High Street, Shafton

Biodiversity Net Gain Assessment

Vistry Partnerships Yorkshire

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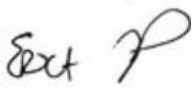
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Summary

This Biodiversity Net Gain Assessment Report has been produced to provide an assessment of any potential changes in biodiversity value associated with the proposed development of the site. Calculations undertaken within this assessment are based on the baseline conditions present at the time of the initial preliminary ecological appraisal and the post-development conditions predicted from the proposed landscaping plan (Drawing no: MR22-007/101).

The site comprises a mosaic of man-made and semi-natural habitats including semi-improved grassland; broadleaved woodland; dense and scattered scrub; tall ruderal vegetation; native hedgerows; scattered trees; ephemeral/short perennial vegetation; hard-standing and a dry pond. The site does not form part of any designated site, priority habitat area or locally designated wildlife corridor.

The proposed development includes the construction of 40 no. residential dwellings with surrounding gardens, driveways, access roads, soft landscaping, and public open space. Landscaping plans include the restoration of existing hedgerows and grassland, along with the creation of further species-rich grassland, native woodland and scrub plantings, native hedgerows, trees plantings and a new wildlife pond.

The overall baseline biodiversity value of the site was calculated as 4.61 Habitat Units (HU), 3.0 Hedgerow Units (HeU). Post-development, biodiversity value is predicted as 2.36 HU, and 3.22 HeU, representing a biodiversity net change of -2.25 units (-48.74%) for area-based habitats and 0.22 units (7.23%) for hedgerows.

It would not be possible to achieve no net loss of area-based biodiversity units using the Defra biodiversity metric on site without a significant reduction of development area which may affect scheme viability. Options for maintaining biodiversity value include off-site habitat compensation, with onsite measures aimed at improving conditions for specific priority species considered likely to use the site. This may include bespoke habitat provisions for birds, bats, amphibians, reptiles, and small mammals. This will act to improve the ecological value of the site for local populations of protected and priority species.

Assessment methodologies, results, and subsequent recommendations and/or mitigation measures are provided within this report, including details of any opportunities for ecological enhancements, where appropriate.

1. Introduction

1.1.1 Envance UK was commissioned by Vistry Partnerships Yorkshire to undertake a biodiversity net gain assessment (BNGA) at High Street, Shafton, Barnsley (central British National Grid Reference (BNGR): SE 39372 10881; hereafter referred to as the 'site'). This assessment has been requested in relation to development of 40 no. dwellings, with associated access roads, vegetated gardens, driveways, and soft-landscaping.

1.1.2 The purpose of the assessment was to identify opportunities to achieve no net loss of biodiversity on the site. An assessment was undertaken using the Defra Biodiversity Metric 3.0 to provide an initial indication of potential change in biodiversity value. The metric uses information on habitat quantity and quality, before and after development, to provide an indication of change in biodiversity value. This approach has limitations as it relies solely on habitat information as a proxy for biodiversity value and does not take into consideration other factors that are important when considering biodiversity, such species presence/absence, connectivity, and species population dynamics. Following the application of the Defra metric recommendations can be made to achieve no-net loss of biodiversity as a result of the development.

1.1.3 This report documents the assessment findings and provides recommendations in line with the CIEEM (2021) Biodiversity Net Gain Report and Audit Templates, as well as the CIRRA (2019) guidelines: Biodiversity Net Gain: Good Practise Principles for Developers. Methodologies employed are described, including site surveys and biodiversity evaluation. Recommendations for any habitat creation and management strategies, further survey work and monitoring, and/or mitigation measures are included, where appropriate.

1.2 Background

1.2.1 A baseline ecology survey was undertaken in June 2020 by Ecus Ltd to inform a preliminary ecological assessment. The survey identified that the site comprised a mosaic of semi-improved grassland, semi-natural broadleaved woodland, native hedgerows, scattered trees, dense/scattered scrub, ephemeral/short perennial vegetation, tall ruderal vegetation, a single dry pond and areas of hard-standing.

1.2.2 An initial biodiversity net gain assessment was undertaken by Ecus ltd in July 2021 using Defra metric 2.0 . The assessment indicated a baseline biodiversity value of 8.42 Habitat Units (HU) and 2.40 Hedgerow Units (HeU). Post-development values were calculated based on the planning layout '*Proposed Site Layout Option 3' (Drawing No. 0812-EA-A-P002 Rev B)*' and resulted in a net loss of biodiversity of -74.38% and -81.67% for habitat units and hedgerow units respectively.

1.2.3 The recommendations were made in order to improve the post-development biodiversity value of the site:

- The replacement of ornamental introduced shrub with native mixed scrub, managed to 'good' condition;
- Wildflower grassland to be managed appropriately to 'good' condition;
- Amenity grassland to be managed appropriately to 'moderate' condition;
- Retain and enhance the species-rich hedgerow along the south-eastern boundary to 'good' condition, through 'gapping-up' and removal of undesirable vegetation;
- Retain and enhance the dry pond to 'moderate' condition; and
- The creation of a new wildlife pond to be appropriately managed to 'moderate' condition.

1.2.4 Implementation of the suggested habitat changes were predicted to achieve a net loss of -67.08% for HU and -10.49% for HeU. It was therefore concluded that off-site compensation in some form would be required in order to achieve a net gain/no net loss target for the site.

1.3 Site Development

1.3.1 The proposed development involves the construction of 40 no. dwellings with associated vegetated gardens and driveways. A single access road is planned to run through the central area of the site, providing access to the development off the main High Street, with public open space provided to the north, and west of the site. Land take of the development will result in the loss of the majority of site habitats, with the exception of the proposed retention of hedgerows along the south-eastern and north-eastern boundary, as well as existing semi-improved grassland in the north of the site.

1.3.2 The current landscaping plan for the site (‘*Outline Landscape Proposals’;* Drawing no: MR22-007/101;) involves the following soft-landscaping proposals:

- The enhancement and creation of species-rich grassland, mixed scrub, and woodland planting within the public open space to the north of the site;
- The creation of a new wildlife pond, woodland planting, and species rich grassland within public open space to the west of the site;
- Mixed scrub planting and native hedgerows as part of residential front gardens; and
- Retention, enhancement, and extension of native hedgerows around the boundary of the site.

2. Methodology

2.1 Baseline Survey

Desk Study

2.1.1 A high-level desk study was undertaken to inform the biodiversity calculation in relation to the strategic significance of the site. Habitats are defined as strategically significant if they achieve one of the following criteria:

- As part of a statutory or non-statutory designated site;
- As part of the National Habitat Recovery Network;
- As part of the Priority Habitat Inventory;
- As part of a locally designated wildlife corridor; and/or
- Listed as a priority habitat within the local biodiversity action plan.

2.1.2 Habitats failing all these criteria are typically classified as 'low strategic significance'. However, if they are adjudged to provide significant ecological connectivity and or value to the local area, they may be assigned an intermediate strategic significance status due to being classified as 'ecologically desirable'.

2.1.3 The following sources were consulted to obtain relevant ecological information for the strategic significance of the site:

- Multi Agency Geographic Information Centre (MAGIC) website (www.magic.gov.uk);
- High Street, Shafton, Barnsley - Preliminary Ecological Site Appraisal (Middleton 2014);
- High Street, Shafton – Preliminary Ecological Appraisal (Ecus 2020);
- High Street, Shafton – Habitat Regulations Assessment (Ecus 2021); and
- High Street, Shafton – Initial Biodiversity Net Gain Assessment (Ecus 2021)

2.1.4 The following information was sought and considered:

- records of priority habitats;
- details of any statutory sites of ecological interest e.g. Sites of Special Scientific Interest (SSSI), Special Protection Area (SPA) etc.;
- location of areas within the National Habitat Recovery Network;
- details of any non-statutory sites of ecological interest e.g. Sites of Importance for Nature Conservation (SINC), Local Wildlife Sites (LWS) etc; and
- details of any locally designated wildlife corridors or similar.

