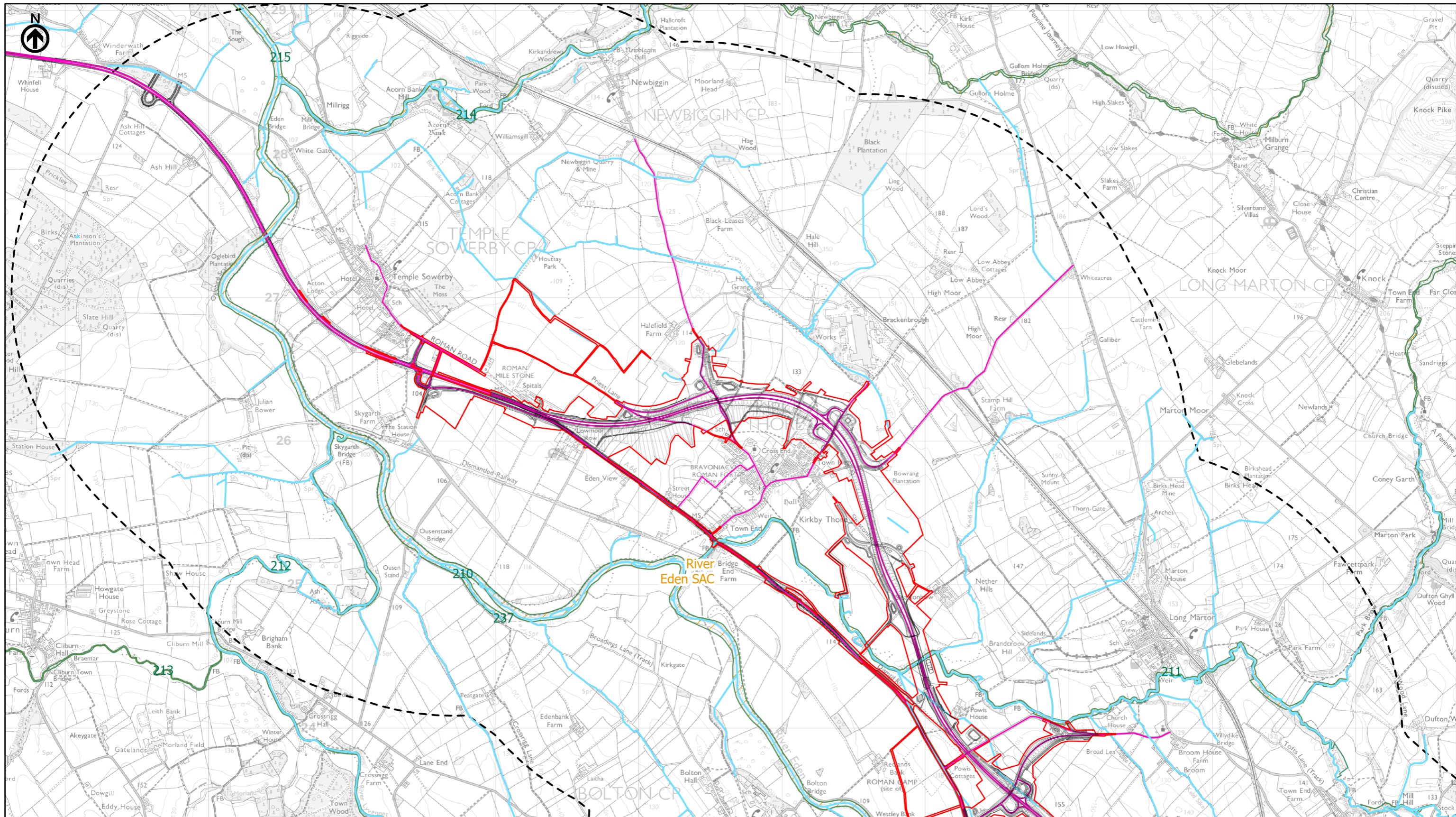
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 3 Piccadilly Place  
 Manchester  
 M1 3BN

P02	First Issue	KBIG	PKEL	THOU	AMIT	KWHA
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Revision	Created	Checked	Reviewed	Approved	Authorised	

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Project Name  
**A66 Northern Trans-Pennine Project**  
 Map Title  
 Figure 1.1  
 Appendix A European Designated Sites Location Plan  
 and the Project  
 Scheme: 03, Penrith to Temple Sowerby  
 Sheet 4 of 13

Map Number	Project	Originator	Volume
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Suitability	Location		Revision
S4	FIT FOR STAGE APPROVAL		P02



**national highways**

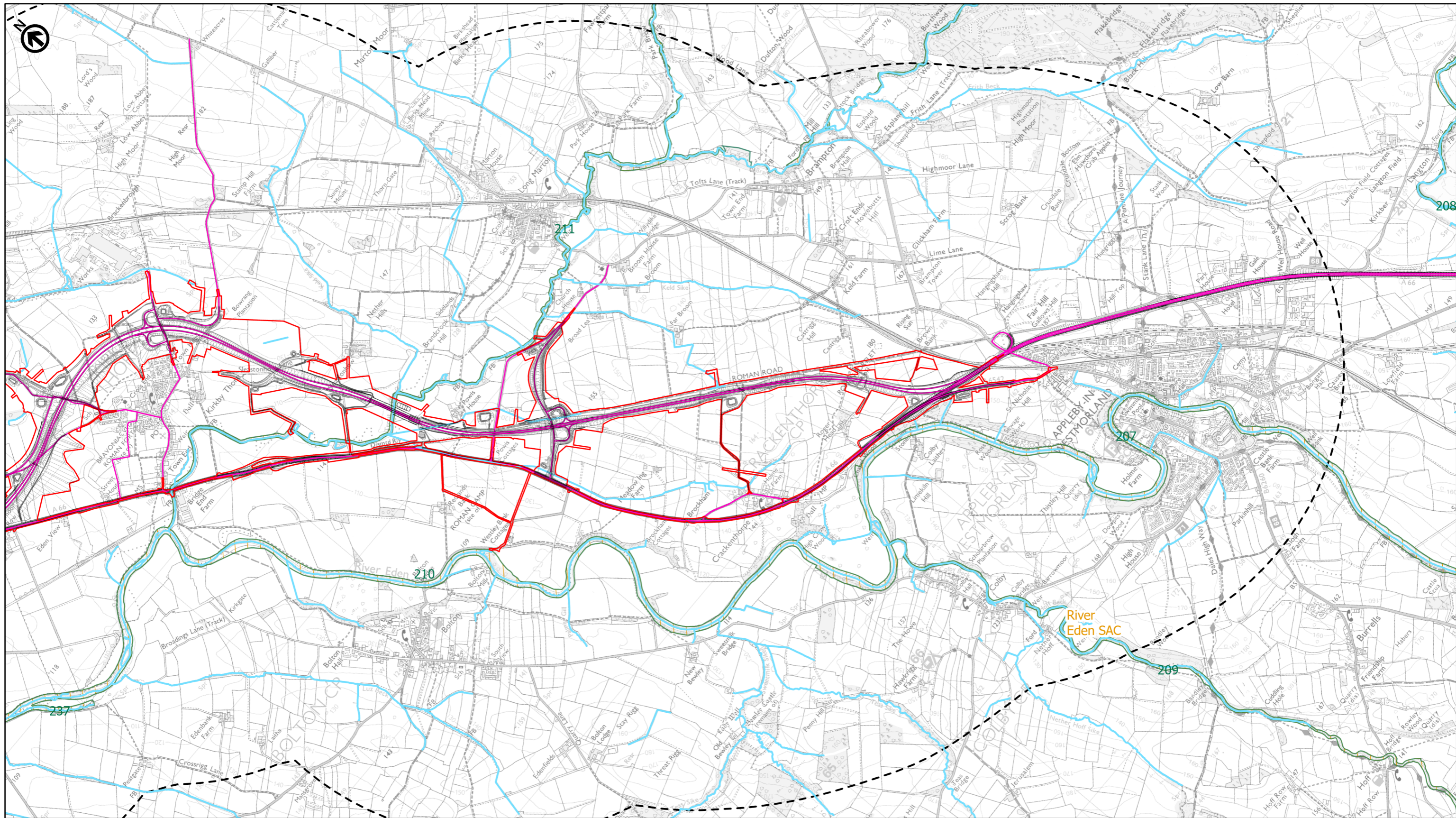
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M1 3BN

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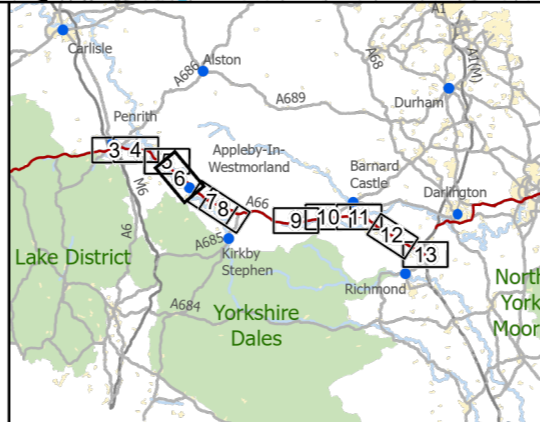
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Project Name <b>A66 Northern Trans-Pennine Project</b>			
Map Title Figure 1.1 Appendix A European Designated Sites Location Plan and the Project Scheme: 0405, Temple Sowerby to Appleby Sheet 5 of 13			
Map Number Project	Originator	Volume	
HE565627	AMY	EBD	
S00 Location	MP	LB	003317
Suitability S4	Suitability Description FIT FOR STAGE APPROVAL	Type   Role   Number	Revision P02



— Route Alignment  
 — Existing A66  
 — Affected Road Network ES  
 — Order Limits  
 - - - Study Area 2000m  
**Statutory Designated Sites**  
 Special Protection Areas (SPA)  
 Special Area of Conservation (SAC)  
 Site of Special Scientific Interest Units (With IDs)  
**Watercourses**  
 Watercourses Functionally Linked To The SAC That Interact With The Project  
 Other Watercourse



