

April 2022

# HS2

## **Phase 2b (Crewe to Manchester) Ancient Woodland Strategy**



## Department for Transport

High Speed Two (HS2) Limited has been tasked by the Department for Transport (DfT) with managing the delivery of a new national high speed rail network. It is a non-departmental public body wholly owned by the DfT.

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# Executive Summary

This Ancient Woodland Strategy focuses on the section of high speed rail called High Speed 2 Crewe – Manchester and follows the structure of the strategies prepared for HS2 Phase One<sup>1</sup> and HS2 Phase 2a<sup>2</sup>. It provides an area-based comparison between losses of ancient woodland and the compensatory measures that would be adopted in response to those losses that are unavoidable.

There are 52,000 ancient woodland sites in England. Through the careful, preliminary design of Phase 2b, we have tried to avoid and reduce the loss of ancient woodland. A total of 5.7 hectares (0.057 square kilometres) of ancient woodland is impacted.

We have developed extensive compensation measures, resulting in 40.9 hectares of woodland planting, enhancing connectivity with other existing woodland habitats and providing new homes for wildlife. This includes 35.2ha of new woodland planting and the translocation of up to 5.7ha of ancient woodland soils to areas that will also be planted to provide further areas of woodland.

Our design, engineering, construction and environmental teams have worked together to fully avoid impacts on some ancient woodland that would have otherwise been affected by the proposed route. These are *Round and Rinks Woods* at Nether Tabley, *Brickhill Wood* located south of Thorns Green, and *Bongs Wood* located east of Feldy.

Where an ancient woodland is described as affected, in many cases this means a small section of an overall woodland is affected. On Phase 2b, 88% of the total area of the 18 ancient woodlands will remain intact and untouched by HS2.

At 17 ancient woodland sites, the habitat impacted per site, will be less than 0.8ha, with the largest loss from any single ancient woodland at Hancock's Bank Ancient Woodland Inventory site (Hulseheath to Manchester Airport area (MA06)), where approximately 1.3ha will be affected.

Ancient woodlands are areas that have been continuously wooded since at least 1600AD. They are complex ecosystems and take hundreds of years to establish, and as such they are

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<sup>1</sup> High Speed Two Ltd (2017), High Speed Two Phase One (London – West Midlands) Ancient Woodland Strategy. Available online at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/664737/hs2\\_phase\\_one\\_ancient\\_woodland\\_strategy.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/664737/hs2_phase_one_ancient_woodland_strategy.pdf)

<sup>2</sup> High Speed Two Ltd (2020), High Speed Two Phase 2a (West Midlands to Crewe) Ancient Woodland Strategy. Available online at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/872799/CS\\_Phase2aAncientWoodlandStrategy\\_RD.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/872799/CS_Phase2aAncientWoodlandStrategy_RD.pdf)

irreplaceable. Both ancient semi-natural woodland and plantations on ancient woodland sites are afforded equal policy protection under the National Planning Policy Framework.

Data from a wide range of sources, including national datasets (e.g. Natural England's Ancient Woodland Inventory), historical map data, and information provided by stakeholders including Natural England and the Woodland Trust, have been used to inform the strategy.

No set ratios of loss and gain have been used in determining an appropriate level of compensation response. The level of compensation provision included in each case has been derived through professional judgement, taking into account the scale of the impacts and the condition of the woodland concerned, which differ in terms of both the existing habitat structure and the diversity of the areas impacted.

In accordance with the HS2 Code of Construction Practice<sup>3</sup> and the Environmental Minimum Requirements<sup>4</sup>, during design development and construction, efforts will be made to seek to avoid or further reduce the impacts of the Proposed Scheme.

As design development is undertaken, HS2 Ltd will look at opportunities to avoid or further reduce the effect on ancient woodland where practicable. As this further information becomes available, HS2 Ltd will continue to work with local landowners, Natural England and other relevant bodies to refine the compensation strategy for each woodland.

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<sup>3</sup> High Speed Two Ltd (2018), High Speed Rail (Crewe to Manchester and West Midlands to Leeds) Draft Code of Construction Practice for working draft Environmental Statement. Available online at: <https://www.gov.uk/government/publications/draft-code-of-construction-practice-for-hs2-phase-2b-working-draft-environmental-statement>

<sup>4</sup> High Speed Two Ltd (2017), High Speed Rail (West Midlands to Crewe) Environmental Minimum Requirements for HS2 Phase 2a. Available online at: <https://www.gov.uk/government/publications/environmental-minimum-requirements-for-hs2-phase-2a>

# 1 Acronyms

Table 1: List of Abbreviations

Acronym	Description
ASNW	Ancient Semi-Natural Woodland
AWI	Ancient Woodland Inventory
CIEEM	Chartered Institute of Ecology and Environmental Management
CoCP	Code of Construction Practice
EMR	Environmental Minimum Requirements
ES	Environmental Statement
ESMP	Ecology Site Management Plan
Ha	Hectare
HoPI	Habitat of Principal Importance
Km	Kilometre
LWS	Local Wildlife Site
M	Metre
MA	Community Area
NPPF	National Planning Policy Framework
NPPG	National Planning Policy Guidance
NVC	National Vegetation Classification
OS	Ordnance Survey
PAWS	Plantations on ancient woodland sites
PHI	Natural England's Priority Habitat Inventory
RSD	Rolling Stock Depot
SBI	Site of Biological Importance
SINC	Site of Importance for Nature Conservation
SMR	Scope and Methodology Report
SSSI	Site of Special Scientific Interest
WCML	West Coast Main Line

## 2 Introduction

### 2.1 Background to High Speed Two

- 2.1.1 High Speed Two (HS2) is a new high speed railway proposed by the Government to connect major cities in Britain. New stations in London, Birmingham, Manchester and East Midlands would be served by high speed trains running at speeds of up to 360 kilometres per hour (kph) (225 miles per hour (mph)).
- 2.1.2 In January 2012, following a consultation exercise, the Government announced its intention to develop a Y-shaped high speed rail network, which would be brought forward in two phases. The 2012 decision confirmed the Government's preferred route for a high speed line between London and the West Midlands, called Phase One. In November 2013, HS2 Ltd deposited a hybrid Bill in Parliament to seek powers for the construction and operation of Phase One. The High Speed Rail (London – West Midlands) Act 2017 received Royal Assent in February 2017, pre-construction work on Phase One commenced in July 2017 and notice to proceed with main works was given in April 2020.
- 2.1.3 In January 2013, the Government announced its initial preferred route for Phase Two between the West Midlands, Leeds and Manchester. Following some minor amendments, the proposed route was subject to a seven-month public consultation from July 2013 until January 2014.
- 2.1.4 In two reports, HS2 Plus<sup>5</sup> and Rebalancing Britain<sup>6</sup>, Sir David Higgins recommended accelerating the section of the Phase Two route between the West Midlands and Crewe to deliver some of the benefits that HS2 would bring to the region and the North sooner. In the November 2015 Command Paper HS2: East and West: The next steps to Crewe and beyond<sup>7</sup>, the Government announced its intention to bring forward the route between the West Midlands and Crewe and set out the preferred line of route for what is known as Phase 2a. Phase 2a involves the construction of the first approximately 58km of the western leg of Phase Two from the end of the Phase One route to Crewe, with a connection to the West Coast Main Line (WCML) at Crewe. In July 2017, HS2 Ltd deposited a hybrid Bill to Parliament to seek powers for the construction and operation of Phase 2a. A subsequent ES deposited with an

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<sup>5</sup> High Speed Two Ltd (2014), HS2 Plus – A report by David Higgins. Available online at:

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/374695/HS2\\_Plus - A report by David Higgins.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/374695/HS2_Plus_-_A_report_by_David_Higgins.pdf)

<sup>6</sup> High Speed Two Ltd (2014), Rebalancing Britain – From HS2 towards a national transport strategy. Available online at:

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/374709/Rebalancing Britain - From HS2 towards a national transport strategy.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/374709/Rebalancing_Britain_-_From_HS2_towards_a_national_transport_strategy.pdf)

<sup>7</sup> Department for Transport (2015), High Speed Two: East and West: The next steps to Crewe and beyond. Available online at:

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/480712/hs2-east-and-west.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/480712/hs2-east-and-west.pdf)

Additional Provision to that Bill followed in March 2018. The High Speed Rail (West Midlands to Crewe) Act 2021 received Royal Assent in February 2021.

- 2.1.5 In November 2016 the Government set out the majority of its preferred route<sup>8</sup> between Crewe and Manchester (the Western Leg) and between the West Midlands and Leeds (the Eastern Leg). Alongside the preferred route of HS2 Crewe – Manchester, the Government also announced a consultation on seven route refinement areas. On 17 July 2017, the Government announced a decision on these refinements and confirmed the remainder of the preferred route for HS2 Crewe – Manchester.
- 2.1.6 In February 2020, following the conclusion of the Oakervee Review<sup>9</sup> into HS2, the Government decided to proceed with legislation for HS2 Crewe – Manchester as a priority. On 7 October 2020 the Minister of State for Transport announced a consultation on four proposed changes to the design of HS2 Crewe – Manchester including the addition of Crewe Northern Connection and changes to the design of Crewe North Rolling Stock Depot; changes to the design of Manchester Airport High Speed station; changes to the design around Manchester Piccadilly High Speed station; and the introduction of a new train stabling facility at Annandale, in Dumfries and Galloway. The consultation closed on 11 December 2020.
- 2.1.7 The powers for HS2 Crewe – Manchester will be sought through a hybrid Bill ('the Bill') that is expected to be deposited in Parliament in early 2022. Construction of HS2 Crewe – Manchester is anticipated to commence in approximately 2025, with operation planned to start around 2038.
- 2.1.8 In this report HS2 Crewe – Manchester is referred to as 'the Proposed Scheme' and is the subject of this Ancient Woodland Strategy (see Section 1.2).

## 2.2 Background to HS2's Ancient Woodland Strategy

- 2.2.1 A review undertaken by Natural England in 2016 recommended that ancient woodland should be excluded from HS2 Ltd's Phase One biodiversity accounting calculation. This recommendation was accepted by HS2 Ltd for Phase One and subsequent Phases. Ancient woodland and associated compensation measures, therefore, fall outside of the scope of the HS2 Ltd's biodiversity accounting calculation for replaceable habitats.

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<sup>8</sup> Department for Transport (2016), High Speed Two: From Crewe to Manchester, the West Midlands to Leeds and beyond. Available online at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/897407/high-speed-two-crewe-manchester-west-midlands-leeds-document.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/897407/high-speed-two-crewe-manchester-west-midlands-leeds-document.pdf)

<sup>9</sup> Department for Transport and High Speed Two Ltd (2020), Oakervee Review of HS2. Available online at: <https://www.gov.uk/government/publications/oakervee-review-of-hs2>

- 2.2.2 This document, the HS2 Crewe – Manchester Ancient Woodland Strategy, provides an area-based comparison of the unavoidable losses of ancient woodland habitat that will occur as a consequence of the Proposed Scheme and the associated package of compensation measures to be provided in response to those losses.



## 3 Context for HS2's Ancient Woodland Strategy

### 3.1 Introduction

3.1.1 This Section provides background information relating to the role of the Ancient Woodland Strategy for the Proposed Scheme, the underlying policy context, and the process followed in developing the package of compensation measures proposed.

### 3.2 Policy and guidance

3.2.1 In England Natural England and the Forestry Commission's standing advice<sup>10</sup> defines ancient woodland as any wooded area that has been wooded continuously since at least 1600 AD. It includes:

- ancient semi-natural woodland (ASNW) - mainly made up of trees and shrubs native to the site, usually arising from natural regeneration; and
- plantations on ancient woodland sites (PAWs) - replanted with conifer and broadleaved trees that retain ancient woodland features, such as undisturbed soil, ground flora and fungi.

3.2.2 Section 175 of The National Planning Policy Framework (NPPF)<sup>11</sup> sets out a series of principles that should be taken into account when determining planning submissions, which includes the following in relation to ancient woodland:

"Development resulting in the loss of deterioration of irreplaceable habitats (such as ancient woodland and ancient of veteran trees) should be refused, unless there are wholly exceptional reasons, and a suitable compensation strategy exists."

3.2.3 The accompanying National Planning Practice Guidance (NPPG)<sup>12</sup> states that:

"Both Ancient Semi-Natural Woodland (ASNW) as well as Plantations on Ancient Woodland Sites (PAWS) are ancient woodland. Both types should be treated equally in terms of the protection afforded to ancient woodland in the National Planning Policy Framework."

3.2.4 All ancient woodlands are, therefore, afforded equal policy protection, and all losses of ancient woodland are considered irreplaceable.

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<sup>10</sup> Natural England and Forestry Commission (2022), Ancient woodland, ancient trees and veteran trees: advice for making planning decisions. Available online at: <https://www.gov.uk/guidance/ancient-woodland-and-veteran-trees-protection-surveys-licences>

<sup>11</sup> UK Government (2021), National Planning Policy Framework. Available online at: <https://www.gov.uk/government/publications/national-planning-policy-framework-2>

<sup>12</sup> UK Government (2019), Natural Environment. Available online at: <https://www.gov.uk/guidance/natural-environment>

3.2.5 England's biodiversity strategy for the period up to 2020<sup>13</sup> also references the Government's commitments in relation to ancient woodland, as follows:

"We are committed to providing appropriate protection to ancient woodlands and to more restoration of plantation on ancient woodland sites (in recognition of that particular value)...."

3.2.6 Beyond the 2020 targets, the Government's 25 Year Environment Plan<sup>14</sup> states that:

"We are committed to ensuring stronger protection of our ancient woodlands, making sure they are sustainably managed to provide a wide range of social, environmental, societal and economic benefits"

3.2.7 In considering schemes where impacts on ancient woodland are likely to occur Natural England's standing advice in relation to ancient woodland advises that the mitigation hierarchy should be implemented and in the first instance efforts should be made to avoid ancient woodland through redesigning the scheme.

3.2.8 In Scotland ancient woodland is defined as land that has been continually wooded since at least 1750<sup>15</sup>. It contains three main categories of woodland, all of which are likely to be of value for their biodiversity and cultural value by virtue of their antiquity:

- Ancient Woodland (1a and 2a) interpreted as semi-natural woodland from the Roy maps of c.1750<sup>16</sup> (1a) and the Ordnance Survey (OS) 1st edition (c1860) (2a) and continuously wooded to the present day. If planted with non-native species during the 20th century they are referred to as Plantations on Ancient Woodland Sites (PAWS);
- long-established woodlands of plantation origin (LEPO) (1b and 2b) interpreted as plantation from maps of 1750 (1b1) or 1860 (2b) and continuously wooded since. Many of these sites have developed semi-natural characteristics, especially the oldest ones, which may be as rich as Ancient Woodland; and
- other woodlands on 'Roy' woodland sites (3) shown as unwooded on the 1st edition OS maps but as woodland on the Roy maps. Such sites have at most, had only a short break in continuity of woodland cover and may still retain features of Ancient Woodland.

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<sup>13</sup> Defra (2011), Biodiversity 2020: A strategy for England's wildlife and ecosystem services. Available online at: <https://www.gov.uk/government/publications/biodiversity-2020-a-strategy-for-england-s-wildlife-and-ecosystem-services>

<sup>14</sup> UK Government (2018), A Green Future: Our 25 Year Plan to Improve the Environment. Available online at: <https://www.gov.uk/government/publications/25-year-environment-plan>

<sup>15</sup> NatureScot (2020), A guide to understanding the Scottish Ancient Woodland Inventory (AWI). Available online at: <https://www.nature.scot/doc/guide-understanding-scottish-ancient-woodland-inventory-awi>

<sup>16</sup> Military map survey of Scotland undertaken by William Roy.

- 3.2.9 Scottish Planning Policy<sup>17</sup> principle 194 states that the planning system should “protect and enhance ancient semi-natural woodland as an important and irreplaceable resource, together with other native or long-established woods, hedgerows and individual trees with high nature conservation or landscape value”. Paragraph 2.16 states, “Ancient semi-natural woodland is an irreplaceable resource and, along with other woodlands, hedgerows and individual trees, especially veteran trees of high nature conservation and landscape value, should be protected from adverse impacts resulting from development.”
- 3.2.10 The Scottish Government’s Policy on Control of Woodland Removal<sup>18</sup> states that there is a “*strong presumption against*” removing ancient semi-natural woodland or plantations on ancient woodland sites, amongst other types of woodland.

### 3.3 Ancient Woodland Inventory

- 3.3.1 The English Ancient Woodland Inventory (AWI) was established in the early 1980s by the Nature Conservancy Council utilising a range of historic data from old maps and documents, alongside field survey information and aerial photograph interpretation to identify all woodland in Britain that had existed since 1600AD.
- 3.3.2 Only woodland sites over 2.0ha (on the 1920s base maps used in the project) were included on the original AWI, and some of the woodlands less than 2.0ha that were excluded are likely to be ancient<sup>19</sup>. Natural England (who maintain and update the AWI in England) have, in recent years, added to the AWI some areas of ancient woodland that are less than 2.0ha in size in those areas where recent updates to local ancient woodland inventories have been undertaken with the aim of identifying all areas of ancient woodland, regardless of their size. In addition, parcels of ancient woodland that were identified in the original Nature Conservancy Council project have remained within the AWI even where there have been subsequent losses from those sites that have reduced the area of ancient woodland remaining in the site to less than 2.0ha. It should be noted that the detail provided in the standing advice applies to all ancient woodlands, whether on inventories or not.
- 3.3.3 The AWI currently lists over 52,000 ancient woodlands in England. However, it is classed as provisional because it is a live dataset. Natural England consider new evidence on woodlands when received and may add sites or remove them on assessment of that evidence, if it proves or disproves the longevity of the site. Natural England’s website states that:

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<sup>17</sup> Scottish Planning Policy (2020), *Policy statement on how nationally important land use planning matters should be addressed across the country*. Directorate: Local Government and Communities.

<sup>18</sup> Scottish Forestry (undated), Woodland Removal. Available online at: <https://forestry.gov.scot/support-regulations/control-of-woodland-removal>

<sup>19</sup> Natural England (2021), Ancient Woodland Inventory (Open Data Geoportal) – dataset accessible from: <http://naturalengland-defra.opendata.arcgis.com>

“Ancient woodland is identified using presence or absence of woods from old maps, information about the wood’s name, shape, internal boundaries, location relative to other features, ground survey and aerial photography”.

- 3.3.4 On the basis that the AWI is provisional and does not include woodlands smaller than 2.0ha, HS2 Ltd prepared a heritage review of all woodlands that may be affected by the Proposed Scheme<sup>20</sup>. This review considered all available data for these sites (including historic mapping) to verify their status. The evidence base was discussed with the Woodland Trust and their views were taken into consideration prior to concluding which woodlands HS2 Ltd would recommend for inclusion in the AWI.
- 3.3.5 This evidence was then provided to Natural England, who confirmed the addition of the recommended woodlands to the AWI. In a small number of cases, certain woods were considered by Natural England to be ancient woodland but too small to include on the AWI<sup>21</sup>. All AWI qualifying and non-AWI qualifying woodlands are considered to be ancient woodland for the purposes of the environmental impact assessment reported in the ES and detailed in this report.
- 3.3.6 NatureScot note that the data provided in the AWI for Scotland, as derived from the Roy maps (c1750) and the OS 1st edition (c1860) is not definitive and should be used with care; when evaluating woods it is important to:
- examine the site on the ground, looking for archaeological, biological and other indicators of antiquity and of its current biodiversity value;
  - examine old maps; the OS 1st edition and Roy maps are available on National Library of Scotland website. Woods not shown on the AWI, but present on the historic maps, are likely to be ancient and should be treated as such unless evidence is available to the contrary; and
  - seek specialist advice if in doubt
- 3.3.7 Therefore, for Scotland the data provided in the Scottish AWI as well the Roy maps and the OS 1<sup>st</sup> edition have been used on a precautionary basis.

## 3.4 Development of HS2 compensation proposals

- 3.4.1 Ancient woodland ecosystems are highly complex and have developed over several hundred years. It is not possible to translocate ancient woodland habitat or mitigate its loss. HS2 Ltd has sought to avoid and reduce loss of ancient woodland during the preliminary design work undertaken to date, and where losses of ancient woodland are expected to occur as a consequence of the Proposed Scheme these losses have been recorded within the ES reports as permanent adverse residual effects at the national level in each case. Further information on the options explored to feasibly

<sup>20</sup> High Speed Two Ltd (February 2021), High Speed Rail (Crewe – Manchester) *Report on Potential Additional Ancient Woodland*.

<sup>21</sup> Daisybank Wood (MA03) and East of Arden House Wood (MA06) are below the threshold for addition to the AWI which is 0.25ha.

amend the Proposed Scheme to reduce impacts on ancient woodlands is found in the Volume 5 Alternatives Report<sup>22</sup>.

3.4.2 Avoidance, mitigation and compensation measures have been incorporated into the Proposed Scheme in accordance with the mitigation hierarchy, as set out in further detail in the Ecological Principles of Mitigation within the SMR Addendum<sup>23</sup>. The ES describes the avoidance, mitigation and compensation measures that have been incorporated into the Proposed Scheme.

3.4.3 The Proposed Scheme has been designed, where reasonably practicable, to avoid impacts on sensitive ecological receptors. However, given the scale of the Proposed Scheme, and a series of sometimes conflicting environmental constraints, there are locations where impacts on ecological receptors cannot be reasonably avoided.

3.4.4 Where the potential for significant adverse ecological effects was identified, feedback has been provided to the design team and the scope for avoiding or reducing the impacts (i.e. mitigation) has been considered. This process has been driven by collaborative working between the HS2 Ltd engineering, construction and environmental teams and has been informed by the consultation and engagement process associated with the ES.

3.4.5 Through this process it has been possible to fully avoid impacts on some ancient woodland that would have otherwise been affected by the Proposed Scheme at:

- Round and Rinks Woods AWI site covering an area of 31.9ha and located at Nether Tabley, through changes to the road junction improvement works along the A556 and Flittogate Lane;
- Brickhill Wood AWI site covering an area of 2.3ha and located south of Thorns Green, through construction methods used for the modification of utilities in this area, and;
- Bongs Wood AWI site covering an area of 4.1ha and located east of Feldy, through the construction methods used for the modification of an overhead power line.

3.4.6 Where losses of ancient woodland are expected to occur, a range of compensatory measures are proposed by HS2 Ltd, these include:

- translocation of ancient woodland soils;
- translocation of coppice stools; and
- new woodland creation.

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<sup>22</sup> High Speed Two Ltd (2018), High Speed Rail (Crewe to Manchester and West Midlands to Leeds) Alternatives Report for the HS2 Phase 2b working draft Environmental Statement. Available online at: <https://www.gov.uk/government/publications/alternatives-report-for-the-hs2-phase-2b-working-draft-environmental-statement>

<sup>23</sup> High Speed Two Ltd (2018), High Speed Rail (Crewe – Manchester), *Environmental Statement, Environmental Impact Assessment Scope and Methodology Report*. Available online at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/745450/HS2\\_Phase\\_2b\\_Working\\_Draft\\_ES\\_EIA\\_Scope\\_and\\_Methodology\\_Report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/745450/HS2_Phase_2b_Working_Draft_ES_EIA_Scope_and_Methodology_Report.pdf)

- 3.4.7 A combination of the above measures will be employed in order to provide an appropriate level of compensation for each ancient woodland loss that occurs as a result of the Proposed Scheme. No standard ratios for woodland loss to compensation gain have been utilised in determining an appropriate level of compensation required.
- 3.4.8 The compensation requirements for individual impacts were considered on a site-by-site basis, taking into account the scale of the impacts of the woodland affected, before consolidating this into a suitable compensation strategy for the wider local area. This process did not involve the use of a biodiversity accounting metric or other loss to gain ratios.
- 3.4.9 The approach to determining the level of compensation included within the Proposed Scheme has, therefore, been no different to that traditionally used by all major UK infrastructure projects over the last 30 years.
- 3.4.10 The location and design of habitat creation areas, including woodland planting to compensate for the loss of ancient woodland, has sought (where possible) to adhere to the key Lawton Review<sup>24</sup> principles of 'more, bigger, better and joined up'. These aim to result in habitat creation areas which will also enhance and connect habitat parcels within the local area. These measures also support climate change adaptation by increasing the resilience of ecological networks.
- 3.4.11 The detailed design of the Proposed Scheme is yet to be undertaken, and therefore, there remain opportunities to reduce effects on ancient woodland. In addition, there may be the potential to refine the compensatory measures currently proposed where this can be achieved through agreement with landowners and stakeholders, and without delay to the project programme.
- 3.4.12 It should be noted that the translocation of ancient woodland soils has been included as a compensatory measure that will, where conditions are suitable, act to provide the best opportunity to retain some of the diversity associated with the ancient woodland seed (and bulb) bank, fungi and invertebrates. Such measures will form one part of the compensatory response, and even where ancient woodland soils are translocated, the soils receptor areas would not be considered to represent ancient woodland.

