

Ecological Impact Assessment

751162: Mannings Heath WTW Transfer Scheme

November 2023
Revision 1



from
**Southern
Water** 

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Document history

Revision	Date	Purpose of Issue	Originator	Date	Checker	Date	Reviewer	Date	Approver / Date
1		For external issue	C.Larter	03/10/2023	Ben Benatt	01/11/2023	J.Nicklin	01/11/2023	

Where: Purpose of Issue is to support a planning application.

Executive Summary

The Mannings Heath WTW Transfer Scheme requires a 3.56 km pipeline from the WTW to join the Horsham gravity sewer network in order to meet the revised permit conditions for outputs of phosphorus, magnesium and iron as indicated in the Water Industry National Environmental Programme (WINEP3). As part of these proposed works, the construction of a pipe bridge is required running east-west across an area of ancient woodland (comprising UKHab mixed deciduous woodland w1f and wet woodland w1d) located immediately to the west of the Mannings Heath WTW.

Mannings Heath WTW is an operational wastewater treatment site located at National Grid Reference X 520292, Y 129090. The WTW is located to the north of Mannings Heath within the administrative boundaries of Horsham District Council and West Sussex County Council. The central point of the ancient woodland in which the pipe bridge will be constructed is located to the west of the WTW at National grid reference X 520240 Y 129090. The patch of woodland directly affected by these works is approximately 10 m in width and 25 m in length – i.e. 250m² in total area.

This Ecological Impact Assessment (EclA) provides an assessment of the impacts of the pipe bridge construction on the ancient woodland habitat and on the protected and/or notable species which occur (or have the potential to occur) within and near to the woodland. In addition, the report assesses the area within the 'red line' planning boundary which provides access to the woodland from the nearby main road – see Figure 1. The report has been produced in line with the Chartered Institute of Ecology and Environmental Management EclA guidance (CIEEM, 2018).

An area of woodland approximately 30 m either side of the ancient woodland's centre point was closely inspected to ensure that the whole area potentially affected by the work was covered. The purpose of this visit was to identify precisely which part of the woodland will be affected. In addition, a baseline ecology survey (Preliminary Ecological Appraisal or PEA) of the whole overall scheme was undertaken by Southern Water in 2022 which identified all potential ecology issues within the scheme area (Southern Water 2022), this included the pipeline easement and temporary access from the Brighton road and construction compound that will help service the construction of the pipe bridge. As part of this great crested newt (GCN) eDNA surveys were carried out on nearby ponds, and a ground-level bat inspection on trees within the area of the proposed works was undertaken in May 2023. A Preliminary Arboricultural Assessment was also undertaken in February 2023 (Middlemarch 2023), and then site assessments for dormice were carried out just within the ancient woodland habitat in September/ October 2023.

The ancient woodland is considered suitable habitat to support the following species: badger, bats, hazel dormouse, and nesting birds. Invasive non-native species have also been recorded in the woodland, which include rhododendron *Rhododendron ponticum*, cherry laurel *Prunus laurocerasus* and variegated yellow archangel. The pipeline easement into the ancient woodland has previously been stripped of topsoil and the easement has been established to facilitate permitted development works. Therefore, in contrast to the ancient woodland, this area of agricultural fields is not considered a habitat of principal importance (HPI) and is unlikely to provide suitable habitat for protected species. In addition, access from the public highway (Brighton Road) has previously been agreed and the access route widened under supervision of an Ecological Clerk of Works (ECoW) as part of the wider pipeline works. No trees were removed here and there is unlikely to be an effect on any protected species. As a result, this report focuses on assessing the impact of the proposed works primarily on the ancient woodland habitat.

The impact of the proposed works on the ancient woodland habitat and the protected and/or notable species it contains is assessed within this report. Appropriate mitigation and enhancements will be embedded into the project and secured via the:

- **Construction Environment Management Plan:** This provides details on how environmental management must be conducted through project specific controls and instructions. The plan includes ecological safeguards for bats, dormice, badgers, breeding birds, and water vole. The plan also details methods to prevent the spread of invasive non-native species (INNS). Such measures will include ecological supervision, appropriate timing of works, sensitive vegetation clearance, pollution prevention measures, habitat compensation and control of lighting.
- **Arboricultural Method Statement:** This has been created to ensure that all site operations occur with minimal risk of adverse impact upon trees that are to be retained.
- **Bat Survey Report:** This includes measures to ensure roosting bats are safeguarded throughout the construction phase.
- **Landscaping proposals:** The enhancements and creation of habitats post construction will ensure that the biodiversity value of the site is maintained and enhanced.

With the proposed embedded mitigation in place, there are expected to be no significant effects on the ancient woodland or any species it contains.

1 Introduction

1.1 Background

Mannings Heath Wastewater Treatment Works (WTW) requires a 3.56 km pipeline from the WTW to join the Horsham gravity sewer network, to meet the revised permit conditions for outputs of phosphorus, magnesium and iron as indicated in the Water Industry National Environmental Programme (WINEP3). As part of these proposed works, the construction of a pipe bridge is required running east-west across a single block of high-quality ancient woodland habitat (UKHab mixed deciduous woodland w1f and wet woodland w1d) located to the west of the Mannings Heath WTW.

1.2 Site Location

Mannings Heath WTW (outlined in blue in Figure 1) is located at National Grid Reference X 520292, Y 129090. The WTW is located to the north of Mannings Heath within the administrative boundaries of Horsham District Council and West Sussex County Council. This EclA covers both the 10m by 25m block of ancient woodland in which the pipe bridge will be constructed (located immediately to the west of the WTW at National grid reference X 520240 Y 129090) and the strip of land within the 'red line' planning boundary which provides access to the woodland from the nearby main road – Figure 1 below shows the boundary of the proposed works area outlined in red. The access route towards to the woodland comprises only of open agricultural fields and does not provide any additional ecological issues, so this document focuses primarily just on the woodland habitat itself. At the time of writing this report the access route to the main road had already been soil-stripped and an easement established, so whilst no retrospective permission is needed for this, the temporary widening of the access from Brighton road and trimming back of the hedgerow is included within this EclA.

