



Harworth Group

Dearne Valley Parkway, Rockingham, Barnsley – Phase 2a.1

Biodiversity Impact Assessment

November 2021

FPCR Environment and Design Ltd

Registered Office: Lockington Hall, Lockington, Derby DE74 2RH

Company No. 07128076. [T] 01509 672772 [F] 01509 674565 [E] mail@fpcr.co.uk [W] www.fpcr.co.uk

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1.0 INTRODUCTION

- 1.1 This report has been prepared by FPCR Environment and Design Ltd on behalf of the Harworth Group in support of both requirements under the Section 106 schedule 4 agreement (10 Aug 2020) and condition 28 discharge for a reserved matters application (Outline planning permission- 2019/1573).

Site Location and Context

- 1.2 The Site sits to the north of Hoyland, adjacent to Shortwood Business Park in Barnsley, South Yorkshire (central grid ref: SE 3563 0103). The surrounding land use is largely arable and pasture with an area of broad-leaved semi-natural woodland to the north, forming part of the Short Wood and Hay Green LWS.
- 1.3 Phase 2a.1 comprises an area to the south of Dearne Valley Parkway (A6195) and has largely been cleared of vegetation as part of the approved site clearance and earthworks. Retained areas consist of a small woodland parcel in the east, and a more substantial area of mixed habitats (woodland, grassland, scrub, pond, wet ditch) along the western boundary beyond a public footpath.

Site Proposals

- 1.4 Site proposals are for a business park development comprising warehousing with associated parking, lorry compounds and access infrastructure, with landscaping and green infrastructure (GI), including attenuation facilities.
- 1.5 Phase 2a.1 contains three plots, each with a single commercial unit and associated infrastructure; alongside which will be an extensive area of green infrastructure, two attenuation features, and an area of retained habitats. Woodland belts along the boundaries will buffer the development footprint from the environs beyond.

Aims and Objectives

- 1.6 This Biodiversity Impact Assessment is based on the Chartered Institute of Ecology and Environmental Management (CIEEM) guidance¹. The scope and objectives of this report are to:
- Summarise the results of the baseline UKHab survey undertaken on the Site and to present the results of habitat condition assessment surveys following the Defra Biodiversity Metric 2.0 Technical Guidance.
 - Provide an overview of the proposed habitats following completion of the scheme.
 - Present the results of the Defra Biodiversity Metric 2.0 assessment completed for the proposals
 - Assess the feasibility of the proposals to achieve a net gain in biodiversity through the Defra Biodiversity metric 2.0
 - Recommendations for the proposals to maximise their biodiversity potential
- 1.7 This report provides an update to the biodiversity impact assessment submitted as part of the outline planning application and utilises the detailed site plans (The Harris Partnership 2021) and

¹ CIEEM (2021) Biodiversity Net Gain Report and Audit Templates Chartered institute of Ecology and Environmental Management, Winchester, UK.

landscaping plans (Urban Wilderness 2021 / Vector Design Concepts 2021) produced in support of the reserved matters application.

- 1.8 This report provides only a summary description of the habitat baseline and this report should be read in conjunction with the Ecological Appraisal (FPCR, 2019).
- 1.9 This report has also been informed by a Landscape and Ecological Management Plan (LEMP) (Urban Wilderness 2021) which has been prepared for the proposals, which details how the retained and proposed habitats will be created and managed. Consequently, this report focuses on elements of creation and management that are relevant to the Biodiversity Metric 2.0 with details of the other practical elements of creation/management reserved for the accompanying LEMP. This report should therefore be read in conjunction with the LEMP. .

Legislative and Policy Context

- 1.10 The UK Government, as signatory to the Rio Convention on Biological Diversity, is committed to conserving and enhancing biodiversity. This commitment is further enforced in the Natural Environment and Rural Communities Act (NERC) 2006 and the Natural Environment White Paper (June 2011).
- 1.11 DEFRA's 25 Year Environment Plan (2018) seeks to embed a 'net environmental gain' principle for development to deliver environmental improvements locally and nationally. Current policy is that the planning system should provide biodiversity net gains where possible; however, this is moving towards a mandatory requirement.
- 1.12 The NPPF (2021) in particular seeks to ensure that the planning system contributes to and enhances the natural and local environment, protect and enhance biodiversity and geodiversity by:
- "174. d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;*
- 179. b) promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity."*
- 1.13 The Barnsley local plan supplementary planning document: Biodiversity and Geodiversity states
- The LPA will not support applications that would damage the ecological network and cause a net-loss in biodiversity in line with the NPPF.*
- 1.14 With specific reference to sites located within the Nature Improvement Area (see 3.3) the above document states:
- Within the NIA (Nature Improvement Area) we require specific biodiversity enhancements with developments over and above the minimum mitigation/ compensation measures.....*
- Such quantifiable, significant benefits could include:*
- *New woodland;*
 - *New wetland;*
 - *Enhancing areas of poor environmental quality;*
 - *Improving public access, or*

- *Improving the management of existing habitats;*

The Environment Bill

- 1.15 The proposed Environment Bill states that “the relevant percentage is 10%” as a biodiversity net gain target for development (Schedule 7A, Part 1, 2(3)). It should be noted that this has not yet passed into law at the time of the writing of this report. At the point the bill receives royal assent, a transition period of two years is allowed for to enable development projects to account for these new requirements.

Measurable net gain

- 1.16 A key point in the current legislative context is that the term “measurable net gain” is not defined within the NPPF. Additionally, this term currently has no agreed definition in local or UK policy. Whilst a figure of 10% is widely viewed as best practice, it currently has no adopted policy support at either a local or national level.
- 1.17 The section 106 agreement for the Site as a whole, stipulates that the development will deliver a 10% net gain in biodiversity units. This is expected to include additional offsite provision to compensate for on-site deficits.
- 1.18 The biodiversity units created and lost for each phase of the development will be tracked utilising the Biodiversity Metric 2.0. with updates submitted at each stage of reserved matters. Surplus units ‘banked’ and carried forward to future phases. Any deficits will be accounted for through offsite provision.