Field Survey

2.1.5 The initial baseline habitat survey was initially undertaken by Middleton Ecology in 2014, with an updated survey carried out by Ecus ltd in June 2020. Both surveys followed extended phase 1 habitat methodology (JNCC 2016), where the habitats and vegetation types present were recorded, together with an indication of their relative abundance and current management.

2.1.6 An updated habitat condition assessment and detailed grassland survey was further undertaken by Paul Wolstenholme ACiEEM on the 3rd May 2022. This survey was requested due to concern over the correct habitat classification of semi-improved grassland within the site, as well as changes in

condition criteria from BM 2.0 to 3.0 that could not be accurately derived from the previous surveys.

2.1.7 The grassland survey broadly followed NVC classification survey methodology (Rodwell 2006), in-line will UK Habitat Classification methodology (UKHab; UHWG 2018). 1m x 1m quadrants were randomly selected within representative areas of the habitat, with species diversity and abundance recorded.

2.1.8 Habitat classifications for the biodiversity metric have been assigned using the descriptions provided within the initial phase 1 survey (Ecus 2020), along with the results of the detailed grassland survey and updated habitat condition assessment, in conjunction with UKHab habitat descriptions and those provided within BM 3.0, where different.

Biodiversity Net Gain Assessment

Baseline

2.1.9 The Biodiversity Net Gain Assessment used the current metric tool, the 'Biodiversity Metric 3.0 Calculation Tool Beta' (BM3.0) distributed by Natural England, (2021). Habitat measurements have been taken using digital mapping software (QGIS Geographic Information System version 3.14).

2.1.10 The condition of each habitat type was assessed from a combination of the habitat descriptions provide within the preliminary ecological appraisal (Ecus 2020), with the results of the updated habitat condition assessment and categorised as either good, fairly good, moderate, fairly poor or poor. The assessment was made using the criteria within 'BM3.0 Technical Supplement' (Panks *et al*, 2021), this provided specific assessment criteria for each broad habitat type (1- 12 specific criteria (C1 – 12) are provided for each defined broad habitat and linear features (including function group criteria for hedgerows (A - E)).

2.1.11 Using the BM3.0, habitat values are calculated based on whether they occur commonly or whether they are rare, their area (ha) (or length (km) for linear features such as hedgerows), condition, connectivity to other habitats, and importance within the local area, identified from the high level desk study findings. This gives a pre-development value in Habitat Units (HU), Hedgerow Units (HeU) and/or River Units (RU).

2.1.12 Measuring Change in Biodiversity

2.1.13 The current landscaping plan (*Outline Landscape Proposals';* Drawing no: MR22-007/101) and baseline habitats were referred to in order to calculate the area, type and condition of each predicted habitat once the scheme is implemented.

2.1.14 BM3.0 was used to calculate the likely net change in biodiversity value of the application site by comparing the existing baseline against the predicted post-restoration units which would be provided by implementation of the restoration plan.

2.1.15 Net change in biodiversity value can be calculated by subtracting the forecasted future biodiversity value of the site, post-management, from its current biodiversity value ('baseline').

3. Policy and Legislation

3.1.1 This appraisal has been undertaken with consideration of relevant national and local policies and legislation.

3.2 Policy

Barnsley Local Plan

3.2.1 The Barnsley local plan was adopted in January 2019 and represent the strategic local plan for the borough. The key policy in relation to biodiversity and ecology is Policy BIO1 Biodiversity and Geodiversity, which states that '*development will be expected to conserve and enhance the biodiversity and geological features of the borough by:*

- Protecting and improving habitats, species, sites of ecological value and sites of geological value with particular regard to designated wildlife and geological sites of international, national and local significance, ancient woodland and species and habitats of principal importance identified via Section 41 of the Natural Environment & Rural Communities Act 2006 (for list of the species and habitats of principal importance) and in the Barnsley Biodiversity Action Plan.
- Maximising biodiversity and geodiversity opportunities in and around new developments.
- Conserving and enhancing the form, local character and distinctiveness of the boroughs natural assets such as the river corridors of the Don, the Dearne and Dove as natural floodplains and important strategic wildlife corridors.
- Proposals will be expected to have followed the national mitigation hierarchy (avoid, mitigate, compensate) which is used to evaluate the impacts of a development on biodiversity interest.
- Protecting ancient and veteran trees where identified.
- Encouraging provision of biodiversity enhancements'

3.2.2 Development will not be permitted where harm to a biodiversity or geological feature/habitat may occur (including but not limited to: ancient woodland and/or aged or veteran trees outside of ancient woodland), unless an effective mitigation/compensation measures can be ensured.

3.2.3 Development will not be permitted where adverse effects of a European designated site may occur unless there are reasons of overriding public interest (IROPI).

Barnsley Biodiversity Action Plan

3.2.4 The 2nd edition of the Barnsley Biodiversity Action Plan (LBAP) was adopted by Barnsley Council in 2010. The plan highlights local important species and habitats within the county and provides specific action plans to maintain and enhance local wildlife. The following species and habitats are potentially relevant to this assessment:

Species

- Mammals (harvest mouse, hedgehog, and bats)
- Birds (including sparrow and starling)
- Reptiles (grass snake and slow-worm)
- Amphibians (common toad, common frog and newts)

Habitats

- Hedgerows
- Arable Field Margins
- Lowland Meadows
- Ponds

National Planning Policy Framework

3.2.5 The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how these are expected to be applied. The NPPF creates a presumption in favour of granting planning permission for sustainable developments, unless any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies within the framework as a whole or if specifically restricted within the NPPF.

3.2.6 Section 15 of the NPPF deals with Conserving and enhancing the natural environment.

3.2.7 Paragraph 174 states that "Planning policies and decisions should contribute to and enhance the natural and local environment by:

- *protecting and enhancing valued landscapes, geological conservation interests and soils;*
- *recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services;*
- *maintaining the character of the undeveloped coast, while improving public access to it where appropriate;*
- *minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;*
- *preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability;*
- *remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate."*

3.2.8 Paragraph 180 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;*
- *development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted.*
- *development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons63 and a suitable compensation strategy exists; and*
- *development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.*

4. Baseline Conditions

4.1.1 The existing conditions at the site are set out below as described with the Preliminary Ecological Report (Ecus 2020). Findings of desk study are incorporated within the report as appropriate. It should be noted that the assessment of importance for a number of species do not appear robust within the PEA. Where this is the case a revised assessment is given alongside the initial conclusion.

4.2 Site Description

4.2.1 The site primarily comprises of former pasture grassland, with an area of semi-natural broadleaved woodland, dense scrub, ephemeral/short perennial vegetation, native hedgerows, and scattered trees. Immediately adjacent to the site is the urban residential area of Shafton to the north and east, with recreational playing fields to the south and the main High Street running along the southwest boundary.

4.2.2 An historic railway line is located approximately 260 m to the east of the application site and provides potential for connectivity into the wider countryside.

4.2.3 In the wider area, the site is situated within the central area of the town of Shafton, which itself is surrounded by an agricultural matrix. No significant areas of semi-natural habitat appear to be present within 5 km of the site.