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<sup>24</sup> Lawton, J.H., Brotherton, P.N.M., Brown, V.K., Elphick, C., Fitter, A.H., Forshaw, J., Haddow, R.W., Hilborne, S., Leafe, R.N., Mace, G.M., Southgate, M.P., Sutherland, W.J., Tew, T.E., Varley, J., & Wynne, G.R. (2010) Making Space for Nature: a review of England's wildlife sites and ecological network. Report to Defra.

## 4 Methodology

### 4.1 Scope of the Ancient Woodland Strategy

- 4.1.1 The scope of the Ancient Woodland Strategy for the Proposed Scheme covers the following:
- all ancient woodlands identified to be impacted by the Proposed Scheme within the ES; and
  - all compensatory habitat creation currently proposed in response to the loss of ancient woodland.
- 4.1.2 All areas of habitat that are considered within the Ancient Woodland Strategy are excluded from the scope of the HS2 Ltd's biodiversity accounting calculation for replaceable habitats. Therefore, all compensatory habitat creation measures referred to within this strategy are in addition to those considered within the biodiversity accounting calculation.
- 4.1.3 Details of specific measures for long-term management and monitoring for each ancient woodland will be prepared at the relevant design development stage and included within the relevant iteration of the Ecology Site Management Plan (ESMP) for that location.
- 4.1.4 It is expected that all future relevant information relating to each ancient woodland will be captured within the respective the ESMP, the annual Ancient Woodland Report and the annual HS2 Environmental Sustainability Report.
- 4.1.5 For each ancient woodland, information relating to the expected impacts, and the proposed compensation in response to these losses is provided under a series of standard headings as follows:
- baseline conditions - current conditions at the ancient woodland to be affected based on available desk study and field survey data;
  - measures to reduce impacts - summary of the steps taken to reduce direct impacts on ancient woodlands to date, in cases where this has been possible;
  - impacts and associated effects - details of the expected areas of ancient woodland affected by the Proposed Scheme in hectares (ha), and the geographic level at which the resultant effect is considered to be significant<sup>25</sup>;
  - compensatory measures – the area of ancient woodland lost is stated. Areas are also stated for ancient woodland retained, new compensatory planting, and translocation;
  - translocation of ancient woodland soils – details of the proposed receptor site for ancient woodland soils;

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<sup>25</sup> Woodland planting figures included within this section of the table include areas of woodland planting that will be provided to compensate for the loss of ancient and non-ancient woodland within this area, this approach has been taken to ensure larger, coherent woodlands are provided that have greater ecological functionality.



- soils conditions – initial data regarding soil conditions at donor and receptor site; and
- woodland planting – extent of new woodland planting (ha).

## 4.2 Data sources

4.2.1 Table 2 provides a summary of key data sources that informed the production of HS2 Ltd’s Crewe – Manchester Ancient Woodland Strategy.

Table 2: Data sources utilised in the Ancient Woodland Strategy

Data Type	Description	Source(s)
Natural England AWI	Location of ancient woodlands in England	Natural England via data.gov.uk website <sup>26</sup>
NatureScot AWI	Location of ancient woodlands in Scotland	NatureScot via their website <sup>27</sup>
Statutory site designation details	Citations for woodlands affected by the Proposed Scheme that are designated as statutory nature conservation sites	Natural England <sup>28</sup>  Multi-Agency Geographic Information for the Countryside (MAGIC) <sup>29</sup>  South West Scotland Environmental Information Centre
Non-statutory site designation details	Designation details for non-statutory sites for nature conservation.	RECORD (the Local Biological Records Centre serving Cheshire); Mersey Biobank; the Lancashire Environment Record Network; and the South West Scotland Environmental Information Centre.
Historic maps	Historic map regression using publicly available early maps including estate, survey, tithe, and available Ordnance Survey maps	Cheshire and Lancashire - tithe maps from 1839 to 1848 depending on the township and parish.  Community areas MA04, MA05, MA06, MA07 and MA08 are covered by earlier OS mapping for Lancashire at six inches to a

<sup>26</sup> Data.gov.uk (2021). Ancient Woodlands (England). Available online at: <https://data.gov.uk/dataset/9461f463-c363-4309-ae77-fdcd7e9df7d3/ancient-woodland-england>

<sup>27</sup> Data.gov.uk (2020). Ancient Woodland Inventory (Scotland). Available online at: <https://gateway.snh.gov.uk/natural-spaces/dataset.jsp?dsid=AWI>

<sup>28</sup> Natural England website. Designated Sites Details. Available online at: [http://www.lnr.naturalengland.org.uk/Special/lnr/lnr\\_search.asp](http://www.lnr.naturalengland.org.uk/Special/lnr/lnr_search.asp) and <https://designatedsites.naturalengland.org.uk/SiteSearch.aspx>

<sup>29</sup> Multi-Agency Geographic Information for the Countryside website. Available online at: <http://www.magic.gov.uk>



Data Type	Description	Source(s)
		<p>mile (1:10,560) surveyed 1842-1849.</p> <p>Community areas MA01, MA02, MA03, MA04, MA05 and MA06 are covered by the 1st Edition OS County maps (1:2,500) for Cheshire surveyed 1871-1875.</p> <p>Estate maps from Cheshire and Lancashire (where available).</p>
Field data from HS2 habitat surveys	Phase 1 habitat survey and National Vegetation Classification (NVC) survey data and ancient woodland survey data from field surveys undertaken by HS2 Ltd, where access has been available	High Speed Rail (Crewe – Manchester) Environmental Statement Volume 5: Ecology and biodiversity appendices <sup>30</sup>
Archaeological record	Review of archaeological record	High Speed Rail (Crewe – Manchester) Environmental Statement Volume 5: Cultural heritage appendices
Soils data	Soils data for the Proposed Scheme as reported in the agriculture, forestry and soils assessment	High Speed Rail (Crewe – Manchester) Environmental Statement Volume 5: Agriculture, forestry and soils
Aerial photography and Ordnance Survey maps	Review of aerial photography surveys and Ordnance Survey maps	<p>HS2 Ltd (fly over aerial photography of the route alignment)</p> <p>Ordnance Survey maps acquired under licence to HS2</p>

## 4.3 Constraints

- 4.3.1 During the review of historical data, maps and documents it was not always possible to obtain access to all pre-19th century mapping, due to copyright issues and/or incomplete mapping. In addition, incomplete or imprecise supporting documents, such as tithe apportionments or survey records, represented a constraint to the historical review. Best endeavours were made to access and utilise relevant historic information to determine which woodlands are likely to be ancient.
- 4.3.2 Due to access restrictions, it has not been possible to access all affected ancient woodland sites to undertake field surveys to inform this report. Where baseline survey continues to not be possible prior to Royal Assent, detailed vegetation survey

<sup>30</sup> High Speed Two Ltd (2022), High Speed Rail (Crewe – Manchester) Environmental Statement. Available online at: <https://www.gov.uk/government/collections/hs2-phase2b-crewe-manchester-environmental-statement>

will be undertaken prior to the commencement of construction, to provide a robust baseline to inform any proposed translocation of soils or plant material and inform future targets for monitoring and management.

4.3.3 Detailed assessment of the soil conditions at the ancient woodland sites and the associated proposed donor sites for ancient woodland soils have not been undertaken to date. The proposed soil translocation donor sites are, therefore, subject to change following detailed surveys of the soils compatibility with those to be translocated from the ancient woodlands. If alternative receptor site locations are required these will still be the same size i.e. there will be no reduction in receptor site areas.

4.3.4 In some cases, the areas of habitat loss stated in Sections 4.5-4.22 below differ slightly from those stated in the hybrid Bill ES. This applies where the area of ancient woodland loss is less than 0.1ha, for which areas are provided to two decimal places in the hybrid Bill ES, but as <0.1ha in this report. This maintains consistency with ancient woodland strategies for earlier phases of HS2, which report areas to one decimal place. Areas of compensation within the hybrid Bill ES and this strategy also differ for some woodlands. This report refers only to compensation for individual ancient woodlands, whereas the hybrid Bill ES states compensation areas that address loss of ancient woodland as well as impacts on other ecological receptors. This means that the areas for habitat loss and compensation cannot be summed to exactly match the areas in the hybrid Bill ES.

## 4.4 Route-section specific assumptions

4.4.1 Table 3 lists ancient woodlands that are included in the hybrid Bill Environmental Statement, but not directly affected by the construction of the Proposed Scheme. The majority are located in relatively close proximity to land required for construction of the Proposed Scheme. In cases where they are a consideration, potential indirect effects, such as dust, noise and altered lighting, will be controlled through implementation of avoidance and protection measures detailed in the draft Code of Construction Practice (CoCP). In some cases, the nature of nearby works such as the provision of ecological and landscape mitigation areas or utilities diversions, also contributes to the absence of effects. There will be no significant adverse effects on these ancient woodlands and they are not considered further in this strategy.

4.4.2 In respect of Wimboldsley Wood AWI site, which is also part of Wimboldsley Wood Site of Special Scientific Interest (SSSI), in MA02. Construction of Crewe North Rolling Stock Depot (RSD) may result in a reduction in ground water recharge that could result in changes to groundwater flow in parts of the SSSI that contain ancient woodland. Based on Phase 1 habitat survey information, including historic information supplied by Natural England, groundwater-dependent wet woodland is predominantly located in the west of the site and are associated with alluvium rather than glacial till. This area of ancient woodland, and the rare saline spring

present within it, will not be affected by construction of Crewe North RSD. There will be no significant direct or indirect effects on the designated woodland features of this SSSI and it is not discussed further in this strategy.

Table 3: Woodlands close to the Proposed Scheme not subject to significant effects

Ancient Woodland Name	Community Area	Distance (m) orientation from land required for construction of the Proposed Scheme
Weaver Bank AWI site	MA02	20/west
Rookery/Small Rookery Woods AWI site, part of which is also within Rookery/Small Rookery Woods LWS	MA02	Adjacent
Wimboldsley Wood AWI site, which is also part of Wimboldsley Wood SSSI	MA02	20/west
Woodland near Lea Hall, Wimboldsley AWI site, part of which is also within Woodland near Lea Hall, Wimboldsley LWS	MA02	Adjacent
Peck Mill Valley AWI site	MA02	1400/west
Winnington Belt AWI site	MA02	Adjacent
Round and Rinks Wood AWI site	MA03	Adjacent
School Wood AWI site	MA03	90/north-east
Tabley Pipe Wood AWI site	MA03	50/west
Meremoss Wood AWI site	MA03	80/south
Park Covert AWI site	MA03	30/east
Rookery at Dunham Massey AWI site	MA03	195/north
Tabley Wood AWI site	MA03	45/south
An unnamed woodland north of Wet Gate Lane AWI site	MA04	Adjacent
Harpers Bank Wood AWI site	MA06	280/west
Wood Bongs AWI site	MA06	600/south-west

Ancient Woodland Name	Community Area	Distance (m) orientation from land required for construction of the Proposed Scheme
Brickhill Wood AWI site	MA06	Adjacent
Cotterill Clough AWI site	MA06	140/east
Watch Hill AWI site	MA06	60/east
Bentley/Tomfield Banks AWI site	MA06	640/north
Warburton Wood AWI site	MA06	60/north
Sunbank Wood AWI site	MA06	Adjacent
Heyscroft AWI site	MA07	10/north
Black Carr Wood AWI site	MA07	160/west
Round's Wood AWI site	MA07	100/north
Black Field Wood AWI site	MA07	285/north
Blacksike Wood and Bensmoor Wood	Annandale Depot	Adjacent
Woodland east of Grahamshill Railway Cottages	Annandale Depot	Adjacent
Mossknowe Lodge Wood	Annandale Depot	Adjacent

## 5 Affected ancient woodlands and associated compensatory measures

### 5.1 Introduction

- 5.1.1 Sections 4.5 to 4.21 of this report provide details of each of the ancient woodland sites that will be affected by the Proposed Scheme and the associated compensatory measures to be provided. The text descriptions provided for each woodland should be read in conjunction with the corresponding maps (provided in Section 7)<sup>31</sup>.
- 5.1.2 Table 4 provides a route-wide summary of the impacts of the Proposed Scheme on ancient woodland and the associated compensatory provision in response to these losses.
- 5.1.3 In accordance with the measures detailed in the draft CoCP and the Environmental Minimum Requirements (EMRs), efforts will continue to be made during design development and construction to seek to avoid or further reduce the impacts of the Proposed Scheme on these sites. For example, through use of innovative design solutions (e.g. increasing cutting gradients), and construction methods. As a consequence, the areas of ancient woodland loss reported in the following sections are considered to be a worst-case, which may be improved upon during design development.
- 5.1.4 Further details regarding the approach to the creation and management of compensatory habitats, which will apply to all sites where loss of ancient woodland habitat occurs, are provided below.

### 5.2 Translocation of ancient woodland soils

- 5.2.1 The detailed design of the Proposed Scheme has yet to be undertaken and, in some locations, it has not been possible to gain access to undertake detailed baseline surveys. At this stage of the scheme development, it has been assumed that at all locations where losses of ancient woodland will occur as a consequence of the Proposed Scheme, the soil material will be translocated to a suitable receptor site.
- 5.2.2 Sections 4.5 to 4.22 of this document identify the currently proposed receptor sites for ancient woodland soils. As part of the design development process, surveys are to be undertaken at all proposed donor and receptor sites to confirm:
- those sites where it is beneficial to undertake translocation of ancient woodland soils; and
  - the exact size and location of the receptor sites required.

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<sup>31</sup>As a result of engagement with landowners, some of the compensatory areas are the subject of an assurance and therefore the current proposed design may be subject to change during design development. The changes that could result from the assurance are conditioned on the compensatory habitat retaining its intended function.

- 5.2.3 The process of agreeing which woodland soils are appropriate for translocation will involve consultation with Natural England and the Woodland Trust.
- 5.2.4 Where appropriate, translocation of coppice stools, saplings and dead wood will also be considered during design development of these habitat creation areas.
- 5.2.5 The area of soil donor sites (i.e. where ancient woodland will be lost) and the proposed ancient woodland soils receptor sites will be confirmed at detailed design. At this stage the area identified for receipt of translocated ancient woodland soils is the same as the area of ancient woodland lost. In practice, the area of recoverable soil will be less.
- 5.2.6 It is worth noting that translocated soils will always be insufficient to cover the entire receptor site to an appropriate depth, because of the space taken up by tree roots and stumps etc. in the donor site.

#### **Soil survey and physical characteristics**

- 5.2.7 At present detailed soil survey information is not available for all potential donor and receptor areas, high level descriptions of the soil conditions are provided in Sections 6.2 to 6.18<sup>32</sup>.
- 5.2.8 Detailed surveys to record soil conditions and physical characteristics of the woodland will be undertaken at both the proposed donor and receptor sites to inform soil translocation. This will include details of the following: nutrient levels (including nitrogen (N), phosphorous (P), potassium (K) and magnesium (Mg)); soil texture; total depth; horizon thickness; rooting depth; soil pH and structure. Hydrological surveys may also be considered necessary.

### **5.3 Woodland planting**

- 5.3.1 The reporting of compensatory measures draws a distinction between areas that will be receptor sites for ancient woodland soils and will be planted with trees, and all other areas of compensatory tree planting (without translocated soils) that will be provided in response to ancient woodland losses.
- 5.3.2 Sections 6.5 to 6.21 report the areas of new woodland planting, which include those areas that will act as soil receptors (and will also be subject to planting).

### **5.4 Management and monitoring**

- 5.4.1 HS2 Ltd has set out indicative commitments to the management and monitoring of ecology led habitat creation in support of the Proposed Scheme, during the period of establishment within forthcoming Information Paper<sup>33</sup>.

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<sup>32</sup> Cranfield University (2022), Landis: Soil Associations in England and Wales. Available online at: [http://www.landis.org.uk/services/soilsguide/mapunit\\_list.cfm?sorttype\\_association=map\\_unit\\_name](http://www.landis.org.uk/services/soilsguide/mapunit_list.cfm?sorttype_association=map_unit_name)

<sup>33</sup> A paper will be published for HS2 Crewe – Manchester in 2022.

- 5.4.2 HS2 Ltd has committed to 50 years of managing and monitoring in all locations where the translocation of ancient woodland soils is proposed. For those locations where new areas of woodland habitat creation are proposed as part of the response to the loss of ancient woodland, management and monitoring will also be provided for up to 50 years.

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Table 4: Areas of loss, translocation and compensation for each woodland

Woodland name	Community area (CA) number	Approximate total woodland size (ha)	Direct loss of ancient woodland (ha) <sup>34</sup>	Areas of ancient woodland within the area covered by the hybrid Bill that will be retained (ha)	Significant indirect effects on ancient woodland (ha)	Area of receptor site currently proposed for ancient woodland soils (ha)	Areas of new planting to be provided in response to the loss of ancient woodland (including ancient woodland soils receptor) (ha) <sup>35</sup>
Stanthorne Hall Farm Wood AWI site	MA02	0.6	0.3	0.0	0.0	0.3	2.1
Bull's Wood AWI site	MA02	2.4	<0.1 (all PAWS)	0.0	0.0	<0.1	0.4
Winnington Wood AWI site	MA02	8.6	0.6	0.0	0.0	0.6	4.1
Leonard's and Smoker Wood AWI site	MA02/03	8.2	0.4 (including <0.1 PAWS)	0.0	0.0	0.3	2.3
Belt Wood AWI site	MA03	5.6	<0.1	0.2	0.0	<0.1	0.3
Daisybank Wood ancient woodland	MA03	0.2	0.2	0.0	0.0	0.2	1.7
Coroners Wood AWI site	MA04	6.0	0.5	<0.1	0.0	0.5	3.4

<sup>34</sup> For some ancient woodlands, the loss of habitat occurs in more than one location. This column shows an aggregated figure. A break-down is shown on the maps and in the individual woodland accounts in this Section.

<sup>35</sup> For some ancient woodlands, compensatory planting is provided in more than one location. This column shows an aggregated figure. A break-down is shown on the maps and in the individual woodland accounts in this Section.



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Woodland name	Community area (CA) number	Approximate total woodland size (ha)	Direct loss of ancient woodland (ha) <sup>34</sup>	Areas of ancient woodland within the area covered by the hybrid Bill that will be retained (ha)	Significant indirect effects on ancient woodland (ha)	Area of receptor site currently proposed for ancient woodland soils (ha)	Areas of new planting to be provided in response to the loss of ancient woodland (including ancient woodland soils receptor) (ha) <sup>35</sup>
Millington Clough AWI site	MA06	1.0	0.2	0.3	0.0	0.2	1.5
Hancock's Bank AWI site complex <sup>36</sup>	MA06	5.5	1.3 (including 0.5ha PAWS)	0.2	0.0	1.3	10.2
Ryecroft Covert AWI site	MA06	1.0	0.2	0.0	0.0	0.2	1.6
Birkin Bridge Lodge Wood AWI site	MA06	1.6	0.4	0.1	0.0	0.4	2.2
Arden House Wood AWI site	MA06	2.6	0.1	0.0	0.0	0.1	0.8
Sugar Brook Wood AWI site	MA06	0.2	0.1	0.0	0.0	0.1	0.8
East Arden House Wood ancient woodland	MA06	0.1	0.1	0.0	0.0	0.1	0.9
Hennessley Bank AWI site	MA06	0.7	<0.1	0.0	0.0	<0.1	0.6
Bollin Bank Wood AWI site	MA06	0.6	0.1	0.0	0.0	0.1	0.9

<sup>36</sup> Includes Hancock's Bank AWI site, Birkin House AWI site and Hancock's Bank north AWI site.

High Speed Two (Crewe – Manchester)  
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Woodland name	Community area (CA) number	Approximate total woodland size (ha)	Direct loss of ancient woodland (ha) <sup>34</sup>	Areas of ancient woodland within the area covered by the hybrid Bill that will be retained (ha)	Significant indirect effects on ancient woodland (ha)	Area of receptor site currently proposed for ancient woodland soils (ha)	Areas of new planting to be provided in response to the loss of ancient woodland (including ancient woodland soils receptor) (ha) <sup>35</sup>
Davenport Green Wood AWI site	MA06	1.3	0.7	0.0	0.0	0.7	5.1
Woodland South of Grahamshill Railway Cottage ancient woodland (Annandale) ancient woodland	Annandale	0.2	0.2	0.0	0.0	0.2	2.0
Totals		46.4	5.7 <sup>37</sup>	0.9	0	5.7 <sup>37</sup>	40.9

<sup>37</sup> Where areas of <0.1ha are stated in the losses and receptor sites above, these have been precautionarily recorded 0.1ha in order to allow a total to be calculated.

## 5.5 Stanthorne Hall Farm AWI site (MA02)

### Baseline conditions

- 5.5.1 Stanthorne Hall Farm AWI site is approximately 0.6ha. This wood is located due north of the A54 Middlewich Road, roughly equidistant between the towns of Stanthorne and Winsford. The wood comprises two parts which are separated by a small section of farmland. The western part is a narrow strip of trees either side of an access track to Stanthorne Hall Farm; and the eastern part is present in field corner at the intersection of the A54 Middlewich Road and the farm access track. The wood is not a designated site, but it is included on the AWI (mapped as ASNW by Natural England) identified on the basis of heritage information provided by HS2 Ltd.
- 5.5.2 Only the western part of the woodland was accessible for survey. However, given the small size of this wood, the data is likely to be representative of the entire wood. Planted broadleaved trees are either side of the access road. The canopy has frequent beech (*Fagus sylvatica*) and common lime (*Tilia x europaea*). Ash (*Fraxinus excelsior*), sycamore (*Acer pseudoplatanus*) and London plane (*Platanus x hispanica*) are rarely present. The understorey comprises holly (*Ilex aquifolium*), elder (*Sambucus nigra*), sycamore and ash. The woodland is a young, planted woodland<sup>38</sup> not resembling any NVC type closely. Holly is the single vascular plant species indicative of ancient woodland.

### Measures taken to reduce impacts

- 5.5.3 There were no specific measures taken to avoid or reduce the loss of ancient woodland at Stanthorne Hall Farm AWI site. The A54 Middlewich Road realignment is constrained by residential properties to the east and west and is adjacent to the ancient woodland.

### Impacts and associated effects

- 5.5.4 Construction of the A54 Middlewich Road realignment, which is associated with the construction of Stanthorne South embankment, will result in the permanent loss of 0.3ha (54.8%)<sup>39</sup> of ancient woodland habitat at Stanthorne Hall Farm AWI site.

### Compensatory measures

- 5.5.5 Table 5 provides a summary of the compensatory measures that are proposed in response to the expected effects on Stanthorne Hall Farm AWI site.

<sup>38</sup> Natural England added this woodland to the AWI before HS2 survey data was available to indicate that it is actually a plantation. HS2's botanical data is more consistent with identifying the woodland as PAWS but for the purpose of this document it is considered ASNW to align with the AWI.

<sup>39</sup> This percentage is calculated from the unrounded area loss.

