



Harworth Group

Dearne Valley Parkway, Rockingham, Barnsley – Phases 2 and 3

Biodiversity Impact Assessment- REV B

May 2020

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Rev	Issue Status	Prepared / Date	Approved/Date
-	Issued	JDH / 07.01.20	SJA / 07.01.20
A	Issue	JDH / 14.05.20	SJA / 20.05.20
B	Issue	JDH / 08.07.20	

CONTENTS

1.0	INTRODUCTION.....	3
2.0	METHODOLOGY.....	6
3.0	RESULTS.....	8
4.0	CONCLUSION	22

TABLES

Table 1: Biodiversity Units: Existing On-Site Habitats
Table 2: Biodiversity Units: Existing On-Site Hedgerows
Table 3: Biodiversity Units: Onsite Habitat Creation
Table 4: Biodiversity Units: Onsite Habitat Enhancement
Table 5: Biodiversity Units: Onsite Hedgerow Creation
Table 6: Biodiversity Units: Offsite Habitat Baseline
Table 7: Biodiversity Units: Offsite Habitat Creation

FIGURES

Figure 1: Onsite baseline habitat
Figure 2: Habitat retention
Figure 3a: Onsite habitat creation
Figure 3b: Plot habitat creation
Figure 4: Offsite baseline habitat
Figure 5: Offsite habitat provision

APPENDICES

Appendix A: Biodiversity Impact Assessment Calculator Sheets
Appendix B: Botanical Species Lists

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 an outline planning application for a proposed commercial development located adjacent to Shortwood Business Park in Barnsley, South Yorkshire (central grid ref: SE 3563 0103).

Site Description

- 1.2 The 38.7ha Site largely comprises establishing plantation woodland and improved pasture, with associated native hedgerows along several linear edges of the plantation areas. Two compartments of species-poor grassland are located in the northern section of the Site. The northern and southern sections of the site are separated by the A6195 dual carriageway. A watercourse (D1) runs northwards through the south western area of the site, connecting to a pond (P1) located on the Sites western boundary. A belt of species-rich semi-improved grassland with mixed scrub follows this watercourse along its eastern bank. Further areas of semi-improved grassland are found in association with seasonally wet ditches and woodland edges.

Proposals

- 1.3 Proposals are for a business park development comprising warehousing with associated parking, lorry compounds and access infrastructure, with landscaping and green-infrastructure, including attenuation facilities.

Offsetting Context

- 1.4 The overall aim of the biodiversity offsetting initiative is to provide a mechanism by which conservation activities are designed to deliver biodiversity benefits in compensation for losses, which can be delivered with a measurable outcome.
- 1.5 Using the biodiversity offsetting approach means that a developer employs a standardised formula to calculate the number of biodiversity 'units' to be lost as a result of their development, based on the habitat(s) and hedgerow(s) affected, their condition and extent. The developer then provides an 'offset' (where necessary) to deliver an equivalent number of biodiversity units; these ideally should be within the development boundary (habitat enhancement/creation) or off-site.
- 1.6 Biodiversity offsetting is to compensate for adverse impacts on biodiversity identified after appropriate avoidance, minimisation and on-site rehabilitation measures have been undertaken, according to the mitigation hierarchy as required by National Planning Policy Framework (NPPF, 2019 (as amended)). Any subsequent changes to planning proposals may affect the credit requirement of the site and a review of the changes would be required.

Legislative Context

- 1.7 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).
- 1.8 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.

- 1.9 NPPF (2019) 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:

170. 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;

174. 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.

- 1.10 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.

- 1.11 With specific reference to sites located within the Nature Improvement Area 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;*

Report Context

- 1.12 This revised report aims to address feedback on the initial metric and report from the LPA and consultees.

- 1.13 The Biodiversity Officer requested

- further botanical surveying in some areas
- review of the ecological baseline information
- review of post-construction habitat proposals
- submission of a further version of your biodiversity metric.

- 1.14 Detailed third party feedback on the metric calculations were also provided by Wildscapes on behalf of the LPA. The following points provide a summary of the key element of their response:

1. It would be more scientifically rigorous to refer to the National model rather than using a county specific model.
2. Habitat distinctiveness should be considered against local wildlife site selection criteria.
3. Consideration given to indirect and connectivity impacts of the development

4. Reevaluate temporal modifiers for grassland and woodland habitats
 5. Provide figures for the areas of the various habitats identified.
 6. Review scrub and grassland habitat mapping.
 7. Reclassify woodland as broadleaved
 8. Reclassify bare ground
 9. Produce a management plan to reflect target habitats.
- 1.15 In response to the comments received it is accepted that the use of the DEFRA Biodiversity Metric 2.0 is appropriate. Consequently, the calculations have been transposed into the 2.0 metric and this report and the response made to the points raised by the consultees is based on the 2.0 metric.
- 1.16 the adoption of the 2.0 Metric address point 1 of the above feedback and by association addresses points 2, 3 and 4 as they are dictated by the metric guidance, set by national specialist within Natural England, rather than the user.
- 1.17 With regards point 9, FPCR have not previously produced a management plan and are unable to comment on that included within the submission.
- 1.18 Further to the above and in response to the comments received this from the various parties the site has been revisited and the resolution of habitat mapping increased in key areas, this works has been used to cover points 5-8. As a result, the following modifications have been made:
- Grassland habitats located within woodland blocks have been mapped separately, rather than as a component of the woodland.
 - Areas off scattered scrub have been reviewed and reclassified as grassland with scrub where appropriate. .
 - The resolution of the mapping of the bare ground habitats has been increased to better represent the mix of grassland and ruderal habitats present
 - The plantation woodland areas have been reviewed and reclassified in accordance with the DEFRA metric requirements.
 - A discreet area of woodland has been reclassified as an area of wet woodland
 - Three boundary hedgerows at the south of the site, previously considered out with the development have been included within the calculations.
 - Separation of proposals for green infrastructure within plots to allow for easier tracking of delivered units. Occupants final planting schemes may vary from those illustrated.
 - Modifications have been made to the on-site hedgerow provision.
 - An additional 3rd waterbody has been added to development proposals.
 - Detailed review of the earthworks proposals have identified additional areas suitable habitat retention around site periphery.