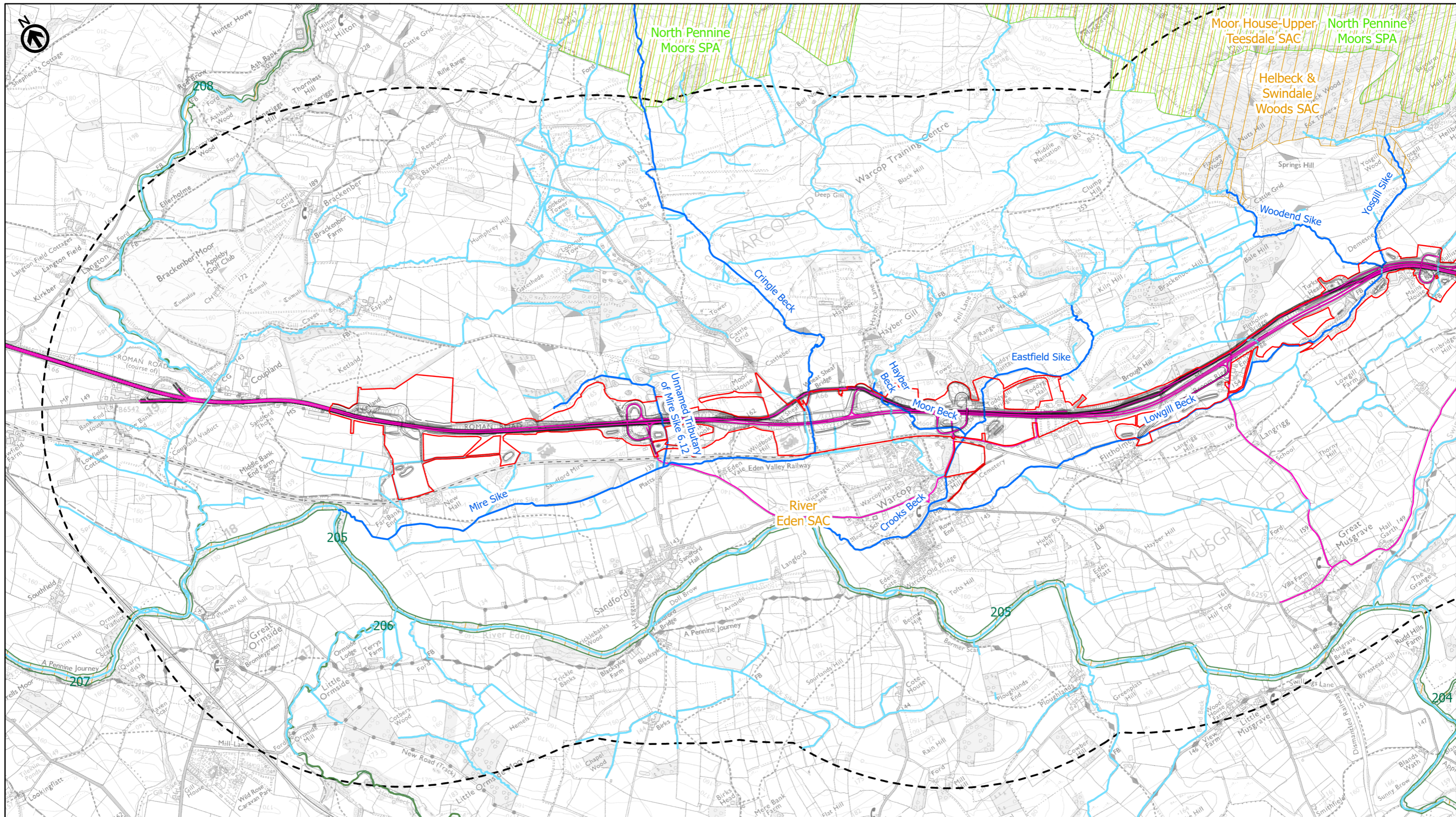
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 Manchester  
 M1 3BN

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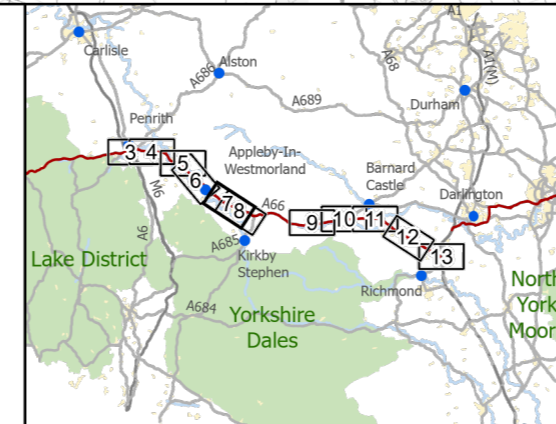
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Project Name  
**A66 Northern Trans-Pennine Project**  
 Map Title  
 Figure 1.1  
 Appendix A European Designated Sites Location Plan  
 and the Project  
 Scheme: 0405, Temple Sowerby to Appley  
 Sheet 6 of 13

Map Number	Project	Originator	Volume
HE565627	-	AMY	- EBD
Suitability	Location		Revision
S4	FIT FOR STAGE APPROVAL		P02



— Route Alignment  
 — Existing A66  
 — Affected Road Network ES  
 — Order Limits  
 - - - Study Area 2000m  
**Statutory Designated Sites**  
 Special Protection Areas (SPA)  
 Special Area of Conservation (SAC)  
 Site of Special Scientific Interest Units (With IDs)  
**Watercourses**  
 Watercourses Functionally Linked To The SAC That Interact With The Project  
 Other Watercourse



**national highways**  
 3 Piccadilly Place  
 Manchester  
 M1 3BN

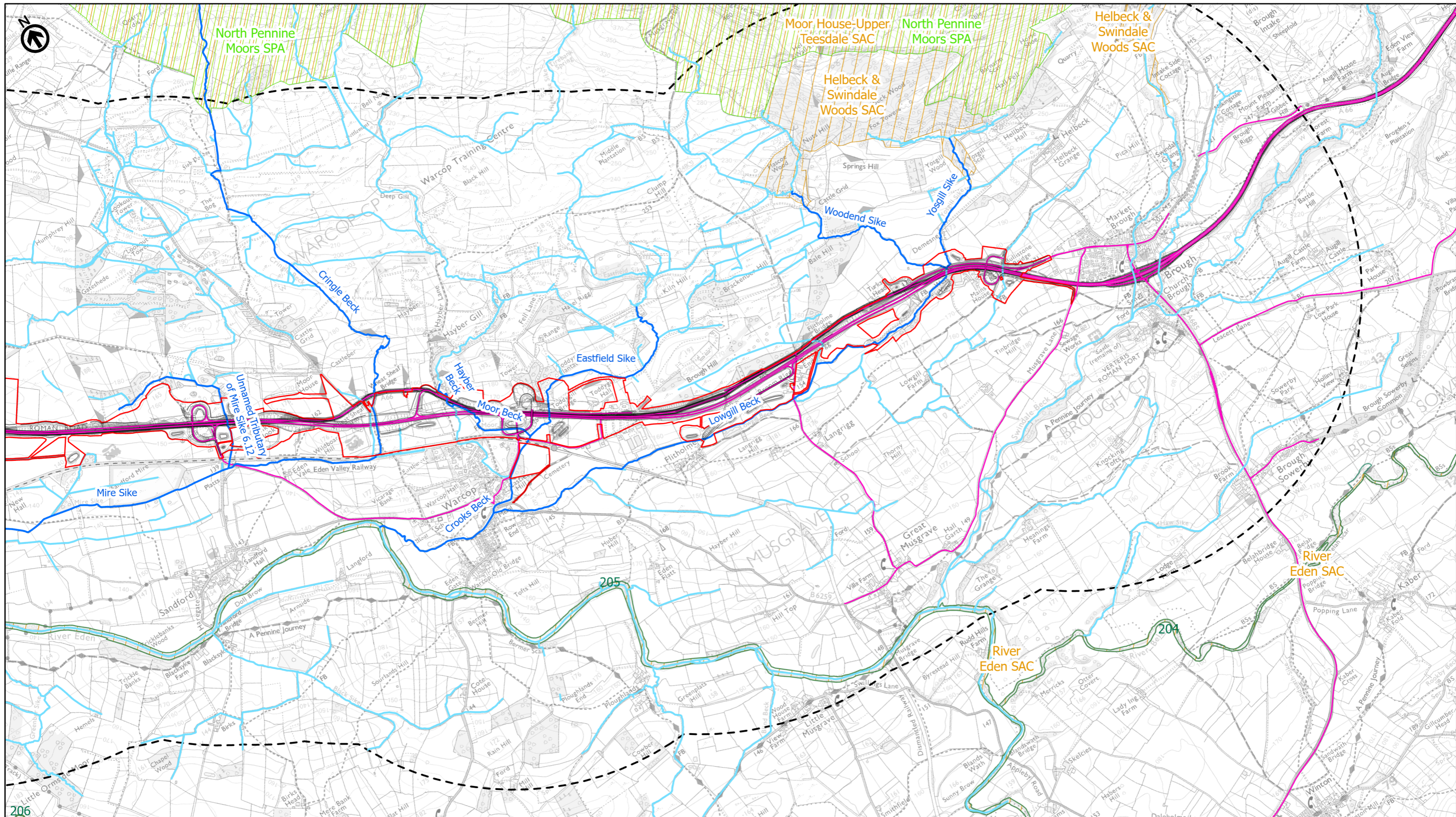
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Revision	Created	Checked	Reviewed	Approved	Authorised

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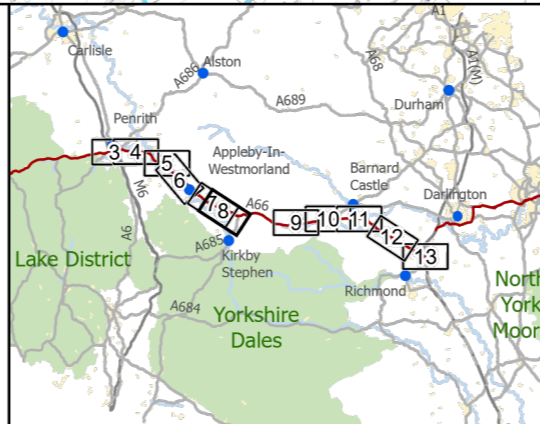
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 Sheet 7 of 13

Map Number	Project	Originator	Volume
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S00	-	MP	LB
Location	-	Type	Role
			Number

Suitability	Suitability Description	Revision
S4	FIT FOR STAGE APPROVAL	P02



— Route Alignment  
 — Existing A66  
 — Affected Road Network ES  
 — Order Limits  
 - - - Study Area 2000m  
**Statutory Designated Sites**  
 Special Protection Areas (SPA)  
 Special Area of Conservation (SAC)  
 Site of Special Scientific Interest Units (With IDs)  
**Watercourses**  
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 Other Watercourse