2.0 METHODOLOGY

Baseline Habitat Assessment

2.1 The following documents were used to inform this assessment:

- Ecological Appraisal. Rev A. (FPCR 2019)
- Biodiversity Impact Assessment. Rev B. (FPCR 2020)
- Landscape and Environmental Management Plan. Rev D. (Urban Wilderness 2021)
- Landscape Planting Plan Phase 2a.1. Drawing No. 334-UW-P-007. Rev E. (Urban Wilderness 2021)
- Landscape Masterplan. Drawing No. 334-UW-P-004. Rev D. (Urban Wilderness 2021)
- Landscape Plan (Plots 1,2 & 3).. Drawing Nos. 12006-2-VL_LO1 - L04. Rev D. (Vector Design Concepts 2021)

Natural England's The Biodiversity Metric 2.0

- 2.2 The Biodiversity Metric version 2.0 was utilised to undertake the initial assessment, with the relevant condition assessment used to guide habitat creation and management objectives for the site. For continuity the Biodiversity Metric 2.0 will be used to track all phases of the development.
- 2.3 Natural England's published biodiversity net gain metric is an MS Excel spreadsheet that is used to quantify the predicted net-change in biodiversity value ("biodiversity units") of a proposed development site before and after development. It treats the flat "habitats" and linear features "hedgerows" separately, and is based on pre-determined values, along with published written guidance, set by a Natural England-led team of experts.
- 2.4 To facilitate this, the Site has been mapped and digitised using QGIS, with the baseline habitats plotted and measured. In accordance with the 2.0 Metric User Guide, habitats have been defined under UK Habitat Classification. The detailed landscaping proposals for the Site were then uploaded into the QGIS, and the proposed habitats mapped and digitised to generate areas for each of the habitats proposed for creation.
- 2.5 These pre- and post-development habitat areas were then inputted into the 2.0 Metric Calculation tool. Pre-development habitats were grouped into their habitat type and condition based on the results of the UKHab and condition assessment surveys, while post-developments were classified into their UKHab type as identified through the classification of proposed habitats within landscaping plans into appropriate UKHab types and their target condition scores. The metric then provides a habitat distinctiveness score for each of the baseline and proposed habitats which are pre-assigned scores based on the habitat type.
- 2.6 The strategic significance of the habitats was also assessed for both the pre- and post-development habitats based on the location of the site, its proximity to existing areas of biodiversity interest and its setting within wider habitat corridors
- 2.7 With regards connectivity, Natural England's Biodiversity Metric 2.0 – Beta Test Version Consultation Response (August 2020) has updated this guidance and states that connectivity is now to be fixed at Low for all habitats until the metric is next reviewed.

- 2.8 The metric then assigns a range of pre-assigned factors to each of the proposed habitats. These have been advised by subject knowledge experts and are universal multipliers generated by the metric itself for the following variables relevant to habitat creation, enhancement or restoration proposals:
- Difficult of creating or restoring/enhancing a habitat: This pre-assigned score is based on how difficult a particular habitat type is to create or restore/enhance
 - Temporal risk: This is the 'time to target condition' for any particular habitat and determines how long a particular habitat type is likely to take to reach the condition score that the desired condition score assigned to it.
 - Spatial Risk: This score is based on the distance between the site of habitat loss and any habitats creation or enhancement proposals at any offsite offsetting solutions.
- 2.9 Full details of the calculation methodology used is provided in the Biodiversity Metric 2.0 – User Guide².

Limitations

- 2.10 Data provided by third party sources collated during the desktop study is generally made up from a wide range of sources including (but not limited to) those submitted by ecological consultancies, wildlife conservation organisations and volunteers. As such, this data is typically focused on areas of known nature conservation, is reliant upon formal surveys having been undertaken within an area or the presence of an expert within the locality and as such this data can never be fully relied upon as a complete ecological dataset for any given area. Rather, this data is used as a guide to likely presence of notable ecological features and can never be relied upon for likely absence.
- 2.11 The UKHab habitat map has been reproduced from detailed field notes and informed by aerial imagery, OS mapping and site maps provided by the client. The accuracy of this figure is therefore ultimately guided by the accuracy of these sources and can only be relied upon to a certain degree of resolution.
- 2.12 Natural ecological communities are susceptible to change; at times this change can be rapid as a result of internal and external environmental factors. The biodiversity offsetting calculations are based on ecological assessments of habitats carried out during 2019; as a result, changes which may affect the conclusions of this report may occur, if a prolonged period of time elapses prior to the commencement of the project.
- 2.13 The aim of biodiversity offsetting is to compensate for significant adverse impacts on biodiversity identified after appropriate avoidance, minimisation and on-site rehabilitation measures have been taken, according to the mitigation hierarchy as required by the NPPF.
- 2.14 The most recent site survey was undertaken in October 2019 which is a sub-optimal time for habitat surveying as many plant species will not be present, making accurate determination of habitat types difficult. While the survey was conducted just outside the recommended survey season (April – September inclusive) it is however considered that sufficient information was collected to enable the determination of broad habitat and types and the identification and assessment of features of ecological value for the purposes of this assessment, given the extent of previous survey

² Natural England, The biodiversity metric 2.0 (2019) Available at:
<http://publications.naturalengland.org.uk/publication/5850908674228224>

information recorded since 2015, including during the recommended seasons, and the nature of the habitats at the Site.

- 2.15 No other limitations specific to this report influenced this assessment.