Table 5: Summary for Stanthorne Hall Farm AWI site (MA02)

Woodland	Stanthorne Hall Farm AWI site
CA	MA02
Status	ASNW listed on the AWI <sup>42</sup>
Category	Extent of habitat in category (ha)
Area of direct loss of ancient woodland	0.3
Area of ancient woodland located within the hybrid Bill limits that will be retained and not utilised or otherwise directly impacted during either construction or operation	0.0
Area of ancient woodland impacted by significant indirect effects during either construction or operation	0.0
Area of receptor site for ancient woodland soils	0.3
Area of new planting to be provided in response to the loss of ancient woodland (including ancient woodland soil receptor area)	2.1

#### Translocation of ancient woodland soils

- 5.5.6 Soils and the associated seed bank from the affected 0.3ha of ancient woodland will be translocated to an area of woodland habitat creation located 125m north of the woodland to be lost.

#### Soil conditions

- 5.5.7 The soil type at both the donor area of ancient woodland and the receptor area for the translocated soils are described as ‘slowly permeable seasonally waterlogged fine loam over clay’.

#### Woodland planting

- 5.5.8 A total of 4.0ha of native broadleaved woodland will be created west of the land required for construction of the Proposed Scheme south of the A533 Northwich Road, of which 2.1ha has been identified to partially compensate for the loss of 0.3ha of ancient woodland habitat at Stanthorne Hall Farm and the remainder for the loss of 1.0ha of smaller blocks of non-ancient woodland in this area. Mitigation planting in this location will also enhance connectivity with other existing woodland habitat within the wider area.

## 5.6 Bull’s Wood AWI site (MA02)

#### Baseline conditions

- 5.6.1 Bull’s Wood AWI site is approximately 2.4ha. It is located approximately 1.1km east of Bostock. It is an AWI site identified by Natural England. The woodland is referred as Bull’s Wood but adjoins an area called Oak Wood. The majority of the AWI site is

PAWS and the far western tip is ASNW. Bull's Wood is part of Bull's Wood and Meadow LWS and is mapped on Natural England's Priority Habitat Inventory (PHI) as deciduous woodland.

- 5.6.2 The entire site was accessible for survey. The wood is predominantly closed canopy but with several glades. The canopy comprises sycamore, pedunculate oak (*Quercus robur*), ash, beech and several other species including occasional European larch (*Larix decidua*). The understorey is relatively diverse and contains sycamore saplings, elder, ash saplings, hazel (*Corylus avellana*) and holly as well as cherry laurel (*Prunus laurocerasus*) and rhododendron (*Rhododendron ponticum*). The ground flora is relatively diverse and with dog's mercury (*Mercurialis perennis*), enchanter's nightshade (*Circaea lutetiana*) and common nettle (*Urtica dioica*). It is considered an example of National Vegetation Classification (NVC) type W8e<sup>40</sup> and it qualifies as lowland mixed deciduous woodland HoPI.
- 5.6.3 Nine vascular plant species that are indicative of ancient woodland were recorded: hazel, holly, ramsons (*Allium ursinum*), wood anemone (*Anemone nemorosa*), remote sedge (*Carex remota*), opposite-leaved golden-saxifrage (*Chrysosplenium oppositifolium*), wood sorrel (*Oxalis acetosa*), bluebell (*Hyacinthoides non-scripta*) and wood horsetail (*Equisetum sylvaticum*).
- 5.6.4 The north east tip of Bull's Wood AWI site is inside the land required for the construction of the Proposed Scheme.

#### Measures taken to reduce impacts

- 5.6.5 The design of River Dane viaduct has been amended to reduce direct impacts on Bull's Wood. The extent of the land required for the construction of the Proposed Scheme adjacent to River Dane viaduct has been decreased, which will further reduce impacts on the ancient woodland habitat at Bull's Wood.

#### Impacts and associated effects

- 5.6.6 Construction of River Dane viaduct will result in the permanent loss of <0.1ha (approximately 1.7%)<sup>41</sup> of PAWS habitat from Bull's Wood AWI site.

#### Compensatory measures

- 5.6.7 Table 6 provides a summary of the compensatory measures that are proposed in response to the expected effects on Bull's Wood AWI site.

<sup>40</sup> W8e *Fraxinus excelsior-Acer campestre-Mercurialis perennis* woodland, *Geranium robertianum* sub-community

<sup>41</sup> This percentage is calculated from the unrounded area loss.

Table 6: Summary for Bull's Wood AWI site (MA02)

Woodland	Bull's Wood AWI site
CA	MA02
Status	ASNW and PAWS listed on the AWI and a LWS
Category	Extent of habitat in category (ha)
Area of direct loss of ancient woodland	<0.1
Area of ancient woodland located within the hybrid Bill limits that will be retained and not utilised or otherwise directly impacted during either construction or operation	0.0
Area of ancient woodland impacted by significant indirect effects during either construction or operation (ha)	0.0
Area of receptor site for ancient woodland soils	<0.1
Area of new planting to be provided in response to the loss of ancient woodland (including ancient woodland soil receptor area)	0.4

### Translocation of ancient woodland soils

- 5.6.8 Soils and the associated seed bank from the affected <0.1ha of ancient woodland will be translocated to an area of woodland habitat creation on the western side of Bull's Wood AWI site.

### Soil conditions

- 5.6.9 The soil type at the donor area of ancient woodland is described as 'deep stoneless permeable silty soils, variably affected by groundwater, gravelly subsoil in places, risk of flooding' and soil type at the receptor area for the translocated soils is 'slowly permeable seasonally waterlogged fine loam over clay'. The donor and receptor areas are located 130m from one another and are both located on the margin of either soil type, so are likely to be a combination of the two. The location of the donor area was chosen in preference to one with the same soil type to ensure connectivity with retained woodland within Bull's Wood.

### Woodland planting

- 5.6.10 A total of 0.4ha of native broadleaved woodland will be created at two locations either side of the land required for construction of the Proposed Scheme, to the north and immediately adjacent to Bull's Wood and Meadow LWS, which will partially compensate for the loss of <0.1ha of ancient woodland habitat from Bull's Wood AWI site and provide connectivity between fragmented ancient and non-ancient woodland in this location.

## 5.7 Winnington Wood AWI site (MA02)

### Baseline conditions

- 5.7.1 Winnington Wood AWI site is approximately 8.6ha and is about 260m north east of Lostock Gralam, to the north of the A556 Chester Road. It is a large AWI site (ASNW) identified by Natural England and it is partially within Winnington and Peas Wood LWS. Winnington Wood AWI site is on Natural England's PHI as deciduous woodland.
- 5.7.2 Winnington Wood AWI site was accessible for survey. The part of the wood that is in the land required for the construction of the Proposed Scheme has dominant sycamore with beech and abundant large-leaved lime (*Tilia platyphyllos*). Pedunculate oak was frequent. A diverse shrub layer was present including holly, rowan (*Sorbus aucuparia*), sycamore and beech. Ivy (*Hedera helix*) is the most abundant ground flora species. Other constant species included bluebell, bracken (*Pteridium aquifolium*) and broad buckler-fern (*Dryopteris dilatata*). Bramble (*Rubus fruticosus* agg.) was locally abundant. Bryophytes are frequent at low cover including *Kindbergia praelonga*, *Mnium hornum* and *Atrichum undulatum*. The wood vegetation is an example of NVC type W10e<sup>42</sup> and it qualifies as lowland mixed deciduous woodland HoPI.
- 5.7.3 Twenty-seven vascular plant species that are indicative of ancient woodland were recorded from Winnington Wood (across the whole AWI site, not just inside the land required for the construction of the Proposed Scheme). They include hornbeam (*Carpinus betulus*), holly, crab apple (*Malus sylvestris*), field rose (*Rosa arvensis*), large-leaved lime<sup>43</sup>, small-leaved lime (*Tilia cordata*), wych elm (*Ulmus glabra*), ramsons, wood anemone, false brome (*Brachypodium sylvaticum*), remote sedge, climbing corydalis (*Ceratocarpus claviculata*), wood speedwell (*Veronica montana*), wood sorrel, wood millet (*Milium effusum*), yellow pimpernel (*Lysimachia nemorum*), creeping soft-grass (*Holcus mollis*), bluebell, woodruff (*Galium odoratum*), wild cherry (*Prunus avium*), opposite-leaved golden-saxifrage, thin-spiked wood-sedge (*Carex strigosa*), pignut (*Conopodium majalis*), hart's-tongue fern (*Asplenium scolopendrium*), wood melick (*Melica uniflora*), hairy woodrush (*Luzula pilosa*) and yellow archangel (*Lamium galeobdolon* subsp. *montanum*).
- 5.7.4 The land required for construction of the Proposed Scheme crosses through the AWI site within Winnington Wood.

### Measures taken to reduce impacts

- 5.7.5 The extent of the land required for the construction of the Proposed Scheme adjacent to Smoker Brook viaduct has been reduced, which will reduce impacts to Winnington and Peas Wood LWS. This includes ancient woodland at Winnington Wood and non-ancient woodland at Peas Wood.

<sup>42</sup> W10e *Quercus robur*-*Pteridium aquilinum*-*Rubus fruticosus* woodland, *Acer pseudoplatanus*-*Oxalis acetosella* sub-community

<sup>43</sup> Large-leaved lime is likely to be a planted tree in Cheshire as it is non-native to this part of the UK.

## Impacts and associated effects

- 5.7.6 Construction of Smoker Brook viaduct and the temporary diversion of the A556 Chester Road and the A559 Manchester Road will result in the permanent loss of 0.6ha (7.0%)<sup>44</sup> ancient woodland habitat from Winnington Wood AWI site.

## Compensatory measures

- 5.7.7 Table 7 provides a summary of the compensatory measures that are proposed in response to the expected effects on Winnington Wood AWI site.

Table 7: Summary for Winnington Wood AWI site (MA02)

Woodland	Winnington Wood AWI site
CA	MA02
Status	ASNW listed on the AWI and a LWS
Category	Extent of habitat in category (ha)
Area of direct loss of ancient woodland	0.6
Area of ancient woodland located within the hybrid Bill limits that will be retained and not utilised or otherwise directly impacted during either construction or operation	0.0
Area of ancient woodland impacted by significant indirect effects during either construction or operation	0.0
Area of receptor site for ancient woodland soils	0.6
Area of new planting to be provided in response to the loss of ancient woodland (including ancient woodland soil receptor area)	4.1

## Translocation of ancient woodland soils

- 5.7.8 Soils and the associated seed bank from the affected 0.6ha of ancient woodland will be translocated to an area of woodland habitat creation on the southern side of Winnington Belt.

## Soil conditions

- 5.7.9 The soil type at both the donor area of ancient woodland and the receptor area for the translocated soils are described as 'slowly permeable seasonally waterlogged fine loam over clay'.

## Woodland planting

- 5.7.10 A total of 4.1ha of native broadleaved woodland will be created, in three locations, between Winnington and Peas Wood LWS and Leonard's and Smoker Wood LWS,

<sup>44</sup> This percentage is calculated from the unrounded area loss.



which will enhance ecological connectivity between woodland within these LWS and help maintain the integrity of these woodland sites.

## 5.8 Leonard's and Smoker Wood AWI site (MA02/MA03)

### Baseline conditions

- 5.8.1 Leonard's and Smoker Wood is 8.2ha in size and is located between Higher Wincham and Plumley. The woodland occurs on the relatively flat ground on a floodplain next to the Smoker Brook and extends up generally south facing slopes. It is an AWI site identified by Natural England. The eastern part is ASNW and the western part is PAWS. It is designated as Leonard's and Smoker Wood LWS and is also identified as deciduous woodland in Natural England's PHI.
- 5.8.2 Access was available to survey the majority of the wood including areas in the land required for the construction of the Proposed Scheme. The canopy features constant and abundant pedunculate oak and sycamore. Species such as hybrid crack willow (*Salix x fragilis*) and alder (*Alnus glutinosa*) are close to the watercourse and a native black poplar (*Populus nigra* ssp. *betulifolia*) occurs on the edge of the brook in the east of the wood. Scots pine (*Pinus sylvestris*) and horse chestnut (*Aesculus hippocastanum*) both occur rarely. The shrub layer is fairly open and comprised of sycamore, hazel, elder, ash, holly, hawthorn (*Crataegus monogyna*) and wych elm. Bluebell is locally dominant in the ground flora. Himalayan balsam (*Impatiens glandulifera*) is abundant next to the Smoker Brook. This woodland is an example of NVC community W10a<sup>45</sup> and it qualifies as lowland mixed deciduous woodland HoPI. Fifteen vascular plant species that are indicative of ancient woodland were recorded from Leonard's and Smokers Wood.
- 5.8.3 The land required for the construction of the Proposed Scheme crosses the middle of Leonard's and Smoker Wood and also borders a large proportion of the wood.

### Measures taken to reduce impacts

- 5.8.4 The land required for the construction of the Proposed Scheme adjacent to Smoker Brook viaduct has been reduced, which will decrease impacts to Leonard's and Smoker Wood AWI site. The location of the Smoker Brook viaduct north satellite compound has been refined, which will remove additional impacts on Leonard's and Smoker Wood AWI site.

### Impacts and associated effects

- 5.8.5 Construction of Smoker Brook viaduct within the Wimboldsley to Lostock Gralam area (MA02), and the construction of Pickmere embankment within the Pickmere to Agden and Hulseheath area (MA03), will result in the permanent loss of 0.4ha (3.7%)<sup>46</sup> of woodland habitat from Leonard's and Smoker Wood AWI site.

<sup>45</sup> W10a *Quercus robur*-*Pteridium aquilinum*-*Rubus fruticosus* woodland, typical sub-community.

<sup>46</sup> This percentage is calculated from the unrounded area loss.

## Compensatory measures

- 5.8.6 Table 8 provides a summary of the compensatory measures that are proposed in response to the expected effects on Leonard's and Smoker Wood AWI site.

Table 8: Summary for Leonard's and Smoker Wood AWI site (MA02/MA03)

Woodland	Leonard's and Smoker Wood AWI site
CA	MA02/03
Status	ASNW and PAWS listed on the AWI and a LWS
Category	Extent of habitat in category (ha)
Area of direct loss of ancient woodland	0.3 (MA02) <0.1 (MA03)
Area of ancient woodland located within the hybrid Bill limits that will be retained and not utilised or otherwise directly impacted during either construction or operation	0.0
Area of ancient woodland impacted by significant indirect effects during either construction or operation	0.0
Area of receptor site for ancient woodland soils	0.3 (MA02)
Area of new planting to be provided in response to the loss of ancient woodland (including ancient woodland soil receptor area)	2.1 (MA02) 0.2 (MA03)

## Translocation of ancient woodland soils

- 5.8.7 Soils and the associated seed bank from the affected 0.3ha of ancient woodland within the Wimboldsley to Lostock Gralam area (MA02) and <0.1ha of ancient woodland in the Pickmere to Agden and Hulseheath area (MA03) will be translocated to an area of woodland habitat creation on the southern side of Winnington Belt.

## Soil conditions

- 5.8.8 The soil type at both the donor area of ancient woodland and the receptor area for the translocated soils are described as 'slowly permeable seasonally waterlogged fine loam over clay'. The soil from both MA02 and MA03 will be translocated to a single site in MA02.

## Woodland planting

- 5.8.9 A total of 2.3ha of native broadleaved woodland will be created in two locations: immediately adjacent to the south of Leonard's and Smoker Wood LWS (2.1ha); and to the west of the Pickmere embankment (0.2ha), which will enhance connectivity along Leonard's and Smoker Wood LWS. This will partially compensate for the losses

in Wimboldsley to Lostock Gralam area (MA02) and Pickmere to Agden and Hulseheath area (MA03) respectively.

## 5.9 Belt Wood AWI site (MA03)

### Baseline conditions

- 5.9.1 Belt Wood AWI site is 5.6ha in size and is west of the A556 by Mere, Cheshire. The ancient woodland makes-up approximately the northern third of Belt Wood LWS (10.50ha) but the AWI site also exceeds the north boundary of the LWS. The AWI site is identified by Natural England on the basis of heritage analysis undertaken by HS2 Ltd. The southern approximate two thirds of Belt Wood LWS (an area also referred to as Oak Wood by some sources) is not ancient woodland.
- 5.9.2 Belt Wood AWI site was accessible for survey. Oak is a constant species with frequent sycamore and common lime and locally abundant Scots pine. Rhododendron is constant in the, relatively open, shrub layer but generally at low cover levels. Other species present include rowan, hazel, holly and wild cherry. Bracken is constant species in the ground flora and was locally frequent. Bramble is also frequent and is locally prominent. It is an example of the NVC type W10a<sup>47</sup> and qualifies as lowland mixed deciduous woodland HoPI.
- 5.9.3 Seven vascular plant species that are indicative of ancient woodland were recorded from Belt Wood: holly, wild cherry, wych elm, remote sedge, greater stitchwort (*Stellaria holostea*), wood sorrel, bluebell.
- 5.9.4 Belt Wood AWI is crossed through the centre by the land required for the construction of the Proposed Scheme.

### Measures taken to reduce impacts

- 5.9.5 There were no specific measures taken to avoid or reduce the loss of ancient woodland at Belt Wood AWI site. The number of utilities in the area, and the presence of the A50 and the A556 to the north and east of the Proposed Scheme alignment mean the area for associated utilities works is highly constrained.

### Impacts and associated effects

- 5.9.6 Modification of an overhead power line will result in the loss of <0.1ha (approximately 0.7%)<sup>48</sup> of woodland habitat from Belt Wood AWI site.

### Compensatory measures

- 5.9.7 Table 9 provides a summary of the compensatory measures that are proposed in response to the expected effects on Belt Wood AWI site.

<sup>47</sup> W10a *Quercus robur*-*Pteridium aquilinum*-*Rubus fruticosus* woodland, typical sub-community.

<sup>48</sup> This percentage is calculated from the unrounded area loss.

Table 9: Summary for Belt Wood AWI site (MA03)

Woodland	Belt Wood AWI site
CA	MA03
Status	ASNW listed on the AWI and a LWS
<b>Category</b>	<b>Extent of habitat in category (ha)</b>
Area of direct loss of ancient woodland	<0.1
Area of ancient woodland located within the hybrid Bill limits that will be retained and not utilised or otherwise directly impacted during either construction or operation	0.2 <sup>49</sup>
Area of ancient woodland impacted by significant indirect effects during either construction or operation	-
Area of receptor site for ancient woodland soils	<0.1
Area of new planting to be provided in response to the loss of ancient woodland (including ancient woodland soil receptor area)	0.3

#### Translocation of ancient woodland soils

- 5.9.8 Soils and the associated seed bank from the affected <0.1ha of ancient woodland will be translocated to an area of woodland habitat creation east of Pickmere embankment.

#### Soil conditions

- 5.9.9 The soil type at both the donor area of ancient woodland and the receptor area for the translocated soils are described as 'slowly permeable seasonally waterlogged fine loam over clay'.

#### Woodland planting

- 5.9.10 0.3ha of native broadleaved woodland will be created to the east of the Pickmere embankment, which will enhance connectivity along Leonard's and Smoker Wood LWS. This will partly compensate for the loss of 0.04ha from Belt Wood AWI site.

## 5.10 Daisybank Wood Ancient Woodland (MA03)

#### Baseline conditions

- 5.10.1 Daisybank Wood is a small (0.2ha) copse located between Winterbottom Lane and the A556, it is west of Belt Wood AWI site. Daisybank Wood ancient woodland is identified by HS2 Ltd on the basis of heritage information but was not added to

<sup>49</sup> This area is included in land required for the modification of an overhead power line associated with the Proposed Scheme. The work will allow the retention of some woodland within the affected area that will reduce the total amount of woodland that will be lost.

Natural England's AWI as it is too small. This woodland is not a LWS and is not on Natural England's PHI.

5.10.2 Daisybank Wood was accessible for survey. Hybrid crack willow is the most abundant species in the canopy, with sub-dominant cover of ash, alder and silver birch (*Betula pendula*). The shrub layer comprises hybrid crack willow and rhododendron. The ground flora is dominated by common nettle and bramble with bittersweet (*Solanum dulcamara*) and cleavers. Two mostly, dry ponds were present in the woodland and with wetland species present including cypress sedge (*Carex pseudocyperus*) and soft rush. The species composition is characteristic of NVC W6b<sup>50</sup>. However, alder is not the dominant canopy species suggesting that this community is at the drier end of the vegetation encompassed by this NVC type. This woodland qualifies as wet woodland HoPI. One vascular plant species that is indicative of ancient woodland is present, remote sedge.

5.10.3 All of Daisybank Wood AWI site is inside the land required for construction of the Proposed Scheme.

#### Measures taken to reduce impacts

5.10.4 There were no specific measures taken to avoid or reduce the loss of ancient woodland at Daisybank Wood ancient woodland. The woodland was not identified as ancient woodland until 2019. The alignment of the Proposed Scheme in this area is highly constrained by other ancient woodland and high voltage overhead lines to the east and properties to the west.

#### Impacts and associated effects

5.10.5 Construction of Hoo Green South embankment No. 2 will result in the permanent loss of 0.2ha (100.0%) of woodland habitat from Daisybank Wood ancient woodland.

#### Compensatory measures

5.10.6 Table 10 provides a summary of the compensatory measures that are proposed in response to the expected effects on Daisybank Wood ancient woodland.

Table 10: Summary for Daisybank Wood ancient woodland (MA03)

Woodland	Daisybank Wood ancient woodland
CA	MA03
Status	ASNW
Category	Extent of habitat in category (ha)
Area of direct loss of ancient woodland	0.2

<sup>50</sup>W6b *Alnus glutinosa-Urtica dioica* woodland, *Salix fragilis* sub-community.

Woodland	Daisybank Wood ancient woodland
Area of ancient woodland located within the hybrid Bill limits that will be retained and not utilised or otherwise directly impacted during either construction or operation	0.0
Area of ancient woodland impacted by significant indirect effects during either construction or operation	0.0
Area of receptor site for ancient woodland soils	0.2
Area of new planting to be provided in response to the loss of ancient woodland (including ancient woodland soil receptor area)	1.7

### Translocation of ancient woodland soils

- 5.10.7 Soils and the associated seed bank from the affected 0.2ha of ancient woodland will be translocated to an area of woodland habitat creation to the west of Daisybank Wood.

### Soil conditions

- 5.10.8 The soil type at both the donor area of ancient woodland and the receptor area for the translocated soils are described as 'slowly permeable seasonally waterlogged fine loam over clay'.

### Woodland planting

- 5.10.9 A total of 1.7ha of native broadleaved woodland will be created in two locations to the west of Daisybank Wood which will partly compensate for the loss of 0.2ha from Daisybank Wood ancient woodland.

## 5.11 Coroners Wood AWI site (MA04)

### Baseline conditions

- 5.11.1 Coroners Wood AWI site is 6.0ha in size and is approximately 30m south of the Manchester Ship Canal.
- 5.11.2 The wood is mapped by Natural England as a AWI site (all ASNW) and as deciduous woodland on Natural England's PHI. Coroners Wood Site of Biological Importance (SBI), covering an area of 1.90ha encompasses the eastern part of the AWI site, 15m east of the land required for construction of the Proposed Scheme.
- 5.11.3 Access was possible to approximately 30.0% of the section of the AWI site within the land required for the construction of the Proposed Scheme. The canopy is dominated by sycamore, with ash and pedunculate oak. The understorey contains hawthorn, bramble, holly, wild cherry and hazel. The ground flora is species-poor, with occasional bluebell and ramsons. The species composition of this habitat is broadly characteristic of NVC type W8<sup>51</sup> but several constant species are missing and

<sup>51</sup> W8 *Fraxinus excelsior*-*Acer campestre*-*Mercurialis perennis* woodland.

the fit is a weak one. The woodland is likely to qualify as lowland mixed deciduous woodland HoPI.

5.11.4 Four vascular plant species that is indicative of ancient woodland were recorded from Coroners Wood AWI site: holly, wild cherry, ramsons and bluebell.

5.11.5 Part of the western end of Coroners Wood AWI site is within land required for the construction of the Proposed Scheme.