national highways  
 3 Piccadilly Place  
 Manchester  
 M1 3BN

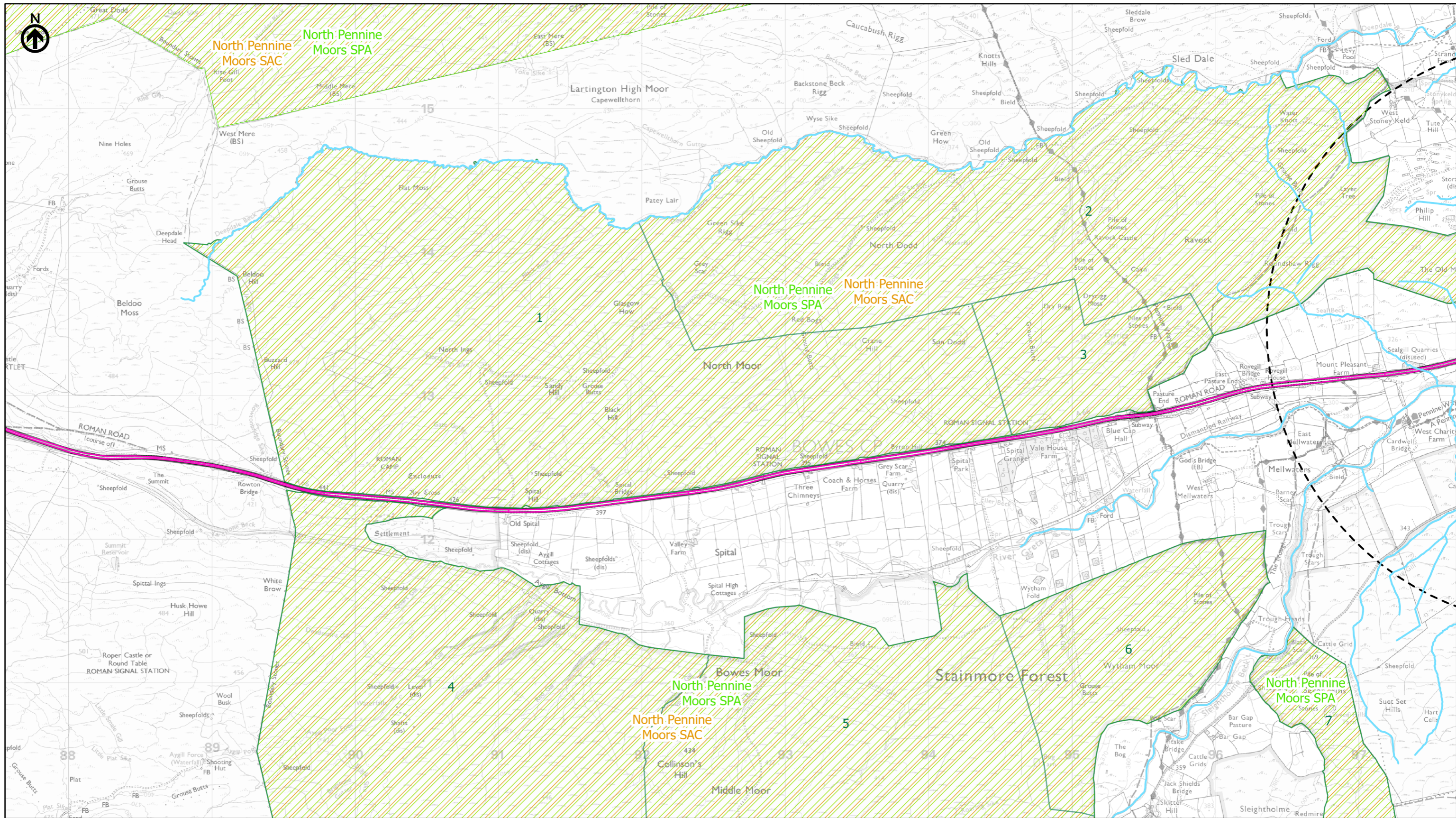
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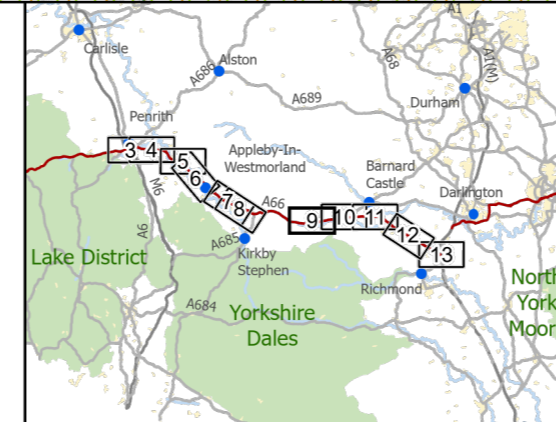
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 Map Title  
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 and the Project  
 Scheme: 06, Appleby to Brough  
 Sheet 8 of 13

Map Number	Project	Originator	Volume
HE565627	-	AMY	- EBD
S00	-	MP	- LB - 003320
Location		Type	Role   Number
Suitability	S4	FIT FOR STAGE APPROVAL	
Revision	P02		





— Route Alignment  
 — Existing A66  
 — Affected Road Network ES  
 — Order Limits  
 - - - Study Area 2000m  
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 [Orange Hatched] Special Area of Conservation (SAC)  
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**Watercourses**  
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 [Light Blue Line] Other Watercourse



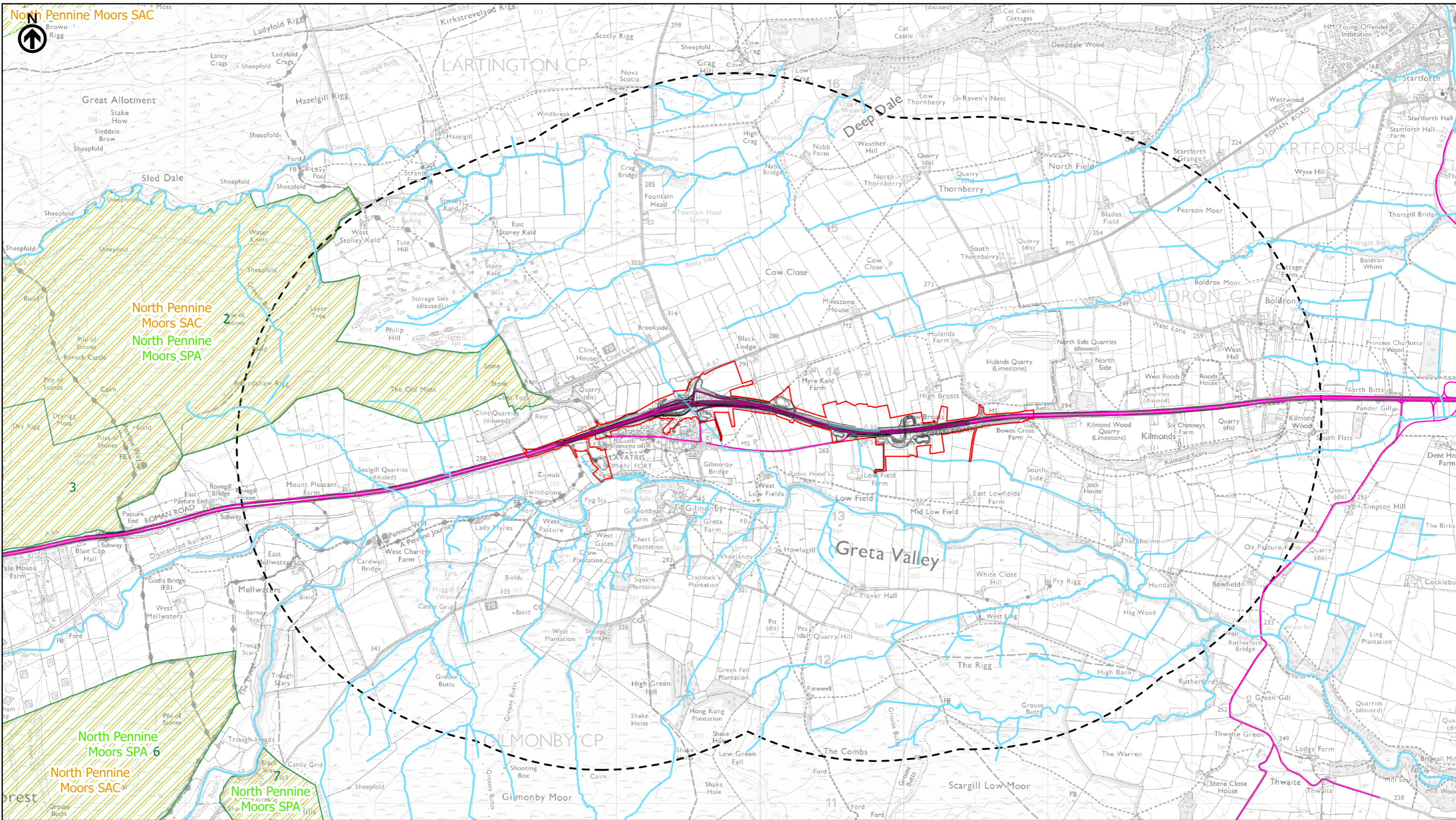
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**Project Name**  
 A66 Northern Trans-Pennine Project  
**Map Title**  
 Figure 1.1  
 Appendix A European Designated Sites Location Plan  
 and the Project  
 Scheme: 07, Bowes Bypass  
 Sheet 9 of 13

Map Number	Project	Originator	Volume
HE565627	-	AMY	- EBD
Suitability	Location		Revision
S4	FIT FOR STAGE APPROVAL		P02



— Route Alignment  
 — Existing A66  
 — Affected Road Network ES  
 — Order Limits  
 - - - Study Area 2000m  
**Statutory Designated Sites**  
 Special Protection Areas (SPA)  
 Special Area of Conservation (SAC)  
 Site of Special Scientific Interest Units (With IDs)  
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 Other Watercourse



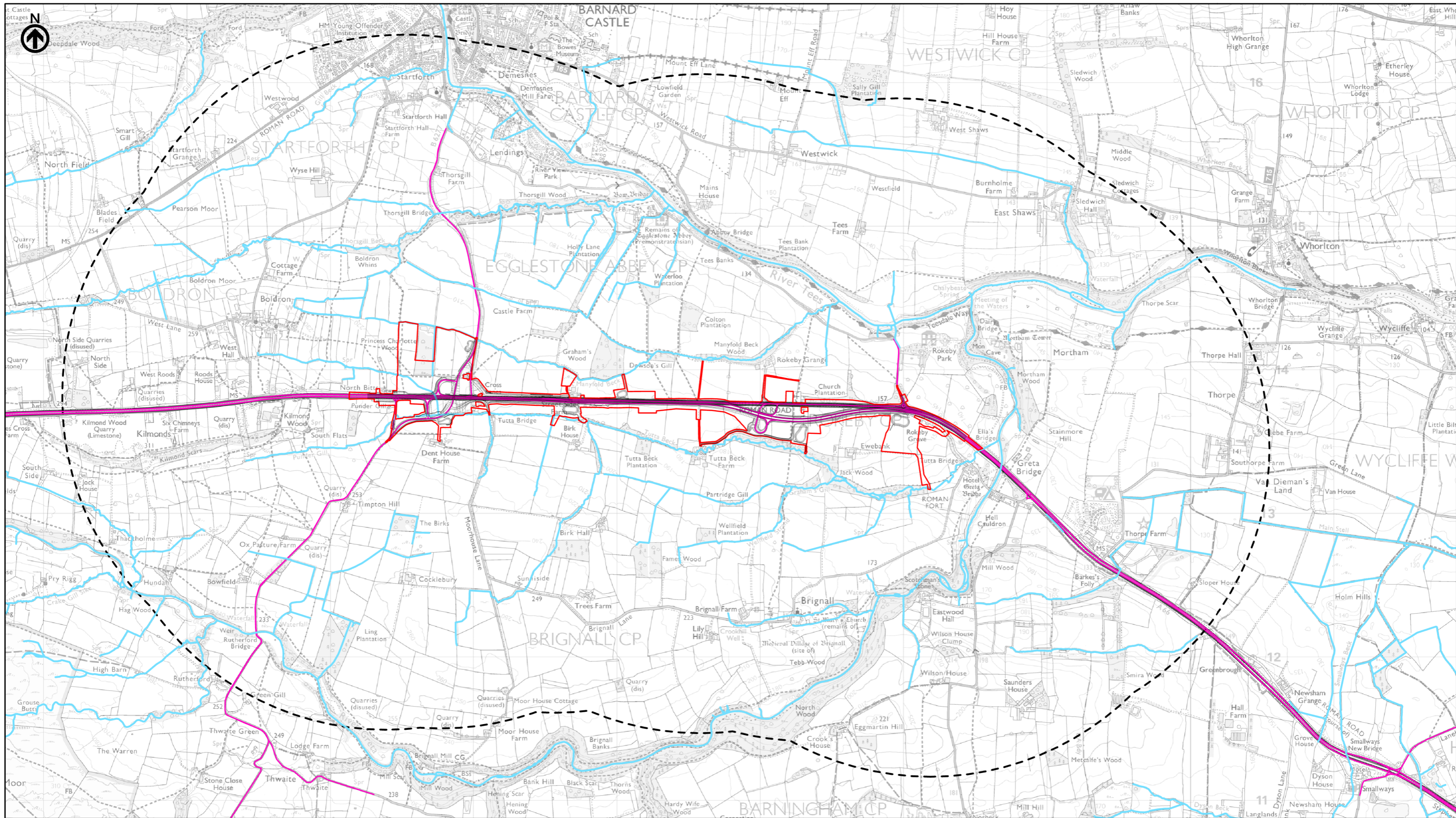
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 3 Piccadilly Place  
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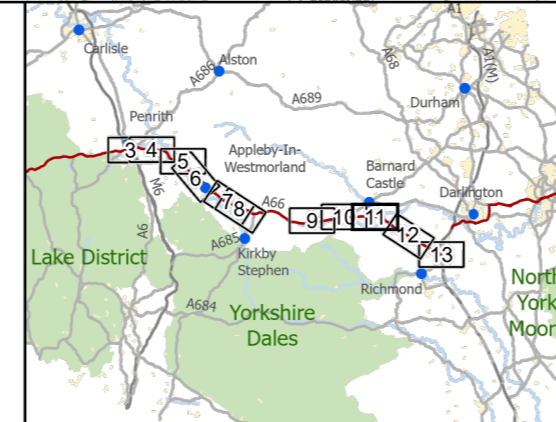
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Project Name  
**A66 Northern Trans-Pennine Project**  
 Map Title  
 Figure 1.1  
 Appendix A European Designated Sites Location Plan  
 and the Project  
 Scheme: 07, Bowes Bypass  
 Sheet 10 of 13