3.0 BASELINE CONDITIONS

- 3.1 The baseline conditions are taken from the site wide Biodiversity Impact Assessment (FPCR 2020) submitted in support of the outline planning application.

Desktop Study

Internationally Designated Sites of Nature Conservation Importance

- 3.2 No international sites of nature conservation importance are present within a 5km radius of the subject site.

Nationally Designated Sites of Nature Conservation Importance

- 3.3 The site is located within the Dearne Valley Green Heart Nature Improvement Area (NIA) which is a national, landscape-scale nature conservation designation and is subject to requirements set out within the Barnsley local plan supplementary planning document: Biodiversity and Geodiversity.
- 3.4 No other nationally designated statutory sites of nature conservation importance were located within the 2km search area.

Non-Statutory Sites

- 3.5 Two Local Wildlife Sites (LWS) are located within 1km of the site as detailed within Table 1 below.

Table 1: Designated Sites within Zones of Influence

Site Name/Ref	Designation	Designation Feature	Approximate Distance and Orientation from Site
Short Wood and Hay Green/637	LWS	Ancient woodland	25m north
Barrow Colliery Site –/1158	LWS	Ancient woodland and semi-improved neutral grassland	700m north-east

Strategic Significance

- 3.6 The site is set within the Dearne Valley Green Heart NIA and as such all habitats meet the criteria for inclusion within the maximum valued strategic significance category- “*within area formally identified in local strategy*”.

Biodiversity Units

Habitats

- 3.7 The site was dominated by agricultural fields utilised for livestock grazing. Native hedgerows bounded the majority of field compartments. Woodland blocks were present within and surrounding the site, with a woodland corridor running along the western boundary. Other habitats on-Site included areas of scrub and neutral grassland.

- 3.8 A number of seasonally wet drainage channels were present within site. Ditch D1 (1m x 0.27km, 0.03ha) which connects into pond P1 is being retained in its entirety. Further seasonally wet ditches (~1m maximum width) measured approximately 1.6km (0.16ha). Given that these do not hold permanent water they would score as poor condition, moderate distinctiveness habitat under the ditch habitat assessment. With some localised exceptions, the ditches were dominated by the vegetation of their surroundings, and it is considered that for these calculations their value is best reflected by inclusion within the habitats in which they are sited. Overall these provide equivalent or higher value in terms of biodiversity units.
- 3.9 The baseline habitats and their conditions are detailed in Table 2 below and illustrated in Figure 1.

Table 2: Biodiversity Units: Baseline On-Site Habitats

Label	Habitat and Description	Area (ha)	Condition	Biodiversity Units
4	Other Neutral grassland Glades, rides and woodland edges.	0.45	Moderate	4.14
5	Other woodland; broadleaved Plantation woodland ~5% coniferous	4.02	Poor	18.49
6	Mixed scrub Roadside scrub	0.05	Poor	0.23
7	Mixed scrub Scrub on neutral grassland	0.38	Moderate	3.5
8	Other Neutral grassland Grassland associated with pond P1	0.27	Moderate	2.48
9	Other woodland; broadleaved Woodland following ditch D1	0.49	Poor	2.25
10	Modified grassland Roadside grassland	0.33	Poor	0.76
12	Mixed scrub Scrub on neutral grassland along drainage ditches	0.14	Poor	0.64
13	Other woodland; broadleaved Plantation woodland ~10% coniferous	0.4	Poor	1.84
14	Modified grassland Grazed field compartments	7.27	Poor	16.72
15	Bramble scrub Dense brambles at field edge	0.04	Poor	0.18
P1	Ponds (Non- Priority Habitat) Pond on eastern site boundary	0.02	Moderate	0.28
N/A	Artificial unvegetated, unsealed surface Tracks throughout site	0.09	N/A	0
	Total	13.95		51.52

Please note there may be minor discrepancies (rounding errors) between the columns and the totals, however, the numbers duplicate those presented within the matrix calculator.

Hedgerows

- 3.10 The biodiversity units for each hedgerow on the site have been calculated and are presented in Table 3.

Table 3: Biodiversity Units: Baseline On-Site Hedgerows

Habitat	Length (km)	Condition	Biodiversity Units
H4 Hedges: Native species rich hedge	0.16	Moderate	0.46
H6 Hedges: Native species rich hedge	0.35	Moderate	0.18
H7 Hedges: Native species rich hedge	0.05	Moderate	0.46
H8 Hedges: Native species rich hedge	0.13	Moderate	1.20
H9 Hedges: Native species rich hedge	0.31	Moderate	2.85
H11 Hedges: Native species rich hedge	0.2	Moderate	1.01
H13 Hedges: Native species rich hedge	0.14	Moderate	0.21
Total	0.69	-	6.38

Please note there may be minor discrepancies (rounding errors) between the columns and the totals, however, the numbers duplicate those presented within the matrix calculator.

4.0 PROPOSED DESIGN

Habitats

Retained/Enhanced

- 4.1 Habitat retention is illustrated in Figure 2.
- 4.2 The proposals include the retention of boundary areas of grassland, woodland and scrub as well as pond P1 and ditch D1.
- 4.3 Onsite woodland habitats totalling 0.86ha will be enhanced in line with the LEMP to target good condition woodlands. In addition, selective thinning of existing woodlands should be undertaken to create more openings in the woodland to encourage tree regeneration and understorey establishment
- 4.4 Onsite scrub buffering existing woodland, totalling 0.24ha will be managed to allow succession to a woodland community. In line with the LEMP, additional tree planting will be used to accelerate woodland development.
- 4.5 Retained areas of grassland will be generally managed to remove encroaching scrub and enhance their floristic diversity in line with the newly created grasslands across site.
- 4.6 The grassland around pond P1 labelled as TN8 (0.27ha), will be the focus of enhancement works to improve its condition to good. In addition to standard management detailed below and in the LEMP, this area will be managed to achieve >15 species / m², including frequent meadow species (i.e. Meadow Vetchling *Lathyrus pratensis*, Bird's-foot Trefoil *Lotus corniculatus*, Ox-eye Daisy *Leucanthemum vulgare*, Lady's Bedstraw *Galium verum*, Cowslip *Primula veris*, Black Knapweed *Centaurea nigra*, Rough Hawkbit *Leontodon hispidus*, Bulbous Buttercup *Ranunculus bulbosus*, Marsh-marigold *Caltha palustris*, Great Burnet *Sanguisorba officinalis*, Meadowsweet *Filipendula ulmaria* and Meadow Foxtail *Alopecurus pratensis*.