#### Measures taken to reduce impacts

5.11.6 There were no specific measures taken to avoid or reduce the loss of ancient woodland at Coroners Wood AWI site. The alignment of the Proposed Scheme at this location is highly constrained by the requirement to cross the Manchester Ship Canal and to avoid sensitive receptors at Hollins Green to the north.

#### Impacts and associated effects

5.11.7 Construction of Manchester Ship Canal viaduct will result in the loss of 0.5ha (8.3%)<sup>52</sup> from Coroners Wood AWI site.

#### Compensatory measures

5.11.8 Table 11 provides a summary of the compensatory measures that are proposed in response to the expected effects on Coroners Wood AWI site.

Table 11: Summary for Coroners Wood AWI site (MA04)

Woodland	Coroners Wood AWI site
CA	MA04
Status	ASNW listed on the AWI and a SBI
<b>Category</b>	<b>Extent of habitat in category (ha)</b>
Area of direct loss of ancient woodland	0.5
Area of ancient woodland located within the hybrid Bill limits that will be retained and not utilised or otherwise directly impacted during either construction or operation	<0.1 <sup>53</sup>
Area of ancient woodland impacted by significant indirect effects during either construction or operation	0.0
Area of receptor site for ancient woodland soils	0.5
Area of new planting to be provided in response to the loss of ancient woodland (including ancient woodland soil receptor area)	3.4

<sup>52</sup> This percentage is calculated from the unrounded area loss.

<sup>53</sup> This area is included in land required for the decommissioning of a gas main associated with the Proposed Scheme. Land take will not be required in the entire area identified for this purpose in the AWI site and therefore some woodland can be retained.

### Translocation of ancient woodland soils

- 5.11.9 Soils and the associated seed bank from the affected 0.5ha of ancient woodland will be translocated to an area of woodland habitat creation located adjacent to Coroners Wood AWI site, 275m east of the area of woodland to be lost.

### Soil conditions

- 5.11.10 The soil type at the donor area of ancient woodland is described 'deep stoneless fine silty and clayey soils variably affected by groundwater' and 'deep permeable sandy and coarse loamy soils'. The soil type at the receptor area for the translocated soils are described as 'deep permeable sandy and coarse loamy soils'.

### Woodland planting

- 5.11.11 A total of 3.4ha of native broadleaved woodland will be created in five locations, adjacent and north, south and west of Coroners Wood which will partly compensate for the loss of 0.5ha from Coroners Wood ancient woodland.

## 5.12 Millington Clough AWI site (MA06)

### Baseline conditions

- 5.12.1 Millington Clough is 1.0ha in size and is approximately 0.8km south of the village of Millington. It is on the north west of side of Millington Clough (stream) and is on a steep slope. The woodland is mapped as deciduous woodland on Natural England's PHI, and it is a AWI site (all ASNW) identified by HS2 Ltd on the basis of heritage information.
- 5.12.2 Approximately 40.0% of the woodland on the west side of a stream was accessible for survey. Sycamore and pedunculate oak are abundant canopy species with a subordinate cover of ash, alder and wych elm. The shrub layer comprises a mixture of young trees as well as shrub species such as elder and holly. Bluebell and ivy are locally dominant. Other ground flora species present at low cover levels include wood anemone, wood speedwell, and opposite-leaved golden-saxifrage. Overall, the ground flora is relatively species-poor. The accessible area of this woodland is considered an example of NVC type W10e<sup>54</sup> woodland and it qualifies as lowland mixed deciduous woodland HoPI. Eight vascular plant species that are indicative of ancient woodland were recorded from Millington Clough: holly, wych elm, wood anemone, opposite-leaved golden-saxifrage, wood speedwell, greater stitchwort, bluebell and scaly male-fern (*Dryopteris affinis*).
- 5.12.3 The northern part of the Millington Clough is within the land required for construction of the Proposed Scheme.

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<sup>54</sup> *Quercus robur*-*Pteridium aquilinum*-*Rubus fruticosus* woodland, *Acer pseudoplatanus*-*Oxalis acetosella* sub-community.



### Measures taken to reduce impacts

- 5.12.4 There were no specific measures taken to avoid or reduce the loss of ancient woodland at Millington Clough AWI site. The alignment of the Proposed Scheme at this location is highly constrained by the number of utilities requiring diversion, the M56 to the north, the A556 to the east and the number of residential properties in the area.

### Impacts and associated effects

- 5.12.5 Modification of a high-pressure gas pipeline will result in the permanent loss of 0.2ha (20.0%) of woodland habitat from Millington Clough ancient woodland and the remaining area will be isolated from other woodland habitats.

### Compensatory measures

- 5.12.6 Table 12 provides a summary of the compensatory measures that are proposed in response to the expected effects on Millington Clough AWI site.

Table 12: Summary for Millington Clough AWI site (MA06)

Woodland	Millington Clough AWI site
CA	MA06
Status	ASNW listed on the AWI and LWS
<b>Category</b>	<b>Extent of habitat in category (ha)</b>
Area of direct loss of ancient woodland	0.2
Area of ancient woodland located within the hybrid Bill limits that will be retained and not utilised or otherwise directly impacted during either construction or operation	0.3 <sup>55</sup>
Area of ancient woodland impacted by significant indirect effects during either construction or operation	0.0
Area of receptor site for ancient woodland soils	0.2
Area of new planting to be provided in response to the loss of ancient woodland (including ancient woodland soil receptor area)	1.5

### Translocation of ancient woodland soils

- 5.12.7 Soils and the associated seed bank from the affected 0.2ha of ancient woodland will be translocated to an area of woodland habitat creation adjacent to Millington Clough ancient woodland.

<sup>55</sup> This area is included in land required for the modification of a high-pressure gas pipeline associated with the Proposed Scheme. Land take will not be required in the entire area identified for this purpose in the AWI site and therefore some woodland can be retained.

### Soil conditions

- 5.12.8 The soil type at both the donor area of ancient woodland and the receptor area for the translocated soils are described as ‘slowly permeable seasonally waterlogged fine loam over clay’.

### Woodland planting

- 5.12.9 A total of 1.5ha of native broadleaved woodland will be created adjacent to Millington Clough ancient woodland. This will partly compensate for the loss of 0.2ha from Millington Clough ancient woodland and adjacent woodland habitats.

## 5.13 Hancock's Bank AWI site complex (MA06)

### Baseline conditions

- 5.13.1 Hancock's Bank AWI site complex comprises three separate areas of AWI woodland totalling 5.5ha which are situated north and south of the M56 about 1.5km north east of the village of Rostherne, as follows:
- Hancock's Bank AWI site (3.2ha) of which 0.7ha is PAWS and 2.5ha is ASNW;
  - Birkin House AWI site (0.9ha) which is mainly PAWS as well as other non-wooded/non-AWI site land; and
  - Hancock's Bank north AWI site (1.4ha) which is all ASNW.
- 5.13.2 The majority of these AWI sites are lowland deciduous woodland on Natural England's PHI. Blackburn's Brook which is approximately 5m wide flows from north to south through these woodlands.
- 5.13.3 Only a small part of this woodland was accessible for survey, part of Hancock's Bank South LWS which is east of Blackburn's Brook. Ash is dominant in the canopy, aside from adjacent to the stream where a small number of alder trees are present. Pedunculate oak and sycamore are occasional. The sub-canopy layer is open with scattered holly, hawthorn, elder and blackthorn (*Prunus spinosa*). There are open areas with wood meadow-grass (*Poa nemoralis*) in the field layer. There are also dense stands of Himalayan balsam adjacent to the stream. Common nettle and hogweed (*Heracleum sphondylium*) are frequent. The accessible area of this woodland is an example of NVC type W8a<sup>56</sup> it qualifies as lowland mixed deciduous woodland HoPI.
- 5.13.4 Eight vascular plant species that are indicative of ancient woodland were recorded from Hancock's Bank South: holly, moschatel (*Adoxa moschatellina*), wood anemone, false brome, wood meadow-grass, wood sedge, wood speedwell, wood sorrel.

<sup>56</sup> W8a *Fraxinus excelsior*-*Acer campestre*-*Mercurialis perennis* woodland, *Primula vulgaris*-*Glechoma hederacea* sub-community.

- 5.13.5 Part of Hancock’s Bank AWI site (inside Hancock’s Bank South LWS) is within the land required for construction of the Proposed Scheme.

#### Measures taken to reduce impacts

- 5.13.6 The location of Blackburn’s Brook viaduct satellite compound has been refined, which will avoid associated impacts on Hancock’s Bank AWI site.

#### Impacts and associated effects

- 5.13.7 Construction of Blackburn’s Brook North viaduct and Blackburn’s Brook viaduct satellite compound will result in the permanent loss of 1.3ha (23.6%)<sup>57</sup> of woodland habitat from Hancock’s Bank AWI site including both ASNW (0.8ha) and PAWS (0.5ha) types.

#### Compensatory measures

- 5.13.8 Table 13 provides a summary of the compensatory measures that are proposed in response to the expected effects on Hancock’s Bank AWI site.

Table 13: Summary for Hancock’s Bank AWI site (MA06)

Woodland	Hancock’s Bank AWI site
CA	MA06
Status	ASNW and PAWS listed on the AWI and LWS
Category	Extent of habitat in category (ha)
Area of direct loss of ancient woodland	1.3
Area of ancient woodland located within the hybrid Bill limits that will be retained and not utilised or otherwise directly impacted during either construction or operation	0.2 <sup>58</sup>
Area of ancient woodland impacted by significant indirect effects during either construction or operation	0.0
Area of receptor site for ancient woodland soils	1.3
Area of new planting to be provided in response to the loss of ancient woodland (including ancient woodland soil receptor area)	10.2

#### Translocation of ancient woodland soils

- 5.13.9 Soils and the associated seed bank from the affected 1.3ha of ancient woodland will be translocated to an area of woodland habitat creation at Birkin Farm and to the west and east of the River Bollin.

<sup>57</sup> This percentage is calculated from the unrounded area loss.

<sup>58</sup> This area is included in land required for the modification of an overhead power line associated with the Proposed Scheme. Land take will not be required in this section of the AWI for this purpose and therefore it will be retained.

### Soil conditions

- 5.13.10 The soil type at both the donor area of ancient woodland and the receptor area for the translocated soils are described as ‘deep permeable sandy and coarse loamy soils’.

### Woodland planting

- 5.13.11 A total of 10.2ha of native broadleaved woodland will be created in 11 locations around Hancock’s Bank AWI site, at Birkin Farm and to the west and east of the River Bollin, which will be created in nine locations. This will partly compensate for the loss of 1.3ha from Hancock’s Bank AWI site. The planting will enhance connectivity of habitat around Hancock’s Bank and the River Bollin.

## 5.14 Ryecroft Covert AWI site (MA06)

### Baseline conditions

- 5.14.1 Ryecroft Covert AWI site is 1.0ha in size. It is broadleaved semi-natural woodland forming the south east part of Ryecroft Covert LWS. This woodland is present on the floodplain next to the Birkin Brook and extending up the south-westerly facing slope to the M56. The woodland is listed as deciduous woodland on the Natural England PHI. The AWI site (all ASNW) was identified by HS2 Ltd on the basis of heritage information.
- 5.14.2 The AWI site of this woodland was surveyed and has a canopy dominated by pedunculate oak with frequent and locally abundant Scots pine. The shrub layer features pedunculate oak at low cover with frequent hazel, rowan and sycamore. The ground flora is dominated by a mixture of bramble and bracken with a low cover of creeping soft-grass and bluebell. Himalayan balsam is frequent throughout. This stand is an example of NVC type W10a<sup>59</sup> and it qualifies as lowland mixed deciduous woodland HoPI. Six vascular plant species that are indicative of ancient woodland were recorded from Ryecroft Covert: hazel, holly, wild cherry, creeping soft-grass, wood sorrel, wood anemone.
- 5.14.3 The west part of the AWI site is inside the land required for construction of the Proposed Scheme.

### Measures taken to reduce impacts

- 5.14.4 There were no specific measures taken to avoid or reduce the loss of ancient woodland at Ryecroft Covert AWI site. The alignment of the Proposed Scheme at this location is highly constrained by the M56 to the north and Rostherne Mere Site of Scientific Special Interest, National Nature Reserve and Ramsar site to the south.

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<sup>59</sup> W10a *Quercus robur*-*Pteridium aquilinum*-*Rubus fruticosus* woodland, typical sub-community.

### Impacts and associated effects

- 5.14.5 Construction of Blackburn's Brook North viaduct and the modification of an overhead high-voltage electricity line will result in the permanent loss of 0.2ha (20.0%) of woodland habitat from Ryecroft Covert AWI site.

### Compensatory measures

- 5.14.6 Table 14 provides a summary of the compensatory measures that are proposed in response to the expected effects on Ryecroft Covert AWI site.

Table 14: Summary for Ryecroft Covert AWI site (MA06)

Woodland	Ryecroft Covert AWI site
CA	MA06
Status	ASNW listed on the AWI and LWS
Category	Extent of habitat in category (ha)
Area of direct loss of ancient woodland	0.2
Area of ancient woodland located within the hybrid Bill limits that will be retained and not utilised or otherwise directly impacted during either construction or operation	0.0
Area of ancient woodland impacted by significant indirect effects during either construction or operation	0.0
Area of receptor site for ancient woodland soils	0.2
Area of new planting to be provided in response to the loss of ancient woodland (including ancient woodland soil receptor area)	1.6

### Translocation of ancient woodland soils

- 5.14.7 Soils and the associated seed bank from the affected 0.2ha of ancient woodland will be translocated to an area of woodland habitat creation to the east of Ryecroft Covert.

### Soil conditions

- 5.14.8 The soil type at both the donor area of ancient woodland and the receptor area for the translocated soils are described as 'deep permeable sandy and coarse loamy soils'.

### Woodland planting

- 5.14.9 A total of 1.6ha of native broadleaved woodland will be created to the east of Ryecroft Covert. This will partly compensate for the loss of 0.2ha from Ryecroft Covert ancient woodland and adjacent woodland habitats.

## 5.15 Birkin Bridge Lodge Wood AWI site (MA06)

### Baseline Conditions

- 5.15.1 Birkin Bridge Lodge Wood AWI site (1.6ha) is located approximately 1km south west of Ashley, east of Ashley Road. It is an AWI site (ASNW) identified on the basis of heritage analysis undertaken by HS2 Ltd. It is mapped on the deciduous woodland and wood pasture and parkland PHIs prepared by Natural England. This land was not accessible for survey. The AWI site is crossed by the land required for construction of the Proposed Scheme.

### Measures taken to reduce impacts

- 5.15.2 There were no specific measures taken to avoid or reduce the loss of ancient woodland at Birkin Bridge Lodge Wood AWI site. The alignment of the Proposed Scheme at this location and the associated utilities works are highly constrained by the M56 to the north, Rostherne Mere Site of Scientific Special Interest, to the west, the settlement of Ashley to the east and a number of other ancient woodlands in the area.

### Impacts and associated effects

- 5.15.3 Birkin Bridge Lodge Wood AWI site is located partially within land required for utilities work involving the removal of an overhead power line. It is also adjacent to a construction traffic route along Ashley Road. Potential indirect effects, such as noise, dust and altered lighting would be controlled through the implementation of avoidance and protection measures set out in the draft CoCP. With respect to utility works, a precautionary approach has been taken where the extent of the works within the land required for the Proposed Scheme is uncertain. However, for some utility works, such as decommissioning of existing overhead line utilities, National Grid has confirmed that it will not be possible to avoid land take from Birkin Bridge Lodge Wood AWI site; that will remove approximately 0.4ha (25.0%) from three locations (0.1ha, 0.1 and 0.2ha).

### Compensatory measures

- 5.15.4 Table 15 provides a summary of the compensatory measures that are proposed in response to the expected effects on Birkin Bridge Lodge Wood AWI site.

Table 15: Summary for Birkin Bridge Lodge Wood AWI site (MA06)

Woodland	Birkin Bridge Lodge Wood AWI site
CA	MA06
Status	ASNW listed on the AWI
Category	Extent of habitat in category (ha)

Woodland	Birkin Bridge Lodge Wood AWI site
Area of direct loss of ancient woodland	0.4 (comprising three areas of 0.1, 0.1 and 0.2)
Area of ancient woodland located within the hybrid Bill limits that will be retained and not utilised or otherwise directly impacted during either construction or operation	0.1 <sup>60</sup>
Area of ancient woodland impacted by significant indirect effects during either construction or operation	0.0
Area of receptor site for ancient woodland soils	0.4
Area of new planting to be provided in response to the loss of ancient woodland (excluding ancient woodland soil receptor area)	2.2

### Translocation of ancient woodland soils

- 5.15.5 Soils and the associated seed bank from the affected 0.4ha of ancient woodland will be translocated to an area of woodland habitat creation to south of Birkin Bridge Lodge Wood AWI site.

### Soil conditions

- 5.15.6 Baseline soil data still being acquired it is not possible to report on this information in this revision of the strategy.

### Woodland planting

- 5.15.7 A total of 2.2ha of native broadleaved woodland will be created in two locations; adjacent to Rycroft Covert AWI site and south of Birkin Bridge Lodge Wood AWI site. This will partly compensate for the loss of 0.4ha from Birkin Bridge Lodge Wood AWI site.

## 5.16 Arden House Wood AWI site (MA06)

### Baseline conditions

- 5.16.1 Arden House Wood AWI site (2.6ha) is in Wood near Arden House LWS. The AWI and LWS are approximately 640m south east of Ashley. The AWI was identified by Natural England as PAWS. The woodland is crossed, east-to-west by a watercourse. This land was not accessible for survey but information available from the LWS citation confirmed that it is mixed semi-natural woodland. A small part of the east end of the AWI site is in the land required for construction of the Proposed Scheme.

<sup>60</sup> This area is included in land required for the decommissioning of an overhead power line associated with the Proposed Scheme. Land take will not be required in the entire area identified for this purpose in the AWI site and therefore some woodland can be retained.

### Measures taken to reduce impacts

- 5.16.2 The location of Birkinheath Covert satellite compound has been refined which will avoid additional impacts on Wood near Arden House LWS and Arden House Wood AWI site.

### Impacts and associated effects

- 5.16.3 Construction of Ashley railhead will result in the permanent loss of 0.1ha (3.8%) of woodland habitat from Arden House Wood AWI site.

### Compensatory measures

- 5.16.4 Table 16 provides a summary of the compensatory measures that are proposed in response to the expected effects on Arden House Wood AWI site.

Table 16: Summary for Arden House Wood AWI site (MA06)

Woodland	Arden House Wood AWI site
CA	MA06
Status	ASNW listed on the AWI and LWS
Category	Extent of habitat in category (ha)
Area of direct loss of ancient woodland	0.1
Area of ancient woodland located within the hybrid Bill limits that will be retained and not utilised or otherwise directly impacted during either construction or operation	0.0
Area of ancient woodland impacted by significant indirect effects during either construction or operation	0.0
Area of receptor site for ancient woodland soils	0.1
Area of new planting to be provided in response to the loss of ancient woodland (including ancient woodland soil receptor area)	0.8

### Translocation of ancient woodland soils

- 5.16.5 Soils and the associated seed bank from the affected 0.1ha of ancient woodland will be translocated to an area of woodland habitat creation to the north of Arden House Wood AWI.

### Soil conditions

- 5.16.6 The soil type at both the donor area of ancient woodland and the receptor area for the translocated soils are described as 'slowly permeable seasonally waterlogged fine loam over clay'.



### Woodland planting

- 5.16.7 A total of 0.8ha of native broadleaved woodland will be created to the north of Arden House Wood AWI in two locations. This will partly compensate for the loss of 0.1ha from Arden House Wood AWI site.

## 5.17 Sugar Brook AWI site (MA06)

### Baseline conditions

- 5.17.1 Sugar Brook AWI site (0.2ha) is located approximately 800m north of the village of New Mills, north of the junction between Breach House Lane and Mobberley Road. Sugar Brook watercourse passes through the woodland. It is an AWI site (ASNW) identified by HS2 Ltd on the basis of heritage information and information provided on the citation for the Sugar Brook LWS. It is part of a wider LWS (2.9ha) which also contains non-ancient woodland, scrub and grassland.
- 5.17.2 This site was not accessible for survey. The LWS citation states that the woodland is thought to be a small fragment of remaining woodland. Canopy species include oak, ash and beech with an understory of elder, holly and ash. Ancient woodland indicator species include ramsons, wood melick and wood speedwell. Other species listed on the citation include plant species that are indicative of ancient woodland including bluebell, wood anemone, primrose (*Primula vulgaris*) and violet (*Viola* sp.). The invasive Himalayan balsam is also reported to be present.
- 5.17.3 The east part of the AWI site is within the land required for construction of the Proposed Scheme.

### Measures taken to reduce impacts

- 5.17.4 There were no specific measures taken to avoid or reduce the loss of ancient woodland at Sugar Brook AWI site. The ancient woodland is adjacent to the existing mid-Cheshire railway line, where the Ashley railhead is required. A high voltage overhead line is located to the south, and the network of roads and residential properties constrained the location of the Ashley railhead.

### Impacts and associated effects

- 5.17.5 Construction of Ashley railhead will result in the loss of 0.1ha (50.0%) of woodland habitat from Sugar Brook AWI site.

### Compensatory measures

- 5.17.6 Table 17 provides a summary of the compensatory measures that are proposed in response to the expected effects on Sugar Brook potential AWI site.

Table 17: Summary for Sugar Brook AWI site (MA06)

Woodland	Sugar Brook AWI site
CA	MA06
Status	ASNW listed on the AWI and LWS
Category	Extent of habitat in category (ha)
Area of direct loss of ancient woodland	0.1
Area of ancient woodland located within the hybrid Bill limits that will be retained and not utilised or otherwise directly impacted during either construction or operation	0.0
Area of ancient woodland impacted by significant indirect effects during either construction or operation	0.0
Area of receptor site for ancient woodland soils	0.1
Area of new planting to be provided in response to the loss of ancient woodland (including ancient woodland soil receptor area)	0.8

#### Translocation of ancient woodland soils

- 5.17.7 Soils and the associated seed bank from the affected 0.1ha of ancient woodland will be translocated to an area of woodland habitat creation to the north of Arden House Wood AWI.

#### Soil conditions

- 5.17.8 The soil type at both the donor area of ancient woodland and the receptor area for the translocated soils are described as 'slowly permeable seasonally waterlogged fine loam over clay'.

#### Woodland planting

- 5.17.9 A total of 0.8ha of native broadleaved woodland will be created in two locations, to the north of Arden House Wood AWI. This will partly compensate for the loss of 0.1ha from Sugar Brook ancient woodland.

## 5.18 East Arden House Wood ancient woodland (MA06)

#### Baseline conditions

- 5.18.1 East Arden House Wood ancient woodland is 0.1ha in size and is located 670m south of Ashley east of Mobberley Road. It is directly adjacent to the east side of Wood near Arden House LWS but inside Ashley Brickworks LWS (formally Erlam's Meadow LWS). It was identified as ancient woodland by heritage analysis undertaken by HS2 Ltd but due to its small size, Natural England has not added it to the AWI. It is surrounded by woodland which is not ancient woodland. This

woodland was not accessible for survey and is all in the land required for construction of the Proposed Scheme.

### Measures taken to reduce impacts

- 5.18.2 There were no specific measures taken to avoid or reduce the loss of ancient woodland at East Arden House Wood. The alignment of the Proposed Scheme in this area is constrained by the existing Mobberley Road, the mid-Cheshire railway line and other ancient woodlands nearby.

### Impacts and associated effects

- 5.18.3 Construction of Ashley railhead, realigned Mobberley Road and Mobberley Road offline overbridge will result in the permanent loss of 0.1ha (100.0%) of woodland habitat from East Arden House Wood ancient woodland.

### Compensatory measures

- 5.18.4 Table 18 provides a summary of the compensatory measures that are proposed in response to the expected effects on East Arden House ancient woodland.