Map Number	Project	Originator	Volume
HE565627	-	AMY	- EBD
Suitability	Location		Revision
S4	FIT FOR STAGE APPROVAL		P02



— Route Alignment  
 — Existing A66  
 — Affected Road Network ES  
 — Order Limits  
 - - - Study Area 2000m  
**Statutory Designated Sites**  
 Special Protection Areas (SPA)  
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 Site of Special Scientific Interest Units (With IDs)  
**Watercourses**  
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 Other Watercourse



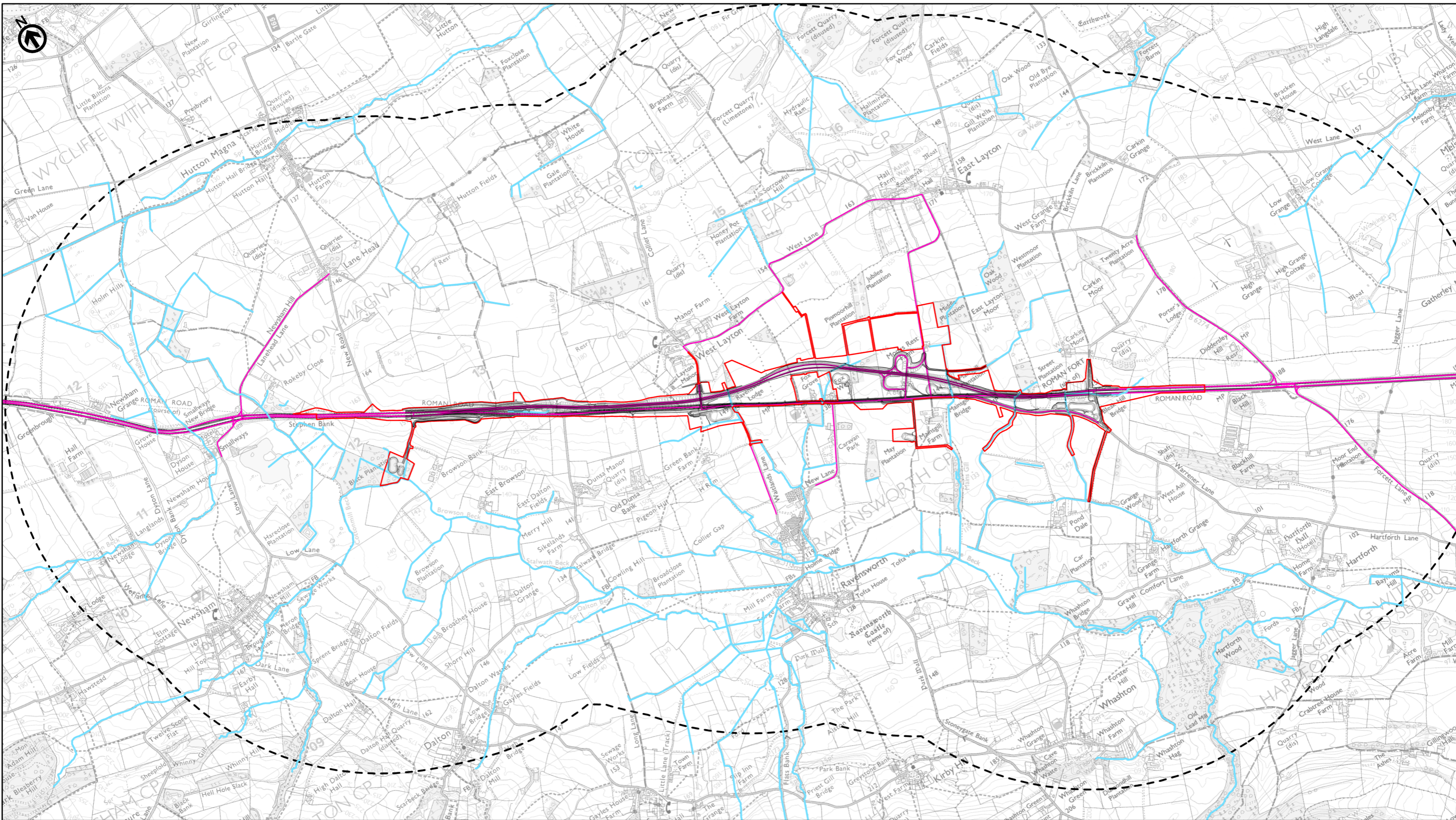
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 3 Piccadilly Place  
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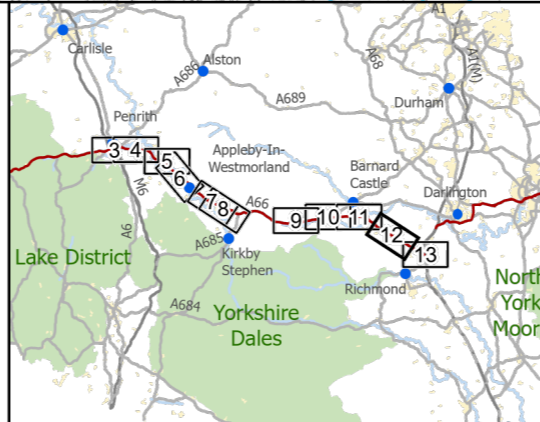
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**Project Name**  
 A66 Northern Trans-Pennine Project  
**Map Title**  
 Figure 1.1  
 Appendix A European Designated Sites Location Plan  
 and the Project  
 Scheme: 08, Cross Lanes to Rokeby  
 Sheet 11 of 13

Map Number	Project	Originator	Volume
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		Type	Role
Suitability	S4	Location	Revision
		Fit For Stage Approval	P02



— Route Alignment  
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 — Affected Road Network ES  
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 Special Protection Areas (SPA)  
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 Site of Special Scientific Interest Units (With IDs)  
**Watercourses**  
 Watercourses Functionally Linked To The SAC That Interact With The Project  
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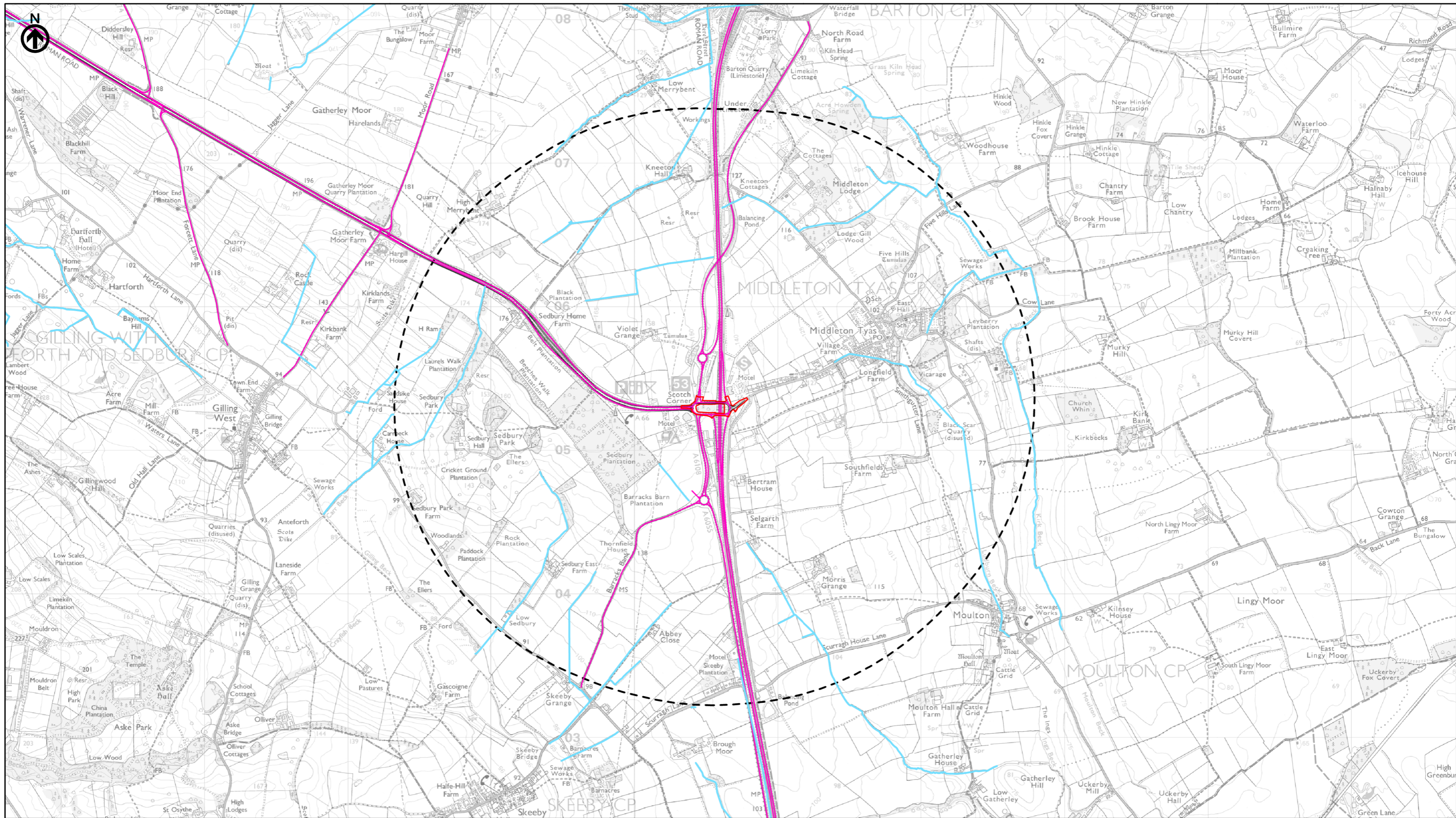
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 Manchester  
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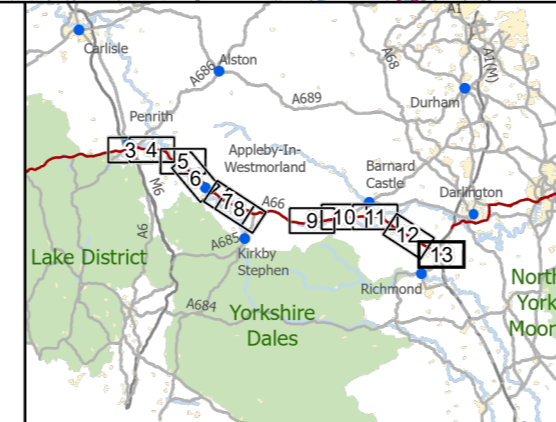
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**Project Name**  
 A66 Northern Trans-Pennine Project  
**Map Title**  
 Figure 1.1  
 Appendix A European Designated Sites Location Plan  
 and the Project  
 Scheme: 09, Stephen Bank to Carkin Moor  
 Sheet 12 of 13

Map Number	Project	Originator	Volume
HE565627	-	AMY	- EBD
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Location		Type	Role   Number
Suitability	S4	Suitability Description	Revision
		FIT FOR STAGE APPROVAL	P02



— Route Alignment  
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 — Affected Road Network ES  
 — Order Limits  
 - - - Study Area 2000m  
**Statutory Designated Sites**  
 Special Protection Areas (SPA)  
 Special Area of Conservation (SAC)  
 Site of Special Scientific Interest Units (With IDs)  
**Watercourses**  
 Watercourses Functionally Linked To The SAC That Interact With The Project  
 Other Watercourse



**national highways**  
 3 Piccadilly Place  
 Manchester  
 M1 3BN

P02	First Issue				
	KBIG	PKEL	THOU	AMIT	KWHA
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Revision	Created	Checked	Reviewed	Approved	Authorised

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**Project Name**  
 A66 Northern Trans-Pennine Project  
**Map Title**  
 Figure 1.1  
 Appendix A European Designated Sites Location Plan  
 and the Project  
 Scheme: 11, A1(M) Junction 53 Scotch Corner  
 Sheet 13 of 13

Map Number	Project	Originator	Volume
HE565627	-	AMY	- EBD
Location	S00	-	MP - LB - 003325
		Type	Role   Number

Suitability	Suitability Description	Revision
S4	FIT FOR STAGE APPROVAL	P02

## Appendix B PINS Screening Matrices

### Potential effects

Potential effects upon the European site(s)<sup>32</sup> which are considered within the submitted HRA report are provided in the Table F.1: Effects considered within the screening matrices.

