

LAND EAST OF THE COMMON, BARWELL

BIODIVERSITY NET GAIN ASSESSMENT

PCAJ183/BNG/V2/FINAL

Submitted to:

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SUMMARY

Delivering biodiversity enhancement has been a key consideration from the outset. As such, the development is concentrated in the western part of the application site (Fields 1-5 and the north-western quarter of Field 6). Field 6 will also be used for the main site entrance and access road. With the exception of a proposed footpath and some areas of woodland screen planting, Fields 8-10 are not directly impacted and would be retained for nature conservation purposes. This will also be the case for part of Field 7. An adjacent field (Field 11) that is outside of the application site but within the ownership of the applicant will also be part of the biodiversity enhancement plan. Impacts to boundaries will be associated with the removal of sections of boundaries 18 and 19 to facilitate access roads and the removal of a section of hedgerow 17 to facilitate the main access to the site off 'The Common'. All other boundaries and associated mature trees will be retained.

Within the retained fields, targeted habitat enhancement measures will be particularly associated with grassland restoration and enhancement. The key objective will be to establish these fields as examples of the lowland meadow priority habitat type. There will also be some areas of woodland screen planting and mixed scrub in these fields which will also provide a different habitat type in the long term. Retained boundaries will also be subject to immediate restoration in the form of restocking, coppicing etc. in combination with long-term management on a long rotation. These measures are entirely consistent with the historic habitats that would have once been present here prior to agricultural intensification.

The proposal has been tested using the Natural England biodiversity Metric 4.0. Whilst only at the outline stage, with the commitment to retain and reinstate three on site and an adjacent offsite field to lowland meadow represents an important habitat enhancement. From a current baseline of 53.06 on-site and 4.84 off-site habitat units, this approach would deliver 58.75 on-site and 11.65 off-site (adjacent) post development units. This equates to net biodiversity gain of 23.55%. Clearly, as the detailed elements of any application progress, there may be other aspects of the design which impact on this score. As a precautionary approach has been adopted, this should be an increase in score, for example, as more detail about the main urban design evolves. Following this initial calculation, biodiversity Metric 4.0 should therefore continue to be used to test the more detailed design of the site. It is clear, however, that this design should continue to target lowland meadows as the priority habitat for the retained pastures. With hedgerows also being largely retained and subject to appropriate long-term management, this also delivers a significant improvement. The current hedges on site deliver 24.55 units. This will increase to 29.67 units in the long-term which equates to a net gain of 20.83%.

1.0 INTRODUCTION

This report provides a biodiversity net gain (BNG) assessment for an area of land located to the south of Dawson's Lane, Barwell, Leicestershire (NGR SP 451 965). A site location plan is provided as Figure 1. The site, which covers approximately 10.92 hectares will be subject to a planning application for residential development and comprises of ten pasture fields with associated field boundary hedgerows. It borders Dawson's Lane on its northern side, farmland on its southern side, partly farmland and 'The Common' on its western side and partly allotments and a small holding on its eastern side.

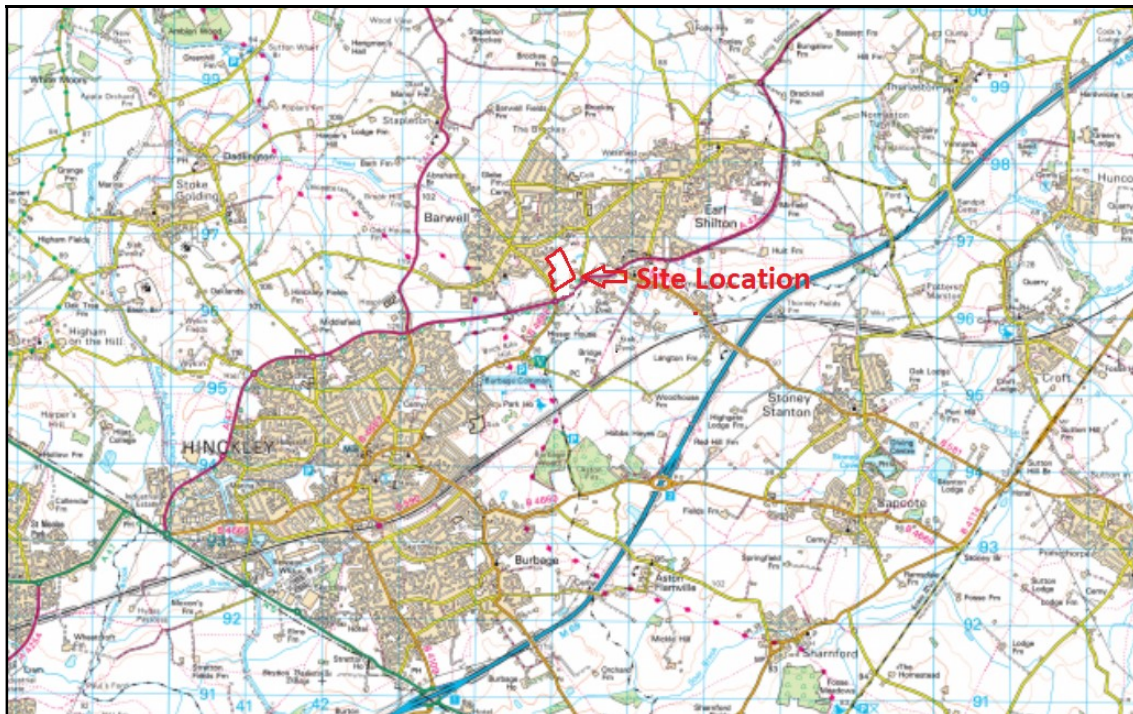


Figure 1: Site Location

The proposal is based upon a 95-unit development that is concentrated in the western part of the application site. This area covers approximately 3.84ha of the wider 10.92ha site, within which there will be approximately 2.88ha of residential development.

The overall general land distribution across the site will be approximately 2.86ha of residential development, 0.95ha for the primary access route, 0.93ha of amenity grassland, 3.09ha of meadow, 1.69ha of hedgerow and scrub, 0.96ha of woodland and 0.44 which will be used for a sustainable drainage system.

This report should be read in conjunction with the detailed Ecological Impact Assessment that has been prepared to inform the planning application (Land East of the Common, Barwell: Ecological Survey and Assessment, Paul Chester & Associates, 2023).

2.0 POLICY AND LEGISLATION

The National Planning Policy Framework (NPPF3) (Ministry of Housing, Communities and Local Government, 2021) sets out requirements for the delivery of BNG, and this is supported within Planning Policy Guidance (PPG) (updated July 2021). In particular the PPG promotes the delivery of measurable biodiversity net gain (BNG) through the creation and enhancement of habitats alongside development.

Mandatory BNG was introduced by the Environment Act in November 2021. Whilst the Environment Act (2021) sets out the framework for BNG, the relevant primary legislation for the statutory framework for BNG is principally set out under Section 90A and Schedule 7A (Biodiversity Gain in England) of the Town and Country Planning Act 1990. This legislation was inserted into the Act by Schedule 14 of the Environment Act 2021 and includes amendments made by the Levelling Up and Regeneration Act 2023 and the Biodiversity Gain (Town and Country Planning) (Consequential Amendments) Regulations [2024]. It is envisaged that this will come into effect in January 2024.

3.0 SUMMARY OF BASELINE CONDITIONS

3.1.1 Introduction

The study area comprises of a limited range of habitats that can be broadly classified under the following habitat categories:

- Semi-improved Neutral Grassland
- Tall Ruderal
- Ruderal/Ephemeral
- Scrub
- Hedgerows

These habitats are described briefly below.

3.1.2 Semi-Improved Neutral Grassland

The application site comprises of ten pasture fields (Fields 1-10) with an eleventh bordering the application site on its southern side that is outside of the application boundary but is included as part of the biodiversity enhancement plan. Fields are typically bounded by a series of largely unmanaged hedgerows. All fields are best described as semi-improved neutral grassland. Typical grasses associated with these fields include abundant and locally dominant Yorkshire-fog *Holcus lanatus*, frequent Common Bent *Agrostis capillaris* and Crested Dog's-tail *Cynosurus cristatus*, locally frequent Creeping Bent *Agrostis stolonifera*, Meadow Foxtail *Alopecurus pratensis*, Perennial Ryegrass *Lolium perenne* and Red Fescue *Festuca rubra* and more occasional Cock's-foot *Dactylis glomerata* and Sweet Vernal-grass *Anthoxanthum odoratum*. More rarely occurring grasses include Soft-brome *Bromus hordeaceus*, Meadow Barley *Hordeum secalinum*, Meadow Fescue *Schedonorus pratensis*, Smaller Cat's-tail *Phleum bertolonii*, Timothy *Phleum pratense* and Smooth Meadow-grass *Poa pratensis*, with very rarely occurring Downy Oat-grass *Avenula pubescens*, Heath-grass *Danthonia decumbens*, Tufted Hair-grass *Deschampsia cespitosa* and Yellow Oat-grass *Trisetum flavescens*.