4.3 Habitats

4.3.1 A summary of the habitats is provided below, with geo-location and extent of each habitat type are outlined in Figure 1. Where appropriate, the associated UKHab and Biodiversity Metric habitat classification is provided (UKHab/BM 3.0), along with an assessment of habitat condition. Full habitat descriptions, including a list of identified species, is provided within the original PEA. The updated condition assessment results are provided within Appendix 1. Tables A1 - A

Area-based habitats

Semi-improved grassland [UKHab/BM 3.0 'Other neutral grassland – *Arrhenatherum* neutral grassland'

4.3.2 The majority of the site is dominated by semi-regularly mown tufted grassland, that appears to be of former grazing pasture origin (from historic aerial mapping (@Goggle earth 1999 – 2021)). This area was subject to a detailed grassland survey and was determined to be largely comprised of frequent false-oat grass *Arrhenatherum elatius*; with locally frequent areas of cock's foot Dactylis glomerata; intertwined with red fescue *Festuca rubra*; and Yorkshire-fog *Holcus lanatus*. Other grasses were loosely scattered across the area, such as sweet vernal grass *Anthoxanthum odoratum*; and meadow foxtail *Alopecurus pratensis*; however these species only appeared in low abundance within the quadrants surveyed. Few herb species were present and the grassland is classed as species-poor with only an average of 5 species per m2. Full grassland survey results are provided in Appendix 2. Table A1 & 2.

4.3.3 The species-composition most closely aligns with the NVC classification MG1 grassland, which under the UKHab methodology is classified as Other neutral grassland – *Arrhenatherum* neutral grassland. This confirms the assessment undertaken by Middleton Ecology (2014) which came to a similar conclusion. This habitat is typical of lightly managed road verges and fields such as this one and is likely to have formed in the absence of intense grazing.

4.3.4 The grassland is however subject to a mowing-regime, which has kept it to an even sward. The south west of the grassland area is also dominated by common nettle *Urtica dioica*; (considered an undesirable species under BM 3.0, >5% abundance), with scattered bramble scrub and tall ruderal

vegetation present in central north of the site (>5% of the area). These areas (Ruderal; Tall herb in Figure 1) were defined as Tall Ruderal habitat under JNCC Phase 1 classification, however under UKHab they are considered to form part of the underlying grassland habitat.

4.3.5 With these condition factors observed, this habitat has been assessed as **poor** condition under the BM 3.0 criteria. This represents a change for the BM 2.0 methodology used within the original baseline assessment (Ecus 2021).

Poor Semi-improved Grassland [UKHab/BM 3.0 'Modified Grassland']

4.3.6 Areas of this grassland are described as close mown, species-poor grassland present in the western area of the site (Modified grassland in Figure 1). Scattered trees are also present. This habitat type is classified as 'Modified grassland' under UKHab/BM 3.0.

4.3.7 From the description provided by Ecus (2020), this represents a more diverse example of this habitat. However, bare ground and disturbance was identified to be significant during the updated condition assessment, with little structural diversity in the grass sward and a significant abundance of ruderal, undesirable vegetation (>5%). As such, it is classified as **poor** condition under BM 3.0 criteria.

Semi-Natural Broadleaved Woodland [UKHab/BM 3.0 'Other woodland; broadleaved']

4.3.8 An area of broadleaved woodland was identified within the northwest of the site (Other woodland; broadleaved in Figure 1). It was described as a mix of mature, semi-mature and young trees with an understorey of scrub, grasses, and tall ruderal vegetation. Trees species described included a dominance of sycamore *Acer pseudoplatnus;* with occasional oak *Quercus* sp; native shrubs and fruit trees. This habitat does not meet the description of a specific NVC woodland type and does not support a specific NVC woodland community within the understorey. As such, it has been classified as 'Other woodland; broadleaved' under UKHab/BM 3.0.

4.3.9 A detailed condition assessment for this habitat was undertaken during the updated habitat condition assessment, which resulted in an overall score of 25 – **poor** condition. This represents a change for the BM 2.0 methodology used within the original baseline assessment (Ecus 2021), for which the criteria has changed significantly. Full results and descriptions are provided in Appendix 1. Table A3.

Dense scrub [UKHab/BM 3.0 'Bramble Scrub/Blackthorn Scrub']

4.3.10 Areas of dense scrub were identified around the site which had been previously classified as mixed scrub within the previous assessment by Ecus (2021). The update condition assessment however identified that all areas of dense scrub were dominated by a single-woody species (>80% cover).

4.3.11 Scrub within the northern and southern extent were dominated by bramble *Rubus fruticosus agg.* and have therefore been re-classified as Bramble Scrub (Figure 1). This habitat type is set as poor condition and does not required a condition assessment under BM 3.0

4.3.12 Within the central area of the site was an area of scrub dominated by young blackthorn. This has therefore be re-classified as Blackthorn Scrub (Figure 1). This area of scrub was assessed as **poor** condition due to a dominance of a single species of a similar age range, mowing edge management and absence of glades or rides due to small area.

4.3.13 This represents a change for the BM 2.0 methodology used within the original baseline assessment (Ecus 2021).

Ephemeral/Short perennial vegetation [UKHab/BM 3.0 'Sparsely vegetated land, ruderal/ephemeral]

4.3.14 This habitat is described as sparse vegetation over bare ground with a covering of wood chippings and branches (Ruderal/ephemeral in Figure 1). Vegetation present includes sparse early successional species including ruderal vegetation, young saplings, mosses, and herbs. From the most recent survey visit, this habitat has become dominated by scattered scrub. This habitat is classified as ' 'Sparsely vegetated land, ruderal/ephemeral' under UKHab/BM 3.0.

4.3.15 The condition criteria for this habitat type has not changed significantly from BM 2.0, and the habitat has deteriorated since the original assessment. Therefore, this habitat has been assessed as **poor** condition under BM 3.0.

Hard-Standing [UKHab/BM 3.0 'Developed land; sealed surface']

4.3.16 This habitat is represented by sealed concrete pathways and building foundations within the western extent of the site (Developed land; sealed surface in Figure 1). This habitat is classified as 'Developed land; sealed surface' under UKHab/BM 3.0. A condition assessment for this habitat type is not required.

Dry pond [UKHab/BM 3.0 'Pond (non-priority)]'

4.3.17 A dry ephemeral pond was reported within the northeast of the site (Pond (non-priority) in Figure 1) which did not hold any water at the time of survey and chocked with dense scrub. This habitat is classified as 'Pond (non-priority)' under UKHab/BM 3.0.

4.3.18 As a waterbody that does not hold permanent water on a regular basis or support any marginal/aquatic vegetation this habitat has been assessed as **poor** condition under BM 3.0 criteria.

Hedgerow Habitats

[UKHab/BM 3.0 'Native Hedgerow']

4.3.19 The hedgerow along the southwestern boundary of the site (H2 in Figure 1) and along the northern boundary (H4 in Figure 1) are described as a defunct hedgerows with moderate species diversity. This is classified as a 'Native hedgerow' under UKHab/BM 3.0.

[UKHab/BM 3.0 'Native Species-Rich Hedgerow with Trees']

4.3.20 The hedgerow within the central area of the site (H1 in Figure 1) and along the south-eastern boundary (H3 in Figure 1) are described as defunct species-rich hedgerows with trees. These are classified as a 'Native hedgerow with trees' under UKHab/BM 3.0.

4.3.21 From the updated condition assessment, H2 was intensively managed with an abundance of species evident of nutrient enrichment, therefore is has been assessed as **poor** condition. All other hedgerows were assessed as **moderate** condition within BM 3.0, in-line with the original assessment (Ecus 2021).

