

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

**Scheme Number: TR010059**

## **6.28 Biodiversity No Net Loss Assessment for the Scheme (Tracked) for Change Request**

Rule 8(1)(c)

Planning Act 2008

Infrastructure Planning (Examination Procedure) Rules 2010

Infrastructure Planning

Planning Act 2008

**The Infrastructure Planning (Examination  
Procedure) Rules 2010**

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

Development Consent Order 20[xx]

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**Biodiversity No Net Loss Assessment for the Scheme  
for Change Request**

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# EXECUTIVE SUMMARY

The A1 in Northumberland: Morpeth to Ellingham, hereafter referred to as 'the Scheme', comprises two sections known as Part A: Morpeth to Felton (Part A) and Part B: Alnwick to Ellingham (Part B). The Scheme aims to increase capacity by widening the existing single carriageway to a dual carriageway along an approximately 12.6 km section of Part A (approximately 6.5 km of online widening and approximately 6.1 km of new offline highway) and along an approximately 8 km section of Part B. Most of the work would take place within the highway boundary, however, some additional land would be required alongside the A1 to enable additional lanes to be constructed. All construction works are contained within the Order Limits, which is shown on the figures in **Appendix B**.

Part A and Part B were subject to individual biodiversity no net loss assessments (see **Appendix 9.20: Biodiversity No Net Loss Assessment Part A [APP-246]** and **Appendix 9.11: Biodiversity No Net Loss Assessment Report Part B [APP-309]**) submitted as part of the Development Consent Order (DCO) application. These assessments were undertaken in accordance with industry recognised best practice guidance and using the Defra 2012 Metric, which represented the current metric at the time of assessment.

[A biodiversity not net loss assessment for the Scheme as a whole was prepared and issued at Deadline 2 of the examination \[REP2-009\]](#). The biodiversity no net loss assessment presented within this report has been prepared [in response to proposed changes to the Scheme](#), as detailed within the [Summary of Proposed Changes to Application \[AS-017 and 018\]](#) issued to the ExA in December 2020. The proposed changes result in additional woodland loss within the Coquet River Felton Park Local Wildlife Site (LWS) as a result of the Stabilisation Works, as outlined in [Section 8.8 of ES Addendum: Stabilisation Works for Change Request](#), as issued at Deadline 4 of the examination. The information presented within this report assumes that the proposed changes are accepted by the ExA and, if accepted, this report would assess the Scheme as a whole and supersedes the individual assessments submitted at the DCO application previous iteration issued at [Deadline 2 of the examination \[REP2-009\]](#). As for the previous iteration issued at [Deadline 2 of the examination \[REP2-009\]](#), the assessment presented has been undertaken in accordance with the same recognised best practice guidance but uses Natural England's Biodiversity Metric 2.0. This metric supersedes and replaces the former Defra biodiversity metric and represents the current metric at the time of assessment. As an assessment utilising the updated metric, the quantitative results of this assessment should not be compared to the previous assessments undertaken for Part A and Part B separately.

As a Nationally Significant Infrastructure Project (NSIP), there is no legal requirement for the Scheme to achieve no net loss or net gains in biodiversity. However, the Scheme seeks to support the aim of no net loss of biodiversity, as detailed in **paragraph 2.2.3, Chapter 2: The Scheme** [of the ES \[APP-037\]](#).

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The Scheme has adopted the Biodiversity Metric 2.0 and the biodiversity no net loss assessment presented within this report has been undertaken in accordance with the Biodiversity Net Gain (BNG) process. WSP was commissioned by Highways England to carry out a biodiversity no net loss assessment of the Scheme and produce a report which aims to:

- a. Establish the total number of Area-based Habitat Biodiversity Units (AHBU), Hedgerow Biodiversity Units (HBU) and River Biodiversity Units (RBU) which would be lost due to construction of the Scheme;
- b. Establish the total number of AHBU, HBU and RBU which would be retained, reinstated or created under the Scheme;
- c. Determine whether the Scheme would result in a net loss, no net loss or a net gain for biodiversity.

An overview of the methods employed is provided in **Section 2** and the methodology is detailed in full in **Appendix D** of this report. **Table 1** details the results of the assessment calculations.

**Table 1 – Summary of Assessment Calculation Results**

Biodiversity Units	Baseline Value	Post-Development Value	Change	Outcome
AHBU	896.19	960.83	+64.64	Net Gain (7.21%)
HBU	338.09	309.47	-28.62	Net Loss (8.47%)
RBU	46.51	41.07	-5.44	Net Loss (11.69%)

The Scheme would result in a total loss of 0.9668 ha of irreplaceable ancient woodland habitat. This loss of irreplaceable habitat is from the River Coquet and Coquet Valley Woodlands Site of Special Scientific Interest (SSSI) (designated ancient woodland) and Coquet River Felton Park Local Wildlife Site (LWS) (not designated but treated as ancient woodland within the assessment, as detailed in **paragraph 9.10.3, Chapter 9: Biodiversity Part A of the ES [APP-048]**). An **Ancient Woodland Strategy (Appendix 9.1 Part A [APP-247] (revised Ancient Woodland Strategy for Change Request is submitted at Deadline 4 of the examination))** has been developed in consultation with Natural England to address the loss of ancient woodland habitat as a result of Part A. The areas associated with this loss have been excluded from the assessment calculations in accordance with best practice

guidelines. It is important to note that biodiversity net loss (or net gain) cannot be achieved for the Scheme as a whole as there is loss of an irreplaceable habitat.

Overall, the Scheme is categorised as achieving a biodiversity net loss due to:

- 1) A 11.69% loss of RBU;
- 2) A 8.47% loss of HBU;
- 3) Loss of irreplaceable ancient woodland habitats within the River Coquet and Coquet Valley Woodlands SSSI and the Coquet River Felton Park LWS.

Whilst no net loss cannot be claimed for the Scheme as a whole due to the loss of irreplaceable habitat (ancient woodland) and medium distinctiveness woodland and scrub, the assessment calculation does identify a net gain in area-based priority woodland and wetland habitats.

The proposed changes to the **Scheme** that have informed this updated assessment relate to the loss of woodland within the Coquet River Felton Park LWS, treated as ancient woodland for the purpose of mitigation and compensation. As detailed above, the areas of habitat loss and creation associated with ancient woodland have been excluded from the assessment calculations in accordance with best practice guidelines. As such, the summary of assessment presented in **Table 1** and the conclusions drawn remains unchanged from the previous iteration of this report [REP2-009].

It should be noted that this report looks at the biodiversity no net loss assessment results only and does not provide any recommendations to enable a reduction in biodiversity losses and to maximise biodiversity gains.

It is important to recognise that the quantification of biodiversity units is one of a number of factors to be considered when assessing the impact of the Scheme on biodiversity. Another component is the collation of qualitative evidence to review adherence to the BNG Good Practice Principles (refer to **Section 3.6**).

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# 1 INTRODUCTION

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## 1.1 PROJECT CONTEXT

- 1.1.1. An application for a Development Consent Order (DCO) was made by Highways England (Applicant) on 07 July 2020 to the Secretary of State for Transport via the Planning Inspectorate (Inspectorate) under the Planning Act 2008 (2008 Act). If made, the DCO would grant consent for the A1 in Northumberland: Morpeth to Ellingham, hereafter referred to as 'the Scheme', which comprises two sections known as Part A: Morpeth to Felton (Part A) and Part B: Alnwick to Ellingham (Part B). The Scheme aims to increase capacity by widening the existing single carriageway to a dual carriageway along an approximately 12.6 km section of Part A (approximately 6.5 km of online widening and approximately 6.1 km of new offline highway) and along an approximately 8 km section of Part B, both of which are in a predominantly rural area. Most of the work would take place within the existing highway boundary, however, some additional land would be required alongside the A1 at certain points to enable the additional lanes to be constructed. All construction works are contained within the Order Limits for the Scheme, which is illustrated on the figures in **Appendix B**.
- 1.1.2. Part A and Part B were previously subject to individual biodiversity no net loss assessments (see **Appendix 9.20: Biodiversity No Net Loss Assessment Part A [APP-246]** and **Appendix 9.11: Biodiversity No Net Loss Assessment Report Part B [APP-309]**) submitted as part of the DCO application. These assessments were undertaken in accordance with industry recognised best practice guidance and using the Defra 2012 Metric, which represented the current metric at the time of assessment.
- 1.1.3. [A biodiversity not net loss assessment for the Scheme as a whole was prepared and issued at Deadline 2 \[REP2-009\] of the examination.](#) The biodiversity no net loss assessment detailed within this report has been prepared [in response to proposed changes to the Scheme, as detailed within the Summary of Proposed Changes to Application \[AS-017 and 018\] issued to the ExA in December 2020. The proposed changes result in additional woodland loss within the Coquet River Felton Park Local Wildlife Site \(LWS\). The information presented within this report assumes that the proposed changes are accepted by the ExA and, if accepted, this report would supersede the previous iteration issued at Deadline 2 \[REP2-009\] of the examination to assess the Scheme as a whole and supersedes the individual assessments submitted at the DCO application. As for the previous iteration issued at Deadline 2 of the examination \[REP2-009\],](#) the assessment presented has been undertaken in accordance with the same recognised best practice guidance but using Natural England's Biodiversity Metric 2.0. This metric supersedes and replaces the former Defra biodiversity metric and represents the current metric at the time of assessment.
- 1.1.4. As an assessment utilising the updated metric, the quantitative results of the assessment presented within this report should not be compared to the previous assessments undertaken for Part A and Part B separately.

- 1.1.5. Biodiversity Metric 2.0 has been used to undertake a baseline and preliminary post-development biodiversity unit and linear unit calculation to quantify the biodiversity which would be impacted due to the Scheme. This assessment will provide an indication of the biodiversity which would be replaced through onsite compensation once the Scheme has been built. This information will be used to indicate whether the Scheme is likely to result in a net loss, no net loss or net gain for biodiversity.
- 1.1.6. The biodiversity assessment provides a quantitative benchmark to inform avoidance, mitigation and compensation measures designed to mitigate for habitat loss due to the Scheme. This includes informing habitat restoration and reinstatement proposals as well as new habitat creation.
- 1.1.7. As a Nationally Significant Infrastructure Project (NSIP), there is no legal requirement for the Scheme to achieve no net loss or net gains in biodiversity. However, the Scheme seeks to support the aim of no net loss of biodiversity, as detailed in **paragraph 2.2.3, Chapter 2: The Scheme of the ES [APP-037]**. As detailed in the Applicant's response to BIO.1.1 of the Examining Authorities first written questions [**REP1-032**], the aim of working towards no net loss of biodiversity relates to the Applicant's own internal requirements (as detailed within Action 3.2, Outcome 3 of the Highways England Biodiversity Action Plan) and national and local policies and strategies, such as the Road Improvement Strategy 2 (RIS2) and the NPS NN.
- 1.1.8. The biodiversity no net loss assessment (hereafter referred to as 'the assessment') detailed within this report has been undertaken in accordance with the Biodiversity Net Gain (BNG) Process, detailed below.

## 1.2 BIODIVERSITY NET GAIN PROCESS

- 1.2.1. The BNG process follows the mitigation hierarchy, which sets out that everything possible must be done to first avoid, secondly minimise and thirdly restore / rehabilitate losses of biodiversity on site. Only as a last resort, residual losses are compensated for using biodiversity offsets, which are distinguished from other forms of mitigation in that they are off the development site and require measurable conservation outcomes.
- 1.2.2. To generate long-term gains for nature, the good practice principles established by the Business and Biodiversity Offset Programme (BBOP) can be used. These principles have been established in the context of UK development by the Construction Industry Research and Information Association (CIRIA), the Chartered Institute for Ecology and Environmental Management (CIEEM) and the Institute of Environmental Management and Assessment (IEMA) (2016) (refer to **Appendix A**).

## 1.3 SCOPE OF REPORT

- 1.3.1. This report contains the Biodiversity No Net Loss assessment using the Biodiversity Metric 2.0 and:

- a. Establishes the total number of Area-Based Habitat Biodiversity Units (AHBU), Hedgerow Biodiversity Units (HBU) and River Biodiversity Units (RBU) which would be lost due to construction of the Scheme;
  - b. Establishes the total number of AHBU, HBU and RBU which would be retained, reinstated or created under the Scheme;
  - c. Determines whether the Scheme would result in a net loss, no net loss or a net gain for biodiversity.
- 1.3.2. This report provides details of the methodology and results of the biodiversity no net loss assessment for the Scheme. It should be noted that this report looks at the biodiversity no net loss assessment results only and does not provide any recommendations to enable a reduction in biodiversity losses and to maximise biodiversity gains.
- 1.3.3. This Biodiversity No Net Loss assessment report does not cover requirements of the Scheme arising from potential impacts on protected species and designated sites. This information is covered within **Chapter 9: Biodiversity Part A** [of the ES \[APP-048\]](#) and **Chapter 9: Biodiversity Part B** [of the ES \[APP-049\]](#)

## 1.4 RELEVANT LEGALISATION AND POLICY

- 1.4.1. This appraisal has been compiled with reference to the following relevant nature conservation, legalisation, planning policy and the UK Biodiversity Framework (JNCC, 2012) from which the protection of sites, habitats and species is derived in England:
- a. The Natural Environment and Rural Communities (NERC) Act (HMSO, 2006);
  - b. National Policy Statement for National Networks (NPSNN) (Department for Transport, 2014);
  - c. National Planning Policy Framework (NPPF) (MHCLG, 2019);
  - d. UK Government's 25 Year Environmental Plan (DEFRA, 2018);
  - e. Biodiversity 2020: A Strategy for England's Wildlife and Ecosystem Services (DEFRA, 2011);
  - f. Northumberland Biodiversity Action Plan (Northumberland Wildlife Trust, 2008);
  - g. Northumberland Local Plan (Northumberland County Council, 2019); and
  - h. Northumberland Local Plan Core Strategy (Northumberland County Council, 2017).
- 1.4.2. Details of the legislation, policy and strategic documents relevant to the Scheme are provided in **Appendix C** and are listed in the subsequent sections.



## 2 METHODOLOGY

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### 2.1 OVERVIEW

- 2.1.1. A summary of the BNG assessment methodology and details of project-specific data sources, assessment limitations, and assumptions are provided in the following methodology section. The full BNG assessment methodology is detailed in **Appendix D**.

### 2.2 DATA SOURCES

- 2.2.1. This assessment is informed by:

- a. A Phase 1 Habitat survey undertaken in 2016 and 2018 for Part A, and in 2019 for Part B following best practice guidelines (Joint Nature Conservation Committee (JNCC, 2010)). The survey provided a baseline habitat database which details the JNCC habitat types present on site, their area (in hectares), length (in kilometres) and their geographic distribution (**Appendix B**, baseline figures).
- b. **Annex A Approach to the Assessment of Losses and Gains for Watercourses** [[REP2-010](#)](~~document reference 6.29; issued at Deadline 2~~), as detailed in **paragraph 2.5.2**.
- c. A habitat condition assessment (HCA) of the habitats identified. HCA was completed in 2016 and 2018 for Part A, and in 2019 for Part B. Where condition assessment data was not collected in the field, assumptions were applied (see **Section 2.5** for list of assumptions).
- d. A detailed post-development landscape mitigation plan, as illustrated in **Figure 7: Landscape Mitigation Masterplan Part A** [[APP-095REP3-008](#)] ([revised Landscape Mitigation Masterplan for Change Request is submitted at Deadline 4 of the examination](#)) and **Figure 7.10: Landscape Mitigation Masterplan Part B** [[APP-144](#)] ([revised Landscape Mitigation Plan for Change Request is submitted at Deadline 4 of the examination](#))] (**Appendix B**, post-development figures).
- e. Publicly available Open Source Natural England datasets for HPI, ancient woodland (classed as irreplaceable habitat) and statutory designated sites for nature conservation.
- f. Areas of temporary and permanent loss of land within the Order Limits in accordance with **paragraph 2.5.2**. This land represents the limit within which the contractor shall be able to operate and clear as required for construction operations.

### 2.3 BIODIVERSITY NO NET LOSS ASSESSMENT

- 2.3.1. This assessment uses the following industry recognised best practice methodologies:

- a. **CIEEM, CIRIA & IEMA** (2016). Biodiversity Net Gain: Good Practice Principles for Development (**Appendix A**);
- b. **CIEEM, CIRIA & IEMA** (2019). Biodiversity Net Gain: Good Practice Principles for Development. A Practical Guide;
- c. **Natural England** (2019). The Biodiversity Metric 2.0 (December 2019);
- d. **Natural England** (2010). Higher Stewardship, Farm Environment Plan (FEP) Manual, 3<sup>rd</sup> Edition;
- e. **BRE** (2018). GN36 – Building Research Establishment Environmental Assessment Method (BREEAM), Civil Engineering Environmental Quality Assessment and Award

Scheme (CEEQUAL) and Home Quality Mark (HQM) Ecology Calculation Methodology – Route 2.

- 2.3.2. Applying these standardised methods results in the calculation of a baseline biodiversity value; a post-development value; and a net change in biodiversity value associated with the Scheme.
- 2.3.3. The quantitative outcomes of the BNG assessment calculations can then be categorised as achieving one of the outcomes listed in **Table 2-1**, as described in GN36 (BRE, 2018). The quantitative outcome awarded to the Scheme will depend on the AHBU or HBU value with the lowest net percentage change value.

**Table 2-1 – Quantitative Outcomes of BNG Calculations**

Post-development biodiversity value	Predicted Scheme-wide outcome
Less than 95% of the baseline value	Net loss (NL) of biodiversity
95% - 104% of baseline value	No net loss (NNL) of biodiversity
105% or more of baseline value	Biodiversity net gain (BNG)

- 2.3.4. The quantitative outcomes of the calculations are one component of the BNG assessment and associated Good Practice Principles (**Appendix A**). A BNG assessment requires the collation of qualitative evidence on the application of the mitigation hierarchy, stakeholder engagement and post-development habitat management. Collectively, these quantitative outcomes and qualitative evidence are used to inform the outcomes of the Scheme-wide BNG assessment.

## 2.4 OVERVIEW OF METHODS

- 2.4.1. The assessment for the Scheme comprised the following steps:
  - 1. Survey baseline habitats and their condition.** A Phase 1 Habitat Survey and HCA of the habitats identified was completed in 2016 and 2018 for Part A and 2019 for Part B. Where condition assessment data was not collected in the field, assumptions were applied (see **Section 2.5** for list of assumptions).
  - 2. Identify irreplaceable habitat and statutory designated sites.** Following Defra guidance, irreplaceable habitats and statutory designated sites within the Order Limits were identified and excluded from the biodiversity unit calculations.
  - 3. Calculate baseline biodiversity units using the biodiversity metric.** This calculation includes all habitats (minus irreplaceable habitats) within the Order Limits prior to development and is informed by Phase 1 Habitat data and results of the condition assessment.



4. **Calculate post-development biodiversity units using the biodiversity metric.** This calculation accounts for all of the proposed habitats (including retained habitats and habitats lost or created as a result of the development) within the Order Limits post-development. The calculation excludes irreplaceable habitats and statutory designated sites. The calculation is informed by **Figure 7.8: Landscape Mitigation Masterplan Part A [REP3-008]** ([revised Landscape Mitigation Masterplan for Change Request is submitted at Deadline 4 of the examination](#)) and **Figure 7.10: Landscape Mitigation Plan Part B [APP-144]** ([revised Landscape Mitigation Plan for Change Request is submitted at Deadline 4 of the examination](#)).
5. **Produce a 'Biodiversity Assessment' report.** The report sets out the BNG process in the context of the Scheme and includes the method and results of initial baseline and post-development biodiversity unit calculations.

2.4.2. The results of the Biodiversity No Net Loss Assessment, and subsequent recommendations are included within this report.

#### IRREPLACEABLE HABITATS AND STATUTORY DESIGNATED SITES

- 2.4.3. The Order Limits includes approximately 0.9668~~8~~ ha of ancient woodland, which is considered to be an irreplaceable habitat. This loss of irreplaceable habitat is from the River Coquet and Coquet Valley Woodlands Site of Special Scientific Interest (SSSI) (designated ancient woodland) and Coquet River Felton Park Local Wildlife Site (not designated but treated as ancient woodland within the assessment, as detailed in **paragraph 9.10.3, Chapter 9: Biodiversity Part A of the ES [APP-048]**). The River Coquet and Coquet Valley Woodlands SSSI is also a statutory designated site.
- 2.4.4. Impacts on ancient woodland and statutory designated sites and measures to address the loss of these habitats are discussed in **Chapter 9: Biodiversity Part A of the ES [APP-048]**. There are no impacts/losses of ancient woodland and statutory designated sites associated with Part B.
- 2.4.5. Following Defra guidance, irreplaceable habitats have been excluded from this biodiversity unit calculation (see Principle 2 of CIRIA, CIEEM & IEMA Good Practice Principles). It is important to note that biodiversity no net loss (or net gain) cannot be achieved for the Scheme as a whole if there is loss of an irreplaceable habitat.
- 2.4.6. Defra guidance dictates that any compensation offered to address impacts on irreplaceable habitats should be agreed directly with the statutory nature conservation agency (in this case Natural England (NE)). An **Ancient Woodland Strategy (Appendix 9.21 Part A [APP-247]** ([revised Ancient Woodland Strategy for Change Request is submitted at Deadline 4 of the examination](#))) has been developed in consultation with Natural England to address the loss of ancient woodland habitat as a result of Part A.
- 2.4.7. Further detail of the assessment methodology can be found within **Appendix D**.

## 2.5 ASSUMPTIONS AND LIMITATIONS

- 2.5.1. Assumptions associated with the Phase 1 Habitat survey are described in **Appendix 9.1 Extended Phase 1 Habitat Survey Report Part A [APP-227]** and **Appendix 9.1: Habitats and Designated Sites Part B [APP-298]** and are therefore not discussed further within this report.
- 2.5.2. In the absence of a plan identifying permanent and temporary habitat loss (which is subject to detailed design), the assessment used the indicative extent of land to be permanently acquired and the Order Limits (shown on **Figure 4.1 Boundary Plan Part A [APP-073]** and **Figure 4.2: Boundary Plan Part B [APP-074]**) as a proxy to inform the assessment and ensure a worst-case scenario was assessed. For the purposes of the assessment, permanent habitat loss was assumed to occur for all habitats within the permanent land acquisition boundary and temporary habitat loss was assumed to occur for the remainder of habitats within the Order Limits. The only exception is where habitats were clearly described as retained on **Figure 7.8: Landscape Mitigation Masterplan Part A [REP3-008]** ([revised Landscape Mitigation Masterplan for Change Request is submitted at Deadline 4 of the examination](#)) and **Figure 7.10: Landscape Mitigation Plan Part B [APP-144]** ([revised Landscape Mitigation Plan for Change Request is submitted at Deadline 4 of the examination](#)). A refined approach for identifying permanent and temporary loss for RBU (running water/watercourses) is presented in **Appendix A Approach to the Assessment of Losses and Gains for Watercourses [REP2-010]** (~~document reference 6.29; issued at Deadline 2~~) and should be read alongside this report.
- 2.5.3. The AHBU, HBU and RBU calculations do not account for indirect impacts to habitats outside of the Order Limits as a result of the proposed works. An assessment of indirect impacts is detailed within the biodiversity assessment presented in **Chapter 9: Biodiversity Part A of the ES [APP-048]** and **Chapter 9: Biodiversity Part B of the ES [APP-049]**

## 2.6 BASELINE BIODIVERSITY

- 2.6.1. JNCC Phase 1 Habitat types determined in the habitat survey were translated to UK Habitat Classification (UKHab) habitat types using the habitat translation information provided in the Biodiversity Metric 2.0 to allow for use in the calculation tool. **Table 2-2** shows the corresponding JNCC Phase 1 Habitat and UKHab types. Retained habitats in the post-development landscape design maintained the UKHab type assigned to the baseline.

**Table 2-2 – Corresponding JNCC Phase 1 Habitat and UK Habitat Classifications**

JNCC Phase 1 Habitat Type	UK Habitat Classification
A1.1.1 Broadleaved woodland – semi-natural	Woodland and forest – Lowland mixed deciduous woodland
A1.1.2 Broadleaved woodland – plantation	Woodland and forest – Other woodland; broadleaved

<b>JNCC Phase 1 Habitat Type</b>	<b>UK Habitat Classification</b>
A1.2.2 Coniferous woodland – plantation	Woodland and forest – Other coniferous woodland
A1.3.1 Mixed woodland – semi-natural	Woodland and forest – Other woodland; mixed
A1.3.2 Mixed woodland – plantation	Woodland and forest – Other woodland; mixed
A2.1 Scrub – dense / continuous	Heathland and shrub – Mixed scrub
A2.2 Scrub – scattered	Heathland and shrub – Mixed scrub
A3.1 Parkland / scattered trees - broadleaved	Woodland and forest – Other woodland; Young trees planted
B2.2 Neutral grassland - semi-improved	Grassland – Other neutral grassland
B4 Improved grassland	Grassland – Modified grassland
B5 Marsh / marshy grassland	Grassland – Modified grassland
B6 Poor semi-improved grassland	Grassland – Modified grassland
C3.1 Other tall herb and fern – ruderal	Sparsely vegetated land – Ruderal/ephemeral
G1 Standing water	Lakes – Temporary lakes, ponds and pools
G2 Running water	Rivers and streams
Hardstanding	Urban – Developed land; sealed surface
J1.1 Cultivated / disturbed land – arable	Cropland – Cereal crops
J1.2 Cultivated / disturbed land – amenity grassland	Grassland – Modified grassland
J1.3 Cultivated / disturbed land – introduced shrub	Sparsely vegetated land – Ruderal/ephemeral
J1.4 Cultivated / disturbed land – ephemeral/short perennial	Urban – Vegetated garden
J3.6 Built-up areas - Buildings	Urban – Developed land; sealed surface
J4 Bare ground	Urban – Vacant/derelict land/bare ground

JNCC Phase 1 Habitat Type	UK Habitat Classification
J5 Other habitat	Urban – Vacant/derelict land/bare ground
J2.1.1 Hedgerow – native species rich (intact)	Native species-rich hedgerow
J2.1.2 Hedgerow – native species poor (intact)	Native hedgerow
J2.2.1 Hedgerow – native species rich (defunct)	Native hedgerow
J2.2.2 Hedgerow – native species poor (defunct)	Native hedgerow
J2.3.1 Hedgerow with trees – native species rich (intact)	Native species-rich hedgerow with trees
J2.3.2 Hedgerow with trees – native species poor (intact)	Native hedgerow with trees

## CONDITION

- 2.6.2. HCA was not available for all habitats identified. Where condition data was not collected in the field, the following assumptions were applied:
- a. All Low distinctiveness habitats were allocated a condition score of Poor.
  - b. All Medium and High Distinctiveness habitats were allocated a condition score of Moderate.
  - c. All hedgerows were assumed to be in Good condition. The exception to this rule were defunct hedgerows. Defunct hedgerows were considered to be in Poor condition as they fail one of the FEP condition assessment criteria.
- 2.6.3. The Biodiversity Metric 2.0 proposes a new condition assessment methodology. This new methodology has been released as a beta version which has not been widely tested. However, field surveys during which condition assessment data was collected were undertaken before the release of Biodiversity Metric 2.0. Therefore, this assessment uses the system presented in Natural England's Farm Environment Plan (FEP) manual (Natural England, 2010) which was the available condition assessment methodology at the time of the surveys. The FEP is compatible with the Biodiversity Metric 2.0.

## CONNECTIVITY

- 2.6.4. Habitat connectivity values were assigned according to the Biodiversity Metric 2.0 default assumptions of medium (1.1 multiplier score) connectivity for high and very high distinctiveness habitats and low (1 multiplier score) connectivity for all other habitats.

## STRATEGIC SIGNIFICANCE

2.6.5. Strategic significance of habitats was assigned with consideration to local policies including the Northumberland Local Plan, Core Strategy and Northumberland Biodiversity Action Plan (Northumberland County Council, 2017, 2019, Northumberland Wildlife Trust, 2008). Part A of the Scheme is partially located within the River Coquet and Coquet Valley Woodlands SSSI. Numerous habitats within the Northumberland Biodiversity Action Plan are also encountered within the Order Limits including:

- a. Rivers and streams
- b. Brownfield land
- c. Built environment
- d. Fen, marsh and swamp
- e. Gardens and allotments
- f. Lowland heathland
- g. Lowland meadows and pastures
- h. Native woodland
- i. Ponds, lakes and reservoirs
- j. Recreational and amenity spaces
- k. Reedbeds
- l. Transport corridors
- m. Trees and Hedges

2.6.6. Habitats listed in the Northumberland Biodiversity Action Plan were determined to be 'Location ecologically desirable but not in local strategy' (medium; 1.10 multiplier score).

2.6.7. Habitats not listed in the Northumberland Biodiversity Action Plan were determined to be 'Area/compensation not in local strategy/no local strategy' (low; 1 multiplier score).

## 2.7 POST-DEVELOPMENT BIODIVERSITY

### CREATED HABITATS

2.7.1. The habitat types within the Landscape Mitigation Masterplans (**Figure 7.8: Landscape Mitigation Masterplan Part A [REP3-008] (revised Landscape Mitigation Masterplan for Change Request is submitted at Deadline 4 of the examination)** and **Figure 7.10: Landscape Mitigation Plan Part B [APP-144] (revised Landscape Mitigation Plan for Change Request is submitted at Deadline 4 of the examination)**) were translated into the following UKHab classifications. **Table 2-3** shows the corresponding landscape categories and UK Habitat Classification types.

**Table 2-3 – Corresponding Landscape Categories and UK Habitat Classifications**

Landscape Category	UK Habitat Classification
LE1.1 Amenity Grassland	Grassland – modified grassland
L1.3 Species-rich grassland	Grassland – other neutral grassland

<b>Landscape Category</b>	<b>UK Habitat Classification</b>
LE2.1 Woodland planting	Woodland and forest – lowland mixed deciduous woodland
LE2.2 Woodland planting	Woodland and forest – lowland mixed deciduous woodland
LE2.6 Shrubs	Heathland and shrub – mixed scrub
LE6.1 Swale / Marginal Planting / Wetland	Wetland – reedbeds
Agriculture	Cropland – cereal crops
Proposed Conservation Grassland	Grassland – other neutral grassland
Grass verge / central reservation	Grassland – modified grassland

2.7.2. It is assumed that the newly created habitats will reach the following conditions:

- a.** Grassland – modified grassland – Poor
- b.** Grassland – other neutral grassland – Good
- c.** Woodland and forest – lowland mixed deciduous woodland – Good
- d.** Heathland and shrub – mixed scrub – Good
- e.** Wetland – reedbeds – Good
- f.** River and streams - Moderate

2.7.3. Where habitat is temporarily lost during the construction period, it is assumed that it would be reinstated back to the original habitat type and condition on completion of construction.

## 3 RESULTS OF BASELINE AND POST-DEVELOPMENT BIODIVERSITY CALCULATIONS

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### 3.1 OVERVIEW

- 3.1.1. A summary of the quantitative BNG assessment calculation outcomes (**Appendix E**) is presented in this results section.

### 3.2 IRREPLACEABLE HABITATS

- 3.2.1. Development of the Scheme would result in a loss of 0.9668~~8~~ ha of ancient woodland at the northern end of Part A along the banks of the River Coquet. This loss of irreplaceable habitat is from the River Coquet and Coquet Valley Woodlands SSSI (designated ancient woodland) and Coquet River Felton Park LWS (not designated but treated as ancient woodland within the assessment, as detailed in **paragraph 9.10.3, Chapter 9: Biodiversity Part A of the ES [APP-048]**). These habitat areas have been excluded from the baseline BU calculations. There are no other irreplaceable habitats on Site.
- 3.2.2. An **Ancient Woodland Strategy (Appendix 9.21 Part A [APP-247] (revised Ancient Woodland Strategy for Change Request is submitted at Deadline 4 of the examination))** has been developed in consultation with Natural England to address the loss of ancient woodland habitat and impacts to retained woodland as a result of Part A. An overview of the Strategy is listed below:
- a. Avoidance measures, including siting of the Part A route alignment to reduce land take and increase retention of ancient woodland;
  - b. Woodland Creation Area identified to the southwest of the River Coquet Bridge;
  - c. Salvage of woodland soils and flora;
  - d. Establishment of 11.268~~16~~ ha of woodland and the replanting of an area of 0.28 ha, using native species of local provenance; and
  - e. Sensitive sapling and seed collection from wider ancient woodland as stock plants for the woodland planting area.

### 3.3 BASELINE BIODIVERSITY

- 3.3.1. The biodiversity baseline for the Scheme is based on habitat types, areas and lengths, their distinctiveness and condition scores, and the number of AHBU, HBU and RBU each type of habitat generates (**Appendix E**). The baseline biodiversity map showing the Phase 1 Habitats is included in **Appendix B**.
- 3.3.2. Within the Order Limits, area-based habitats total 361.76~~7~~ ha and generate 896.19 AHBU. Linear hedgerow habitats total 53~~3~~ km and generate 338.16 HBU. Linear watercourse habitats total 3.37~~3~~ km and generate 46.51 RBU.
- 3.3.3. The Scheme's area-based habitats comprise approximately:
- a. Cropland – 140.1 ha (38.7%)
  - b. Grassland – 129.8 ha (35.8%)



- c. Heathland and scrub – 4.9 ha (1.35%)
- d. Rivers and Standing water – 1.7 ha (0.46%)
- e. Sparsely vegetated land tall ruderal – 5.8 ha (1.6%)
- f. Urban – 48.9 ha (13.5%)
- g. Woodland and forest – 30.6 ha (8.4%)

### 3.4 POST-DEVELOPMENT BIODIVERSITY

- 3.4.1. The landscape planting measures expected on site after construction are based on the Landscape Mitigation Masterplans for the Scheme (**Figure 7.8: Landscape Mitigation Masterplan Part A [REP3-008]** (revised Landscape Mitigation Masterplan for Change Request is submitted at Deadline 4 of the examination) and **Figure 7.10: Landscape Mitigation Plan Part B [APP-144]** (revised Landscape Mitigation Plan for Change Request is submitted at Deadline 4 of the examination)).
- 3.4.2. The retained and created area-based habitats total 361.76 ha and generate 960.83 AHBU. Linear hedgerow habitats total 50.04 km and generate 309.47 HBU.
- 3.4.3. Retained and created linear watercourse habitat totals 3.07 km and generates 41.07 RBU.

### 3.5 RESULTS SUMMARY

- 3.5.1. A summary of results of the BNG calculations for AHBU, HBU and RBU is detailed in **Table 3-1**, along with the percentage change from baseline for each habitat type.
- 3.5.2. The results show that construction of the Scheme would result in:
  - a. A 7.21% net gain in AHBU;
  - b. A 8.47% net loss in HBU;
  - c. A 11.69% net loss in RBU.

**Table 3-1 – Summary of BNG Calculation Results**

Biodiversity Units	Baseline Value	Post-Development Value*	Change	Outcome
AHBU	896.19	960.38	+64.64	Net Gain (+7.21%)
HBU	338.09	309.47	-28.62	Net loss (-8.47%)
RBU	46.51	41.07	-5.44	Net loss (-11.69%)

\*The post-development value includes the sum of the units generated from retained and created habitats.



## 3.6 BIODIVERSITY NET GAIN PRINCIPLES

- 3.6.1. The quantitative outcomes of the assessment are a singular element of the BNG assessment and associated Good Practice Principles (**Appendix A** of this report). **Table 3-2** discusses adherence of the Scheme to each of the BNG Good Practice Principles. Whilst the BNG Good Practice Principles seek to offer practical advice to achieve BNG, as a NSIP, there is no legal requirement for the Scheme to achieve no net loss or net gain in biodiversity. However, as detailed in **paragraph 1.1.7**, the Scheme works towards achieving no net loss of biodiversity. These principles have therefore been assessed in regard to the aims of the Scheme which are to achieve no net loss in biodiversity.