Commonly occurring forbs include frequent and locally abundant Creeping Buttercup *Ranunculus repens* and White Clover *Trifolium repens*, with more occasional Cat's-ear *Hypochaeris radicata*, Common Mouse-ear *Cerastium fontanum*, Common Sorrel *Rumex acetosa*, Meadow Buttercup *Ranunculus acris*, Red Clover *Trifolium pratense* and Ribwort Plantain *Plantago lanceolata*. Other forbs often have a more restricted distribution being found in only certain fields. These include several more notable species, for example, Autumn Hawkbit *Scorzoneroides autumnalis*, Common Bird's-foot-trefoil *Lotus corniculatus*, Common Knapweed *Centaurea nigra*, Great Burnet *Sanguisorba officinalis*, Oval Sedge *Carex leporina*, Oxeye Daisy *Leucanthemum vulgare*, Pepper-saxifrage *Silene silaus*, Pignut *Conopodium majus* and Tormential *Potentilla erecta*. These all had a much more restricted distribution with certain species, for example, Pepper-saxifrage, occurring as only a few individual plants.

The fields are locally damper; particularly those in the east where additional species associated with damper patches and occasionally waterlogged ground include Cuckooflower *Cardamine pratensis*, Jointed Rush *Juncus articulatus*, Marsh Foxtail *Alopecurus geniculatus* and Soft-rush *Juncus effusus*. A more substantial wetter area that was present in Field 10 in 2021 had significantly dried in the interim period. It comprises of locally abundant Creeping Buttercup, Great Willowherb *Epilobium hirsutum* and Yorkshire-fog, with rare although locally abundant Brooklime *Veronica beccabunga* and Creeping Bent and rarely occurring Marsh Foxtail, Short-fruited Willowherb *Epilobium obscurum* and Tall Fescue *Schedonorus arundinaceus*.

In recent years the fields have been used for horse grazing. Whilst in 2021, only fields 5 and 6 were subject to high levels of grazing, in the interim period, a livery business has established adjacent the site and uses Fields 7-10. These are now subject to much more intensive horse grazing than was previously the case. Fields 3 and 4 were subject to much lighter levels of use and were essentially used as a source of hay in 2023. This was also the case for Field 1. Field 2 appears to have been abandoned since 2021. Fields 5 and 6 continue to be subject to high levels of grazing from horses. The off-site Field 11 which was an abandoned False Oat-grass *Arrhenatherum elatius* dominated grassland in 2021 is now horse grazed and has reverted to a more typical grazed semi-improved pasture. Where grazing levels have been light or where fields are largely abandoned, locally extensive patches of ruderals are present with locally abundant Broad-leaved Dock *Rumex obtusifolius*, Creeping Thistle *Cirsium arvense* and more occasional Common Ragwort *Senecio jacobaea*, Curled Dock *Rumex crispus* and Spear Thistle *Cirsium vulgare*. Common Nettle *Urtica dioica* is also locally dominant, especially along field edges.

More trampled sections and gate entrances support a typical range of species associated with bare and disturbed ground including Annual Meadow-grass *Poa annua*, Common Chickweed *Stellaria media*, Knotgrass *Polygonum aviculare*, Greater Plantain *Plantago major*, Marsh Cudweed *Gnaphalium uliginosum*, Scented Mayweed *Matricaria chamomilla* and Scentless Mayweed *Tripleurospermum inodorum*. These sections are more extensive than was the case in 2021, particularly in those fields in the west of the site that are now used as part of a livery business.

3.1.3 Tall Ruderal

In addition to locally extensive patches of tall ruderals in certain fields, they are occasionally present elsewhere, for example, as a band at the western side of Field 5 where it bounds the gardens of adjacent properties. Here the vegetation includes locally dominant stands of species such as Broad-leaved Dock, Common Nettle and Creeping Thistle. Bramble is also locally dominant in this part of the site.

3.1.4 Scrub

Typically, always associated with the field boundaries, in the absence of management, suckering Blackthorn has quickly spread out from the hedgerows and has established as a dense band of Blackthorn scrub across parts of the site. At those hedgerows where Blackthorn is less prominent, or where there are historic gaps in boundaries, this is replaced by dense Bramble scrub.

3.1.5 Hedgerows/Field Boundaries

Fields are bordered by hedgerows and field boundaries. There are twenty across the application site. The locations of these are shown on Figure 2 with survey results for individual boundaries provided in Appendix 3. The boundaries are typically unmanaged and have dense bands of associated scrub. Strictly, several no longer fall within the definition of a hedgerow. This is typically defined as any boundary line of trees or shrubs over 20m long and less than 5m wide, and where any gaps between the trees or shrub species are less than 20m wide (Bickmore, 2002). Any bank, wall, ditch or tree within 2m of the centre of the hedgerow is considered to be part of the hedgerow habitat, as is the herbaceous vegetation within 2m of the centre of the hedgerow. Whilst certain boundaries are therefore probably no longer strictly within the definition of a hedgerow, for the purposes of the description and assessment, they are treated as such. This is particularly as any deterioration is a factor of the lack of management and they all therefore could be returned to a true hedgerow habitat in the future.

In their entirety, the boundaries supported a diverse range of woody species. Twenty-six woody species (trees and shrubs) listed in Schedule 3 of the Hedgerows Regulations were recorded across the site. These were Apple *Malus sylvestris sens. lat.*, Ash *Fraxinus excelsior*, Aspen *Populus tremula*, Blackthorn *Prunus spinosa*, Crack-willow *Salix fragilis*, Dogwood *Cornus sanguinea*, Dog-rose *Rosa canina*, Elder *Sambucus nigra*, English Elm *Ulmus procera*, Field Maple *Acer campestre*, Field Rose *Rosa arvensis*, Goat Willow *Salix caprea*, Grey Willow *Salix cinerea*, Guelder-rose *Viburnum opulus*, Hawthorn *Crataegus monogyna*, Hazel *Corylus avellana*, Holly *Ilex aquifolium*, Honeysuckle *Lonicera periclymenum*, Pear *Pyrus communis*, Pedunculate Oak *Quercus robur*, Rowan *Sorbus aucuparia*, Small-leaved Elm *Ulmus minor subsp. minor*, Wayfaring Tree *Viburnum lantana*, Wild Cherry *Prunus avium*, Wild Plum *Prunus domestica* and Wych Elm *Ulmus glabra*. Regarding notable species, whilst identification to species level is not straightforward, several of the elms were considered to be Small-leaved Elm. Whilst very rare or absent from much of the United Kingdom, this species remains quite widespread in Leicestershire. Other trees and shrubs that are non-native species not included on Schedule 4 of the Hedgerows Regulations were rarely occurring Sycamore *Acer pseudoplatanus* (Hedgerows 3, 4, 5, 14 and 20) and very rare Cherry Laurel *Prunus laurocerasus* (Hedgerow 3). Species that are particularly frequent were Blackthorn, Dog-rose, Elder, Field Maple, Hawthorn and Holly. Regarding the diversity of individual boundaries, Hedgerow 10 supported eleven woody,

Hedgerows 9, 12, 14, 18 and 19 supported ten woody species, and Hedgerows 11 and 16 supported eight such species.

In the absence of management Blackthorn has spread rapidly out from certain boundaries and now forms a dense band of scrub. This has extended the width of certain boundaries to more than 10m and occasionally up to 20m.

Whilst the ground flora is often species-poor, more characteristic hedgerow and woodland species are present occasionally. These included Broad Buckler-fern *Dryopteris dilatata*, Dog's Mercury *Mercurialis perennis*, Hairy-brome *Bromopsis ramosa*, Herb-Robert *Geranium robertianum*, Lords-and-Ladies *Arum maculatum*, Male-fern *Dryopteris filix-mas*, Pignut *Conopodium majus* and Wood Avens *Geum urbanum*. Of particular note was the presence of Tutsan *Hypericum androsaemum* in the eastern boundary (hedgerow 10).