4.4 Species

Amphibians

4.4.1 The site is considered unlikely to support breeding amphibians but may have potential to be of some value for foraging and hibernation.

Bats

4.4.2 No confirmed bat roosts have been recorded on site and no evidence of bat presence was recorded during the ground-based tree inspections. Two trees were considered to have moderate roosting potential, with a further 8 individual trees and one group displaying low roosting potential. The Site is considered to display low suitability for foraging and commuting bats.

Birds

4.4.3 A number of bird species were recorded during the survey and site habitats are likely to be of up to local importance for nesting and foraging birds. This assessment is not considered robust as the site appears to support a low number of common birds and forms part of a wider habitat resource.

Reptile.

4.4.4 A reptile survey was undertaken in 2017 during which no evidence of reptiles was recorded. However,

the PEA (Ecus, 2020) concludes that the site may of value at up to local level due to presence of grass snake records within 370 m. It should be noted that this conclusion is not considered robust as a negative survey suggests that the site is unlikely to be of local importance.

Invertebrates

4.4.5 On-site habitats provide suitable habitat for a variety of invertebrates, with the areas of sparser vegetation cover and woodland providing potentially suitable habitat for the small heath butterfly. The Site was therefore considered to be of value to invertebrates at the local level.

Hedgehog

4.4.6 SBRC returned 19 records for hedgehog *Erinaceus europaeus.* The closest record was found approximately 1.2 km north-west of Site in 2013. The habitats on Site are suitable for use by hedgehog and number of small compost piles were recorded. Given the size of the Site, wider heavily urban area and presence of local records it is considered the Site may be of up to local importance to hedgehog.

4.5 Strategic Significance

Designated Sites

4.5.1 The site does not fall within any statutory or non-statutory designated sites for nature conservation, with the closest such designation Rabbit Ings Local Wildlife Site (LWS), located approx. 1.1 km northwest of the site. Full details of designated sites are provided within the original PEA report (Ecus, 2020).

Priority and important Habitat

4.5.2 No areas included within the Priority Habitat Inventory (England) have been identified within or adjacent to the site, with the closest such designation an area of deciduous woodland approx. 220m northeast of the site.

4.5.3 Although semi-improved grassland and broadleaved woodland habitat types are included within the Barnsley LBAP, the habitats present on site do not meet the criteria for the specific habitats detailed within the habitat action plans. In addition, the site is isolated by surrounding urban and residential areas. As such, all area-based habitats currently present have been assessed to have low strategic significance.

4.5.4 Ecus (2020) identified the presence of potential 'important' hedgerows within the site (H1 & H3 in Figure 1). However, a Hedgerow Regulations Assessment survey undertaken by Ecus in 2021 revealed that none of the hedgerow present met the required criteria. From the most recent site visit, all hedgerows are considered to be isolated by the surrounding residential development, contributing limited value to wildlife connectivity, as such they are considered to have low strategic significance.

Application of the Defra Metric 3.0

4.6 Baseline Biodiversity Value

4.6.1 Habitat types and their relative conditions are summarised below in Tables 1 & 2. Within the application site, area-based habitats generated: 4.61 HU; hedgerows: 3.00 HeU.

Table 1: Baseline Area-based Habitats, Condition and Unit Scores

Habitat Type	Condition	Strategic Significance	Area (ha)	Habitat Units (HU)
Other neutral grassland	Poor	Low	0.75	3.00
Modified grassland	Poor	Low	0.04	0.08
Other woodland; broadleaved	Poor	Low	0.20	0.80
Bramble scrub	Poor	Low	0.11	0.44
Blackthorn scrub	Poor	Low	0.01	0.04
Sparsely vegetated land; ruderal/ephemeral	Poor	Low	0.123	0.25
Developed land; sealed surface	N/A	Low	0.016	0.00
Ponds (non-priority habitat)	Poor	Low	0.001	0.00
			Total Habitat Units	**4.61**

Table 2: Baseline Hedgerow Habitats, Condition, and Hedgerow Unit Scores

Habitat Type	Condition	Strategic Significance	Length (km)	Hedgerow Units (HeU)
Native hedgerow	Moderate	Low	0.055	0.22
Native hedgerow	Poor	Low	0.04	0.08
Native species-rich hedgerow with trees	Moderate	Low	0.225	2.70
			Total Hedgerow Units	**3.00**

4.7 Habitats Retained/Enhanced

4.7.1 Figure 2 outlines the post-development habitats proposed as part of the current landscaping plan. The following habitats are to be retained and enhanced as part of current landscaping plans:

- **Other neutral grassland – 0.08 ha:** Existing semi-improved grassland in the northeast of the site is due to be retained and enhanced to 'good' condition as part of public open space. To achieve this, the existing topsoil will be carefully removed to allow the installation of the attenuation tank followed by the reinstatement of topsoil on completion. The habitat will then be manged by a low intensity mowing regime, with supplementary wildflower seeding, to allow a rich diversity of grasses and wildflowers to establish.
- **Native Hedgerow – 0.055 km:** H4 along the north-eastern boundary of the site will be retained and enhanced to 'good' condition. This will be achieved through the planting of native WHIPS (young tree/shrub saplings) to close canopy gaps, along with management through a low intensity pruning regime. This will allow a dense mature canopy layer to establish with a diverse mix of woody species.
- **Native Species-rich Hedgerow with Trees – 0.12 km:** H3 along the south-eastern boundary will be retained and enhance to 'good' condition. This will be achieved through the planting of native WHIPS to close canopy gaps and management through a low intensity pruning regime. This will allow a dense mature canopy layer to establish with a rich diversity of woody species alongside standard mature trees.

4.8 Habitats lost

4.8.1 Table 3 & 4 detail the habitats lost as part of the current landscaping plan and the associated loss of biodiversity value.

4.8.2 **Table 3. Area-based habitat to be lost as part of the proposed development**

Habitat	Area lost (ha)	Biodiversity Units lost (HU)	Description
Other neutral grassland	0.67	4.92	Loss of remaining semi-improved grassland and tall ruderal vegetation
Modified grassland	0.04	0.16	Loss of poor semi-improved grassland in western area of site
Other woodland; broadleaved	0.20	1.60	Loss of all woodland, with the exception of 5 trees along the northern boundary
Mixed Scrub	0.12	0.96	Loss of all areas of dense scrub within site
Sparsely vegetated land; ruderal/ephemeral	0.12	0.25	Loss of all areas of ephemeral/short perennial vegetation
Developed land; sealed surface	0.016	0.00	Loss of concrete path and building foundations in western area of site
Ponds (Non-Priority Habitat)	0.001	0.00	Loss of dry pond within northeast of the site

Table 4. Hedgerow habitats to be lost as part of the proposed development

Habitat	Length lost (km)	Biodiversity Units lost (HeU)	Description
Native hedgerow	0.04	0.16	Loss of H2 to facilitate development
Native species-rich hedgerow with trees	0.11	1.45	Loss of H1 to facilitate development

4.9 Habitats created

4.9.1 Newly created habitats, not present during the baseline habitat survey include:

- **Other neutral grassland – 0.03 ha:** Open areas of public open space are to be seeded with a wildflower grass seed mix and managed via a low intensity mowing regime (Species-rich grassland in Figure 2). This will allow a rich diversity of flowering plants and grasses to establish, with a varied uneven sward. Grassland of this type will create an abundant food source for **native** invertebrates, providing a valuable prey resource for other species, such as bird and bats. It is anticipated that these habitat areas can eventually achieve 'good' condition following this management strategy.
- **Other woodland; broadleaved – 0.02 ha:** Native whips will be planted around the public space within the north-eastern and western areas of public space (Woodland planting) in Figure 2). These areas are anticipated to become established woodland habitats and will be lightly managed to prevent safety hazards and control any invasive species, should they be present in future. It is anticipated that these habitat areas can eventually achieve 'moderate' condition following this management strategy.
- **Mixed scrub – 0.11 ha:** Native mixed scrub will be established within the north-eastern public open space and as part of landscaping at the front of the residential dwellings (Mixed scrub in Figure 2). A mixture of native woody species will be used, of a varied age range (young and semi-mature shrubs) manged on an ad-hoc pruning regime, when required. It is anticipated that areas of scrub can eventually achieve 'good' condition following this management strategy, due to the presence of surrounding semi-natural habitats. Incidences of this habitat within the development areas are unlikely to form a well-developed semi-natural edge (required for good condition), and therefore, are limited to a 'moderate' condition state.

