

JACQUET UK, TANKERSLEY

Biodiversity Net Gain Assessment



ECO03127
Tankersley BNG
1
25th July 2023

Document status

Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date
1	Draft	Rose Poston-Saynor	Peter Watson	Peter Watson	21/07/23
2	Updated layout	Rose Poston-Saynor	Peter Watson	Peter Watson	28/07/23

Approval for issue

Peter Watson

28 July 2023

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Prepared for:

Jarvale Construction Ltd

Contents

1	INTRODUCTION	2
1.1	Purpose and scope of this report	2
1.2	Biodiversity Net Gain definition and methods	2
2	BASELINE DESCRIPTION.....	4
2.1	Phase 1 Habitat Survey - Overview	4
2.2	Habitat Condition Assessments	7
2.3	Hedgerows.....	9
3	BIODIVERSITY ENHANCEMENT STRATEGY	10
3.1	Habitats	10
3.2	Hedgerows.....	12
4	SUMMARY	14
	REFERENCES	15

Tables

Table 2.1: Summary of baseline habitats (non-linear)	9
Table 2.2: Summary of baseline habitats (linear)	9

Figures

Figure 2.1: Phase 1 Habitat Survey	5
Figure 2.2: Landscape Proposals	6
Figure 4.1: Biodiversity Metric 3.1 Calculation Tool Headline Results	14

1 INTRODUCTION

1.1 Purpose and scope of this report

- 1.1.1 RPS was commissioned by Jarvale Construction Ltd to produce a Biodiversity Net Gain (BNG) Assessment for the Jacquet UK site at 21 Wentworth Way, Tankersley, Barnsley S75 3DH.
- 1.1.2 The proposals involve the construction of warehouse space and hardstanding extending the existing office and warehouse provision on the site.
- 1.1.3 A Preliminary Ecological Appraisal (PEA) of the site was undertaken by RPS (RPS, 2023). This identified the need to undertake a BNG Assessment of the site, to support the planning application. The PEA also made recommendations for biodiversity enhancements.
- 1.1.4 This BNG assessment report aims to:
 - Calculate and assess the baseline ecological status and condition of current habitats identified on site;
 - Calculate the biodiversity value of the site post-development; and
 - Provide a summary of the habitat enhancements and creation proposals designed to ensure net gain is achieved.
- 1.1.5 The recommendations included within this report are the professional opinion of an experienced ecologist and therefore the view of RPS.

1.2 Biodiversity Net Gain definition and methods

- 1.2.1 Biodiversity Net Gain (BNG) is defined by Baker *et al.* (2019) as:
“Development that leaves biodiversity in a better state than before”
- 1.2.2 The requirement or developments to seek to achieve BNG arises from the National Planning Policy Framework (NPPF, 2021), which states in Para. 174 that:
“Planning policies and decisions should contribute to and enhance the natural and local environment by...minimising impacts on and providing net gains for biodiversity.”
- 1.2.3 This requirement is further outlined in the recently passed Environment Act 2021 that will require a mandatory 10% net gain in biodiversity for all planning applications from November 2023. Many LPAs are already actioning a standard target of 10% BNG in advance of this.
- 1.2.4 There is no single set method for quantifying the assessment of BNG but one method is the use of biodiversity calculators to assess the biodiversity value of habitats pre- and post- development based on habitat type, distinctiveness and condition.
- 1.2.5 A biodiversity index is derived for the baseline and for the proposed development. CIEEM (2019) describe a projects ecological baseline as:
“Conditions existing in the absence of proposed activities.”
- 1.2.6 BNG is considered to be achieved where an increase in value is delivered (on or offsite), and where habitats of a higher value are not replaced exclusively with habitats of a lower value.
- 1.2.7 The methods of calculating BNG for this project followed the guidance produced by Natural England’s Biodiversity Metric 4.0 (Natural England, 2023). This tool has been used for the assessment in this report. The tool and associated documents were downloaded from:
<http://publications.naturalengland.org.uk/publication/6049804846366720>
- 1.2.8 The baseline data and post development data, such as habitat enhancement and creation, was inputted into the calculator to work out the total net percentage change of the site.