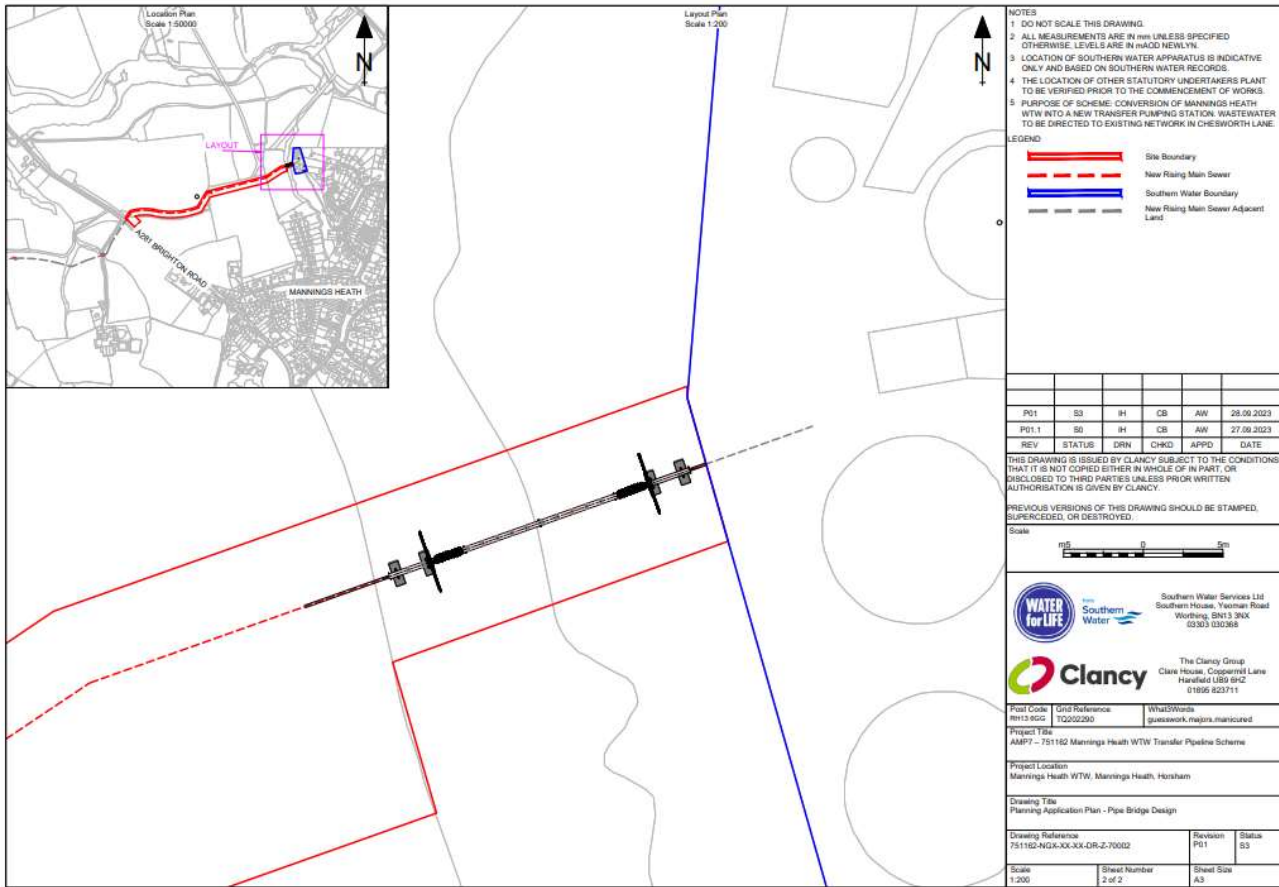


Figure 1: Mannings Heath Pipe Bridge Location and Site Boundary

1.3 Aims and Objectives

The aims of this Ecological Impact Assessment (EclA) report are to:

- Identify and describe all potentially significant effects¹ associated with the proposed works;
- Set out the mitigation measures required to ensure compliance with nature conservation legislation and to address any potentially significant effects;
- Identify how mitigation measures will/could be secured;
- Provide an assessment of any residual effects;
- Identify appropriate enhancement measures; and
- Set out any requirements for post-construction monitoring.

¹ For EclA, a significant effect is an effect that either supports or undermines biodiversity conservation objectives for “important ecological features” or for biodiversity in general (CIEEM 2018).

1.4 Quality Assurance and Environmental Management

This report has been produced on behalf of Southern Water Services. All Ecologists involved in the production of this report are members of the Chartered Institute of Ecology and Environmental Management (CIEEM). All surveys, assessments and mitigation have been undertaken with reference to the recommendations given in 'BS 42020:2013 Biodiversity: Code of practice for planning and development'. The EclA is based on the Guidelines for Ecological Impact Assessment in the UK and Ireland – Terrestrial, Freshwater and Coastal (CIEEM, 2018) and the Guidelines for Ecological Report Writing (CIEEM, 2017).

1.5 Planning Policy and Legislation

The construction and operational activities for the project must comply with international, European, and UK nature conservation legislation and with national and local biodiversity policies. The main pieces of legislation in the UK are the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 (as amended), which legally protect a number of species and habitats. These pieces of legislation provide a range of protection for many species, and also create protected sites (including Sites of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs) and Special Areas of Conservation (SACs)).

Under the Natural Environment and Rural Communities Act 2006 (NERC Act 2006), all public bodies are required to enhance and conserve biodiversity when carrying out their function. Under this Act a list of 'notable' habitats and species of principal importance (HPIs and SPIs) for the conservation of biodiversity in England are published under Section 41 (S41).

The biodiversity policies which are most relevant to the proposed works are the National Planning Policy Framework (NPPF, updated 2021), and the Sussex Biodiversity Action Plan (BAP).

Legislation and policy are further detailed in Appendix A.

2 Methodology

2.1 Desk Study

For the purposes of the Preliminary Ecological Appraisal (Southern Water 2022) a desk study was undertaken to search for records of protected and/or notable species occurring within and near to (within 2 km of) the ancient woodland area. For GCN, ponds within 250 m of the proposed works were mapped (Appendix B).

2.2 Field Study

The Preliminary Ecological Appraisal (PEA) also involved a site walkover was undertaken in April and May 2022, which identified the area of ancient woodland located to the west of Mannings Heath WTW. Subsequently, the habitat was inspected closely by an experienced ecologist/botanist to assess the habitat in the light of the proposed Mannings Heath WTW Transfer Scheme. An area of woodland approximately 30m either side of the ancient woodlands' mid-point was inspected to ensure that the whole area potentially affected by the scheme was covered. The field surveys identified any evidence and potential presence of protected and priority species which the woodland may contain. An assessment of the possible presence of these protected or priority species was completed. This was based on the known distribution of species, habitat suitability and/or direct evidence such as field signs or observations. The methodologies and assessment criteria used were based on current published guidance where available.

Additional survey work was also undertaken. A summary of the further survey work undertaken in relevance to the construction of the pipe bridge, and references to relevant methodologies are included below within Table 1.