Habitat Creation

- 4.7 Habitat creation is shown in Figure 3.
- 4.8 Green infrastructure proposals include the creation of a range of habitats throughout the Site that will be managed for their biodiversity value; including woodland, scrub, species rich grassland and attenuation features with marginal planting.
- 4.9 Around individual plots, habitat creation will include ornamental planting and amenity grassland turfs which will be managed primarily for their amenity value. Nevertheless, planting a diverse range of ornamental plants will provide some interest for wildlife, particularly pollinators that can take advantage of flowering species. Grassland will be seeded with a diverse flowering lawn mix and, while management will prioritise their amenity character, it will ensure these areas provide some botanical interest, particularly during the spring/summer months.
- 4.10 The biodiversity units for each habitat on the Site have been calculated and are presented in Appendix A, along with the target condition criteria which will be employed to achieve the target conditions for each habitat type. Management prescriptions for the green infrastructure are detailed within the LEMP. On plot management will be focused on amenity value for low distinctiveness habitats, with biodiversity benefits bolstered through diverse planting/seeding mixes.

Hedgerows

Retained Hedgerows

- 4.11 Hedgerow H8 is to be retained in full. Hedgerow H13 will be largely retained with a small section removed to facilitate a new pedestrian route.
- 4.12 The following measures will be employed within the Site Boundary to manage the existing hedgerows:
- Hedgerows will be subjected to three-year rotational management to encourage the establishment of tall, bushy hedgerows.
 - Additional planting of a range of native hedgerow species will be carried out within retained hedgerows to close up gaps and create more continuously dense and bushy features.
 - A minimum of 1m adjacent the hedgerows will be managed as 'undisturbed' ground where possible within the Site boundary. Management these areas adjacent to hedgerows will be in line with the management of grasslands.

Hedgerow Creation

- 4.13 In line with the accompanying LEMP and detailed planting plans, the proposals include the creation of a number of native species-rich hedgerows associated with ditches/banks as well as a number of formal hedgerows with a mix of native and ornamental species.
- 4.14 Native species-rich hedgerows will be planted to ensure they provide a diverse range of species along their length. Altogether, 1.157km of native species-rich hedgerow planting will be carried out generating a total of 8.95 units. Where possible these will be created in association with new ditches/banks providing valuable seasonally wet habitats for local amphibian species. These will be managed to target moderate condition by implementing the following measures:
- Failed specimens will be replaced during establishment on a like-for-like basis
 - Hedgerows will be managed to encourage tall, wide and bushy features.
 - Fertiliser use will be prohibited within grasslands in the Site Boundary that are adjacent to hedgerows to reduce nutrient enrichment
 - A minimum of 1m adjacent to the hedgerows will be managed as 'undisturbed' ground where possible. Management of grasslands within these areas adjacent to hedgerows will be in line with the management of meadow grasslands
- 4.15 The focus of management for the formal hedgerows will be for their ornamental value and these features have therefore been targeted as poor condition. These hedgerows will, however by planted with 50% hornbeam *Carpinus betulus*, a native species. In total, 1.03 km of formal hedgerows will be planted.

Additional Enhancements

- 4.16 Additional mitigation measures will be implemented to contribute to a biodiversity net gain across the Site. This will focus on the provision of faunal enhancements that are not captured within the

Natural England Biodiversity Metric 2.0 calculations. Full details of these measures are set out in the Habitat Creation, Biodiversity Mitigation and Enhancement Scheme (FPCR 2021). In brief:

- Provision of a bat hop-over across the site access road.
- Inclusion of baffles/louvres to reduce light spill onto sensitive habitats.
- Provision of a range of pole mounted bat boxes
- Provision of a range of bird nesting boxes
- Creation of hibernacula features in association with attenuation features.

5.0 BNG METRIC

- 5.1 The habitat retention, enhancement and creation proposals highlighted within this report have all been inputted into the Biodiversity Metric 2.0. Table 4 provides a summary of the headline results of the biodiversity metric 2.0 assessment completed for the proposals. The full metric has been provided in Appendix B.

Table 4: Biodiversity Metric 2.0 Headline Results

Baseline	Habitat Units	51.52
	Hedgerow Units	6.38
Post-Intervention	Habitat Units	64.89
	Hedgerow Units	10.30
Total Net Unit Change	Habitat Units	+13.37
	Hedgerow Units	+3.93
Total Net Percentage Change	Habitat Units	25.95%
	Hedgerow Units	61.62%

- 5.2 The assessment has demonstrated that this phase of the proposals will lead to a gain in both area habitat and hedgerow units.
- 5.3 A summary of post-intervention biodiversity units is provided in tables 5 and 6 below.