Condition Assessment

- 1.2.9 Using the data collected from the Phase 1 Habitat Survey, habitat condition assessments were undertaken for the habitats present within the project boundary.
- 1.2.10 The appropriate 'Condition Sheet' was first selected via the Technical Annex 1 provided by Natural England.
- 1.2.11 The condition sheet was then used to assess the individual habitats by comparing how they scored against pre-set condition assessment criteria. The criteria describe what components are needed for the habitat to be of good, moderate or poor value.
- 1.2.12 Each habitat was scored the following:
- 1 – Poor;
 - 2 – Moderate; or
 - 3 – Good.
- 1.2.13 The calculator allows these to be further divided and provides categories for fairly good and fairly poor. The ecologist undertaking the assessment used their professional judgement, considering the habitat condition assessment criteria, to decide when it was suitable to use these categories.
- 1.2.14 It should be noted that some habitats are given a fixed score and do not need assessing.

2 BASELINE DESCRIPTION

- 2.1.1 The baseline description is taken from the Preliminary Ecological Appraisal (RPS, 2023) where the full Phase 1 Habitat Survey descriptions can be found. To ensure compatibility with the BNG metric, these habitats were translated to UKHab habitat descriptions as outlined below.

2.1 Habitat Survey - Overview

- 2.1.1 The site comprises primarily hardstanding and buildings, with an area of young / semi-mature woodland, grassland, ponds, and introduced shrub also present.
- 2.1.2 A full list of the habitats identified on the site is provided below:
- Other woodland; broadleaved
 - Introduced shrub;
 - Ponds (priority habitat);
 - Modified grassland;
 - Bare ground;
 - Non-native ornamental line of trees; and
 - Developed land.
- 2.1.3 The habitat survey results are shown in Figure 2.1, with site proposals shown in Figure 2.2.