Table 18: Summary for East of Arden House ancient woodland (MA06)

Woodland	East of Arden House ancient woodland
CA	MA06
Status	ASNW
Category	Extent of habitat in category (ha)
Area of direct loss of ancient woodland	0.1
Area of ancient woodland located within the hybrid Bill limits that will be retained and not utilised or otherwise directly impacted during either construction or operation	0.0
Area of ancient woodland impacted by significant indirect effects during either construction or operation	0.0
Area of receptor site for ancient woodland soils	0.1
Area of new planting to be provided in response to the loss of ancient woodland (including ancient woodland soil receptor area)	0.9

### Translocation of ancient woodland soils

- 5.18.5 Soils and the associated seed bank from the affected 0.1ha of ancient woodland will be translocated to an area of woodland habitat creation to the west of Sugar Brook Farm.

### Soil conditions

- 5.18.6 The soil type at both the donor area of ancient woodland and the receptor area for the translocated soils are described as ‘slowly permeable seasonally waterlogged fine loam over clay’.

### Woodland planting

- 5.18.7 A total of 0.9ha of native broadleaved woodland will be created in two locations to the west of Sugar Brook Farm. This will partly compensate for the loss of 0.1ha from East Arden House Wood ancient woodland.

## 5.19 Hennersley Bank AWI site (MA06)

### Baseline conditions

- 5.19.1 Hennersley Bank AWI site (0.7ha) is located due south of the M56 and due west of the River Bollin. It is an AWI site identified by Natural England (all ASNW); it is inside the slightly larger Wood near Chapel Lane SBI; and it is all deciduous woodland PHI.
- 5.19.2 The whole AWI site was accessible for survey. Sycamore, ash and pedunculate oak are co-dominant in the canopy, with wych elm, sycamore and hawthorn abundant within the understorey. The ground flora contains abundant ivy, bare earth and frequent mosses. This woodland is an example of NVC type W8e<sup>61</sup>. This woodland qualifies as lowland mixed deciduous woodland HoPI. Fifteen vascular plant species that are indicative of ancient woodland were recorded from Hennersley Bank Wood: holly, crab apple, field rose, wych elm, ramsons, pendulous sedge (*Carex pendula*), opposite-leaved golden-saxifrage, pignut, wood speedwell, sanicle (*Sanicula europaea*), hart’s tongue fern, wood millet, wood melick, yellow archangel and scaly male-fern.
- 5.19.3 The east end of the AWI site is within the land required for construction of the Proposed Scheme.

### Measures taken to reduce impacts

- 5.19.4 There were no specific measures taken to avoid or reduce the loss of ancient woodland at Hennersley Bank AWI site. The realignment of the M56 is not possible to the north of the existing M56 alignment due to the presence of the settlement of Warburton Green.

### Impacts and associated effects

- 5.19.5 Realignment of the M56 carriageway will result in the permanent loss of <0.1ha (14.3%)<sup>62</sup> of woodland habitat from Hennersley Bank AWI site.

<sup>61</sup> W8e *Fraxinus excelsior*-*Acer campestre*-*Mercurialis perennis* woodland, *Geranium robertianum* sub-community.

<sup>62</sup> This percentage is calculated from the unrounded area loss.

### Compensatory measures

- 5.19.6 Table 19 provides a summary of the compensatory measures that are proposed in response to the expected effects on Hennersley Bank AWI site.

Table 19: Summary for Hennersley Bank AWI site (MA06)

Woodland	Hennersley Bank AWI site
CA	MA06
Status	ASNW on the AWI and LWS
<b>Category</b>	<b>Extent of habitat in category (ha)</b>
Area of direct loss of ancient woodland	<0.1
Area of ancient woodland located within the hybrid Bill limits that will be retained and not utilised or otherwise directly impacted during either construction or operation	0.0
Area of ancient woodland impacted by significant indirect effects during either construction or operation	0.0
Area of receptor site for ancient woodland soils	<0.1
Area of new planting to be provided in response to the loss of ancient woodland (including ancient woodland soil receptor area)	0.6

### Translocation of ancient woodland soils

- 5.19.7 Soils and the associated seed bank from the affected 0.1ha of ancient woodland will be translocated to an area of woodland habitat creation to the east of the River Bollin.

### Soil conditions

- 5.19.8 The soil type at both the donor area of ancient woodland and the receptor area for the translocated soils are described as 'slowly permeable seasonally waterlogged fine loam over clay'.

### Woodland planting

- 5.19.9 A total of 0.6ha of native broadleaved woodland will be created to the east of the River Bollin. This will partly compensate for the loss of 0.1ha from Bollin Bank ancient woodland.

## 5.20 Bollin Bank AWI site (MA06)

### Baseline conditions

- 5.20.1 Bollin Bank is an AWI site (0.6ha) south of Hennersley Bank AWI site. It comprises broadleaved semi-natural woodland and forms the western spur of the Sunbank Wood and Ponds SBI. The River Bollin passes alongside the woodland. The

woodland is mapped by Natural England on the PHI as deciduous woodland. This AWI site was identified by HS2 Ltd on the basis of heritage information.

5.20.2 The part of this AWI site that is inside the land required for the construction of the Proposed Scheme spans the valley slopes and valley bottom of the River Bollin. The valley slopes contain abundant sycamore and occasional pedunculate oak. The shrub layer contains young trees of the canopy species and bramble, hawthorn, hazel, holly and field maple. The ground flora contains lesser celandine, wood anemone and ivy. This woodland is an example of NVC type W8b<sup>63</sup>. However, it is transitional to NVC type W6d<sup>64</sup> at the valley bottom and is best regarded as an intermediate. This woodland qualifies as lowland mixed deciduous woodland HoPI and wet woodland HoPI. Thirteen vascular plant species that are indicative of ancient woodland were recorded across the entirety of Sunbank Wood & Ponds and Bollin Bank SBI (not just the part called Bollin Bank AWI site): field maple, holly, field rose, ramsons, wood anemone, pendulous sedge, wood sedge, opposite-leaved golden-saxifrage, pignut, wood speedwell, hart's tongue fern, yellow archangel, scaly male-fern.

5.20.3 The north part of the AWI site is in the land required for construction of the Proposed Scheme.

#### Measures taken to reduce impacts

5.20.4 There were no specific measures taken to avoid or reduce the loss of ancient woodland at Bollin Bank AWI site. The alignment of the Proposed Scheme in this area is highly constrained by the M56 to the north and other ancient woodlands.

#### Impacts and associated effects

5.20.5 Construction of River Bollin East viaduct will result in the permanent loss of 0.1ha (16.7%)<sup>65</sup> of woodland habitat from Bollin Bank AWI site. The loss will occur in two locations one totalling 0.1ha and a second totalling <0.1ha.

#### Compensatory measures

5.20.6 Table 20 provides a summary of the compensatory measures that are proposed in response to the expected effects on Bollin Bank AWI site.

Table 20: Summary for Bollin Bank AWI site (MA06)

Woodland	Bollin Bank AWI site
CA	MA06
Status	ASNW on the AWI and LWS
Category	Extent of habitat in category (ha)

<sup>63</sup> W8b *Fraxinus excelsior-Acer campestre-Mercurialis perennis* woodland, *Anemone nemorosa* sub-community.

<sup>64</sup> W6d *Alnus glutinosa-Urtica dioica* woodland, *Sambucus nigra* sub-community.

<sup>65</sup> This percentage is calculated from the unrounded area loss.

Woodland	Bollin Bank AWI site
Area of direct loss of ancient woodland	0.1
Area of ancient woodland located within the hybrid Bill limits that will be retained and not utilised or otherwise directly impacted during either construction or operation	0.0
Area of ancient woodland impacted by significant indirect effects during either construction or operation	0.0
Area of receptor site for ancient woodland soils	0.1
Area of new planting to be provided in response to the loss of ancient woodland (including ancient woodland soil receptor area)	0.9

### Translocation of ancient woodland soils

- 5.20.7 Soils and the associated seed bank from the affected 0.1ha of ancient woodland will be translocated to an area of woodland habitat creation to the east of the River Bollin.

### Soil conditions

- 5.20.8 The soil type at both the donor area of ancient woodland and the receptor area for the translocated soils are described as ‘slowly permeable seasonally waterlogged fine loam over clay’.

### Woodland planting

- 5.20.9 A total of 0.9ha of native broadleaved woodland will be created to the east of the River Bollin. This will partly compensate for the loss of 0.1ha from Bollin Bank ancient woodland.

## 5.21 Davenport Green Wood AWI site (MA06)

### Baseline conditions

- 5.21.1 Davenport Green Wood AWI site (1.3ha) is broadleaved woodland situated west of Manchester Airport on the southern edge of the Manchester conurbation. It is also a SBI of the same name, which is 3.6ha in area. It is identified as deciduous woodland HPI by Natural England. Timperley Brook runs through the woodland with steep banks leading to an upper raised terrace to the south of the watercourse.
- 5.21.2 Approximately 10.0% of the west of the AWI site was accessible for survey. The surveyed section comprised ash and pedunculate oak with approximately 10.0% planted Scots pine, larch and horse chestnut. The shrub layer is well developed featuring hazel, holly, sycamore and elder. Bluebell is abundant in the field layer. The woodland is an example of NVC type W10e<sup>66</sup>. The woodland qualifies as lowland mixed deciduous woodland HoPI. Twelve vascular plant species that are indicative

<sup>66</sup> W10e *Quercus robur*-*Pteridium aquilinum*-*Rubus fruticosus* woodland, *Acer pseudoplatanus*-*Oxalis acetosella* sub-community.

of ancient woodland were recorded from Davenport Green Wood: bluebell, holly, field rose, moschatel, ramsons, wood anemone, pendulous sedge, wood sorrel, wood millet, dog's mercury, wood melick and water avens (*Geum rivale*).

- 5.21.3 The east part of the AWI site is inside the land required for construction of the Proposed Scheme.

#### Measures taken to reduce impacts

- 5.21.4 Providing the Davenport Green Retaining Wall rather than a cutting has reduced the extent of loss from Davenport Green Wood AWI site.

#### Impacts and associated effects

- 5.21.5 Construction of Manchester Airport High Speed station will result in the permanent loss of 0.7ha (50.0%)<sup>67</sup> of woodland habitat from Davenport Green Wood AWI site.

#### Compensatory measures

- 5.21.6 Table 21 provides a summary of the compensatory measures that are proposed in response to the expected effects on Davenport Green Wood AWI site.

Table 21: Summary for Davenport Green Wood AWI site (MA06)

Woodland	Davenport Green Wood AWI site
CA	MA06
Status	ASNW on the AWI and LWS
Category	Extent of habitat in category (ha)
Area of direct loss of ancient woodland	0.7
Area of ancient woodland located within the hybrid Bill limits that will be retained and not utilised or otherwise directly impacted during either construction or operation	0.0
Area of ancient woodland impacted by significant indirect effects during either construction or operation	0.0
Area of receptor site for ancient woodland soils	0.7
Area of new planting to be provided in response to the loss of ancient woodland (including ancient woodland soil receptor area)	5.1

#### Translocation of ancient woodland soils

- 5.21.7 Soils and the associated seed bank from the affected 0.7ha of ancient woodland will be translocated to an area of woodland habitat creation at Warburton Green and at Davenport Green Wood.

<sup>67</sup> This percentage is calculated from the unrounded area loss.



### **Soil conditions**

- 5.21.8 The soil type at both the donor area of ancient woodland and the receptor area for the translocated soils are described as 'slowly permeable seasonally waterlogged fine loam over clay'.

### **Woodland planting**

- 5.21.9 A total of 5.1ha of native broadleaved woodland will be created in three locations at Warburton Green and at Davenport Green Wood which will be created in three locations. This will partly compensate for the loss of 0.7ha from Davenport Green Wood AWI. The planting will increase the connectivity of Davenport Green Wood and Flaxhigh Covert.

## **5.22 Woodland South of Grahamshill Railway Cottage ancient woodland (Annandale)**

### **Baseline conditions**

- 5.22.1 Woodland south of Grahamshill Railway Cottage ancient woodland (0.2ha) is long established woodland of plantation origin located to the south of the WCML in the Annandale area.
- 5.22.2 This woodland, located within the land required for construction of the Proposed Scheme, was not accessible for survey.

### **Measures taken to reduce impacts**

- 5.22.3 There were no specific measures taken to avoid or reduce the loss of ancient woodland at woodland south of Grahamshill Railway Cottage. The land required for the Proposed Scheme is constrained in this area.

### **Impacts and associated effects**

- 5.22.4 Construction of the Annandale depot will result in the permanent loss of 0.2ha (100.0%) of the woodland south of Grahamshill Railway Cottage.

### **Compensatory measures**

- 5.22.5

- 5.22.6 Table 22 provides a summary of the compensatory measures that are proposed in response to the expected effects on woodland south of Grahamshill Railway Cottage.

Table 22: Summary for Woodland South of Grahamshill Railway Cottage

Woodland	Woodland South of Grahamshill Railway Cottage ancient woodland (Annandale)
CA	ADEP
Status	Ancient woodland (included on the AWI Scotland)
Category	Extent of habitat in category (ha)
Area of direct loss of ancient woodland	0.2
Area of ancient woodland located within the hybrid Bill limits that will be retained and not utilised or otherwise directly impacted during either construction or operation	0.0
Area of ancient woodland impacted by significant indirect effects during either construction or operation	0.0
Area of receptor site for ancient woodland soils	0.2
Area of new planting to be provided in response to the loss of ancient woodland (including ancient woodland soil receptor area)	2.0

### Translocation of ancient woodland soils

- 5.22.7 Soils and the associated seed bank from the affected 0.2ha of ancient woodland will be translocated to an area of woodland habitat creation south of the WCML.

### Soil conditions

- 5.22.8 The soil type at both the donor area of ancient woodland and the receptor area for the translocated soils are described as 'mineral noncalcareous gleys associated with undulating lowlands with gentle slopes'.

### Woodland planting

- 5.22.9 A total of 2.0ha of native broadleaved woodland will be created in two locations in the Annandale area which will be created in one cluster south of the WCML. This will partly compensate for the loss of 0.2ha from woodland south of Grahamshill Railway Cottage ancient woodland. The planting will increase the extent of woodland in the Annandale area and connect to existing woodland east of Grahamshill Railway Cottage to the north of the WCML.

## 6 Conclusions and route wide summary

- 6.1.1 The 5.7ha total area of ancient woodland loss as a result of the Proposed Scheme will consist of 5.0ha of ASNW and 0.7ha of PAWS<sup>68</sup>. The largest scale loss from any single ancient woodland will be 1.3ha from Hancock's Bank AWI site (MA06), which is 0.8ha of ASNW and 0.5ha of PAWS.
- 6.1.2 Of the 18 ancient woodlands where direct impacts will occur, the loss or damage of ancient woodland at 17 of these sites will be less than 0.8ha. This includes 14 ancient woodlands where the area of ancient woodland lost or damaged will be less than 0.5ha (see Table 4).
- 6.1.3 No additional ancient woodlands (beyond the 18 directly affected) are expected to be subject to significant adverse effects.
- 6.1.4 All updated figures are based on the assumptions detailed in this document and the Hybrid Bill Design. Estimates are made in advance of the design development of the Proposed Scheme.

### 6.2 Compensation in response to effects on ancient woodland

- 6.2.1 Where effects on ancient woodland cannot be reasonably avoided then HS2 Ltd has committed to provide a range of compensation measures.
- 6.2.2 A route-wide summary of the compensation measures proposed in response to effects on ancient woodland habitat is as follows:
- approximately 5.7ha of ancient woodland soils<sup>69</sup> to be translocated to receptor sites; and
  - 40.9ha of new woodland planting (including the areas identified as receptor sites for ancient woodland soils).
- 6.2.3 The above measures are considered a robust and proportionate response to the loss of ancient woodland that is expected to occur as a consequence of the Proposed Scheme and are in line with current relevant standing advice.
- 6.2.4 The primary purpose of the 40.9ha of new woodland planting detailed above is to compensate for the loss of ancient woodland. This new woodland planting is also designed to provide connectivity between retained areas of woodland and other associated semi-natural habitats within the local landscape. This connectivity will

<sup>68</sup> Instances of loss of <0.1ha have been precautionarily recorded as 0.1ha to calculate the area total.

<sup>69</sup> These areas are expected to be planted following soil translocation.

facilitate the dispersal of species from the retained areas of ancient woodland into these associated habitats.

- 6.2.5 Additional areas of woodland mitigation and planting, provided to compensate for impacts on non-ancient woodlands by the Proposed Scheme, has not been included in this report and will be considered within the biodiversity accounting calculation for replaceable habitats for the Proposed Scheme.

## 6.3 Moving forward to detailed design

- 6.3.1 HS2 Ltd recognise that ancient woodland is an irreplaceable resource, and during the design development of the Proposed Scheme will continue to make efforts to reduce the area of ancient woodland that will be lost as a consequence of the Proposed Scheme.
- 6.3.2 In accordance with the measures detailed in the draft CoCP and the EMRs, during design development and detailed design and construction, efforts will continue to be made to seek to avoid or further reduce the impacts of the Proposed Scheme on ancient woodland. For example, through use of innovative design solutions (e.g. increasing cutting gradients), and construction methods that reduce the area of ancient woodland that is lost. As a consequence, the 5.7ha<sup>70</sup> of ancient woodland losses currently expected should be considered to be a worst-case figure, which may be reduced during detailed design.
- 6.3.3 As detailed design is undertaken, further information will be gathered relating to both the areas of ancient woodland that will be affected and proposed receptor sites. This will include further baseline vegetation survey in areas where it has not yet been possible to undertake these, and detailed soil survey of both donor and proposed receptor sites.
- 6.3.4 As further information becomes available, HS2 Ltd will continue to work with local landowners, Natural England and other relevant bodies during design development and detailed design to refine the compensation strategy for each woodland. Where appropriate this may include consideration of alternative (and available) locations for compensatory habitat provision put forward by HS2 Ltd or other landowners. For example, opportunities that may allow consolidation of smaller fragments of compensation planting within a larger area of habitat creation that will be easier to manage and conserve in the long term.

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<sup>70</sup> Instances of loss of <0.1ha have been precautionarily recorded as 0.1ha to calculate the area total.

## 7 References

Data.gov.uk (2016), Ancient Woodlands (England). Available online at:

<https://data.gov.uk/dataset/9461f463-c363-4309-ae77-fdcd7e9df7d3/ancient-woodland-england>

Department for Transport and High Speed Two Ltd (2020), Oakervee Review of HS2. Available online at: <https://www.gov.uk/government/publications/oakervee-review-of-hs2>

Department for Transport (2015), High Speed Two: East and West: The next steps to Crewe and beyond. Available online at:

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/480712/hs2-east-and-west.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/480712/hs2-east-and-west.pdf)

Department for Transport (2016), High Speed Two: From Crewe to Manchester, the West Midlands to Leeds and beyond. Available online at:

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/568208/high-speed-two-crewe-manchester-west-midlands-leeds-web-version.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/568208/high-speed-two-crewe-manchester-west-midlands-leeds-web-version.pdf)

Defra (2011), Biodiversity 2020: A strategy for England's wildlife and ecosystem services, Defra, London.

High Speed Two Ltd (2017), High Speed Two Phase One: London-West Midlands. Ancient Woodland Strategy. Available online at:

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/664737/hs2\\_phase\\_one\\_ancient\\_woodland\\_strategy.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/664737/hs2_phase_one_ancient_woodland_strategy.pdf)

High Speed Two Ltd (2020), High Speed Two (West Midlands to Crewe) Ancient Woodland Strategy. Available online at:

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/872799/CS\\_Phase2aAncientWoodlandStrategy\\_RD.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/872799/CS_Phase2aAncientWoodlandStrategy_RD.pdf)

High Speed Two Ltd (2018), (Crewe to Manchester and West Midlands to Leeds) Draft Code of Construction Practice for HS2 Phase 2b working draft Environmental Statement . Available online at: <https://www.gov.uk/government/publications/draft-code-of-construction-practice-for-hs2-phase-2b-working-draft-environmental-statement>

High Speed Two Ltd (2019), High Speed Two (West Midlands to Crewe) Environmental Minimum Requirements for HS2 Phase 2a. Available online at

<https://www.gov.uk/government/publications/environmental-minimum-requirements-for-hs2-phase-2a>

High Speed Two Ltd (2014), HS2 Plus – A report by David Higgins. Available online at:

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/374695/HS2\\_Plus\\_-\\_A\\_report\\_by\\_David\\_Higgins.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/374695/HS2_Plus_-_A_report_by_David_Higgins.pdf)

High Speed Two Ltd (2014), Rebalancing Britain – From HS2 towards a national transport strategy. Available online at:

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/374709/Rebalancing\\_Britain\\_-\\_From\\_HS2\\_towards\\_a\\_national\\_transport\\_strategy.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/374709/Rebalancing_Britain_-_From_HS2_towards_a_national_transport_strategy.pdf)

High Speed Two Ltd (2018), High Speed Rail (Crewe to Manchester and West Midlands to Leeds) Alternatives Report for the HS2 Phase 2b working draft Environmental Statement. Available online at: <https://www.gov.uk/government/publications/alternatives-report-for-the-hs2-phase-2b-working-draft-environmental-statement>

High Speed Two Ltd (2018), HS2 Phase 2b: Crewe to Manchester and West Midlands to Leeds Environmental Impact Assessment Report Scope and Methodology Report. Available online at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/745450/HS2\\_Phase\\_2b\\_Working\\_Draft\\_ES\\_EIA\\_Scope\\_and\\_Methodology\\_Report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/745450/HS2_Phase_2b_Working_Draft_ES_EIA_Scope_and_Methodology_Report.pdf)

Cranfield University (2022), Soil Associations in England and Wales. Available online at: [http://www.landis.org.uk/services/soilsguide/mapunit\\_list.cfm?sorttype\\_association=map\\_unit\\_name](http://www.landis.org.uk/services/soilsguide/mapunit_list.cfm?sorttype_association=map_unit_name)

Lawton, J.H., Brotherton, P.N.M., Brown, V.K., Elphick, C., Fitter, A.H., Forshaw, J., Haddow, R.W., Hilborne, S., Leafe, R.N., Mace, G.M., Southgate, M.P., Sutherland, W.J., Tew, T.E., Varley, J., & Wynne, G.R. (2010) Making Space for Nature: a review of England's wildlife sites and ecological network. Report to Defra.

Ministry of Housing, Communities and Local Government (MHCLG) (2019), National Planning Policy Framework,. Available online at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

Natural England (2021), Ancient Woodland Inventory (Open Data Geoportal). Available online at: [http://www.gis.naturalengland.org.uk/pubs/gis/tech\\_aw.htm](http://www.gis.naturalengland.org.uk/pubs/gis/tech_aw.htm)

Natural England and Forestry Commission (2018), Ancient woodland, ancient trees and veteran trees: advice for making planning decisions. Available online at: <https://www.gov.uk/guidance/ancient-woodland-and-veteran-trees-protection-surveys-licences>

Scottish Planning Policy (2020), Policy statement on how nationally important land use planning matters should be addressed across the country. Directorate: Local Government and Communities.