- **Ponds (Non - priority habitat) – 0.0014 ha:** A wildlife pond will be included within the public open space to the west of the site as mitigation for the loss of the dry pond in the north (Wildlife pond in Figure 2). This will be formed with a gently sloping, shallow topology to allow submerged, emergent, and floating aquatic vegetation to establish, and help develop a rich diversity of aquatic invertebrates. Marginal vegetation will be allowed to naturally establish to create a semi-natural pond buffer, however, supplementary planting and seeding may be required in the absence of significant natural progress. It is anticipated that the pond can eventually achieve 'moderate' condition following this management strategy and will resemble a priority habitat pond type.
- **Urban tree – 0.0127ha:** Addition tree planting will be included around the development site and public open space in addition to the trees retain trees along the north-western boundary (Urban trees in Figure 2) . Tree will be planted as sapling and allowed to mature in the absence of significant pruning. Any failed saplings will be replaced where necessary. It is anticipated that trees can eventually achieve 'moderate' condition following this management strategy.
- **Vegetated garden – 0.36 ha:** Residential gardens to be rotovated and expected to become vegetated gardens (Vegetated gardens in Figure 2). Management will be controlled by residents and therefore habitat condition is set as 'poor' for this habitat type.
- **Developed land; sealed surface – 0.65 ha:** Man-made sealed surfaces as part of residential buildings, driveways, and access roads, to be created as part of the residential development (Access road & Development area in Figure 2). This habitat is considered to have a negligible value for biodiversity.
- **Native Hedgerow – 0.066 km:** Native single species hedgerows will be planted as part of landscaping around the residential dwellings (Native hedgerow in Figure 2). Hedges will be manged for aesthetic purposes to a minimum 1.5m height x 1.5 width but will be devoid of any significant canopy gaps and significant nutrient inputs. It is anticipated that hedgerows can eventually achieve 'moderate' condition following this management strategy.
- **Native species-rich hedgerow with trees – 0.069 km:** Native whips to be planted along the south-eastern boundary to extent H3 and connect to H4 (Native species-rich hedgerow with trees in Figure 2). This will form an extension of H3 and will be manged in the same manner. It is anticipated that this hedgerow can eventually achieve 'good' condition following this management strategy.

4.10 Change in biodiversity units

4.10.1 Target condition for habitats, post-development, is based on most favourable condition considered to be feasible within a 30-year period (the minimum management period recommended by the government with the biodiversity net gain scheme), following the proposed habitat management regime to be implemented. Time to target values are based on those provided by the BM 3.0 Calculation Tool (Natural England, 2021)

4.10.2 Habitat gains and losses, biodiversity values, target condition and suggested management associated with the proposed development of the site are detailed within Table 5 & 6, with full detailed results provided in Appendix 1. Post-development, area-based habitats generated: 2.36 HU; and hedgerows: 3.22 HeU. Representing a biodiversity net change of -48.74% for habitats; and 7.23% for hedgerows.

Table 5: Post-development area-based Habitats, Condition and Unit Scores

Habitat Type	Condition	Time-to-Target (years)	Strategic Significance	Area (ha)	Habitat Units (HU)
Developed land; sealed surface	N/A	N/A	Low	0.65	0.00
Vegetated garden	Poor	1	Low	0.36	0.69
Ponds (Non-priority Habitat)	Moderate	3	Low	0.0014	0.01
Other neutral grassland	Moderate	5	Low	0.11	0.74
Other woodland; broadleaved	Moderate	15	Low	0.02	0.09
Mixed scrub	Moderate	5	Low	0.08	0.54
Mixed scrub	Good	10	Low	0.03	0.25
Urban Tree	Moderate	27	Low	0.0127	0.03
				Total Habitat Units	**2.36**

Table 6: Post-development Hedgerow Habitats, Condition, and Hedgerow Unit Scores

Habitat Type	Condition	Time-to-Target (years)	Strategic Significance	Length (km)	Hedgerow Units (HeU)
Native Species Rich Hedgerow with trees	Good	20	Low	0.19	2.67
Native Hedgerow	Moderate	5	Low	0.121	0.54
				Total Hedgerow Units	**3.22**

Table 6.1: Summary of chance in Biodiversity Units

Total net unit change (including all on-site & off-site habitat retention, creation & enhancement)	Habitat units	**-2.25**
	Hedgerow units	**0.22**
	River units	**0.00**

5. Recommendations

5.1 On-site recommendations

5.1.1 The application of the Defra Metric indicates that the current landscaping plan would result in a net change in biodiversity of -48.74% for area-based habitats and 7.23% for hedgerow habitats. While this represents a net gain in biodiversity of 0.22 HeU for hedgerows, there is predicted to be a deficit of 2.25 HU for area-based habitats. it would not be possible to achieve a no net loss on site using the metric without significant impacts up on the scheme. On-site solutions are always preferable to offsite solutions and it is understood that there is no offsetting scheme available with Barnsley. It is therefore recommend that a range of on-site species specific measures are implemented to ensure that the site's value and carrying capacity for locally important species is conserved, thereby meeting the requirements of the Barnsley Local Plan.

5.1.2 It is important to note that the biodiversity metric is a proxy for determining biodiversity value and does not necessarily represent actual real-world biodiversity and/or determine the actual ecological value of the site being assessed. For example, the calculation tool does not take into to account the spatial location of the site, surrounding habitats and wider landscape connectivity and does not consider value for locally important species. In this case, the site is surrounded by residential development and highly disturbed anthropogenic environments, not forming any part of any important ecological corridor or migration route. Therefore, it would be possible to improve the relative biodiversity value of the site, by undertaking on site measures that improve habitat provisions for protected and notable species likely to be present in local area, rather than creation of generic habitats with "higher biodiversity value" under the metric.

5.1.3 Current landscaping plans include the creation and enhancement of species-rich grassland. This will help develop a richer diversity of flowering plants and grasses, not previously found within the site. When properly managed, this will increase the local habitat resource and encourage a greater diversity of native invertebrates, as well as providing suitable foraging and sheltering habitat for amphibians, reptiles, and small mammals.

5.1.4 In addition, the retention and enhancement of hedgerows along the south-eastern and north-eastern boundary of the site will help establish a valuable foraging resource for both bats and birds, with the 'gapping-up' and connecting of the two hedgerows (H3 and H4) potentially improving connectivity across the site over current conditions where hedgerows were reported to be relatively defunct.