Associated features are limited and essentially restricted to ditches. Whilst often defunct, the eastern boundary associated with boundaries 5 and 10 has more permanent wetness. Whilst semi-defunct and shaded, this supported several characteristic species, for example, Brooklime, Cuckooflower, Floating Sweet-grass *Glyceria fluitans*, Great Willowherb, Greater Bird's-foot Trefoil *Lotus pedunculatus*, Marsh Thistle *Cirsium palustre*, Square-stalked St John's-wort *Hypericum tetrapterum* and Trifid Bur-marigold *Bidens tripartita*.

A number of boundaries support several or more mature trees, particularly Ash and Pedunculate Oak. These are particularly numerous along the eastern and southern boundaries 10 and 14 although are also present more occasionally in several others. Other mature trees include Crab Apple, Field Maple and Pear.

4.0 METHODOLOGY

4.1 Habitat Type

Biodiversity metric 4.0 uses the UK Habitat Classification (UK Habitat Classification Working Group, 2020) to define habitat types. This is something of an intermediate level of classification being more detailed than the Phase 1 methodology and less detailed than the National Vegetation Classification. Given the likelihood of needing to test the development plan in accordance with biodiversity metric 4.0 the botanical survey included consideration of habitats in accordance with UK Habitat Classification types. These have been reviewed against the recently published updated version 2.0 of the UK Habitat Classification (UK Habitat Classification Working Group, July 2023).

4.2 Habitat Distinctiveness

Biodiversity metric 4.0 assigns habitat to distinctiveness bands based upon key criteria, particularly rarity i.e., based upon the total amount of remaining habitat in England (it's rarity). Also, the proportion of habitat protected in Sites of Special Scientific Interest (SSSIs). Where less is protected in SSSI's, it is considered of higher distinctiveness. The list of UK Priority Habitat types is also used with such habitats all classified as being of 'High' or 'Very High' distinctiveness. Finally, the metric used the European Red List Categories to inform habitat distinctiveness.

4.3 Habitat Condition

Biodiversity metric 4.0 uses habitat condition as one of the measures of habitat quality. This is based upon the condition of particular habitat measured against the accepted optimum condition for that particular habitat. Condition sheets have been developed for each habitat type and are provided in The Biodiversity Metric 4.0 – Technical Annex 1: Conditions Assessment Sheets and Methodology (March 2023) with more detail provided in The Biodiversity Metric 4.0 - User Guide: Technical Annex 2 (March 2023). Under this approach, discrete habitats can be scored based upon the number of passes or failures for specific criteria regarded as important for condition. For example, condition assessment criteria for low distinctive grasslands include the number of species per m²; sward height; % of scrub; physical damage; % bare ground; % Bracken; and the presence of notifiable and other unwanted weeds. Based upon the number of passes or fails, the habitat condition would be assessed as good, moderate or poor.

4.4 Strategic Significance

Strategic significance scores require an analysis of published local plans and objectives to identify local priorities for targeting biodiversity and nature improvement, such as Nature Recovery Areas, local biodiversity plans, National Character Area objectives and green infrastructure strategies. A score is assigned to each habitat parcel according to the habitat type and what is identified as a priority in a particular area. The options are High (within an area formally identified in local strategy, plan or policy), Medium (Location ecologically desirable but not identified in a local strategy, plan or policy) and Low (Not identified in a local strategy, plan or policy or no strategy or plan is in place in the area). When assessing this category, information is often not complete or up to date for any given area. The metric therefore allows for professional judgement to determine whether a habitat should be identified as 'medium' i.e., ecologically desirable.

4.5 Metric Trading Rules

Biodiversity metric 4.0 automatically applies trading rules (Rule 3) which set minimum habitat creation and enhancement requirements to compensate for specific habitat losses (up to the point of no net loss). These requirements are based on habitat type and distinctiveness. For example, for habitat classified as being of medium distinctiveness, losses must be replaced by area units of either medium distinctiveness habitats within the same broad habitat type or any habitat from a higher distinctiveness band (from any broad habitat type).

4.6 Assumptions

4.6.1 Introduction

When testing any development with biodiversity metric 4.0 it is necessary to interpret the baseline survey. Specific to this, biodiversity metric 4.0 uses the UK Habitat Classification to categorise different habitat types. This is a somewhat intermediate classification between the more basic Phase 1 and more detailed National Vegetation Classification. The metric also requires the assessment of habitat condition and strategic significance. Assumptions made in this assessment are discussed further below.

4.6.2 Baseline Habitat Type and Classification

Key points relating to the classification of individual habitats and approach to the assessment are as follows:

- Grasslands do not necessarily fit well into the UK Habitat Classification. Despite the presence of some typical meadow species in Fields 6 and 10, species diversity in sampled quadrats is rarely high. The sampled quadrats in these fields have <9 species per m² and grass cover is 75% or more i.e., indicative of the modified grassland category. This does not, however, reflect the true nature of these individual fields. As such, for the purpose of the baseline BNG score, Fields 6 and 10 are classified in the higher scoring 'other neutral grassland' (medium distinctiveness) category.
- Parts of certain fields have sections with dominant ruderals which could be mapped separately. Given, however, they are pastures which have been poorly managed, they are treated as other neutral grasslands that are in a poor condition.
- Metric 4.0 does not include a 'tall ruderal' category with species such as docks, thistles, etc. typically been regarded as unfavourable species within other habitats such as grasslands. The west side of Field 5 is a mosaic of coarse neutral grassland and tall ruderals along with patches of dense Bramble scrub. For the purpose of the metric calculation, this has to be entered as two separate areas, modified grassland (poor condition) and Bramble scrub.
- In Metric 4.0, it is not possible to include different habitats within the same retained area i.e., post development habitats need to be included separately. For example, in the retained Field 10, the post development will include an area of lowland meadow as well as an area of planted broadleaved woodland. These have to be mapped separately with the area of meadow being treated as enhancement of the existing grassland and the woodland as habitat creation.

Table 1 below details the individual habitat blocks and their classification including both the Phase 1 and Metric 4.0 (UK habitat Classification) type. The reference from the EcIA is also included (see also Figure 3)

Metric Ref	Area (ha)	Phase 1	Metric 4.0/UK Habitat Classification	EcIA
1	0.45	Semi-improved (Poor)	Modified Grassland	Field 1
2	0.07	Ephemeral/Short Perennial	Ruderal/ephemeral	Entrance to Field 1
3	0.03	Buildings	Developed land, sealed surface	Within Field 1
4	0.02	Tall Ruderals	Other Neutral Grassland	Within Field 1
5	0.06	Buildings/Bare Ground	Developed land, sealed surface	Within Field 2
6	0.3	Dense/Continuous Scrub	Bramble Scrub	Within Field 2
7	0.78	Semi-improved (Poor)	Modified Grassland	Field 2
8	1.5	Semi-improved (Poor)	Modified Grassland	Field 3
9	1.57	Semi-improved (Poor)	Modified Grassland	Field 4
10	0.85	Semi-improved (Neutral)	Other Neutral Grassland	Field 5
11	0.05	Semi-improved (Poor)/Tall Ruderal Mosaic	Modified Grassland	Within Field 5

Metric Ref	Area (ha)	Phase 1	Metric 4.0/UK Habitat Classification	EclA
12	0.05	Dense/Continuous Scrub	Bramble Scrub	Within Field 5
13	0.05	Dense/Continuous Scrub	Blackthorn Scrub	Within Field 5
14	1.25	Semi-improved (Neutral)	Other Neutral Grassland	Field 6
15	1.35	Semi-improved (Poor)	Modified Grassland	Field 7
16	0.6	Semi-improved (Poor)	Modified Grassland	Field 8
17	1.5	Semi-improved (Poor)	Modified Grassland	Field 9
18	0.02	Dense/Continuous Scrub	Bramble Scrub	Within Field 10
19	1.05	Semi-improved (Neutral)	Other Neutral Grassland	Field 10

Table 1: Habitat Classification

4.6.3 Baseline Habitat Condition

The condition of low distinctiveness grasslands i.e., modified grassland, is based upon seven assessment criteria. These are as follows:

1. There must be 6-8 species per m² including at least two forbs. (Nb - this criterion is essential for achieving moderate condition.
2. Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.
3. Some scattered scrub (including bramble) may be present, but scrub accounts for less than 20% of total grassland area.
4. Physical damage is evident in less than 5% of total grassland area. Examples of physical damage include excessive poaching, damage from machinery use or storage, erosion caused by high levels of access, or any other damaging management activities.
5. Cover of bare ground is between 1% and 10%, including localised areas (for example, a concentration of rabbit warrens).
6. Cover of bracken is less than 20%.
7. There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981)."