Scottish Forestry (undated), Woodland Removal. Available online at: <https://forestry.gov.scot/support-regulations/control-of-woodland-removal>

UK Government (2016), Natural Environment, Available online at: <https://www.gov.uk/guidance/natural-environment>

UK Government (2018), A Green Future: Our 25 Year Plan to Improve the Environment. <https://www.gov.uk/government/publications/25-year-environment-plan>

## 8 Figures



Figure 1: MA02 map index

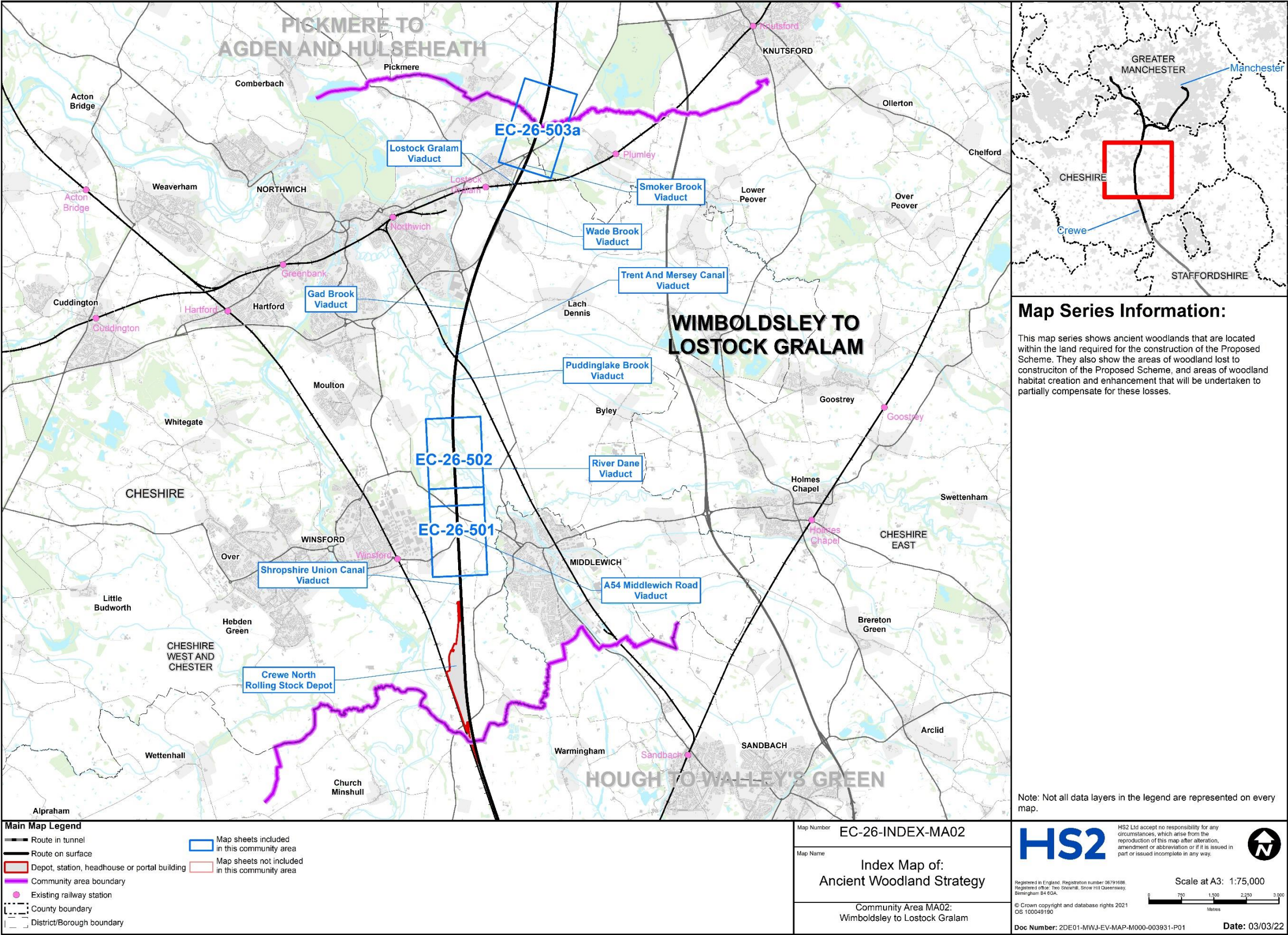




Figure 2: MA02 map sheet 1

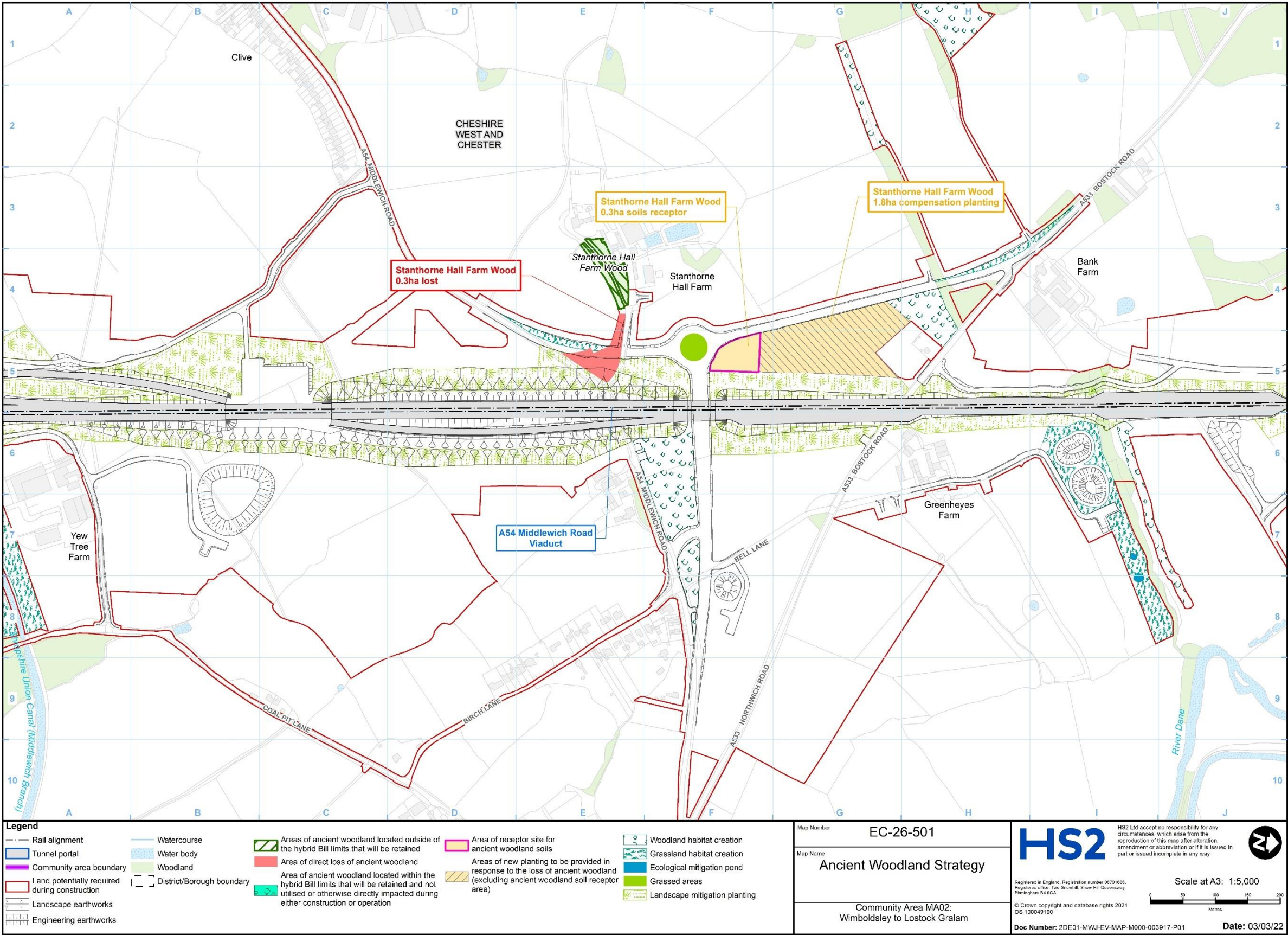




Figure 3: MA02 map sheet 2

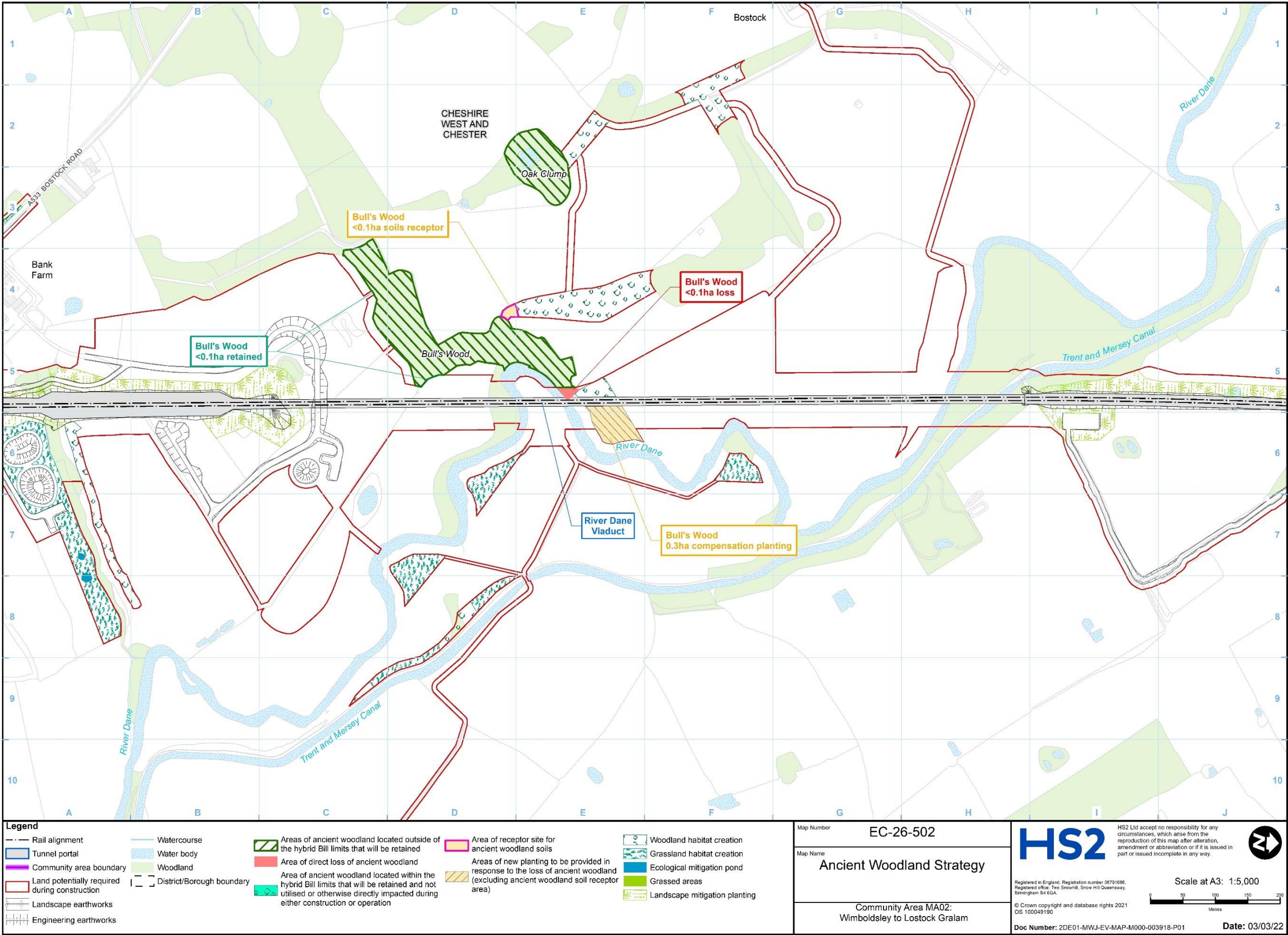




Figure 4: MA02 map sheet 3

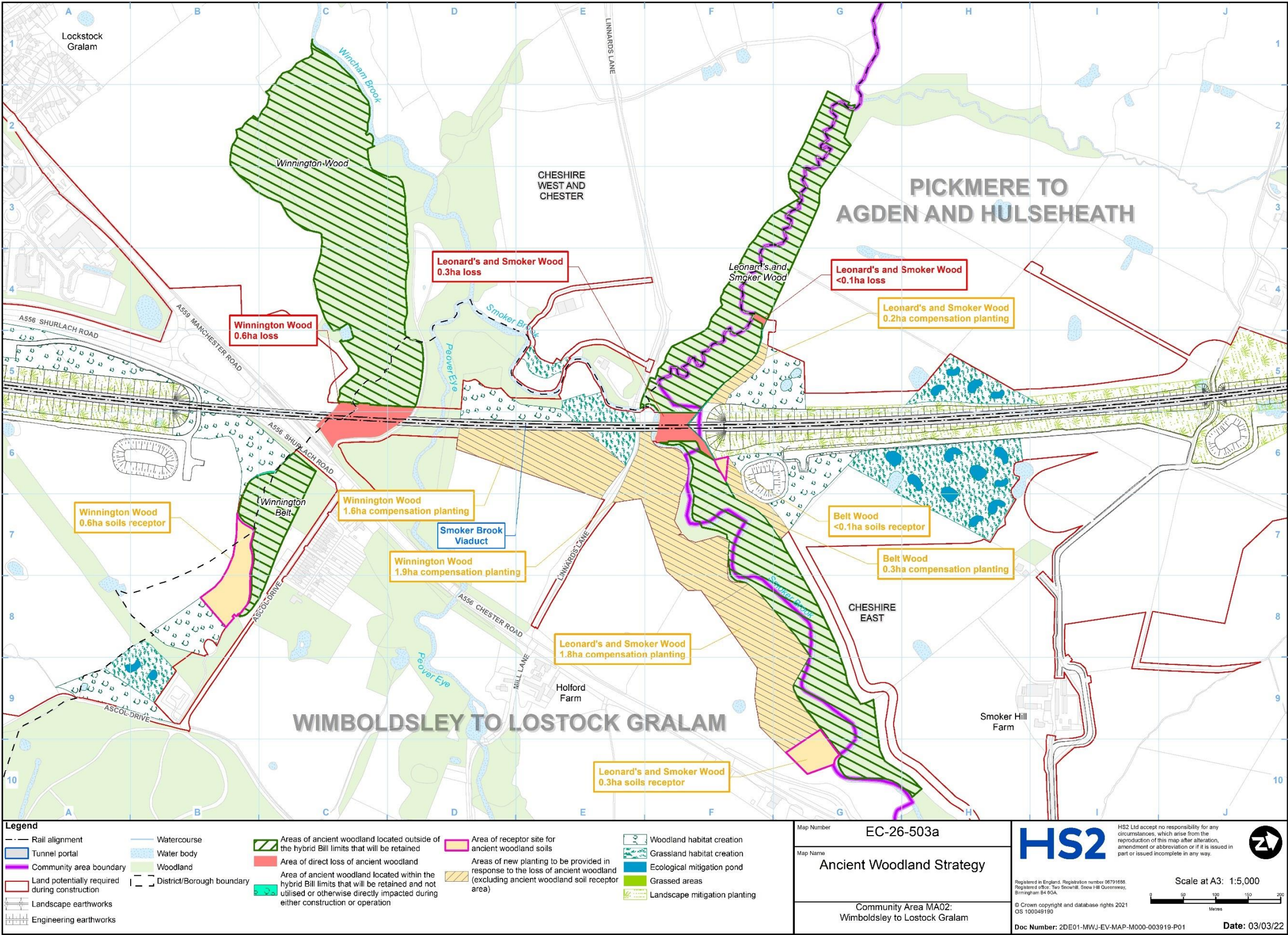




Figure 5: MA03 map index

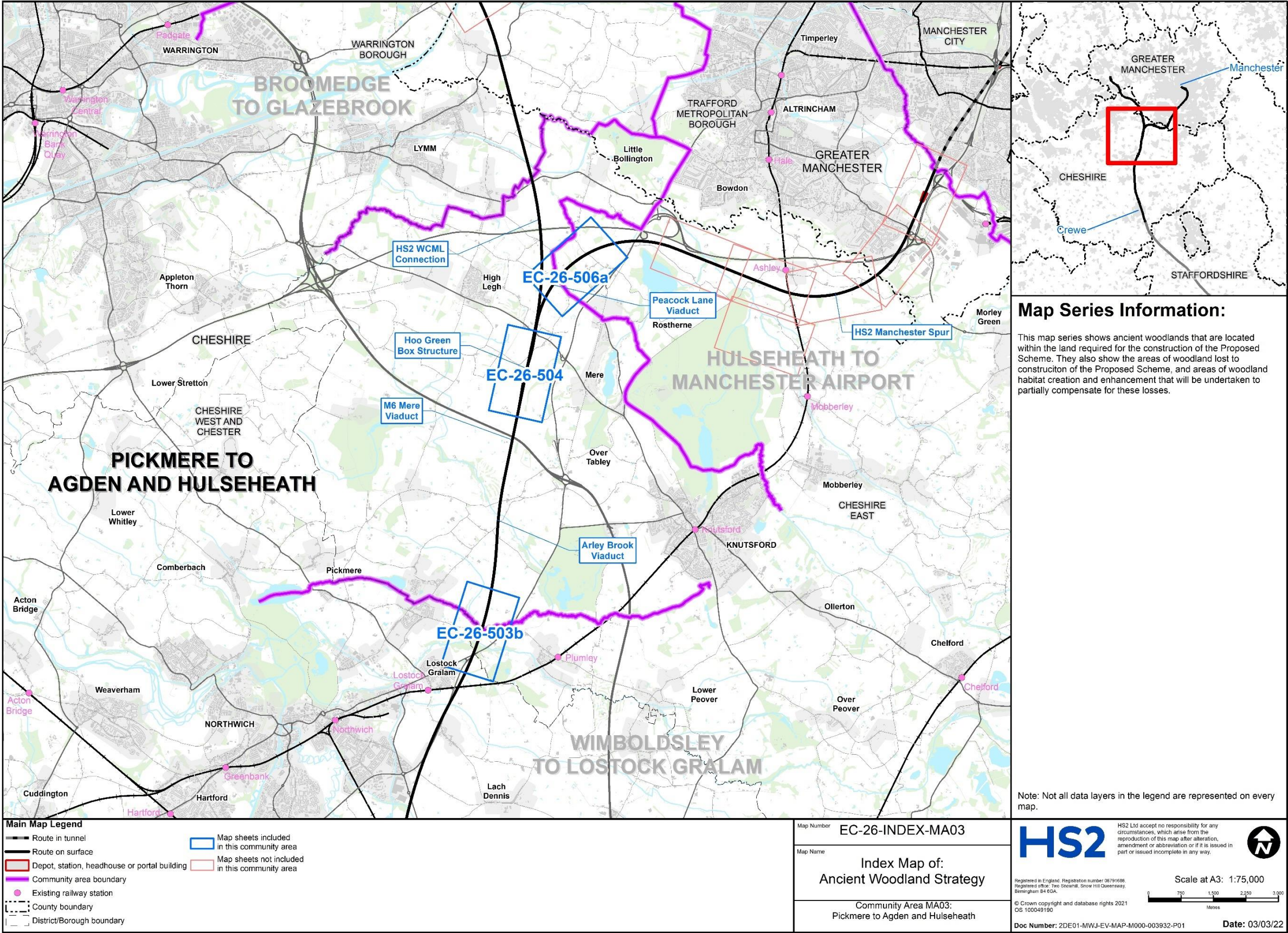




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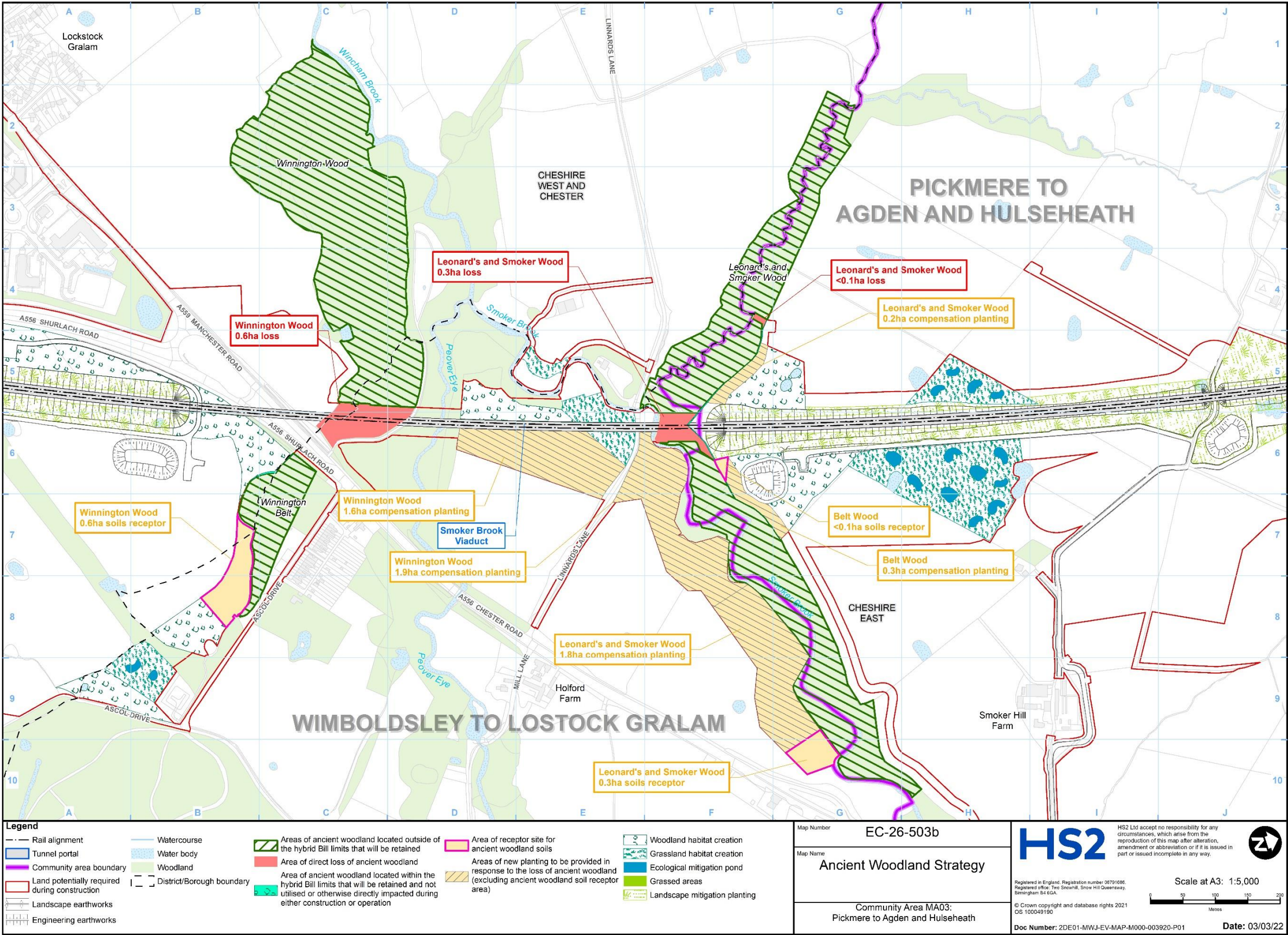