2.0 METHODOLOGY

Habitat assessment

2.1 The site has been surveyed over several year. Data was drawn from a number of surveys and reports to inform the baseline habitat values. In brief

- LWS Assessment and Phase 1 Survey- Short Wood and Hey Green (TEP 2011).
- Phase 1 Assessment- H5 Land south of Dearne Valley Parkway (Wildscapes 2013).
- Extended Phase 1 Survey – Application Site.(Andrew Burrows FISC 4, FPCR 2015).
- Site walkover update survey- Application Site (Ben Carver FISC 3, FPCR 2017).
- Site walkover update survey- Application Site (James Hutchison FISC 3, FPCR 2019).
- Targeted habitat assessment- Application Site (James Hutchison FISC 3, FPCR 2020).

Existing Value

2.2 DEFRA has developed a metric based on evaluating each individual habitat's value. While the DEFRA metric is still under development and subject to future review, a 'beta test' version 2.0 is available for use. The calculator is in excel format and is used to measure the biodiversity value of habitats and hedgerows within an application site before and after development, therefore calculating the expected biodiversity net loss or gain.

2.3 The development site is mapped and divided into existing habitat criteria. Habitats are defined under UK Habitat Classification with further information providing habitat area, distinctiveness and condition, which are used to calculate the value of each habitat.

2.4 Linear habitats require different treatments, utilising lengths rather than areas. Therefore, in accordance with the guidance hedgerows are considered separately.

2.5 Full detail of the calculation methodology is provided in the Biodiversity metric 2.0 – User Guide¹.

Compensation

2.6 In addition to quantifying the biodiversity value of habitats / hedgerows to be lost, to determine the offsetting requirement it is also necessary to measure the offsetting potential of mitigation measures. This allows for the potential quantity of off-site units required to be calculated. For this to take place a number of factors must be considered:

- the size of the mitigation areas;
- the habitat distinctiveness band it is assigned currently, and the target band once improved; and
- the condition of the habitat at the start of the offset project, and its condition at the end.

2.7 The potential compensation value is derived from the difference in quality between the habitat to be lost and that to be created. The area from which the same number of units can be achieved may allow for the area required for mitigation to be smaller than that which is being lost. For example, if a habitat of low distinctiveness and poor condition is improved to create a habitat of

¹ Natural England, The biodiversity metric 2.0 (2019) Available at: <http://publications.naturalengland.org.uk/publication/5850908674228224>

high distinctiveness in good condition, the area needed to offset can theoretically be less than that lost.

Risk Multipliers

- 2.8 Once the maximum potential value of the mitigation is calculated (the difference between the current value and the proposed value) a set of risk multipliers is utilised to quantify the difference between the area to be lost and the area to be created/enhanced.
- 2.9 The aim of a multiplier is to correct for a disparity or risk. There are three main types of risk that are associated with habitat creation:
- 2.10 Temporal risks: Many factors influence how long a habitat takes to go from the point of creation or restoration to the desired end point condition. Within the metric average time estimates have been used, accepting that there will be variation from this central estimation. Average estimates of the time to target condition were largely expert driven.
- 2.11 Delivery risks: The risks associated with the actual delivery of the offset due to the uncertainty in the effectiveness of restoration and/or habitat creation/management techniques.
- 2.12 Spatial risks: These reflect ecological risks deriving from the change in location of the habitat or resource. For example, it may be that recreating a type of habitat in a new location may reduce its biodiversity value.
- 2.13 The above risks are automatically factored into the calculations completed using the metric calculator.

Considerations

- 2.14 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 2020; 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.
- 2.15 The proposed site habitat biodiversity values have been calculated using the proposed masterplan which supports the outline application (12006-1-110 The Harris Partnership November 2019).
- 2.16 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 NPPF. Any changes to planning proposals or decisions may affect the credit requirement of the site. As mentioned previously, as the project is currently at outline, all the specific details of the design are yet to be determined and will not be available until the project progresses to full planning; therefore some changes are likely to the framework and GI provision, meaning that the calculations will need to be reassessed. Thus, all scores within this assessment are indicative, and should be treated as such.

3.0 RESULTS

Biodiversity Units – Existing Value

Habitats

- 3.1 The existing Phase 1 Habitats are shown in Figure 1.
- 3.2 The biodiversity units for each habitat on the site have been calculated and are presented in Table 1. Justifications for condition scores are detailed below with species lists provided in Appendix B.