5.1.5 The addition of a new wildlife pond within the western areas of the site will also act to improve site condition for aquatic and semi-aquatic species, with the dry pond in its current condition offering little value for these species' groups. The development of a pond with a diversity of emergent and aquatic vegetation surrounded by semi-natural habitat will provide suitable breeding habitat for a range of amphibian species, including great crested newt, as well as aquatic invertebrates. Habitat of this type and condition is not currently present within the site.

5.1.6 To further improve the site the following species specific habitat provisions are recommended:

- Bat and bird roosting boxes to be installed with the retained trees along the north-western boundary of the site;
- Bat and bird roosting boxes to be installed, or designed within, the residential houses as part of the development;
- Refugia/hibernacula in the form of external and buried log piles within areas of public open space to provide suitable shelter for amphibians and reptiles;
- The development of a bat sensitive lighting plan to help reduce light disturbance on bat foraging/commuting;

- The inclusion of 'hedgehog hotels' within the areas of public open space and at site boundaries. Hedgehog passage to be maintained through garden fences;
- Inclusion of insect hotels within areas of public open space and at site boundaries; and
- Compost bins to be provided to all residents.

5.1.7 With the addition of these habitat provisions habitat provisions provided will improve the site over current conditions for specific species by providing habitat features that are not currently present.

Summary of predicted changes in biodiversity value

Ecological Receptor	Change in resource	Indicator
Semi-improved grassland	Loss of large areas of poor quality semi-natural grassland, creation of wildflower areas and residential gardens. Net loss of Habitat Unit value, gain in hedgerow value.	
Broadleaved Woodland	Loss of large are of poor quality woodland, creation of new young woodland to be managed to better condition, but at a smaller area. Net loss of Habitat Unit value.	
Trees/ Scrub	Removal of self-set scrub, retention of boundary trees and planting of whips and urban trees	
Hedgerows	Retention and improvement of existing hedgerows. Gain in hedgerow unit values.	
Amphibians	Loss of dry pond and potential foraging habitat, creation of new pond with associated marginal habitat and foraging at margins of site.	
Bats	No confirm roosts, low to moderate tree roost potential, low foraging and commuting value. Installation of new tree and building mounted roosts, addition of invertebrate friendly planting and nigh flowering plants. Maintain and improve hedgerow connection into wider landscape, bat friendly lighting to be incorporated into scheme.	
Birds	Roosting potential retained in trees, loss of scrub habitat. Installation of bird boxes and replacement of natural habitats with residential gardens and ornamental planting.	
Hedgehog	Existing habitat of potential value to local populations. Compost heaps to be replaced with specific hedgehog hotels and habitat piles, with residents provided with compost bins. Hedgehogs often associated with urban habitats. Creation of hedgehog pass through fences will maintain connectivity.	
Invertebrates	Existing habitats likely to support a range of naturally occurring invertebrates. Installation of invertebrate hotels, habitat piles and ornamental and wildflower planting are likely to more than offset any impact. Incorporation of night flowering plants will encourage moth populations.	
Reptiles	Historic surveys indicate no reptiles on the site. Creation of habitat piles and retention and enhancement of hedgerow connectivity maintains potential for future use of the site by reptiles.	

5.2 Habitat Management and Monitoring

5.2.1 In order to achieve the predicted biodiversity value post-development, a detail environmental habitat management plan will be required for all proposed habitat creation and restoration both within the development site and for any planned off-site mitigation. This will outline the appropriate management methods and timings to be implemented, including a monitoring schedule of the site habitats to ensure that the site achieves the target biodiversity value.

5.2.2 It is recommended that a monitoring visit f the site is undertaken every five years post-development. This will involve an updated biodiversity assessment of the site by a suitably qualified ecologist (SQE) to track the progress on the proposed habitat interventions. Any potential issues with the management strategy can then be highlighted at an early stage, with corrective solutions implemented to ensure the predicted biodiversity value is achieved.

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Figure 1. Baseline Habitat Map



Legend

- Development boundary
- Blackthorn scrub
- Bramble scrub
- Built linear features
- Modified grassland
- Other neutral grassland
- Other woodland; broadleaved
- Ruderal/Ephemeral
- Ruderal; Tall herb
- Native Hedgerow
- Native Species Rich Hedgerow with trees
- Pond (non-prority)
- Scattered trees
- Scattered scrub

0 20 40 m

High Street, Shafton

Figure 1. Baseline Habitat Map

Date	May 2022
Scale	1:750@A3
Drawing Ref:	0172/F1

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Figure 2. Post-Development Habitat



Legend

- Development boundary
- Access road
- Mixed scrub
- Vegetated gardens
- Species-rich grassland
- Woodland planting (WHIPS)
- WIldlife pond
- Development area
- Native hedgerow
- Native species-rich hedgerow with trees
- Urban trees

0 20 40 m

High Street, Shafton

Figure 2. Post-Developement Habitat Map

Date	May 2022
Scale	1:750@A3
Drawing Ref:	0172/F2

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Appendix 1. Baseline Biodiversity Condition Assessment Results

Grassland

Other neutral grassland - Arrhenatherum neutral grassland

Table A1. Condition assessment of other neutral grassland within the site

Criteria	Description	Pass/Fail
1	The appearance and composition of the vegetation closely matches characteristics of the specific grassland habitat type (see UKHab definition). Wildflowers, sedges and indicator species for the specific grassland habitat type are very clearly and easily visible throughout the sward.	Fail
2	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20 per cent is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.	Fail
3	Cover of bare ground between 1% and 5%, including localised areas, for example, rabbit warrens.	Pass
4	Cover of bracken less than 20% and cover of scrub (including bramble) less than 5%.	Fail
5	There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981). Combined cover of undesirable species and physical damage (such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities) accounts for less than 5% of total area.	Fail
Final Assessment		**Condition**
Fails most criteria – Poor condition		**Poor**

Modified Grassland

Table A2. Condition assessment of modified grassland within the site

Criteria	Description	Pass/Fail
1	There must be 6-8 species per m^2. Note - if a grassland has 9 or more species per m^2 it should be classified as a moderate distinctiveness grassland habitat type. **NB - this criterion is non-negotiable for achieving good condition.**	Pass
2	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20 per cent is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.	Fail
3	Some scattered scrub (including bramble) may be present, but scrub accounts for less than 20% of total grassland area. Note - patches of shrubs with continuous (more than 90%) cover should be classified as the relevant scrub habitat type.	Pass
4	Physical damage evident in less than 5% of total grassland area, such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities.	Fail
5	Cover of bare ground between 1% and 5%, including localised areas, for example, rabbit warrens.	Fail
7	There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981) and undesirable species make up less than 5% of ground cover.	Fail
Final Assessment		**Condition**
Fails most criteria – Poor condition		**Poor**