Figure 2.1: Habitat Survey Results

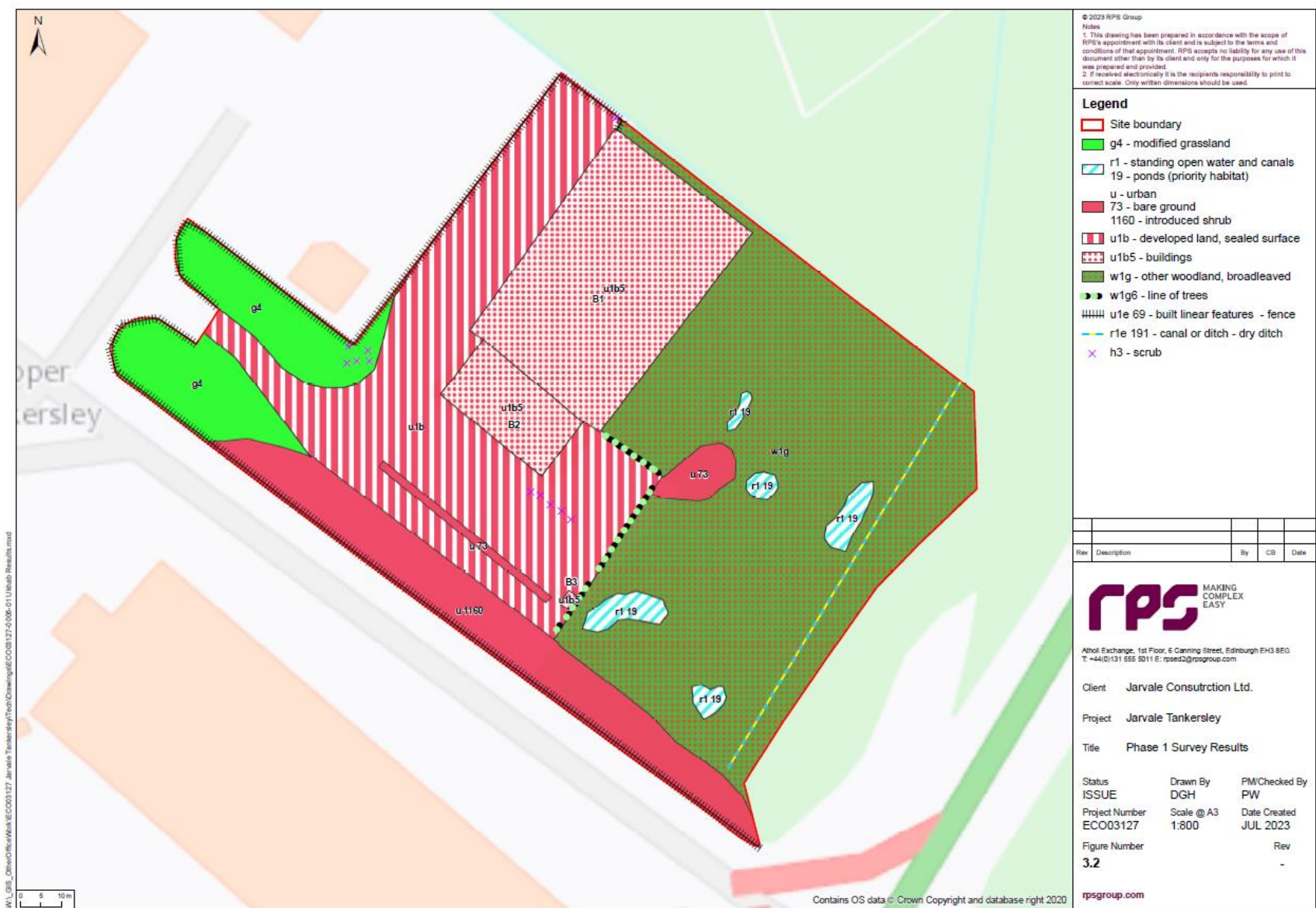
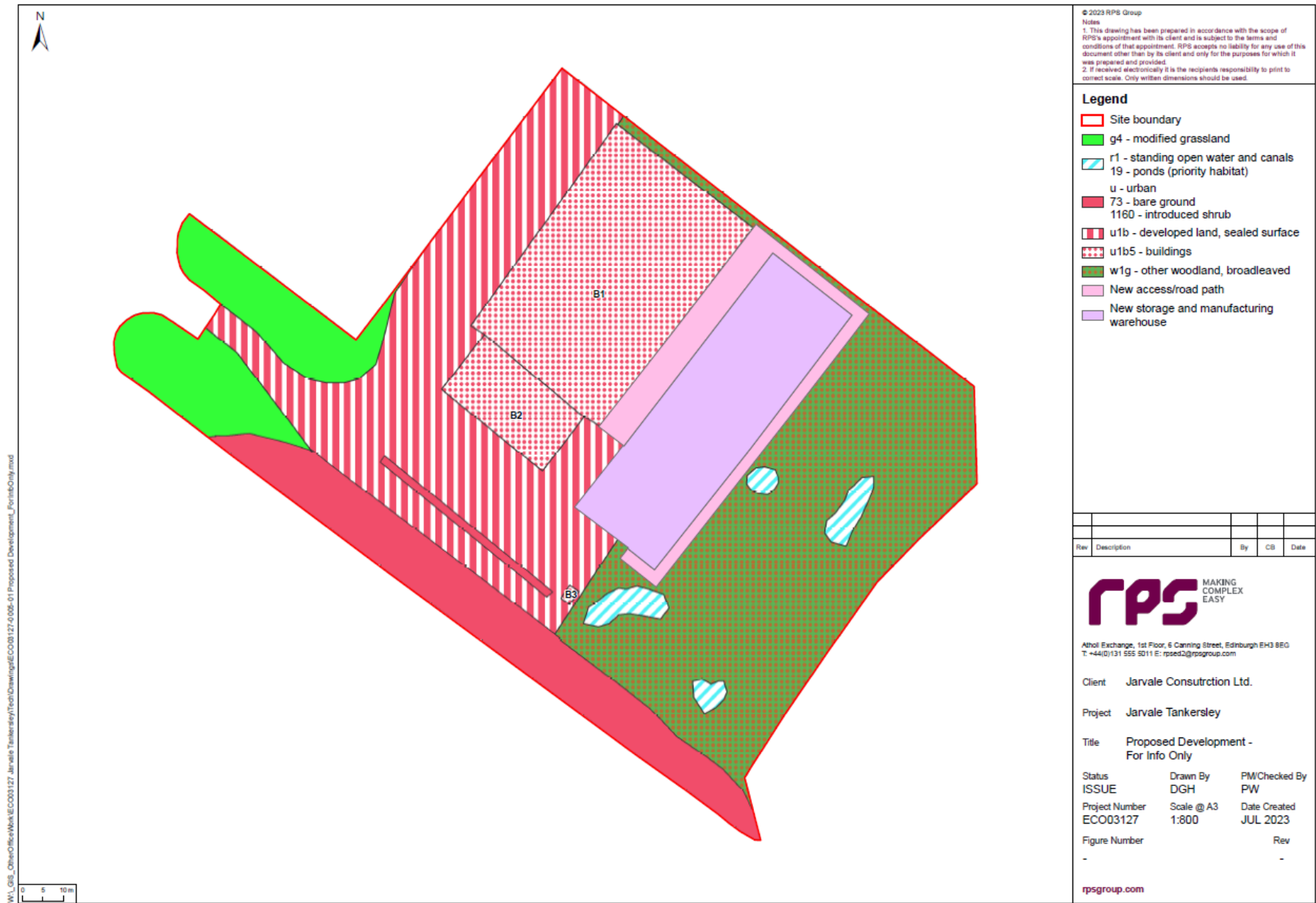