Table 1: Biodiversity Units: Existing On-Site Habitats

Habitat	Area (ha)	Condition	Biodiversity Units
Urban: Sealed Surface	0.24	n/a	0
Urban: Unsealed Surface	0.47	n/a	0
Grassland: Modified grassland (TN1)	3.95	Poor	9.09
Grassland: Modified grassland (TN10)	0.33	Poor	0.76
Grassland: Modified grassland (TN14)	16.74	Poor	38.50
Grassland: Semi-improved neutral grassland (TN3)	0.33	Poor	1.52
Grassland: Semi-improved neutral grassland (TN4)	0.84	Moderate	7.73
Grassland: Semi-improved neutral grassland (TN8)	0.43	Moderate	3.96
Other: Ruderal (TN2)	0.41	Poor	0.94
Wetland: Standing water (P1)	0.02	Moderate	0.30
Woodland: Broadleaved plantation (TN5)	10.5	Poor	48.30
Woodland: Broadleaved plantation (TN9)	0.49	Poor	2.25
Woodland: Broadleaved plantation (TN13)	2.59	Poor	11.91
Woodland: Wet Woodland (TN11)	0.13	Poor	0.99
Woodland: Mixed scrub (TN6)	0.42	Poor	1.93
Woodland: Mixed scrub (TN7)	0.5	Moderate	4.60
Woodland: Mixed scrub (TN12)	0.22	Poor	1.01
Woodland: Bramble scrub (TN15)	0.08	Poor	0.37
Total	38.69		134.16

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.

Modified Grassland (TN1) - Species poor semi-improved grassland

- 3.3 Two grassland compartments north of Dearne valley parkway.

3.4 Grassland habitat condition assessment poor

- Grassland on previously arable land (2015), possibly sown as part of rotation.
- Characterised by limited species diversity.
- Lolium species > 25%
- Undesirable species >5%

Sparsely vegetated land (TN2) - Tall ruderal

3.5 The central area of a soil mound in the north west of the site which appears to have been used as a temporary storage area (~60% bare ground).

3.6 This area did not meet the description for open-mosaic habitat on previously developed land due to being sited on previously arable land and not containing spatially diverse habitats.

3.7 Sparsely vegetated and rock habitat condition assessment poor

- Transitory habitat of low growing early successional plants on open ground.
- Ruderal Habitat with low biodiversity value.
- Relict of any of the habitat that can be restored.
- Habitat created by accident but through human activity

Other neutral grassland (TN3). Species poor grassland and tall ruderal herb

3.8 The periphery area of a soil mound in the north west of the site which appears to have been used as a temporary storage area.

3.9 Grassland habitat condition assessment poor

- Undesirable species >15%
- Not a good example of grassland habitat
- Does not closely match priority habitat
- Wild flowers and sedges not at high density
- Undesirable species and physical damage is above 5%

Other neutral grassland (TN4)

3.10 Several glades, rides and woodland edge areas of grassland generally characterised by Yorkshire fog, cock's foot, rough meadow grass and red fescue with patches of common couch, field horsetail, tall fescue, cow parsley and soft rush.

3.11 Grassland habitat condition assessment moderate

- Typical grasses include: cock's-foot, common bent, creeping bent, crested dog's-tail, false oat-grass, meadow fescue, meadow foxtail, red fescue, sweet vernal grass, Timothy, tufted hair-grass and Yorkshire-fog.
- Total cover of wildflowers and sedges less than 30%, excluding white clover, creeping buttercup and injurious weeds.

- Rye-grass cover is less than 25% including amenity grasslands.

Other woodland; mixed; mainly broadleaved (TN5)

3.12 Establishing plantation broadleaved woodland (~5% coniferous).

3.13 Woodland broad habitat condition assessment poor

- Limited age and height structure of the trees.
- No standing and fallen dead wood over 20 cm diameter
- Mixed species show a consistent planting pattern across the site
- Original planting lines, or remains of planting lines, can be seen
- Drainage features and channel straightening of watercourses

Mixed scrub (TN6)

3.14 Scrub bordering Dearne valley parkway characterised by hawthorn and silver birch, with patches of willow, dog rose and bramble.

3.15 Scrub habitat condition assessment poor

- The age range is missing some size classes (missing mature standards, saplings and seedlings)
- No well-developed edge of tall herbs (bordered by woodland and Dearne Valley Parkway)
- No clearings or glades

Mixed scrub (TN7)

3.16 Mixed species scrub on neutral grassland. Mix of self set and planted specimens. Characterised by alder, birch and willow with patches of bramble. Running along the west of the site by woodland edges. Japanese rose noted along footpath.

3.17 Scrub habitat condition assessment moderate

- Some age classes missing (lacking mature specimens)
- No well-developed edge of tall herbs (open borders diffusing into woodland and grassland)
- No clearings and glades

Other neutral grassland (TN8)

3.18 Grassland area associated with pond P1. Previously assessed against and failed to meet LBAP criteria based on insufficient species diversity (FPCR 2017- Phase II Botany Survey). Self-set scrub spreading from the east.

3.19 Grassland habitat condition assessment moderate

- Wildflowers and sedges >30%
- Rye-grass < 25%
- Scrub and bramble >5%
- Potentially restorable to grassland Priority Habitat with improved management.