To achieve good condition 6 or 7 of the above criteria must be met including essential criterion 1. Moderate condition is achieved with 4 or 5 passes including essential criterion 1. Poor condition is where 3 or less passes are achieved or where 4-6 are achieved but not criterion 1.

Given that species diversity is lower than 6-8 species per m² in certain fields, or there are not two forbs present in 1m² samples, these are automatically within the poor condition category.

The condition of medium distinctiveness grasslands i.e., other neutral grassland, is based upon six assessment criteria. These are:

1. The grassland is a good representation of the habitat type it has been identified as, based on its UK Habitat Classification (UKHab) description i.e., the appearance and composition of the vegetation closely matches the characteristics of the specific grassland type. Indicator species listed by UKHab for the specific grassland type are consistently present. Wildflowers,

- sedges and indicator species for the specific grassland habitat type are very clearly and easily visible throughout the sward. This criterion is essential for achieving moderate condition for non-acid grassland types (there are no acidic grasslands on this site).
2. Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.
 3. Cover of bare ground is between 1% and 5%, including localised areas, for example, rabbit warrens.
 4. Cover of bracken is less than 20% and cover of scrub (including bramble) is less than 5%.
 5. Combined cover of species indicative of sub-optimal condition 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. If any invasive non-native species (as listed on Schedule 9 of WCA, 1981) are present then this criterion is automatically failed.
 6. There are 10 or more vascular plant species per m² including forbs that are characteristic of the habitat type. (certain species listed in the condition sheet are excluded from this total, for example, Broad-leaved Dock, Curled Dock, Greater Plantain, White Clover etc.) This criterion is essential for achieving good condition (non-acid grassland types only).

To achieve good condition 5 or 6 of the above criteria must be met including essential criterion 1 and additional criterion 6. Moderate condition is achieved with 3, 4 or 5 passes including essential criterion 1. Poor condition is where 2 or less passes are achieved or where 3-4 are achieved but not criterion 1 and 6.

The two neutral grass fields (5 and 10) are examples of the habitat type and have sufficient passes to meet moderate condition. Other habitats classified as neutral grassland are often tall ruderal dominated and therefore in poor condition .

Blackthorn scrub is assessed on the basis of five criteria as follows:

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).”*
2. *There is a good age range – all of the following are present: seedlings, young shrubs and mature shrubs.*
3. *There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981) and species indicative of sub-optimal condition make up less than 5% of ground cover.*
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).*
5. *There are clearings, glades or rides present within the scrub, providing sheltered edges.”*

The species-poor even aged nature of the on-site scrub along with grazed edge means that this fails criteria 1, 2, 4 and 5. This places it in the poor category.

Metric 4.0 has no specific condition criteria for Bramble scrub, developed land (sealed surfaces) and gardens.

Regarding hedgerows, metric 4.0 uses similar favourable condition criteria to the Hedgerow Survey Handbook with condition defined as good, moderate or poor according to the number of passes or fails when assessed against eight attributes in four functional groups (ten attributes in five groups where trees are present). Good condition can only be achieved where there are no more than two failures in total and no more than one in any of the functional groups. Whilst the hedgerows here are well-established, the majority typically fail category C1 and C2 which relates to adjacent undisturbed ground and perennial vegetation and nutrient enrichment. The majority therefore fall into the 'moderate' category. A small number do meet the criteria require for good condition. Only one is assessed as being in poor condition.

4.6.4 Post-development Habitat Type and Classification

With regard to the post development habitats:

- The post-development assessment is based upon the Illustrative Landscape Masterplan submitted with the planning application (see Figure 4).
- A precautionary approach has been adopted. In particular, it is assumed that the majority of amenity grassland would be classified as being poor condition. Only a small part of this has been included in the elevated 'other neutral grassland' category.
- When considering the future condition of the meadows, achieving good condition is considered to be a valid target. To achieve good condition requires 5 of 6 assessment criteria to be met, including essential criterion 1 and 6. In considering this further, appropriate preparation and management as detailed in the Ecological Impact Assessment would be required. Such measures are:
 - Weed control, particularly to reduce the current levels of docks and thistles across large sections of the retained fields.
 - Grazing. Once weeds have been effectively controlled, a period of hard grazing, for example, by sheep is often beneficial in the early stages of grassland restoration.
 - Scarification. Under the assumption that these fields could continue to support a good quality seedbank, scarification is likely to benefit new seedling establishment. This would be preferred to more significant restoration measures involving ploughing and reseedling.
 - Supplementary seeding. Some supplementary seeding may be appropriate depending upon establishment. The preferred approach would be to gather green hay or seed from the best sections of grassland, particularly Fields 5 and 10 (eastern side) and spread in less species-rich areas across the retained fields.
 - Turf translocation. The salvage and relocation of more species-rich sections of turf.
 - Hay Cutting. Once established, managing the fields in a traditional manner will be essential. This will typically involve a single late-summer hay cut with all arisings removed. Whilst in traditional farming systems, light aftermath grazing is often deployed, this may not be appropriate. This can, however, be addressed by other means, for example an additional spring cut, if considered necessary.
- For the main urban element of the development, this is entered in accordance with the user guide instructions i.e., *"When entering post-intervention predictions for areas where there*

will be a small scale mosaic of developed and natural surfaces, such as housing and gardens in suburban areas, you should use a similar approach to the above and assume the ratio of developed land, sealed surface to vegetated garden is in the proportion 70:30."

- The hedgerow assessment makes a number of precautionary assumptions. Specific to this, whilst enhancement through immediate remedial measures such as coppicing, planting gaps, etc. along with an optimum long-term rotational management regime should deliver enhancement throughout, this is not typically assumed for those hedgerows within or defining an edge to the development. At these, retention in their current condition is presumed. Enhancement in the form of improved structure and species composition is therefore only assumed where the hedgerows border the meadows or where a hedgerow within the development is currently in poor condition, for example, Hedgerow 1. In relation to new hedgerows, the western boundary of Field 6 where the current hedgerow will be removed to facilitate site access, will be planted with a new native hedgerow. Other new hedgerows include both native and ornamental examples and are calculated on the basis of the landscape masterplan.
- Urban trees are a feature of the proposed development. These are calculated using the Landscape Masterplan. For the purpose of the calculation, a precautionary approach has been taken and all are entered in the 'small' category.

4.6.5 Strategic Significance

In relation to Strategic Significance, this is based upon the analysis of published local plans and objectives to identify local priorities for targeting biodiversity and nature improvement, such as Nature Recovery Areas, local biodiversity plans, National Character Area objectives and green infrastructure strategies. Whilst the site is not specifically identified for any of these purposes, it is in close proximity to areas/strategies identified in the Hinckley and Bosworth Borough Council Core Strategy, for example, the Barwell Sustainable Urban Extension, the Hinckley/Barwell/Earl Shilton/Burbage Green Wedge. It is also relevant to wider objectives to achieve a strategic green infrastructure network. In situations such as this, the metric allows for professional judgement to determine whether a habitat should be identified as 'medium' i.e., ecologically desirable. As this is considered to be the case, the medium category is applied to both the baseline and post-development scores.

4.6.6 Limitations

As detailed in the metric User Guide (Natural England, 2023), *"the outputs of this metric are not absolute values but provide a proxy for the relative biodiversity worth of a site pre- and post-intervention. The quality and reliability of outputs will depend on the quality of the inputs. The metric and its outputs should be used alongside ecological expertise as part of the evidence that informs plans and decisions."*

It is important to note any metric such as this is a simplification of the 'real world'. Whilst the scoring of habitats is informed by ecological reasoning and the available evidence, the outputs of biodiversity unit calculations are not scientifically precise or absolute values. Generated biodiversity unit scores are a proxy for the relative biodiversity worth of a habitat or site which need to be interpreted as part of the evidence that informs plans and decisions.

5.0 BIODIVERSITY NET GAIN ASSESSMENT RESULTS

The headline results from the calculation tool are reproduced in Figure 2 below. The full metric spreadsheet has also been provided separately to the local planning authority.