Figure 2.2: Site Proposals



2.2 Habitat Condition Assessments

- 2.2.1 The assessments below relate to the condition of the habitats present on site at the time of the survey. Table 2.1 and Table 2.2 overleaf provide a summary of these baseline habitats.

Broadleaved Woodland

- 2.2.2 The eastern half of the site comprised young broadleaved woodland. The trees were predominantly silver birch *Betula pendula*, with occasional ash *Fraxinus excelsior* and hawthorn *Crataegus monogyna*. The trees were between 2-4 m in height. The ground flora mainly comprised low-lying bramble *Rubus fruticosus* agg. and moss.
- 2.2.3 More open areas were present in the northern section of the woodland, these areas included a ground layer of a neutral, marshy grassland. Some tussocky grasses were present. Species within the north-east of the site were considered to be more diverse. The open areas contained frequent birch, hawthorn, mountain ash *Sorbus aucuparia*, cherry *Prunus avium* and goat willow *Salix caprea* saplings. There was evidence of historical disturbance by vehicles with deep wheel ruts.
- 2.2.4 Where grassland species were present, these included willowherb *Chamaenerion angustifolium*, cocksfoot *Dactylis glomerata*, Yorkshire fog *Holcus lanatus* and moss with frequent common knapweed *Centaurea nigra* common hogweed *Heracleum sphondylium*, creeping thistle *Cirsium arvense*, birds-foot trefoil *Lotus corniculatus* soft rush *Juncus effusus*, ragwort *Jacobaea vulgaris* and fescue *Festuca* sp.
- 2.2.5 Congested and Tibetan cotoneaster was recorded within the woodland. Both of these species are invasive and non-native, but not currently listed on Schedule 9 under the Wildlife and Countryside Act.
- 2.2.6 Higher class species included frequent orchids throughout the woodland area.
- 2.2.7 The woodland was unmanaged at the time of the survey.
- 2.2.8 This habitat is identified as “Woodland and Forest – Other Woodland; Broadleaved” in the BNG Metric.
- 2.2.9 The woodland was assessed against the condition criteria. One age class of tree was present; there was no evidence of significant browsing pressure; some invasive non-native species were present; there was open space within the woodland; some regeneration was noted; there was <10% tree mortality; no recognisable NVC community ground layer; one storey was present; no veteran trees; no standing deadwood; and >20% damaged ground. Given this, following the Natural England condition assessment this would be categorised as ‘poor’ habitat condition.
- 2.2.10 0.74 ha of this habitat and condition provides **2.95 habitat units**.