Table 5: Biodiversity Units: Post-intervention On-Site Habitats

Habitat and Description	Area (ha)	Condition	Biodiversity Units
Creation			
Heathland and shrub - Mixed scrub Large areas of interconnected, structurally diverse scrub.	2.59	Good	27.85
Other woodland; broadleaved Woodland blocks providing connectivity across site.	2.73	Good	8.07
Grassland – Modified grassland Formal areas of species poor grassland.	1.39	Poor	3.09
Lakes- Ponds (Non-Priority Habitat)	0.08	Moderate	0.99

Habitat and Description	Area (ha)	Condition	Biodiversity Units
Over-deepened attenuation basin designed to hold permanent water.			
Other Neutral grassland Grassland associated with western SUDS basin	1.14	Moderate	7.34
Other Neutral grassland Grassland strip to south east of plots	0.07	Moderate	0.45
Urban – SUDS Northern SUDS to be adopted by highways agency.	0.32	Poor	0.48
Urban – Developed Land	3.54	N/A - other	0
Street Trees (75x Medium)	0.3052	Moderate	0.54
Urban - Amenity Grassland On-plot	0.25	Poor	0.55
Urban – Introduced Shrub On-plot	0.08	Poor	0.18
Urban – Artificial unvegetated, unsealed surface On-plot	0.07	Poor	0
Section Total	12.26		49.54
Enhanced			
Woodland and forest - Other woodland; broadleaved Retained woodland around peripheries	0.86	Good	5.65 (Net)
Grassland - Other neutral grassland Retained grassland by pond P1	0.27	Good	3.21 (Net)
Woodland and forest - Other woodland; broadleaved (Succession from mixed scrub) Retained scrub area managed to reach woodland status.	0.24	Good	4.65 (Net)
Section Total	1.37		13.51

Please note there may be minor discrepancies (rounding errors) between the columns and the totals, however, the numbers duplicate those presented within the matrix calculator. 1.84 baseline units are retained in addition to those created and enhanced.

Table 6: Biodiversity Units: Post-intervention On-Site Hedgerows

Habitat	Length (km)	Condition	Biodiversity Units
Native Species Rich Hedgerow - Associated with bank or ditch	1.157	Moderate	8.95
Native Hedgerow Formal Hedging	0.602	Moderate	0
Native Hedgerow On-plot	0.431	Moderate	0
Total	2.19	-	8.95

Please note there may be minor discrepancies (rounding errors) between the columns and the totals, however, the numbers duplicate those presented within the matrix calculator. 1.35 baseline units retained in addition to those created.

Habitat Trading Summary

- 5.4 A large area of habitats to be lost are modified grassland fields, which are low distinctiveness habitats and have been compensated for through the creation of higher distinctiveness habitats.
- 5.5 A significant area of broadleaved woodland has been lost. This is a medium distinctiveness habitat and requires compensation to be equivalent or better. Current proposals compensate for this loss through a combination of woodland habitat creation and enhancement of retained areas.
- 5.6 The metric highlights the loss of 0.18 units of medium distinctiveness bramble scrub as an unaccounted for. However, the net increase in mixed scrub habitat on site is 25.78 units and so the small loss of bramble scrub is sufficiently accounted for, and the trading error highlighted is considered erroneous.

6.0 BIODIVERSITY NET GAIN PRINCIPLES

- 6.1 The above have been guided by the Biodiversity Good Practice Principles (CIRIA-CIEEM-IEMA, 2016) Table 7 lists all of the principles along with a description of how the principles has been applied to this assessment.