Table F.1: Effects considered within the screening matrices

Designation	Effects described in submission information	Presented in screening matrices as
River Eden SAC	Land take / resource requirements / reduction of habitat Disturbance of mobile species and species fragmentation Species injury and mortality Introduction and/or spread of invasive non-native species Changes in surface and groundwater quality, quantity, and hydrogeology Changes in hydrology and fluvial geomorphological processes Changes in air quality.	Land take / resource requirements / reduction of habitat Disturbance of mobile species and species fragmentation Species injury and mortality Introduction and/or spread of invasive non-native species Changes in surface and groundwater quality, quantity, and hydrogeology Changes in hydrology and fluvial geomorphological processes Changes in air quality.
Helbeck and Swindale Woods SAC	Air quality Land take / resource requirements / reduction of habitat <u>Changes in surface and groundwater quality, quantity, and hydrogeology</u> Introduction and/or spread of invasive non-native species	Air quality Land take / resource requirements / reduction of habitat <u>Changes in surface and groundwater quality, quantity, and hydrogeology</u> Introduction and/or spread of invasive non-native species
Moor House-Upper Teesdale SAC	Air quality Land take / resource requirements / reduction of habitat <u>Changes in surface and groundwater quality, quantity, and hydrogeology</u>	Air quality Land take / resource requirements / reduction of habitat Hydrology Introduction and/or spread of invasive non-native species

<sup>32</sup> As defined in Advice Note 10.

Designation	Effects described in submission information	Presented in screening matrices as
	Introduction and/or spread of invasive non-native species	
North Pennine Moors SAC	Air quality Reduction of habitat area and reduction of species density (as a result of changes in air quality) Introduction and/or spread of invasive non-native species  Land take / resource requirements / reduction of habitat <u>Changes in surface and groundwater quality, quantity, and hydrogeology</u>	Air quality  Reduction of habitat area and reduction of species density (as a result of changes in air quality)  Introduction and/or spread of invasive non-native species  Land take / resource requirements / reduction of habitat  <u>Changes in surface and groundwater quality, quantity, and hydrogeology</u>
North Pennine Moors SPA	Air quality  Reduction of habitat area and reduction of species density (as a result of changes in air quality) Disturbance to Annex I species Introduction and/or spread of invasive non-native species  Land take / resource requirements / reduction of habitat <u>Changes in surface and groundwater quality, quantity, and hydrogeology</u>	Air quality  Reduction of habitat area and reduction of species density (as a result of changes in air quality)  Disturbance to Annex I species  Introduction and/or spread of invasive non-native species  Land take / resource requirements / reduction of habitat  <u>Changes in surface and groundwater quality, quantity, and hydrogeology</u>

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## STAGE 1: Screening Matrices

The European sites included within the screening assessment are:

- River Eden SAC
- Helbeck and Swindale Woods SAC
- Moor House-Upper Teesdale SAC
- North Pennine Moors SAC
- North Pennine Moors SPA

Evidence for, or against, LSEs on the European site(s) and its qualifying feature(s) is detailed within the footnotes to the screening matrices below.

Decommissioning will not be either feasible or desirable and is therefore not proposed to be considered and is consequently not included in the screening matrices below.

An in combination assessment is not included within this HRA Screening matrix as for sites not taken forward to Appropriate Assessment LSE have been ruled out alone with no residual effects; therefore, there are no residual effects to assess in combination with other plans or projects. Where a credible risk of any residual effect is identified, that may give rise to a LSE in combination or undermine the conservation objectives, this is taken forward to the Appropriate Assessment.

### Matrix Key:

✓ = LSE **cannot** be excluded

✗ = LSE **can** be excluded

C = construction

O = operation



Table F.2: River Eden SAC PINS matrix.

Name of European site and designation: River Eden SAC														
EU Code: UK0012643														
Distance to NSIP: Within Temple Sowerby to Appleby (closest point)														
European site features	Likely effects of NSIP													
<i>Effect</i>	Land take / resource requirements / reduction of habitat		Disturbance of mobile species and species fragmentation		Species injury and mortality		Introduction and/or spread of invasive non-native species		Changes in surface and groundwater quality, quantity, and hydrogeology		Changes in hydrology and fluvial geomorphological processes		Changes in air quality.	
<i>Stage of Development</i>	C	O	C	O	C	O	C	O	C	O	C	O	C	O
3130 Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or of the <i>Isoëto-Nanojuncetea</i>	*a	x*a	x*a	x*a	x*a	x*a	x*a	x*a	x*a	x*a	x*a	x*a	x*a	x*a

Name of European site and designation: River Eden SAC														
EU Code: UK0012643														
Distance to NSIP: Within Temple Sowerby to Appleby (closest point)														
3260 Watercourses of plain to montane levels with the <i>Ranuncion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation.	✓*b	✓*b	x*d	x*d	x*f	x*f	✓*j	x*k	✓*l	✓*m	✓*n	✓*n	✓*o	✓*o
91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae)	x*a	x*a	x*a	x*a	x*a	x*a	x*a	x*a	x*a	x*a	x*a	x*a	x*a	x*a
Atlantic salmon	✓*b	✓*c	✓*e	✓*e	✓*g	x*i	✓*j	x*k	✓*l	✓*m	✓*n	✓*n	x*p	x*p

Name of European site and designation: River Eden SAC														
EU Code: UK0012643														
Distance to NSIP: Within Temple Sowerby to Appleby (closest point)														
Brook lamprey	✓*b	✓*c	✓*e	✓*e	✓*g	x*i	✓*j	x*k	✓*l	✓*m	✓*n	✓*n	x *p	x *p
Bullhead	✓*b	✓*c	✓*e	✓*e	✓*g	x*i	✓*j	x*k	✓*l	✓*m	✓*n	✓*n	x *p	x *p
Otter	✓*b	✓*c	✓*e	✓*e	x*h	x*i	✓*j	x*k	✓*l	✓*m	✓*n	✓*n	x *p	x *p
River lamprey	✓*b	✓*c	✓*e	✓*e	✓*g	x*i	✓*j	x*k	✓*l	✓*m	✓*n	✓*n	x *p	x *p
Sea lamprey	✓*b	✓*c	✓*e	✓*e	✓*g	x*i	✓*j	x*k	✓*l	✓*m	✓*n	✓*n	x *p	x *p

\*a LSE(s) alone with no residual effects can be ruled out for 3130 Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea*; this habitat relates to Ullswater, which is considered outside the Project zone of influence. LSE(s) alone with no residual effects can be ruled out for 91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) habitat. No alluvial forest was recorded within the SAC during surveys as described in Appendix 6.20 Aquatic Macrophyte and River Corridor Survey Technical Appendix (ES Volume 3, Application Document Number 3.4) and this habitat type is absent from the SSSI units affected by the Project according to the *designated sites viewer* (Natural England, 2022)<sup>12</sup>.

\*b LSE(s) alone cannot be ruled out. Trout Beck (with the SAC) would be shaded as a result of the proposed crossing resulting in localised loss of riparian habitats; there would also be alteration of the riparian zone as a result of attenuation basin discharges that will enter the SAC through the riparian zone in Trout Beck and the River Eamont. In addition, sections of functionally linked habitat will be impacted/degraded through shading as a result of culvert/underpass extensions at Carlton Hall and Light Water and proposed crossings at Unnamed Tributary of Mire Sike 6.12, Cringle Beck, Moor Beck, Eastfield Sike, Lowgill Beck, Woodend Sike and Yosgill Sike.

\*c LSE(s) alone cannot be ruled out. In the absence of suitable watercourse crossing design and/or mitigation, the Trout Beck crossing, the extension of Light Water and proposed crossings at Unnamed Tributary of Mire Sike 6.12, Cringle Beck, Moor Beck, Eastfield Sike, Lowgill Beck, Woodend Sike and Yosgill Sike could restrict the free movement of SAC qualifying features and alter fluvial geomorphological processes. The existing culvert within Light Water will be extended and lead to potential

impact/degradation of habitat as a result of shading which supports the sub type 2 Annex I habitat watercourses of plain to montane levels with the *Ranunculion fluitantis* and Callitriche-Batrachion vegetation. This area does not form part of the River Eden SAC, however the habitat is functionally linked (Atlantic salmon DNA was recorded during surveys).

\*d LSE(s) alone can be ruled out. Habitats not considered under mobile species. Any potential habitat fragmentation would occur during the construction phase and is considered within 'Land take / resource requirements / reduction of habitat'.

\*e LSE(s) alone cannot be ruled out. During the construction phase, potential noise, vibration and lighting disturbance may impact on all Annex II species i.e. Atlantic salmon, brook lamprey, bullhead, river lamprey, sea lamprey, white-clawed crayfish and otter may occur as a result of in channel works, or works within close proximity of the river channel and river banks. During the operation phase, potential noise, vibration and lighting disturbance may impact on all Annex II species as a result of additional watercourse crossings.

\*f LSE(s) alone can be ruled out. Impact pathway not applicable for habitats.

\*g LSE(s) alone cannot be ruled out. Ground vibration as a result of construction activities, such as piling sound, can cause fatal injuries in fish and fish eggs/embryos. All the qualifying fish species (i.e. all lamprey species, Atlantic salmon and bullhead) are lithophilic spawners, meaning they lay their eggs in clean, oxygenated river gravels; vibration of these gravels could lead to egg/embryo mortality. Mortality of fish eggs and embryos in spawning gravels as a result of vibration could have an adverse effect of the populations of, and distribution of qualifying fish species (i.e. brook lamprey, river lamprey, sea lamprey, salmon and bullhead)

\*h LSE(s) alone can be ruled out. Construction activities are not considered to have any LSE on otter through species injury or mortality.

\*i LSE(s) alone can be ruled out. No direct species injury or mortality as a result of the operational phase was identified. Potential for indirect operational impacts is considered within 'Disturbance of mobile species and species fragmentation'.

\*j LSE(s) alone cannot be ruled out. Non-native species constitute a major threat to many river systems and could be introduced and/or spread during construction. Impacts may be on the river habitat itself (e.g. damage to banks and consequent siltation) or directly on characteristic biota (through predation, competition and disease), or a combination of these. Of particular relevance to the SAC are signal crayfish (which have been responsible for much of the decline of native crayfish in the UK through competition, habitat damage, and the introduction of crayfish plague) and Himalayan balsam.