Table 1: Further Surveys

Species	Survey	Survey Timings	Survey Guidance
GCN	Environmental DNA (eDNA) survey	April/May 2022	Natural England (Biggs et al., 2014)
Trees	Preliminary Arboricultural Assessment	February 2023	British standard 5837:2012 ' <i>Trees in Relation to Design, Demolition and Construction – Recommendations</i> '.
Bats	Ground level bat roost assessment	May 2023	Bat Conservation Trust (2016). Good Practice Guidelines: Bat Surveys for Professional Ecologists
Dormice	<ul style="list-style-type: none"> ■ Hazel nut search ■ Hand search of hazels and surrounding habitat (woody material and bases of multi stemmed shrubs). ■ Set up of 10x footprint tunnels 	September and October 2023	<p>Bright, P., Morris, P. and Mitchell Jones, T. (2006) <i>The Dormouse Conservation Handbook</i>. Peterborough: English Nature.</p> <p>Natural England (2015) <i>Hazel or common dormouse: surveys and mitigation for development projects</i> [Online] https://www.gov.uk/guidance/hazel-or-common-dormouse-surveys-and-mitigation-for-development-projects [Accessed 5th December 2022].</p>

Source: Southern Water, 2023

Standalone survey reports for arboriculture (Middlemarch Ecology 2023) and bats (Southern Water 2023) have been produced which outline methodologies and survey results in greater detail. The arboriculture and bat survey reports can be found in Appendix C and D respectively and should be read in conjunction with this EclA. A pond map is shown in Appendix B.

2.3 Assessment Methodology

An assessment of the anticipated impacts for each ecological receptor that occurs within the ancient woodland has been undertaken with reference to CIEEMs Guidelines for EclA (CIEEM, 2018). These guidelines set out a process of identifying the value of an ecological receptor and characterising the predicted impacts on that receptor from the proposed works. The criteria used to determine the importance of the ecological receptors present and in determining the significance of the anticipated impacts are detailed within the following sections.

2.3.1 Determining Importance of Ecological Receptors

The conservation importance of each ecological receptor that occurs within the woodland was assessed with consideration of the following factors:

- Designation of the site;
- Rarity of the species or habitats;
- Presence of Red List or endemic species;
- Presence of diverse assemblages of plants, habitats or animals;
- Plant communities typical of natural/semi-natural habitats; and
- Connectivity and presence of large populations of animals which are uncommon or threatened in a wider context.

In line with CIEEMs guidance on EclA, a geographic frame of reference was used to value each receptor scoped into the assessment (CIEEM, 2018). The geographic frame of reference used within this report is defined within Table 2.

Table 2: Geographic Frame of Reference

Scale	Description
International	<p>A feature (e.g., habitat or population) which is to be considered as being of nature conservation importance at an international level:</p> <ul style="list-style-type: none"> ■ Habitats or species that form part of the cited interest within an internationally designated site (e.g., Ramsar, SPA and SAC). ■ A feature (e.g., habitat or population) which is to be considered as being of the highest quality examples in an international context.
National	<p>A feature (e.g., habitat or population) which is to be considered as being of nature conservation importance at a national level:</p> <ul style="list-style-type: none"> ■ Habitats or species that form part of the cited interest within a nationally designated site (e.g., SSSI and National Nature Reserve (NNR)) ■ A feature (e.g., habitat or population) which is to be considered as being of the highest quality examples in a national context. ■ Presence of UK Biodiversity Action Plan habitats or species, where the action plan states that all areas of representative habitat or individuals of the species should be protected.
Regional	<p>A feature (e.g., habitat or population) which is to be considered as being of nature conservation importance at a regional level:</p> <ul style="list-style-type: none"> ■ Habitats or species that form the cited interest for a non-statutory site (e.g., Local Nature Reserve (LNR)). ■ Presence of LBAP habitats or species, where the action plan states that all areas of representative habitat or individuals of the species should be protected.
County	Designated sites, such as Wildlife Sites or habitats/species populations of value at a county level (i.e., West Sussex).
Local	<p>A feature of importance at district (local authority or local) level:</p> <ul style="list-style-type: none"> ■ A feature (e.g., habitat or population) that is of nature conservation value importance in a local context only, with insufficient value to merit a formal nature conservation designation.

Source: Southern Water, 2023 (based on geographic scales identified in CIEEM, 2018)

2.3.2 Impact Assessment Criteria

In order to assess the significance of any potential adverse or beneficial effects of the construction of the pipe bridge on the ecological receptors that occur within the woodland, consideration has been given to the following factors; extent, magnitude, duration, frequency and timing, reversibility and the cumulation of all anticipated impacts when considered together. The assessment of effects takes into account any embedded mitigation (see section 4.1) in determining effects and then considers additional mitigation and any residual effects to determine an overall significance.

2.4 Limitations

Biological records obtained from third parties and presented in the desk study do not represent a full and complete species list for the area. The records are mostly provided by individuals on an ad-hoc basis, often meaning there are areas of deficiency in the data. If species records are not present it may be as a result of the area being under surveyed and as such no records have been returned, lack of species should therefore not be disregarded.

The above poses only minor constraints to the survey work, its results and this report. The overall survey work is considered valid and provides appropriate effort to consider the impacts on the habitats and species present.

3 Baseline Ecological Conditions

Based on the ecological walkover, protected species surveys and the desk study undertaken, an assessment of the ecological value of the ancient woodland habitat, the section of stream within it, the agricultural fields from the access point to the pipe bridge, and protected/notable species that occur or have potential to occur within these habitats is included below.

3.1 Habitats

3.1.1 w1f Mixed deciduous woodland and w1d Wet woodland (Ancient woodland; priority habitat)

The 25m by 10m block of woodland was identified as a habitat of principal importance (HPI), and as ancient woodland on the ancient woodland inventory. As ancient woodland is classed as 'irreplaceable'², it is important that all potential impacts on this block of habitat are avoided/minimised. The woodland contains large, mature canopy trees and a shrub layer comprising of large multi-stemmed specimens which are potentially of considerable age. In addition, the affected area of woodland habitat contains at least 17 ancient woodland indicator species including yellow archangel *Lamium galeobdolon* and wood anemone *Anemone nemorosa*. Therefore, the ancient woodland is scoped into further assessment.

The location of the woodland is shown in the UK Hab map in Appendix E and described further with accompanying photographs and text description given in Appendix F.