Table 7: Application of the Biodiversity Net Gain Principles to the Proposals

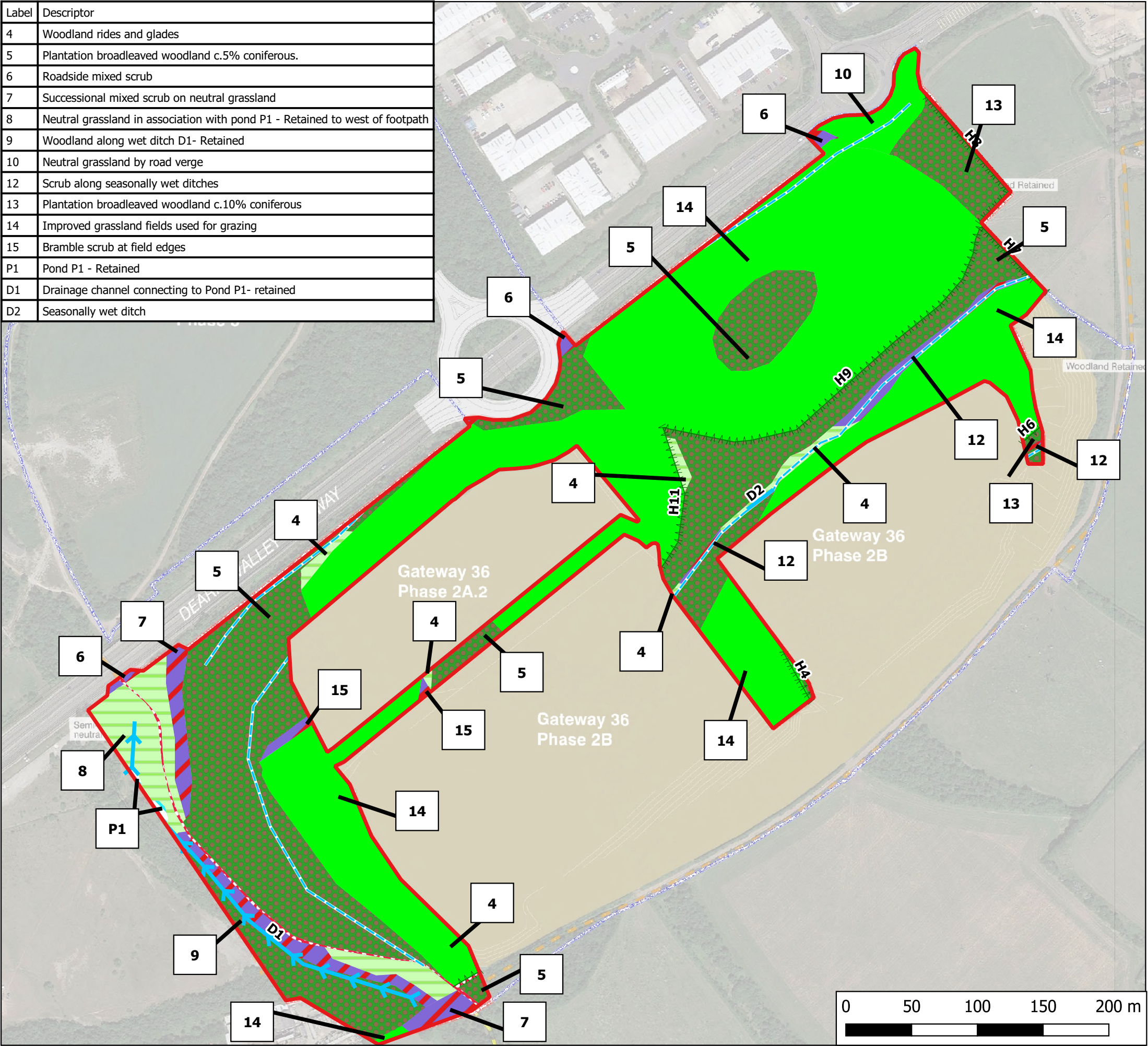
Principle	Indicators
Principle 1: Apply the Mitigation Hierarchy	Medium distinctiveness habitats have been retained throughout proposals wherever possible, notably the grassland and woodlands buffering pond P1 and ditch D1.
Principle 2: Avoid losing biodiversity that cannot be offset by gains elsewhere	The proposals have sought to retain medium distinctiveness habitats wherever possible.
Principle 3: Be inclusive and equitable	Preliminary biodiversity net gain calculations were provided during the design stage to inform the proposals. These were completed using the 2.0 metric prior to the release of the 3.0 metric.
Principle 4: Address risks	The habitats recommended for creation include those that would be suitable for establishment in line with the accompanying LEMP. The condition scores have been set at achievable levels, though management will ultimately strive to improve the condition scores above those stated above where possible.
Principle 5: Make a measurable Net Gain contribution	Phase 2a.1 has provided a gain in habitat biodiversity. In addition a range of other biodiversity enhancements are incorporated in the scheme including faunal features such as bird boxes, bat boxes and hibernacula to provide a range of features for faunal species to bring these species into the heart of the built environment as well as just on the peripheries.
Principle 6: Achieve the best outcomes for biodiversity	
Principle 7: Be additional	

Principle 8: Create a Net Gain legacy	The LEMP produced for the proposals will ensure that the management is secured in the long-term to ensure that the target conditions can be achieved.
Principle 9: Optimise sustainability	The drainage proposals have been designed to provide additional opportunities for habitat creation through the creation of attenuation features that will hold some degree of water year-round. The network of footpaths throughout the green infrastructure will provide opportunities for employees and local residents cross through the site and to take advantage of less formally managed habitats.
Principle 10: Be transparent	All assumptions have been set out within this report and its appendices to ensure that the information used to inform the biodiversity metric 2.0 calculations can be reviewed

7.0 CONCLUSION

- 7.1 The approach to habitat creation has aimed to maximise biodiversity value within the space made available within the proposals for green infrastructure. Biodiversity Net Gain has then been used to inform the habitat creation and enhancement proposals for the scheme and to guide decisions around additional habitat provision.
- 7.2 The results of the assessment demonstrate that phase 2a.1 currently will lead to an overall gain of biodiversity units associated with the area habitats and hedgerows when compared with the baseline values.
- 7.3 In order to comply with the Section 106 agreement (schedule 4), calculations for the remainder of phase 2 and phase 3 of the development should utilise the data provided within this report to track the site wide net gain, and inform offsite habitat creation requirements.
- 7.4 The proposals for phase 2a.1 provide an overall surplus of biodiversity units in respect to this phase of development. As such no additional off-site habitat creation is required to compensate for this phase and no offsetting scheme is required.

Label	Descriptor
4	Woodland rides and glades
5	Plantation broadleaved woodland c.5% coniferous.
6	Roadside mixed scrub
7	Successional mixed scrub on neutral grassland
8	Neutral grassland in association with pond P1 - Retained to west of footpath
9	Woodland along wet ditch D1- Retained
10	Neutral grassland by road verge
12	Scrub along seasonally wet ditches
13	Plantation broadleaved woodland c.10% coniferous
14	Improved grassland fields used for grazing
15	Bramble scrub at field edges
P1	Pond P1 - Retained
D1	Drainage channel connecting to Pond P1- retained
D2	Seasonally wet ditch