LAND EAST OF THE COMMON, BARWELL		Return to results menu	
Headline Results			
Scroll down for final results ▲			
On-site baseline	Habitat units	53.06	
	Hedgerow units	24.55	
	Watercourse units	0.00	
On-site post-intervention (including habitat retention, creation & enhancement)	Habitat units	58.75	
	Hedgerow units	29.67	
	Watercourse units	0.00	
On-site net change (units & percentage)	Habitat units	5.68	10.71%
	Hedgerow units	5.12	20.83%
	Watercourse units	0.00	0.00%
Off-site baseline	Habitat units	4.84	
	Hedgerow units	0.00	
	Watercourse units	0.00	
Off-site post-intervention (including habitat retention, creation & enhancement)	Habitat units	11.65	
	Hedgerow units	0.00	
	Watercourse units	0.00	
Off-site net change (units & percentage)	Habitat units	6.81	140.76%
	Hedgerow units	0.00	0.00%
	Watercourse units	0.00	0.00%
Combined net unit change (including all on-site & off-site habitat retention, creation & enhancement)	Habitat units	12.50	
	Hedgerow units	5.12	
	Watercourse units	0.00	
Spatial risk multiplier (SRM) deductions	Habitat units	0.00	
	Hedgerow units	0.00	
	Watercourse units	0.00	
FINAL RESULTS			
Total net unit change (including all on-site & off-site habitat retention, creation & enhancement)	Habitat units	12.50	
	Hedgerow units	5.12	
	Watercourse units	0.00	
Total net % change (including all on-site & off-site habitat retention, creation & enhancement)	Habitat units	23.55%	
	Hedgerow units	20.83%	
	Watercourse units	0.00%	
Trading rules satisfied?	Yes ✓		
Unit Type	Target	Baseline Units	Units Required
Habitat units	10.00%	53.06	58.37
Hedgerow units	10.00%	24.55	27.01
Watercourse units	10.00%	0.00	0.00
		Unit Deficit	
		Unit requirement met or surpassed ✓	
		Unit requirement met or surpassed ✓	
		Unit requirement met or surpassed ✓	

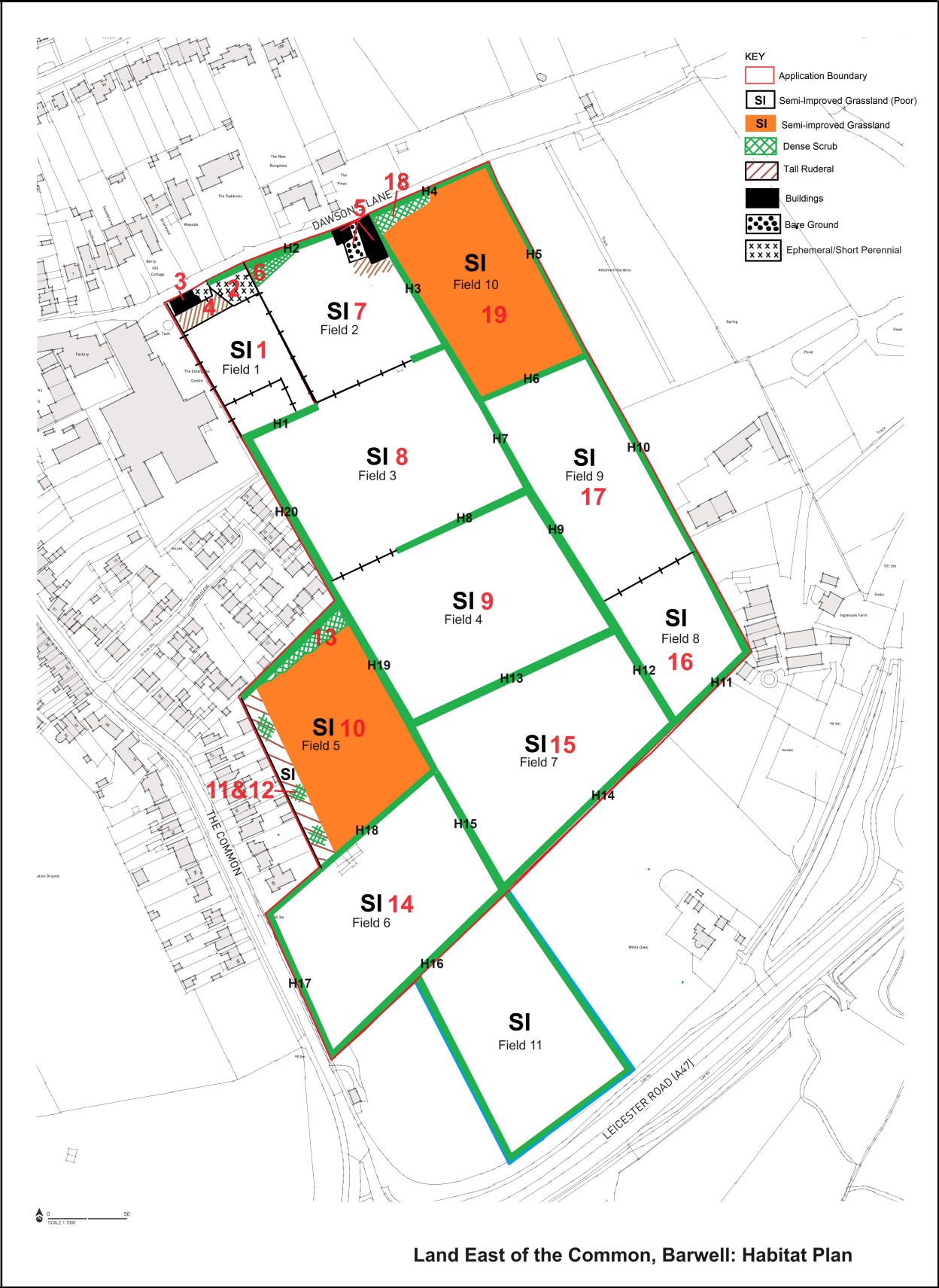
Figure 2: BNG Headline Results

Whilst only at the outline stage, with the commitment to retain and reinstate three on site and an adjacent offsite field to lowland meadow represents an important habitat enhancement. From a current baseline of 53.06 habitat units, this approach would deliver 58.75 on-site and 11.65 adjacent post development units. This equates to net biodiversity gain of 23.55%. Clearly, as the detailed elements of any application progress, there may be other aspects of the design which impact on this score. As a precautionary approach has been adopted, this should be an increase in score, for example, as more detail about the main urban design evolves. Following this initial calculation, biodiversity Metric 4.0 should therefore continue to be used to test the more detailed design of the

site. It is clear, however, that this design should continue to target lowland meadows as the priority habitat for the retained pastures.

With hedgerows also being largely retained and subject to appropriate long-term management, this also delivers a significant improvement. The current hedges on site deliver 24.55 units. This will increase to 29.67 units in the long-term which equates to a net gain of 20.83%.

FIGURE 3 – HABITAT PLAN



**FIGURE 4 – ILLUSTRATIVE MASTERPLAN (FROM PLANNING
APPLICATION)**



Land east of The Common, Barwell, Leicestershire- Figure 9: Illustrative Landscape Masterplan