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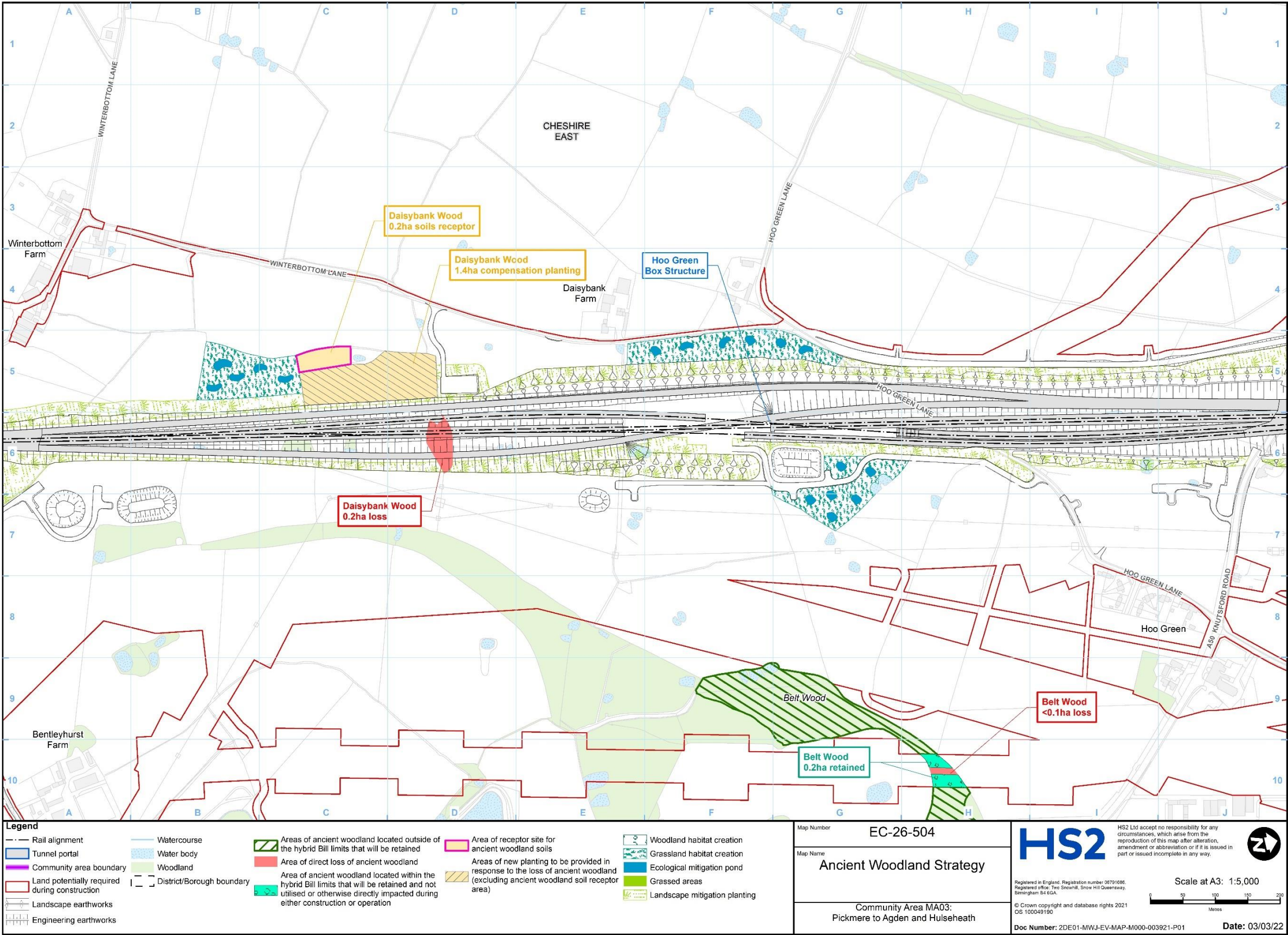




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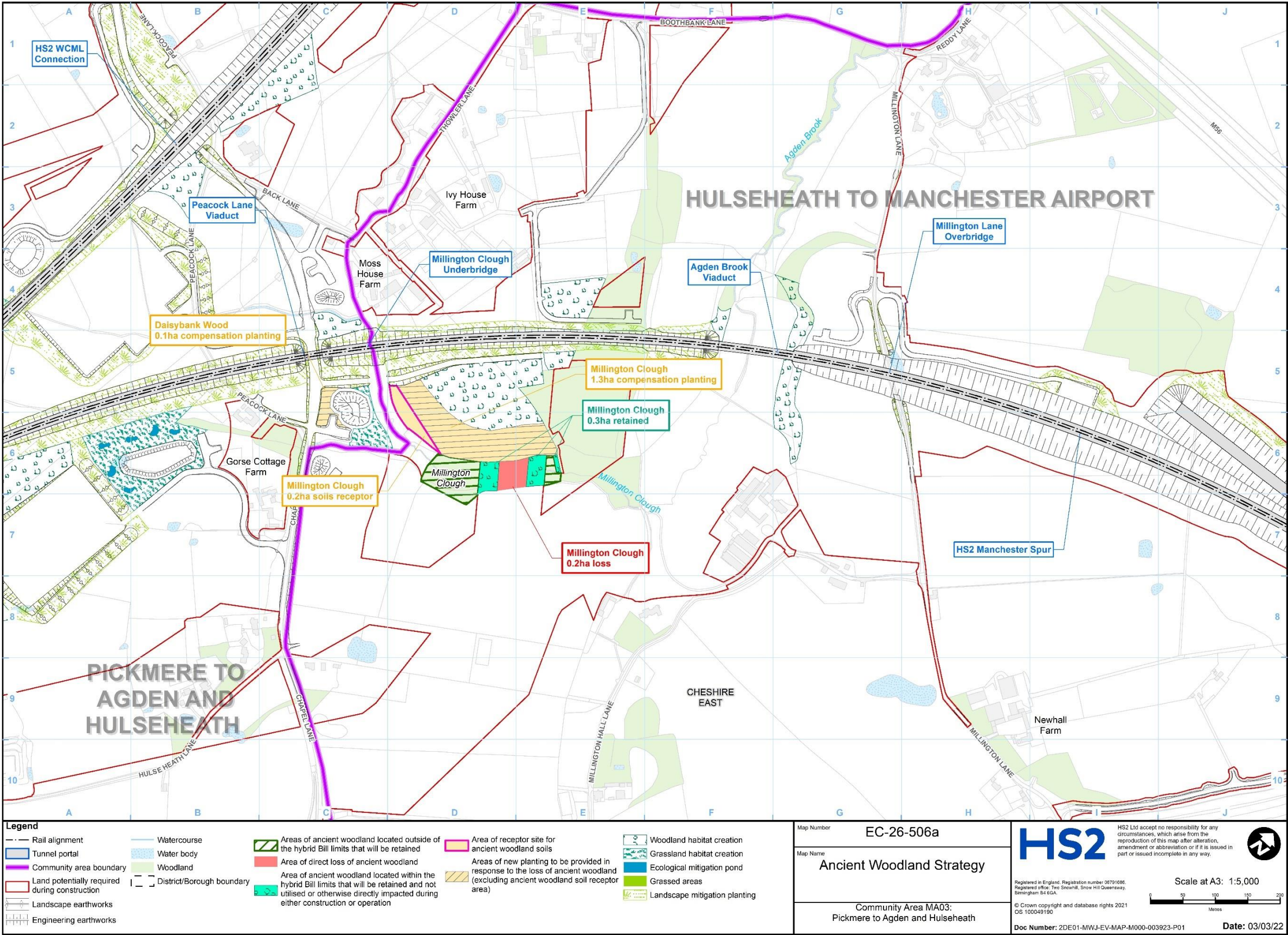




Figure 9: MA04 map index

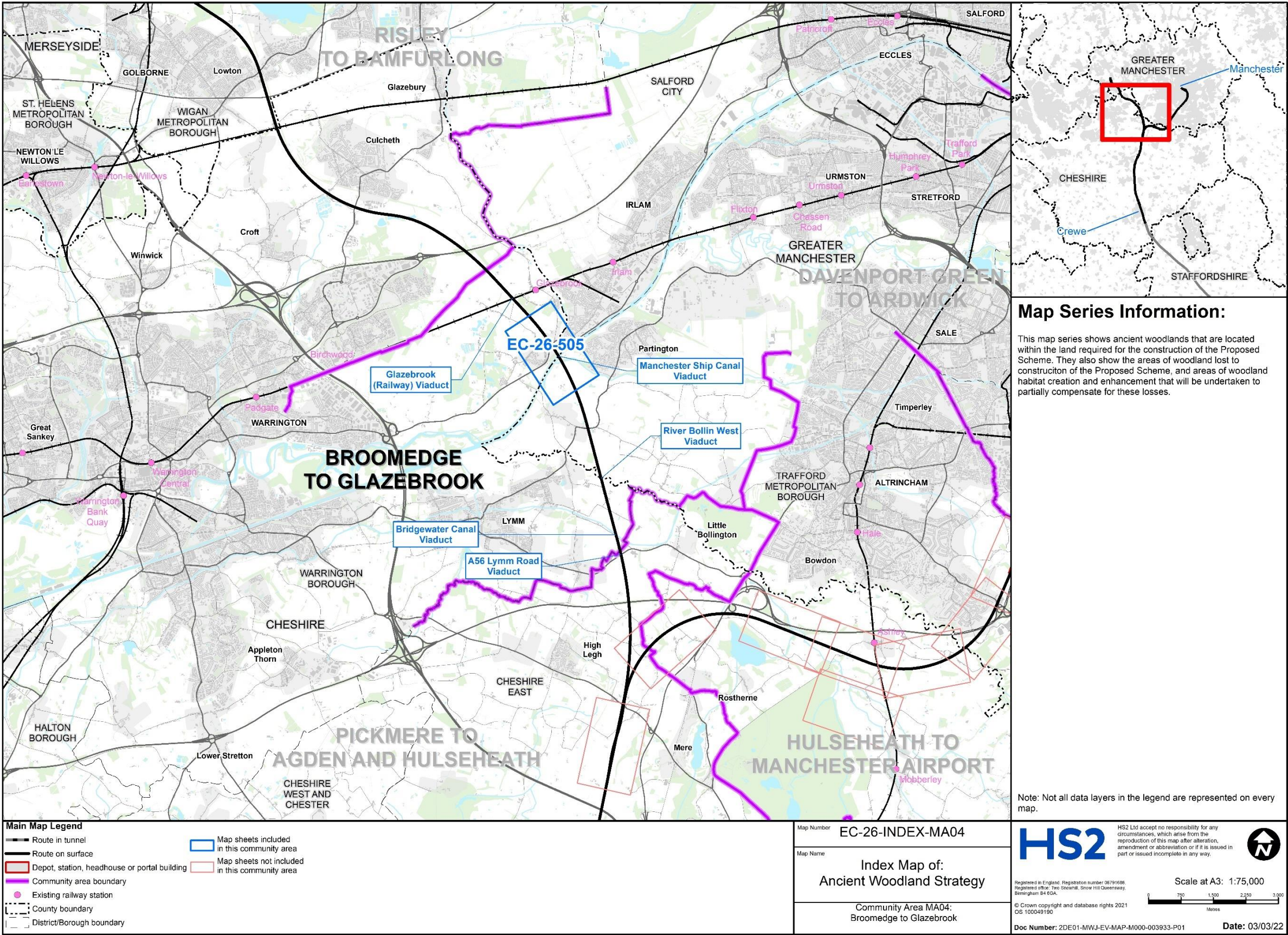




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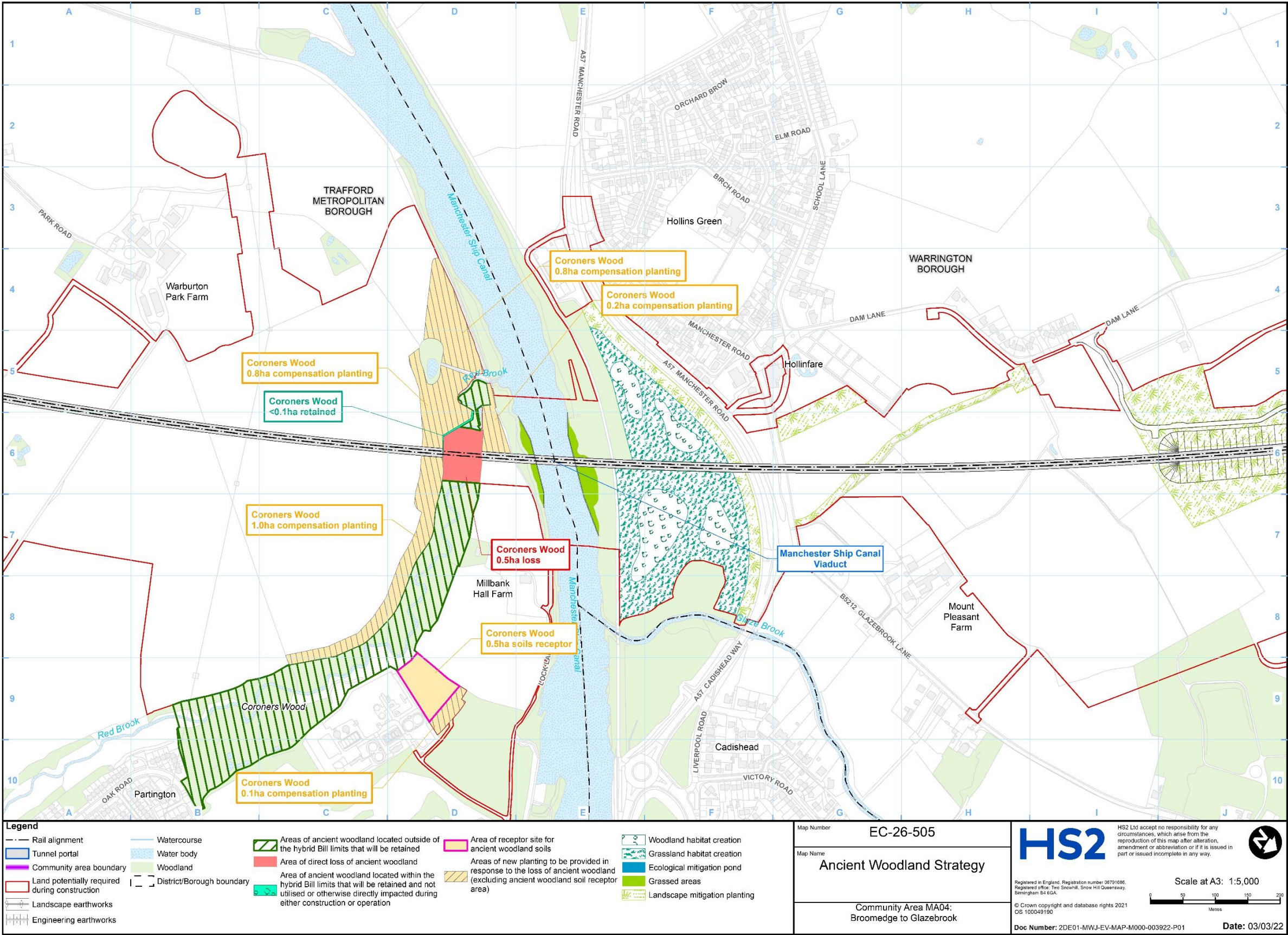




Figure 11: MA06 map index

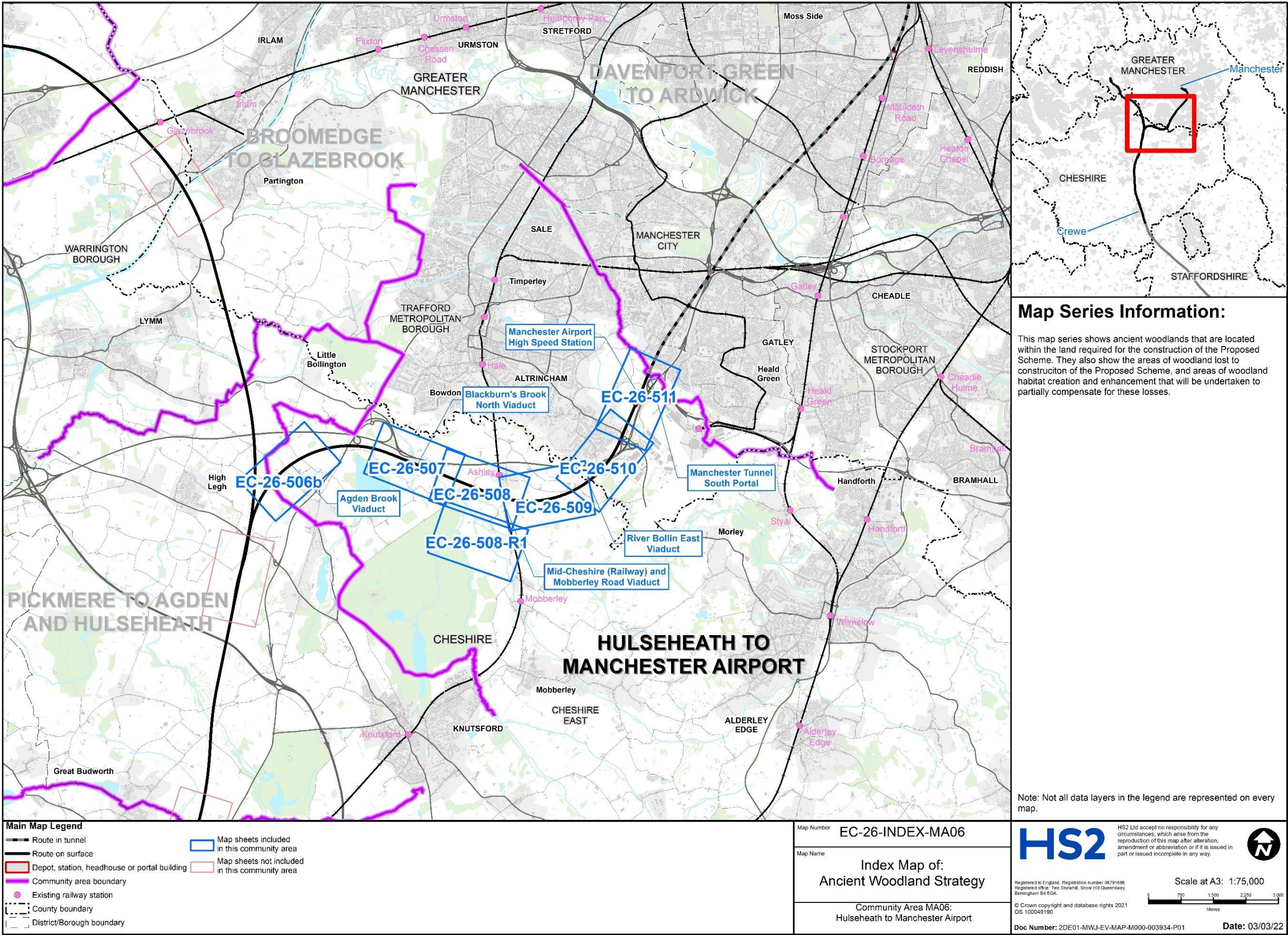




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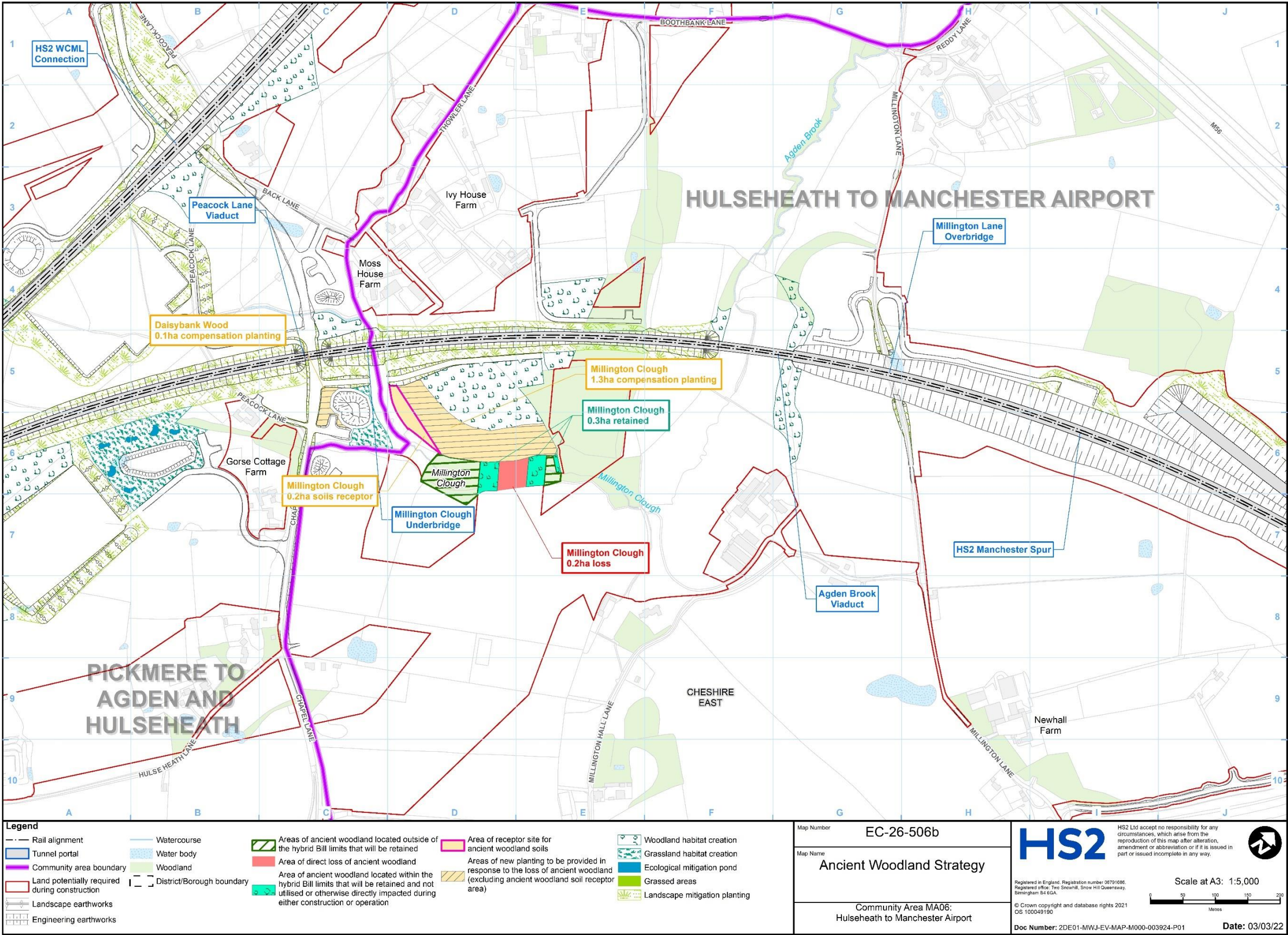