Introduced Shrub

- 2.2.11 Scattered shrub, mainly comprising cherry-laurel *Prunus laurocerasus*, occurred on the southern boundary with scattered trees throughout. The cherry laurel was unmanaged and exceeded heights of 8 m. Areas of planted laurel occurred around the car park with a shrub bed also recorded within the modified grassland. The laurel had recently been cut back to ground level but given the resilience of the species, re-growth is to be expected.
- 2.2.12 This habitat is identified as “Urban – Introduced Shrub” in the BNG Metric.
- 2.2.13 This habitat is not subject to condition assessment.
- 2.2.14 0.18 ha of this habitat provide **0.37 habitat units**.

Ponds

- 2.2.15 Five ponds were recorded on site during the survey.
- 2.2.16 The site is formed of made-ground with troughs and hollows throughout. A ditch originally led to a culvert which has been non-functioning for many years which has affected site drainage. Ponds 1,

2, 3 and 4 are all established with varying levels of aquatic plant colonisation. Pond 5 is a shallow woodland pond that only holds water for a short period of time in early spring. For pond locations, refer to the Preliminary Ecological Appraisal report (RPS, 2023).

- 2.2.17 Pond 1 was less than 5 cm deep and heavily covered with blanket weed *Spirogyra* sp. Bulrush *Typha latifolia* was also present across the pond.
- 2.2.18 Pond 2 was partially shaded and likely to dry out annually, bulrush was dominant with soft rush and blanketweed also present.
- 2.2.19 Pond 3 was partially shaded and approximately 25 cm deep. Aquatic vegetation was dominated by bulrush and yellow flag iris *Iris pseudacorus* with blanketweed also present.
- 2.2.20 Pond 4 was interconnected with a defunct ditch running through the site, in addition to bulrush and blanketweed, water plantain *Alisma plantago-aquatica* and water mint *Mentha aquatica* were present. The pond was less than 5 cm deep and likely to dry regularly.
- 2.2.21 Pond 5 was a woodland pond, heavily shaded with no aquatic vegetation. The pond was less than 5 cm deep and likely to dry out.
- 2.2.22 Environmental DNA (eDNA) surveys of the ponds confirmed presence of great crested newts (GCN) in P1-P3. Therefore, these ponds have been classed as priority habitat ponds.
- 2.2.23 This habitat is identified as “Lakes – Ponds (Priority Habitat)” in the BNG Metric.
- 2.2.24 Given the water quality, surrounding habitats, water levels, vegetation present, and absence of fish, following the Natural England condition assessment for ponds, this would be categorised as ‘moderate’ habitat condition.
- 2.2.25 0.03 ha of this habitat and condition provides **0.41 habitat units**.

Modified Grassland

- 2.2.26 Areas of close-mown amenity grassland occurred in the landscaped areas around the car park and site entrance. Herb species present included white clover *Trifolium repens*, daisy *Bellis perennis*, creeping cinquefoil *Potentilla reptans* and self-heal *Prunella vulgaris* with occasional patches of field woodrush *Luzula campestris* and moss.
- 2.2.27 This habitat is identified as “Grassland – Modified Grassland” in the BNG Metric.
- 2.2.28 This grassland meets five of the seven condition assessment criteria for a low distinctiveness grassland habitat. Following the Natural England condition assessment this would be categorised as ‘moderate’ habitat condition. Criteria failed include varied sward height and physical damage.
- 2.2.29 0.15 ha of this habitat and condition provides **0.59 habitat units**.

Bare Ground

- 2.2.30 A small area of bare ground was present adjacent to the car park, surrounded by woodland.
- 2.2.31 This habitat is identified as “Urban – Bare Ground” in the BNG Metric.
- 2.2.32 Given no vegetation present, following the Natural England condition assessment for urban habitat, this would be categorised as ‘poor’ habitat condition.
- 2.2.33 0.03 ha of this habitat and condition provides **0.06 habitat units**.