**Table 3-2 – Evidence of Project Compliance with BNG Good Practice Principles**

Principle	Description	Evidence	Outcome
1. Apply the mitigation hierarchy	Do everything possible to first avoid and then minimise impacts on biodiversity. Only as a last resort, and in agreement with external decision-makers where possible, compensate for losses that cannot be avoided. If compensating for losses within the development footprint is not possible or does not generate the most benefits for nature conservation, then offset biodiversity losses by gains elsewhere.	<p>Potential impacts and risks to habitats have been considered at the design stage, and wherever possible, avoided or minimised. As an example of avoidance, the siting of the Part A route alignment sought to reduce land take and increase retention of ancient woodland relating to the construction of the new River Coquet Bridge. Full details of avoidance and minimisation (mitigation) are presented in <b>Section 9.9, Chapter 9: Biodiversity Part A of the ES [APP-048]</b> and <b>Section 9.9, Chapter 9: Biodiversity Part B of the ES [APP-049]</b>. Mitigation measures are secured by the <b>Outline Construction Environmental Management Plan (Outline CEMP) [REP31-02313 and 024014]</b>.</p> <p>Where impacts to habitats cannot be completely avoided, new habitats will be created to compensate for the losses. The landscape mitigation plans (<b>Figure 7.8: Landscape Mitigation Masterplan Part A [REP3-008] (revised Landscape Mitigation Masterplan for Change Request is submitted at Deadline 4 of the examination)</b> and <b>Figure 7.10: Landscape Mitigation Plan Part B [APP-144] (revised Landscape Mitigation Plan for Change Request is submitted at Deadline 4 of the examination)</b>) partially compensate for habitat losses by creating new habitats within the Order Limits and achieving a net gain in priority woodland and wetland habitats.</p> <p>An <b>Ancient Woodland Strategy [(APP-247) (revised Ancient Woodland Strategy for Change Request is submitted at Deadline 4 of the examination)]</b> has been developed in consultation with Natural England to address the loss of ancient woodland habitat as a result of Part A.</p> <p>However, the Scheme does not fully compensate for the habitat losses due to a net a loss of native-species rich hedgerows, river habitat and medium distinctiveness woodland and scrub habitat.</p>	Not Achieved
2. Avoid losing biodiversity that cannot be offset by gains elsewhere	Avoid impacts on irreplaceable biodiversity – these impacts cannot be offset to achieve No Net Loss or Net Gain.	<p>Development of the Scheme would result in a loss of 0.9668 ha of ancient woodland at the northern end of Part A, along the banks of the River Coquet. This loss of irreplaceable habitat is from the River Coquet and Coquet Valley Woodlands Site of Special Scientific Interest (SSSI) (designated ancient woodland) and Coquet River Felton Park Local Wildlife Site (LWS) (not designated but treated as ancient woodland for the purposes of mitigation, as detailed in <b>paragraph 9.10.3, Chapter 9: Biodiversity Part A of the ES [APP-048]</b> and the Applicant’s response to BIO.1.18 of the Examining Authorities first written questions <b>[REP1-032]</b>).</p> <p>As detailed in <b>paragraph 3.3.8 of Chapter 3: Assessment of Alternatives of the ES [APP-038]</b>, alternative routes were considered but would not avoid crossing the SSSI and would still require an entirely new bridge crossing to be constructed. Furthermore, other options to avoid the LWS would have required a significant length of additional dual carriageway (between 4 and 5 miles). As a result, no alignments to this effect were considered and the</p>	Not Achieved

Principle	Description	Evidence	Outcome
		<p>option of a new bridge crossing the SSSI and LWS adjacent to the existing A1 road bridge was chosen.</p> <p>The loss of ancient woodland habitat as a result of the Scheme was therefore unavoidable. Whilst the Scheme is not able to fully comply with BNG Policy 2, the Applicant has sought to minimise the impacts to ancient woodland as much as possible.</p> <p>The Scheme design carefully considered the siting of the Scheme alignment to minimise the extent of ancient woodland loss associated with the new bridge over the River Coquet. Scheme design included reducing the extent of the Order limits to retain woodland habitat; to constrain the extent of construction and infrastructure, including the drainage outflow location and diversion of the public right of way beneath the bridges (as detailed in <b>paragraph 3.2.3 of the Ancient Woodland Strategy Part A [APP-247]</b> (<a href="#">revised Ancient Woodland Strategy for Change Request is submitted at Deadline 4 of the examination</a>)).</p> <p>An <b>Ancient Woodland Strategy (Appendix 9.21 Part A [APP-048]</b> (<a href="#">revised Ancient Woodland Strategy for Change Request is submitted at Deadline 4 of the examination</a>)) has been developed in consultation with Natural England to address the loss of ancient woodland habitat and impacts to retained ancient woodland as a result of Part A.</p>	
3. Be inclusive and equitable	Engage stakeholders early, and involve them in designing, implementing, monitoring and evaluating the approach to Net Gain. Achieve Net Gain in partnership with stakeholders where possible and share the benefits fairly among stakeholders.	<p>Stakeholders have been engaged with on the habitat creation proposals through consultation as part of the Environmental Impact Assessment process. As detailed in <b>Table 7-4, Chapter 7: Landscape and Visual Part A of the ES [APP-044]</b>, preliminary landscape mitigation plans were discussed with Natural England. As detailed in <b>paragraph 7.9.1, Chapter 7: Landscape and Visual Part A of the ES [APP-044]</b> and <b>paragraph 7.9.1, Chapter 7: Landscape and Visual Part B of the ES [APP-045]</b>, the Landscape Mitigation Masterplans have been developed through an iterative design process in consultation with Natural England and Northumberland County Council.</p> <p>The previous Part A and Part B biodiversity no net loss assessments (<b>Appendix 9.20: Biodiversity No Net Loss Assessment Part A [APP-246]</b> and <b>Appendix 9.11: Biodiversity No Net Loss Assessment Report Part B [APP-309]</b>) were subject to stakeholder review following the DCO application. In response to comments received by the Environment Agency, the assessment for watercourses was refined. Further details are documented in <b>Annex A Approach to the Assessment of Losses and Gains for Watercourses [REP2-010]</b>(<a href="#">document reference-6.29</a>).</p>	Achieved at EIA stage
4. Address risks	Mitigate difficulty, uncertainty and other risks to achieving Net Gain. Apply well-accepted ways to add contingency when calculating biodiversity losses and gains in order to account for any remaining	The BNG assessment used industry recognised risk multipliers from The Biodiversity Metric 2.0 Technical Supplement (Natural England, 2019). These multipliers account for uncertainty with creating new habitats. Contingency is added according to the level and type of uncertainty, to	Achieved at EIA stage

Principle	Description	Evidence	Outcome
	risks, as well as to compensate for the time between the losses occurring and the gains being fully realised.	increase the amount of habitat needed to achieve no net loss or net gains in biodiversity.	
5. Make a measurable Net Gain contribution	Achieve a measurable, overall gain for biodiversity and the services ecosystems provide while directly contributing towards nature conservation priorities.	Whilst a Scheme-wide net gain cannot be claimed due to the loss of irreplaceable habitat, medium distinctiveness woodland and scrub, native species-rich hedgerows and river habitat, the Scheme does demonstrate a measurable overall gain for priority woodland and wetland habitats.	Not achieved
6. Achieve the best outcomes for biodiversity	<p>Achieve the best outcomes for biodiversity by using robust, credible evidence and local knowledge to make clearly justified choices when:</p> <ul style="list-style-type: none"> <li>- Delivering compensation that is ecologically equivalent in type, amount and condition, and that accounts for the location and timing of biodiversity losses;</li> <li>- Compensating for losses of one type of biodiversity by providing a different type that delivers greater benefits for nature conservation;</li> <li>- Achieving Net Gain locally to the development while also contributing towards nature conservation priorities at local, regional and national levels;</li> <li>- Enhancing existing or creating new habitat;</li> </ul> <p>Enhancing ecological connectivity by creating more, bigger, better and joined areas for biodiversity.</p>	<p>For priority woodland and wetland habitats, creation will follow the “like-for-like or better” approach.</p> <p>The landscape mitigation plans (<b>Figure 7.8: Landscape Mitigation Masterplan Part A [REP3-008] (revised Landscape Mitigation Masterplan for Change Request is submitted at Deadline 4 of the examination)</b> and <b>Figure 7.10: Landscape Mitigation Plan Part B [APP-144] (revised Landscape Mitigation Plan for Change Request is submitted at Deadline 4 of the examination)</b>) partially compensate for habitat losses by creating new habitats within the Order Limits and achieving a net gain in area-based priority woodland and wetland habitats.</p> <p>At a local level, the Scheme complies with the Northumberland Draft Local Plan by:</p> <ul style="list-style-type: none"> <li>- Avoiding and minimising impacts through the design stage;</li> <li>- Partially compensating for habitat losses;</li> <li>- Achieving net gain of area-based habitats, excluding irreplaceable habitats;</li> <li>- Creation of woodland and wetland priority habitats; and</li> <li>- Creation of a coherent and resilient ecological network.</li> </ul> <p>Policy QOP 1 and ENV 2 of the Northumberland Draft Local Plan discuss biodiversity net gains. Compliance with these local policies is detailed within the Applicant’s response to BIO.1.7 of the Examining Authorities first written questions [REP1-032].</p> <p>Compliance with national policy is detailed in <b>Table 9-2, Chapter 9: Biodiversity Part A of the ES [APP-048]</b> and <b>Table 9-2, Chapter 9: Biodiversity Part B of the ES [APP-049]</b>.</p>	Not achieved
7. Be additional	Achieve nature conservation outcomes that demonstrably exceed existing obligations (i.e. do not deliver something that would occur anyway).	<p>The nature conservation outcomes have not been fully met because of impacts on ancient woodland and a net loss in native species-rich hedgerows and river habitat.</p> <p>However, the Scheme does demonstrate a measurable overall gain for area-based priority woodland and wetland habitat</p>	Not achieved

Principle	Description	Evidence	Outcome
8. Create a Net Gain legacy	<p>Ensure Net Gain generates long-term benefits by:</p> <ul style="list-style-type: none"> <li>- Engaging stakeholders and jointly agreeing practical solutions that secure Net Gain in perpetuity;</li> <li>- Planning for adaptive management and securing dedicated funding for long-term management;</li> <li>- Designing Net Gain for biodiversity to be resilient to external factors, especially climate change;</li> <li>- Mitigating risks from other land uses;</li> <li>- Avoiding displacing harmful activities from one location to another;</li> </ul> <p>Supporting local-level management of Net Gain activities.</p>	<p>Stakeholders have been actively engaged with on the habitat creation proposals through consultation as part of the Environmental Impact Assessment process.</p> <p>A full account of the stakeholders engaged with and the matters discussed is evidenced in <b>Appendix 4.2: Environmental Consultation [APP-193 and APP-194]</b>.</p> <p>The habitats proposed in the post-development mitigation plan and their associated maintenance would be undertaken by the Applicant or a third-party management body appointed by the Applicant.</p>	Achieved at EIA stage
9. Optimise sustainability	Prioritise BNG and, where possible, optimise the wider environmental benefits for a sustainable society and economy.	The landscape mitigation plans ( <b>Figure 7.8: Landscape Mitigation Masterplan Part A [REP3-008] (revised Landscape Mitigation Masterplan for Change Request is submitted at Deadline 4 of the examination)</b> and <b>Figure 7.10: Landscape Mitigation Plan Part B [APP-144] (revised Landscape Mitigation Plan for Change Request is submitted at Deadline 4 of the examination)</b> ) contain features which have biodiversity value and environmental benefits. However, the mitigation plans do not achieve a no net loss or net gain for HBU and RBU.	Not achieved
10. Be transparent	Communicate all Net Gain activities in a transparent and timely manner, sharing the learning with all stakeholders.	This Biodiversity No Net Loss Report for the Scheme and its associated assessment calculations <del>is</del> <u>was</u> issued at Deadline 2 <a href="#">of the examination</a> and will be available for stakeholders to review.	Achieved



## 4 CONCLUSIONS AND RECOMMENDATIONS

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### 4.1 CONCLUSIONS

~~4.1.1. The proposed changes to the application that have informed this updated assessment relate to the loss of woodland within the Coquet River Felton Park LWS, treated as ancient woodland for the purpose of mitigation and compensation. The areas of habitat loss and creation associated with ancient woodland have been excluded from the assessment calculations in accordance with best practice guidelines.~~

~~4.1.1.4.1.2. Development of the Scheme would result in a loss of 0.9668 ha of ancient woodland at the northern end of Part A along the banks of the River Coquet. This loss of irreplaceable habitat is from the River Coquet and Coquet Valley Woodlands SSSI and Coquet River Felton Park LWS. These habitat areas have been excluded from the baseline calculations. There are no other irreplaceable habitats on Site.~~

~~4.1.2.4.1.3. An Ancient Woodland Strategy (Appendix 9.21 Part A [APP-247] (revised Ancient Woodland Strategy for Change Request is submitted at Deadline 4 of the examination)) has been developed in consultation with Natural England to address the loss of ancient woodland habitat and impacts to retained woodland as a result of Part A. An overview of the Strategy is listed below:~~

- ~~a. Avoidance measures, including siting of the Part A route alignment to reduce land take and increase retention of ancient woodland;~~
- ~~b. Woodland Creation Area identified to the southwest of the River Coquet Bridge;~~
- ~~c. Salvage of woodland soils and flora;~~
- ~~d. Establishment of 11.268-16 ha of woodland and the replanting of an area of 0.28 ha, using native species of local provenance; and~~
- ~~e. Sensitive sapling and seed collection from wider ancient woodland as stock plants for the woodland planting area.~~

~~4.1.4. The conclusions of the assessment remain unchanged from the previous iteration of this report [REP2-009]. In conclusion, t[he Scheme as assessed does not achieve a quantitative and qualitative scheme-wide biodiversity net gain due to the loss of irreplaceable ancient woodland, medium distinctiveness woodland and scrub, native species-rich hedgerows and river habitat and as the Scheme only passes four out of the ten Good Practice Principles. Whilst no net loss cannot be claimed for the Scheme as a whole, due to the loss of irreplaceable habitat (ancient woodland) and medium distinctiveness woodland and scrub, the assessment calculation does identify a net gain in area-based priority woodland and wetland habitats.~~

~~The proposed changes to the application that have informed this updated assessment relate to the loss of woodland within the Coquet River Felton Park LWS, treated as ancient woodland for the purpose of mitigation and compensation. The areas of habitat loss and creation associated with ancient woodland have been excluded from the assessment calculations in accordance with best practice guidelines. As such, the summary of the~~

assessment results presented in **Section 3.5** and the conclusions of the assessment remain unchanged from the previous iteration of this report [REP2-009], namely that [ ]:

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# Appendix A

CIEEM, CIRIA AND IEMA UK  
BIODIVERSITY NET GAIN GOOD  
PRACTICE PRINCIPLES

# Biodiversity Net Gain

## Good practice principles for development

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Biodiversity Net Gain is development that leaves biodiversity in a better state than before. It is also an approach where developers work with local governments, wildlife groups, land owners and other stakeholders in order to support their priorities for nature conservation. These ten principles set out good practice for achieving Biodiversity Net Gain and must be applied all together, as one approach.

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### Principle 1. Apply the Mitigation Hierarchy

Do everything possible to first avoid and then minimise impacts on biodiversity. Only as a last resort, and in agreement with external decision-makers where possible, compensate for losses that cannot be avoided. If compensating for losses within the development footprint is not possible or does not generate the most benefits for nature conservation, then offset biodiversity losses by gains elsewhere.

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### Principle 2. Avoid losing biodiversity that cannot be offset by gains elsewhere

Avoid impacts on irreplaceable biodiversity - these impacts cannot be offset to achieve No Net Loss or Net Gain.

### Principle 3. Be inclusive and equitable

Engage stakeholders early, and involve them in designing, implementing, monitoring and evaluating the approach to Net Gain. Achieve Net Gain in partnership with stakeholders where possible, and share the benefits fairly among stakeholders.

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### Principle 4. Address risks

Mitigate difficulty, uncertainty and other risks to achieving Net Gain. Apply well-accepted ways to add contingency when calculating biodiversity losses and gains in order to account for any remaining risks, as well as to compensate for the time between the losses occurring and the gains being fully realised.

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### Principle 5. Make a measurable Net Gain contribution

Achieve a measurable, overall gain<sup>1</sup> for biodiversity and the services ecosystems provide while directly contributing towards nature conservation priorities.

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<sup>1</sup> Net Gain has been described as a measurable target for development projects where impacts on biodiversity are outweighed by a clear mitigation hierarchy approach to first avoid and then minimise impacts, including through restoration and / or compensation. Adhering to these Net Gain principles (i.e. pursuing all principles together) will help in underpinning good practice for achieving and sustaining Net Gain.

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**Principle 6. Achieve the best outcomes for biodiversity**

Achieve the best outcomes for biodiversity by using robust, credible evidence and local knowledge to make clearly-justified choices when:

- Delivering compensation that is ecologically equivalent in type, amount and condition, and that accounts for the location and timing of biodiversity losses
- Compensating for losses of one type of biodiversity by providing a different type that delivers greater benefits for nature conservation
- Achieving Net Gain locally to the development while also contributing towards nature conservation priorities at local, regional and national levels
- Enhancing existing or creating new habitat
- Enhancing ecological connectivity by creating more, bigger, better and joined areas for biodiversity

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**Principle 7. Be additional**

Achieve nature conservation outcomes that demonstrably exceed existing obligations (i.e. do not deliver something that would occur anyway).

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**Principle 8. Create a Net Gain legacy**

Ensure Net Gain generates long-term benefits by:

- Engaging stakeholders and jointly agreeing practical solutions that secure Net Gain in perpetuity<sup>2</sup>
- Planning for adaptive management and securing dedicated funding for long-term management
- Designing Net Gain for biodiversity to be resilient to external factors, especially climate change
- Mitigating risks from other land uses
- Avoiding displacing harmful activities from one location to another
- Supporting local-level management of Net Gain activities

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**Principle 9. Optimise sustainability**

Prioritise Biodiversity Net Gain and, where possible, optimise the wider environmental benefits for a sustainable society and economy.

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**Principle 10. Be transparent**

Communicate all Net Gain activities in a transparent and timely manner, sharing the learning with all stakeholders.

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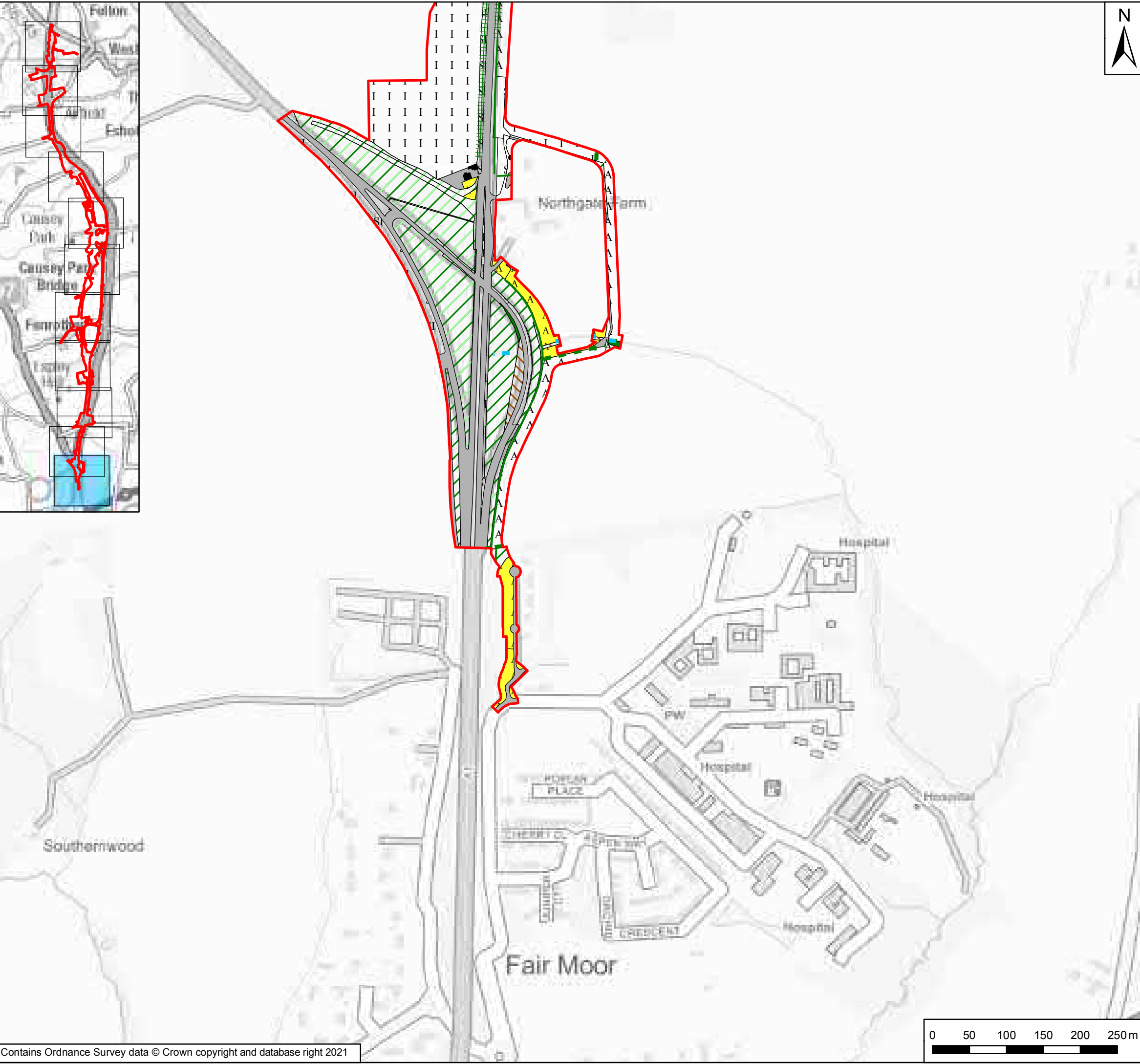
<sup>2</sup> Biodiversity compensation should be planned for a sustained Net Gain over the longest possible timeframe. For development in the UK, the expectation is that compensation sites will be secured for at least the lifetime of the development (e.g. often 25-30 years) with the objective of Net Gain management continuing in the future.

# Appendix B

BASELINE AND POST-  
DEVELOPMENT FIGURES

# **BASELINE HABITAT PLANS**

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Key	
	Order Limits
Description	
	Broadleaved woodland - semi-natural
	Broadleaved woodland - plantation
	Coniferous woodland - plantation
	Mixed woodland - semi-natural
	Mixed woodland - plantation
	Scrub - dense/continuous
	Scrub - scattered
	Broadleaved Parkland/scattered trees
	Neutral grassland - semi-improved
	Improved grassland
	Marsh/marshy grassland
	Poor semi-improved grassland
	Other tall herb and fern - ruderal
	Standing water
	Spoil
	Cultivated/disturbed land - arable
	Cultivated/disturbed land - amenity grassland
	Introduced shrub
	Buildings
	Bare ground
	Hard standing
	Intact hedge - native species-rich
	Intact hedge - species-poor
	Defunct hedge - species-poor
	Hedge with trees - species-poor
	Running water
	Dry ditch

JNCC Phase 1 Habitat Types determined in the survey were translated to UK Habitat Classification types to allow use in the Metric. Table 2-2 in the Biodiversity No Net Loss Assessment report shows the corresponding UK

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P03	11/03/2021	Update to Order Limits	RM	RB	JM
P02	19/01/2021		JR	RB	JM
P01	12/10/2020	First Issue	JR	RB	-



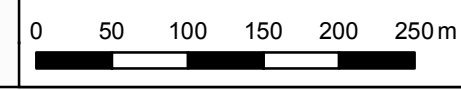
**Project Title** A1 in Northumberland: Morpeth to Ellingham Improvement Scheme

**Drawing Title** Baseline Phase 1 Habitat Map (Part A)  
 Page 1 of 11

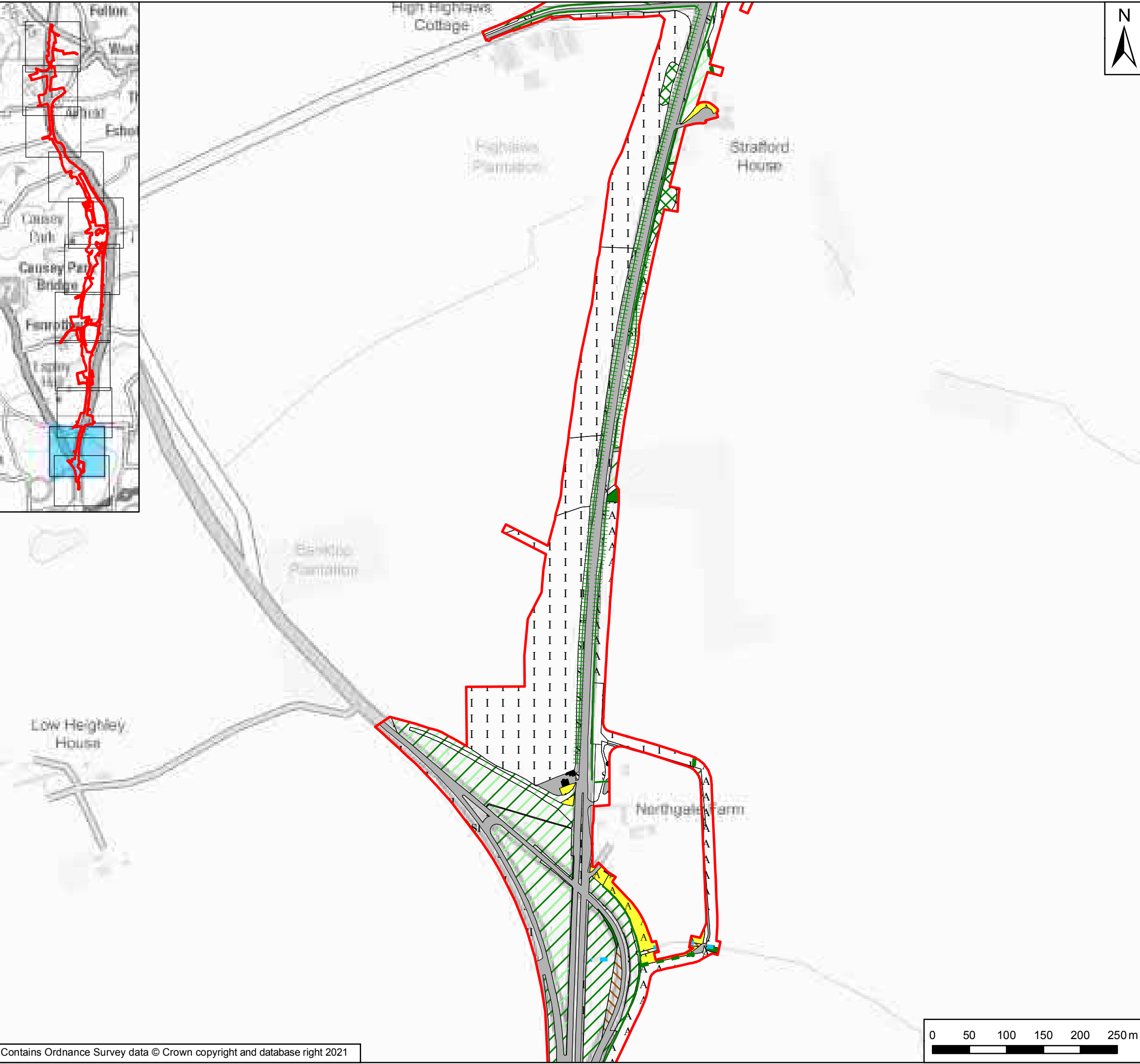
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**Drawing Status** For Information Suitability -

Drawing Number	Project	Originator	Volume	Project Ref. No.
HE551459		WSP		
Revision				
-				







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Key	
Symbol	Description
[Red outline]	Order Limits
[Green solid]	Broadleaved woodland - semi-natural
[Green diagonal lines]	Broadleaved woodland - plantation
[Light green diagonal lines]	Coniferous woodland - plantation
[Light green solid]	Mixed woodland - semi-natural
[Light green diagonal lines]	Mixed woodland - plantation
[Green cross-hatch]	Scrub - dense/continuous
[Green X-hatch]	Scrub - scattered
[Green circle]	Broadleaved Parkland/scattered trees
[Orange solid]	Neutral grassland - semi-improved
[White with 'I']	Improved grassland
[Red diagonal lines]	Marsh/marshy grassland
[White with 'P']	Poor semi-improved grassland
[White with 'O']	Other tall herb and fern - ruderal
[Blue solid]	Standing water
[White with 'S']	Spoil
[White with 'A']	Cultivated/disturbed land - arable
[Yellow with 'A']	Cultivated/disturbed land - amenity grassland
[Orange cross-hatch]	Introduced shrub
[Black solid]	Buildings
[White with 'B']	Bare ground
[Grey solid]	Hard standing
[Green wavy line]	Intact hedge - native species-rich
[Green dashed line]	Intact hedge - species-poor
[Green dotted line]	Defunct hedge - species-poor
[Green line with trees]	Hedge with trees - species-poor
[Blue line]	Running water
[Blue dashed line]	Dry ditch

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P02	19/01/2021		JR	RB	JM
P01	12/10/2020	First Issue	JR	RB	-

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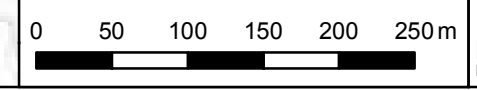
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Drawing Title: Baseline Phase 1 Habitat Map (Part A)  
Page 2 of 11

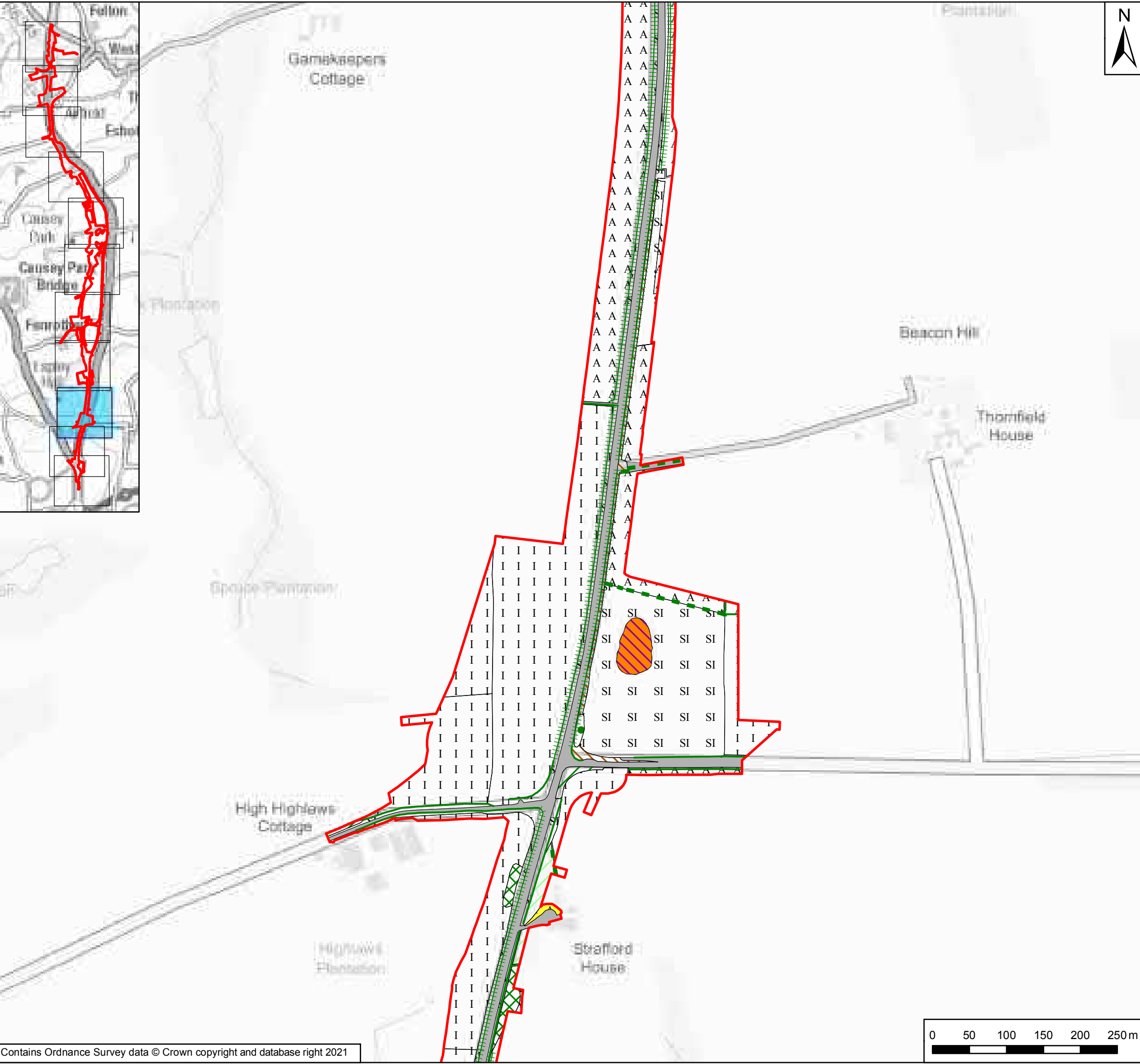
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Suitability: -

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Revision				
-				
M2E Location	Type	Role	Number	







Key	
	Order Limits
Description	
	Broadleaved woodland - semi-natural
	Broadleaved woodland - plantation
	Coniferous woodland - plantation
	Mixed woodland - semi-natural
	Mixed woodland - plantation
	Scrub - dense/continuous
	Scrub - scattered
	Broadleaved Parkland/scattered trees
	Neutral grassland - semi-improved
	Improved grassland
	Marsh/marshy grassland
	Poor semi-improved grassland
	Other tall herb and fern - ruderal
	Standing water
	Spoil
	Cultivated/disturbed land - arable
	Cultivated/disturbed land - amenity grassland
	Introduced shrub
	Buildings
	Bare ground
	Hard standing
	Intact hedge - native species-rich
	Intact hedge - species-poor
	Defunct hedge - species-poor
	Hedge with trees - species-poor
	Running water
	Dry ditch

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P01	12/10/2020	First Issue	JR	RB	-



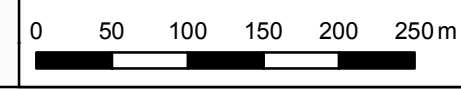
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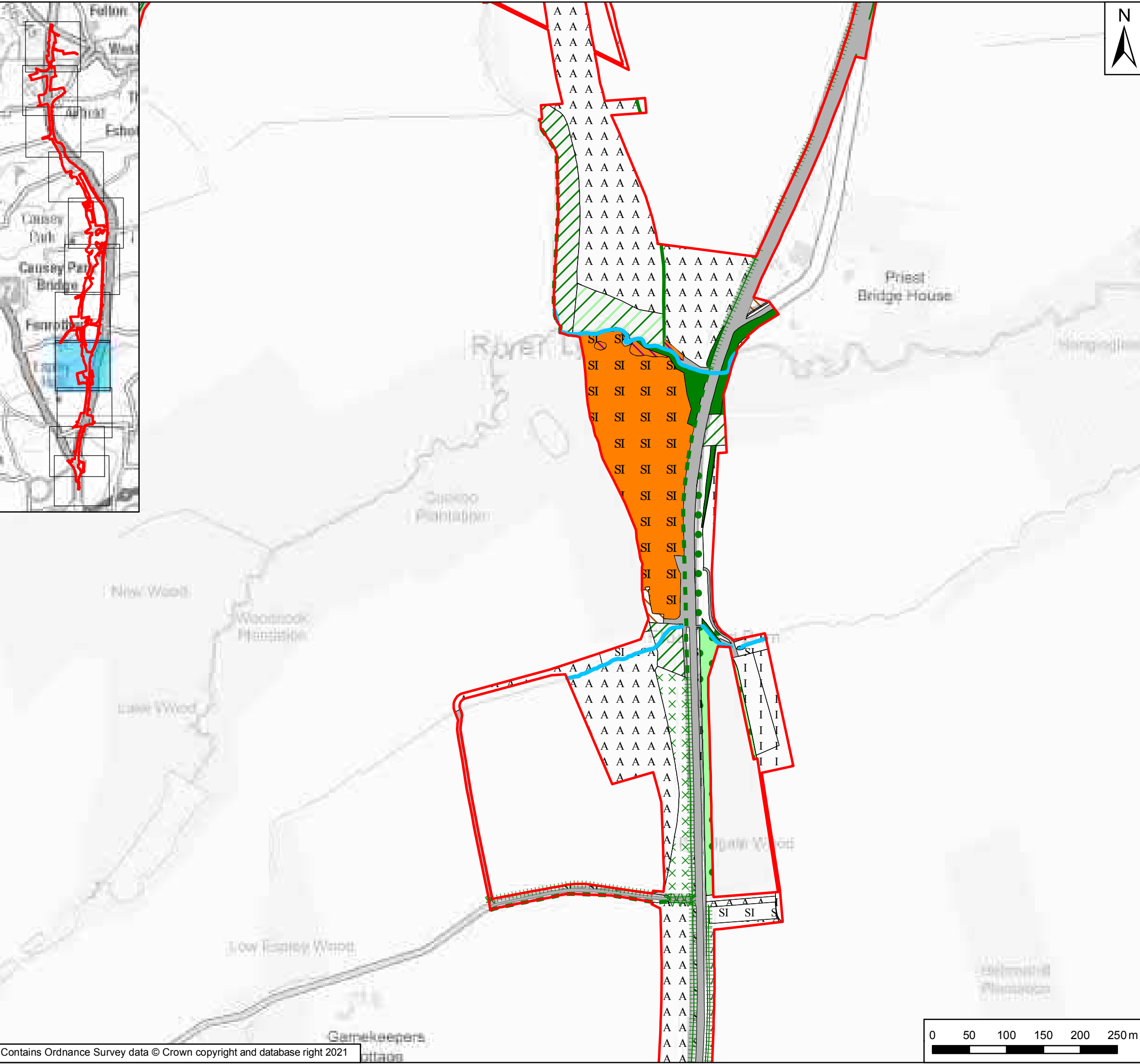
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Page 3 of 11

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Revision	-			
Location	Type	Role	Number	





Key	
	Order Limits
Description	
	Broadleaved woodland - semi-natural
	Broadleaved woodland - plantation
	Coniferous woodland - plantation
	Mixed woodland - semi-natural
	Mixed woodland - plantation
	Scrub - dense/continuous
	Scrub - scattered
	Broadleaved Parkland/scattered trees
	Neutral grassland - semi-improved
	Improved grassland
	Marsh/marshy grassland
	Poor semi-improved grassland
	Other tall herb and fern - ruderal
	Standing water
	Spoil
	Cultivated/disturbed land - arable
	Cultivated/disturbed land - amenity grassland
	Introduced shrub
	Buildings
	Bare ground
	Hard standing
	Intact hedge - native species-rich
	Intact hedge - species-poor
	Defunct hedge - species-poor
	Hedge with trees - species-poor
	Running water
	Dry ditch

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P01	12/10/2020	First Issue	JR	RB	-