Figure 13: MA06 map sheet 2

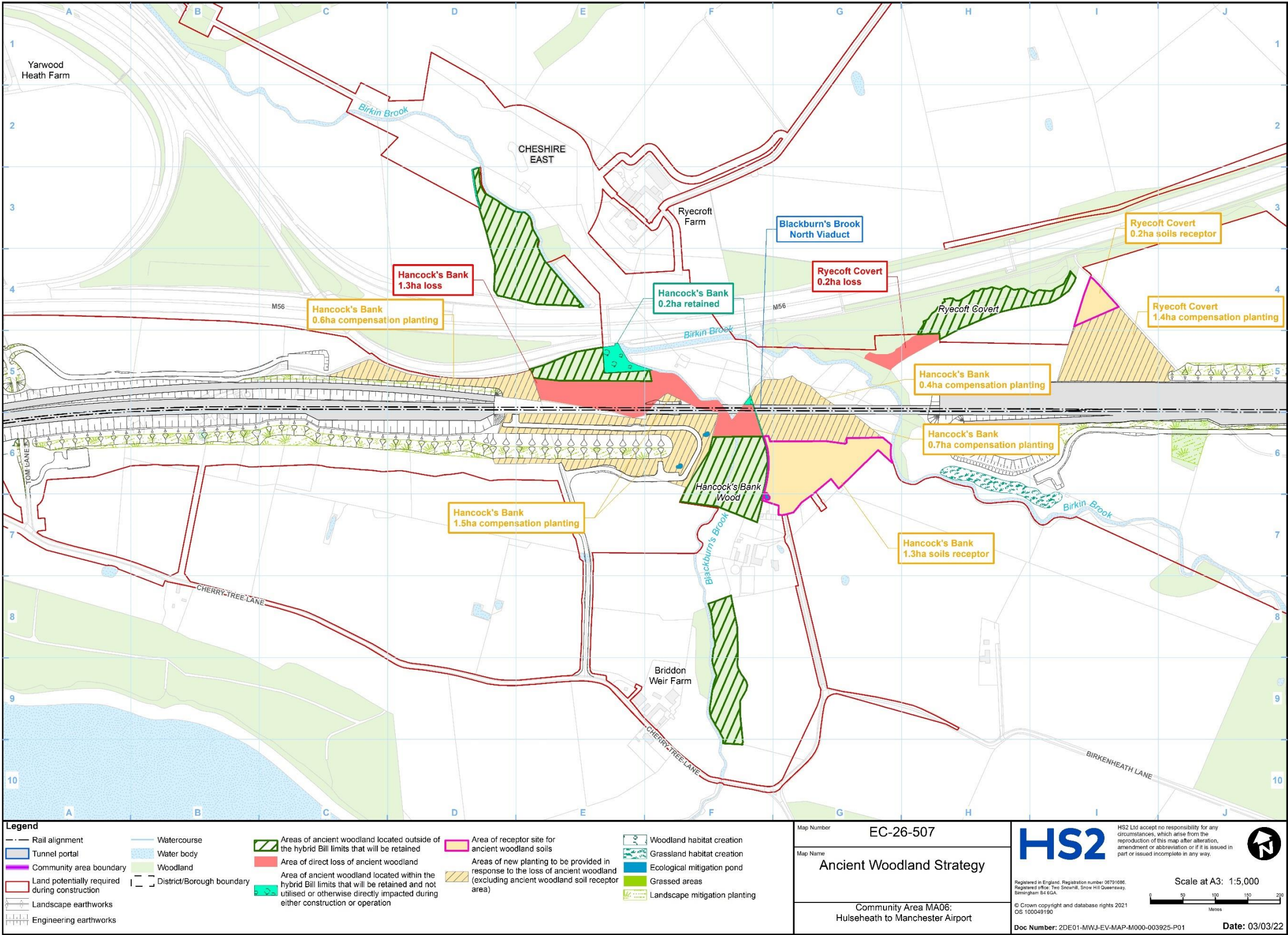




Figure 14: MA06 map sheet

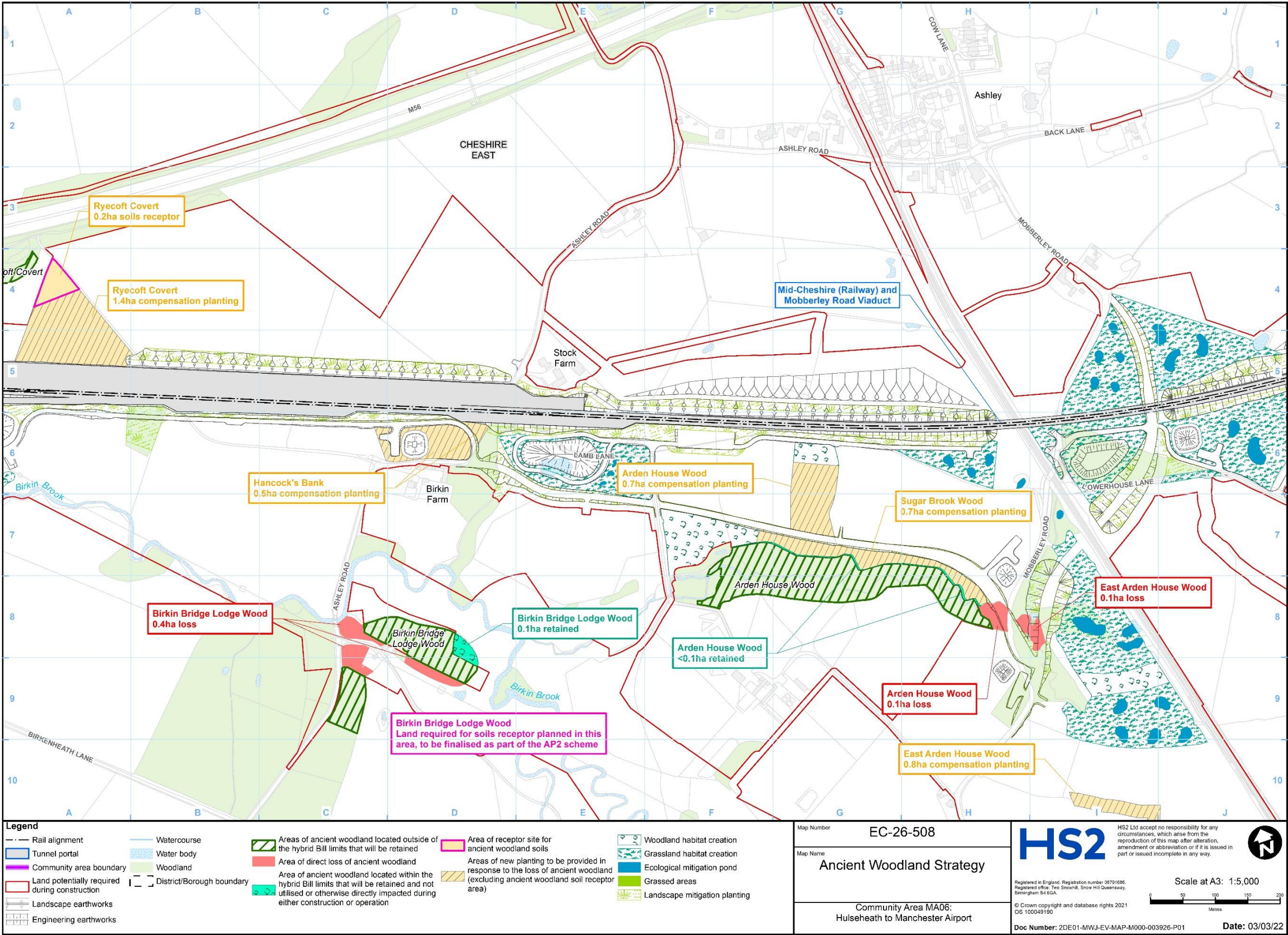




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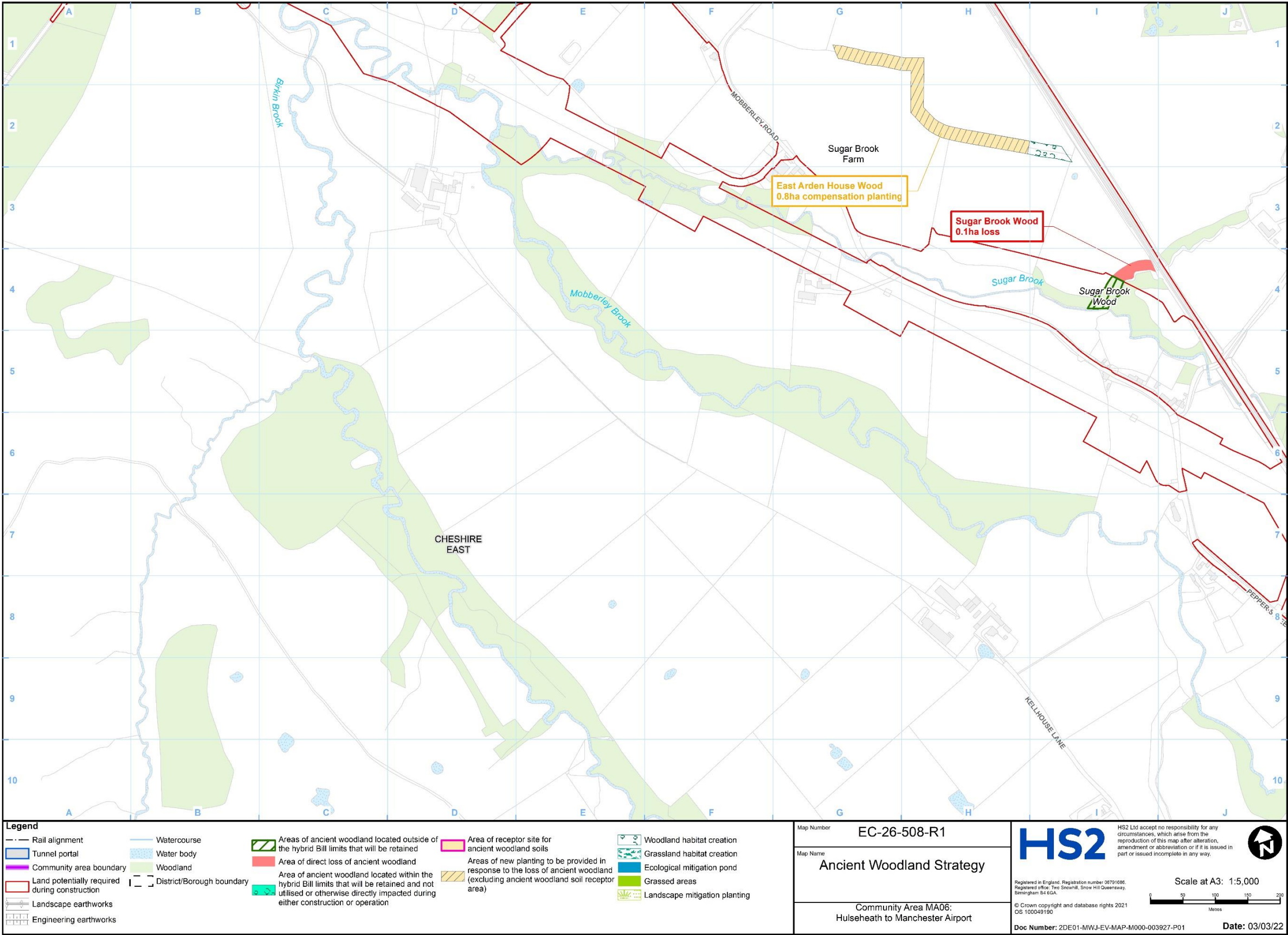




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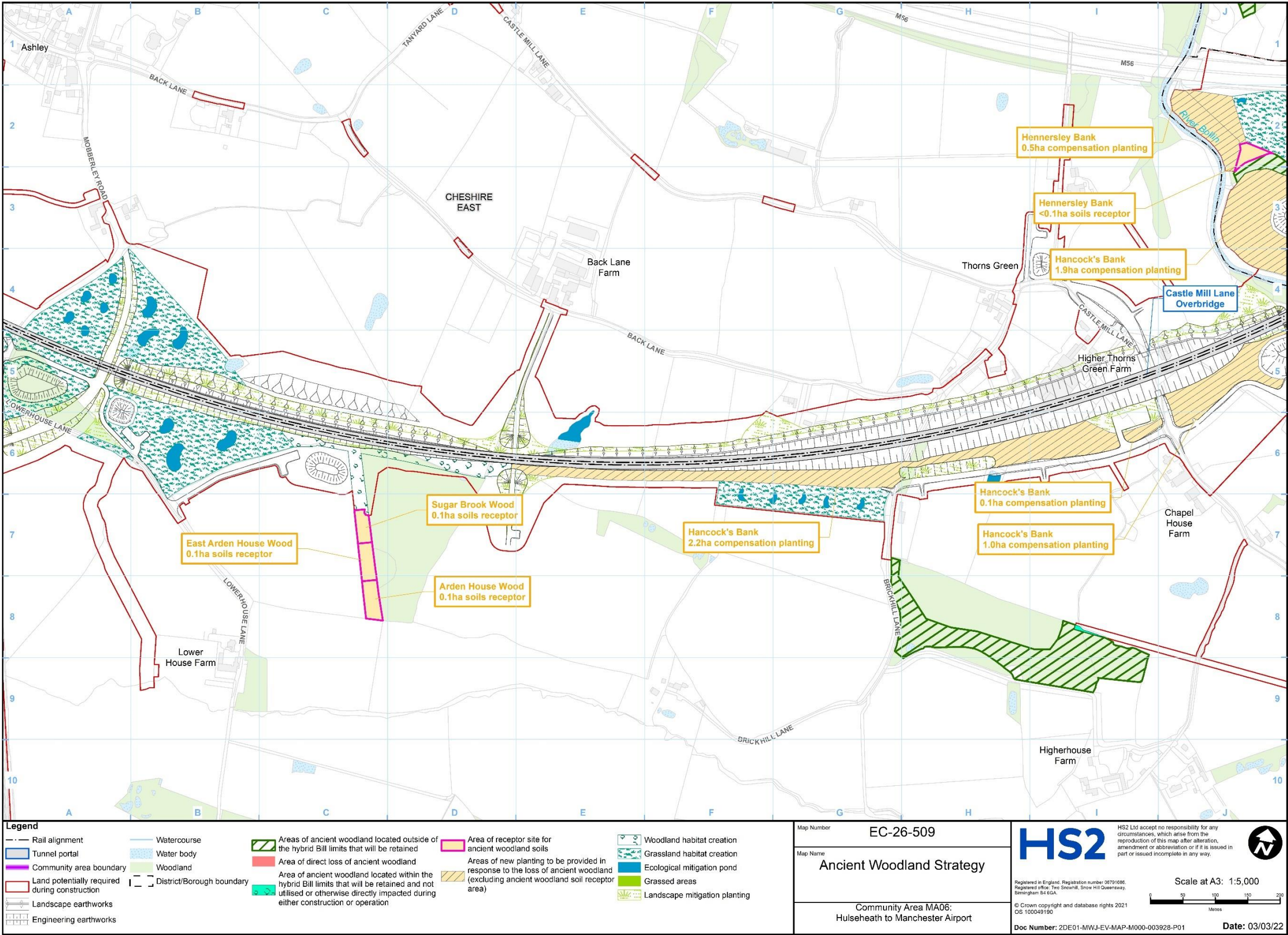




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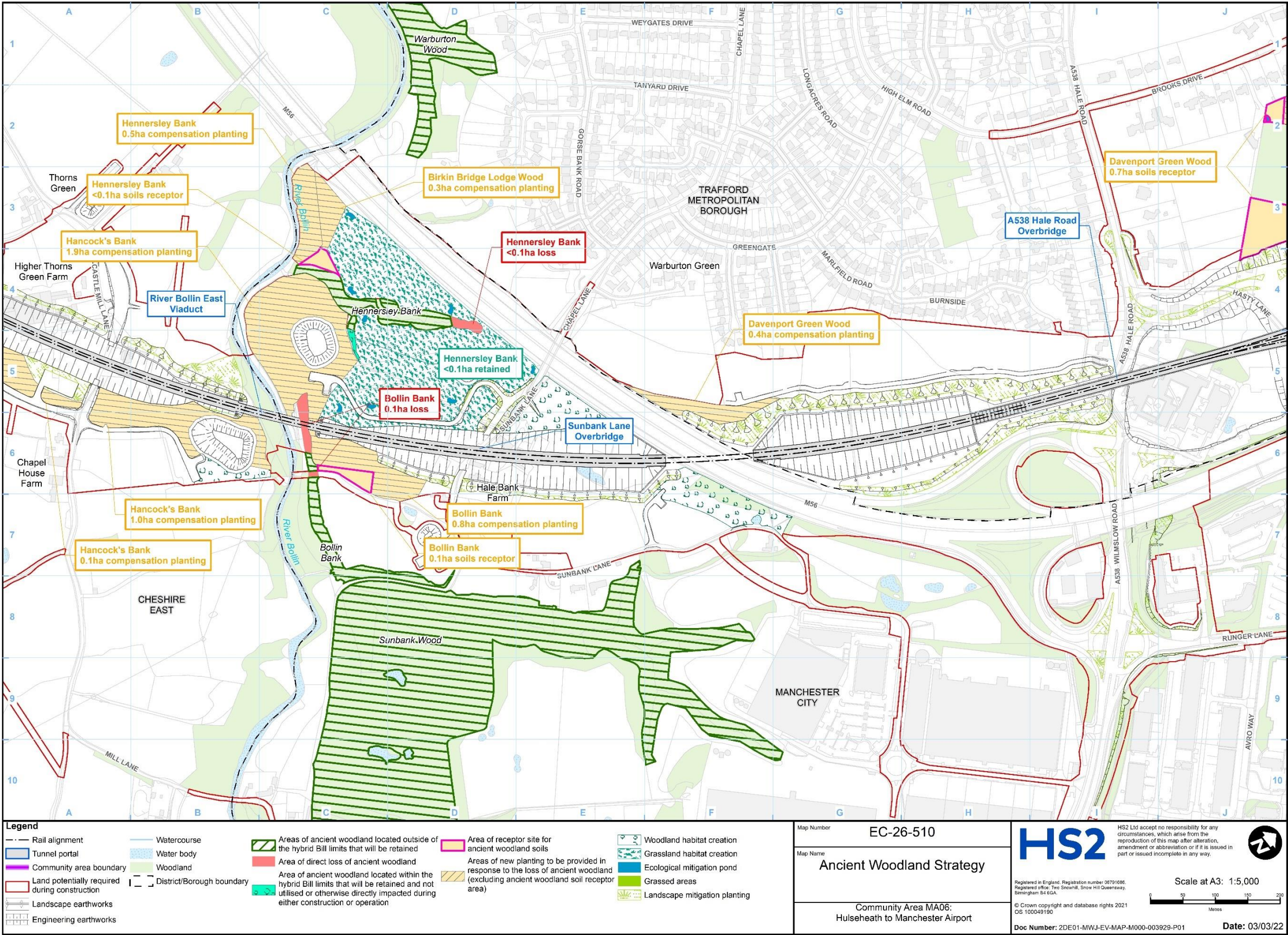




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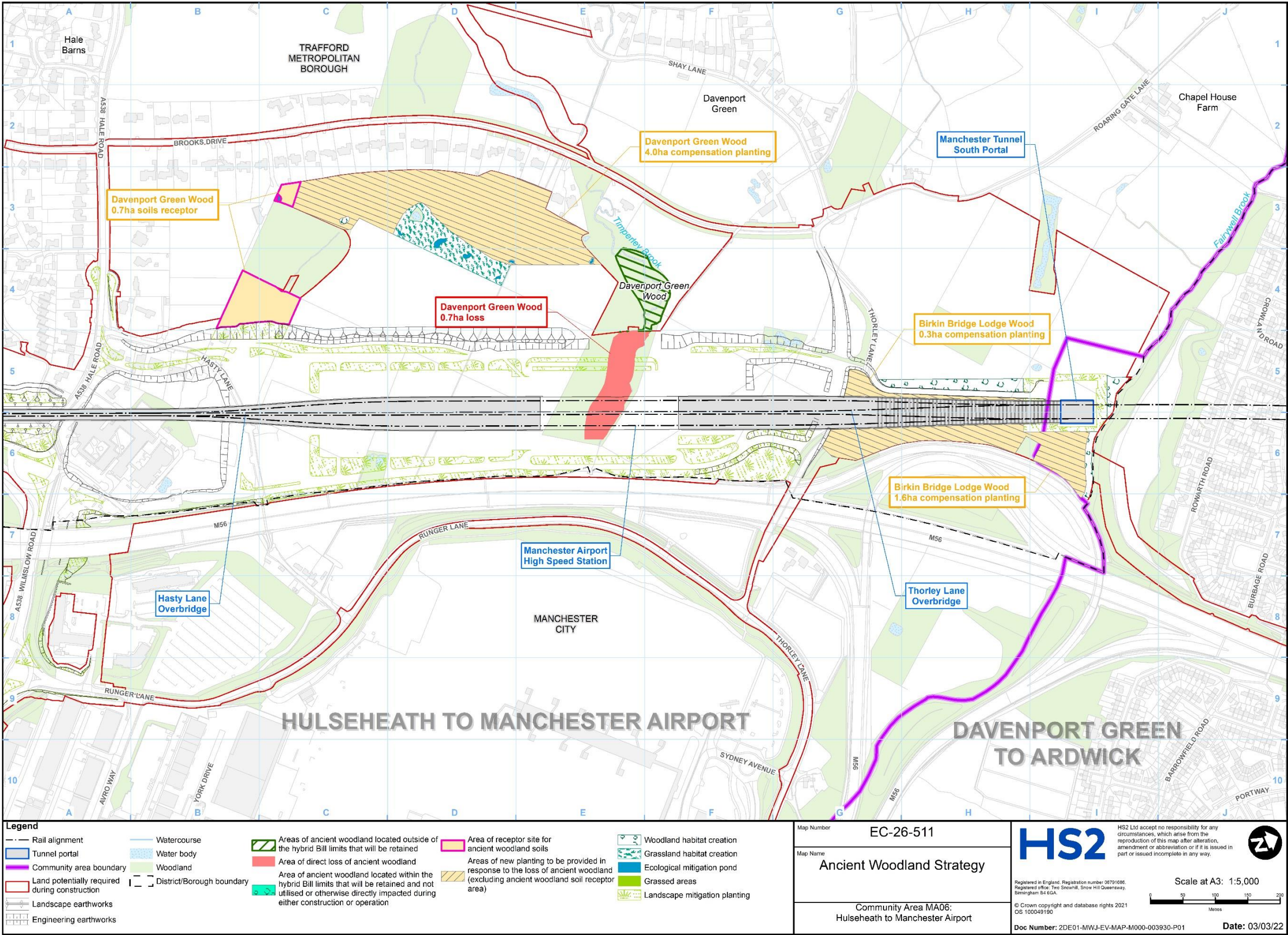




Figure 19: Annandale depot map index

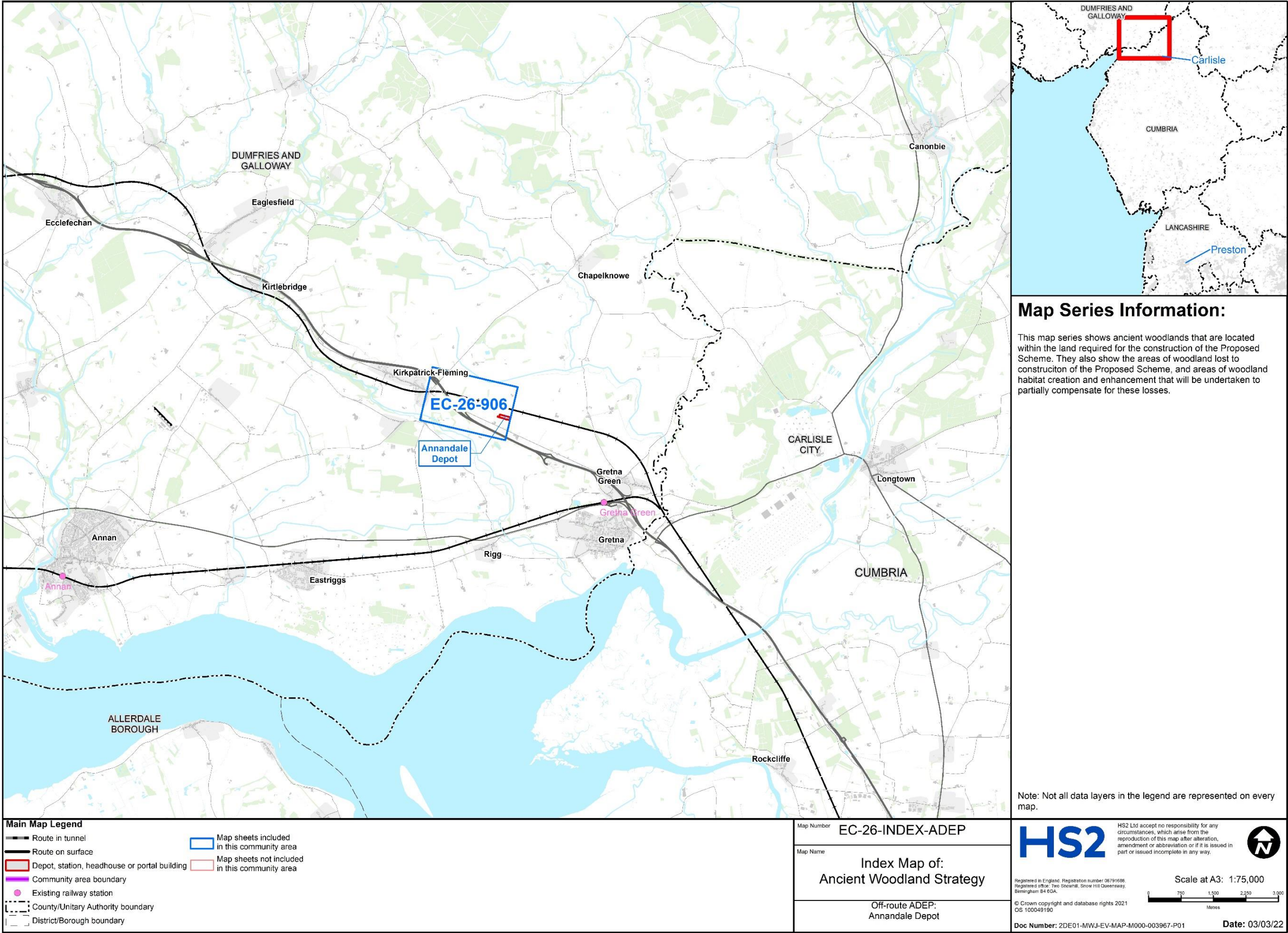




Figure 20: Annandale depot map sheet 1