Other woodland; mixed; mainly broadleaved (TN9)

3.20 Retained woodland in steep valley with wet ditch at base. Appears more established than elsewhere on site

3.21 Woodland broad habitat condition assessment poor

- Limited age and height structure of the trees.
- No standing and fallen dead wood of over 20 cm diameter
- Mixed species show a consistent planting pattern across the site
- Original planting lines, or remains of planting lines, can be seen
- Drainage features and channel straightening of watercourses

Modified Grassland (TN10)

3.22 Grassland area south of Shortwood roundabout.

3.23 Grassland habitat condition assessment poor

- Species poor
- Road side grassland
- Not a good example of grassland habitat
- Does not closely match priority habitat
- Wild flowers and sedges not at high density
- Undesirable species >15%

Woodland - wet woodland (TN11)

3.24 This character of this area of woodland alters from the adjoining plantation. Willows are dominant mixed with alder and birch. The ground flora is patchy with sparser areas vegetated characterised by soft rush, field horsetail and common sedge, while sphagnum moss and common nettle grew more densely in patches. At time of survey the ground was parched and the adjacent ditch was dry.

3.25 Woodland broad habitat condition assessment poor

- Limited age and height structure of the trees.
- No standing and fallen dead wood of over 20 cm diameter
- Original planting lines, or remains of planting lines, can be seen
- Drainage features and channel straightening of watercourses

Mixed scrub (TN12)

3.26 Mixed species scrub on neutral grassland running along drainage ditches in woodlands.

3.27 Scrub habitat condition assessment poor

- Some age classes missing (lacking mature specimens)
- No well-developed edge of tall herbs (borders woodland)

- No clearings and glades

Other woodland; mixed; mainly broadleaved (TN13)

3.28 Establishing plantation broadleaved woodland (~10% coniferous).

3.29 Woodland broad habitat condition assessment poor

- Limited age and height structure of the trees.
- No standing and fallen dead wood over 20 cm diameter
- Mixed species show a consistent planting pattern across the site
- Original planting lines, or remains of planting lines, can be seen
- Drainage features and channel straightening of watercourses

Modified Grassland (TN14)

3.30 Improved grassland fields south of Dearne Valley Parkway.

3.31 Grassland habitat condition assessment poor

- Agricultural grassland
- Characterised by limited species diversity.
- Lolium species > 25%
- Wild flowers and sedges not at high density

Bramble scrub (TN15)

3.32 Dense bramble scrub on field edge.

3.33 Scrub habitat condition assessment poor

- Single age
- Single species
- Does not have a well developed ruderal edge
- No clearings and glades

Pond (P1)

3.34 Eastern edge of pond lies within red line boundary.

3.35 Pond habitat condition assessment moderate

- Artificial connections to other waterbodies which do not prevent natural fluctuations or deliver water of poor quality.
- Moderate shading along western bank

Hedgerows

3.36 The biodiversity units for each hedgerow on the site have been calculated and are presented in Table 2.

Table 2: Biodiversity Units: Existing On-Site Hedgerows

Habitat	Length (km)	Condition	Biodiversity Units
H1 Hedges: species rich hedge	0.21	2	2.22
H2 Hedges: species rich hedge	0.33	2	3.49
H3 Hedges: species rich hedge	0.15	2	1.59
H4 Hedges: species rich hedge	0.16	2	1.69
H5 Hedges: species rich hedge	0.09	2	0.95
H6 Hedges: species rich hedge	0.35	2	3.70
H7 Hedges: species rich hedge	0.05	2	0.53
H8 Hedges: species rich hedge	0.13	2	1.38
H9 Hedges: species rich hedge	0.31	2	3.28
H11 Hedges: species rich hedge	0.2	2	2.12
H12 Hedges: species rich hedge	0.24	2	2.54
H13 Hedges: species rich hedge	0.14	2	1.48
H14 Hedges: species rich hedge	0.17	2	1.80
H15 Hedges: species rich hedge	0.15	2	1.59
H16 Hedges: species rich hedge	0.15	2	1.59
Total	2.83	-	29.94

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.

- 3.37 All of the hedgerows were considered species native species rich with more than five native woody species recorded per 30m section.

3.38 Condition assessments were uniform across the hedgerows which met 6 conditions and failed 2. Those that were met were:

- A1 Hedgerow is on average above 1.5m high.
- A2 Hedgerow is on average over 1.5m wide.
- B1 Gaps between the ground and the base of the canopy are below 0.5m for over 90% of length (excluding lines of trees).
- B2 Horizontal gaps make up less than 10% of the hedgerow and canopy gaps do not exceed 5m.
- D1 over 90% of hedgerow and undisturbed ground is free of invasive, non-native and neophyte species.
- D2 Over 90% of the hedgerow and undisturbed ground is free of damage caused by human activities.

3.39 The conditions that all hedgerows failed are:

- C1 Over 90% of the hedgerow must hold a width of over 1m undisturbed ground on at least one side containing perennial herbaceous vegetation.
- C2 Plant species indicative of nutrient enrichment of soils dominate less than 20% of ground cover i.e. nettles (*Urtica* spp.) and docks (*Rumex* spp.).

Watercourses

3.40 A number of seasonally wet drainage channels are present within site.

3.41 Ditch D1 (1m x 0.27km, 0.03ha) which connects into pond P1 is being retained in its entirety.

3.42 Further seasonally wet ditches (~1m maximum width) measured approximately 1.6km (0.16ha).

3.43 Given that these do not hold permanent water they would score as poor condition, moderate distinctiveness habitat under the ditch habitat assessment.