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Key

- Redline Phase 2a.1
- Area Habitats

Other neutral grassland

Modified grassland

Other woodland-broadleaved

Scrub

Artificial unvegetated unsealed surface

Non-priority pond
- Linear Habitats

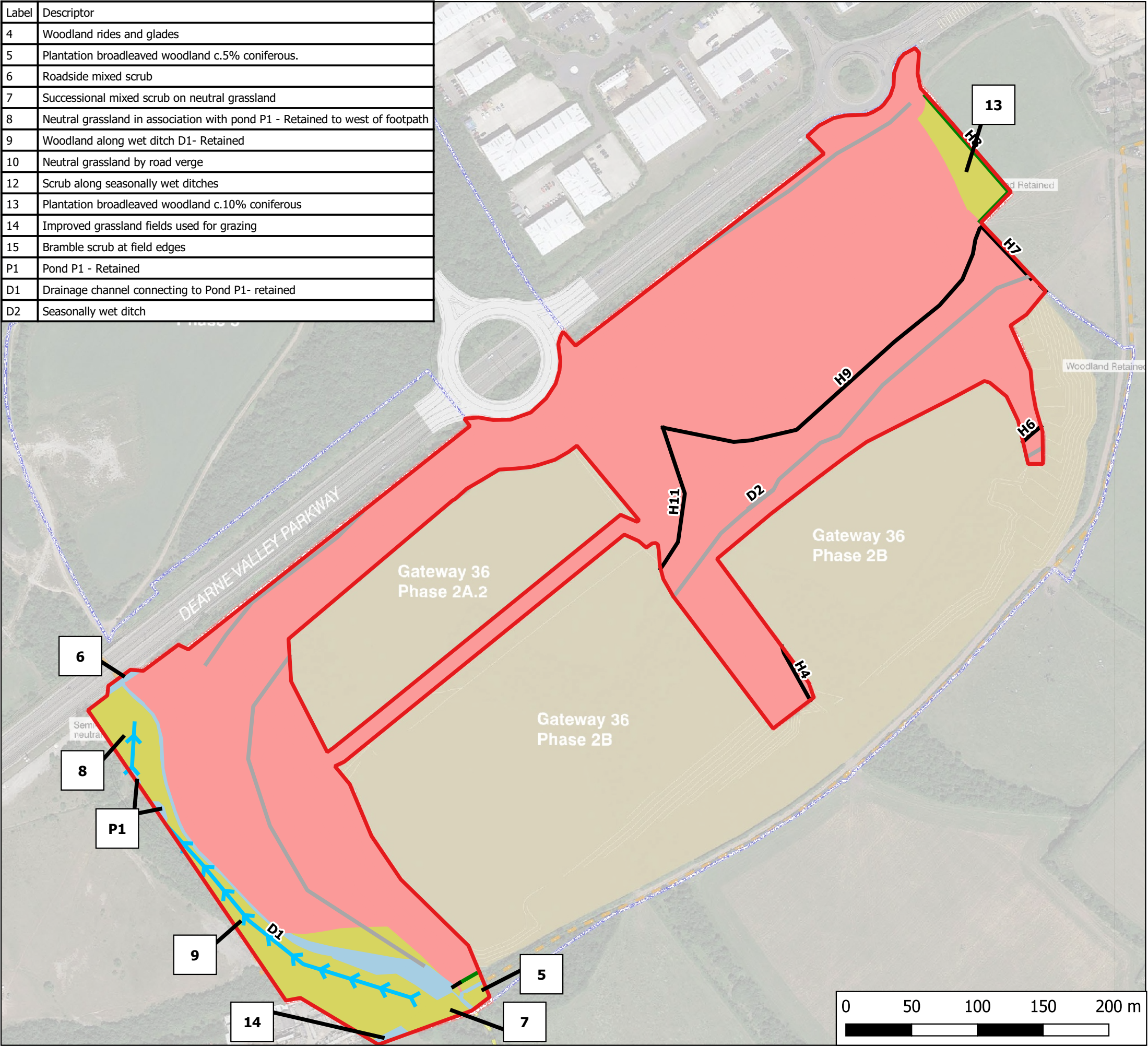
Intact hedge - native species-rich

Standing water

Running water

Dry ditch

Label	Descriptor
4	Woodland rides and glades
5	Plantation broadleaved woodland c.5% coniferous.
6	Roadside mixed scrub
7	Successional mixed scrub on neutral grassland
8	Neutral grassland in association with pond P1 - Retained to west of footpath
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Key