\*k LSE(s) alone can be ruled out with no residual effect. The spread of non-native species is only considered during the construction phase.

\*l LSE(s) alone cannot be ruled out. Construction activities have the potential to generate water-borne pollution (e.g. dust, fine sediment, fuels and oils) which in the absence of mitigation could give rise to an adverse effect on the qualifying features of the SAC. Construction activities, such as cutting, piling, temporary abstractions and discharges and floodplain utilisation, also have the potential to impact on the water environment through changes in surface and groundwater quality and quantity.

\*m LSE(s) alone cannot be ruled out. Road runoff during operation of the road has the potential to generate water-borne pollution (e.g. trace metals, hydrocarbons and other organic pollutants resulting from oil/petrol spills and tyre and brake wear) which, in the absence of mitigation, could enter the River Eden SAC resulting in adverse effects and qualifying features.

\*n LSE(s) alone cannot be ruled out. Further assessment of the potential for changes in hydrology and fluvial geomorphological processes as a result of the construction and operation of the Project and how this may alter habitats locally and impact on the conservation value and integrity of the site and the habitats it supports is required.

\*o LSE(s) alone cannot be ruled out. SAC qualifying habitat 3260: watercourses within the SAC that is intersected by the ARN, or within 200m to the ARN could be adversely affected by increased deposition of air pollutants from operation of the road. Exceedance of critical values for air pollutants may modify the chemical status of its substrate, accelerating or damaging plant growth, altering its vegetation structure and composition and causing the loss of sensitive typical species associated with it.

\*p LSE(s) alone can be ruled out. Air quality impacts are considered on 3260: watercourses habitat only. Potential changes in qualifying habitats as a result of air quality impacts are not considered to have LSE on qualifying species.

Table F.3: Helbeck and Swindale Woods SAC PINS matrix.

Name of European site and designation: Helbeck and Swindale Woods SAC								
EU code: UK0030033								
Distance to NSIP: Within the ARN (closest point)								
European site features	Likely effects of NSIP							
Effect	Changes in air quality		Land take / resource requirements / reduction of habitat		<u>Changes in surface and groundwater quality, quantity, and hydrogeology</u>		Introduction and/or spread of invasive non-native species	
Stage of Development	C	O	C	O	C	O	C	O
Annex I habitats	x*a	x*a	x *b	x *b	x *c	x *c	X*d	X*d

\*a LSE(s) alone can be ruled out, with no residual effect. LA 105 DMRB guidelines states air quality assessments must be undertaken for sites within 200m from the road. Helbeck and Swindale Woods SAC is located 0.5km north of Appleby to Brough.

\*b LSE(s) alone with no residual effect can be ruled out. No direct habitat loss is required within the Helbeck and Swindale Woods SAC boundary for any of the schemes.

\*c LSE(s) alone can be ruled out, with no residual effect. The Project is located downstream of the SAC and therefore will not interact with habitats that are hydrologically connected or functionally linked to the SAC.

\*d LSE(s) alone can be ruled out, with no residual effect. No works are required within the SAC therefore there is no risk of introduction and/or spread of invasive non-native species within the SAC. The closest construction area of the Project is 430m south with no impact pathways e.g. functionally linked watercourses within the Project are downstream of the SAC.

Table 4: Moor House-Upper Teesdale SAC PINS matrix.

Name of European site and designation: Moor House-Upper Teesdale SAC								
EU code: UK0030033								
Distance to NSIP: Within the ARN (closest point)								
European site features	Likely effects of NSIP							
Effect	Changes in air quality		Land take / resource requirements / reduction of habitat		<u>Changes in surface and groundwater quality, quantity, and hydrogeology</u>		Introduction and/or spread of invasive non-native species	
Stage of Development	C	O	C	O	C	O	C	O
Annex I habitats	x*a	x*a	x *b	x *b	x *c	x *c	X*d	X*d
Round-mouth whorled snail	x*a	x*a	x *b	x *b	x *c	x *c	X*d	X*d
Marsh saxifrage	x*a	x*a	x *b	x *b	x *c	x *c	X*d	X*d

\*a LSE(s) alone can be ruled out, with no residual effect. LA 105 DMRB guidelines states air quality assessments must be undertaken for sites within 200m from the road. Moor House-Upper Teesdale SAC is located 1.4km north of Appleby to Brough.

\*b LSE(s) alone with no residual effect can be ruled out. No direct habitat loss is required within Moor House-Upper Teesdale SAC boundary for any of the schemes.

\*c LSE(s) alone can be ruled out, with no residual effect. The Project is located downstream of the SAC and therefore will not interact with habitats that are hydrologically connected or functionally linked to the SAC.

\*d LSE(s) alone can be ruled out, with no residual effect. No works are required within the SAC therefore there is no risk of introduction and/or spread of invasive non-native species within the SAC. The closest construction area of the Project is 1.4km south with no impact pathways e.g. functionally linked watercourses within the Project are downstream of the SAC.

Table F.5: North Pennine Moors SAC PINS matrix.

Name of European site and designation: North Pennine Moors SAC										
EU code: UK0030033										
Distance to NSIP: Within the ARN (closest point)										
European site features	Likely effects of NSIP									
Effect	Changes in air quality		Reduction of habitat area and reduction of species density (as a result of changes in air quality)		Introduction and/or spread of invasive non-native species		Land take / resource requirements / reduction of habitat		<u>Changes in surface and groundwater quality, quantity, and hydrogeology</u>	
Stage of Development	C	O	C	O	C	O	C	O	C	O
Annex I habitats	✓*a	✓*a	✓*b	✓*b	x *c	x *c	x *d	x *d	x *e	x *e
Marsh saxifrage	✓*a	✓*a	✓*b	✓*b	x *c	x *c	x *d	x *d	x *e	x *e

\*a LSE alone cannot be ruled out. LA 105 DMRB standard states air quality assessments must be undertaken for sites within 200m from the road. The SAC is located 255m north of Bowes Bypass. An assessment on the deposition levels up to 200m is to be undertaken for nitrogen and ammonia to determine whether the pattern of decline from deposition is sufficient to rule out LSE on North Pennine Moors SAC for this scheme. Ammonia data has not currently been included in the modelling.

\*b LSE alone cannot be ruled out. No direct habitat loss is required within the SAC boundary for any of the schemes. However, potential LSEs on the damage and subsequently reduction of habitat areas cannot be excluded at this stage, as a result of changes in air quality. Any LSE(s) as a result may subsequently impact on the reduction of species density due to impact on habitats which support them.



\*c LSE(s) alone can be ruled out, with no residual effect. No works are required within the SAC therefore there is no risk of introduction and/or spread of invasive non-native species within the SAC. The closest construction area of the Project is 255m south with no impact pathways e.g. functionally linked watercourses.\*d LSE(s) alone can be ruled out, with no residual effect. No construction or operational works will be undertaken within the SAC.

\*e LSE(s) alone can be ruled out, with no residual effect. No groundwater SPZ were identified within Bowes Bypass which is the closest scheme. One surface water WFD catchment was identified within Bowes Bypass; Greta from Sleightholme Beck to Eller Beck, however this is located south of the existing A66 and does not have any hydrological connectivity to the SAC.

Table F.6: North Pennine Moors SPA PINS matrix.

Name of European site and designation: North Pennine Moors SPA												
EU code: UK9006272												
Distance to NSIP: Within the ARN (closest point)												
European site features	Likely effects of NSIP											
Effect	Changes in air quality		Reduction of habitat area and reduction of species density (as a result of changes in air quality)		Disturbance to Annex I species		Introduction and/or spread of invasive non-native species		Land take / resource requirements / reduction of habitat		<u>Changes in surface and groundwater quality, quantity, and hydrogeology</u>	
Stage of Development	C	O	C	O	C	O	C	O	C	O	C	O
Annex I species (qualifying breeding birds)	✓*a	✓*a	✓*b	✓*b	x*c	x*c	X*d	X*d	X*e	X*e	X*f	X*f

\*a LSE(s) alone cannot be ruled out. The SPA is located over 200m from the road. However, the site is located adjacent to the ARN. Potential impacts may arise from an increase in air pollution locally as a result of construction activities and an increase in road traffic during operation. In addition, mitigation design is to be confirmed, therefore potential impacts on functionally linked habitat cannot currently be excluded.

\*b LSE(s) alone cannot be ruled out. No direct habitat loss is required within the SPA boundary for any of the schemes. However, LSEs associated with the reduction of habitat areas cannot be excluded at this stage as a result of changes in air quality within the ARN.

\*c LSE(s) alone can be ruled out with no residual impacts. Following breeding bird surveys in 2021, one single golden plover (possibly breeding) was recorded utilising suitable habitat of the SPA within proximity (500m) to Bowes Bypass. The numbers of recorded pairs is <1% of the SPA population. Less than 1% of the SPA population is defined as:

- 28 individual golden plover.
- One hen harrier.
- Two Merlin.
- One Peregrine.

Disturbance to a larger number of birds (i.e. >1% SPA population) would be considered a significant impact. No other scheme is located within proximity where potential disturbance impacts may occur as a result of construction or operation. The next closest scheme is Appleby to Brough (Warcop) which is approximately 900m south. Consequently, LSE as a result of disturbance to key species can be ruled out alone with no residual effects.

\*d LSE(s) alone with no residual effect can be ruled out. No works are required within the SPA therefore there is no risk of introduction and/or spread of invasive non-native species within the SPA. The closest construction area of the Project is 255m south with no impact pathways e.g. functionally linked watercourses.

\*e LSE(s) alone can be ruled out, with no residual effect. No construction or operational works will be undertaken within the SPA.

\*f LSE(s) alone can be ruled out, with no residual effect. No groundwater SPZ were identified within Bowes Bypass which is the closest scheme. One surface water WFD catchment was identified within Bowes Bypass; Greta from Sleightholme Beck to Eller Beck, however this is located south of the existing A66 and does not have any hydrological connectivity to the SPA.

## Appendix C European Designated Site Citations

# EC Directive 92/43 on the Conservation of Natural Habitats and of Wild Fauna and Flora

## Citation for Special Area of Conservation (SAC)

<b>Name:</b>	River Eden
<b>Unitary Authority/County:</b>	Cumbria
<b>SAC status:</b>	Designated on 1 April 2005
<b>Grid reference:</b>	NY).462237
<b>SAC EU code:</b>	UK0012643
<b>Area (ha):</b>	2463.23
<b>Component SSSI:</b>	River Eden and Tributaries SSSI

### Site description:

The Eden is an outstanding floristically rich, northern river on sandstone and hard limestone. The catchment includes headwaters running off the Yorkshire Dales, the North Pennines and the eastern fells of the Lake District District and the major standing water body of Ullswater. Streams flowing from limestone are calcareous, whilst those flowing off the Pennines and the Lake District fells are more acidic. The nutrient status gradually changes along the Eden's length as nutrient loadings naturally increase in the lower reaches.

The variations in the physical and chemical character of the Eden result in an unusual and exceptionally rich aquatic flora. Upstream from Appleby, it is typical of nutrient poor, rapid upland rivers, and bryophytes and algae are the main components. The middle reaches support an aquatic flora characteristic of sandstone and limestone rivers. Water-crowfoots dominate the faster flowing sections with river water-crowfoot *Ranunculus fluitans* and common water crow-foot *R. aquatilis*. Slower flowing stretches have associated species such as water-milfoils *Myriophyllum spp*, and various pondweeds including perfoliate pondweed *Potamogeton perfoliatus* and various-leaved pondweed *P. gramineus*. In the lower reaches the algae *Hildenbrandia rivularis*, *Nostoc parmelioide* and the lichen *Collema fluviatile* appear in the river. The tributaries support a variety of stream water-crowfoot *R. penicillatus ssp* in association with marginal plants such as lesser water parsnip *Berula erecta* and pink water-speedwell *Veronica anagallis-aquatica*.