3.44 With some localised exceptions, the ditches are 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.

Habitat Creation

Habitats

3.45 Habitat retention is highlighted in figure 2 and post development habitats are shown in figure 3a and 3b.

3.46 The following section outlines the habitats to be created and restored and provides a summary of the conditions required for these scores within the metric. A separate management plan will provide details on long term management to achieve these goals.

3.47 The proposed onsite mitigation and their target conditions are presented in Tables 3 and 4. Proposed habitats within plots are included within the figures but have been listed under separate headings to allow for easier traceability.

Table 3: Biodiversity Units: On-site Habitat Creation

Proposed Habitat	Area (ha)	Target Condition	Biodiversity Units
Developed Land; Sealed surface	21.06	n/a	0
Broadleaved Woodland	6.4	Good	18.92
Mixed Scrub	3.86	Good	41.51
Ponds	1.87	Moderate	25.51
Amenity grassland	0.23	Poor	0.51
Neutral Grassland	0.02	Good	0.16
Amenity Grassland (plots)	0.86	Poor	1.91
Mixed Scrub (plots)	0.58	Good	6.23
Broadleaved Woodland (plots)	1.02	Good	3.02
Total	35.91		97.78

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

Table 4: Biodiversity Units: On-site Habitat Enhancement

Proposed Habitat	Area (ha)	Target Condition	Biodiversity Units
Neutral Grassland	0.42	Good	5
Broadleaved Woodland	1.19	Good	9.11
Total	1.61		14.10

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

Woodland: Broadleaved

- 3.48 A significant amount of woodland is to be planted to provide screening for the development. Additional planting will reinforce these areas and provide connectivity to retained and adjoining

woodlands. These areas can then be managed to maintain both a visual function but also to enrich biodiversity.

3.49 The target condition for this habitat is high. In order to meet this target, it will be created and managed in order to meet 10 of the following criteria:

- Complete canopy cover.
- Native species are dominant with non-native and invasive species accounting for less than 10% of vegetation cover.
- A diverse age and height structure of trees.
- Free from damage.
- Evidence of successful tree regeneration.
- Standing or fallen dead wood of over 20cm diameter.
- Wetland habitats within the wood to have little sign of drainage or channel straightening.
- The area is protected from damage by agricultural and other adjacent operations.
- No evidence of inappropriate.
- Less than 5% invasive non-native plants.
- No evidence of significant nutrient enrichment.
- More than 3 different native tree and 3 shrub species in an average 10m radius.

3.50 Additionally, no more than one of the following indicators will be present

- Non-native trees of a single age or species are dominant.
- More than 20% invasive plants.
- Mixed species show consistent planting pattern across the site.
- Original planting lines evident.
- Drainage features and channel straightening of watercourses.

Mixed scrub

3.51 Mixed scrub is a high value habitat in terms of biodiversity. This will be designed to provide a mosaic of woody mixed scrub with numerous grassland clearings and glades in order to provide plentiful edge habitats. A diverse structure will be encouraged through rotational management

3.52 This habitat is targeted to reach a good condition. The scrub must be suitably planted and managed to prioritise biodiversity and environmental value. To achieve good condition the habitat must meet all five of the following criteria:

- Must contain at least three woody species with no one species comprising over 75% of cover.
- Varied age range including a mixture of seedlings, saplings, young shrubs and mature shrubs.
- Pernicious weeds and invasive species make up less than 5% of ground cover.
- The scrub contains a well-developed edge including ungrazed tall herbs.
- Contains many clearing and glades.

3.53 Additionally, none of the following indicators will be present:

- Single woody species cover is more than 75%.
- The age range is missing some size classes.
- Scrub of high biodiversity value in poor condition.
- The scrub type has minor differences between what is described in the relevant habitat classifications and what is visible on site.
- Cover of undesirable and invasive species at 5-20%.
- Single-age scrub present.
- Potentially restorable to improved scrub habitat with improved management.
- The scrub type has major differences between what is described in the relevant habitat classifications and what is visible on site.
- Cover of undesirable and invasive species above 20% [see below].
- Rhododendron stands.

Ponds

3.54 Three attenuation features are to be created on site. These will be overdeepened to ensure that they hold permanent water and planted and managed to benefit biodiversity.

3.55 The target habitat condition for ponds is moderate. Due to the rapid rate aquatic vegetation, invertebrates and amphibians colonise at, ponds can quickly become a valuable resource. In order to achieve this the ponds will be designed and created in order to ensure water quality is not reduced by factors such as pollution run off. To reach the target condition of moderate ponds will be designed to meet the majority of the following criteria:

- Are of good water quality, with clear water (substrate can be seen) and no obvious sign of pollution in the water body.
- The water body should have semi natural riparian land for at least 10 m from the pond edge.
- Non-woodland ponds should be dominated by plants, be they submerged or floating (note dominance of duckweed is a sign of eutrophication).
- Non-woodland ponds [i.e. that have always been open] should not be shaded more than 50%
- Many ponds will be fishless, those which naturally contain fish should not be stocked and should contain a native fish assemblage.
- Ponds should not be artificially connected to other water bodies, e.g. ditches.
- Pond water levels should be able to fluctuate naturally throughout the year.
- Non-native species should be absent.
- Less than 10% of the pond should be covered with duckweed or filamentous algae.