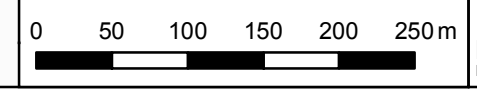
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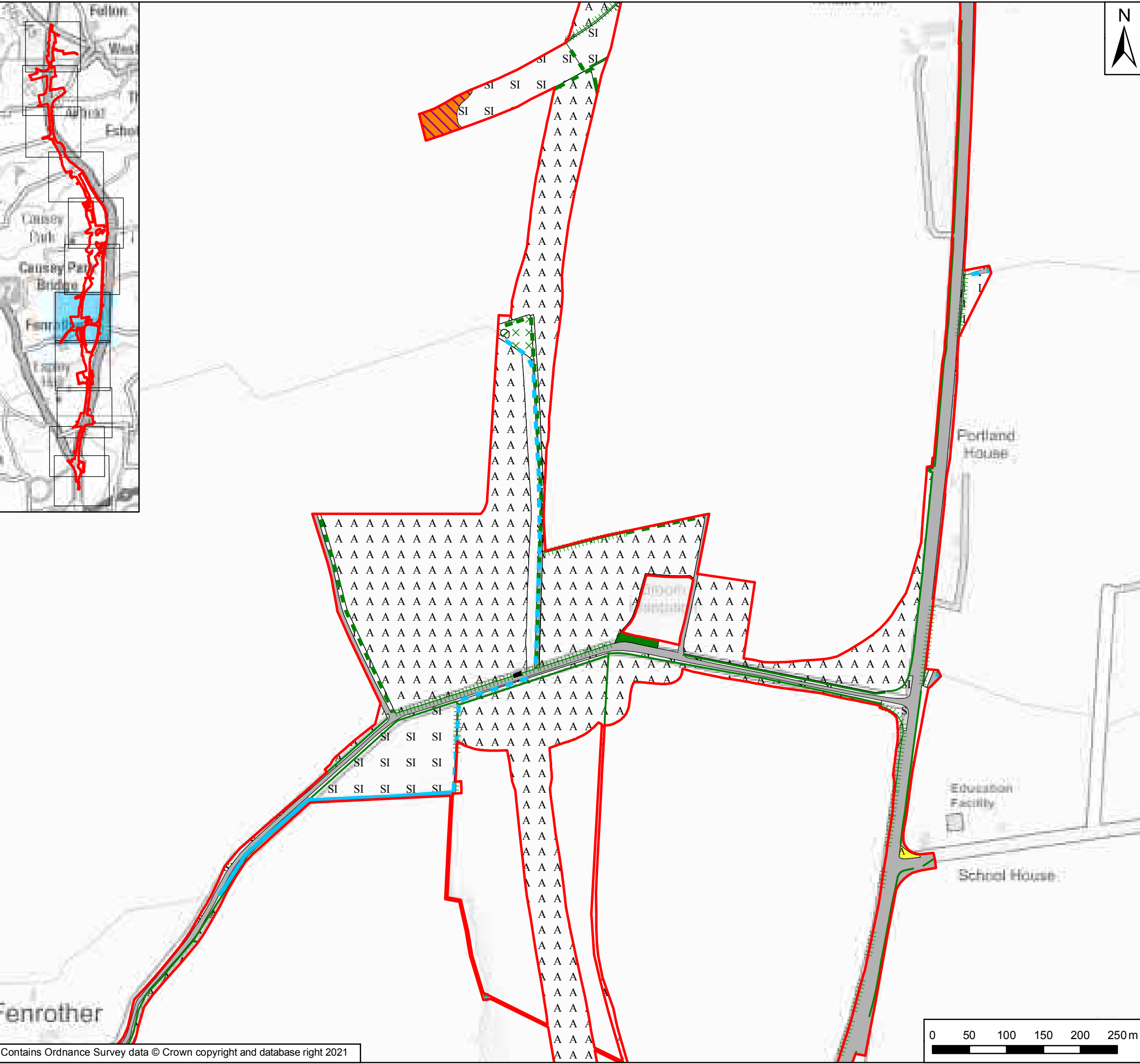
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Page 4 of 11

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Drawing Status: For Information  
Suitability: -

Drawing Number	Project	Originator	Volume	Project Ref. No.
HE551459		WSP		
Revision				
-				





**Key**

**Description**

- Order Limits
- Broadleaved woodland - semi-natural
- Broadleaved woodland - plantation
- Coniferous woodland - plantation
- Mixed woodland - semi-natural
- Mixed woodland - plantation
- Scrub - dense/continuous
- Scrub - scattered
- Broadleaved Parkland/scattered trees
- Neutral grassland - semi-improved
- Improved grassland
- Marsh/marshy grassland
- Poor semi-improved grassland
- Other tall herb and fern - ruderal
- Standing water
- Spoil
- Cultivated/disturbed land - arable
- Cultivated/disturbed land - amenity grassland
- Introduced shrub
- Buildings
- Bare ground
- Hard standing
- Intact hedge - native species-rich
- Intact hedge - species-poor
- Defunct hedge - species-poor
- Hedge with trees - species-poor
- Running water
- Dry ditch

N

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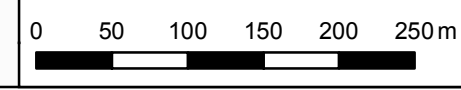
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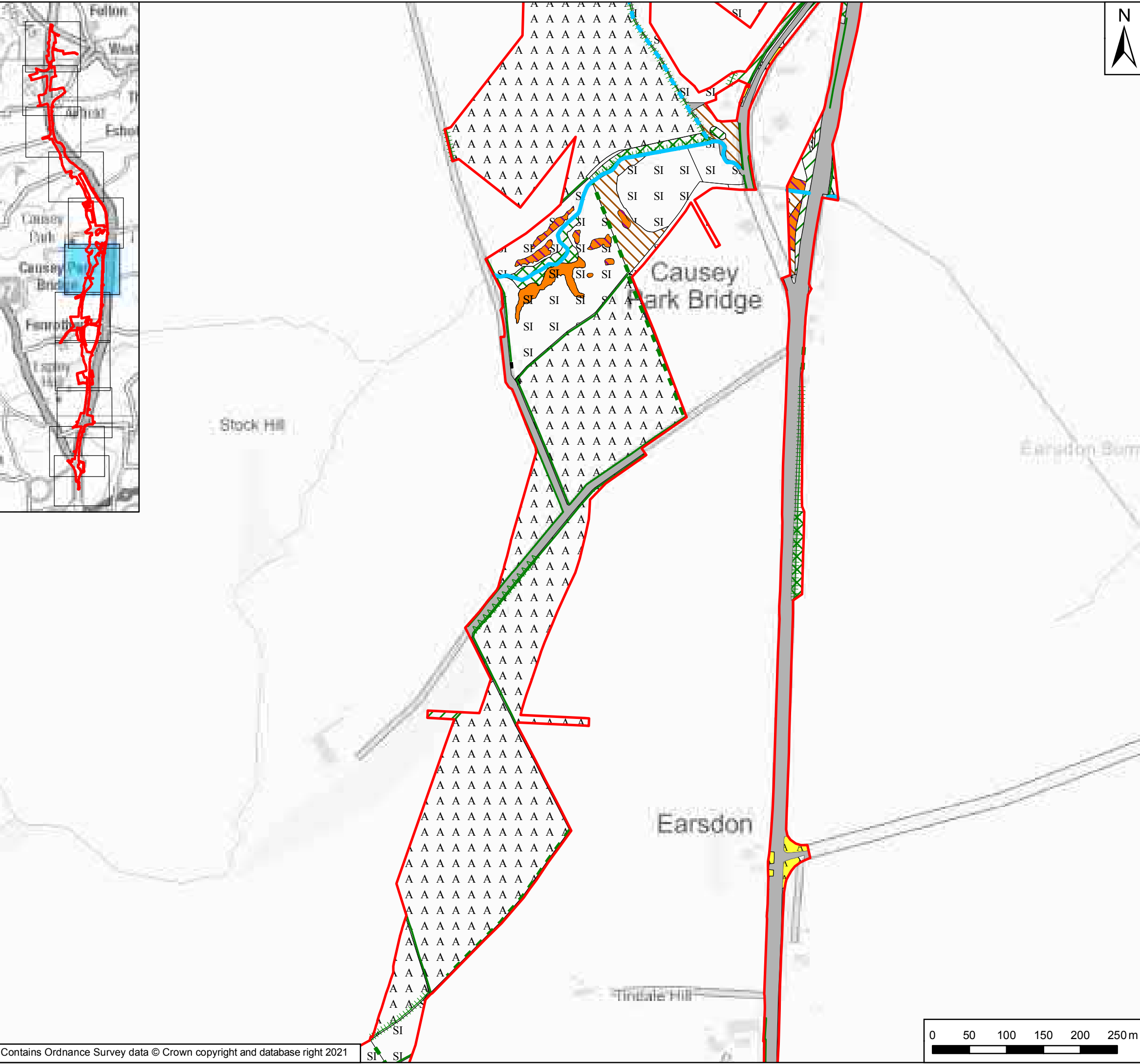
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Page 5 of 11

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Drawing Status	Type	Role	Number
M2E			
Location			





**Key**

**Description**

- Order Limits
- Broadleaved woodland - semi-natural
- Broadleaved woodland - plantation
- Coniferous woodland - plantation
- Mixed woodland - semi-natural
- Mixed woodland - plantation
- Scrub - dense/continuous
- Scrub - scattered
- Broadleaved Parkland/scattered trees
- Neutral grassland - semi-improved
- Improved grassland
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- Poor semi-improved grassland
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- Standing water
- Spoil
- Cultivated/disturbed land - arable
- Cultivated/disturbed land - amenity grassland
- Introduced shrub
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- Hard standing
- Intact hedge - native species-rich
- Intact hedge - species-poor
- Defunct hedge - species-poor
- Hedge with trees - species-poor
- Running water
- Dry ditch

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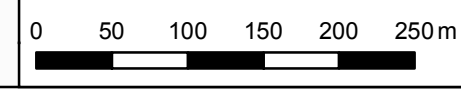
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Drawing Title: Baseline Phase 1 Habitat Map (Part A)  
Page 6 of 11

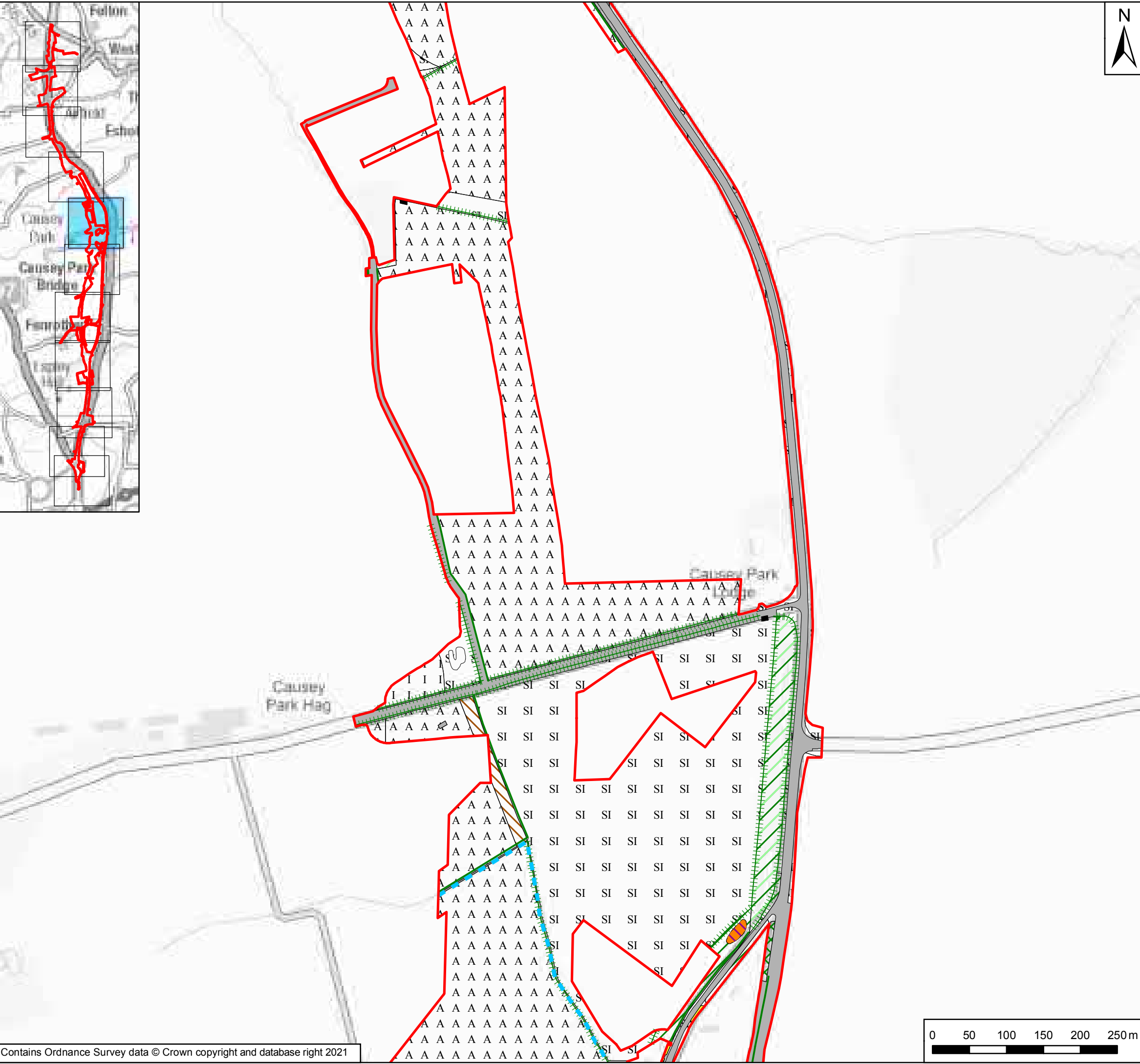
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Location	M2E	Type		Role		Number		Revision	-







Key	
Description	
	Order Limits
	Broadleaved woodland - semi-natural
	Broadleaved woodland - plantation
	Coniferous woodland - plantation
	Mixed woodland - semi-natural
	Mixed woodland - plantation
	Scrub - dense/continuous
	Scrub - scattered
	Broadleaved Parkland/scattered trees
	Neutral grassland - semi-improved
	Improved grassland
	Marsh/marshy grassland
	Poor semi-improved grassland
	Other tall herb and fern - ruderal
	Standing water
	Spoil
	Cultivated/disturbed land - arable
	Cultivated/disturbed land - amenity grassland
	Introduced shrub
	Buildings
	Bare ground
	Hard standing
	Intact hedge - native species-rich
	Intact hedge - species-poor
	Defunct hedge - species-poor
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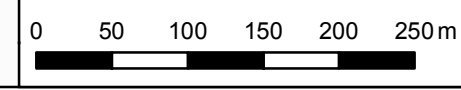
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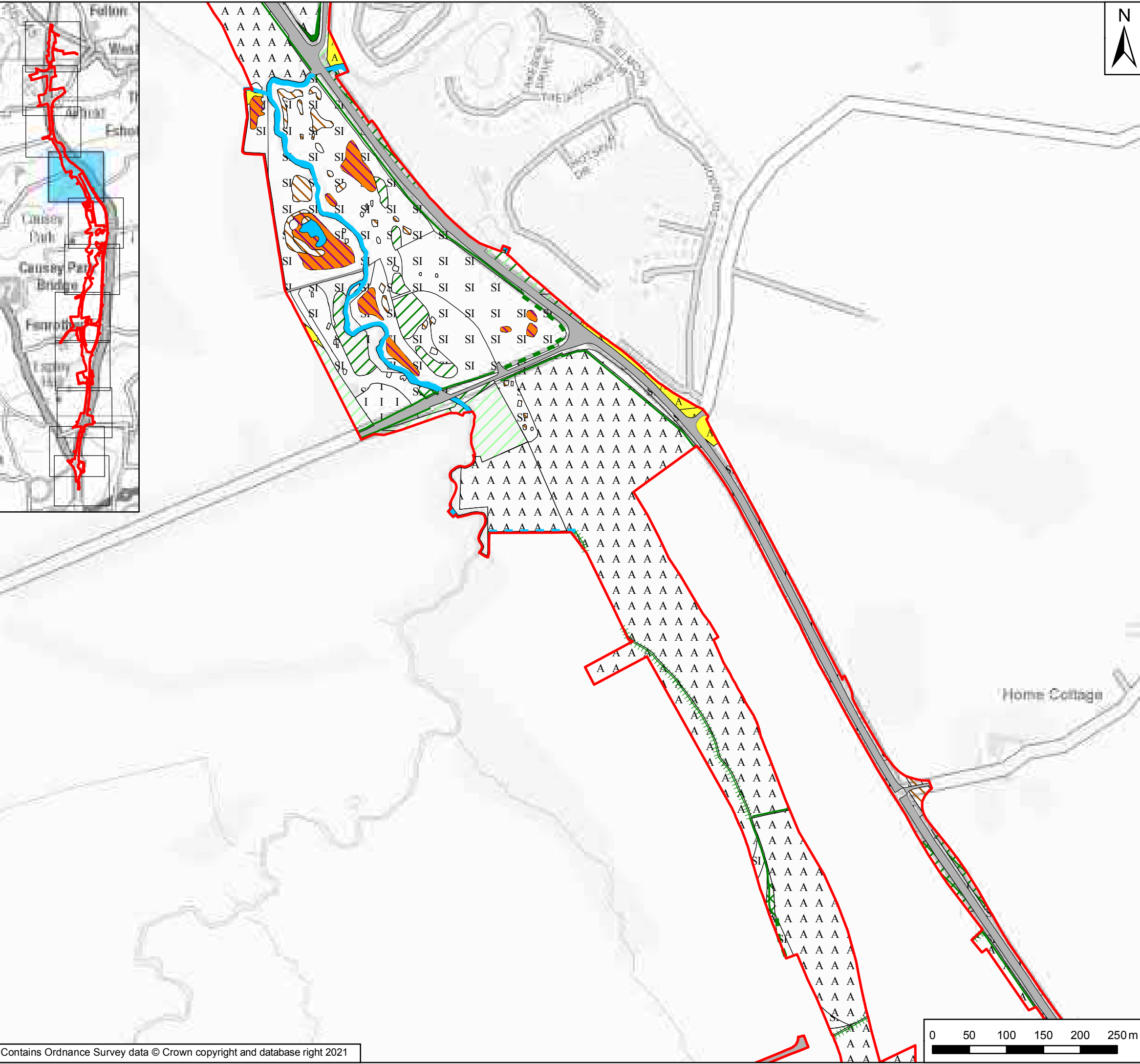
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Page 7 of 11

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Drawing Number	Project	Originator	Volume	Project Ref. No.
HE551459		WSP		
Revision	-			
Location	Type	Role	Number	





**Key**

**Order Limits**

**Description**

- Broadleaved woodland - semi-natural
- Broadleaved woodland - plantation
- Coniferous woodland - plantation
- Mixed woodland - semi-natural
- Mixed woodland - plantation
- Scrub - dense/continuous
- Scrub - scattered
- Broadleaved Parkland/scattered trees
- Neutral grassland - semi-improved
- Improved grassland
- Marsh/marshy grassland
- Poor semi-improved grassland
- Other tall herb and fern - ruderal
- Standing water
- Spoil
- Cultivated/disturbed land - arable
- Cultivated/disturbed land - amenity grassland
- Introduced shrub
- Buildings
- Bare ground
- Hard standing
- Intact hedge - native species-rich
- Intact hedge - species-poor
- Defunct hedge - species-poor
- Hedge with trees - species-poor
- Running water
- Dry ditch

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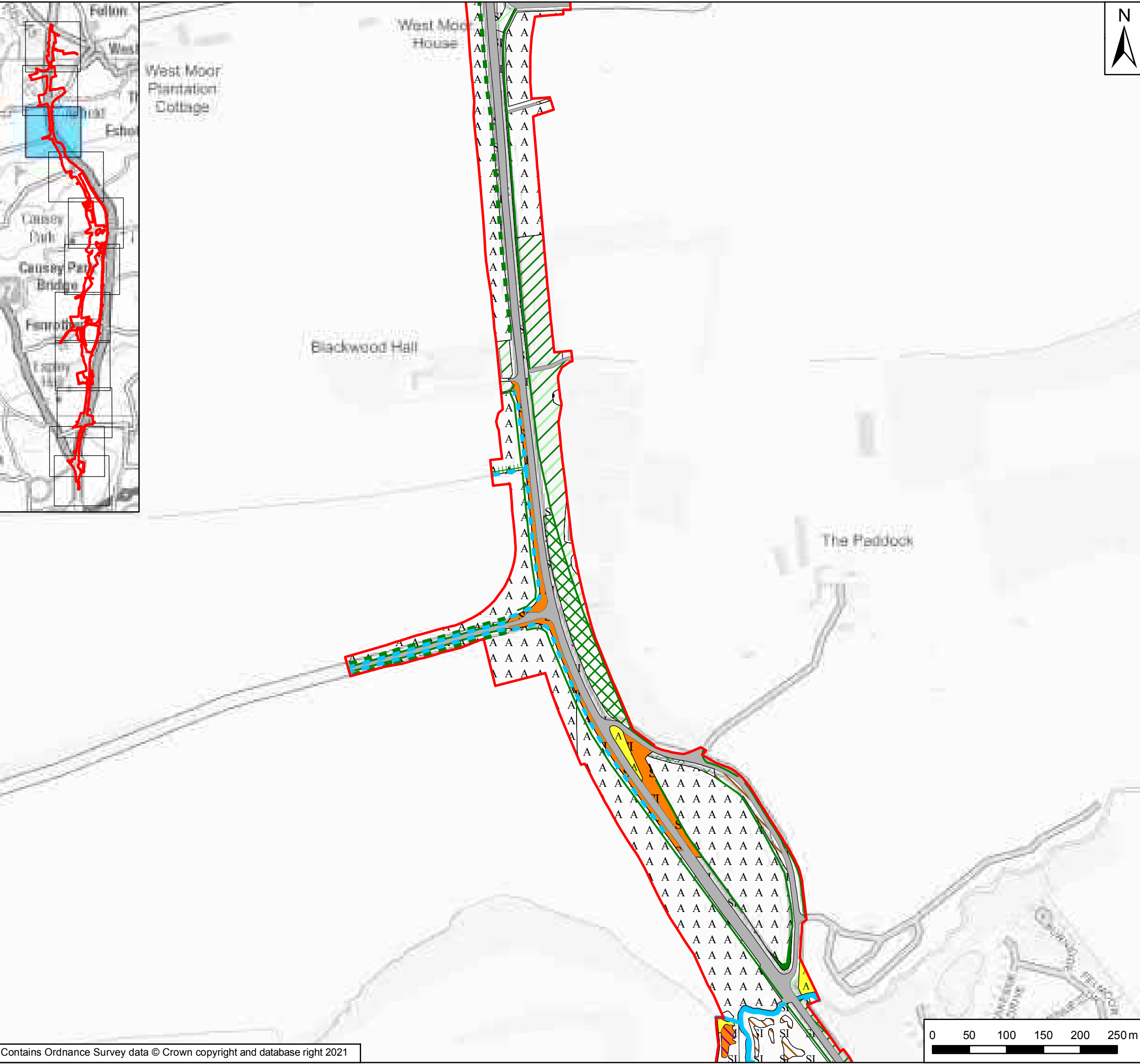
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Page 8 of 11

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Suitability: -

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Revision				
-				
Location	Type	Role	Number	
M2E				



Key	
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Description	
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<span style="background: repeating-linear-gradient(-45deg, transparent, transparent 2px, #008000 2px, #008000 4px); display: inline-block; width: 10px; height: 10px;"></span>	Coniferous woodland - plantation
<span style="background-color: #90EE90; display: inline-block; width: 10px; height: 10px;"></span>	Mixed woodland - semi-natural
<span style="background: repeating-linear-gradient(45deg, transparent, transparent 2px, #90EE90 2px, #90EE90 4px); display: inline-block; width: 10px; height: 10px;"></span>	Mixed woodland - plantation
<span style="background: repeating-linear-gradient(-45deg, transparent, transparent 2px, #90EE90 2px, #90EE90 4px); display: inline-block; width: 10px; height: 10px;"></span>	Scrub - dense/continuous
<span style="background: repeating-linear-gradient(45deg, transparent, transparent 2px, #90EE90 2px, #90EE90 4px); border: 1px dashed black; display: inline-block; width: 10px; height: 10px;"></span>	Scrub - scattered
<span style="background-color: #90EE90; border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span>	Broadleaved Parkland/scattered trees
<span style="background-color: #FFD700; display: inline-block; width: 10px; height: 10px;"></span>	Neutral grassland - semi-improved
<span style="border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span>	Improved grassland
<span style="background: repeating-linear-gradient(45deg, transparent, transparent 2px, #FFD700 2px, #FFD700 4px); display: inline-block; width: 10px; height: 10px;"></span>	Marsh/marshy grassland
<span style="background-color: #FFFACD; display: inline-block; width: 10px; height: 10px;"></span>	Poor semi-improved grassland
<span style="background: repeating-linear-gradient(-45deg, transparent, transparent 2px, #FFFACD 2px, #FFFACD 4px); display: inline-block; width: 10px; height: 10px;"></span>	Other tall herb and fern - ruderal
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<span style="background-color: #FFFF00; border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span>	Cultivated/disturbed land - arable
<span style="background-color: #FFFF00; border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span>	Cultivated/disturbed land - amenity grassland
<span style="background: repeating-linear-gradient(45deg, transparent, transparent 2px, #FFD700 2px, #FFD700 4px); border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span>	Introduced shrub
<span style="background-color: black; display: inline-block; width: 10px; height: 10px;"></span>	Buildings
<span style="background-color: #FFFFFF; border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span>	Bare ground
<span style="background-color: #808080; display: inline-block; width: 10px; height: 10px;"></span>	Hard standing
<span style="border-bottom: 2px solid green; display: inline-block; width: 10px;"></span>	Intact hedge - native species-rich
<span style="border-bottom: 2px solid green; display: inline-block; width: 10px;"></span>	Intact hedge - species-poor
<span style="border-bottom: 2px dashed green; display: inline-block; width: 10px;"></span>	Defunct hedge - species-poor
<span style="border-bottom: 2px solid green; border-left: 2px solid green; border-right: 2px solid green; display: inline-block; width: 10px;"></span>	Hedge with trees - species-poor
<span style="border-bottom: 2px solid blue; display: inline-block; width: 10px;"></span>	Running water
<span style="border-bottom: 2px dashed blue; display: inline-block; width: 10px;"></span>	Dry ditch

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P01	12/10/2020	First Issue	JR	RB	-

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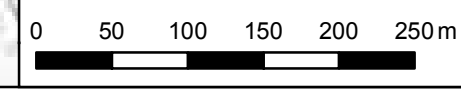
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Page 9 of 11

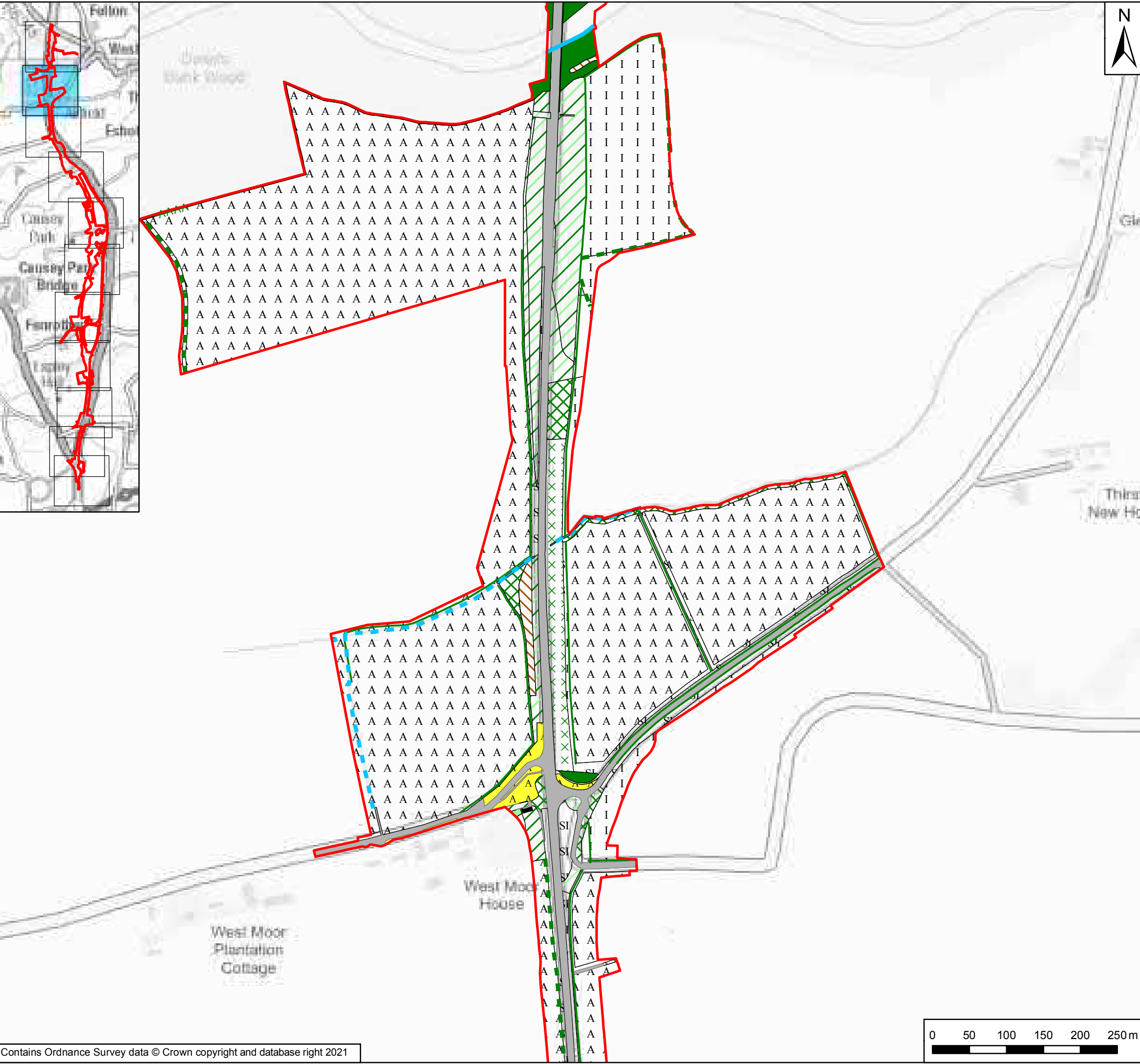
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A3	19/01/2021	19/01/2021	19/01/2021	19/01/2021

Drawing Status: For Information  
Suitability: -

Drawing Number	Project	Originator	Volume	Project Ref. No.
HE551459		WSP		
M2E	Location	Type	Role	Number







Key	
Description	
	Order Limits
	Broadleaved woodland - semi-natural
	Broadleaved woodland - plantation
	Coniferous woodland - plantation
	Mixed woodland - semi-natural
	Mixed woodland - plantation
	Scrub - dense/continuous
	Scrub - scattered
	Broadleaved Parkland/scattered trees
	Neutral grassland - semi-improved
	Improved grassland
	Marsh/marshy grassland
	Poor semi-improved grassland
	Other tall herb and fern - ruderal
	Standing water
	Spoil
	Cultivated/disturbed land - arable
	Cultivated/disturbed land - amenity grassland
	Introduced shrub
	Buildings
	Bare ground
	Hard standing
	Intact hedge - native species-rich
	Intact hedge - species-poor
	Defunct hedge - species-poor
	Hedge with trees - species-poor
	Running water
	Dry ditch

JNCC Phase 1 Habitat Types determined in the survey were translated to UK Habitat Classification types to allow use in the Metric. Table 2-2 in the Biodiversity No Net Loss Assessment report shows the corresponding UK

Rev	Date	Description	By	Chk'd	App'd
P03	11/03/2021	Update to Order Limits	RM	RB	JM
P02	19/01/2021		JR	RB	JM
P01	12/10/2020	First Issue	JR	RB	-



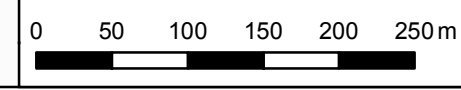
Project Title: A1 in Northumberland: Morpeth to Ellingham Improvement Scheme

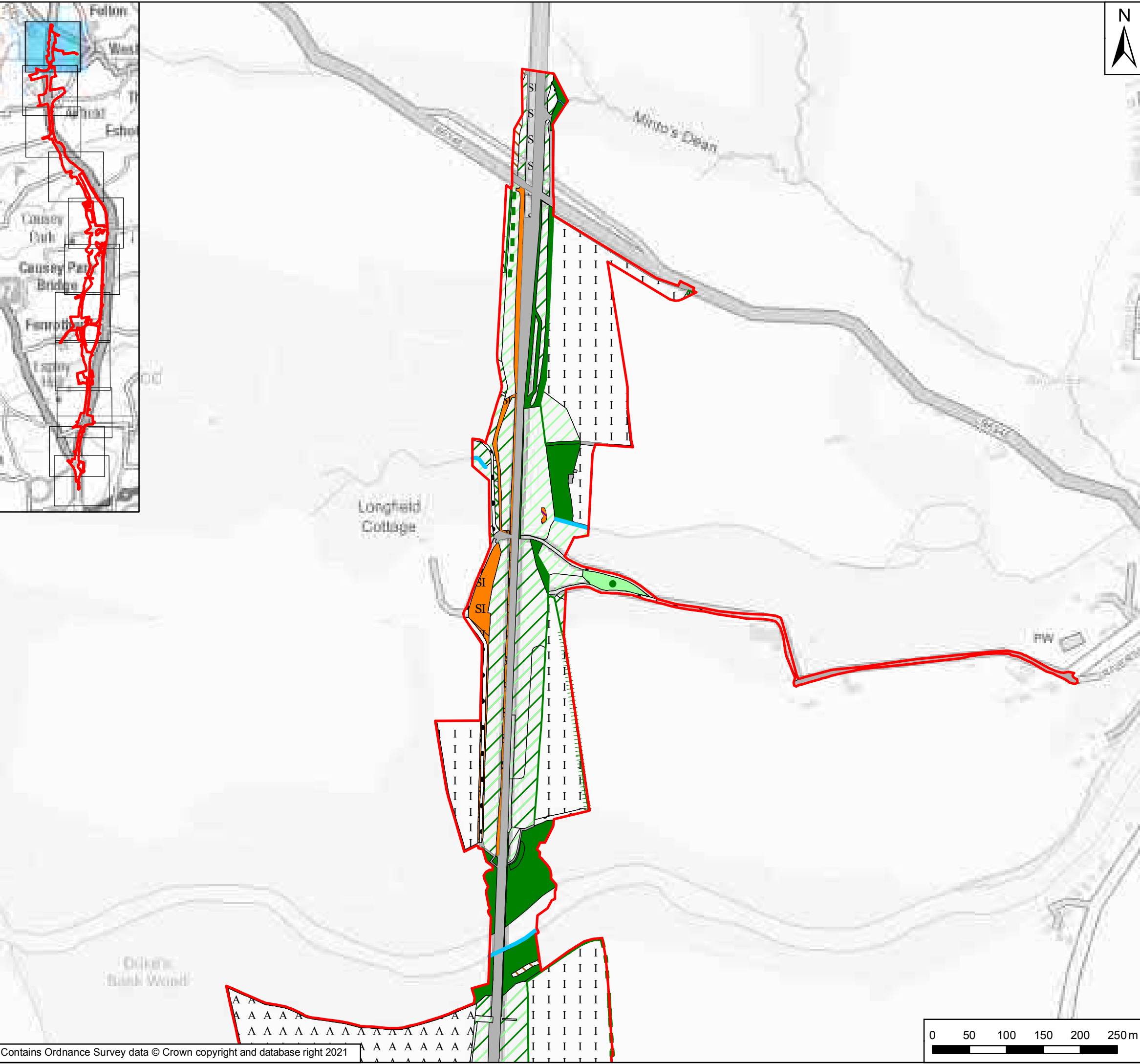
Drawing Title: Baseline Phase 1 Habitat Map (Part A)  
Page 10 of 11

Scale	Drawn	Checked	Approved	Authorised
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Original Size	Date	Date	Date	Date
A3	19/01/2021	19/01/2021	19/01/2021	19/01/2021

Drawing Status: For Information  
Suitability: -

Drawing Number	Project	Originator	Volume	Project Ref. No.
HE551459		WSP		
Revision				
-				
M2E Location	Type	Role	Number	





Key	
	Order Limits
Description	
	Broadleaved woodland - semi-natural
	Broadleaved woodland - plantation
	Coniferous woodland - plantation
	Mixed woodland - semi-natural
	Mixed woodland - plantation
	Scrub - dense/continuous
	Scrub - scattered
	Broadleaved Parkland/scattered trees
	Neutral grassland - semi-improved
	Improved grassland
	Marsh/marshy grassland
	Poor semi-improved grassland
	Other tall herb and fern - ruderal
	Standing water
	Spoil
	Cultivated/disturbed land - arable
	Cultivated/disturbed land - amenity grassland
	Introduced shrub
	Buildings
	Bare ground
	Hard standing
	Intact hedge - native species-rich
	Intact hedge - species-poor
	Defunct hedge - species-poor
	Hedge with trees - species-poor
	Running water
	Dry ditch

JNCC Phase 1 Habitat Types determined in the survey were translated to UK Habitat Classification types to allow use in the Metric. Table 2-2 in the Biodiversity No Net Loss Assessment report shows the corresponding UK

Rev	Date	Description	By	Chk'd	App'd
P03	11/03/2021	Update to Order Limits	RM	RB	JM
P02	19/01/2021		JR	RB	JM
P01	12/10/2020	First Issue	JR	RB	-

Client

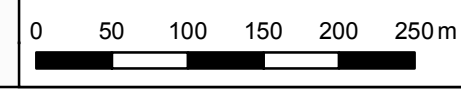
Project Title: A1 in Northumberland: Morpeth to Ellingham Improvement Scheme