3.1.2 r2a Rivers (Priority habitat)

A small stream, over which the pipe bridge will be built, runs through the ancient woodland. This consists of a deep 'ghyll' stream valley with a very small stream running within it, a sensitive ecological feature supporting a number of widespread fern and bryophyte species on its earth banks. As a result, the stream is scoped in for further assessment.

3.1.3 g4 Modified Grassland

The easement from the access at Brighton Road to the pipe bridge consists of agricultural fields, poor modified grassland lacking in herb species, unlikely to provide suitable habitat for any protected species. As a result, this habitat is scoped out of further assessment.

3.1.4 h2a Hedgerow (priority habitat)

The access point from Brighton Road consists of a hedgerow, which has already been widened in an ecologically sensitive manner as a part of the wider pipeline works. No trees were removed as a part of this, and the same method was used as was used along other hedgerows along the pipeline.

3.2 Species and Species Groups

3.2.1 Bats

The ground level bat roost assessment undertaken in May 2023 revealed that the ancient woodland has the potential to support roosting, commuting and foraging bats. Trees in the pipe bridge crossing location may

² <https://www.gov.uk/guidance/ancient-woodland-ancient-trees-and-veteran-trees-advice-for-making-planning-decisions>

require removal to facilitate the works to build the new bridge. Therefore, bats are scoped in for further assessment.

The bat survey report in Appendix D (Southern Water 2023) should be read in conjunction with this EclA.

3.2.2 Great crested newt

The PEA desk study revealed recent records of GCN 500m to the south of Mannings Heath WTW. The eDNA surveys revealed that one pond within 250m of the proposed pipeline was positive for GCN. All the other ponds obtained negative results. However, the pond which tested positive was at the far west end of the proposed pipeline, away from the ancient woodland. No ponds within 250m of the woodland were positive. Therefore, the ancient woodland is unlikely to be suitable terrestrial habitat for GCN and GCN are scoped out of further assessment.

Positive and negative GCN Pond locations are shown in Appendix B.

3.2.3 Hazel Dormouse

There are local records of dormouse *Muscardinus avellanarius* with 2km of the proposed pipeline, with the closest being 770m to the north-west of the pipeline (TQ165300) and within Sand Clumps Woods (TQ196305). The desk study also found confirmed hazel dormouse findings from 2019 and 2021 around Chesworth Farm, towards the western end of the pipeline route. The hand search found no hazel nuts in the ancient woodland area which had been eaten by dormice. In addition, no signs of dormouse nests were found in the woody material found within the works area, and no dormouse footprints recorded from within the footprint tunnels.

Although no Dormice were found in or near to the ancient woodland, due to the understory of the ancient woodland containing hazel *Corylus avellana* with a line of large, well-developed hazels along the western edge, providing highly suitable dormouse habitat, dormice are scoped in for further assessment.

3.2.4 Badger

Woodland provides suitable habitat for badger *Meles meles*. Multiple field signs relating to badger were identified throughout the length of the pipeline route but no setts were identified. Therefore, badger are scoped into further assessment.

3.2.5 Reptiles

The desk study noted multiple records of reptiles within the pipeline boundary, including slow worm *Anguis fragilis* and grass snake *Natrix helvetica* at Chesworth Farm (TQ1766529485), as well as multiple records of reptiles within the 2km study area. However, the most suitable reptile habitat was towards the western area of the scheme, away from the area of ancient woodland. Therefore, reptiles are scoped out of further assessment.

3.2.6 Bird species

The desk study identified records of notable bird species including kingfisher *Alcedo atthis* elsewhere within the overall project area along the River Arun, as well as woodland species redstart *Phoenicurus phoenicurus* and spotted flycatcher *Muscicapa striata*. The ancient woodland where the pipe bridge will be built may provide suitable habitat for breeding birds, especially the latter woodland species. As a result, breeding birds are scoped into further assessment.

3.2.7 Water Vole and Otter

Four desk study records were found for water vole *Arvicola amphibius* on the banks of the river Arun elsewhere along the proposed pipeline route, however these were found well away from the woodland. Additionally, the small stream running through the woodland is unsuitable habitat for water vole due to the small size of the stream and lack of suitable vegetation. Water vole are therefore scoped out of further assessment. There are no records of otter *Lutra lutra* within the area of the proposed works, so otter are also scoped out of further assessment.

3.2.8 Invasive Non-Native Species (INNS)

Three invasive plant species were identified within the woodland and are abundant all around the Mannings Heath WTW site perimeter: Rhododendron *Rhododendron ponticum*, Cherry Laurel *Prunus laurocerasus* and Variegated Yellow Archangel. Skunk cabbage *Lysichiton americanus* and floating pennywort *Hydrocotyle ranunculoides* were also found, located along River Arun/ Horn Brook, but away from the ancient woodland area. Due to the presence of INNS within the ancient woodland, INNS are scoped in for further assessment.

3.3 Summary of baseline

On the basis of the ecological baseline information detailed above, Table 3 outlines the receptors which have been scoped into the impact assessment and their level of importance on a geographic scale.

Table 3: Ecological Receptors scoped in for assessment

Ecological Receptor	Level of Importance
Bats	Local
Hazel dormouse	Local
Badger	Local
Breeding birds	Local
INNS	Local
Habitats – Ancient woodland (w1f Mixed deciduous woodland and w1d wet woodland) and r2a Rivers	Local

Source: Southern Water, 2023

4 Assessment of Effects and Mitigation Measures

This section characterises the predicted impacts and subsequent effects of the proposed works on ecological features present within the woodland which have been scoped in, in accordance with Section 3. It also sets out agreed avoidance, embedded mitigation, compensation and enhancement measures (where applicable) and assesses the significance of the effects of the proposed development on these features after applying the mitigation hierarchy (Table 4).

Construction impact assessment:

In order to avoid and reduce the level of effects on the woodland as a result of the construction works, the project ecologist has held in-depth discussions with the construction team supervisor, including site meetings, to work out ways to design out adverse impacts on the woodland. Through careful consideration of construction methods and requirements it has been possible to agree and commit to a large reduction in the proportion of the overall 10m working width in which tree and shrub roots will need to be removed/ grubbed up. The outer sides (2-3m on both sides) of the working width will not need to have the rootballs removed and will only be cut to ground level. Protective matting will then be placed over this zone for the duration of the construction works (estimated to be no more than 2-3 weeks), after which the matting will be removed and the plants will be able to re-grow. In addition to this, in the deeper central parts of the stream valley it has also been confirmed that there is no need to grub up the rootballs. Therefore, these plants will also only be cut to ground level. The areas to be cut down and protected will be agreed with the project ecologist on site prior to commencement of the works, and will be clearly demarcated to ensure that they are protected. Consequently, it is estimated that approximately two thirds of the 10m wide working area will be treated in this way, which will reduce the potential level of impacts on the woodland as far as is reasonably practicable.