3.56 Additionally, only a few of the following indicators may be present:

- Ponds in poor health.
- Poor water quality present.

- Extensive filamentous algae or duckweed.
- Absence of semi-natural riparian land.
- No natural fluctuations in water levels.
- Extensive non-native species.
- High density of stocked fish.
- Absence of submerged and floating plants (unless naturally a shaded woodland pond).
- Non-woodland ponds completely over-grown with trees and scrub.

Neutral grassland

- 3.57 Grassland creation is planned for the area east of the footpath adjoining the retained grassland around P1. Where possible this will be retained during development however it may be impacted by works and so has been included in this section to ensure it is restored post-development.
- 3.58 The habitat is targeted for good condition. To achieve this, it must meet be managed as a Species-rich Grassland of high to moderate quality. Wildflower and sedges should cover at least 30% (excluding white clover *Trifolium repens*, creeping buttercup *Ranunculus repens* and injurious weeds).
- 3.59 All of the following criteria will be met.:
- 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.
 - The appearance and composition of the vegetation on site should very closely match the characteristics for the specific Priority Habitat [i.e as described by either the Phase 1 Habitat Classification or the UK Habitat Classification], with species typical of the habitat representing a significant majority of the vegetation.
 - Wildflowers, sedges and indicator species for the specific Priority grassland habitat are very clearly and easily visible throughout the sward and occur at high densities in high frequency. See relevant Habitat Classification for details of indicator species for specific habitat.
- 3.60 None of the following indicators will be present:
- Undesirable species and physical damage above 5% cover.
 - Cover of bare ground less than 10% (including localised areas, for example, rabbit warrens).
 - Cover of bracken more than 20% and cover of scrub and bramble more than 5%.

Hedgerow Creation

- 3.61 Four substantial hedgerows (NH1-4) are proposed as part of the new habitat creation. A further 3 shorter hedgerows (NH5-7) will connect into existing hedgerows to increase their connectivity. It is possible that hedgerow H13 will be impacted to facilitate earthworks. As a precautionary approach it is assumed that H13 will be lost in its entirety then replaced. The length and target conditions of these hedgerows are presented below in Table 5.

Table 5: Biodiversity Units: On-Site Hedgerow Creation

Habitat	Length (km)	Target Condition	Biodiversity Units
NH1 Hedges: species rich hedge - Associated with bank or ditch	0.36	2	3.20
NH2 Hedges: species rich hedge - Associated with bank or ditch	0.29	2	2.58
NH3 Hedges: species rich hedge - Associated with bank or ditch	0.79	2	7.03
NH4 Hedges: species rich hedge - Associated with bank or ditch	0.96	2	8.54
NH5 Hedges: species rich hedge	0.05	2	0.30
NH6 Hedges: species rich hedge	0.16	2	0.95
NH7 Hedges: species rich hedge	0.11	2	0.65
H13 (Replaced) Hedges: species rich hedge	0.14	2	0.83
Total	2.86	-	24.08

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.

- 3.62 Condition assessments of the proposed hedgerows are expected to match those of existing hedgerows on site, meeting the same 6 assessment criteria. See section 3.38 for specific condition assessments.

Watercourses

- 3.63 The four new hedgerows (NH1-4) will include associated ditches, delivering 2.4km of new seasonally wet habitat providing additional habitat connectivity.

Offsite Compensation

- 3.64 In order to provide an overall net gain in biodiversity units three areas within the ownership of Harworth Group have been identified as suitable locations for providing additional biodiversity units (Figure 4).

Baseline Offsite Habitats

- 3.65 The preliminary assessment of these areas was undertaken by FPCR in October 2019 towards the end of the optimal time for botanical surveys and whilst this is likely to be accurate in terms of the condition assessments, for a definitive value, more detailed survey work would be required, and this should be done at an optimum time (May-August).

- 3.66 Table 6 summarises the existing value of the offsite parcels, with further details provided below and in appendix B.

Table 6: Biodiversity Units: Offsite Habitat Baseline

Habitat	Area (ha)	Condition	Biodiversity Units
Modified Grassland (Species Poor)	0.84	Poor	1.93
Modified Grassland (Improved)	2.65	Poor	6.1
Cropland: Arable	0.74	n/a	1.7
Total	4.23	-	9.73

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.

Parcel 1: Modified Grassland

- 3.67 The first parcel of land (Figure 4 TN1) is a 0.84ha semi-improved grassland field adjacent to the development area which falls within the boundary of Short Wood and Hay Green LWS.
- 3.68 In the 2011 LWS citation (Barnsley Metropolitan Borough Council) this is listed as semi-improved neutral grassland. However, the species list provided with this citation was target noted to a separate field to the west. The species list was dominated by Ryegrass with abundant False oat-grass, cock's foot and timothy. Yorkshire Fog was frequent. Occasional species were common bent, crested dog's tail, cleavers, pineapple weed, smooth meadow grass, knotgrass, creeping buttercup and prickly sow thistle. Garlic mustard, meadow buttercup and yellow rattle were recorded as rare.
- 3.69 Based on the preliminary assessment this area was considered to be species-poor semi-improved neutral grassland in poor condition
- Agricultural grassland
 - Characterised by limited species diversity.
 - Lolium species ~ 25%
 - Wild flowers and sedges not at high density

Parcel 2: Modified Grassland

- 3.70 The second parcel of land (Figure 4 TN2) is a 2.65ha improved grassland field between Shortwood and Hay Green LWS and Barrow Colliery LWS. Currently this is a rye-grass ley considered to be in poor condition.
- Agricultural grassland
 - Characterised by limited species diversity.