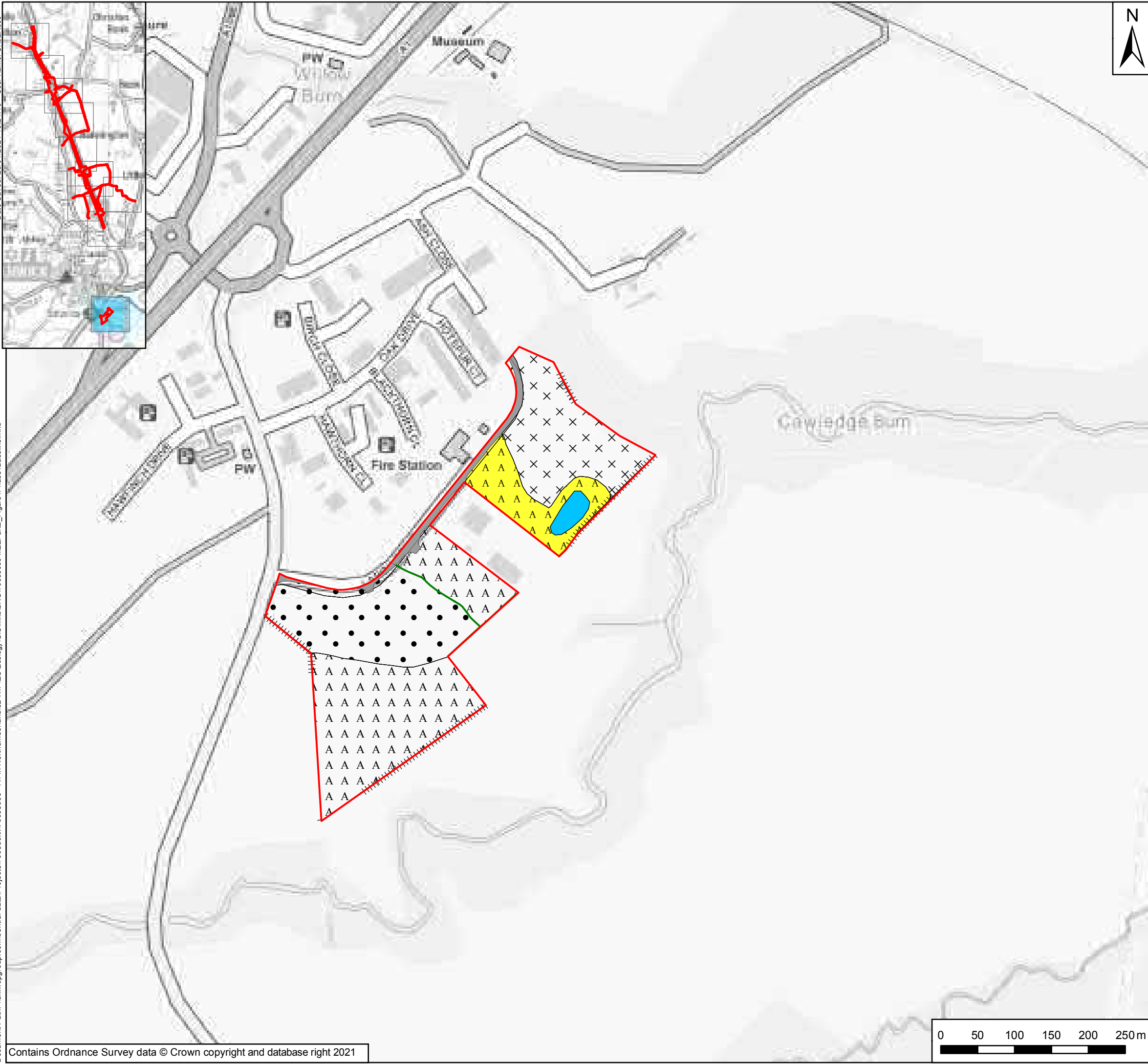
Drawing Title: Baseline Phase 1 Habitat Map (Part A)  
Page 11 of 11

Scale	Drawn	Checked	Approved	Authorised
1:5,000	JR	RB	JM	-
Original Size	Date	Date	Date	Date
A3	19/01/2021	19/01/2021	19/01/2021	19/01/2021

Drawing Status: For Information  
Suitability: -

Drawing Number	Project	Originator	Volume	Project Ref. No.
HE551459		WSP		
Drawing Number	Type	Role	Number	Revision
M2E				-





Key	
	Order Limits
	Broadleaved woodland - semi-natural
	Broadleaved woodland - plantation
	Coniferous woodland - plantation
	Mixed woodland - plantation
	Scrub - dense/continuous
	Improved grassland
	Marsh/marshy grassland
	Poor semi-improved grassland
	Other tall herb and fern - ruderal
	Standing water
	Hard standing
	Cultivated/disturbed land - arable
	Cultivated/disturbed land - amenity grassland
	Cultivated/disturbed land - ephemeral/short perennial
	Introduced shrub
	Buildings
	Bare ground
	Running water
	Intact hedge - native species-rich
	Intact hedge - species-poor
	Defunct hedge - native species-rich
	Defunct hedge - species-poor
	Hedge with trees - native species-rich
	Hedge with trees - species-poor
	Fence
	Wall
	Dry ditch
	Scrub - scattered
	Broad-Leaved Parkland/scattered trees
	Coniferous Parkland/scattered trees

Rev	Date	Description	By	Chk'd	App'd
P02	19/01/2021	Second Issue	JR	RB	JM
P01	13/10/2020	First Issue	JR	RB	JR



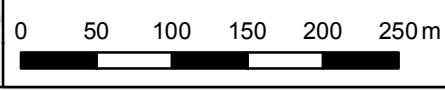
Project Title: A1 in Northumberland: Morpeth to Ellingham Improvement Scheme

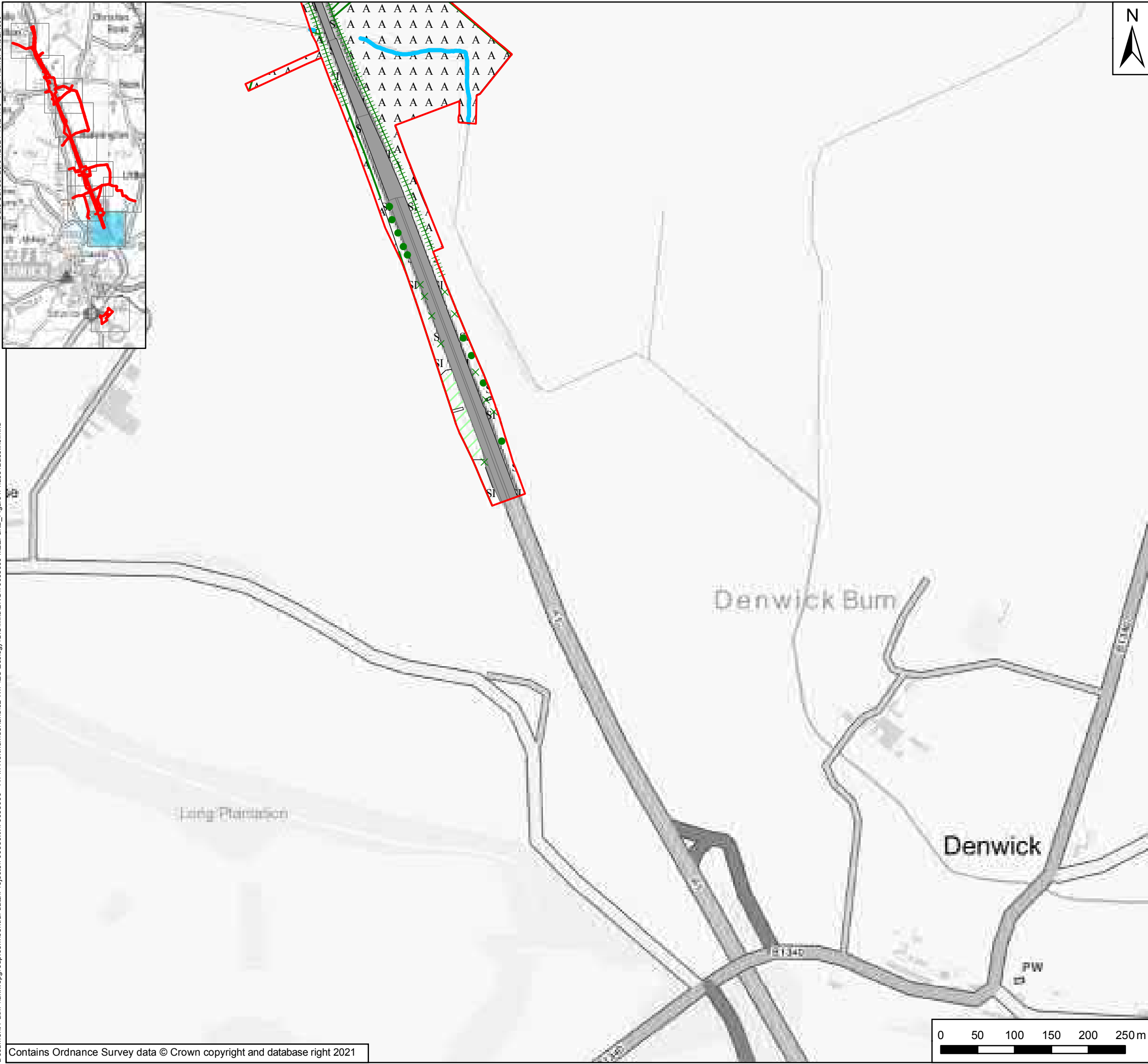
Drawing Title: Baseline Phase 1 Habitat Map (Part B)  
Page 1 of 10

Scale	Drawn	Checked	Approved	Authorised
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Original Size	Date	Date	Date	Date
A3	13/10/2020	19/01/2021	19/01/2021	-

Drawing Status: For Information  
Suitability: -

Drawing Number	Project	Originator	Volume	Project Ref. No.
HE551459		WSP		
Location	Type	Role	Number	Revision
M2E				-





Key	
	Order Limits
	Broadleaved woodland - semi-natural
	Broadleaved woodland - plantation
	Coniferous woodland - plantation
	Mixed woodland - plantation
	Scrub - dense/continuous
	Improved grassland
	Marsh/marshy grassland
	Poor semi-improved grassland
	Other tall herb and fern - ruderal
	Standing water
	Hard standing
	Cultivated/disturbed land - arable
	Cultivated/disturbed land - amenity grassland
	Cultivated/disturbed land - ephemeral/short perennial
	Introduced shrub
	Buildings
	Bare ground
	Running water
	Intact hedge - native species-rich
	Intact hedge - species-poor
	Defunct hedge - native species-rich
	Defunct hedge - species-poor
	Hedge with trees - native species-rich
	Hedge with trees - species-poor
	Fence
	Wall
	Dry ditch
	Scrub - scattered
	Broad-Leaved Parkland/scattered trees
	Coniferous Parkland/scattered trees

Rev	Date	Description	By	Chk'd	App'd
P02	19/01/2021	Second Issue	JR	RB	JM
P01	13/10/2020	First Issue	JR	RB	JR



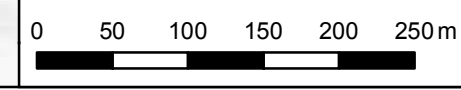
Project Title: A1 in Northumberland: Morpeth to Ellingham Improvement Scheme

Drawing Title: Baseline Phase 1 Habitat Map (Part B)  
Page 2 of 10

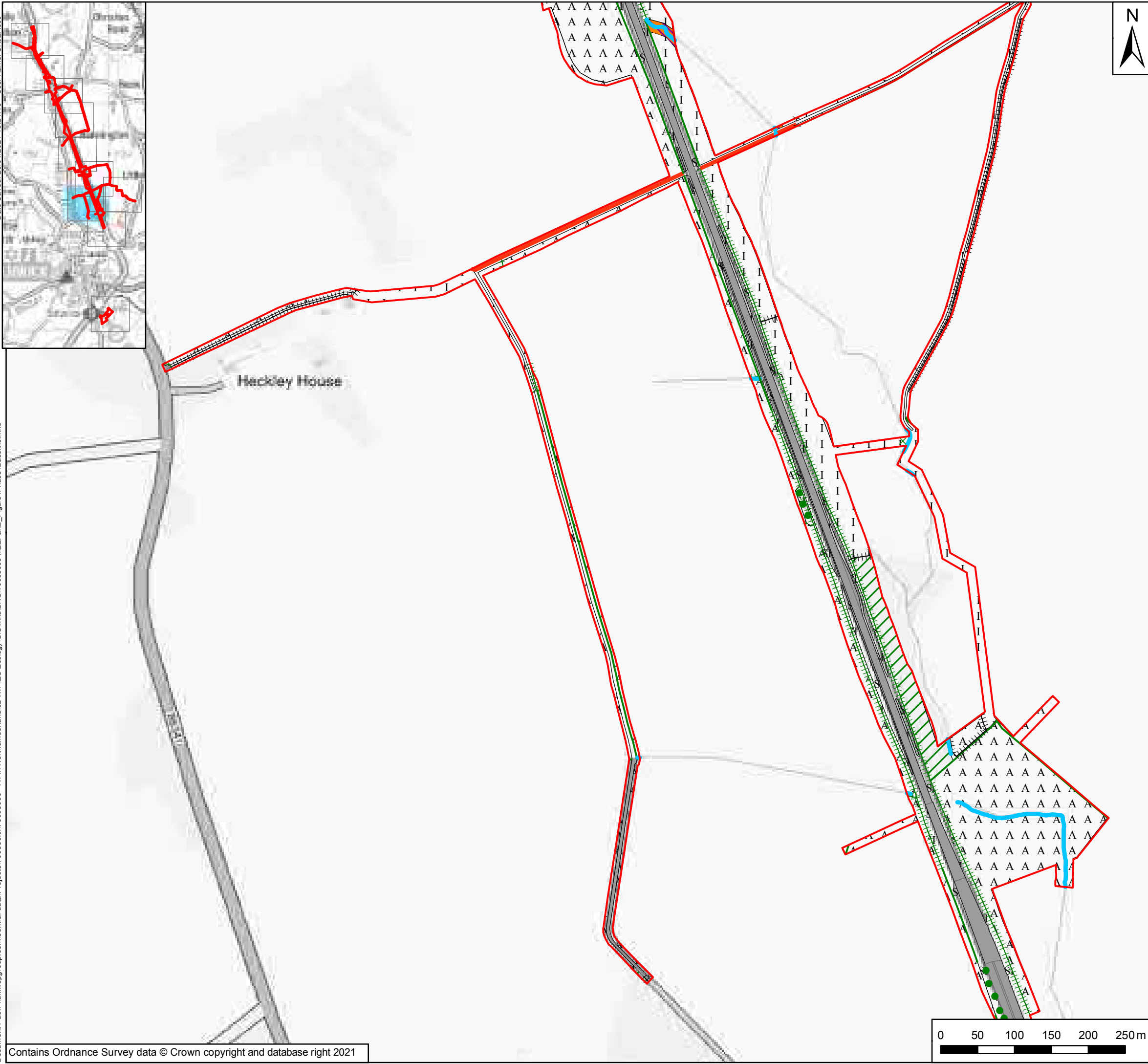
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Original Size	Date	Date	Date	Date
A3	13/10/2020	19/01/2021	19/01/2021	-

Drawing Status: For Information  
Suitability: -

Drawing Number	Project	Originator	Volume	Project Ref. No.
HE551459		WSP		
Revision				
M2E				
Location	Type	Role	Number	







Key	
	Order Limits
	Broadleaved woodland - semi-natural
	Broadleaved woodland - plantation
	Coniferous woodland - plantation
	Mixed woodland - plantation
	Scrub - dense/continuous
	Improved grassland
	Marsh/marshy grassland
	Poor semi-improved grassland
	Other tall herb and fern - ruderal
	Standing water
	Hard standing
	Cultivated/disturbed land - arable
	Cultivated/disturbed land - amenity grassland
	Cultivated/disturbed land - ephemeral/short perennial
	Introduced shrub
	Buildings
	Bare ground
	Running water
	Intact hedge - native species-rich
	Intact hedge - species-poor
	Defunct hedge - native species-rich
	Defunct hedge - species-poor
	Hedge with trees - native species-rich
	Hedge with trees - species-poor
	Fence
	Wall
	Dry ditch
	Scrub - scattered
	Broad-Leaved Parkland/scattered trees
	Coniferous Parkland/scattered trees

Rev	Date	Description	By	Chk'd	App'd
P02	19/01/2021	Second Issue	JR	RB	JM
P01	13/10/2020	First Issue	JR	RB	JR



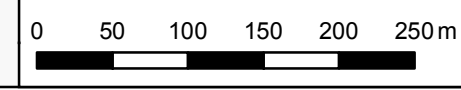
Project Title: A1 in Northumberland: Morpeth to Ellingham Improvement Scheme

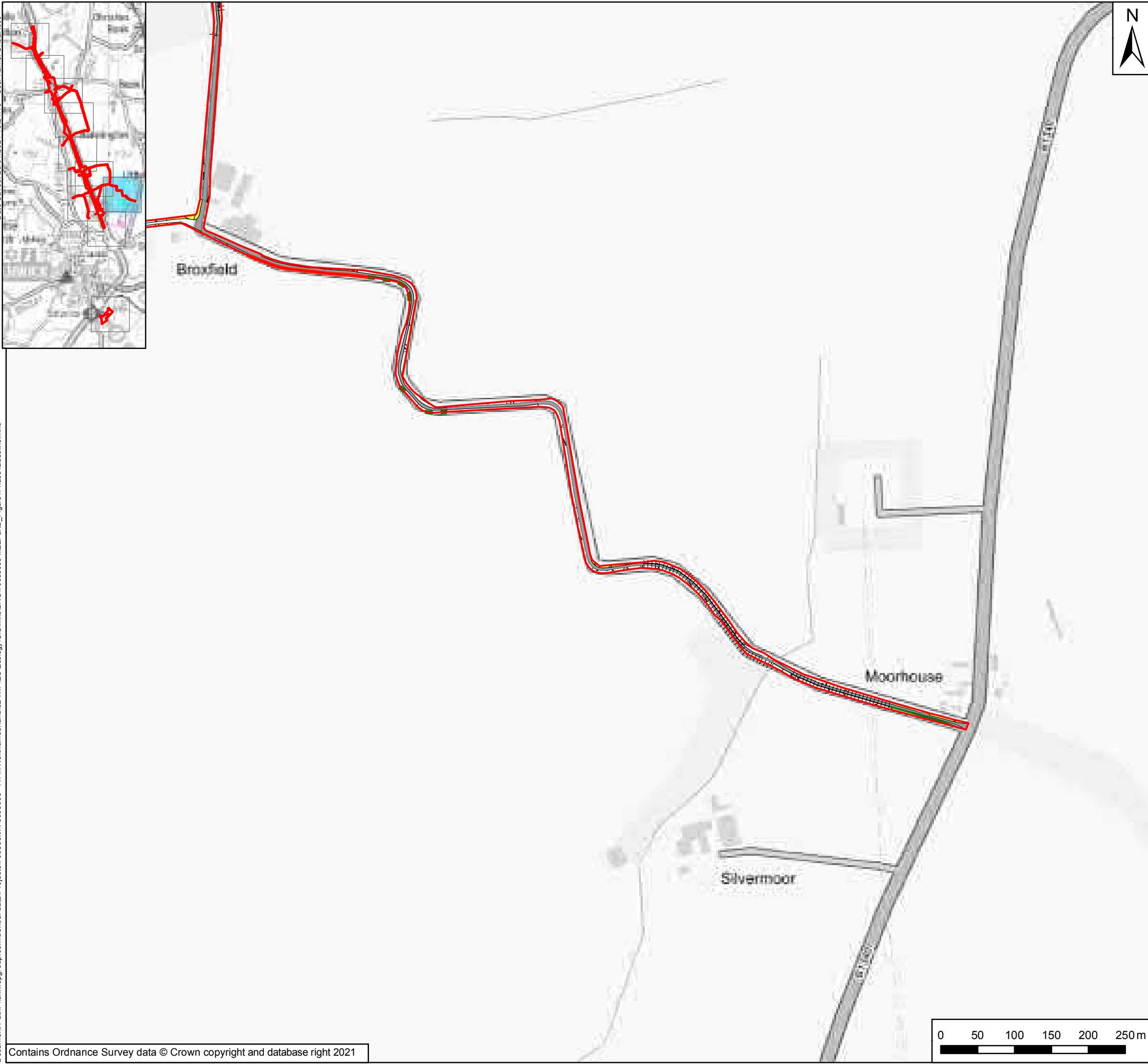
Drawing Title: Baseline Phase 1 Habitat Map (Part B)  
Page 3 of 10

Scale	Drawn	Checked	Approved	Authorised
1:5,000	JR	RB	JM	-
Original Size	Date	Date	Date	Date
A3	13/10/2020	19/01/2021	19/01/2021	-

Drawing Status: For Information  
Suitability: -

Drawing Number	Project	Originator	Volume	Project Ref. No.
HE551459		WSP		
Location	Type	Role	Number	Revision
M2E				-





**Key**

- Order Limits
- Broadleaved woodland - semi-natural
- Broadleaved woodland - plantation
- Coniferous woodland - plantation
- Mixed woodland - plantation
- Scrub - dense/continuous
- Improved grassland
- Marsh/marshy grassland
- Poor semi-improved grassland
- Other tall herb and fern - ruderal
- Standing water
- Hard standing
- Cultivated/disturbed land - arable
- Cultivated/disturbed land - amenity grassland
- Cultivated/disturbed land - ephemeral/short perennial
- Introduced shrub
- Buildings
- Bare ground
- Running water
- Intact hedge - native species-rich
- Intact hedge - species-poor
- Defunct hedge - native species-rich
- Defunct hedge - species-poor
- Hedge with trees - native species-rich
- Hedge with trees - species-poor
- Fence
- Wall
- Dry ditch
- Scrub - scattered
- Broad-Leaved Parkland/scattered trees
- Coniferous Parkland/scattered trees

Rev	Date	Description	By	Chk'd	App'd
P02	19/01/2021	Second Issue	JR	RB	JM
P01	13/10/2020	First Issue	JR	RB	JR

Client

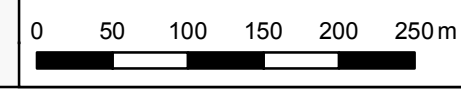
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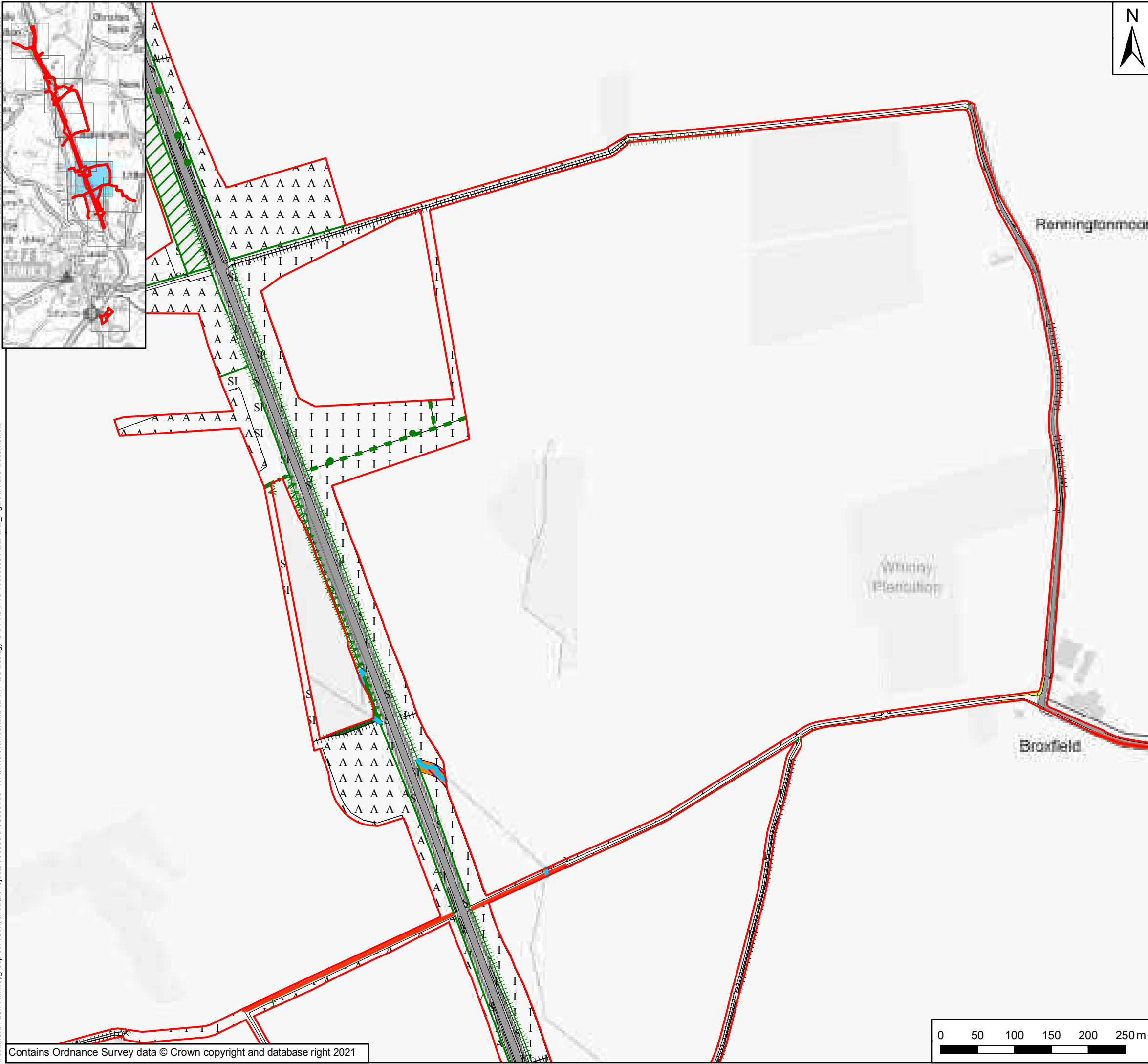
Drawing Title: Baseline Phase 1 Habitat Map (Part B)  
Page 4 of 10

Scale	1:5,000	Drawn	JR	Checked	RB	Approved	JM	Authorised	-
Original Size	A3	Date	13/10/2020	Date	19/01/2021	Date	19/01/2021	Date	-

Drawing Status: For Information  
Suitability: -

Drawing Number	HE551459	Project	WSP	Originator	Volume	Project Ref. No.	-
M2E	Location	Type	Role	Number	Revision	-	-





Key	
	Order Limits
	Broadleaved woodland - semi-natural
	Broadleaved woodland - plantation
	Coniferous woodland - plantation
	Mixed woodland - plantation
	Scrub - dense/continuous
	Improved grassland
	Marsh/marshy grassland
	Poor semi-improved grassland
	Other tall herb and fern - ruderal
	Standing water
	Hard standing
	Cultivated/disturbed land - arable
	Cultivated/disturbed land - amenity grassland
	Cultivated/disturbed land - ephemeral/short perennial
	Introduced shrub
	Buildings
	Bare ground
	Running water
	Intact hedge - native species-rich
	Intact hedge - species-poor
	Defunct hedge - native species-rich
	Defunct hedge - species-poor
	Hedge with trees - native species-rich
	Hedge with trees - species-poor
	Fence
	Wall
	Dry ditch
	Scrub - scattered
	Broad-Leaved Parkland/scattered trees
	Coniferous Parkland/scattered trees

Rev	Date	Description	By	Chk'd	App'd
P02	19/01/2021	Second Issue	JR	RB	JM
P01	13/10/2020	First Issue	JR	RB	JR

Client

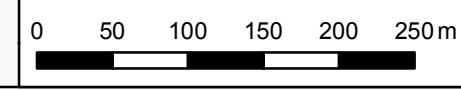
Project Title: A1 in Northumberland: Morpeth to Ellingham Improvement Scheme

Drawing Title: Baseline Phase 1 Habitat Map (Part B)  
Page 5 of 10

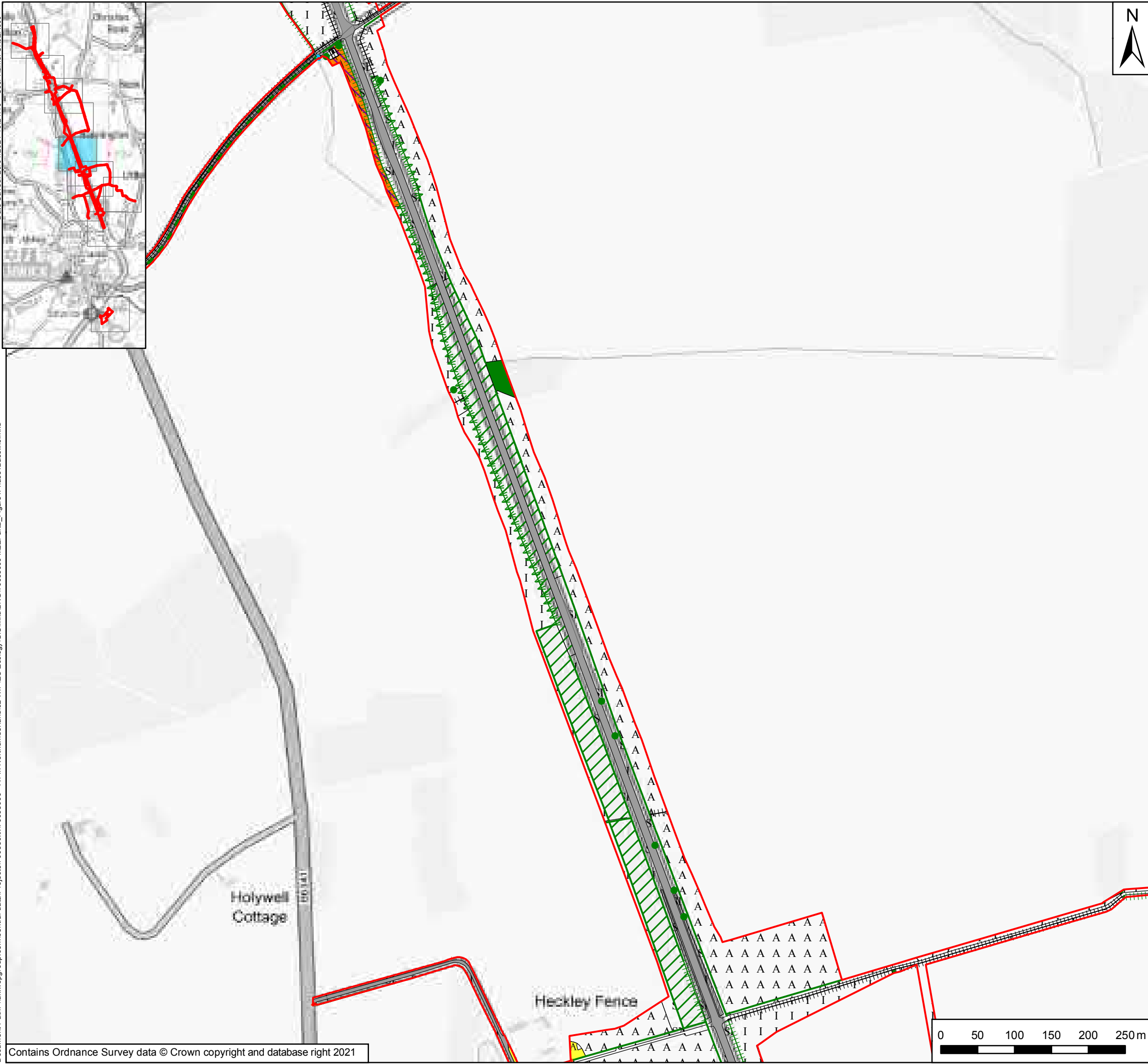
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Original Size	A3	Date	13/10/2020	Date	19/01/2021	Date	19/01/2021	Date	-

Drawing Status: For Information  
Suitability: -

Drawing Number	HE551459	Project	M2E	Location	Location	Originator	WSP	Volume		Project Ref. No.	
										Revision	-







Key	
	Order Limits
	Broadleaved woodland - semi-natural
	Broadleaved woodland - plantation
	Coniferous woodland - plantation
	Mixed woodland - plantation
	Scrub - dense/continuous
	Improved grassland
	Marsh/marshy grassland
	Poor semi-improved grassland
	Other tall herb and fern - ruderal
	Standing water
	Hard standing
	Cultivated/disturbed land - arable
	Cultivated/disturbed land - amenity grassland
	Cultivated/disturbed land - ephemeral/short perennial
	Introduced shrub
	Buildings
	Bare ground
	Running water
	Intact hedge - native species-rich
	Intact hedge - species-poor
	Defunct hedge - native species-rich
	Defunct hedge - species-poor
	Hedge with trees - native species-rich
	Hedge with trees - species-poor
	Fence
	Wall
	Dry ditch
	Scrub - scattered
	Broad-Leaved Parkland/scattered trees
	Coniferous Parkland/scattered trees

Rev	Date	Description	By	Chk'd	App'd
P02	19/01/2021	Second Issue	JR	RB	JM
P01	13/10/2020	First Issue	JR	RB	JR



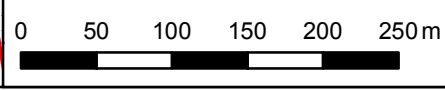
Project Title: A1 in Northumberland: Morpeth to Ellingham Improvement Scheme

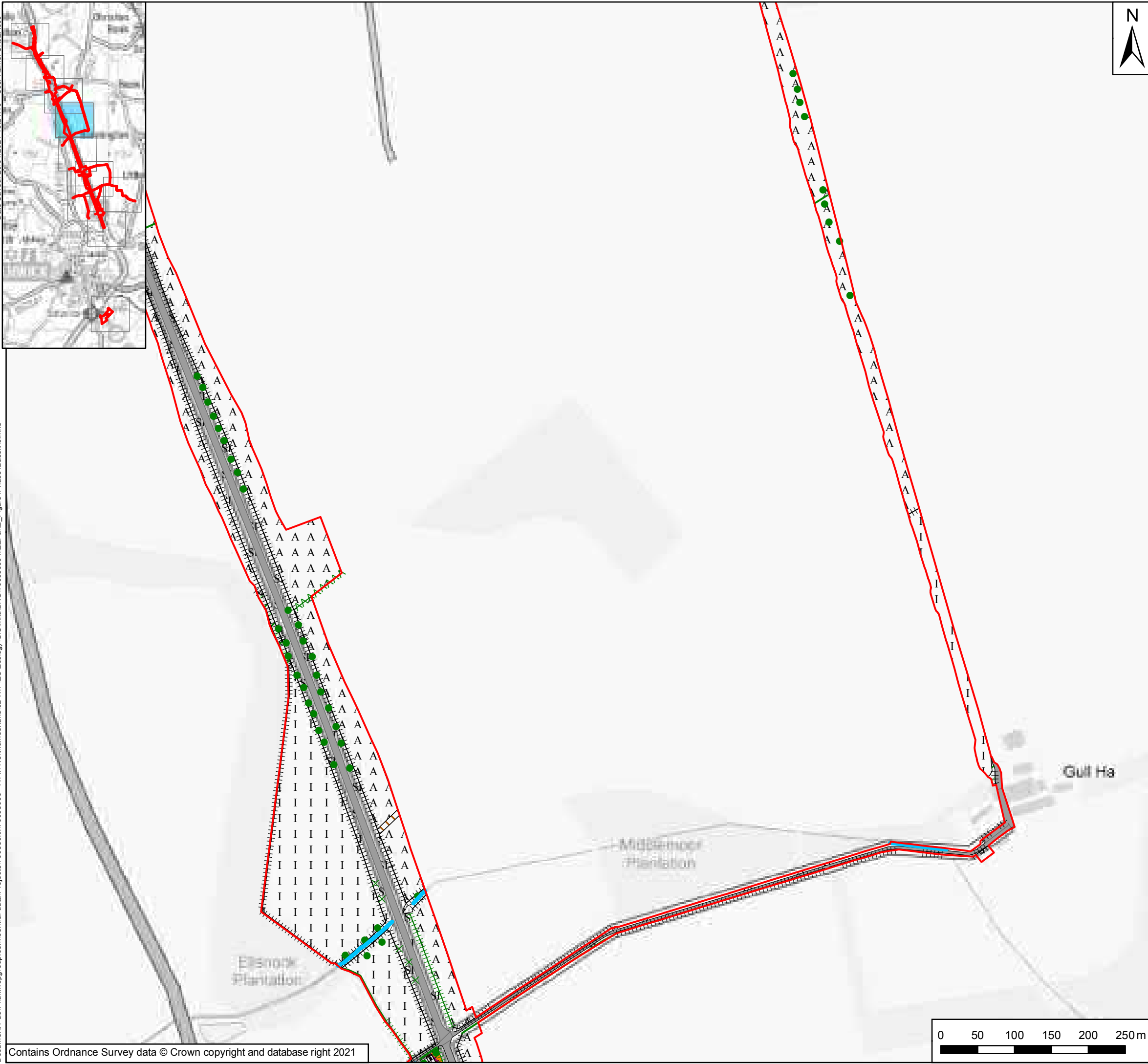
Drawing Title: Baseline Phase 1 Habitat Map (Part B)  
Page 6 of 10

Scale	1:5,000	Drawn	JR	Checked	RB	Approved	JM	Authorised	-
Original Size	A3	Date	13/10/2020	Date	19/01/2021	Date	19/01/2021	Date	-

Drawing Status: For Information  
Suitability: -

Drawing Number	HE551459	Originator	WSP	Volume		Project Ref. No.	
Project						Revision	-
M2E		Type		Role		Number	





Key	
[Red outline]	Order Limits
[Green solid]	Broadleaved woodland - semi-natural
[Green diagonal lines]	Broadleaved woodland - plantation
[Light green diagonal lines]	Coniferous woodland - plantation
[Green cross-hatch]	Mixed woodland - plantation
[Green X-hatch]	Scrub - dense/continuous
[White with black border]	Improved grassland
[Orange diagonal lines]	Marsh/marshy grassland
[White with black border]	Poor semi-improved grassland
[White with black border]	Other tall herb and fern - ruderal
[Blue solid]	Standing water
[Grey solid]	Hard standing
[White with black border]	Cultivated/disturbed land - arable
[Yellow solid]	Cultivated/disturbed land - amenity grassland
[White with black border]	Cultivated/disturbed land - ephemeral/short perennial
[Orange X-hatch]	Introduced shrub
[Black solid]	Buildings
[White with black border]	Bare ground
[Blue line]	Running water
[Green V-hatch]	Intact hedge - native species-rich
[Green solid]	Intact hedge - species-poor
[Green V-hatch]	Defunct hedge - native species-rich
[Green dashed]	Defunct hedge - species-poor
[Green V-hatch]	Hedge with trees - native species-rich
[Green H-hatch]	Hedge with trees - species-poor
[Black H-hatch]	Fence
[Red solid]	Wall
[Blue dashed]	Dry ditch
[Green X]	Scrub - scattered
[Green circle]	Broad-Leaved Parkland/scattered trees
[Light green circle]	Coniferous Parkland/scattered trees