Coppicing shrubs down to ground level in the dormant winter period is a traditional woodland management method, which allows light into the woodland floor and promotes a more varied woodland structure and enhancement of biodiversity. Where excavation of rootballs is needed, all suitable specimens will be removed in a sensitive manner under ecological supervision, then retained and carefully maintained in a holding 'nursery' area so that they can be replanted once construction works have been completed. Although there is a risk that some specimens will not survive this process, most are likely to persist, and even where they do not, the soil will be inoculated with microbes, fungi and invertebrates through replanting the rootballs. The planting will be maintained for 5 years. Any planting failures and gaps within that period will be replaced/planted up using suitable brought-in material (i.e. using diverse native species appropriate to the locality which are locally sourced and of local genetic provenance), to ensure that an adequate density of shrubs is maintained.

Enhancement measures:

A review of enhancement measures was undertaken by the project ecologist as part of the EclA process to establish what measures could be implemented to the affected area and its surrounds to improve the conservation value of the woodland. It was concluded that additional planting of trees and shrubs (considered a possible enhancement option at the EIA screening stage) would not in fact be desirable - the existing diversity of native species is already at a good level and does not need augmenting, and there is already sufficient natural regeneration of seedlings, saplings and young trees and shrubs. There is a general presumption against bringing planting material into ancient woodland habitats due to the risk that this will introduce pathogens and genetic stock, which is not as well adapted to the locality as material generated from within the woodland. Furthermore, the existing structure of the woodland is already rather dense, and opening it up (and not planting more trees and shrubs) is considered to be the best means of increasing its biodiversity.

In summary, the most important enhancement measure is considered to be the removal and treatment of invasive non-native species (rhododendron, cherry laurel and variegated archangel) which will be done in and adjacent to the working area.

4.1 Embedded Mitigation Measures

4.1.1 Construction Environment Management Plan (CEMP)

A CEMP has been produced and will be implemented during the construction phase of the proposed works. The plan will provide a framework within which to monitor, avoid and or minimise likely impacts to ecological receptors arising from the proposed works, as far as reasonably practicable. The plan has been produced and adapted in accordance with the findings of the field surveys undertaken. Section 7.2 contains a series of control measures relating to the safeguarding of habitats and wildlife. The plan also outlines how noise, air, waste, water and traffic impacts will be managed throughout the construction phase.

4.1.2 Landscaping Proposals

Landscaping proposals have been produced which will ensure the successful implementation and delivery of landscape integration measures, visual screening and ecological habitat creation. See Section 4.5 for further detail regarding the enhancement measures to be undertaken post construction.

Table 4: Assessment of effects

Receptor	Geographical importance of receptor	Potential Impact	Embedded Mitigation Measures applied	Impact Characterisation (after application of embedded mitigation measures)				Additional Mitigation	Residual Effect	Overall significance
				Positive, negative or neutral	Extent	Duration/ Frequency of Timing	Reversibility			
Bats	Local	Potential disturbance to roosting bats.	<p>The CEMP and The Mannings Heath WTW Bat Survey Report include measures to ensure foraging, commuting and roosting bats are safeguarded throughout the construction phase. These include:</p> <ul style="list-style-type: none"> - Excessive noise and vibration will be controlled/ subject to acceptable limits near trees in the area of the pipe bridge construction, for example by using sound attenuation barriers to avoid indirect disturbance in case any bat species are present. - Where trees with low suitability for roosting bats require pruning or removal the works will be carried out under supervision by a suitably experienced ecologist. Any sections containing features suitable for roosting bats will be gently lowered to the ground and left in a nearby sheltered location for at least 48 hours to allow any bats to escape unharmed. - Best practice measures will be followed regarding bats and lighting (for both construction and permanent lighting), in accordance with the following standards and guidance: <ul style="list-style-type: none"> ▪ Guidance Note 8: Bats and Artificial Lighting in the UK (2018) – Bat Conservation Trust & Institution of Lighting Engineers; ▪ BS EN 12464-2: Light and Lighting – Lighting of Workplaces – Part 2: Outdoor Work Places (2014) – BSI ▪ Lighting Guidance 6: The Exterior Environment (2016) – Chartered Institution of Building Services Engineers 	Neutral	Site only	Throughout the Construction phase	Reversible	None	Negligible	Not significant
Hazel dormouse	Local	Potential disturbance to and loss of habitat of hazel dormice.	<p>To cater for the low risk that dormice could be present within the woodland habitat the CEMP will include a Precautionary Method of Working containing measures to ensure dormice are safeguarded throughout the construction phase. This will include:</p> <ul style="list-style-type: none"> - Ecological supervision of all vegetation removal in the woodland involving careful fingertips searching of any dense habitat and locations at the base of multi-stemmed shrubs where dormice tend to build nests. - Habitat manipulation involving removal of all woody vegetation above 200mm in height during the winter months, and subsequent grubbing up of root balls of trees and shrubs from May onwards to minimise any risk of impacts to hibernating dormice. - Any large hazels present along the western edge of the woodland that need to be removed for the proposed works will be coppiced (i.e. cut down to ground level), then the coppice stools dug up with as much earth intact around them as is possible and stored in a designated area for the duration of the works. - Perennial herbaceous vegetation including ancient woodland indicator species such as wood sedge <i>Carex sylvatica</i> will be dug up with large undisturbed rootballs under the supervision of the ecologist and also stored during the works and then replanted. - The plant material will be retained throughout the works period (which will require watering a couple of times per week from site staff during any droughts of especially hot spells) and placed back into the ground at a suitable location as part of the site reinstatement following completion of the works. 	Neutral	Site only	Throughout the construction phase	Reversible	None	Negligible	Not significant
Badger	Local	Construction works could impact foraging badger if present through entrapment in	<p>The CEMP includes measures to ensure badgers and their setts are safeguarded throughout the construction phase. These include:</p>	Neutral	Site only	Throughout the Construction phase	Reversible	None	Negligible	Not significant