Woodland

Other woodland; broadleaved

Table A3. Condition assessment of other woodland; broadleaved within the site

Indicator		Assessment Score	Justification
1	Age distribution of trees	One age class present (1)	Only young cherry trees and sycamore saplings present – All other trees between 20 – 150 years
2	Wild, domestic and feral herbivore damage	No significant browsing damage evident in woodland (3)	No signs of damage or access by herbivores
3	Invasive plant species	No invasive species present in woodland (3)	No invasive species observed
4	Number of native tree species	Five or native tree or shrub species found across woodland (3)	Five or more native species identified – See Ecus 2020 for full species list.
5	Cover of native tree and shrub species	< 50% of canopy trees and <50% of understory shrubs are native (1)	Canopy dominated by sycamore
6	Open space within woodland	10 – 20% of woodland has areas of temporary open space, unless woodland is <10ha in which case threshold of 10% does not apply (3)	Woodland less the 10ha, with no areas of recent clearance or areas where woodland would be expected to re-generate.
7	Woodland regeneration	One or two classes only present in woodland (2)	Young cherry trees and sycamore saplings only present as regeneration.
8	Tree health	Tree mortality less than 10%, no pests or diseases and no crown dieback (3)	No significant signs of diseases, pests or dieback present.
9	Vegetation and ground flora	No recognisable NVC community (1)	Understorey dominated by bramble *Rubus fruticosus agg*.; and cow parsley Anthriscus sylvestris. Not recognisable as a woodland NVC community.
10	Woodland vertical structure	One or less storey across all survey plots (1)	Complex canopy storey present only. No distinct canopy separation.
11	Veteran trees	No veteran trees present in woodland (1)	No veteran trees observed
12	Amount of deadwood	Less than 25% of all survey plots within the woodland parcel have standing deadwood, large dead branches/ stems and stumps (1)	No significant dead wood present, only small twigs and debris.
13	Woodland disturbance	Less than 1 hectare in total of nutrient enrichment across woodland area and/ or less than 20% of woodland area has damaged ground (2)	Woodland understorey is dominated by vegetation indicative of nutrient enrichment by less than 1 ha.
Final Score		**25**	
Condition		**Poor**	

Heathland and Shrub

Blackthorn Scrub

Table A4. Condition assessment of blackthorn scrub within the site

Criteria	Description	Pass/Fail
1	Habitat is representative of UKHab description (where in its natural range). There are at least three woody species, with no one species comprising more than 75% of the cover (except common juniper, sea buckthorn or box, which can be up to 100% cover).	Fail
2	There is a good age range – all of the following are present: seedlings, young shrubs and mature shrubs.	Fail
3	There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981) and undesirable species[1] make up less than 5% of ground cover.	Pass
4	The scrub has a well-developed edge with scattered scrub and tall grassland and/or herbs present between the scrub and adjacent habitat(s).	Fail
5	There are clearings, glades or rides present within the scrub, providing sheltered edges.	Fail
Final Assessment		**Condition**
Fails most criteria – Poor condition		**Poor**

Sparsely Vegetated Land

Ruderal/Ephemeral

Table A5. Condition assessment of ruderal/ephemeral land within the site (urban criteria)

Criteria	Description	Pass/Fail
1	Vegetation structure is varied, providing opportunities for insects, birds and bats to live and breed. A single ecotone (i.e. scrub, grassland, herbs) should not account for more than 80% of the total habitat area.	Fail
2	There is a diverse range of flowering plant species, providing nectar sources for insects. These species may be either native, or non-native but beneficial to wildlife. NB - To achieve GOOD condition, criterion 2 must be satisfied by native species only (rather than non-natives beneficial to wildlife).	Fail
3	Invasive non-native species (Schedule 9 of WCA) cover less than 5% of total vegetated area. NB - To achieve GOOD condition, criterion 3 must be satisfied by a complete absence of invasive non-native species (rather than <5% cover).	Pass
Final Assessment		**Condition**
Fails most criteria – Poor condition		**Poor**

Rivers and Lakes

Ponds (non-priority)

Table A6. Condition assessment of ruderal/ephemeral land within the site (urban criteria)

Criteria	Description	Pass/Fail
1	The pond is of good water quality, with clear water (low turbidity) indicating no obvious signs of pollution. Turbidity is acceptable if the pond is grazed by livestock.	Fail
2	There is semi-natural habitat (i.e. moderate distinctiveness or above) for at least 10 m from the pond edge.	Fail
3	Less than 10% of the pond is covered with duckweed or filamentous algae.	Pass
4	The pond is not artificially connected to other waterbodies, either via streams, ditches or artificial pipework.	Pass
5	Pond water levels should be able to fluctuate naturally throughout the year. No obvious dams, pumps or pipework.	Pass
6	There is an absence of non-native plant and animal species[2].	Pass
8	In non-woodland ponds, plants, be they emergent, submerged or floating (excluding duckweeds)[3], should cover at least 50% of the pond area that is less than 3 m deep.	Fail
9	The surface of non-woodland ponds is no more than 50% shaded by woody bankside species.	Fail
Final Assessment		**Condition**
Fails 4 criteria – Poor condition		**Poor**

Native Hedgerows

Table A7. Condition assessment of native hedgerows within the site

Attributes and functional groupings (A, B, C, D & E)		Criteria (the minimum requirements for 'favourable condition')	Description	H1	H2	H3	H4
A1.	Height	>1.5 m average along length	The average height of woody growth estimated from base of stem to the top of shoots, excluding any bank beneath the hedgerow, any gaps or isolated trees.	Pass	Pass	Pass	Pass
A2.	Width	>1.5 m average along length	The average width of woody growth estimated at the widest point of the canopy, excluding gaps and isolated trees.	Pass	Fail	Pass	Pass
B1.	Gap - hedge base	Gap between ground and base of canopy <0.5 m for >90% of length (unless 'line of trees')	This is the vertical gappiness of the woody component of the hedgerow, and its distance from the ground to the lowest leafy growth.	Fail	Pass	Fail	Fail
B2.	Gap - hedge canopy continuity	· Gaps make up <10% of total length and · No canopy gaps >5 m	This is the horizontal gappiness of the woody component of the hedgerow. Gaps are complete breaks in the woody canopy (no matter how small).	Fail	Fail	Fail	Fail
C1.	Undisturbed ground and perennial vegetation	>1 m width of undisturbed ground with perennial herbaceous vegetation for >90% of length: · measured from outer edge of hedgerow, and · is present on one side of the hedge (at least)	Strip of vegetation with no visible signs of significant management extending from outer most edge of hedgerow	Pass	Fail	Pass	Pass
C2.	Undesirable perennial vegetation	Plant species indicative of nutrient enrichment of soils dominate <20% cover of the area of undisturbed ground	The indicator species used are nettles (Urtica spp.), cleavers (Galium aparine) and docks (Rumex spp.). Their presence, either singly or together, should not exceed the 20% cover threshold.	Pass	Fail	Pass	Pass
D1.	Invasive and neophyte species	>90% of the hedgerow and undisturbed ground is free of invasive non-native and neophyte species	Neophytes are plants that have naturalised in the UK since AD 1500.	Pass	Pass	Pass	Pass
D2.	Current damage	>90% of the hedgerow or undisturbed ground is free of damage caused by human activities	This criterion addresses damaging activities that may have led to or lead to deterioration in other attributes.	Pass	Fail	Pass	Pass
E1.	Tree age	At least one mature tree per 30m stretch of hedgerow. A mature tree is one that is at least 2/3 expected fully mature height for the species.	This criterion addresses if there are sufficient mature trees (within the scope of planning timescales) which are of higher value to biodiversity.	Pass	N/A	Fail	N/A
E2.	Tree health	At least 95% of hedgerow trees are in a healthy condition (excluding veteran features valuable for wildlife). There is little or no evidence of an adverse impact on tree health by damage from livestock or wild animals, pests or diseases, or human activity.	This criterion identifies if the trees are subject to damage which compromises the survival and health of the individual specimens.	Pass	N/A	Pass	N/A
Final Assessment							
H2 intensively managed with signs of nutrient enrichment				**Moderate**	**Poor**	**Moderate**	**Moderate**