Rev	Date	Description	By	Chk'd	App'd
P02	19/01/2021	Second Issue	JR	RB	JM
P01	13/10/2020	First Issue	JR	RB	JR



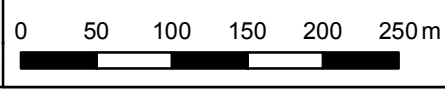
Project Title: A1 in Northumberland: Morpeth to Ellingham Improvement Scheme

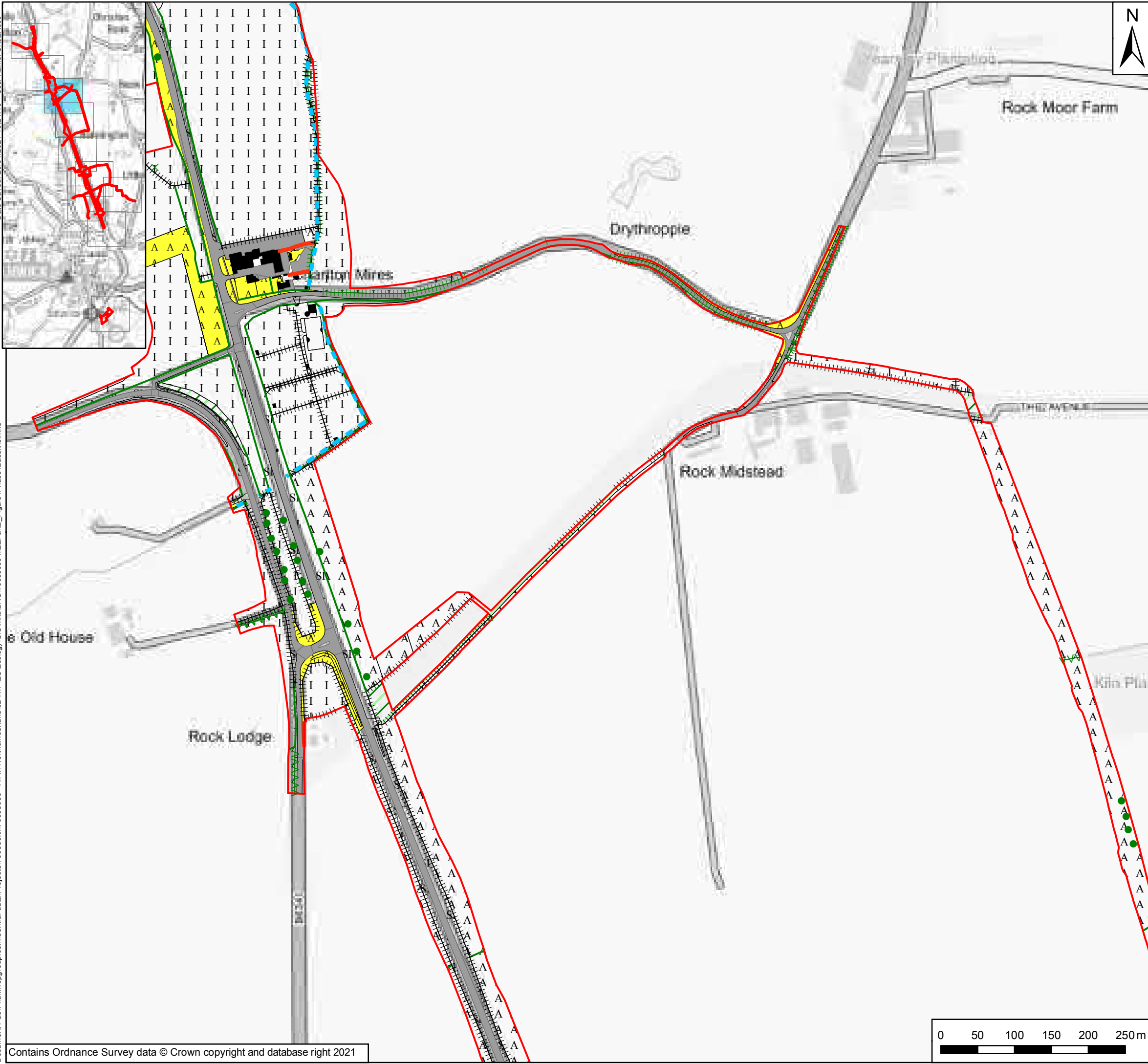
Drawing Title: Baseline Phase 1 Habitat Map (Part B)  
Page 7 of 10

Scale	1:5,000	Drawn	JR	Checked	RB	Approved	JM	Authorised	-
Original Size	A3	Date	13/10/2020	Date	19/01/2021	Date	19/01/2021	Date	-

Drawing Status: For Information  
Suitability: -

Drawing Number	HE551459	Originator	WSP	Volume		Project Ref. No.	
Project	M2E	Type		Role		Revision	-
Location				Number			





**Key**

- Order Limits
- Broadleaved woodland - semi-natural
- Broadleaved woodland - plantation
- Coniferous woodland - plantation
- Mixed woodland - plantation
- Scrub - dense/continuous
- Improved grassland
- Marsh/marshy grassland
- Poor semi-improved grassland
- Other tall herb and fern - ruderal
- Standing water
- Hard standing
- Cultivated/disturbed land - arable
- Cultivated/disturbed land - amenity grassland
- Cultivated/disturbed land - ephemeral/short perennial
- Introduced shrub
- Buildings
- Bare ground
- Running water
- Intact hedge - native species-rich
- Intact hedge - species-poor
- Defunct hedge - native species-rich
- Defunct hedge - species-poor
- Hedge with trees - native species-rich
- Hedge with trees - species-poor
- Fence
- Wall
- Dry ditch
- Scrub - scattered
- Broad-Leaved Parkland/scattered trees
- Coniferous Parkland/scattered trees

P02	19/01/2021	Second Issue	JR	RB	JM
P01	13/10/2020	First Issue	JR	RB	JR
Rev	Date	Description	By	Chk'd	App'd



Client

**highways england**

Project Title: A1 in Northumberland: Morpeth to Ellingham Improvement Scheme

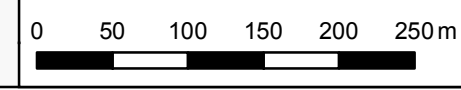
Drawing Title: Baseline Phase 1 Habitat Map (Part B) Page 8 of 10

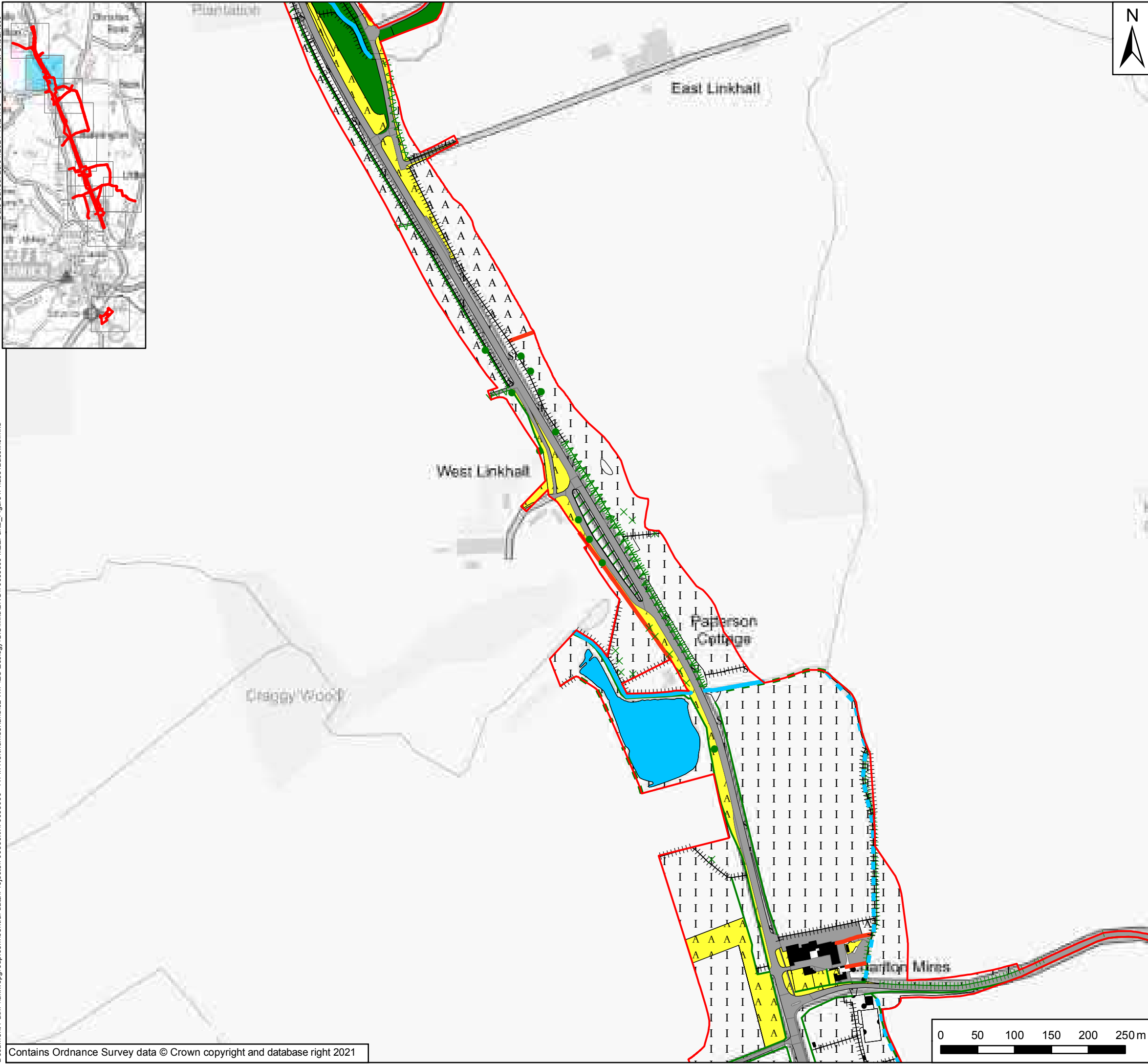
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Drawing Status: For Information

Suitability: -

Drawing Number	HE551459	Project	M2E	Originator	WSP	Volume	-	Project Ref. No.	-
Location		Type		Role		Number		Revision	





Key	
[Red outline]	Order Limits
[Dark Green]	Broadleaved woodland - semi-natural
[Light Green]	Broadleaved woodland - plantation
[Green with diagonal lines]	Coniferous woodland - plantation
[Green with cross-hatch]	Mixed woodland - plantation
[Green with 'X' pattern]	Scrub - dense/continuous
[White with 'I' pattern]	Improved grassland
[Orange]	Marsh/marshy grassland
[White with 'I' pattern]	Poor semi-improved grassland
[White with diagonal lines]	Other tall herb and fern - ruderal
[Blue]	Standing water
[Grey]	Hard standing
[White with 'A' pattern]	Cultivated/disturbed land - arable
[Yellow]	Cultivated/disturbed land - amenity grassland
[White with 'A' pattern]	Cultivated/disturbed land - ephemeral/short perennial
[White with 'X' pattern]	Introduced shrub
[Black]	Buildings
[White with black dot]	Bare ground
[Blue line]	Running water
[Green wavy line]	Intact hedge - native species-rich
[Green wavy line]	Intact hedge - species-poor
[Green wavy line]	Defunct hedge - native species-rich
[Green wavy line]	Defunct hedge - species-poor
[Green wavy line]	Hedge with trees - native species-rich
[Green wavy line]	Hedge with trees - species-poor
[Black line]	Fence
[Red line]	Wall
[Blue dashed line]	Dry ditch
[Green 'X' symbol]	Scrub - scattered
[Green circle]	Broad-Leaved Parkland/scattered trees
[Light Green circle]	Coniferous Parkland/scattered trees

Rev	Date	Description	By	Chk'd	App'd
P02	19/01/2021	Second Issue	JR	RB	JM
P01	13/10/2020	First Issue	JR	RB	JR



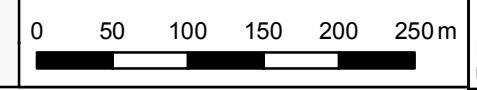
Project Title: A1 in Northumberland: Morpeth to Ellingham Improvement Scheme

Drawing Title: Baseline Phase 1 Habitat Map (Part B)  
Page 9 of 10

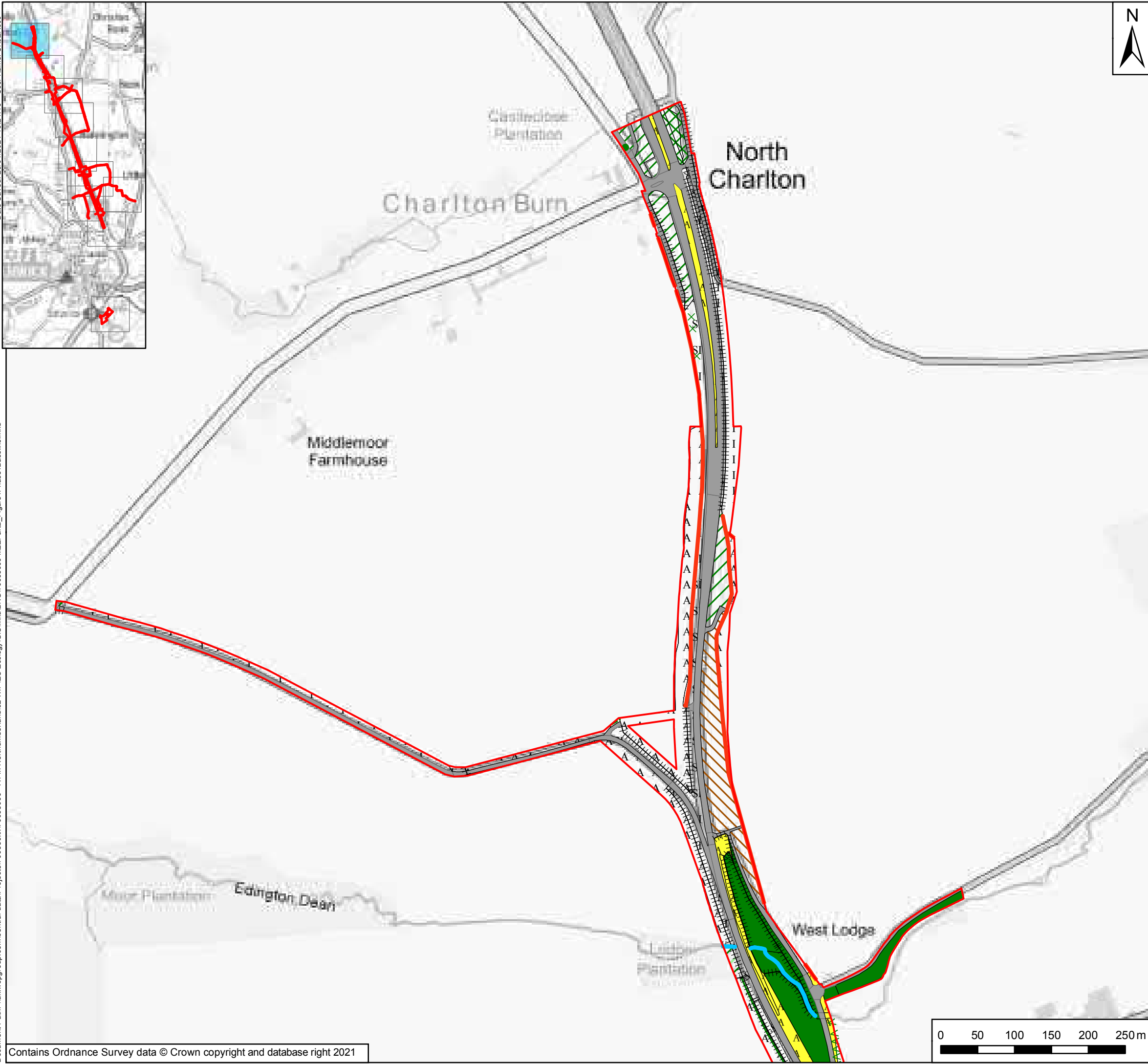
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Original Size	A3	Date	13/10/2020	Date	19/01/2021	Date	19/01/2021	Date	-

Drawing Status: For Information  
Suitability: -

Drawing Number	HE551459	Project	M2E	Location	Location	Originator	WSP	Volume	Volume	Project Ref. No.	Project Ref. No.
Revision	-	Type	Type	Role	Role	Number	Number	Number	Number	Number	Number







Key	
	Order Limits
	Broadleaved woodland - semi-natural
	Broadleaved woodland - plantation
	Coniferous woodland - plantation
	Mixed woodland - plantation
	Scrub - dense/continuous
	Improved grassland
	Marsh/marshy grassland
	Poor semi-improved grassland
	Other tall herb and fern - ruderal
	Standing water
	Hard standing
	Cultivated/disturbed land - arable
	Cultivated/disturbed land - amenity grassland
	Cultivated/disturbed land - ephemeral/short perennial
	Introduced shrub
	Buildings
	Bare ground
	Running water
	Intact hedge - native species-rich
	Intact hedge - species-poor
	Defunct hedge - native species-rich
	Defunct hedge - species-poor
	Hedge with trees - native species-rich
	Hedge with trees - species-poor
	Fence
	Wall
	Dry ditch
	Scrub - scattered
	Broad-Leaved Parkland/scattered trees
	Coniferous Parkland/scattered trees

Rev	Date	Description	By	Chk'd	App'd
P02	19/01/2021	Second Issue	JR	RB	JM
P01	13/10/2020	First Issue	JR	RB	JR

Client

Project Title: A1 in Northumberland: Morpeth to Ellingham Improvement Scheme

Drawing Title: Baseline Phase 1 Habitat Map (Part B)  
Page 10 of 10

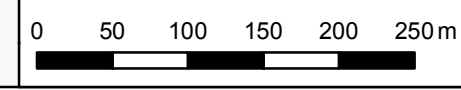
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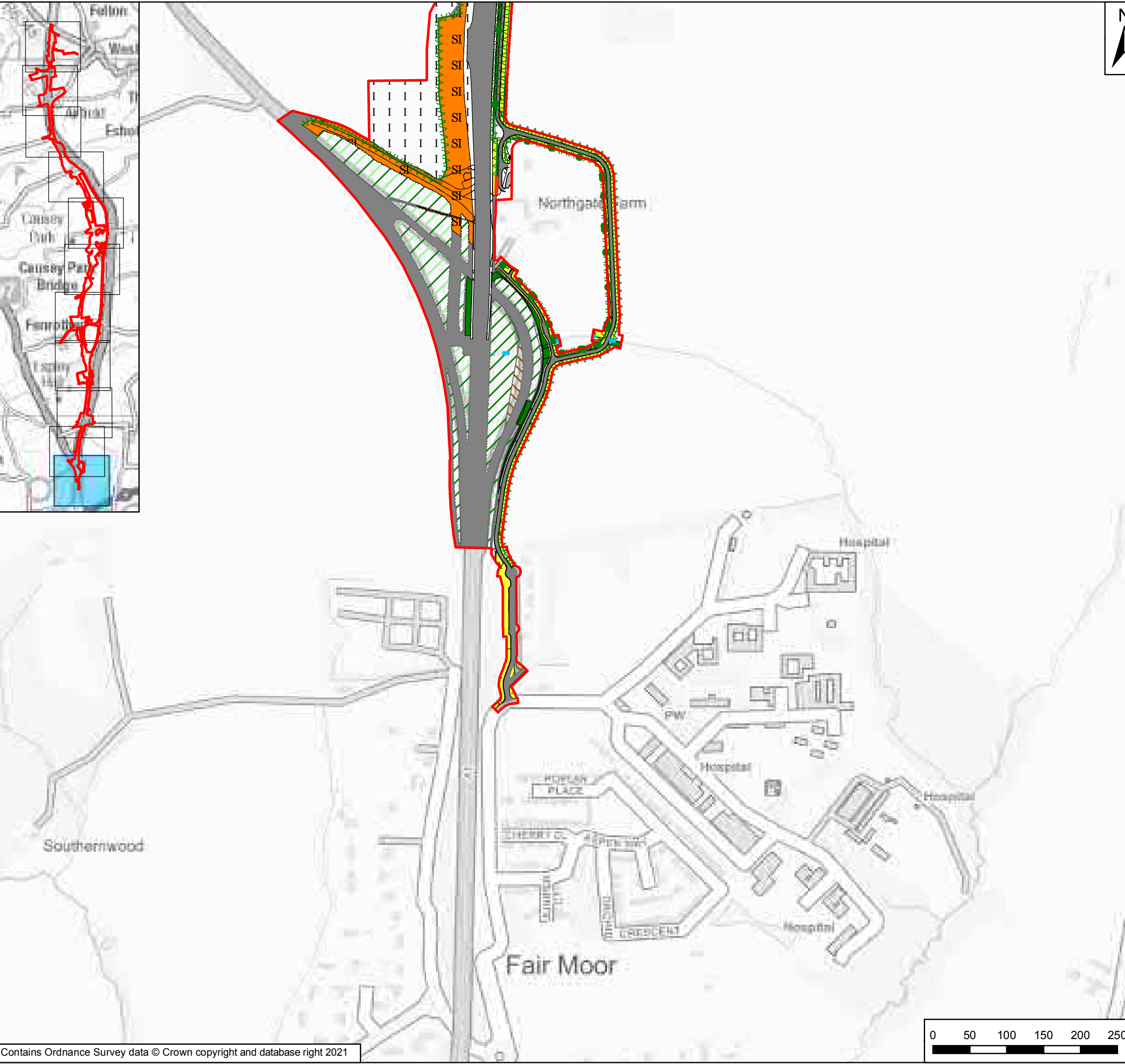
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Drawing Number	HE551459	Project	WSP	Originator	Volume	Project Ref. No.
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M2E	Location	Type	Role	Number	Revision	-
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# **POST-DEVELOPMENT PLANS**



- Key
- Order Limits
  - Broadleaved woodland - semi-natural
  - Broadleaved woodland - plantation
  - Mixed woodland - plantation
  - Broadleaved Parkland/scattered trees
  - Improved grassland
  - Poor semi-improved grassland
  - Other tall herb and fern - ruderal
  - Cultivated/disturbed land - arable
  - Cultivated/disturbed land - amenity grassland
  - Buildings
  - Bare ground
  - Hard standing

JNCC Phase 1 Habitat Types determined in the survey were translated to UK Habitat Classification types to allow use in the Metric. Table 2-2 in the Biodiversity No Net Loss Assessment report shows the corresponding UK Habitat Classification types.

Rev	Date	Description	By	Chk'd	App'd
P03	11/03/2021	Update to Order Limits	RM	RB	JM
P02	13/10/2020	Second Issue	JR	RB	JM
P01	13/10/2020	First Issue	JR	RB	-

Client



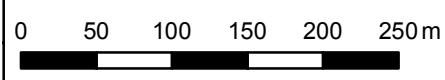
Project Title: A1 in Northumberland: Morpeth to Ellingham Improvement Scheme

Drawing Title: Post-Development Plan (Part A)  
Page 1 of 11

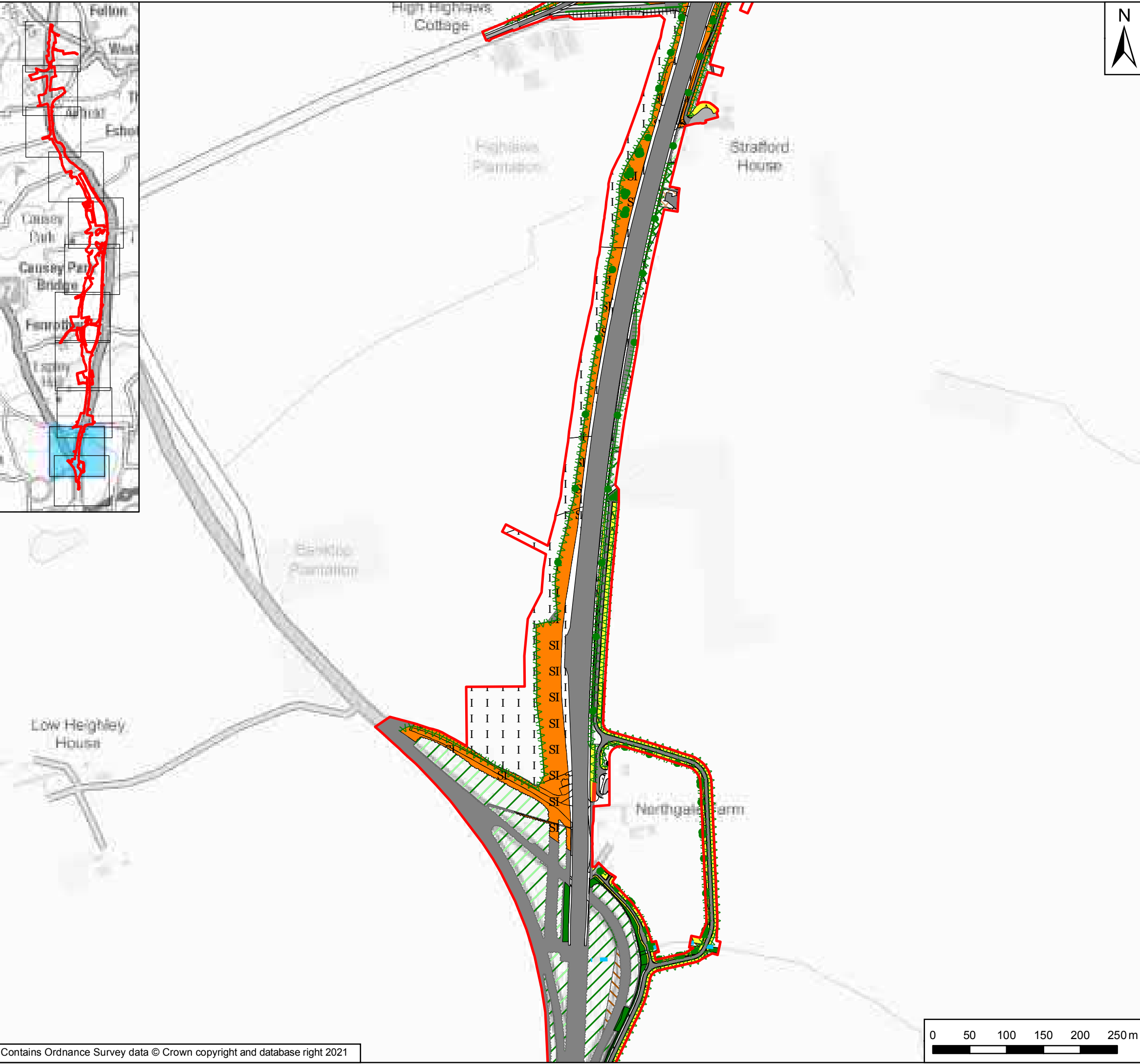
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Drawing Status: For Information  
Suitability: -

Drawing Number	HE551459	Originator	WSP	Volume		Project Ref. No.	
Location	M2E	Type		Role		Revision	-







- Key**
- Order Limits
  - Broadleaved woodland - semi-natural
  - Broadleaved woodland - plantation
  - Coniferous woodland - plantation
  - Mixed woodland - plantation
  - Scrub - dense/continuous
  - Broadleaved Parkland/scattered trees
  - I I Improved grassland
  - SI SI Poor semi-improved grassland
  - Other tall herb and fern - ruderal
  - A A Cultivated/disturbed land - arable
  - A A Cultivated/disturbed land - amenity grassland
  - Buildings
  - Bare ground
  - Hard standing

JNCC Phase 1 Habitat Types determined in the survey were translated to UK Habitat Classification types to allow use in the Metric. Table 2-2 in the Biodiversity No Net Loss Assessment report shows the corresponding UK Habitat Classification types.

Rev	Date	Description	By	Chk'd	App'd
P03	11/03/2021	Update to Order Limits	RM	RB	JM
P02	13/10/2020	Second Issue	JR	RB	JM
P01	13/10/2020	First Issue	JR	RB	-

Client

Project Title: A1 in Northumberland: Morpeth to Ellingham Improvement Scheme

Drawing Title: Post-Development Plan (Part A)  
Page 2 of 11

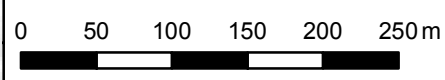
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A3	01/10/2020	-	-	-

Drawing Status: For Information      Suitability: -

Drawing Number	Project	Originator	Volume	Project Ref. No.
HE551459		WSP		

Drawing Status	Location	Type	Role	Number	Revision
M2E					-





Key

	Order Limits
	Broadleaved woodland - plantation
	Coniferous woodland - plantation
	Mixed woodland - plantation
	Scrub - dense/continuous
	Broadleaved Parkland/scattered trees
	Improved grassland
	Marsh/marshy grassland
	Poor semi-improved grassland
	Other tall herb and fern - ruderal
	Cultivated/disturbed land - arable
	Cultivated/disturbed land - amenity grassland
	Hard standing

JNCC Phase 1 Habitat Types determined in the survey were translated to UK Habitat Classification types to allow use in the Metric. Table 2-2 in the Biodiversity No Net Loss Assessment report shows the corresponding UK Habitat Classification types.

Rev	Date	Description	By	Chk'd	App'd
P03	11/03/2021	Update to Order Limits	RM	RB	JM
P02	13/10/2020	Second Issue	JR	RB	JM
P01	13/10/2020	First Issue	JR	RB	-

Client

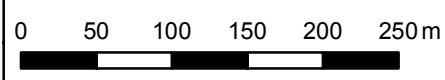
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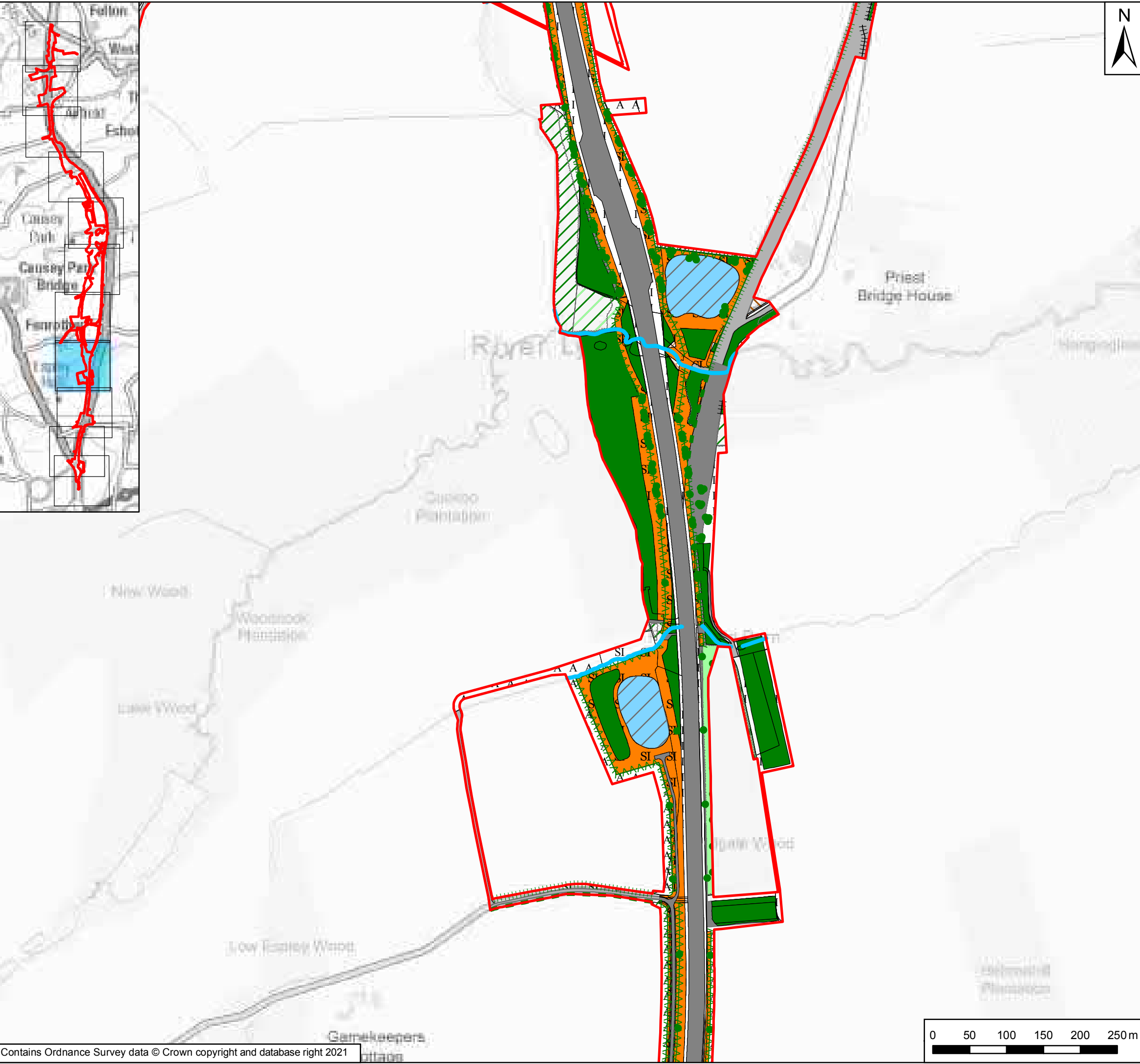
Drawing Title: Post-Development Plan (Part A)  
Page 3 of 11

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Drawing Status: For Information  
Suitability: -

Drawing Number	HE551459	Originator	WSP	Volume		Project Ref. No.	
Project		Type		Role		Revision	





- Key**
- Order Limits
  - Broadleaved woodland - semi-natural
  - Broadleaved woodland - plantation
  - Coniferous woodland - plantation
  - Mixed woodland - semi-natural
  - Mixed woodland - plantation
  - Scrub - dense/continuous
  - Scrub - scattered
  - Broadleaved Parkland/scattered trees
  - Neutral grassland - semi-improved
  - Improved grassland
  - Marsh/marshy grassland
  - Poor semi-improved grassland
  - Other tall herb and fern - ruderal
  - Standing water
  - Cultivated/disturbed land - arable
  - Hard standing

JNCC Phase 1 Habitat Types determined in the survey were translated to UK Habitat Classification types to allow use in the Metric. Table 2-2 in the Biodiversity No Net Loss Assessment report shows the corresponding UK Habitat Classification types.

Rev	Date	Description	By	Chk'd	App'd
P03	11/03/2021	Update to Order Limits	RM	RB	JM
P02	13/10/2020	Second Issue	JR	RB	JM
P01	13/10/2020	First Issue	JR	RB	-

Client

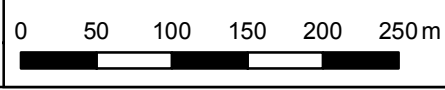
Project Title: A1 in Northumberland: Morpeth to Ellingham Improvement Scheme

Drawing Title: Post-Development Plan (Part A)  
Page 4 of 11

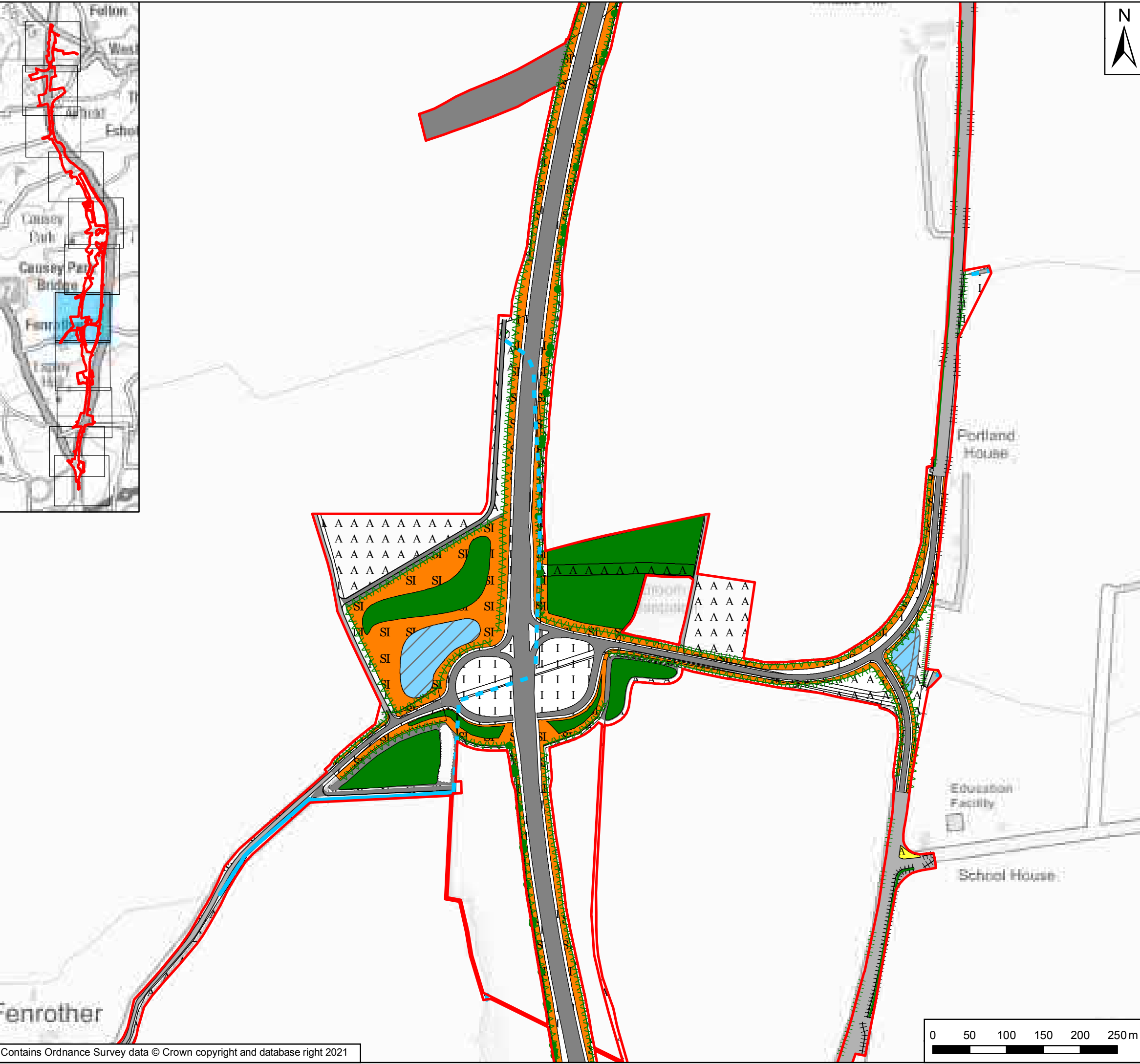
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Drawing Status: For Information  
Suitability: -

Drawing Number	Project	Originator	Volume	Project Ref. No.
HE551459		WSP		
M2E	Location	Type	Role	Number







Key

	Order Limits
	Broadleaved woodland - semi-natural
	Coniferous woodland - plantation
	Mixed woodland - plantation
	Scrub - dense/continuous
	Scrub - scattered
	Improved grassland
	Marsh/marshy grassland
	Poor semi-improved grassland
	Other tall herb and fern - ruderal
	Cultivated/disturbed land - arable
	Cultivated/disturbed land - amenity grassland
	Buildings
	Hard standing

JNCC Phase 1 Habitat Types determined in the survey were translated to UK Habitat Classification types to allow use in the Metric. Table 2-2 in the Biodiversity No Net Loss Assessment report shows the corresponding UK Habitat Classification types.