Receptor	Geographical importance of receptor	Potential Impact	Embedded Mitigation Measures applied	Impact Characterisation (after application of embedded mitigation measures)				Additional Mitigation	Residual Effect	Overall significance
				Positive, negative or neutral	Extent	Duration/ Frequency of Timing	Reversibility			
		trenches or uncovered excavations.	<ul style="list-style-type: none"> - A pre-construction check for badgers will be completed by an Ecologist prior to commencement of the pipe bridge construction works. The ecologist will undertake a visual check of all areas of the woodland, and 30m each side of the proposed works for badgers and their setts. - Excavations will be fenced off and/or covered to avoid animals becoming trapped, with mammal ladders or a 45° slope installed. Site personnel to check these at the start and end of every working day. 							
Nesting Birds	Local	Loss of suitable nesting habitat and adverse impacts to nesting birds	<p>The CEMP includes measures to ensure birds are safeguarded throughout the construction phase. These include:</p> <ul style="list-style-type: none"> - A pre-construction check for breeding birds will be completed by an Ecologist prior to commencement of the pipe bridge construction. The Ecologist must undertake a visual check of all areas breeding birds may create nests within 30m of the pipe bridge. - Any vegetation suitable for breeding birds will be removed outside of the breeding bird season (peak breeding season is March to August inclusive). - If this is not possible, a nesting bird check will be carried out by an Ecologist within 48 ours prior to any vegetation clearance. If any active nests are discovered, an appropriate buffer will be established by the Ecologist and left in place until all young have dispersed. 	Neutral	Site only	Throughout the construction phase	Reversible	None	Negligible	Not significant
INNS	Local	Spread of INNS	<p>The CEMP includes measures to ensure INNS are not spread throughout the construction phase. These include:</p> <ul style="list-style-type: none"> - A pre-construction check for INNS will be completed by an Ecologist - Removal/ control of invasive plant species by cutting and treating stumps of Rhododendron and Cherry Laurel, and by carefully digging up and disposing of clumps of Variegated Archangel. - Additionally, any aquatic plant INNS present will be assessed in terms of potential to be spread by the works. 	Neutral	Site only	Throughout the construction phase	Reversible	None	Negligible	Not significant
Habitats – Ancient woodland (w1f mixed deciduous woodland and w1d wet woodland)	Local	Adverse impacts to HPI and ancient woodland	<p>The CEMP, Preliminary Arboricultural Assessment and Method Statement, and Ecological Memo include measures to ensure the ancient woodland is safeguarded throughout the construction phase. These include:</p> <ul style="list-style-type: none"> - The site Ecological Clerk of Works (ECoW) will be an ecologist experienced in botany who will oversee all ecological mitigation and enhancement measures on site. - Trees and shrubs in the outer 2.5m of the working width through the woodland will be coppiced down to the ground, protected with matting and allowed to regrow following completion of the works. This will include the largest and most ecologically valuable hazels, and will help to maintain the condition of the ancient woodland and increase its potential as dormouse habitat. - For trees and shrubs which require removal, they will be cut down to approximately 50cm in height before digging them up complete with intact rootballs and retaining on site for replanting post-construction. - The ECoW will advise on which herbaceous (i.e. non-woody) plant material to retain, and the machine operators instructed to dig up clumps of ancient woodland indicator and other notable plants whole complete with their root systems. - A designated space within the working easement immediately on the west side of the woodland will be used to store rootballs of shrubs and dug up clumps of perennial herbaceous species. - The ancient woodland indicator plant species in particular will be gathered and retained here, including yellow archangel <i>Lamium galeobdolon</i>, enchanters' nightshade <i>Circaea lutetiana</i>, wood anemone <i>Anemone nemorosa</i>, and wood sedge. - Dead wood material produced from coppicing will be used to create log piles and create habitat for stag beetles, as well as diversifying the structure of the woodland. 	Neutral	Site only	Throughout the construction phase	Reversible	None	Negligible	Not significant

Receptor	Geographical importance of receptor	Potential Impact	Embedded Mitigation Measures applied	Impact Characterisation (after application of embedded mitigation measures)				Additional Mitigation	Residual Effect	Overall significance
				Positive, negative or neutral	Extent	Duration/ Frequency of Timing	Reversibility			
			<ul style="list-style-type: none"> - Protection from deer browsing is to be used when the shrubs are replanted to increase survival chances. - All works will adhere to the Preliminary Arboricultural Assessment and Method Statement, and a hard copy of these will be held on site. 							
Habitats – Rivers	All Local	Pollution events to the stream and loss of habitat	<p>The CEMP includes measures to ensure INNS are not spread throughout the construction phase. These will include:</p> <ul style="list-style-type: none"> - Protecting the stream and its fern and bryophyte-covered sides from any impacts so that it remains intact. - Any risk of pollution from dust or other material will be carefully controlled to avoid this entering the stream or affecting its banks. 	Neutral	Watercourse within site and further downstream	Throughout the construction phase	Reversible	None	Negligible	Not significant

Source: Southern Water, 2023

4.2 Operational Impacts

During the operation of the site, adverse impacts on important ecological features are not anticipated owing to the nature of the development and the enhancements to be undertaken as part of the landscape proposals.

4.3 Cumulative Effects

The embedded mitigation measures outlined in this section are considered to ensure there are no significant effects on ecological features. Therefore, no cumulative effects are anticipated as a result of the proposed works.

4.4 Compensation and Enhancements

In addition to the mitigation measures proposed above to address construction phase impacts, the following measures are proposed:

- The retained and replanted shrubs within the construction footprint as well and the coppiced shrubs which do not need to be grubbed up will give rise to a more open strip of woodland habitat. This will contribute to the structural diversity of the surrounding woodland by allowing light in and stimulating the ground flora, and is likely to improve the condition of the woodland as well as increase its value as dormouse habitat.
- Removal/ control of invasive plant species by cutting and treating stumps of rhododendron and cherry laurel within and adjacent to the working area, and by carefully digging up clumps of variegated archangel and disposing of them appropriately.
- Dead wood material produced from site preparation/ coppicing will be used to create log piles and to create 'loggery' habitat (i.e. partially buried large logs) for stag beetles.

4.5 Monitoring

The regrowth of the affected woodland strip will be monitored by and ecologist during the 5 year maintenance period to ensure that the quality of the resultant habitat is optimised.

5 Conclusions

The construction of a pipe bridge is required across the steep valley sides of a stream within an area of ancient woodland immediately to the west of Mannings Heath WTW.

Embedded mitigation measures will be implemented to avoid/mitigate any potential adverse impacts to ecological features. With these mitigation measures implemented, as well as the enhancements in section 4.4, there will be no significant adverse effects on the ancient woodland habitat or species as a result of the proposed works.