Throughout the length of the River Eden stands of alder *Alnus glutinosa* and willow *Salix spp*. occur associated with backwaters and seasonally-flooded channels. The least-disturbed stands are on the tributary River Irthing, where they occur on the shingle and gravels of actively-moving channels. The ground flora includes patches of common nettle *Urtica dioica*, butterbur *Petasites hybridus* and hogweed *Heracleum sphondylium* that grade into hollows with greater tussock-sedge *Carex paniculata*.

Ullswater is a relatively deep lake with both oligotrophic (nutrient poor) and mesotrophic (moderate levels of nutrients) elements in its fauna and flora. The south-western part of the lake is surrounded by high fells of the Borrowdale Volcanics with enclosed farmland confined to the valley bottoms. The north-eastern arm is in gentler terrain with deeper soils and a greater extent of enclosed farmland. The lake flows into the River Eamont, one of the major tributaries of the River Eden. The lake has an extremely rich aquatic flora, including eight species of *Potamogeton*. These include various-leaved pondweed *P. gramineus*, red pondweed *P. alpinus* and long-stalked pondweed *P. praelongus*. The nationally scarce six-stamened waterwort *Elatine hexandra* is also found in some of the bays. Ullswater supports one of the few populations of schelly *Coregonus lavaretus* in the UK.

The fish fauna of the River Eden includes Atlantic salmon *Salmo salar*, bullhead *Cottus gobio*, and sea *Petromyzon marinus*, river *Lampetra fluviatilis* and brook lampreys *L. planeri*. The high ecological value of the river system and the fact that the salmon are able to use most of the catchment (even above Ullswater) mean that the Eden is able to maintain a large population of salmon. The highly erodible nature of the rock results in extensive areas of gravel and finer silt being deposited throughout the system, providing conditions for spawning and nursery areas. Brook and river lampreys are supported widely within the catchment and a large and healthy population of sea lamprey is supported in the middle to lower regions of the river. The presence of extensive areas of gravel and generally good quality water provides good habitat for bullheads, which are widely distributed throughout the system. The tributaries, in particular those flowing over limestone, hold abundant numbers of bullhead.

The River Eden system is important for otters *Lutra lutra* which favour areas of undisturbed riparian habitat and associated features. The headwaters comprise one of the most important remaining sites in Britain for the native white-clawed crayfish *Austropotamobius pallipes*, a species characteristic of calcareous streams with high water quality.

**Qualifying habitats:** The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following habitats listed in Annex I:

- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*). (Alder woodland on floodplains)\*
- Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoeto-Nanojuncetea*. (Clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels)
- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation. (Rivers with floating vegetation often dominated by water-crowfoot)

**Qualifying species:** The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following species listed in Annex II:

- Atlantic salmon *Salmo salar*
- Brook lamprey *Lampetra planeri*
- Bullhead *Cottus gobio*
- Otter *Lutra lutra*
- River lamprey *Lampetra fluviatilis*
- Sea lamprey *Petromyzon marinus*
- White-clawed (or Atlantic stream) crayfish *Austropotamobius pallipes*

Annex I priority habitats are denoted by an asterisk (\*).

This citation relates to a site entered in the Register of European Sites for Great Britain.

Register reference number: UK0012643

Date of registration: 14 June 2005

Signed: *Trevor Salmon*

On behalf of the Secretary of State for Environment, Food and Rural Affairs

# EC Directive 92/43 on the Conservation of Natural Habitats and of Wild Fauna and Flora

## Citation for Special Area of Conservation (SAC)

**Name:** Helbeck and Swindale Woods  
**Unitary Authority/County:** Cumbria  
**SAC status:** Designated on 1 April 2005  
**Grid reference:** NY784164  
**SAC EU code:** UK0030167  
**Area (ha):** 136.38  
**Component SSSI:** Helbeck Wood SSSI, Swindale Wood SSSI

### Site description:

Mixed woodlands have developed here over limestone, with crags, blocks and fine scree showing through in parts. In the Swindale section there is a steep-sided gorge with cliffs up to 30m high. The wood is predominantly ash *Fraxinus excelsior* with some elm *Ulmus* sp. and has a rich ground flora, including the helleborines *Cephalanthera longifolia*, *Epipactis atrorubens* and *E. helleborine*, and wood barley *Hordelymus europaeus*.

**Qualifying habitats:** The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following habitats listed in Annex I:

- *Tilio-Acerion* forests of slopes, screes and ravines. (Mixed woodland on base-rich soils associated with rocky slopes)\*

Annex I priority habitats are denoted by an asterisk (\*).

This citation relates to a site entered in the Register of European Sites for Great Britain.  
Register reference number: UK0030167  
Date of registration: 14 June 2005  
Signed: *Trew Salmon*  
On behalf of the Secretary of State for Environment, Food and Rural Affairs

# EC Directive 92/43 on the Conservation of Natural Habitats and of Wild Fauna and Flora

## Citation for Special Area of Conservation (SAC)

<b>Name:</b>	Moor House – Upper Teesdale
<b>Unitary Authority/County:</b>	Cumbria, Durham
<b>SAC status:</b>	Designated on 1 April 2005
<b>Grid reference:</b>	NY799358
<b>SAC EU code:</b>	UK0014774
<b>Area (ha):</b>	38795.99
<b>Component SSSI:</b>	Appleby Fells SSSI, Moor House and Cross Fell SSSI, Upper Teesdale SSSI

### Site description:

This large site in northern England consists of an upland complex on limestone and gritstone, with enclosed hay meadows and pastures as well as large tracts of mountain and moorland, with varied and extensive mires and flushes, acid and calcareous grasslands, and dwarf shrub heaths. Other valued habitats present include an upland water body, cliffs and scree of varying chemistry and the largest stands of juniper in England.

The site contains a calcium-rich nutrient-poor water body, Tarn Dub; an upland pool which is impermanent in nature and situated on the slopes of Cronkley Fell. A species-poor flora includes stoneworts *Chara* spp. in the deeper parts, as well as shoreweed *Littorella uniflora*, the aquatic moss *Fontinalis antipyretica* and tubular water-dropwort *Oenanthe fistulosa*.

Moor House – Upper Teesdale includes large swathes of blanket bog dominated by heather *Calluna vulgaris* or cottongrasses *Eriophorum* spp. A few areas display small-scale surface patterning, with distinct bog-moss *Sphagnum* hollows and intervening ridges. Spring-fed flush fens are widespread, often as part of complex vegetation mosaics. An exceptionally important rare plant flora is associated with the flush vegetation, including species such as bird's-eye primrose *Primula farinosa* and Scottish asphodel *Tofieldia pusilla*. On the highest and coldest parts of the site, fen grades into high altitude flush communities where there is surface seepage of base-rich water. The site is a southern outpost for many of the rarer arctic-alpine plants characteristic of this habitat type, with a unique relict mountain flora. Teesdale sandwort *Minuartia stricta* is restricted to Upper Teesdale, and other rare species found in this habitat type include false sedge *Kobresia simpliciuscula*, hair sedge *Carex capillaris* and Scottish asphodel. Tufa springs often occur at the junction between limestone and other, less permeable, rocks at a range of altitudes. The flora associated with them is exceptionally rich and includes rare northern species such as bird's-eye primrose and Scottish asphodel. Round-mouthed whorl snail *Vertigo genesii* lives amongst moss and low-growing sedges at a number of base-rich flushes. The snail is locally abundant at some flushes and dominates the molluscan fauna at many of them. Approximately ten of the flush areas support populations of marsh saxifrage *Saxifraga hirculus*. Individual populations can be large, with several localities supporting thriving populations of many thousands of plants.

Alpine and subalpine heaths occur on an extensive plateau. Characteristically there is an abundance of lichens, especially *Cladonia* species, but on this site there is also an unusual abundance of large clumps of the montane lichen *Cetraria islandica*. At the edge of the plateau bilberry *Vaccinium myrtillus* – *Cladonia* heath gives way below to a wind-clipped form of heather *Calluna vulgaris* – bilberry heath, which grades into taller heaths of the same

community lower down the slopes. These represent alpine to subalpine transitions.

The summit of Cross Fell has the best-developed and largest area of montane acid grasslands in England. The stiff sedge – woolly fringe-moss *Carex bigelowii* – *Racomitrium lanuginosum* moss-heath that covers the summit cap has a high cover of woolly fringe-moss. The site supports a large area of semi-natural dry grassland of the blue moor-grass – limestone bedstraw *Sesleria caerulea* – *Galium sternerii* grassland type. It contains a rich assemblage of relict arctic-alpine species, such as spring gentian *Gentiana verna* and alpine forget-me-not *Myosotis alpestris*. These calcareous grasslands show transitions to a wide range of other vegetation types, including blanket bogs, acid grassland, alkaline fens, mountain hay meadows, limestone pavements, cliffs and base-rich scree. This site also contains grasslands on lead-mine spoil where metal-tolerant species such as spring sandwort *Minuartia verna*, alpine penny-cress *Thlaspi caerulescens* and Pyrenean scurvygrass *Cochlearia pyrenaica* occur, along with lichens such as *Cladonia rangiformis*, *C. chlorophaea* and *Coelocaulon aculeatum*.

Upper Teesdale contains a series of separate fields within several north Pennine and Cumbrian valleys and exhibits a range of variation exhibited by mountain hay meadows in the UK. The grasslands included within the site show very limited effects of agricultural improvement as well as good structure and function. A wide range of rare and local meadow species are contained within the meadows, including globeflower *Trollius europaeus* the lady's-mantles *Alchemilla acutiloba*, *A. monticola* and *A. glomerulans*, and spignel *Meum athamanticum*. The small white orchid *Pseudorchis albida* is also a diagnostic rarity of this site.

The site contains one of the largest areas of base-rich scree in the UK, consisting of Carboniferous limestone. Communities are diverse and include holly-fern *Polystichum lonchitis*, rigid buckler-fern *Dryopteris submontana*, limestone fern *Gymnocarpium robertianum*, musk thistle *Carduus nutans* and mossy saxifrage *Saxifraga hypnoides*. Hairy stonecrop *Sedum villosum* occurs where scree is flushed by springs. Acidic scree occurs at both high and low altitudes, with diverse plant communities. Cross Fell is a southern outlier of high-altitude gritstone scree, with a flora including rare lichens and widespread montane vascular plants. Ferns including parsley fern *Cryptogramma crispa* and holly fern *Polystichum lonchitis* occur on extensive whin-sill screes at lower altitudes.

Base-rich crevice communities occur on limestone scars. The main community present is characterised by green spleenwort *Asplenium viride* and brittle bladder-fern *Cystopteris fragilis*. Less common species found in this community include hoary whitlowgrass *Draba incana*, alpine cinquefoil *Potentilla crantzii* and holly-fern. The site also supports crevice communities on acidic rocks. Characteristic species present include parsley fern, mountain male-fern *Dryopteris oreades* and northern buckler-fern *D. expansa*. Bearberry *Arctostaphylos uva-ursi* and starry saxifrage *Saxifraga stellaris* also occur. Tall herb communities occur on wet ledges in base-rich rocks, which are inaccessible to grazing livestock. Typical species that occur in these localities include great wood-rush *Luzula sylvatica*, wood crane's-bill *Geranium sylvaticum*, water avens *Geum rivale*, lady's-mantle *Alchemilla glabra*, wild angelica *Angelica sylvestris* and roseroot *Sedum rosea*.