APPENDIX 1 – COMPLETED HABITAT CONDITION SHEETS

Condition Sheet: GRASSLAND Habitat Type (low distinctiveness)												
UK Habitat Classification (UKHab) Habitat Type(s)												
Grassland - Modified grassland												
Habitat Description												
ukhab – UK Habitat Classification												
Site name and location	LAND OFF THE COMMON, BARWELL	On-site or off-site	ON-SITE									
		Survey reference (if relating to a wider survey)	Field references used in EclA included in brackets i.e., F1, F2 etc.									
Limitations (if applicable)		Habitat parcel reference										
		1 (F1)	7 (F2)	8 (F3)	9(F4)	15(F7)	16(F8)	17(F9)				
		Grid reference										
Condition Assessment Criteria												
		Criterion passed (Yes or No)										Notes (such as justification)
A	There are 6-8 vascular plant species per m ² present, including at least 2 forbs (this may include those listed in Footnote 1). Note - this criterion is essential for achieving Moderate or Good condition. Where the vascular plant species present are characteristic of medium, high or very high distinctiveness grassland, or there are 9 or more of these characteristic species per m ² (excluding those listed in Footnote 1), please review the full UKHab description to assess whether the grassland should instead be classified as a higher distinctiveness grassland. Where a grassland is classed as medium, high, or very high distinctiveness, please use the relevant condition sheet.	NO	YES	YES	YES	NO	NO	NO				
B	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for vertebrates and invertebrates to live and breed.	NO	NO	NO	NO	NO	NO	NO				
C	Some scattered scrub (including bramble <i>Rubus fruticosus</i> agg.) may be present, but scrub accounts for less than 20% of total grassland area. Note - patches of scrub with continuous (more than 90%) cover should be classified as the relevant scrub habitat type.	YES	YES	YES	YES	YES	YES	YES				
D	Physical damage is evident in less than 5% of total grassland area. Examples of physical damage include excessive poaching, damage from machinery use or storage, erosion caused by high levels of access, or any other damaging management activities.	YES	YES	YES	NO	NO	NO	YES				
E	Cover of bare ground is between 1% and 10%, including localised areas (for example, a concentration of rabbit warrens) ² .	YES	YES	YES	YES	YES	YES	YES				
F	Cover of bracken <i>Pteridium aquilinum</i> is less than 20%.	YES	YES	YES	YES	YES	YES	YES				
G	There is an absence of invasive non-native plant species ³ (as listed on Schedule 9 of WCA ⁴).	YES	YES	YES	YES	YES	YES	YES				
Essential criterion achieved (Yes or No)		NO	YES	YES	YES	NO	NO	NO				
Number of criteria passed		5	6	6	5	5	4	5				
Condition Assessment Result (out of 7 criteria)	Condition Assessment Score	Score Achieved x/□										
Passes 6 or 7 criteria including passing essential criterion A	Good (3)		YES	YES								
Passes 4 or 5 criteria including passing essential criterion A	Moderate (2)				YES							
Passes 3 or fewer criteria; OR Passes 4 - 6 criteria (excluding criterion A)	Poor (1)	YES				YES	YES	YES				
Suggested enhancement interventions to improve condition score												

Footnotes

Footnote 1 – Creeping thistle *Cirsium arvense* , spear thistle *Cirsium vulgare* , curled dock *Rumex crispus* , broad-leaved dock *Rumex obtusifolius* , common nettle *Urtica dioica* , creeping buttercup *Ranunculus repens* , greater plantain *Plantago major* , white clover *Trifolium repens* and cow parsley *Anthriscus sylvestris* .

Footnote 2 – For example, this could include small, scattered areas of bare ground allowing establishment of new species, or localised patches where not exceeding 10% cover.

Footnote 3 – Assess this for each distinct habitat parcel. If the distribution of invasive non-native species varies across the habitat, split into parcels accordingly, applying a buffer zone around the invasive non-native species with a size relative to its risk of spread into adjacent habitat, using professional judgement.

Footnote 4 – Wildlife and Countryside Act 1981 (as amended).

Condition Sheet: GRASSLAND Habitat Type (medium, high and very high distinctiveness)												
UK Habitat Classification (UKHab) Habitat Type(s)												
Grassland - Lowland calcareous grassland Grassland - Lowland dry acid grassland Grassland - Lowland meadows Grassland - Other lowland acid grassland Grassland - Other neutral grassland Grassland - Tall herb communities (H6430) [Note Tall herb habitat that does not meet the Annex 1 definition should be recorded as 'Other neutral grassland'] [Not to be confused with the Tall forbs secondary code – see UKHab guidance for details.] Grassland - Upland acid grassland Grassland - Upland calcareous grassland Grassland - Upland hay meadows Sparsely vegetated land - Calaminarian grassland												
Habitat Description												
ukhab – UK Habitat Classification												
Site name and location		Land East of the Common, Barwell	On-site or off-site	On-site								
			Survey reference (if relating to a wider survey)	Field references used in EclA included in brackets i.e., F5, F6 etc.								
Limitations (if applicable)			Habitat parcel reference									
			4	10(F5)	11	14(F6)	19(F10)					
Condition Assessment Criteria			Grid reference									
			Criterion passed (Yes or No)									
A	The grassland is a good representation of the habitat type it has been identified as, based on its UKHab description - the appearance and composition of the vegetation closely matches the characteristics of the specific grassland habitat type. Indicator species listed by UKHab for the specific grassland habitat type are consistently present. Note - this criterion is essential for achieving Moderate or Good condition for non-acid grassland types only.	No	Yes	No	No	Yes						
B	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.	No	No	No	No	No						
C	Cover of bare ground is between 1% and 5%, including localised areas, for example, rabbit warrens ¹ .	Yes	Yes	Yes	Yes	Yes						
D	Cover of bracken <i>Pteridium aquilinum</i> is less than 20% and cover of scrub (including bramble <i>Rubus fruticosus</i> agg.) is less than 5%.	Yes	Yes	Yes	Yes	Yes						
E	Combined cover of species indicative of sub-optimal condition ² 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. If any invasive non-native plant species ³ (as listed on Schedule 9 of WCA ⁴) are present, this criterion is automatically failed.	No	No	No	No	Yes						
Additional Criterion - must be assessed for all non-acid grassland types												

F	There are 10 or more vascular plant species per m ² present, including forbs that are characteristic of the habitat type (species referenced in Footnote 2 and 4 cannot contribute towards this count). Note - this criterion is essential for achieving Good condition for non-acid grassland types only.	No	Yes	No	No	No						
Essential criterion for Good condition achieved (for non-acid grassland) (Yes or No)		No	Yes	No	No	No						
Number of criteria passed		2	4	2	2	4						
Condition Assessment Result	Condition Assessment Score	Score Achieved x/□										
Acid Grassland types (Result out of 5 criteria)												
Passes 5 criteria	Good (3)											
Passes 3 or 4 criteria	Moderate (2)											
Passes 2 or fewer criteria	Poor (1)											
Non-acid grassland types (Result out of 6 criteria)												
Passes 5 or 6 criteria, including essential criterion A and additional criterion F.	Good (3)											
Passes 3 - 5 criteria, including essential criterion A.	Moderate (2)		Yes			Yes						
Passes 2 or fewer criteria; OR Passes 3 or 4 criteria excluding criterion A and F.	Poor (1)	Yes		Yes	Yes							
Suggested enhancement interventions to improve condition score												
Notes												
Footnote 1 – For example, this could include small, scattered areas of bare ground allowing for plant colonisation, or localised patches not exceeding 5% cover.												
Footnote 2 - Species indicative of sub-optimal condition for this habitat type include: creeping thistle <i>Cirsium arvense</i> , spear thistle <i>Cirsium vulgare</i> , curled dock <i>Rumex crispus</i> , broad-leaved dock <i>Rumex obtusifolius</i> , common nettle <i>Urtica dioica</i> , creeping buttercup <i>Ranunculus repens</i> , greater plantain <i>Plantago major</i> , white clover <i>Trifolium repens</i> and cow parsley <i>Anthriscus sylvestris</i> . There may be additional relevant species local to the region and or site.												
Footnote 3 – Assess this for each distinct habitat parcel. If the distribution of invasive non-native species varies across the habitat, split into parcels accordingly, applying a buffer zone around the invasive non-native species with a size relative to its risk of spread into adjacent habitat, by applying professional judgement.												
Footnote 4 – Wildlife and Countryside Act 1981 (as amended).												