6 References

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- Southern Water (June 2023). Bat Survey Report - 751162: Mannings Heath WTW
- Southern Water (September 2022). Preliminary Ecological Appraisal - 751162: Mannings Heath WTW Transfer Scheme

Appendices

Appendix A: Legislation and Policy

Environment Act 2021

This legislation plans to enhance the environment by improving air and water quality, restoring natural habitats, reducing waste, increasing biodiversity, and ending the decline of species. The Act will require new developments to improve or create habitats for nature with a mandatory biodiversity net gain (BNG) of 10% for new developments expected to be enforced in November 2023.

Wildlife and Countryside Act 1981 (as amended)

Forms the basis for protection of statutory designated sites of national importance (e.g., Sites of Special Scientific Interest) and native species that are rare and vulnerable in a national context.

The Conservation of Habitats and Species Regulations 2017 (as amended)

The Regulations provide for the designation and protection of 'European sites', the protection of 'European protected species', and the adaptation of planning and other controls for the protection of European Sites. The Regulations provide for the control of potentially damaging operations, whereby consent may only be granted once it has been shown through appropriate assessment that the proposed operation will not adversely affect the integrity of the European site.

Natural Environment and Rural Communities (NERC) Act 2006

Under this act all public bodies are required to enhance and conserve biodiversity when carrying out their function. Under this act a list of habitats and species of principal importance (HPIs and SPIs) that are of principal importance for the conservation of biodiversity in England are published under Section 41 (S41). Section 40 of the Act places a duty to conserve biodiversity on public authorities in England. It requires local authorities and government departments to have regard to the purposes of conserving biodiversity in a manner that is consistent with the exercise of their normal functions such as policy and decision-making. 'Conserving biodiversity' may include enhancing, restoring or protecting a population or a habitat.

National Planning Policy Framework (NPPF) 2021

The NPPF sets out how the planning system should protect and enhance nature conservation interests.

Paragraph 179 of the NPPF, states that: *plans should 'identify and map components of the local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity, wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and •promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species and identify and pursue opportunities for securing measurable net gains for biodiversity.'*

Paragraph 180 of the NPPF states that: *'when determining planning applications, local planning authorities should apply the following principles: If significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused.'*

Badgers

All Badgers are protected under The Protection of the Badgers Act 1992. It makes the intentional or reckless destruction, damage or obstruction of a badger sett an offence. Any construction work that directly affects a

badger sett will require a licence from Natural England and licences are only issued between July and November.

Bats

All bat species in the UK are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and through European legislation under schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended). It is an offence to intentionally kill, injure or take a bat or to intentionally or recklessly disturb a bat in a roost or any other structure or place it uses for shelter or protection.

Birds

All birds are protected under the Wildlife and Countryside Act 1981 (as amended). It is an offence to take damage or destroy the nest of bird while it is being built or in use. In addition to this, species included on Schedule 1 of the Act receive special protection, making intentional and reckless disturbance whilst breeding an offence. Such species are considered to be in greater need of legal protection or of high nature conservation priority.

Dormice

All dormice and their habitat are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and through European legislation under schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended). It is an offence to intentionally kill, injure or take a dormouse or to intentionally or recklessly disturb a dormouse or its structure or place it uses for shelter or protection.

Great Crested Newts (GCN)

GCN are listed on schedule 5 and protected under the Wildlife and Countryside Act 1981 (as amended) and listed on schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended). Together this legislation makes it an offence to intentionally or recklessly disturb, capture, kill, injure or take a GCN or its eggs. Intentionally or recklessly damage, destroy or obstruct access to a GCN breeding site or resting place and possess or control any live or dead specimen or anything derived from a GCN.