- Lolium species ~ 25%
- Wild flowers and sedges not at high density

Parcel 3: Arable Field

- 3.71 The third parcel (Figure 4 TN3) consists of two areas of an arable field which collectively form 0.74ha bordering the northern edge of Barrow Colliery LWS. As agricultural land these are not condition assessed.

Offsite Habitat Provision

- 3.72 Offsite habitat creation and enhancements are shown in figure 5 and summarised in table 7.

Table 7: Biodiversity Units: Offsite Habitat Provision

Habitat	Area (ha)	Condition	Biodiversity Units
Ponds (creation)	0.35	Moderate	4.77
Wet Woodland (creation)	0.64	Moderate	2.67
Neutral Grassland (enhancement)	0.84	Good	7.59
Mixed Scrub (enhancement)	2.4	Good	27.03

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.

- 3.73 Parcel 1 will be managed to achieve good condition neutral grassland (see 3.52-3.54).
- 3.74 Parcel 2 will include 5 new ponds managed for moderate condition (see 3.50-3.51) and mixed scrub managed for good condition (see 3.48-3.49).
- 3.75 Parcel 3 will include 2 new ponds managed for moderate condition (see 3.50-3.51) and wet woodland managed to achieve moderate condition.
- 3.76 Wet woodland management should aim for the criteria laid out in 3.46-3.47. However, given the specificity of the habitat and the limited size of the parcels involved, some flexibility in target has been allowed and so it is acceptable if the woodland matches the following descriptors:
- Clearly fails at least 2 of the criteria above (see 3.46).
 - Invasive non-native plants are 5-20%.
 - Non-native species comprise more than 20% of the canopy,
 - A mixed woodland with native and non-native species.
 - Trees of similar age and height structure throughout the woodland.
 - Little standing or fallen deadwood present.

4.0 CONCLUSION

- 4.1 The revised metric addresses comments received following the previous submission. The approach to habitat creation has aimed to maximise biodiversity value with consideration to the requirements of the Nature Improvement Area.
- 4.2 Biodiversity offsetting has been used to inform the habitat creation and enhancement proposals for the scheme. The assessment cannot be concluded as an absolute, as all calculation were based on an indicative framework. Development plots are assumed to contribute 9.71 units and so any alteration of green infrastructure created within these will impact the final scores.
- 4.3 The results of the assessment demonstrate that the outline scheme currently has the ability to lead to the delivery of a total net gain in biodiversity for habitats and linear features in line with NPFF.
- 4.4 The onsite habitats are valued at 134.16 units for habitats and 29.94 units for hedgerows. Taking into account habitat retention, the proposed development will provide are 115.50 units for habitats and 33.61 units for hedgerows.
- 4.5 The inclusion and enhancement of offsite areas results in a delivery of 32.34 units.
- 4.6 The overall net gain in biodiversity is 13.67 units (10.19%) against the site base value.
- 4.7 The creation of new hedgerows results in a gain of 3.66 units, providing a net gain in biodiversity of +12.24%.
- 4.8 In order to ensure that the benefits of the proposed habitat creation are maximised it is recommended that a Biodiversity Management Plan be produced detailing habitat creation measures and long-term management prescriptions for the site.