This site has the second most extensive area of juniper *Juniperus communis* scrub in UK and the largest south of Scotland. The main area of juniper scrub grows on the igneous whin-sill, at moderately high altitude. In Upper Teesdale the juniper has developed mainly on heath. There are transitions to dwarf-shrub heath, acidic grasslands and whin-sill cliffs. Small patches of juniper scrub also occur on calcareous soils, including the sugar limestone grassland for which this site is famous. Palaeo-environmental evidence indicates that juniper scrub has been present continuously since the last glacial period.



**Qualifying habitats:** The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following habitats listed in Annex I:

- Alkaline fens
- Alpine and Boreal heaths. (Alpine and subalpine heaths)
- Alpine pioneer formations of the *Caricion bicoloris-atrofuscae*. (High-altitude plant communities associated with areas of water seepage)\*
- Blanket bogs\*
- Calaminarian grasslands of the *Violetalia calaminariae*. (Grasslands on soils rich in heavy metals)
- Calcareous and calcshist screes of the montane to alpine levels (*Thlaspietea rotundifolii*). (Base-rich scree)
- Calcareous rocky slopes with chasmophytic vegetation. (Plants in crevices in base-rich rocks)
- European dry heaths
- Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp. (Calcium-rich nutrient-poor lakes, lochs and pools)
- Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels. (Tall herb communities)
- *Juniperus communis* formations on heaths or calcareous grasslands. (Juniper on heaths or calcareous grasslands)
- Limestone pavements\*
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*). (Purple moor-grass meadows)
- Mountain hay meadows
- Petrifying springs with tufa formation (*Cratoneurion*). (Hard-water springs depositing lime)\*
- Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*). (Dry grasslands and scrublands on chalk or limestone)
- Siliceous alpine and boreal grasslands. (Montane acid grasslands)
- Siliceous rocky slopes with chasmophytic vegetation. (Plants in crevices on acid rocks)
- Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*). (Acidic scree)

**Qualifying species:** The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following species listed in Annex II:

- Marsh saxifrage *Saxifraga hirculus*
- Round-mouthed whorl snail *Vertigo genesii*

Annex I priority habitats are denoted by an asterisk (\*).

This citation relates to a site entered in the Register of European Sites for Great Britain.

Register reference number: UK0014774

Date of registration: 14 June 2005

Signed: *Trevor Salmon*

On behalf of the Secretary of State for Environment, Food and Rural Affairs

# EC Directive 92/43 on the Conservation of Natural Habitats and of Wild Fauna and Flora

## Citation for Special Area of Conservation (SAC)

<b>Name:</b>	North Pennine Moors
<b>Unitary Authority/County:</b>	Cumbria, Durham, Northumberland, North Yorkshire
<b>SAC status:</b>	Designated on 1 April 2005
<b>Grid reference:</b>	SE137749
<b>SAC EU code:</b>	UK0030033
<b>Area (ha):</b>	103109.42
<b>Component SSSI:</b>	Allendale Moors SSSI, Arkengarthdale, Gunnerside and Reeth Moors SSSI, Bollihope, Pikestone, Eggleston and Woodland Fells SSSI, Bowes Moor SSSI, Cotherstone Moor SSSI, East Nidderdale Moors (Flamstone Pin - High Ruckles) SSSI, Geltsdale and Glendue Fells SSSI, Hexhamshire Moors SSSI, Lovely Seat - Stainton Moor SSSI, Lune Forest SSSI, Mallerstang - Swaledale Head SSSI, Muggleswick, Stanhope, Edmundbyers Commons and Blanchland Moor SSSI, West Nidderdale, Barden and Blubberhouses Moors SSSI, Whitfield Moor, Plenmeller and Ashholme Common SSSI

### Site description:

The North Pennine Moors hold much of the upland heathland of northern England. The most abundant heath communities are heather – wavy hair-grass *Calluna vulgaris* – *Deschampsia flexuosa* heath and heather – bilberry *Vaccinium myrtillus* heath. At higher altitudes and to the wetter west and north of the site complex, the heaths grade into extensive areas of blanket bog. A significant proportion of the bog remains active with accumulating peat. The main type is heather – hare’s-tail cottongrass *Eriophorum vaginatum* blanket mire. The site contains other wetland habitats including wet heaths and calcium-rich fens, which support populations of yellow marsh saxifrage *Saxifraga hirculus*. Tufa-forming springs are localised in occurrence, but where the habitat does occur it is species-rich with abundant bryophytes, sedges and herbs including bird’s-eye primrose *Primula farinosa* and marsh valerian *Valeriana dioica*.

Acidic rock outcrops and screes are well-scattered across the North Pennine Moors and support a range of lichens and bryophytes, such as *Racomitrium lanuginosum*, and species like stiff sedge *Carex bigelowii* and fir clubmoss *Huperzia selago*. The site also contains base-rich rocks that support calcicole crevice vegetation communities.

Birk Gill Wood (within East Nidderdale SSSI) is an example of western acidic oak woodland in a sheltered river valley. It supports rich bryophyte and lichen communities under a canopy of sessile oak *Quercus petraea*, birch *Betula* sp. and rowan *Sorbus aucuparia*. The slopes are boulder-strewn, with mixtures of heather, bilberry and moss carpets in the ground flora. The North Pennine Moors includes one major stand of juniper *Juniperus communis* scrub in Swaledale as well as a number of small and isolated localities. The Swaledale site grades into heathland and bracken *Pteridium aquilinum* but there is a core area of juniper woodland with scattered rowan and birch.

In addition, the North Pennine Moors contain important areas of calcareous grassland, montane acid grassland and grasslands on soils rich in heavy metals, such as old lead mines.

**Qualifying habitats:** The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following habitats listed in Annex I:

- Alkaline fens. (Calcium-rich springwater-fed fens)
- Blanket bogs\*
- Calaminarian grasslands of the *Violetalia calaminariae*. (Grasslands on soils rich in heavy metals)
- Calcareous rocky slopes with chasmophytic vegetation. (Plants in crevices in base-rich rocks)
- European dry heaths
- *Juniperus communis* formations on heaths or calcareous grasslands. (Juniper on heaths or calcareous grasslands)
- Northern Atlantic wet heaths with *Erica tetralix*. (Wet heathland with cross-leaved heath)
- Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles. (Western acidic oak woodland)
- Petrifying springs with tufa formation (*Cratoneurion*). (Hard-water springs depositing lime)\*
- Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*). (Dry grasslands and scrublands on chalk or limestone)
- Siliceous alpine and boreal grasslands. (Montane acid grasslands)
- Siliceous rocky slopes with chasmophytic vegetation. (Plants in crevices on acid rocks)
- Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*). (Acidic scree)

**Qualifying species:** The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following species listed in Annex II:

- Marsh saxifrage *Saxifraga hirculus*

Annex I priority habitats are denoted by an asterisk (\*).

This citation relates to a site entered in the Register of European Sites for Great Britain.  
Register reference number: UK0030033  
Date of registration: 14 June 2005

Signed: *Trevor Salmon*

On behalf of the Secretary of State for Environment,  
Food and Rural Affairs

## EC Directive 79/409 on the Conservation of Wild Birds: Citation for Special Protection Area (SPA)

**Name:** North Pennine Moors

**Unitary Authority/County:** Cumbria, Durham, North Yorkshire and Northumberland.

**Consultation proposal:** The 17 Sites of Special Scientific Interest (SSSIs) listed below have been recommended as a Special Protection Area because of their European ornithological importance. The SPA supports breeding populations of three birds of prey and one wading bird in numbers of European significance. The boundary of the SPA includes all or parts of the following SSSIs: Allendale Moors SSSI; Appleby Fells SSSI; Arkengarthdale, Gunnerside and Reeth Moors SSSI; Bollihope, Pikestone, Eggleston and Woodland Fells SSSI; Bowes Moor SSSI; Cotherstone Moor SSSI; East Nidderdale Moors (Flamstone Pin - High Ruckles) SSSI; Geltsdale and Glendue Fells SSSI; Hexhamshire Moors SSSI; Lovely Seat - Stainton Moor SSSI; Lune Forest SSSI; Mallerstang - Swaledale Head SSSI; Moorhouse and Cross Fell SSSI; Muggleswick, Stanhope and Edmundbyers Commons and Blanchland Moor SSSI; Upper Teesdale SSSI; West Nidderdale, Barden and Blubberhouses Moors SSSI; Whitfield Moor, Plenmeller and Ashholme Commons SSSI. See SPA map for further detail of boundary.

**Site description:** The North Pennine Moors SPA includes parts of the Pennine moorland massif between the Tyne Gap (Hexham) and the Ribble-Aire corridor (Skipton). It encompasses extensive tracts of semi-natural moorland habitats including upland heath and blanket bog. The southern end of the North Pennine Moors SPA is within 10 km of the South Pennine Moors SPA, which supports a similar assemblage of upland breeding species. The North Pennine Moors includes Moor House SPA, a site that was subject to separate classification. The latter site has been subsumed within the North Pennine Moors SPA for reporting purposes.

**Size of SPA:** The SPA covers an area of 147,246.41 ha.

### Qualifying species:

The site qualifies under **article 4.1** of the Directive (79/409/EEC) as it is used regularly by 1% or more of the Great Britain populations of the following species listed in Annex I, in any season:

Annex I species	Count and Season	Period	% of GB population
Hen Harrier <i>Circus cyaneus</i>	11 pairs - breeding	Count as at 1993 and 1994	2.3%
Merlin <i>Falco columbarius</i>	136 pairs - breeding	Estimated population during 1993 and 1994	10.5%
Peregrine <i>Falco peregrinus</i>	15 pairs - breeding	Count as at 1991	1.3%
Golden Plover <i>Pluvialis apricaria</i>	1,400 pairs - breeding	Minimum based on densities recorded 1960 - 1993	6.2%

Hen Harrier figures from: Nattress, M. & Clement, P. 1996. *Summary of the analysis of English Nature licences issued in 1994 for Schedule 1 birds*. English Nature unpublished report, Peterborough.

Merlin figures from: Rebecca, G. & Bainbridge, I.P. 1998. The status of breeding merlin *Falco columbarius* in Britain in 1993-94. *Bird Study* **45**: 172-187.

Peregrine figures from: Crick, H.Q.P. & Ratcliffe, D.A. 1995. The peregrine *Falco peregrinus* breeding populations of the United Kingdom. *Bird Study* **42**: 1-19.

Golden Plover figures represent a minimum (assuming 1.0 pair/km<sup>2</sup>), with no full census available. Based on a range of recorded densities from 1.0 pair/km<sup>2</sup> within East Nidderdale Moors SSSI to 5.0-5.2 pairs/km<sup>2</sup> within Upper Teesdale SSSI. Density figures from:

Ratcliffe, D.A. 1976. Observations on the breeding of the Golden Plover in Britain. *Bird Study* **23**: 63-116.

Percival, S. & Smith, C. 1992. *Habitat requirements of Golden Plover: A pilot study*. English Nature Research Report No. 1, Peterborough.

Winder, F. 1992-94. *Yorkshire Dales National Park Committee Moorland Bird Surveys 1992-1994*. Unpublished.

**Non-qualifying species of interest**

Within the North Pennine Moors SPA, two pairs of Montagu's Harriers *Circus pygargus* are known to have bred, while numbers of breeding Short-eared Owls *Asio flammeus* have still to be ascertained. Both species are listed in Annex I.

**Status of SPA:**

- i) Moor House was classified as a Special Protection Area on 31 August 1982.
- ii) North Pennine Moors (including the subsumed site at Moor House) was classified as a Special Protection Area on 9 February 2001.