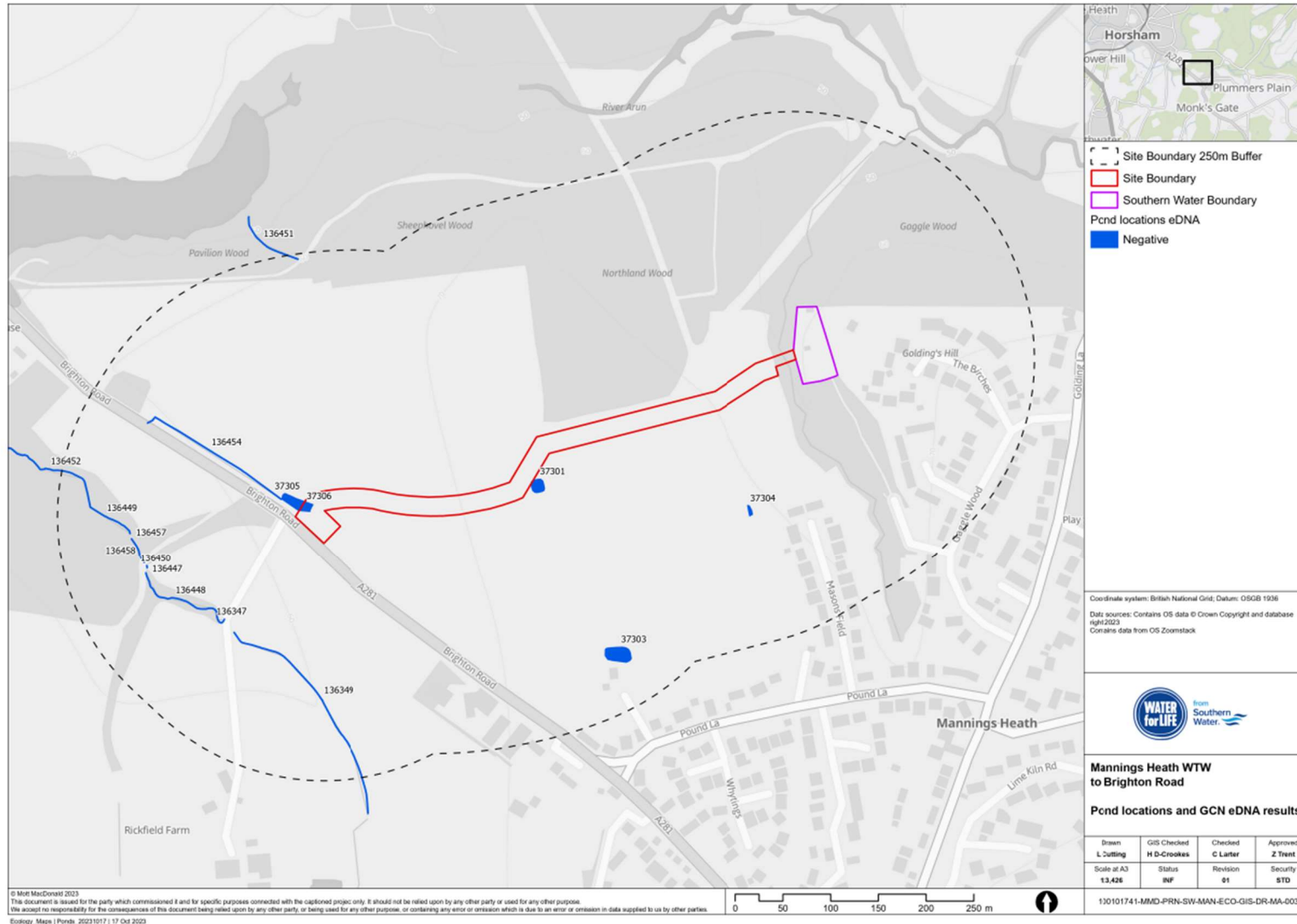
Reptiles

The four more common widespread reptile species (slow worms, common lizard, grass snake and adder) which can be found on a range of sites, receive partial protection under the Wildlife and Countryside Act 1981 (as amended). It is an offence to intentionally kill or injure a reptile and to trade these species. The rarer species, sand lizard and smooth snake, are fully protected under the Wildlife & Countryside Act 1981 and through European legislation under Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended).

Mammals

The Wild Mammals (Protection) Act 1996 protects all mammals from harm and cruelty, making it illegal to mutilate, kick, beat, nail or otherwise impale, stab, burn, stone, crush, drown, drag or asphyxiate any wild mammal with intent to inflict unnecessary suffering.

Appendix B: Mannings Heath Ponds and Great Crested Newt eDNA Results

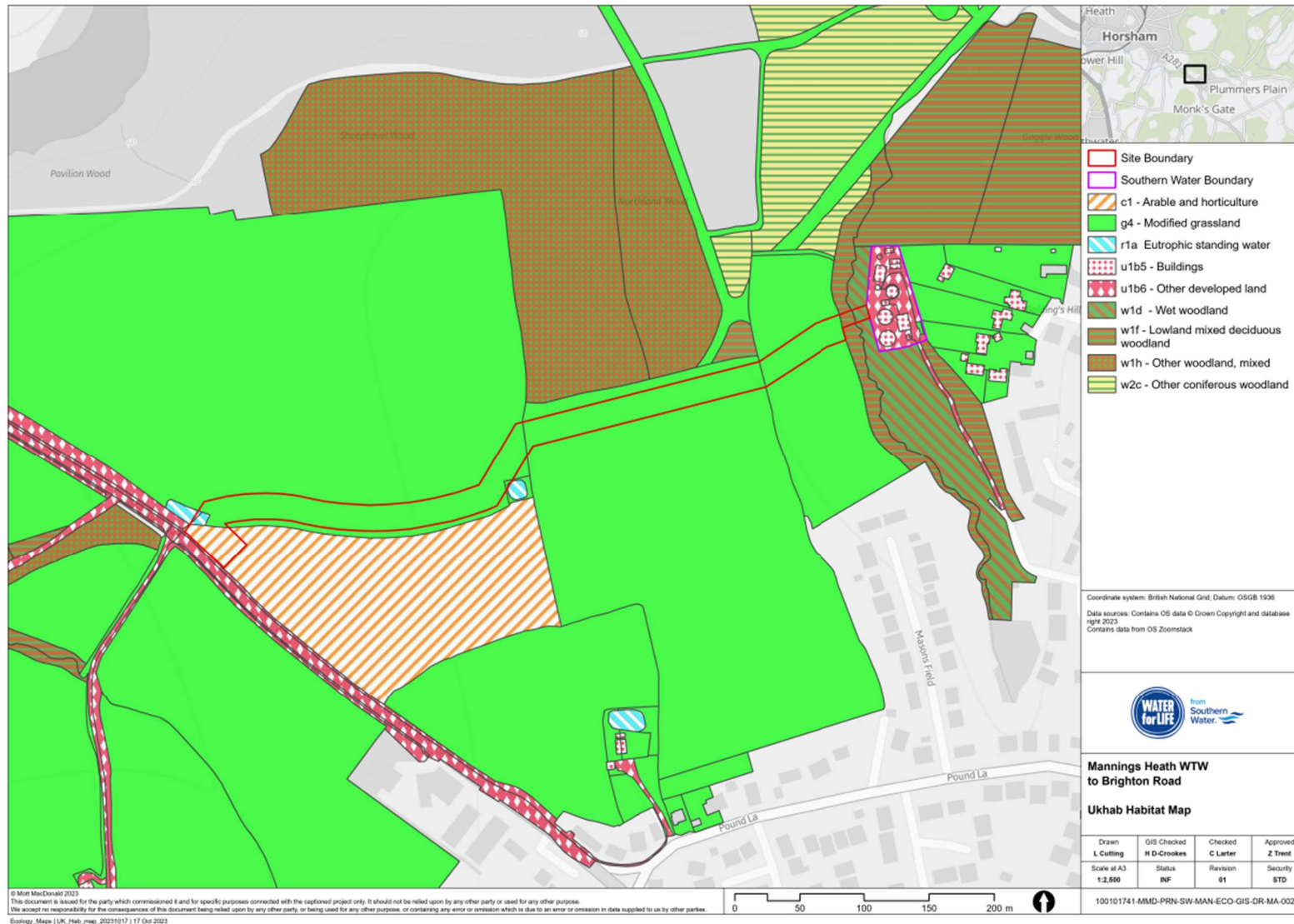


Appendix C: Arboricultural Survey Report – Please see separate submission

Appendix D: Bat Survey Report



Appendix E: UKHab Habitats Map



Appendix F: Ancient Woodland Photograph and Description

Description	Photograph
<p>w1d wet woodland and w1f lowland mixed deciduous woodland. Oak <i>Quercus robur</i> and Alder <i>Alnus glutinosa</i> dominated ancient woodland habitat with hazel <i>Corylus avellana</i> and holly <i>Ilex aquifolium</i> understorey – located immediately on the west side of Mannings Heath WTW. Ancient woodland indicators (AWIs) included yellow archangel <i>Lamium galeobdolon</i>, enchanters' nightshade <i>Circaea lutetiana</i>, wood anemone <i>Anemone nemorosa</i>, wood sedge <i>Carex sylvatica</i>. Felled trees and dead wood present with varying age structure. The woodland includes a deep 'ghyll' stream valley supporting fern and bryophyte species dominated by large mature alder trees <i>Alnus glutinosa</i>. The stream will need to be crossed by the proposed scheme. The woodland habitat was determined as being of good condition using BNG condition assessment.</p>	