Appendix 2. Grassland Survey Results

Table A8. Species diversity and abundance recorded within each survey plot

Quadrant	1	
BNGR	SE 39403 10938	
Species Recorded		
Common name	***Scientific name***	***Abundance****
False oat-grass	*Arrhenatherum elatius*	62
Red fescue	*Festuca rubra*	10
Soft-rush	*Juncus effusus*	2
Vetch sp	*Vicia sp*	5
Quadrant	2	
BNGR	SE 39435 10904	
Species Recorded		
Common name	***Scientific name***	***Abundance****
Common bent	*Agrostis capillaris*	1
Meadow foxtail	*Alopecurus pratensis*	1
Sweet vernal-grass	*Anthoxanthum odoratum*	5
False oat-grass	*Arrhenatherum elatius*	50
Red fescue	*Festuca rubra*	15
Yorkshire-fog	*Holcus lanatus*	25
Jointed/ sharp-flowered rush	*Juncus articulates/ acutiflorus*	4
Ribwort plantain	*Plantago lanceolata*	2
Rough meadow-grass	*Poa trivialis*	1
Meadow buttercup	*Ranunculus acris*	2
Common sorrel	*Rumex acetosa subsp. acetosa*	11
Dandelion	*Taraxacum sp*	1
Red clover	*Trifolium pratense*	4
Quadrant	3	
BNGR	SE 39387 10868	
Species Recorded		
Common name	***Scientific name***	***Abundance****
False oat-grass	*Arrhenatherum elatius*	35
Red fescue	*Festuca rubra*	80
Yorkshire-fog	*Holcus lanatus*	42
Ribwort plantain	*Plantago lanceolata*	2
Quadrant	3	
BNGR	SE 39387 10868	
Species Recorded		
Common name	***Scientific name***	***Abundance****
False oat-grass	*Arrhenatherum elatius*	5
Creeping thistle	*Cirsium arvense*	6
Cock's-foot	*Dactylis glomerata*	73
Red fescue	*Festuca rubra*	45
Ribwort plantain	*Plantago lanceolata*	15
Meadow buttercup	*Ranunculus acris*	1
Creeping buttercup	*Ranunculus repens*	18
Common sorrel	*Rumex acetosa subsp. acetosa*	12
Common nettle	Urtica dioica	5

*Total number of 0.1m x 0.1m grid squares for which species was identified within the quadrant

Table A9. Overall species diversity and abundance

Overall Species Recorded			
Common name	***Scientific name***	***Average Abundance****	***Relative DAFOR abundance***
False oat-grass	*Arrhenatherum elatius*	38.00	Frequent
Red fescue	*Festuca rubra*	38.00	Frequent
Soft-rush	*Juncus effusus*	0.50	Rare
Vetch sp	*Vicia sp*	1.25	Rare
Common bent	*Agrostis capillaris*	0.25	Rare
Meadow foxtail	*Alopecurus pratensis*	0.25	Rare
Sweet vernal-grass	*Anthoxanthum odoratum*	1.25	Rare
Yorkshire-fog	*Holcus lanatus*	16.75	Occasional
Jointed/ sharp-flowered rush	*Juncus articulates/ acutiflorus*	1.00	Rare
Ribwort plantain	*Plantago lanceolata*	4.75	Rare
Rough meadow-grass	*Poa trivialis*	0.25	Rare
Meadow buttercup	*Ranunculus acris*	0.75	Rare
Common sorrel	*Rumex acetosa subsp. acetosa*	5.75	Rare
Dandelion	*Taraxacum sp*	0.25	Rare
Red clover	*Trifolium pratense*	1.00	Rare
Creeping thistle	*Cirsium arvense*	1.50	Rare
Cock's-foot	*Dactylis glomerata*	18.25	Occasional
Creeping buttercup	*Ranunculus repens*	4.50	Rare
Common nettle	*Urtica dioica*	1.25	Rare
Average no. of species per m²		**5**	

*Average number of 0.1m x 0.1m grid squares for which species was identified over all quadrants

Appendix 3. Post-Development Changes in Biodiversity Value

Table A10. Post-Development Area-Based Habitat Gains/Losses

Habitat Type	Impact/Action	Target Condition	Strategic Significance	Time-to Target	Area (ha)	Habitat Units (HU)	Habitat Management
Developed land; sealed surface	Creation	N/A	Low	N/A	0.65	0.00	Residential buildings, driveways, pavements, and access roads
Developed land; sealed surface	Loss	N/A	Low	N/A	0.04	0.00	Loss of concrete building foundations and access path
Vegetated garden	Creation	Poor	Low	1	0.36	0.69	Rotovated residential gardens – To be manged by residents
Ponds (non-priority Habitat)	Creation	Moderate	Low	5	0.0014	0.01	Wildlife pond – Natural establishment of aquatic vegetation with supplementary planting if required.
Ponds (non-priority habitat)	Loss	Poor	Low	N/A	0.001	0.00	Loss of dry pond in northeast of site
Other neutral grassland	Creation	Moderate	Low	5	0.03	0.20	Species-rich grassland – Low intensity mowing regime
Other neutral grassland	Enhancement	Moderate	Low	10	0.08	0.54	Enhancement of semi-improved grassland in northeast of site - Low intensity mowing regime with supplementary wildflower seeding
Other neutral grassland	Loss	Poor	Low	N/A	0.67	-2.68	Loss of semi-improved grassland within site
Other woodland; broadleaved	Creation	Moderate	Low	15	0.02	0.09	Woodland planting – Allowed to naturally establish, with ad-hoc management where required.
Other woodland; broadleaved	Loss	Poor	Low	N/A	0.20	-0.80	Loss of broadleaved woodland within site
Mixed scrub	Creation	Moderate	Low	5	0.08	0.54	Native shrub planting –Aesthetic pruning regime
Mixed scrub	Creation	Good	Low	10	0.03	0.25	Native shrub planting – Low intensity pruning regime
Bramble scrub	Loss	Poor	Low	N/A	0.11	-0.44	Removal of bramble scrub to facilitate development and habitat creation
Blackthorn scrub	Loss	Poor	Low	N/A	0.01	-0.04	Removal of blackthorn scrub to facilitate development and habitat creation
Urban Tree	Creation	Moderate	Low	27	0.0104	0.03	Native sapling planting – Ad-hoc pruning management where required; Failed saplings to be replaced
Urban Tree	Retention	Moderate	Low	N/A	0.0023	0.01	Retention of trees along north-western boundary
Post-Development Biodiversity Units (HU)						4.61	
Baseline Biodiversity Units (HU)						2.36	
Percentage Change in Biodiversity (%)						-48.74%	

Table A2. Post-Development Hedgerow-Based Habitat Gains/Losses

Habitat Type	Impact/Action	Target Condition	Strategic Significance	Time-to Target	Length (km)	Hedgerow Units (HeU)	Habitat Management
Native Species Rich Hedgerow with trees	Creation	Good	Low	20	0.069	0.61	Planting of native WHIPS to extend H3 and connect to H4 – Management vie low intensity pruning regime
	Enhancement	Good	Low	4	0.12	2.06	Enhancement of H3 through planting of native WHIPS to 'gap-up' - Management vie low intensity pruning regime
	Loss	Moderate	Low	N/A	0.11	-1.26	Loss of H1 within site
Native Hedgerow	Creation	Moderate	Low	5	0.066	0.22	Planting of single species native hedgerow as landscaping – Management via aesthetic pruning
	Enhancement	Good	Low	2	0.055	0.32	Enhancement of H4 through planting of native WHIPS to 'gap-up' - Management vie low intensity pruning regime
	Loss	Poor	Low	N/A	0.04	-0.08	Loss of H2 within site
Post-Development Biodiversity Units (HeU)						3.22	
Baseline Biodiversity Units (HeU)						3.00	
Percentage Change in Biodiversity (%)						7.23%	