Buildings and Hardstanding

- 2.2.34 Approximately half of the site comprised hardstanding and a building associated with the existing site operations.
- 2.2.35 This habitat is identified as “Urban – Developed Land; Sealed Surface” in the BNG Metric.
- 2.2.36 This habitat is not subject to condition assessment.
- 2.2.37 0.79 ha of this habitat provides **0.00 habitat units**.

Table 2.1: Summary of baseline habitats (non-linear)

Habitat Type	UK Hab Category	Area (Ha)	Habitat Condition	Habitat Units
Woodland	Other woodland; broadleaved	0.7378	Poor	2.95
Introduced shrub	Introduced shrub	0.1838	N/A	0.37
Ponds	Ponds (priority habitat)	0.0342	Moderate	0.41
Grassland	Modified grassland	0.1465	Moderate	0.59
Bare ground	Bare ground	0.0287	Poor	0.06
Buildings and hardstanding	Developed land; sealed surface	0.7852	N/A	0.00
Total		1.9162		4.37

2.3 Hedgerows

Species-poor Hedgerow

- 2.3.1 A line of leylandii *Cupressus x leylandii* trees was present along the north-eastern corner of the car park. This species is non-native and ornamental.
- 2.3.2 This habitat is identified as “Non-native and Ornamental Hedgerow” in the BNG Metric.
- 2.3.3 This hedgerow type does not require condition assessment and is automatically classed as ‘poor’ condition.
- 2.3.4 0.07 km of this hedgerow and condition provides **0.07 hedgerow units**.

Table 2.2: Summary of baseline habitats (linear)

Habitat Type	UK Hab Category	Length (km)	Habitat Condition	Hedgerow Units
Non-native ornamental hedgerow	Non-native ornamental hedgerow	0.07	Poor (fixed)	0.07
Total		0.07		0.07

3 BIODIVERSITY ENHANCEMENT STRATEGY

3.1 Current Proposals

- 3.1.1 The post-development plan for the site includes a new warehousing facility and associated hard landscaping (refer to Figure 2.2). If no soft landscaping is included within the proposals, the development would result in an **82.14% net loss** for habitats and **62.86% net loss** for hedgerows.
- 3.1.2 Habitat recommendations designed to achieve a net gain for biodiversity are therefore outlined below.

3.2 Habitats

Species-Rich Grassland

- 3.2.1 The retained modified grassland areas should be re-seeded with a species-rich grassland mix, such as Emorsgate EL1, EM10, or similar approved. This will enhance the habitat from a low distinctiveness to a medium distinctiveness grassland. Management practices should be designed to provide at least a 'moderate' condition grassland.
- 3.2.2 To achieve moderate condition, the grassland needs to achieve between 3-4 of the criteria listed below in Table 3.1, of which Criterion 1 is essential.

Table 3.1: Habitat condition criteria for Other Neutral Grassland

Criterion no.	Criterion
1	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
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.
3	Cover of bare ground between 1% and 5%, including localised areas, for example, rabbit warrens.
4	Cover of bracken less than 20% and cover of scrub (including bramble) less than 5%.
5	There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981). Combined cover of species indicative of sub-optimal condition (creeping thistle, spear thistle, curled dock, broadleaved dock, common nettle, creeping buttercup, greater plantain, white clover, and cow parsley) 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.
6	There are 10 or more vascular plant species per m ² present, including forbs that are characteristic of the habitat type (species referenced criterion 5 cannot contribute towards this count). Note - this criterion is essential for achieving Good condition for non-acid grassland types only.

- 3.2.3 This can be achieved by re-seeding the grassland and managing the sward to encourage wildflower growth, removing sub-optimal species, and provide structural variation through rotational mowing.
- 3.2.4 This is recorded as 'Grassland – Other Neutral Grassland' in the BNG Matrix.