Condition sheet: HEDGEROW Habitat Types														
Habitat Type														
Native hedgerow Native hedgerow - associated with bank or ditch Native hedgerow with trees Native hedgerow with trees - associated with bank or ditch Species-rich native hedgerow Species-rich native hedgerow - associated with bank or ditch Species-rich native hedgerow with trees Species-rich native hedgerow with trees - associated with bank or ditch														
Habitat Description														
See the Biodiversity Metric 4.0 User Guide Section 9. Each attribute is assigned to one of five functional groups (A – E) and the condition of a hedgerow is assessed according to the number of attributes from these functional groups which pass or fail the 'favourable condition' criteria.														
Site name and	Land East of the Common, Barwell				On-site or off-site	On-site								
Limitations (if applicable)					Survey reference (if relating to a wider survey)									
Condition Assessment Criteria														
A series of ten attributes, representing key physical characteristics are used for this assessment. This assessment is based on the Hedgerow Survey Handbook¹ and Favourable Conservation Status document². For further clarification please refer to the Hedgerow Survey Handbook. Each attribute is assigned to one of five functional groups (A – E) and the condition of a hedgerow is assessed according to the number of attributes from these functional groups which pass or fail the 'favourable condition' criteria.														
Hedgerow favourable condition attributes														
Attributes and functional groupings (A, B, C, D and E)	Criteria - the minimum requirements for 'favourable condition'	Criteria description	Habitat parcel reference											
			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10		
			Grid reference											
Core groups - applicable to all hedgerow types			Criterion passed (Yes or No)										Notes (such as justification)	
A1.	Height	>1.5 m average along length	The average height of woody growth estimated from base of stem to the top of the shoots, excluding any bank beneath the hedgerow, any gaps or isolated trees. Newly laid or coppiced hedgerows are indicative of good management and pass this criterion for up to a maximum of four years (if undertaken according to good practice). A newly planted hedgerow does not pass this criterion (unless it is >1.5 m height).	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
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. Outgrowths (such as blackthorn <i>Prunus spinosa</i> suckers) are only included in the width estimate when they are >0.5 m in height. Laid, coppiced, cut and newly planted hedgerows are indicative of good management and pass this criterion for up to a maximum of four years (if undertaken according to good practice).	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
B1.	Gap - hedge base	Gap between ground and base of canopy <0.5 m for >90% of length	This is the vertical 'gappiness' of the woody component of the hedgerow, and its distance from the ground to the lowest leafy growth. Certain exceptions to this criterion are acceptable (see page 65 of the Hedgerow Survey Handbook).	No	No	No	No	Yes	No	No	No	No	No	

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). Access points and gates contribute to the overall 'gappiness' but are not subject to the >5 m criterion (as this is the typical size of a gate).	No	Yes	Yes	Yes	Yes	Yes	No	No	No	No	
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 hedgerow (at least).	This is the level of disturbance (excluding wildlife disturbance) at the base of the hedgerow. Undisturbed ground is present for at least 90% of the hedgerow length, greater than 1 m in width and must be present along at least one side of the hedgerow. This criterion recognises the value of the hedgerow base as a boundary habitat with the capacity to support a wide range of species. Cultivation, heavily trodden footpaths, poached ground etc. can limit available habitat niches.	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	
C2.	Nutrient-enriched 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 <i>Urtica</i> spp., cleavers <i>Galium aparine</i> and docks <i>Rumex</i> spp. Their presence, either singly or together, does not exceed the 20% cover threshold.	No	No	No	No	No	No	No	No	No	No	
D1.	Invasive and neophyte species	>90% of the hedgerow and undisturbed ground is free of invasive non-native plant species (including those listed on Schedule 9 of WCA ³) and recently introduced species.	Recently introduced species refer to plants that have naturalised in the UK since AD 1500 (neophytes). Archaeophytes count as natives. For information on archaeophytes and neophytes see the JNCC website ⁴ , as well as the BSBI website ⁵ where the 'Online Atlas of the British and Irish Flora' ⁶ contains an up-to-date list of the status of species. For information on invasive non-native species see the GB Non-Native Secretariat website ⁷ .	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
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. This could include evidence of pollution, piles of manure or rubble, or inappropriate management practices (e.g., excessive hedgerow cutting).	Yes	No	Yes	No	No	Yes	Yes	Yes	Yes	No	
Additional group - applicable to hedgerows with trees only														
E1.	Tree class	There is more than one age-class (or morphology) of tree present (for example: young, mature, veteran and or ancient ⁸), and there is on average at least one mature, ancient or veteran tree present per 20 - 50m of hedgerow.	This criterion addresses if there are a range of age-classes or morphologies which allow for replacement of trees and provide opportunities for different species.	No		No	Yes		No			No	Yes	
E3.	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.	No		Yes	No		Yes			No	No	

The hedgerow condition assessment generates a weighting (score) ranging from 1 - 3, which is used within the metric. The scores for each are set out in the tables below.

Condition categories for hedgerows without trees

Category	Category Requirements	Metric Score
Good	No more than 2 failures in total; AND No more than 1 failure in any functional group.	3
Moderate	No more than 4 failures in total; AND <u>Does not fail both attributes</u> in more than one functional group (e.g. fails attributes A1, A2, B1 and C2 = Moderate condition).	2
Poor	Fails a total of more than 4 attributes; OR <u>Fails both attributes</u> in more than one functional group (e.g. fails attributes A1, A2, B1 and B2 = Poor condition).	1

Score achieved:

Condition categories for hedgerows with trees

Category	Category Requirements	Metric score
Good	No more than 2 failures in total; AND No more than 1 failure in any functional group.	3
Moderate	No more than 5 failures in total; AND <u>Does not fail both attributes</u> in more than one functional group (e.g., fails attributes A1, A2, B1, C2 and E1 = Moderate condition).	2
Poor	Fails a total of more than 5 attributes; OR <u>Fails both attributes</u> in more than one functional group (e.g. fails attributes A1, A2, B1 and B2 = Poor condition).	1

Score achieved:

Suggested enhancement interventions to improve condition score

Condition sheet: HEDGEROW Habitat Types

Habitat Type

Native hedgerow

Native hedgerow - associated with bank or ditch

Native hedgerow with trees

Native hedgerow with trees - associated with bank or ditch

Species-rich native hedgerow

Species-rich native hedgerow - associated with bank or ditch

Species-rich native hedgerow with trees

Species-rich native hedgerow with trees - associated with bank or ditch

Habitat Description

See the Biodiversity Metric 4.0 User Guide Section 9.

Each attribute is assigned to one of five functional groups (A – E) and the condition of a hedgerow is assessed according to the number of attributes from these functional groups which pass or fail the 'favourable condition' criteria.

Site name and Limitations (if applicable)	Land East of the Common, Barwell	On-site or off-site	On-site
		Survey reference (if relating to a wider survey)	

Condition Assessment Criteria	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	

A series of ten attributes, representing key physical characteristics are used for this assessment. This assessment is based on the Hedgerow Survey Handbook¹ and Favourable Conservation Status document². For further clarification please refer to the Hedgerow Survey Handbook.

Each attribute is assigned to one of five functional groups (A – E) and the condition of a hedgerow is assessed according to the number of attributes from these functional groups which pass or fail the 'favourable condition' criteria.

Hedgerow favourable condition attributes

[illegible][illegible]

B1.	Gap - hedge base	Gap between ground and base of canopy <0.5 m for >90% of length	This is the vertical 'gappiness' of the woody component of the hedgerow, and its distance from the ground to the lowest leafy growth. Certain exceptions to this criterion are acceptable (see page 65 of the Hedgerow Survey Handbook).	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes	No	
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). Access points and gates contribute to the overall 'gappiness' but are not subject to the >5 m criterion (as this is the typical size of a gate).	No	No	No	No	Yes	Yes	Yes	Yes	Yes	No	
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 hedgerow (at least).	This is the level of disturbance (excluding wildlife disturbance) at the base of the hedgerow. Undisturbed ground is present for at least 90% of the hedgerow length, greater than 1 m in width and must be present along at least one side of the hedgerow. This criterion recognises the value of the hedgerow base as a boundary habitat with the capacity to support a wide range of species. Cultivation, heavily trodden footpaths, poached ground etc. can limit available habitat niches.	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	
C2.	Nutrient-enriched 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 <i>Urtica</i> spp., cleavers <i>Galium aparine</i> and docks <i>Rumex</i> spp. Their presence, either singly or together, does not exceed the 20% cover threshold.	No	No	No	No	Yes	Yes	No	Yes	Yes	No	
D1.	Invasive and neophyte species	>90% of the hedgerow and undisturbed ground is free of invasive non-native plant species (including those listed on Schedule 9 of WCA ³) and recently introduced species.	Recently introduced species refer to plants that have naturalised in the UK since AD 1500 (neophytes). Archaeophytes count as natives. For information on archaeophytes and neophytes see the JNCC website ⁴ , as well as the BSBI website ⁵ where the 'Online Atlas of the British and Irish Flora' ⁶ contains an up-to-date list of the status of species. For information on invasive non-native species see the GB Non-Native Secretariat website ⁷ .	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
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. This could include evidence of pollution, piles of manure or rubble, or inappropriate management practices (e.g., excessive hedgerow cutting).	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	
Additional group - applicable to hedgerows with trees only														
E1.	Tree class	There is more than one age-class (or morphology) of tree present (for example: young, mature, veteran and or ancient ⁸), and there is on average at least one mature, ancient or veteran tree present per 20 - 50m of hedgerow.	This criterion addresses if there are a range of age-classes or morphologies which allow for replacement of trees and provide opportunities for different species.	No	No	No	Yes		No		No	No	Yes	

E3.	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.	No	No	Yes	Yes		Yes		Yes	Yes	Yes	
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The hedgerow condition assessment generates a weighting (score) ranging from 1 - 3, which is used within the metric. The scores for each are set out in the tables below.