Rev	Date	Description	By	Chk'd	App'd
P03	11/03/2021	Update to Order Limits	RM	RB	JM
P02	13/10/2020	Second Issue	JR	RB	JM
P01	13/10/2020	First Issue	JR	RB	-

Client

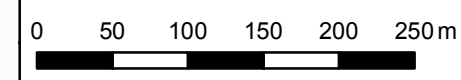
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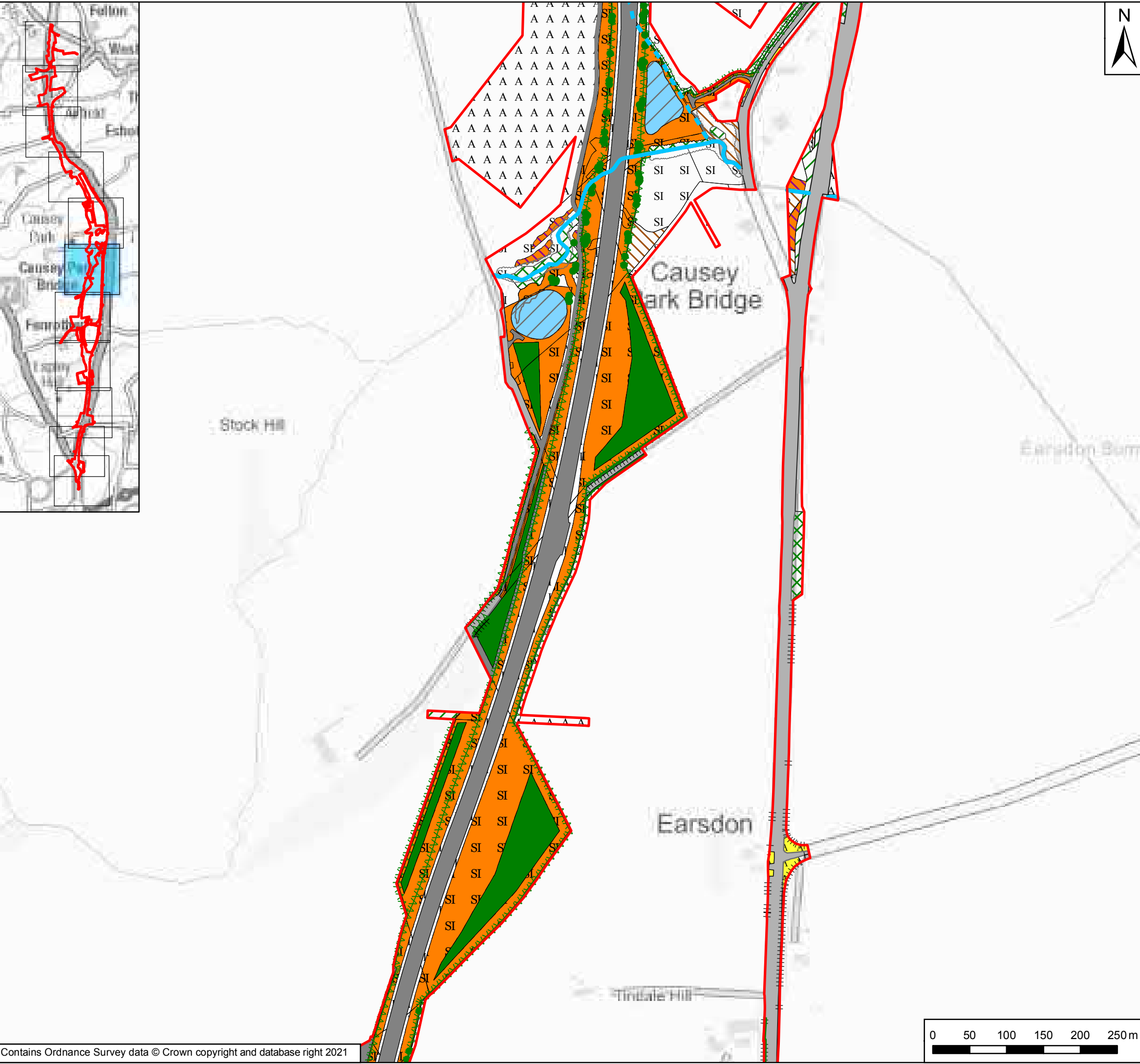
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Page 5 of 11

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Drawing Status: For Information  
Suitability: -

Drawing Number	HE551459	Project	WSP	Originator	Volume	Project Ref. No.
M2E	Location	Type	Role	Number	Revision	-





- Key
- Order Limits
  - Broadleaved woodland - semi-natural
  - Broadleaved woodland - plantation
  - Coniferous woodland - plantation
  - Mixed woodland - plantation
  - Scrub - dense/continuous
  - Neutral grassland - semi-improved
  - Improved grassland
  - Marsh/marshy grassland
  - Poor semi-improved grassland
  - Other tall herb and fern - ruderal
  - Spoil
  - Cultivated/disturbed land - arable
  - Cultivated/disturbed land - amenity grassland
  - Buildings
  - Hard standing

JNCC Phase 1 Habitat Types determined in the survey were translated to UK Habitat Classification types to allow use in the Metric. Table 2-2 in the Biodiversity No Net Loss Assessment report shows the corresponding UK Habitat Classification types.

Rev	Date	Description	By	Chk'd	App'd
P03	11/03/2021	Update to Order Limits	RM	RB	JM
P02	13/10/2020	Second Issue	JR	RB	JM
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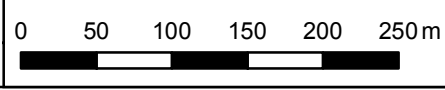
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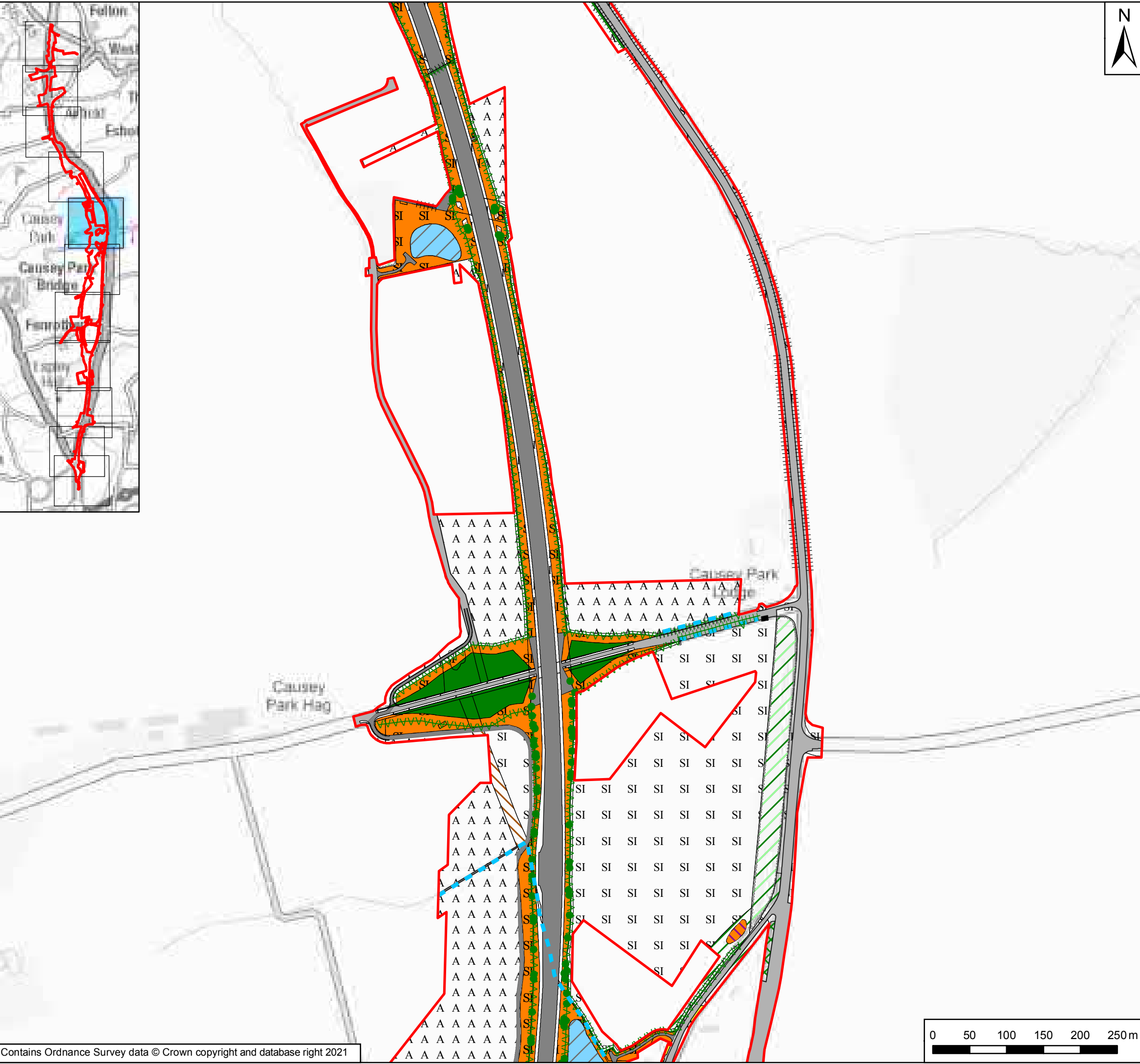
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Page 6 of 11

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Drawing Status: For Information  
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Drawing Number	HE551459	Project	WSP	Originator	WSP	Volume		Project Ref. No.	
M2E	Location	Type	Role	Number				Revision	-





Key	
	Order Limits
	Broadleaved woodland - plantation
	Coniferous woodland - plantation
	Mixed woodland - plantation
	Scrub - dense/continuous
	Improved grassland
	Marsh/marshy grassland
	Poor semi-improved grassland
	Other tall herb and fern - ruderal
	Cultivated/disturbed land - arable
	Cultivated/disturbed land - amenity grassland
	Buildings
	Hard standing

JNCC Phase 1 Habitat Types determined in the survey were translated to UK Habitat Classification types to allow use in the Metric. Table 2-2 in the Biodiversity No Net Loss Assessment report shows the corresponding UK Habitat Classification types.

Rev	Date	Description	By	Chk'd	App'd
P03	11/03/2021	Update to Order Limits	RM	RB	JM
P02	13/10/2020	Second Issue	JR	RB	JM
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Client

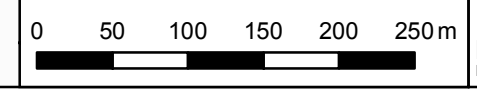
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Drawing Title: Post-Development Plan (Part A)  
Page 7 of 11

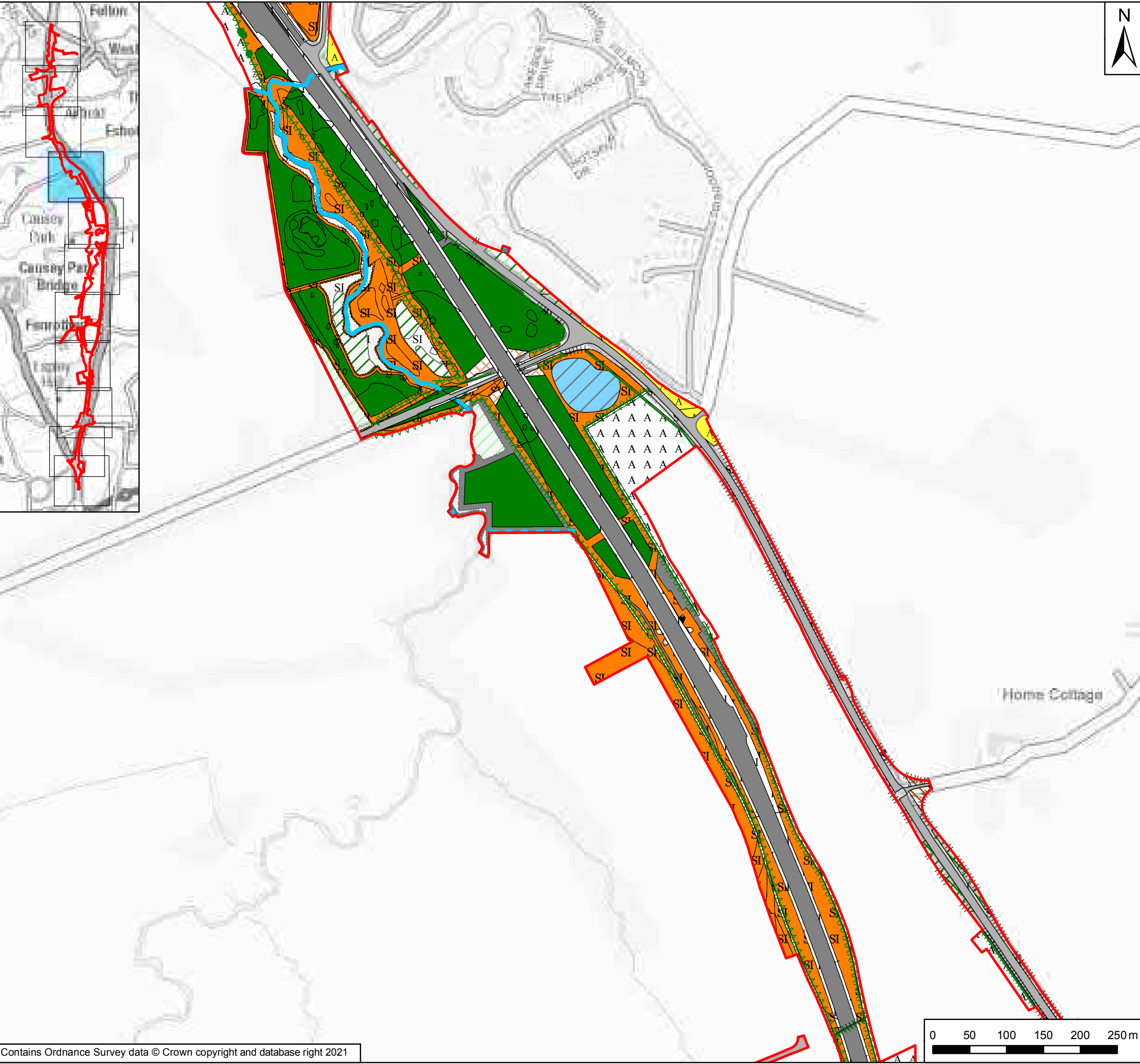
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Drawing Status: For Information  
Suitability: -

Drawing Number	Project	Originator	Volume	Project Ref. No.
HE551459		WSP		
Revision				
-				







**Key**

- Order Limits
- Broadleaved woodland - semi-natural
- Broadleaved woodland - plantation
- Coniferous woodland - plantation
- Mixed woodland - plantation
- Scrub - dense/continuous
- Broadleaved Parkland/scattered trees
- Improved grassland
- Marsh/marshy grassland
- Poor semi-improved grassland
- Other tall herb and fern - ruderal
- Standing water
- Cultivated/disturbed land - arable
- Cultivated/disturbed land - amenity grassland
- Hard standing

JNCC Phase 1 Habitat Types determined in the survey were translated to UK Habitat Classification types to allow use in the Metric. Table 2-2 in the Biodiversity No Net Loss Assessment report shows the corresponding UK Habitat Classification types.

Rev	Date	Description	By	Chk'd	App'd
P03	11/03/2021	Update to Order Limits	RM	RB	JM
P02	13/10/2020	Second Issue	JR	RB	JM
P01	13/10/2020	First Issue	JR	RB	-

Client



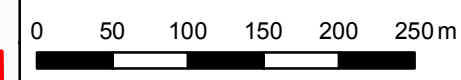
Project Title: A1 in Northumberland: Morpeth to Ellingham Improvement Scheme

Drawing Title: Post-Development Plan (Part A)  
Page 8 of 11

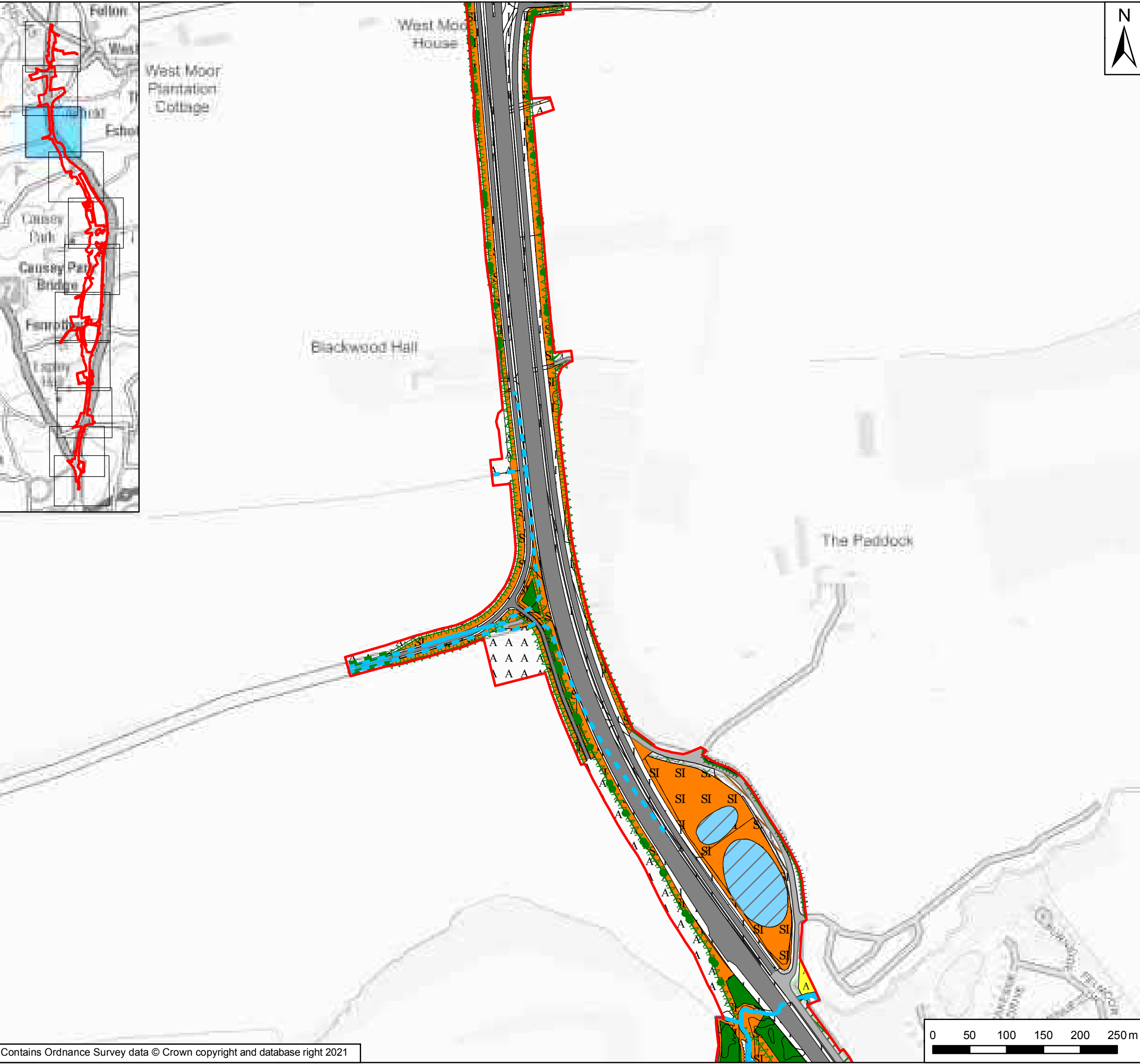
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Suitability: -

Drawing Number	Project	Originator	Volume	Project Ref. No.
HE551459		WSP		
Location	Type	Role	Number	Revision
M2E				-







Key

	Order Limits
	Broadleaved woodland - semi-natural
	Broadleaved woodland - plantation
	Coniferous woodland - plantation
	Mixed woodland - plantation
	Scrub - dense/continuous
	Scrub - scattered
	Neutral grassland - semi-improved
	Improved grassland
	Marsh/marshy grassland
	Poor semi-improved grassland
	Other tall herb and fern - ruderal
	Standing water
	Cultivated/disturbed land - arable
	Cultivated/disturbed land - amenity grassland
	Bare ground
	Hard standing

JNCC Phase 1 Habitat Types determined in the survey were translated to UK Habitat Classification types to allow use in the Metric. Table 2-2 in the Biodiversity No Net Loss Assessment report shows the corresponding UK Habitat Classification types.

Rev	Date	Description	By	Chk'd	App'd
P03	11/03/2021	Update to Order Limits	RM	RB	JM
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Client

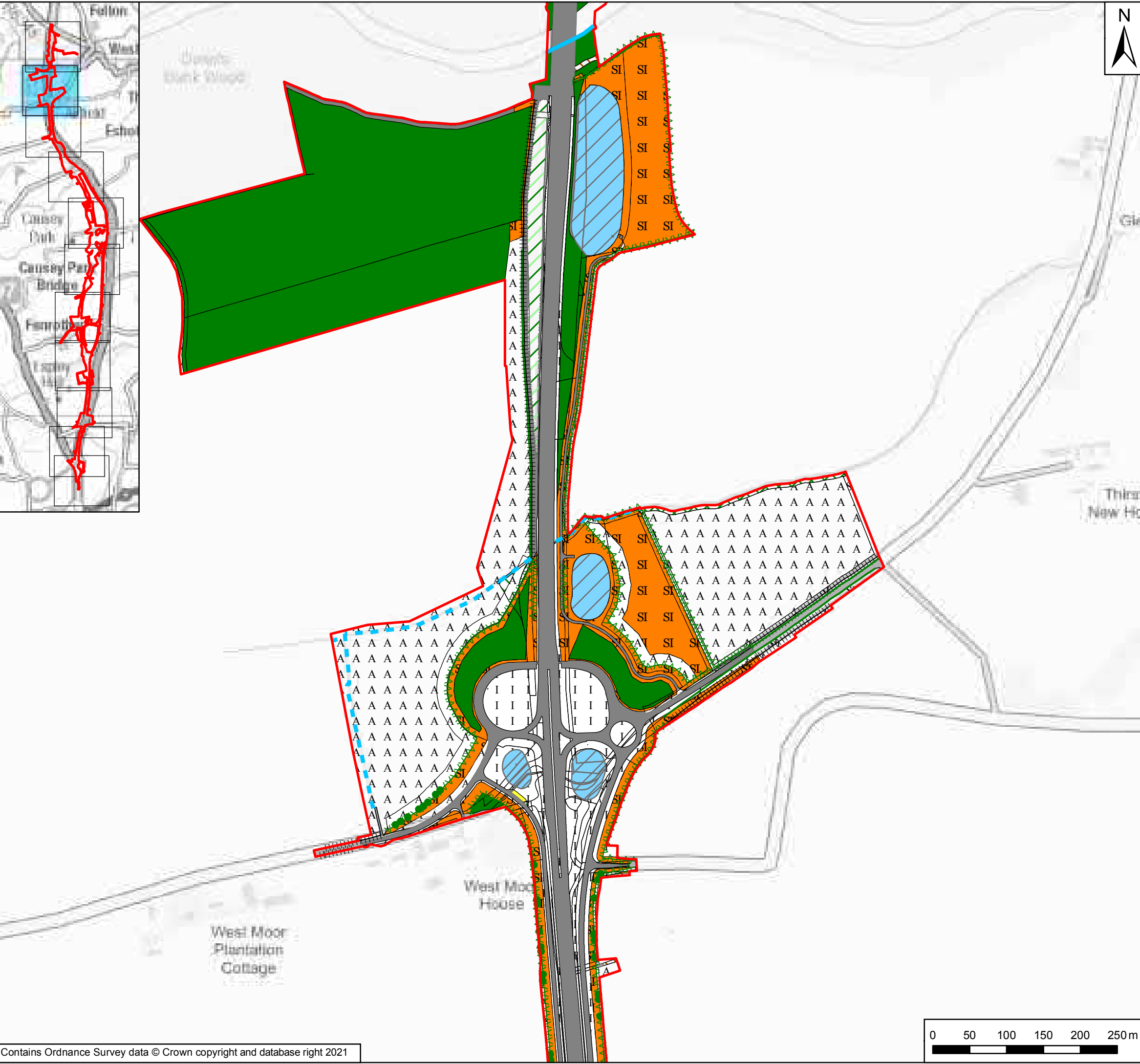
Project Title: A1 in Northumberland: Morpeth to Ellingham Improvement Scheme

Drawing Title: Post-Development Plan (Part A)  
Page 9 of 11

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Drawing Status: For Information  
Suitability: -

Drawing Number	HE551459	Originator	WSP	Volume		Project Ref. No.	
Location	M2E	Type		Role		Revision	-



**Key**

- Order Limits
- Broadleaved woodland - semi-natural
- Broadleaved woodland - plantation
- Coniferous woodland - plantation
- Mixed woodland - semi-natural
- Mixed woodland - plantation
- Scrub - dense/continuous
- Scrub - scattered
- I I Improved grassland
- A A Poor semi-improved grassland
- Other tall herb and fern - ruderal
- Standing water
- A A Cultivated/disturbed land - arable
- Cultivated/disturbed land - amenity grassland
- Buildings
- Bare ground
- Hard standing

JNCC Phase 1 Habitat Types determined in the survey were translated to UK Habitat Classification types to allow use in the Metric. Table 2-2 in the Biodiversity No Net Loss Assessment report shows the corresponding UK Habitat Classification types.

Rev	Date	Description	By	Chk'd	App'd
P03	11/03/2021	Update to Order Limits	RM	RB	JM
P02	13/10/2020	Second Issue	JR	RB	JM
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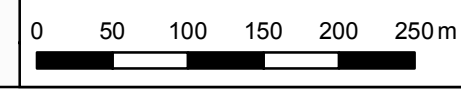
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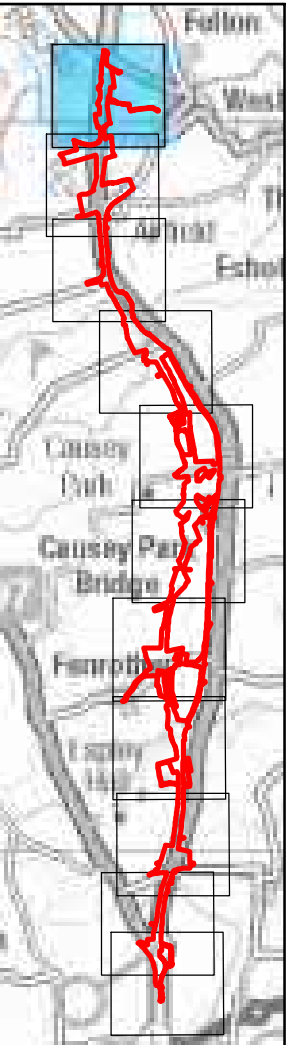
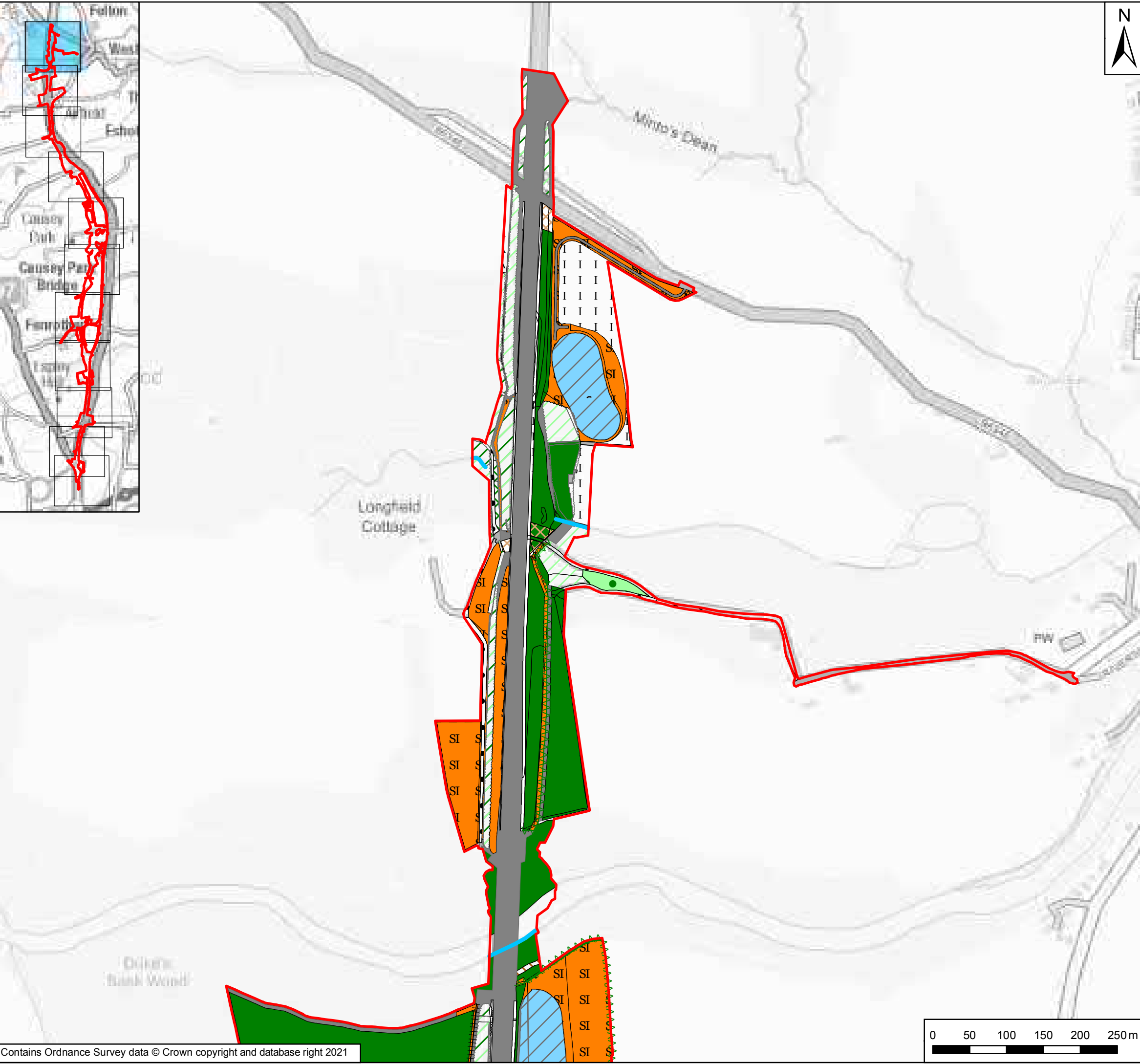
**Drawing Title** Post-Development Plan (Part A)  
Page 10 of 11

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Original Size	Date	Date	Date	Date
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**Drawing Status** For Information Suitability: -

<b>Drawing Number</b> HE551459	<b>Project</b> WSP	<b>Originator</b> WSP	<b>Volume</b> 	<b>Project Ref. No.</b> 
<b>Location</b> 				<b>Revision</b> 





Key

	Order Limits
	Broadleaved woodland - semi-natural
	Broadleaved woodland - plantation
	Coniferous woodland - plantation
	Mixed woodland - semi-natural
	Mixed woodland - plantation
	Scrub - dense/continuous
	Neutral grassland - semi-improved
	Improved grassland
	Marsh/marshy grassland
	Poor semi-improved grassland
	Other tall herb and fern - ruderal
	Standing water
	Cultivated/disturbed land - arable
	Cultivated/disturbed land - amenity grassland
	Bare ground
	Hard standing

JNCC Phase 1 Habitat Types determined in the survey were translated to UK Habitat Classification types to allow use in the Metric. Table 2-2 in the Biodiversity No Net Loss Assessment report shows the corresponding UK Habitat Classification types.