3.2.5 This would deliver **0.90 habitat units**.

Woodland Enhancement

- 3.2.6 As a small area of woodland habitat is being lost to development, creation of new woodland or enhancement of existing woodland is required to satisfy the trading rules and provide a net gain for biodiversity. There is no scope to plant new woodland, so management of the existing woodland is recommended.
- 3.2.7 At the time of the survey, the broadleaved woodland was considered to fall into the 'poor' habitat condition category, as it failed to meet the maximum score for several criteria. These criteria included age distribution, undesirable species presence, species diversity, woodland regeneration, structural variation, ground flora, veteran trees, amount of deadwood, and woodland disturbance.
- 3.2.8 There is scope to enhance the woodland to the next condition level, which would in turn increase the biodiversity value of the site. As the woodland currently achieves 24 criteria points, only two additional points are required to achieve 'moderate condition'.
- 3.2.9 In order to enhance the habitat to 'moderate' condition, undesirable species (cotoneaster) should be removed from the woodland, native shrub / scrub layer planting should be incorporated to provide two storeys across the woodland, and the ground flora should be improved through management and planting where necessary. Care should be taken to maintain orchid populations. Where trees are to be felled during future management, these should be left as deadwood on site to provide suitable habitat for invertebrates.
- 3.2.10 A management regime for the woodland should be implemented to maintain a diverse age and canopy structure in the medium-long term.
- 3.2.11 It has been calculated that enhancement of the woodland from 'poor' to 'moderate' habitat condition could deliver **3.43 habitat units**.

Pond Creation

- 3.2.12 As P1 is being lost to development, creation of a new pond is required to satisfy the trading rules and provide a net gain for biodiversity. It is recommended that the new pond be located within the southern grassland parcel.
- 3.2.13 In order to provide sufficient habitat units, the pond should measure 70 m².
- 3.2.14 P1 is considered a priority habitat due to the positive GCN eDNA result, and the replacement pond is therefore required to achieve priority habitat status. It is considered likely that GCN present on site will eventually inhabit the new pond (provided it is suitable condition for the species) as it is connected to the woodland through shrub along the southern boundary.
- 3.2.15 The pond should therefore be designed to provide suitable breeding habitat for GCN and not be stocked with fish. In order to provide suitable habitat and to satisfy target conditions, the pond should be designed and managed to provide 'moderate' habitat condition.
- 3.2.16 To achieve moderate condition, the pond needs to achieve between 6-8 of the criteria listed below in Table 3.2.

Table 3.2: Habitat condition criteria for Ponds

Criterion no.	Criterion
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.
2	There is semi-natural habitat (moderate distinctiveness or above) completely surrounding the pond, for at least 10 m from the pond edge for its entire perimeter.
3	Less than 10% of the water surface is covered with duckweed <i>Lemna spp.</i> or filamentous algae.

4	The pond is not artificially connected to other waterbodies, e.g. agricultural ditches or artificial pipework.
5	Pond water levels can fluctuate naturally throughout the year. No obvious artificial dams, pumps or pipework.
6	There is an absence of listed non-native plant and animal species.
7	The pond is not artificially stocked with fish. If the pond naturally contains fish, it is a native fish assemblage at low densities.
Additional criteria for all non-woodland ponds	
8	Emergent, submerged or floating plants (excluding duckweed) cover at least 50% of the pond area which is less than 3 m deep.
9	The pond surface is no more than 50% shaded by adjacent trees and scrub.

3.2.17 The pond should be managed to maintain or improve its condition in the long-term. Precautionary protection measures for amphibians should be included within the Management Plan for the pond, to avoid negatively impacting GCN or other amphibians that may be present after establishment.

3.2.18 This would deliver **0.05 habitat units**.

Habitat Summary

3.2.19 Considering all the above, the potential total habitat net change was calculated as a gain of **+17.68%**.

3.3 Hedgerows

3.3.1 Linear habitats such as hedgerows are calculated separately within the BNG Metric. This means that at least 10% net gain is required for habitats and hedgerows individually to achieve an overall BNG score.