Redline Phase 2a.1

Area Habitats

Lost

Retained

Enhanced

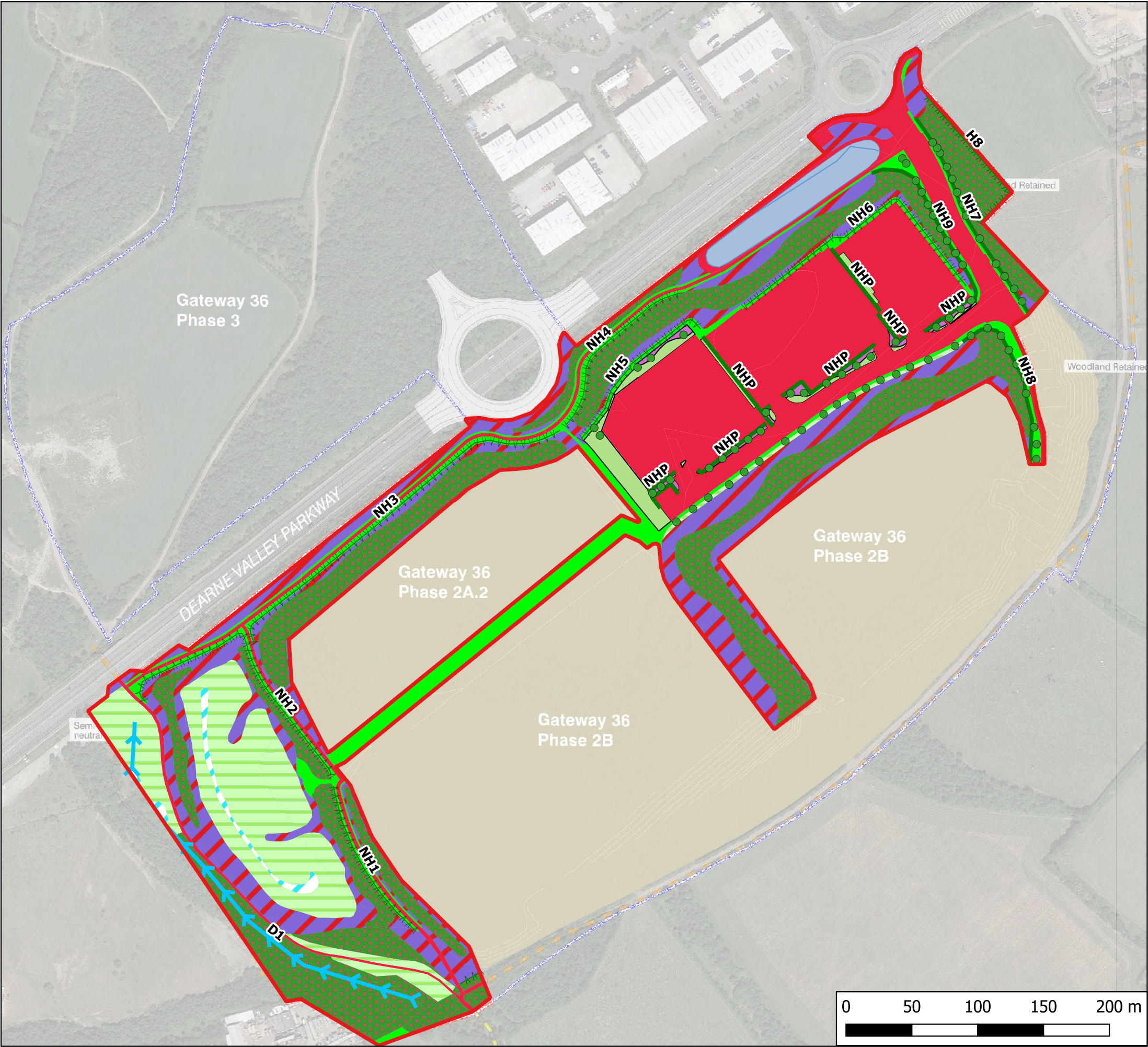
Linear Habitats

Retained Hedgerow

Lost Hedgerow

Retained Ditch

Lost Ditch



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Key

Redline Phase 2a.1

Area Habitats

Mixed scrub

Non-priority pond

Other neutral grassland

Developed land, sealed surface

Other broadleaved woodland

Modified grassland

SUDS

Plot- Amenity Grassland

Plot- Ornamental Planting

Street Trees

Linear Habitats

Running water

Intact hedge - species-poor

Intact hedge - native species-rich

APPENDIX A: PROPOSED HABITAT CREATION

Habitat	Habitat (UKHab Type)	Targets for Creation/Management	Area (ha)	Target Condition	Distinctiveness	Biodiversity Units
Plots						
Ornamental Planting	Introduced shrub	These areas will be managed primarily for their ornamental value. A diverse range of species will provide benefits for insects.	0.08	Poor	Low	0.18
Close mown lawn	Amenity Grassland	The flowering grassland areas will in part be managed as amenity grasslands, but this should include addition management measures: - Where appropriate use flowering Lawn mix to encourage at least 6 species per m². - Regular management to prevent scrub/bracken encroachment - Reseeding any areas of failed establishment	0.25	Poor	Low	0.55
Green Infrastructure						
Trees	Street Trees	Managed to reach a minimum of 30cm stem diameter	0.2564	Moderate	Low	0.45
Woodland	Other woodland; broadleaved	- This should be an area of trees with complete canopy cover. - Native species are dominant. Non-native and invasive species account for less than 10% of the vegetation cover. - A diverse age and height structure of the trees. - Free from damage [Bark stripping; Browse line; Damage shoot tips] (in the last five years) from stock or wild mammals with less than 20% of vegetation being browsed. - There should be evidence of successful (i.e. not browsed off before it gets well established) tree regeneration such as seedlings, saplings and young trees. - Standing and fallen dead wood of over 20 cm diameter are present including fallen large dead branches/stems and stumps. - Wetland habitat if they exist within the wood has little sign of drainage or channel straightening.	2.73	Good	Medium	8.07

		8. The area is protected from damage by agricultural and other adjacent operations. 9. There should be no evidence of inappropriate management (e.g. deep ruts, animal poaching or compaction). 10. Invasive non-native plants are below 5% (see list below). 11. No signs of significant nutrient enrichment present. 12. More than 3 different native trees and 3 shrub species in an average 10 m radius.				
Scrub	Mixed scrub	1. 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 100% cover). 2. There is a good age range – a mixture of seedlings, saplings, young shrubs and mature shrubs. 3. Pernicious weeds and invasive species make up less than 5% of the ground cover. 4. The scrub has a well-developed edge with un-grazed tall herbs. 5. There are many clearings and glades within the scrub.	2.59	Good	Medium	27.85
Wetland / Meadow	Other Neutral Grassland	1. The area is clearly and easily recognisable as a good example of this type of habitat and there is little difference between what is described in the relevant habitat classifications and what is visible on site. 2. Undesirable species and physical damage is below 5% cover. 3. Cover of bare ground greater than 10% (including localised areas, for example, rabbit warrens). 4. Cover of bracken less than 20% and cover of scrub and bramble less than 5%.	1.21	Moderate	Medium	7.8
Mown Strips	Modified Grassland	This area will be managed primarily for their amenity value and so will be in poor condition.	1.39	Poor	Low	3.09

Wetland / Reedbed	Ponds (Non- Priority Habitat)	1. Are of good water quality, with clear water (substrate can be seen) and no obvious sign of pollution in the water body. 2. The water body should have semi natural riparian land for at least 10 m from the pond edge. 3. Non-woodland ponds should be dominated by plants, be they submerged or floating (note dominance of duckweed is a sign of eutrophication). 4. Non-woodland ponds [i.e. that have always been open] should not be shaded more than 50% 5. Non-native species should be absent. 6. Less than 10% of the pond should be covered with duckweed or filamentous algae.	0.08	Moderate	Low	0.99
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