Rev	Date	Description	By	Chk'd	App'd
P03	11/03/2021	Update to Order Limits	RM	RB	JM
P02	13/10/2020	Second Issue	JR	RB	JM
P01	13/10/2020	First Issue	JR	RB	-



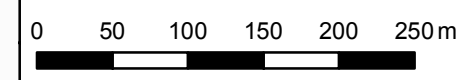
Project Title: A1 in Northumberland: Morpeth to Ellingham Improvement Scheme

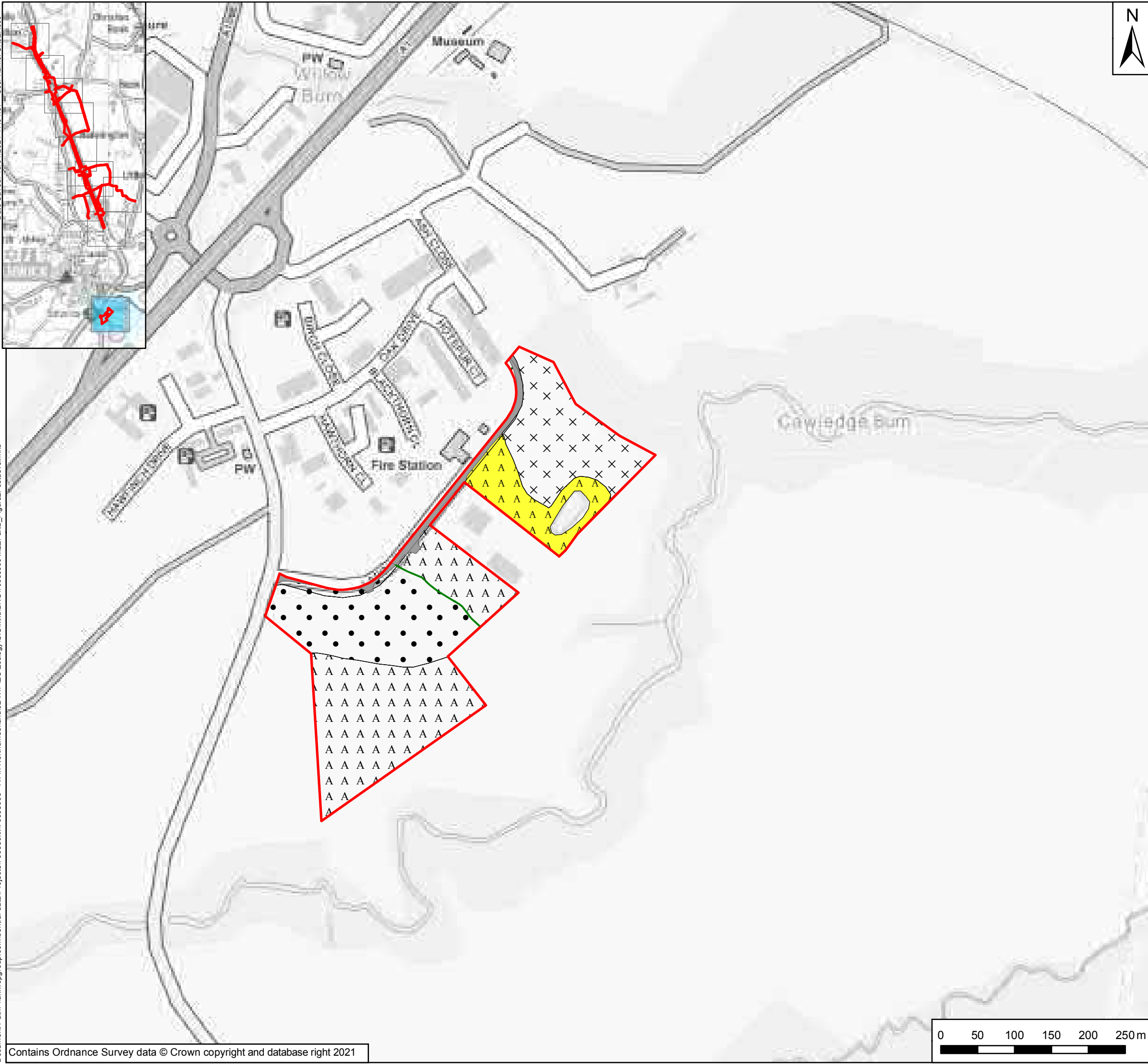
Drawing Title: Post-Development Plan (Part A)  
Page 11 of 11

Scale	1:5,000	Drawn	JR	Checked	RB	Approved	JM	Authorised	-
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Drawing Status: For Information  
Suitability: -

Drawing Number	HE551459	Originator	WSP	Volume		Project Ref. No.	
Project						Revision	-
M2E		Type		Role		Number	





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Key	
	Order Limits
	Broadleaved woodland - semi-natural
	Broadleaved woodland - plantation
	Coniferous woodland - plantation
	Mixed woodland - plantation
	Scrub - dense/continuous
	Neutral grassland - semi-improved
	Improved grassland
	Marsh/marshy grassland
	Poor semi-improved grassland
	Other tall herb and fern - ruderal
	Marginal and inundation - inundation vegetation
	Standing water
	Hard standing
	Cultivated/disturbed land - arable
	Cultivated/disturbed land - amenity grassland
	Cultivated/disturbed land - ephemeral/short perennial
	Introduced shrub
	Buildings
	Bare ground
	Running water
	Intact hedge - native species-rich
	Intact hedge - species-poor
	Dry ditch
	Scrub - scattered
	Broad-Leaved Parkland/scattered trees
	Coniferous Parkland/scattered trees

Rev	Date	Description	By	Chk'd	App'd
P02	19/01/2021	Second Issue	JR	RB	JM
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Client

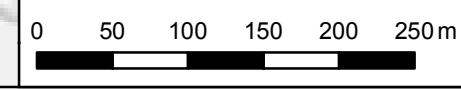
Project Title: A1 in Northumberland: Morpeth to Ellingham Improvement Scheme

Drawing Title: Post-Development Plan (Part B)  
Page 1 of 10

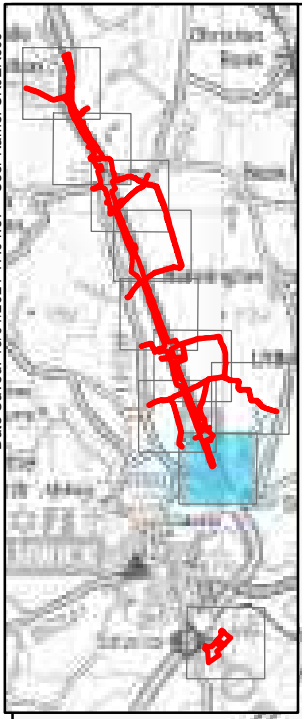
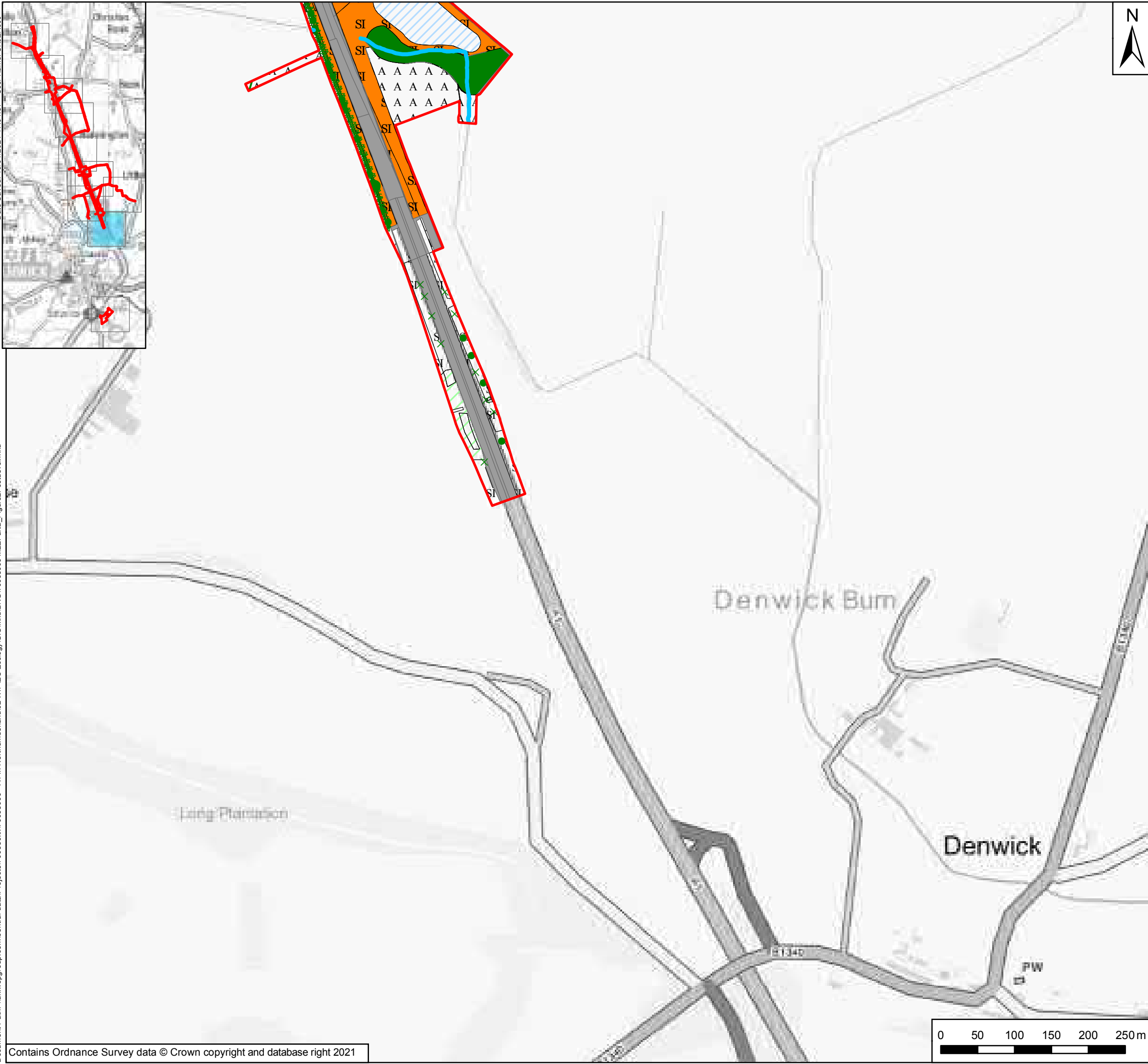
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Drawing Status: For Information  
Suitability: -

Drawing Number	Project	Originator	Volume	Project Ref. No.
HE551459		WSP		
Revision				
-				







**Key**

- Order Limits
- Broadleaved woodland - semi-natural
- Broadleaved woodland - plantation
- Coniferous woodland - plantation
- Mixed woodland - plantation
- Scrub - dense/continuous
- Neutral grassland - semi-improved
- Improved grassland
- Marsh/marshy grassland
- Poor semi-improved grassland
- Other tall herb and fern - ruderal
- Marginal and inundation - inundation vegetation
- Standing water
- Hard standing
- Cultivated/disturbed land - arable
- Cultivated/disturbed land - amenity grassland
- Cultivated/disturbed land - ephemeral/short perennial
- Introduced shrub
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- Bare ground
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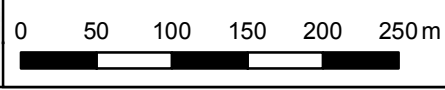
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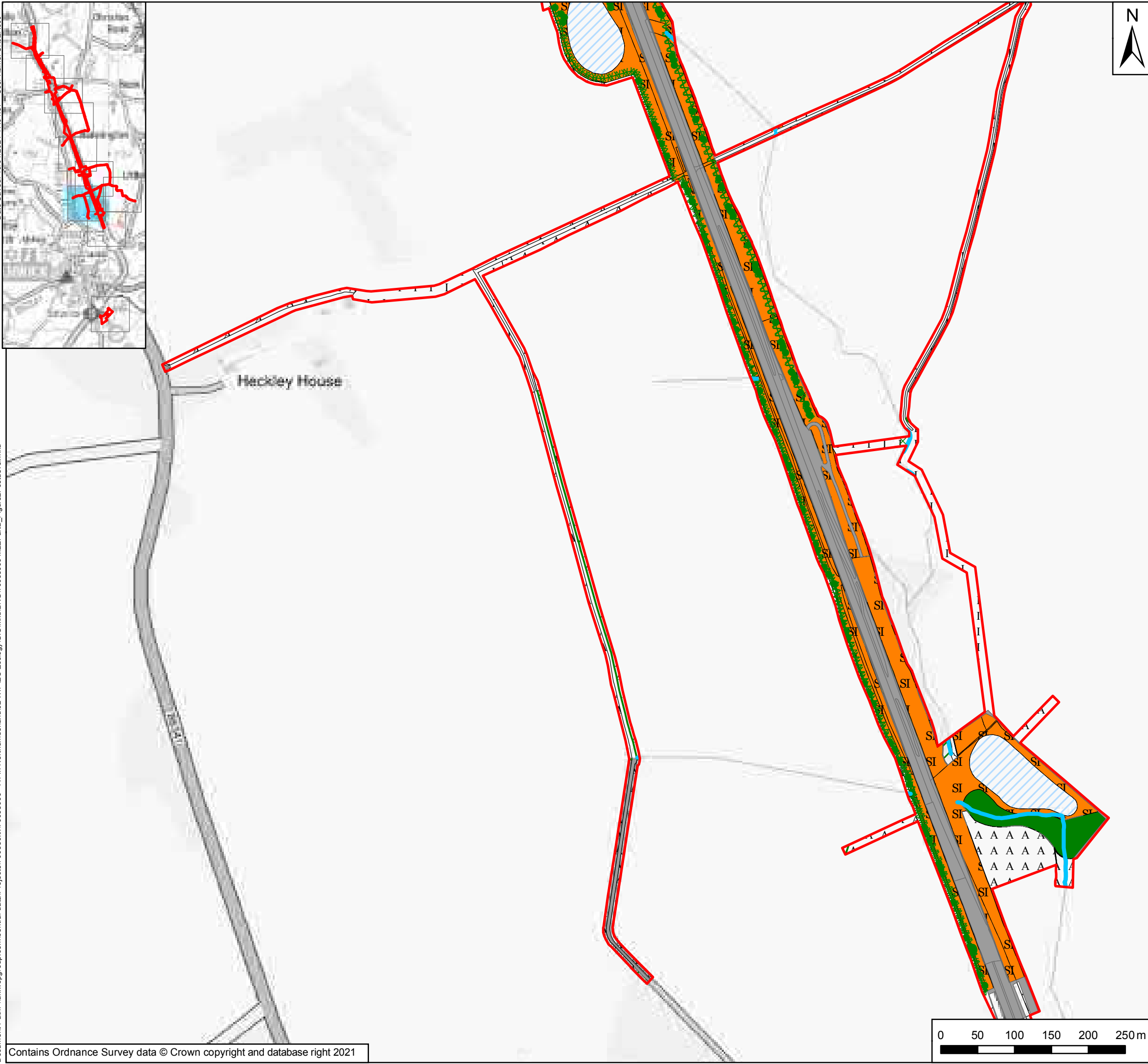
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M2E	Type	Role	Number
Location			





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Key	
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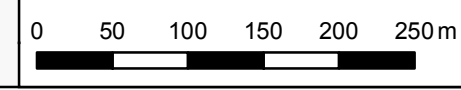
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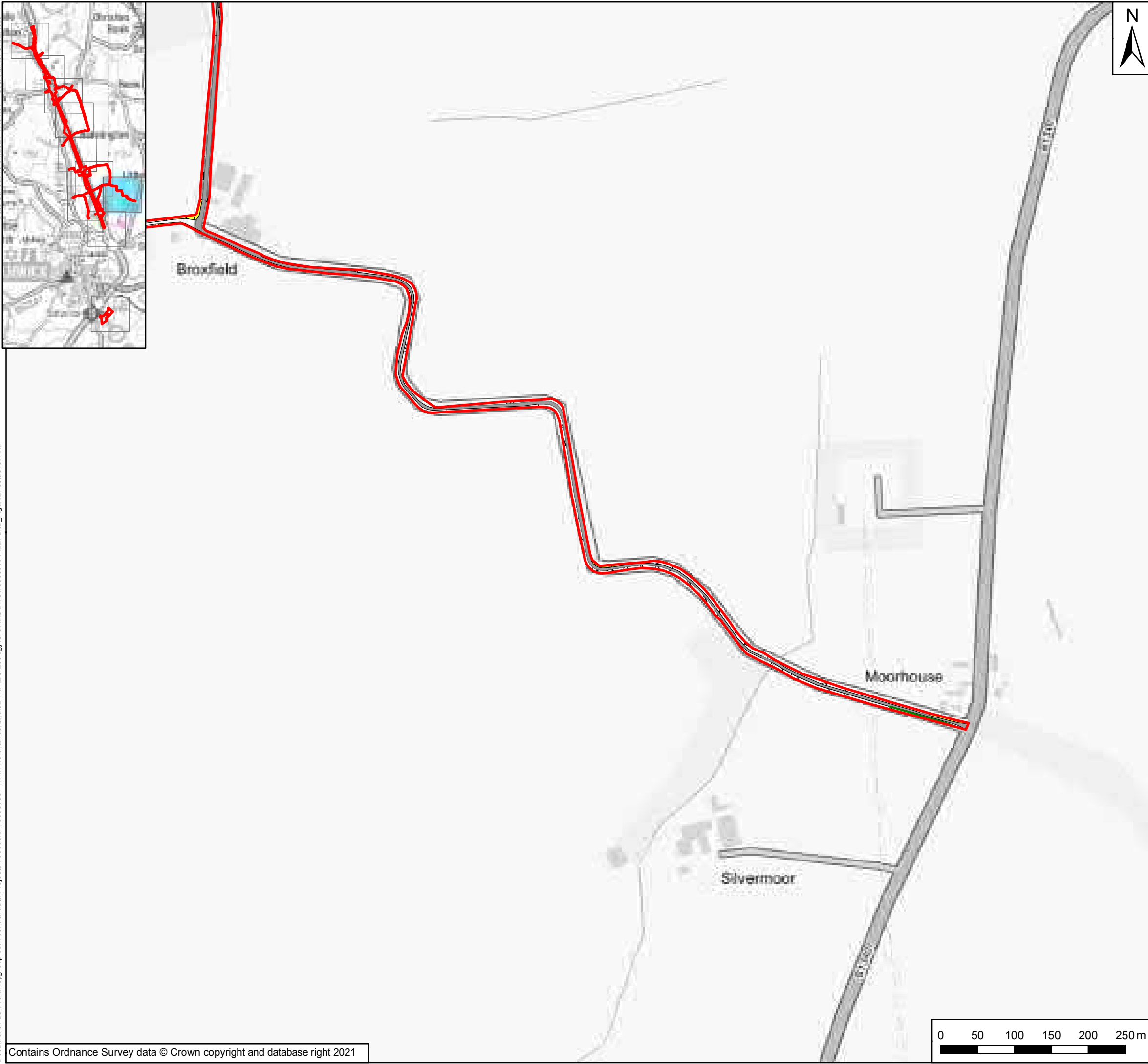
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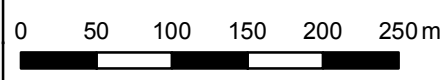
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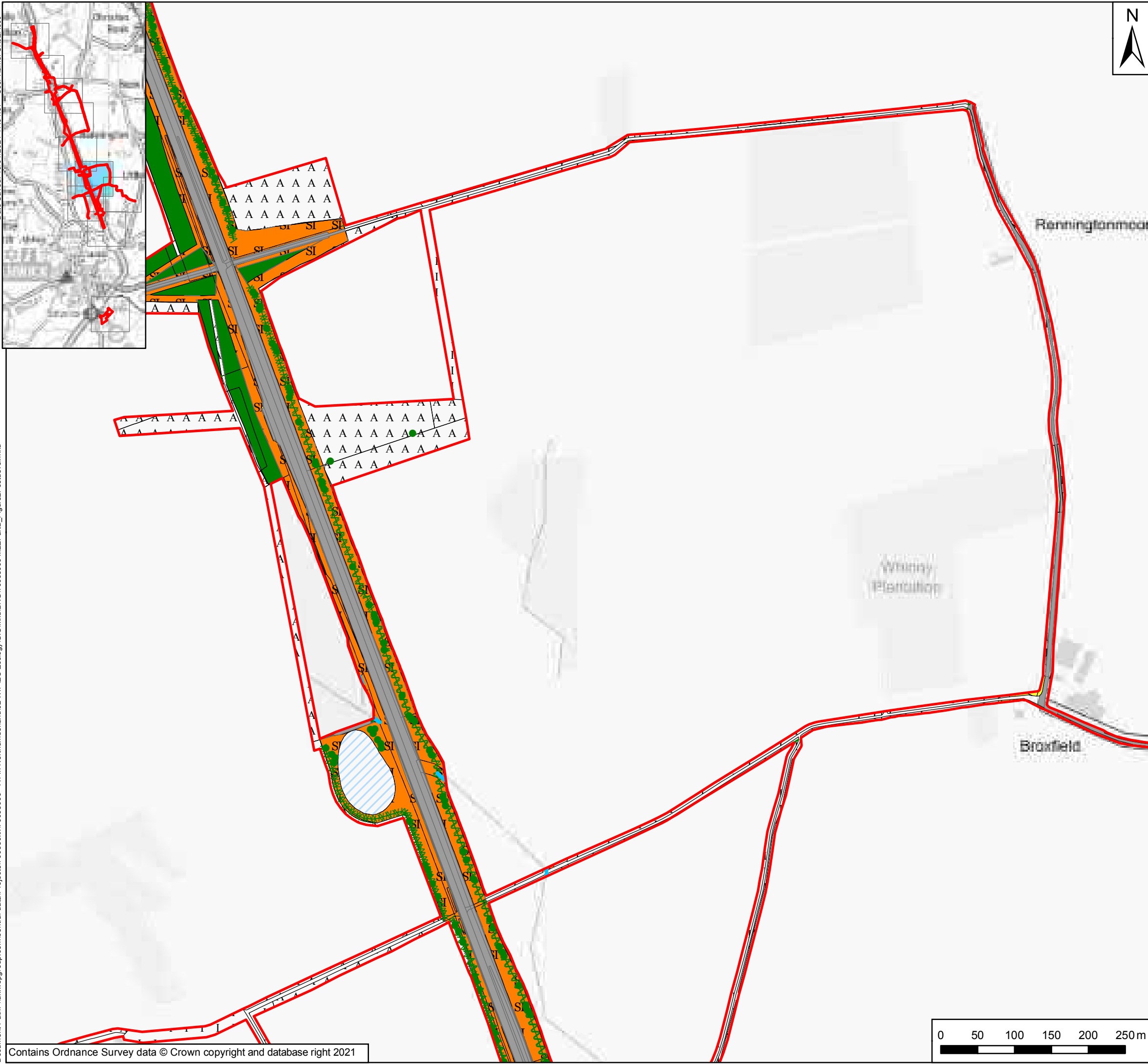
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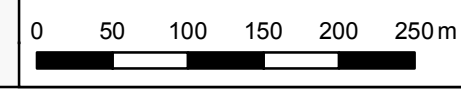
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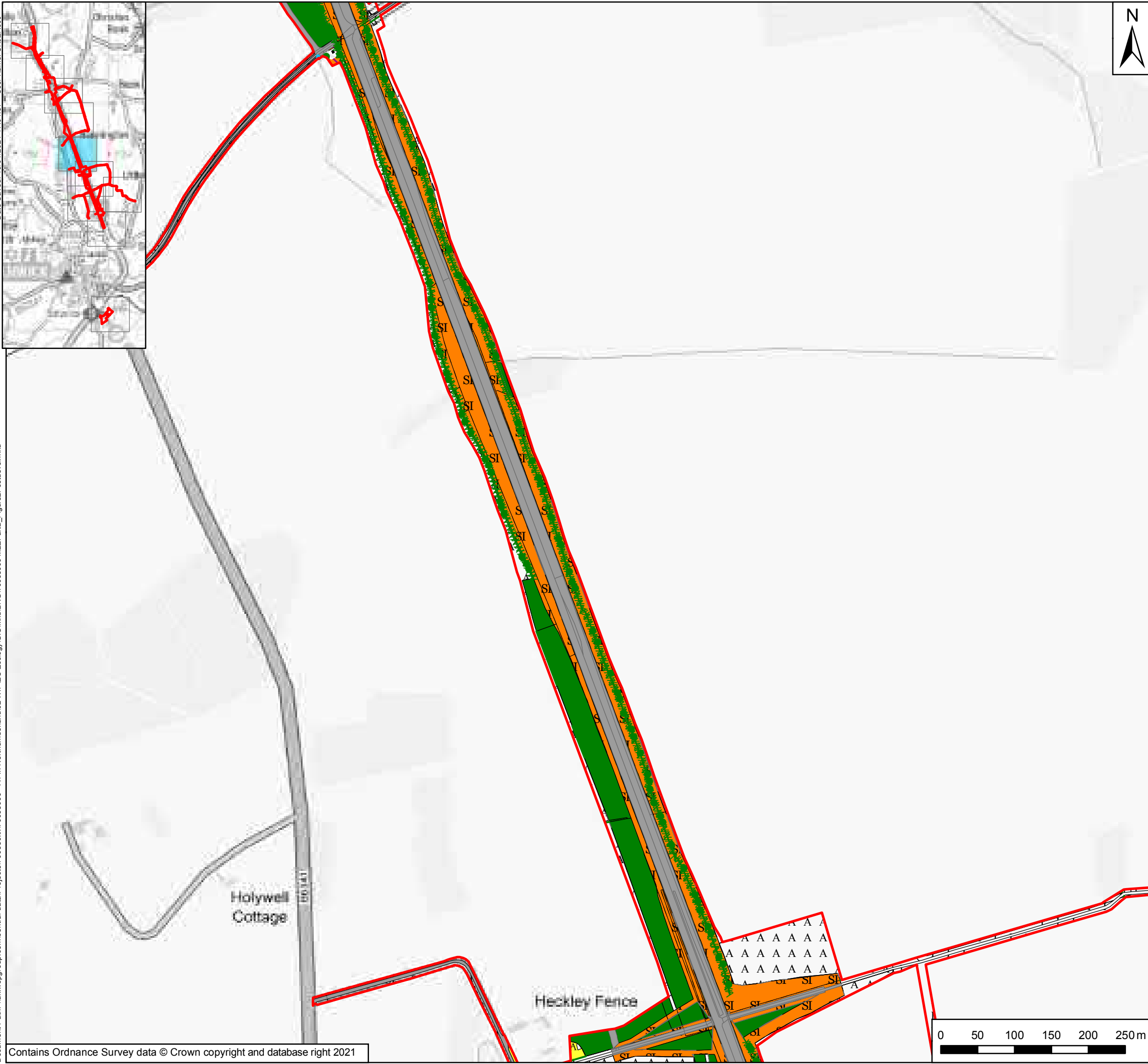
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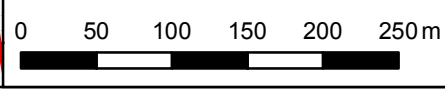
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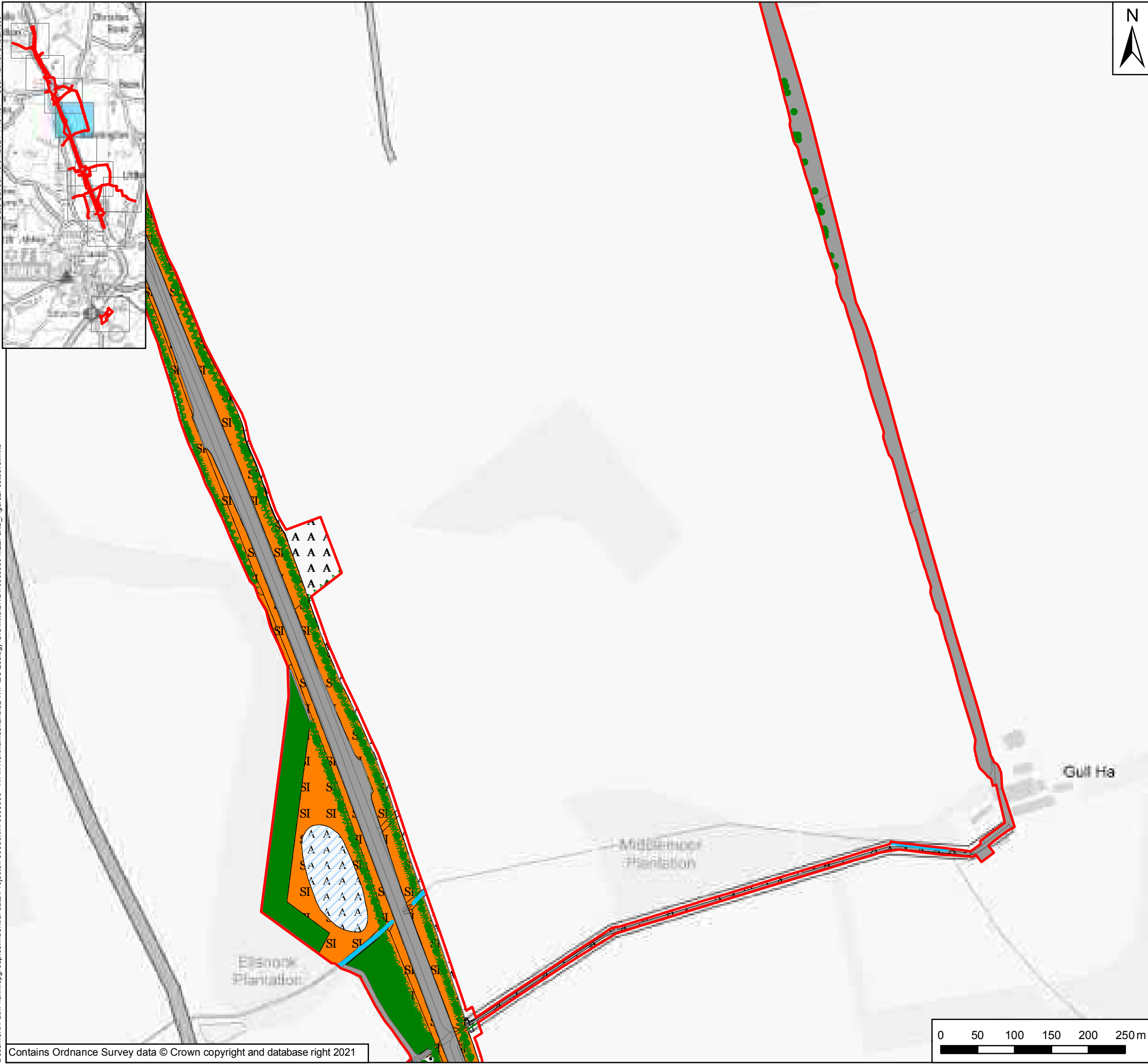
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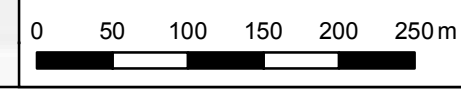
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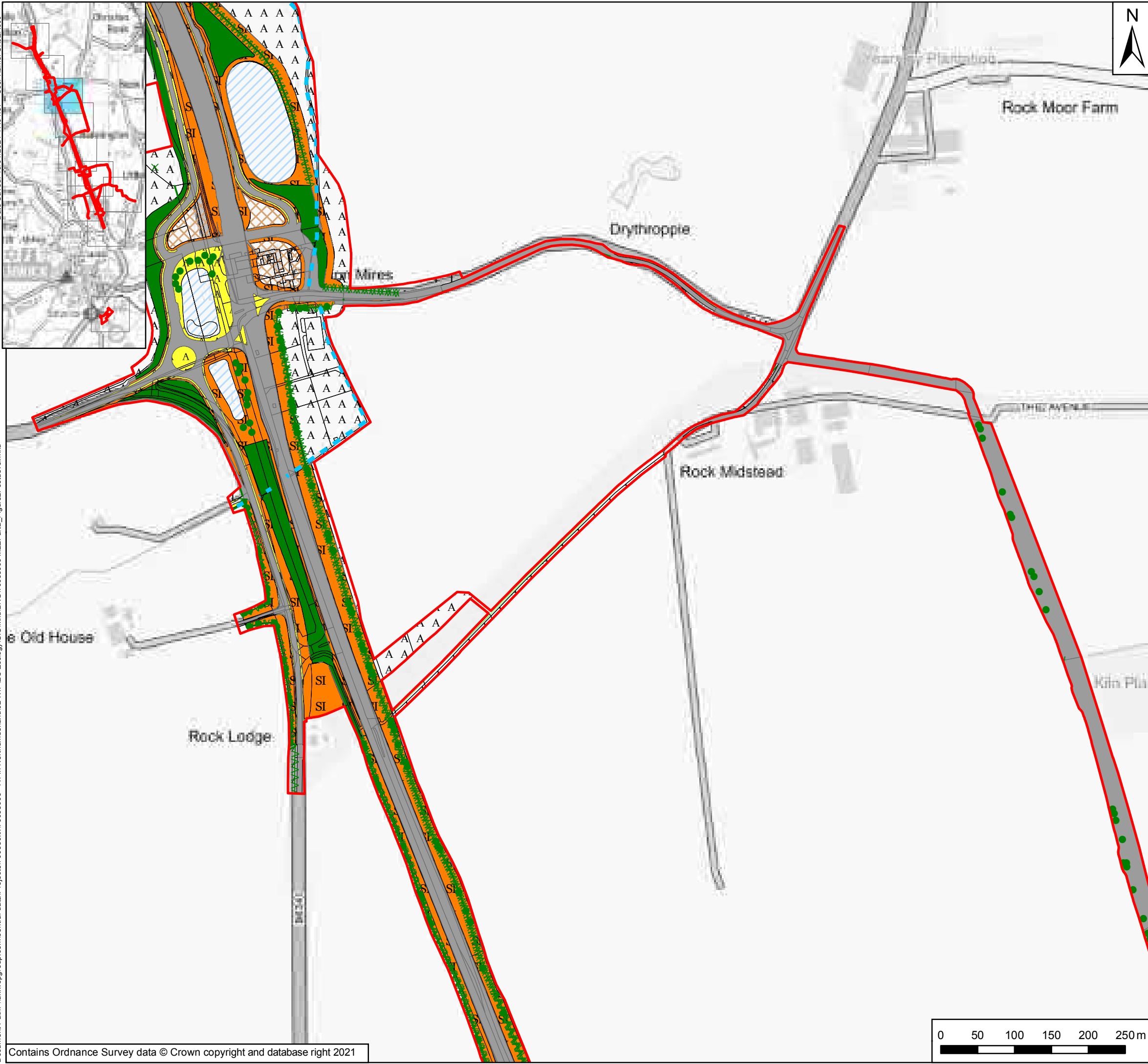
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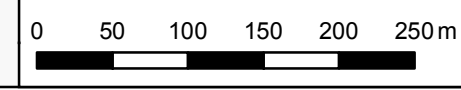
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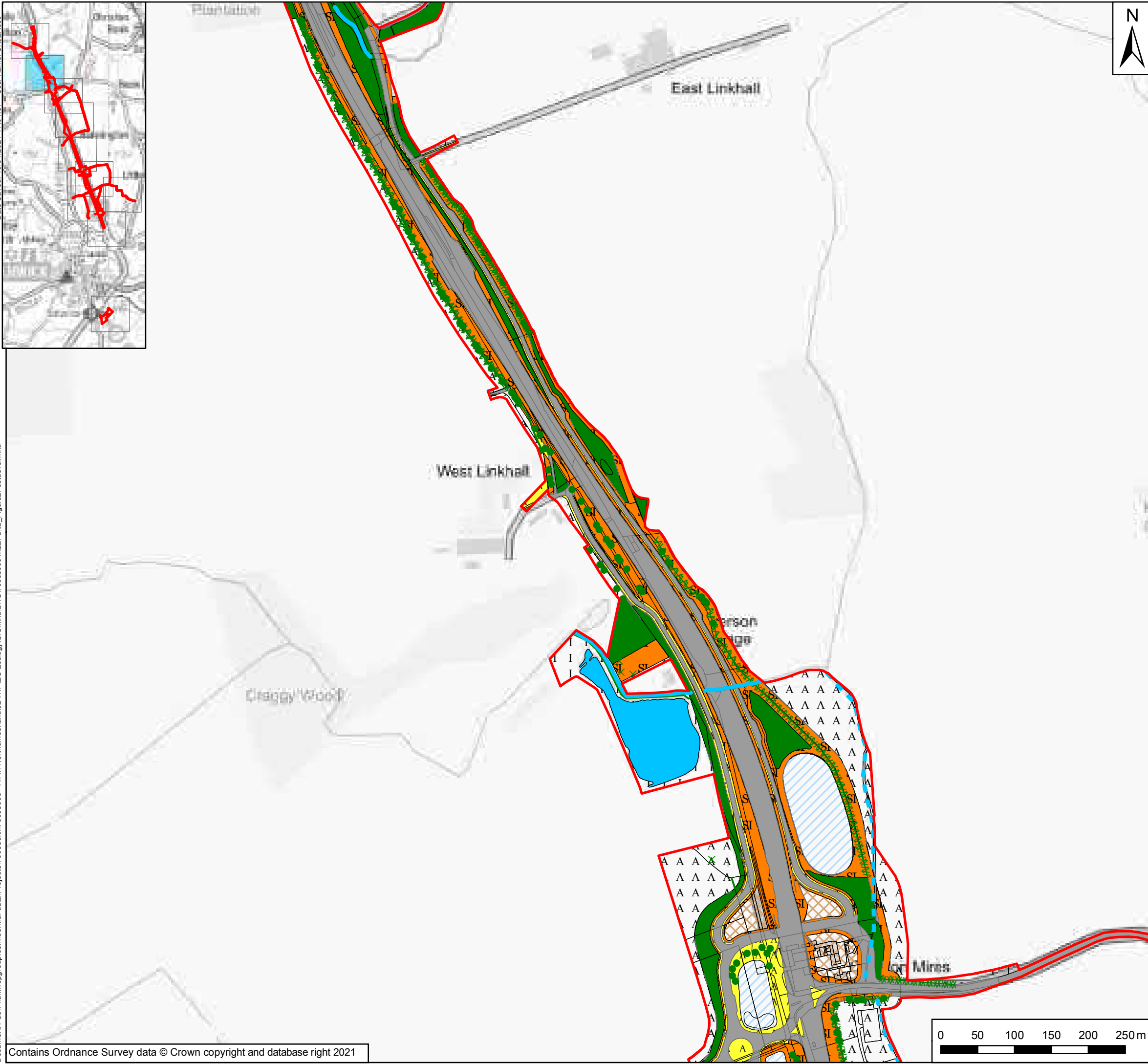
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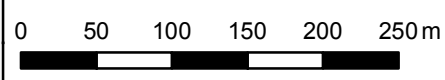
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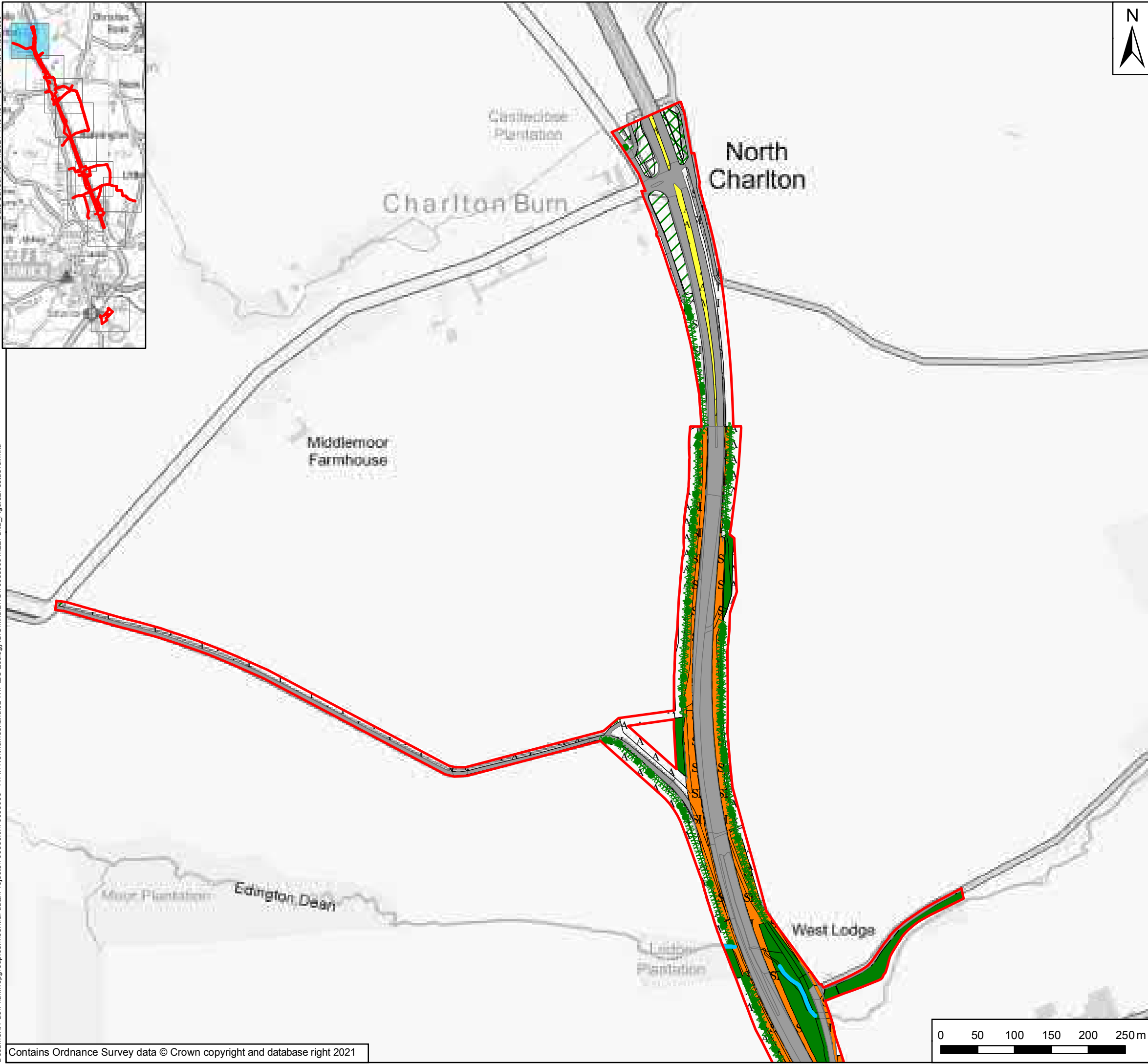
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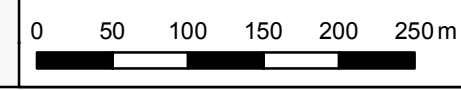
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# Appendix C

BIODIVERSITY NET GAIN POLICY  
AND LEGISLATION

## **BIODIVERSITY NET GAIN POLICY AND LEGISLATION**

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### **NATURAL ENVIRONMENT AND RURAL COUNTRYSIDE ACT**

The Natural Environment and Rural Countryside (NERC) Act (HMSO, 2006) requires public bodies, including local authorities, 'to have regard to the conservation of biodiversity in England when carrying out their normal functions'.