3.3.2 As a section of the leylandii hedgerow is being lost to development, inclusion of a new hedgerow is required to satisfy the trading rules and provide a net gain for biodiversity. It is recommended that the new pond be located within the grassland habitat to provide connectivity to the wider landscape.

3.3.3 It has been calculated that at least 30 metres of native species hedgerow is required to replace the section of hedgerow lost. The new hedgerow has been given a target condition of 'poor' due to expected age variation, structure, and management, and to avoid over-estimation of the BNG score.

3.3.4 Inclusion of 30 m of native, poor condition hedgerow would provide **0.06 hedgerow units**.

Hedgerow Summary

3.3.5 Considering all the above, the total hedgerow net change was calculated as a potential gain of at least **+19.86%**. Inclusion of more length or of a species-rich hedgerow (5 species or more) would further increase the BNG score.

3.4 Other Enhancements

3.4.1 The BNG Metric captures information on habitat types, conditions, and sizes to calculate the biodiversity value of a site. However, various method of biodiversity enhancement cannot be captured within such a calculation.

3.4.2 For example, provision of bird, bat, and invertebrate boxes would create valuable habitats for a range of species and increase the biodiversity of the site by providing further nesting, roosting, feeding, and hibernating opportunities. Provision of invertebrate boxes would not only provide suitable habitat for insects, but would also increase foraging opportunities for bats and birds.

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- 3.4.3 Inclusion of log piles or reptile and amphibian hibernacula would provide sheltered hibernation and refuge habitat for a range of species.
 - 3.4.4 Lengthening periods between mowing the grassland, particularly in the spring and summer months, would allow plants to grow to flower and increase the foraging opportunities for insects, and in turn, bats and birds.

4 SUMMARY

- 4.1.1 The assessment above indicates that the development has the potential to deliver a net gain of **+17.68%** for habitats and **+19.86%** for hedgerows, with all trading rules satisfied, through the enhancement of existing grassland to species-rich grassland, creation of a new pond, new hedgerow, and enhancement and management of the existing woodland.
- 4.1.2 This score is above the standard target of 10% and demonstrates how the proposed development can provide a biodiverse, ecologically valuable site that will benefit a wide range of species.
- 4.1.3 Once final landscaping proposals are designed, the Metric should be re-run with accurate measurements to ensure a net gain is achieved.
- 4.1.4 A summary screenshot from the calculator tool is provided in Figure 4.1 below.

Figure 4.1: Biodiversity Metric 3.1 Calculation Tool Headline Results

Jacquet UK Tankersley

Headline Results

Scroll down for final results ▲

Return to results menu

On-site baseline	Habitat units	4.37			
	Hedgerow units	0.07			
	Watercourse units	0.00			
On-site post-intervention (Including habitat retention, creation & enhancement)	Habitat units	5.15			
	Hedgerow units	0.08			
	Watercourse units	0.00			
On-site net change (units & percentage)	Habitat units	0.77	17.68%		
	Hedgerow units	0.01	19.86%		
	Watercourse units	0.00	0.00%		
Off-site baseline	Habitat units	0.00			
	Hedgerow units	0.00			
	Watercourse units	0.00			
Off-site post-intervention (Including habitat retention, creation & enhancement)	Habitat units	0.00			
	Hedgerow units	0.00			
	Watercourse units	0.00			
Off-site net change (units & percentage)	Habitat units	0.00	0.00%		
	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	0.77			
	Hedgerow units	0.01			
	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	0.77			
	Hedgerow units	0.01			
	Watercourse units	0.00			
Total net % change (Including all on-site & off-site habitat retention, creation & enhancement)	Habitat units	17.68%			
	Hedgerow units	19.86%			
	Watercourse units	0.00%			
Trading rules satisfied?	Yes ✓				
Unit Type	Target	Baseline Units	Units Required	Unit Deficit	
Habitat units	10.00%	4.37	4.81	0.00	Unit requirement met or surpassed ✓
Hedgerow units	10.00%	0.07	0.08	0.00	Unit requirement met or surpassed ✓
Watercourse units	10.00%	0.00	0.00	0.00	Unit requirement met or surpassed ✓

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