Condition categories for hedgerows without trees		
Category	Category Requirements	Metric Score
Good	No more than 2 failures in total; AND No more than 1 failure in any functional group.	3
Moderate	No more than 4 failures in total; AND <u>Does not fail both attributes</u> in more than one functional group (e.g. fails attributes A1, A2, B1 and C2 = Moderate condition).	2
Poor	Fails a total of more than 4 attributes; OR <u>Fails both attributes</u> in more than one functional group (e.g. fails attributes A1, A2, B1 and B2 = Poor condition).	1
Score achieved:		
Condition categories for hedgerows with trees		
Category	Category Requirements	Metric score
Good	No more than 2 failures in total; AND No more than 1 failure in any functional group.	3
Moderate	No more than 5 failures in total; AND <u>Does not fail both attributes</u> in more than one functional group (e.g., fails attributes A1, A2, B1, C2 and E1 = Moderate condition).	2
Poor	Fails a total of more than 5 attributes; OR <u>Fails both attributes</u> in more than one functional group (e.g. fails attributes A1, A2, B1 and B2 = Poor condition).	1
Score achieved:		
Suggested enhancement interventions to improve condition score		

[illegible]

Passes 2 or fewer criteria	Poor (1)	Yes											
Suggested enhancement interventions to improve condition score													

APPENDIX 2: SAMPLED 1M² QUADRATS USED IN THE CONDITION ASSESSMENT OF FIELDS

		FIELD 1			FIELD 2			FIELD 3			FIELD 4			FIELD 5			FIELD 6			FIELD 7			FIELD 8			FIELD 9			FIELD 10			FIELD 11		
Common Name	Scientific Name	Q1	Q2	Q3	Q1	Q2	Q3	Q1	Q2	Q3	Q1	Q2	Q3	Q1	Q2	Q3	Q1	Q2	Q3	Q1	Q2	Q3	Q1	Q2	Q3	Q1	Q2	Q3	Q1	Q2	Q3			
Autumn Hawkbit	<i>Scorzonerodites autumnalis</i>														P	P	P	P	P															
Beaked Hawk's-beard	<i>Crepis vesicaria</i>														P																			
Black Medick	<i>Medicago lupulina</i>																																	
Bush Vetch	<i>Vicia sepium</i>																																	
Cat's-ear	<i>Hypochaeris radicata</i>					P	P					P		P	P	P		P	P															
Cock's-foot	<i>Dactylis glomerata</i>			P			P	P		P	P			P						P	P													
Colt's-foot	<i>Tussilago farfara</i>																						P											
Common Bent	<i>Agrostis capillaris</i>	P	P	P	P	P	P	P	P	P	P		P	P			P	P	P	P	P	P	P	P	P		P	P	P			P	P	
Common Bird's-foot Trefoil	<i>Lotus corniculatus</i>														P	P	P	P	P			P												
Common Couch	<i>Elymus repens</i>																																	
Common Knapweed	<i>Centaurea nigra</i>														P	P																		
Common Mouse-ear	<i>Cerastium fontanum</i>														P													P	P					
Common Nettle	<i>Urtica dioica</i>																																	
Common Ragwort	<i>Jacobaea vulgaris</i>					P	P		P											P		P								P				
Common Sorrel	<i>Rumex acetosa</i>																P				P								P	P	P			
Common Vetch	<i>Vicia sativa subsp. segetalis</i>																																	
Cow Parsley	<i>Anthriscus sylvestris</i>																																	
Creeping Buttercup	<i>Ranunculus repens</i>		P	P				P	P	P	P	P		P	P	P		P	P		P		P	P	P	P	P		P		P	P	P	
Creeping Cinquefoil	<i>Potentilla reptans</i>																																	
Creeping Thistle	<i>Cirsium arvense</i>							P												P		P								P				
Crested Dog's-tail	<i>Cynosurus cristatus</i>		P					P			P	P	P	P	P	P	P	P	P				P		P	P	P	P		P				
Curled Dock	<i>Rumex crispus</i>																																	
Daisy	<i>Bellis perennis</i>																																	
Dandelion	<i>Taraxacum</i> agg.										P				P	P	P	P	P															
Dove's-foot Crane's-bill	<i>Geranium molle</i>																																	
False Oat-grass	<i>Arrhenatherum elatius</i>				P																										P		P	
Field Bindweed	<i>Convolvulus arvensis</i>																																	
Field Forget-me-not	<i>Myosotis arvensis</i>																																	
Field Horsetail	<i>Equisetum arvense</i>																																	
Germander Speedwell	<i>Veronica chamaedrys</i>																																	
Goat's-beard	<i>Tragapogon pratensis</i>																																	
Great Burnet	<i>Sanguisorba officinalis</i>													P																				
Greater Plantain	<i>Plantago major</i>															P							P		P									
Hairy Sedge	<i>Carex hirta</i>													P																				
Hairy Tare	<i>Ervilia hirsuta</i>																																	
Hogweed	<i>Heracleum sphondylium</i>																															P		
Hybrid Bent	<i>Agrostis</i> sp.																												P	p				
Lesser Trefoil	<i>Trifolium dubium</i>																																	
Meadow Buttercup	<i>Ranunculus acris</i>								P																									
Meadow Foxtail	<i>Alopecurus pratensis</i>					P		P	P	P	P		P									P	P		P	P				P	P	P		
Meadow Vetchling	<i>Lathyrus pratensis</i>																													P				
Mugwort	<i>Artemisia vulgaris</i>																																	
Oxeye Daisy	<i>Leucanthemum vulgare</i>														P																			
Perennial Rye-grass	<i>Lolium perenne</i>	P	P		P				P	P	P	P	P	P	P	P								P	P	P	P	P						
Perennial Sow-thistle	<i>Sonchus arvensis</i>																																	
Red Clover	<i>Trifolium pratense</i>						P							P		P																		
Red Fescue	<i>Festuca rubra</i>			P			P							P	P						P	P												
Ribwort Plantain	<i>Plantago lanceolata</i>		P	P	P	P	P				P	P		P		P														P				

		FIELD 1			FIELD 2			FIELD 3			FIELD 4			FIELD 5			FIELD 6			FIELD 7			FIELD 8			FIELD 9			FIELD 10			FIELD 11		
Common Name	Scientific Name	Q1	Q2	Q3	Q1	Q2	Q3	Q1	Q2	Q3	Q1	Q2	Q3	Q1	Q2	Q3	Q1	Q2	Q3	Q1	Q2	Q3	Q1	Q2	Q3	Q1	Q2	Q3	Q1	Q2	Q3			
Rough Meadow-grass	<i>Poa trivialis</i>					P		P	P	P						P				P		P		P		P	P		P					
Selfheal	<i>Prunella vulgaris</i>															P																		
Smaller Cat's-tail	<i>Phleum bertolonii</i>											P			P							P					P							
Smooth Meadow-grass	<i>Poa pratensis</i>																																	
Soft-brome	<i>Bromus hordeaceus</i>								P																									
Spear Thistle	<i>Cirsium vulgare</i>																		P											P		P		
Sweet Vernal-grass	<i>Anthoxanthum odoratum</i>											P		P											P		P		P					
Timothy	<i>Phleum pratense</i>																										p							
Tufted Vetch	<i>Vicia cracca</i>																																	
Upright Hedge-parsley	<i>Torilis japonica</i>																																	
White Clover	<i>Trifolium repens</i>		P					P				P	P		P		P	P	P				P	P	P	P		P		P	P			
Yarrow	<i>Achillea millefoilum</i>															P												P	P					
Yellow-rattle	<i>Rhinanthus minor</i>																																	
Yorkshire-fog	<i>Holcus lanatus</i>	P	P	P	P	P	P		P	P	P	P					P	P	P	P	P	P	P	P	P	P	P		P	P	P	P		
Total Species in 1x1m sample		3	6	6	5	7	8	6	9	7	9	8	4	12	13	13	7	8	8	5	6	8	6	5	6	5	7	7	7	7	9	5	3	5
Average Species Per 1x1m sample		5			6.7			7.3			7			12.7			7.7			6.3			5.7			6.3			7.7			4.3		

Nb. In accordance with metric 4.0, species highlighted in red are excluded from the quadrat totals.