Section 40 sets out that:

- Paragraph 1. "Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity"; and that
- Paragraph 3. "Conserving biodiversity includes, in relation to a living organism or type of habitat, restoring or enhancing a population or habitat".

Section 41 sets out that:

- Paragraph 1. "The Secretary of State must... publish a list of the living organisms and types of habitat ... of principal importance for the purpose of conserving biodiversity" based on consultation with Natural England; and that
- Paragraph 3a. Every planning authority must "a) take such steps... to further the conservation of the living organisms and types of habitat included in any list published under this section, or (b) promote the taking by others of such steps".

The forthcoming Environment Bill seeks to expand the duty of public authorities to include a consideration of both the conservation and the enhancement of biodiversity, under amendments to section 40 of the NERC Act 2006.

### **NATIONAL POLICY STATEMENT FOR NATIONAL NETWORKS**

The National Policy Statement for National Networks (NPSNN) (Department for Transport, 2014) paragraph 5.23 states that:

- "The applicant should show how the project has taken advantage of opportunities to conserve and enhance biodiversity and geological conservation interests."

Maintaining no net loss of biodiversity as a result of the Scheme is consistent with the policy aims of Paragraph 5.25, which states:

- "As a general principle, and subject to the specific policies below, development should avoid significant harm to biodiversity and geological conservation interests, including through mitigation and consideration of reasonable alternatives. The applicant may also wish to make use of biodiversity offsetting in devising compensation proposals to counteract any impacts on biodiversity which cannot be avoided or mitigated. Where significant harm cannot be avoided or mitigated, as a last resort, appropriate compensation measures should be sought."

This sets out that any loss should be compensated for to achieve no net loss or net gain by replacing habitats, exploring the potential for enhancing them, and managing retained features.

## **NATIONAL PLANNING POLICY FRAMEWORK**

The revised National Planning Policy Framework (NPPF) (MHCLG, 2019) refers to conserving and enhancing the natural environment. This requires Local Authorities in England to take measures to:

- Conserve and enhance biodiversity;
- Protect the habitats of these species from further decline;
- Protect the species from the adverse effect of development; and
- Refuse planning permission for development if significant harm resulting from a development cannot be avoided, adequately mitigated, or, as a last resort, compensated for.

Although not currently a legal obligation, the revised NPPF refers to biodiversity and environmental net gains in the following paragraphs:

- Transport Infrastructure
  - Paragraph 102. “Transport issues should be considered from the earliest stages of plan-making and development proposals, so that:
    - d) the environmental impacts of traffic and transport infrastructure can be identified assessed and considered – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains.”
- Planning decisions
  - Paragraph 118. “Planning decisions and planning policy should a) encourage multiple benefits from both urban and rural land ... and taking opportunities to achieve net environmental gains - such as developments that would enable new habitat creation.”
  - Paragraph 170. “Planning policies and decisions should contribute to and enhance the natural and local environment by: ... d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.”
  - Paragraph 174. “To protect and enhance biodiversity and geodiversity plans should b) promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.”
  - Paragraph 175. “When determining planning applications, local planning authorities should apply the following principles: a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts) adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused; ... and d) ... opportunities to incorporate

biodiversity improvements in and around developments, especially where this can secure measurable net gains for biodiversity.”

## **UK GOVERNMENT’S 25 YEAR ENVIRONMENT PLAN**

The UK Government’s 25 Year Environment Plan (DEFRA, 2018) states a desire to “embed a ‘net environmental gain’ principle for development to deliver environmental improvements locally and nationally.” and plans to consult on making Biodiversity Net Gain a mandatory requirement.

## **BIODIVERSITY 2020: A STRATEGY FOR ENGLAND’S WILDLIFE AND ECOSYSTEM SERVICES**

Biodiversity 2020: A strategy for England’s wildlife and ecosystem services (DEFRA, 2011) is the national strategy for biodiversity. This sets out an ambition to halt the loss of biodiversity and see an increase in the area of priority habitats by 200,000 ha by 2020. Biodiversity 2020 sets in policy the objectives to improve our wildlife sites, make them bigger, develop more of them and join them up (summarised as ‘Bigger, Better, More and Joined’).

## **LOCAL POLICY**

In this case, the public authority mentioned in the Natural Environment and Rural Communities Act (2006) Section 40 (1) is deemed to be the local planning authority (Northumberland County Council).

Within the Northumberland Biodiversity Action Plan a list of HPI are recorded as priority habitats. These priority habitats are then referred in the following local plans.

The Northumberland Local Plan Core Strategy was withdrawn in April 2017 in favour of the Northumberland Local Plan (Northumberland County Council, 2019) but states that:

There should be “no net loss of biodiversity, with the creation of new priority habitats and green infrastructure”; and that

“Moving from a net loss of biodiversity to achieving net gains for nature is central to sustainable development and that contributing to conserving and enhancing the natural environment is a core planning principle”.

Within the draft Northumberland Local Plan, net gains for biodiversity and priority habitats are mentioned as follows:

Policy STP 3 states that a development should adhere to principles that “Contribute to net gains for biodiversity and establish a coherent and resilient ecological network”;

Section 10.9. “Moving from a net loss of biodiversity to achieving net gains is central to sustainable development and that contributing to conserving and enhancing the natural environment is a core planning principle”;

Policy ENV 2 (1) states that “Development proposals affecting biodiversity and geodiversity will minimise their impact and net gains for biodiversity will be secured by: a) Avoiding

significant harm through location and / or design. Where significant harm cannot be avoided, applicants will be required to demonstrate that adverse impacts will be adequately mitigated or, as a last resort compensated for; b) Securing net biodiversity gains and / or wider ecological enhancements through new development”;

Policy ENV 2 (4) states that “The conservation, restoration, enhancement, creation and / or (where appropriate) the re-creation of priority habitats” will follow an ecosystem approach; and

Policy MIN 1 states that “The conservation and enhancement of nature conservation and geological sites, including internationally, nationally and locally designated sites, priority habitats and protected and priority species – applicants will be required to demonstrate that their proposal will deliver a net gain for biodiversity where possible through the creation of priority habitats and by contributing to the creation of a coherent and resilient ecological network and that there will be no unacceptable adverse effects on national or international nature conservation designations or irreplaceable habitats”.



# Appendix D

## BIODIVERSITY NET GAIN ASSESSMENT METHODOLOGY



## **BIODIVERSITY NET GAIN ASSESSMENT METHODOLOGY**

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### **OVERVIEW**

BNG assessment calculations are separated into four key sections which are used to produce the quantitative outcomes. They are:

- Separating out irreplaceable baseline habitats and any mitigation proposed for impacts to irreplaceable habitats;
- Quantification of baseline biodiversity units using Phase 1 Habitat data and habitat condition assessment data;
- Quantification of post-development biodiversity units using Phase 1 Habitat data derived from the post-development landscape mitigation plan; and
- Assessing the net change in biodiversity value as a result of the Scheme.

Collectively these elements of the BNG assessment are used in conjunction with qualitative information relating to the BNG Good Practice Principles (Appendix A) to produce a scheme wide BNG assessment outcome. The principles and rules for using the Biodiversity Metric 2.0 are detailed in Appendix F.

### **IRREPLACEABLE HABITATS**

It is important to note that BNG or no net-loss cannot be achieved for the development as a whole if there is a negative impact on an irreplaceable habitat (Appendix A – Principle 2). Best practice guidance advises that irreplaceable habitats should not be included in any BNG assessment of impacts (CIEEM, IEMA and CIRIA, 2019 and Natural England 2019).

In these situations, any compensation offered to address impacts on irreplaceable habitats should be agreed directly with the relevant statutory nature conservation agency (in this case Natural England).

Unavoidable impacts on irreplaceable habitats should not undermine the BNG assessment process for other habitats. Projects should still aim to achieve no net loss or net gains for non-irreplaceable habitats.

### **HABITAT TYPES**

The BNG assessment used Phase 1 habitat types to describe the different habitat types. These were translated into the UKHab-based Biodiversity Metric 2.0 Calculation Tool habitat categories and associated default distinctiveness scores; informed by the UKHab classification system and the Calculation Tool.

### **BASELINE ASSESSMENT**

#### **BIODIVERSITY UNIT CALCULATION**

A baseline biodiversity unit calculation was completed for all existing habitats within the Scheme. Calculations were undertaken separately for hedgerow habitats measured as

linear features in kilometres and all remaining habitats measured as area-based features in hectares.

These calculations were carried out using the Biodiversity Metric 2.0, released by Natural England in 2019. Biodiversity Metric 2.0 refers to the Beta Test version update to the former 'Defra 2012 Metric' used for calculating biodiversity units in England.

Distinctiveness, condition, connectivity and strategic significance are given numerical 'scores' within the Biodiversity Metric 2.0 which are multiplied, together with hectares (ha) or length in kilometres (km) of each habitat to give the number of baseline AHBU or HBU:

Baseline Area Habitat Biodiversity Units (AHBU) = Area (ha) x Distinctiveness x Condition x Ecological Connectivity x Strategic Significance

Hedgerow Biodiversity Units (HBU) = Length (km) x Distinctiveness x Condition x Ecological Connectivity x Strategic Significance

This calculation was applied to all polygons (AHBU) and polylines (HBU) within the Scheme's footprint and then summed by habitat type.

## DISTINCTIVENESS

Habitat distinctiveness is defined as a collective measure of biodiversity and includes parameters such as the number and variety of species found within the habitat (richness and diversity), how rare the species are, and how many species the habitat supports that are not common elsewhere.

Default distinctiveness bands and habitat types were assigned as per the **Table D-1** below.

**Table D-1 – Habitat Distinctiveness Bands and Scores**

<b>Distinctiveness Band</b>	<b>Distinctiveness Score</b>	<b>Habitat Types Included</b>
Very High	8	Priority habitats as defined in Section 41 of the NERC Act that are highly threatened, internationally scarce and require conservation action, e.g. blanket bog.
High	6	Priority habitats as defined in Section 41 of the NERC Act that require conservation action, e.g. lowland fens.
Medium	4	Other semi-natural habitats that do not fall within the scope of habitats of principle importance definitions, i.e. all other areas of woodland (e.g. non-native coniferous plantation), other grassland (e.g. species poor semi-improved), uncultivated field margins, road verges and railway

<b>Distinctiveness Band</b>	<b>Distinctiveness Score</b>	<b>Habitat Types Included</b>
		embankments (excluding those that are intensively managed).
Low	2	Improved grassland, arable fields (excluding any uncultivated margins), domestic gardens, verges, and rhododendron scrub associated with transport corridors.
Very Low	0	Little or no biodiversity value e.g. developed land or sealed surface.

## CONDITION

Condition, in the context of BNG, is defined as the quality of a habitat. For example, a habitat is in poor condition if it fails to support the rare or notable species for which it is valued, or if it is degraded as a result of pollution, erosion, invasive species or other factors.

The Biodiversity Metric 2.0 proposes a new condition assessment methodology. This new methodology has been released as a beta version which has not been widely tested. However, field surveys during which condition assessment data was collected were undertaken before the release of Biodiversity Metric 2.0. Therefore, this assessment uses the system presented in Natural England's Farm Environment Plan (FEP) manual (Natural England, 2010) which was the available condition assessment methodology at the time of the surveys. The FEP is compatible with the Biodiversity Metric 2.0.

**Table D-2 – Habitat Condition Bands and Scores**

<b>Condition Band</b>	<b>Condition Score</b>	<b>Criteria for Assigning Condition</b>
Good	3	Any habitat which passes all the FEP criteria.
Moderate	2	Any habitat which fails one FEP criterion.
Poor	1	Any habitat which fails two or more FEP criteria.

## STRATEGIC SIGNIFICANCE

The idea of strategic significance works at a landscape scale, taking account of published Nature Recovery Strategies, local biodiversity plans, and local plans for targeting green infrastructure and biodiversity. This component gives extra value to habitats that are located in prioritised locations for biodiversity and other environmental objectives.

**Table D-3 – Strategic Significance Scores**

Category	Strategic Significance	Score
Within area formally identified in local policy	High	1.15
Location ecologically desirable but not in local policy	Medium	1.1
Area/compensation not in local policy/ no local policy	Low	1

## CONNECTIVITY

The focus of connectivity in the metric is the relationship of a particular habitat patch to other surrounding similar or related semi-natural habitats facilitating flows of species and ecosystem services. Connectivity is applied to both baseline and post-development biodiversity units. The connectivity of each habitat was assessed in accordance with Natural England’s Geographical Information System (GIS) based connectivity tool which was released in December 2019. The tool can be found here;

<http://publications.naturalengland.org.uk/publication/5850908674228224>

**Table D-4 – Connectivity Risk Factors**

Score	Description	Risk Factor
Score 57-81	Highly aggregated / connected	1.15
Score 33-56	Moderate aggregation / connectivity	1.1
Score 9-32	Low aggregation / connectivity	1

## POST DEVELOPMENT ASSESSMENT

### POST DEVELOPMENT BIODIVERSITY UNIT CALCULATION

Post-development biodiversity units were calculated for all the habitats retained, enhanced or created within the off-site compensation area.

Calculations were undertaken separately for hedgerow habitats (measured in kilometres) and all remaining habitats (measured in hectares).

These calculations were carried out using the Biodiversity Metric 2.0 and associated guidance and calculation tool.

Post-development biodiversity units are calculated in a similar way to baseline biodiversity units. However, in addition to the proposed habitats’ area, condition, distinctiveness, connectivity and strategic significance, the key risks to delivery are taken into account



through incorporation of risk factors. The metric sets out three risk factors: distance from the Scheme (off-site risk); time taken for created or enhanced habitats to reach target condition (temporal risk); and how difficult it is to create or enhance any given habitat (difficulty risk). The specific details and values of these risk factors are listed below (see Post-Development Risk Factors).

To calculate post-development Biodiversity Units for the area-based habitats from creation of new or enhancement of existing habitats, the following equations from the Biodiversity Metric 2.0 were used:

***t1 Creation AHBU***

$$= \{ [A^{t1} \times Q_D^{t1} \times Q_C^{t1}] \times [R_D \times R_T] \times [Q_{SC}^{t1} \times Q_{SS}^{t1}] \} \times R_{OS}$$

***t1 Enhancement AHBU***

$$= [ \{ [ ( [A^{t1} \times Q_D^{t1} \times Q_C^{t1}] - [A^{t0} \times Q_D^{t0} \times Q_C^{t0}] ) \times (R_D \times R_T) \} + [A^{t0} \times Q_D^{t0} \times Q_C^{t0}] \} \times [Q_{SC}^{t1} \times Q_{SS}^{t1}] \} \times R_{OS}$$

Where:

A is area of habitat (hectares)

RD is difficulty (a risk factor)

RT is time to target condition (a risk factor)

ROS is off-site Risk

t0 is before intervention

t1 is post intervention

QC is condition (a quality measure)

QD is distinctiveness (a quality measure)

QSC is connectivity (a quality measure)

QSS is strategic Significance (a quality measure)

H1 is area of habitat type before intervention

H2 is area of habitat type post intervention

## **APPLYING RISK FACTORS TO THE POST-DEVELOPMENT CALCULATION**

### **DIFFICULTY OF CREATION RISK**

This is the risk associated with the difficulty to create or restore any specific habitat. Values for this risk factor were automatically populated within Defra’s Calculator Tool. **Table D-45** shows the risk factors assigned to each level of Difficulty Risk for habitats created or enhanced on site.

**Table D-54 – Delivery Risk Factors**

<b>Difficulty of Creation or Restoration</b>	<b>Difficulty Risk Factor</b>
Very High	0.10
High	0.33
Medium	0.67
Low	1.00

### TEMPORAL RISK

In delivering compensation for loss of habitats, the timing of impact may not coincide with the new habitat reaching the required quality or level of maturity which could result in loss of biodiversity for a period of time. This risk is accounted for by applying a ‘temporal risk’ factor to the biodiversity unit calculations.

Values for this risk factor were automatically populated within Defra’s recently released calculator tool for particular target habitat types and conditions. The Biodiversity Metric 2.0 uses a 3.5% ‘standard discount rate’, which is the value recommended in the HM Treasury Green Book. The metric also employs two assumptions in terms of temporal risk:

- There is a quality ‘jump’ from the baseline condition to the target condition once the relevant number of years have passed. Metric calculations do not need to be redone annually, and;
- Sets a limit on the discount rate used for temporal risk. The metric’s risk factor has a limit of 0.320 to take account of temporal risk. This equates to approximately 32 years.

Risk factors were assigned based on the criteria set out in **Table D-65**.

**Table D-56 – Temporal Risk Factors**

<b>Years to Create</b>	<b>Temporal Risk Factor</b>	<b>Years to Create</b>	<b>Temporal Risk Factor</b>
0	1.000	17	0.546
1	0.965	18	0.527
2	0.931	19	0.508
3	0.899	20	0.490
4	0.867	21	0.473
5	0.837	22	0.457

Years to Create	Temporal Risk Factor	Years to Create	Temporal Risk Factor
6	0.808	23	0.441
7	0.779	24	0.425
8	0.752	25	0.410
9	0.726	26	0.396
10	0.700	27	0.382
11	0.676	28	0.369
12	0.652	29	0.356
13	0.629	30	0.343
14	0.607	31	0.331
15	0.586	32+	0.320
16	0.566	Not Possible	N/A

## NET CHANGE IN BIODIVERSITY VALUE AND ASSESSMENT OUTCOME

The baseline and post-development biodiversity units were compared for each option to assess whether they achieved a quantitative biodiversity net gain.

The following formula was used to calculate the change in BU:

Net change in biodiversity value = Post-Development BU – Baseline BU

If the resulting score is negative, there is a loss in biodiversity that should be compensated for by on-site design changes or, where this is not possible, off-site compensation.

To determine the percentage net gain that the scheme delivers, the following formula was used:

Percentage change of biodiversity units = (Post-Development BU / Baseline BU) x 100

The percentage should be rounded to the nearest whole percentage point (0.5 and above is to be rounded up to 1 and anything below 0.5 should be rounded down).

Outcomes greater than 100% could be deemed to achieve net gain. However, organisations and decision makers are setting specific targets in recognition of the current local and global challenges for biodiversity and potential inaccuracies in the measurement of losses and gains through use of the metric. The Environment Bill proposes a target for development in England of +10% net gain (110% percentage change), but BREEAM provides a useful

framework that also includes the levels of percentage change that constitute no net loss or net loss. This is set out in **Table D-76** below.

To fully demonstrate biodiversity net gain, the scheme should not only achieve a suitable quantitative net gain, but also meet the other qualitative aspects of the industry Good Practice Principles (**Appendix A**).

**Table D-76 - Quantitative outcomes of BNG calculations**

<b>Calculation Result</b>	<b>Predicted Outcome</b>
Less than 95% of the baseline value	Net loss (NL) of biodiversity
95% - 104% of baseline value	No net loss (NNL) of biodiversity
105% or more of baseline value	Biodiversity net gain (BNG)
110% or more of baseline value	Significant BNG.

# Appendix E

BIODIVERSITY ASSESSMENT  
CALCULATIONS



A1 MZE  
A-1 Site Habitat Baseline

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Ref	Habitats and areas			Habitat distinctiveness	Habitat condition	Ecological connectivity	Strategic significance	Suggested action to address habitat losses	Ecological baseline
	Broad Habitat	Habitat type	Area (hectares)						
1	Woodland and forest	Woodland and forest - Lowland mixed deciduous woodland	1.04	High	Moderate	Medium	Location ecologically desirable but not in local strategy	Same habitat required	15.10
2	Woodland and forest	Woodland and forest - Other woodland: mixed	0.14	Medium	Moderate	Low	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required	1.12
3									
4	Woodland and forest	Woodland and forest - Lowland mixed deciduous woodland	0.18	High	Good	Medium	Location ecologically desirable but not in local strategy	Same habitat required	3.92
5	Woodland and forest	Woodland and forest - Lowland mixed deciduous woodland	0.28	High	Moderate	Medium	Location ecologically desirable but not in local strategy	Same habitat required	4.07
6	Woodland and forest	Woodland and forest - Other woodland: broadleaved	0	Medium	Good	Low	Location ecologically desirable but not in local strategy	Same broad habitat or a higher distinctiveness habitat required	0.00
7	Woodland and forest	Woodland and forest - Other woodland: broadleaved	4.35	Medium	Moderate	Low	Location ecologically desirable but not in local strategy	Same broad habitat or a higher distinctiveness habitat required	38.28
8	Woodland and forest	Woodland and forest - Other woodland: broadleaved	0.82	Medium	Poor	Low	Location ecologically desirable but not in local strategy	Same broad habitat or a higher distinctiveness habitat required	3.61
9	Woodland and forest	Woodland and forest - Other coniferous woodland	0	Low	Moderate	Low	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required	0.00
10	Woodland and forest	Woodland and forest - Other coniferous woodland	0.44	Low	Poor	Low	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required	0.88
11	Woodland and forest	Woodland and forest - Other woodland: mixed	0.5	Medium	Moderate	Low	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required	4.00
12	Heathland and shrub	Heathland and shrub - Mixed scrub	0.15	Medium	Moderate	Low	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required	1.20
13	Heathland and shrub	Heathland and shrub - Mixed scrub	0	Medium	Poor	Low	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required	0.00
14	Woodland and forest	Woodland and forest - Other woodland: Young Trees planted	0	Medium	Poor	Low	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required	0.00
15	Grassland	Grassland - Other neutral grassland	0	Medium	Poor	Low	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required	0.00
16	Grassland	Grassland - Modified grassland	33.71	Low	Poor	Low	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required	67.42
17	Grassland	Grassland - Modified grassland	0.29	Low	Poor	Low	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required	0.58
18	Grassland	Grassland - Modified grassland	1.17	Low	Moderate	Low	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required	4.68
19	Grassland	Grassland - Modified grassland	14.85	Low	Poor	Low	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required	29.70
20	Sparsely vegetated land	Sparsely vegetated land - Ruderal/Ephemeral	1.02	Low	Poor	Low	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required	2.04
21	Lakes	Lakes - Temporary lakes, ponds and pools	1.17	High	Moderate	Medium	Location ecologically desirable but not in local strategy	Same habitat required	16.99
22	Urban	Urban - Developed land: sealed surface	15.6	V.Low	N/A - Other	N/A	Area/compensation not in local strategy/ no local strategy	Compensation Not Required	0.00
23	Cropland	Cropland - Cereal crops	32.71	Low	N/A - Agricultural	Low	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required	65.42
24	Grassland	Grassland - Modified grassland	4.3	Low	Poor	Low	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required	8.60
25	Sparsely vegetated land	Sparsely vegetated land - Ruderal/Ephemeral	2.1	Low	Poor	Low	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required	4.20
26	Urban	Urban - Vegetated garden	0.01	Low	Poor	Low	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required	0.02
27	Urban	Urban - Developed land: sealed surface	0.2	V.Low	N/A - Other	N/A	Area/compensation not in local strategy/ no local strategy	Compensation Not Required	0.00
28	Urban	Urban - Vacant/derelict land/ bareground	2.76	Low	Poor	Low	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required	5.52
29	Urban	Urban - Developed land: sealed surface	0.27	V.Low	N/A - Other	N/A	Area/compensation not in local strategy/ no local strategy	Compensation Not Required	0.00
30	Urban	Urban - Vacant/derelict land/ bareground	1.73	Low	Poor	Low	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required	3.46
31									
32	Woodland and forest	Woodland and forest - Lowland mixed deciduous woodland	0.32	High	Good	Medium	Location ecologically desirable but not in local strategy	Same habitat required	6.97
33	Woodland and forest	Woodland and forest - Lowland mixed deciduous woodland	1.16	High	Moderate	Medium	Location ecologically desirable but not in local strategy	Same habitat required	16.84
34	Woodland and forest	Woodland and forest - Other woodland: mixed	0.13	Medium	Good	Low	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required	1.56
35	Woodland and forest	Woodland and forest - Other woodland: mixed	0	Medium	Moderate	Low	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required	0.00
36	Woodland and forest	Woodland and forest - Other woodland: mixed	0.31	Medium	Good	Low	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required	3.72
37	Woodland and forest	Woodland and forest - Other woodland: mixed	5.05	Medium	Moderate	Low	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required	40.40
38									

Retention category biodiversity value								Bespoke compensation agreed for unacceptable losses	Comments	
Area retained	Area enhanced	Area succession	Baseline units retained	Baseline units enhanced	Baseline units succession	Area lost	Units lost		Assessor comments	Reviewer comments
0.02			0.29	0.00	0.00	1.02	14.81			
0			0.00	0.00	0.00	0.14	1.12			
0.01			0.22	0.00	0.00	0.17	3.70			
0.26			3.78	0.00	0.00	0.02	0.29			
0			0.00	0.00	0.00	0.00	0.00			
0.36			3.17	0.00	0.00	3.99	35.11			
0.02			0.09	0.00	0.00	0.80	3.52			
0			0.00	0.00	0.00	0.00	0.00			
0.08			0.16	0.00	0.00	0.36	0.72			
0.01			0.08	0.00	0.00	0.49	3.92			
0.07			0.56	0.00	0.00	0.08	0.64			
0			0.00	0.00	0.00	0.00	0.00			
0			0.00	0.00	0.00	0.00	0.00			
0.16			0.32	0.00	0.00	33.55	67.10			
0			0.00	0.00	0.00	0.29	0.58			
0			0.00	0.00	0.00	1.17	4.68			
0.46			0.92	0.00	0.00	14.39	28.78			
0			0.00	0.00	0.00	1.02	2.04			
0			0.00	0.00	0.00	1.17	16.99			
0.02			0.00	0.00	0.00	15.58	0.00			
0.08			0.16	0.00	0.00	32.63	65.26			
0			0.00	0.00	0.00	4.30	8.60			
0			0.00	0.00	0.00	2.10	4.20			
0			0.00	0.00	0.00	0.01	0.02			
0			0.00	0.00	0.00	0.20	0.00			
0			0.00	0.00	0.00	2.76	5.52			
0			0.00	0.00	0.00	0.27	0.00			
0.11			0.22	0.00	0.00	1.62	3.24			
0			0.00	0.00	0.00	0.32	6.97			
0.37			5.37	0.00	0.00	0.79	11.47			
0.13			1.56	0.00	0.00	0.00	0.00			
0			0.00	0.00	0.00	0.00	0.00			
0.03			0.36	0.00	0.00	0.28	3.36			
1.45			11.60	0.00	0.00	3.60	28.80			



A1 M2E  
A-2 Site Habitat Creation

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Post development/ post intervention habitats										
Proposed habitat	Area (hectares)	Distinctiveness	Condition	Ecological	Strategic significance	Temporal multiplier	Difficulty	Habitat units delivered	Comments	
				Ecological connectivity	Strategic significance	Time to target condition/years	Difficulty of creation category		Assessor comments	Reviewer comments
Cropland - Cereal crops	14.94	Low	N/A - Agricultural	Low	Area/compensation not in local strategy/ no local strategy	1	Low	28.83		
Grassland - Modified grassland	3.2	Low	Poor	Low	Area/compensation not in local strategy/ no local strategy	1	Low	6.18		
Grassland - Other neutral grassland	29.66	Medium	Moderate	Low	Location ecologically desirable but not in local strategy	10	Low	182.78		
Woodland and forest - Lowland mixed deciduous woodland	9.82	High	Moderate	Medium	Location ecologically desirable but not in local strategy	32+	High	15.05		
Heathland and shrub - Mixed scrub	0.68	Medium	Moderate	Low	Area/compensation not in local strategy/ no local strategy	3	Low	4.89		
Wetland - Reedbeds	3.93	High	Moderate	Medium	Location ecologically desirable but not in local strategy	10	Medium	26.77		
Woodland and forest - Lowland mixed deciduous woodland	0.01	High	Moderate	Medium	Location ecologically desirable but not in local strategy	32+	High	0.02		
Woodland and forest - Other woodland; broadleaved	0.13	Medium	Moderate	Low	Location ecologically desirable but not in local strategy	30	Medium	0.26		
Woodland and forest - Other coniferous woodland	0.35	Low	Moderate	Low	Area/compensation not in local strategy/ no local strategy	25	Low	0.57		
Woodland and forest - Other woodland; mixed	0.22	Medium	Moderate	Low	Area/compensation not in local strategy/ no local strategy	25	Medium	0.48		
Heathland and shrub - Mixed scrub	0.07	Medium	Moderate	Low	Area/compensation not in local strategy/ no local strategy	3	Low	0.50		
Woodland and forest - Other woodland; Young Trees planted	0	Medium	Poor	Low	Area/compensation not in local strategy/ no local strategy	25	Low	0.00		
Woodland and forest - Other woodland; Young Trees planted	0	Medium	Poor	Low	Area/compensation not in local strategy/ no local strategy	25	Low	0.00		
Grassland - Modified grassland	5.07	Low	Poor	Low	Area/compensation not in local strategy/ no local strategy	1	Low	9.79		
Grassland - Modified grassland	0.03	Low	Poor	Low	Area/compensation not in local strategy/ no local strategy	1	Low	0.06		
Grassland - Modified grassland	2.31	Low	Poor	Low	Area/compensation not in local strategy/ no local strategy	1	Low	4.46		
Sparsely vegetated land - Ruderal/Ephemeral	0.02	Low	Poor	Low	Area/compensation not in local strategy/ no local strategy	1	Low	0.04		
Lakes - Temporary lakes, ponds and pools	1.17	High	Moderate	Medium	Location ecologically desirable but not in local strategy	5	Medium	9.52		
Cropland - Cereal crops	7.2	Low	N/A - Agricultural	Low	Area/compensation not in local strategy/ no local strategy	1	Low	13.90		
Grassland - Modified grassland	1.5	Low	Poor	Low	Area/compensation not in local strategy/ no local strategy	1	Low	2.90		
Sparsely vegetated land - Ruderal/Ephemeral	2.1	Low	Poor	Low	Area/compensation not in local strategy/ no local strategy	1	Low	4.05		
Heathland and shrub - Mixed scrub	0.01	Medium	Moderate	Low	Area/compensation not in local strategy/ no local strategy	3	Low	0.07		
Urban - Vacant/derelict land/ bareground	2.53	Low	Poor	Low	Area/compensation not in local strategy/ no local strategy	1	Low	4.88		
Urban - Vacant/derelict land/ bareground	1.36	Low	Poor	Low	Area/compensation not in local strategy/ no local strategy	1	Low	2.62		
Cropland - Cereal crops	5.88	Low	N/A - Agricultural	Low	Area/compensation not in local strategy/ no local strategy	1	Low	11.35		
Grassland - Modified grassland	18.33	Low	Poor	Low	Area/compensation not in local strategy/ no local strategy	1	Low	35.38		
Wetland - Reedbeds	7.88	High	Moderate	Medium	Location ecologically desirable but not in local strategy	10	Medium	53.68		
Grassland - Modified grassland	0.93	Low	Poor	Low	Area/compensation not in local strategy/ no local strategy	1	Low	1.79		
Woodland and forest - Lowland mixed deciduous woodland	8.16	High	Moderate	Medium	Location ecologically desirable but not in local strategy	32+	High	12.50		
Grassland - Other neutral grassland	45.59	Medium	Moderate	Low	Area/compensation not in local strategy/ no local strategy	10	Low	255.41		
Heathland and shrub - Mixed scrub	0.32	Medium	Moderate	Low	Area/compensation not in local strategy/ no local strategy	3	Low	2.30		

Woodland and forest - Lowland mixed deciduous woodland	25.54	High	Moderate	Medium	Location ecologically desirable but not in local strategy	32+	High	39.14
Woodland and forest - Lowland mixed deciduous woodland	0.47	High	Moderate	Medium	Location ecologically desirable but not in local strategy	32+	High	0.72
Woodland and forest - Other woodland; broadleaved	0.98	Medium	Moderate	Low	Location ecologically desirable but not in local strategy	30	Medium	1.98
Woodland and forest - Other coniferous woodland	0.5	Low	Moderate	Low	Area/compensation not in local strategy/ no local strategy	25	Low	0.82
Woodland and forest - Other woodland; mixed	0.17	Medium	Moderate	Low	Area/compensation not in local strategy/ no local strategy	25	Medium	0.37
Woodland and forest - Other woodland; mixed	0.74	Medium	Moderate	Low	Area/compensation not in local strategy/ no local strategy	25	Medium	1.63
Heathland and shrub - Mixed scrub	1.08	Medium	Moderate	Low	Area/compensation not in local strategy/ no local strategy	3	Low	7.76
Heathland and shrub - Mixed scrub	0.12	Medium	Moderate	Low	Area/compensation not in local strategy/ no local strategy	3	Low	0.86
Woodland and forest - Other woodland; Young Trees planted	0.04	Medium	Poor	Low	Area/compensation not in local strategy/ no local strategy	25	Low	0.07
Grassland - Other neutral grassland	0.6	Medium	Moderate	Low	Area/compensation not in local strategy/ no local strategy	10	Low	3.36
Grassland - Modified grassland	8.77	Low	Poor	Low	Area/compensation not in local strategy/ no local strategy	1	Low	16.93
Grassland - Modified grassland	0.28	Low	Poor	Low	Area/compensation not in local strategy/ no local strategy	1	Low	0.54
Grassland - Modified grassland	16.17	Low	Poor	Low	Area/compensation not in local strategy/ no local strategy	1	Low	31.21
Sparsely vegetated land - Ruderal/Ephemeral	0.78	Low	Poor	Low	Area/compensation not in local strategy/ no local strategy	1	Low	1.51
Lakes - Temporary lakes, ponds and pools	0.12	High	Moderate	Medium	Location ecologically desirable but not in local strategy	5	Medium	0.98
Cropland - Cereal crops	30.88	Low	N/A - Agricultural	Low	Area/compensation not in local strategy/ no local strategy	1	Low	59.60
Grassland - Modified grassland	0.81	Low	Poor	Low	Area/compensation not in local strategy/ no local strategy	1	Low	1.56
Urban - Vacant/derelict land/ bareground	0.57	Low	Poor	Low	Area/compensation not in local strategy/ no local strategy	1	Low	1.10
Urban - Vacant/derelict land/ bareground	0.1	Low	Poor	Low	Area/compensation not in local strategy/ no local strategy	1	Low	0.19
Urban - Developed land; sealed surface	5.15	V.Low	N/A - Other	Low	Area/compensation not in local strategy/ no local strategy	0	Low	0.00
Urban - Developed land; sealed surface	0.06	V.Low	N/A - Other	Low	Area/compensation not in local strategy/ no local strategy	0	Low	0.00
Urban - Developed land; sealed surface	0.01	V.Low	N/A - Other	Low	Area/compensation not in local strategy/ no local strategy	0	Low	0.00
Urban - Developed land; sealed surface	81.94	V.Low	N/A - Other	Low	Area/compensation not in local strategy/ no local strategy	0	Low	0.00
Totals	349.28							861.37





A1 M2E  
 B-2 Site Hedge Creation

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		Proposed habitats				Habitat distinctiveness		Habitat condition		Ecological connectivity		Strategic significance		Temporal multiplier	Hedge units delivered	Comments	
Baseline ref	New hedge number	Habitat type	Length km	Distinctiveness	Condition	Ecological connectivity	Ecological connectivity	Strategic significance	Strategic significance	Time to target condition/years			Assessor comments	Reviewer comments			
1		Native Species Rich Hedgerow	11.81	Medium	Good	Low	Low	Location ecologically desirable but not in local strategy	Location ecologically desirable but not in local strategy	10		73.14					
2		Native Species Rich Hedgerow	32.63	Medium	Good	Low	Low	Location ecologically desirable but not in local strategy	Location ecologically desirable but not in local strategy	10		202.09					
3																	
4																	
5																	
6																	
7		Creation Length/KM	44.44									275.23					

A1 M2E  
C-1 Site River Baseline

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Existing river type			Habitat distinctiveness	Habitat condition	Strategic significance		Suggested action	Ecological baseline	Retention category biodiversity value						Comments	
Baseline ref	River type	length KM	Distinctiveness	Condition	Strategic significance	Strategic significance		Total river units	Length retained	Length enhanced	Units retained	Units enhanced	Length impacted	Units Lost	Assessor Comments	Reviewer comments
1	Rivers & Streams (Other)	1.01	Medium	Moderate	Within Local Plans	High strategic significance	Avoid	13,938	0.85		11.73	0	0.16	2,208		
2																
3	Rivers & Streams (Other)	2.36	Medium	Moderate	Within Local Plans	High strategic significance	Avoid	32,568	2.09		28.842	0	0.27	3,726		
4																
5																
6																
7																
8																
Total site length KM		3.37					Total Site	46,51	2.94	0.00	40.57	0.00	0.43	5.93		

A1 M2E  
 C-2 Site River Creation

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Baseline ref	Proposed habitats		Habitat distinctiveness	Habitat condition	Strategic significance		Temporal multiplier	Difficulty of creation category	Riparian encroachment	River units delivered	Comments	
	River type	Length km	Distinctiveness	Condition	Strategic significance	Strategic significance	Time to target condition/years	Extent of encroachment	Assessor comments		Reviewer comments	
1												
2												
3	Rivers & Streams (Other)	0.13	Medium	Moderate	Delivery within Local Plans	High strategic significance	5	High	0m	0.50		
4												
5												
6												
7												
8												
	Creation Length/KM		0.13							0.50		

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