Appendix A: Biodiversity Impact Assessment Calculator Sheets

Onsite Habitats

	Habitats and areas			Habitat distinctiveness	Habitat condition	Ecological connectivity	Strategic significance		Ecological baseline	Retention category biodiversity value							
Ref	Broad Habitat	Habitat type	Area (hectares)	Distinctiveness	Condition	Ecological connectivity	Strategic significance	Suggested action to address habitat losses	Total habitat units	Area retained	Area enhanced	Area succession	Baseline units retained	Baseline units enhance	Baseline units succession	Area lost	Units lost
1	Grassland	Grassland - Modified grassland	3.95	Low	Poor	Low	Within area formally identified in local strategy	Same distinctiveness or better habitat required	9.09	0			0.00	0.00	0.00	3.95	9.09
2	Sparsely vegetated land	Sparsely vegetated land - Ruderal/Ephemeral	0.41	Low	Poor	Low	Within area formally identified in local strategy	Same distinctiveness or better habitat required	0.94	0			0.00	0.00	0.00	0.41	0.94
3	Grassland	Grassland - Other neutral grassland	0.33	Medium	Poor	Low	Within area formally identified in local strategy	Same broad habitat or a higher distinctiveness habitat required	1.52	0			0.00	0.00	0.00	0.33	1.52
4	Grassland	Grassland - Other neutral grassland	0.84	Medium	Moderate	Low	Within area formally identified in local strategy	Same broad habitat or a higher distinctiveness habitat required	7.73	0.09	0.13		0.83	1.20	0.00	0.62	5.70
5	Woodland and forest	Woodland and forest - Other woodland; broadleaved	10.5	Medium	Poor	Low	Within area formally identified in local strategy	Same broad habitat or a higher distinctiveness habitat required	48.30	0.29			1.33	0.00	0.00	10.21	46.97
6	Heathland and shrub	Heathland and shrub - Mixed scrub	0.42	Medium	Poor	Low	Within area formally identified in local strategy	Same broad habitat or a higher distinctiveness habitat required	1.93	0.05			0.23	0.00	0.00	0.37	1.70
7	Heathland and shrub	Heathland and shrub - Mixed scrub	0.5	Medium	Moderate	Low	Within area formally identified in local strategy	Same broad habitat or a higher distinctiveness habitat required	4.60		0.29		0.00	2.67	0.00	0.21	1.93
8	Grassland	Grassland - Other neutral grassland	0.43	Medium	Moderate	Low	Within area formally identified in local strategy	Same broad habitat or a higher distinctiveness habitat required	3.96		0.29		0.00	2.67	0.00	0.14	1.29
9	Woodland and forest	Woodland and forest - Other woodland; broadleaved	0.49	Medium	Poor	Low	Within area formally identified in local strategy	Same broad habitat or a higher distinctiveness habitat required	2.25		0.49		0.00	2.25	0.00	0.00	0.00
10	Grassland	Grassland - Modified grassland	0.33	Low	Poor	Low	Within area formally identified in local strategy	Same distinctiveness or better habitat required	0.76	0			0.00	0.00	0.00	0.33	0.76
11	Woodland and forest	Woodland and forest - Wet woodland	0.13	High	Poor	Medium	Within area formally identified in local strategy	Same habitat required	0.99	0			0.00	0.00	0.00	0.13	0.99
12	Heathland and shrub	Heathland and shrub - Mixed scrub	0.22	Medium	Poor	Low	Within area formally identified in local strategy	Same broad habitat or a higher distinctiveness habitat required	1.01		0.01		0.00	0.05	0.00	0.21	0.97
13	Woodland and forest	Woodland and forest - Other woodland; broadleaved	2.59	Medium	Poor	Low	Within area formally identified in local strategy	Same broad habitat or a higher distinctiveness habitat required	11.91		0.4		0.00	1.84	0.00	2.19	10.07
14	Grassland	Grassland - Modified grassland	16.74	Low	Poor	Low	Within area formally identified in local strategy	Same distinctiveness or better habitat required	38.50	0.4			0.92	0.00	0.00	16.34	37.58
15	Heathland and shrub	Heathland and shrub - Bramble scrub	0.08	Medium	Poor	Low	Within area formally identified in local strategy	Same broad habitat or a higher distinctiveness habitat required	0.37	0			0.00	0.00	0.00	0.08	0.37
16	Urban	Urban - Developed land; sealed surface	0.24	V.Low	N/A - Other	Low	Within area formally identified in local strategy	Compensation Not Required	0.00	0			0.00	0.00	0.00	0.24	0.00
17	Lakes	Lakes - Ponds (Non- Priority Habitat)	0.02	High	Moderate	Medium	Within area formally identified in local strategy	Same habitat required	0.30	0.02			0.30	0.00	0.00	0.00	0.00
18	Urban	Urban - Artificial unvegetated, unsealed surface	0.47	V.Low	N/A - Other	Low	Within area formally identified in local strategy	Compensation Not Required	0.00	0.32			0.00	0.00	0.00	0.15	0.00

Post development/ post intervention habitats								Habitat units delivered
Proposed habitat	Area (hectares)	Distinctiveness	Condition	Ecological	Strategic significance	Temporal	Difficulty	
				Ecological connectivity	Strategic significance	Time to target condition/years	Difficulty of creation category	
Urban - Developed land; sealed surface	21.06	V.Low	N/A - Other	N/A	Within area formally identified in local strategy	0	Low	0.00
Woodland and forest - Other woodland; broadleaved	6.4	Medium	Good	Low	Within area formally identified in local strategy	32+	Medium	18.92
Heathland and shrub - Mixed scrub	3.86	Medium	Good	Low	Within area formally identified in local strategy	7	Low	41.51
Lakes - Ponds (Non- Priority Habitat)	1.04	High	Moderate	Medium	Within area formally identified in local strategy	3	Low	14.19
Lakes - Ponds (Non- Priority Habitat)	0.83	High	Moderate	Medium	Within area formally identified in local strategy	3	Low	11.32
Urban - Amenity grassland	0.23	Low	Poor	Low	Within area formally identified in local strategy	1	Low	0.51
Grassland - Other neutral grassland	0.02	Medium	Good	Low	Within area formally identified in local strategy	15	Low	0.16
Heathland and shrub - Mixed scrub	0.31	Medium	Good	Low	Within area formally identified in local strategy	7	Low	3.33
Woodland and forest - Other woodland; broadleaved	0.72	Medium	Good	Low	Within area formally identified in local strategy	32+	Medium	2.13
Urban - Amenity grassland	0.62	Low	Poor	Low	Within area formally identified in local strategy	1	Low	1.38
Heathland and shrub - Mixed scrub	0.27	Medium	Good	Low	Within area formally identified in local strategy	7	Low	2.90
Woodland and forest - Other woodland; broadleaved	0.3	Medium	Good	Low	Within area formally identified in local strategy	32+	Medium	0.89
Urban - Amenity grassland	0.24	Low	Poor	Low	Within area formally identified in local strategy	1	Low	0.53

	Baseline habitats	Change in distinctiveness and condition			Area (hectares)	Distinctiveness	Condition	Ecological connectivity	Strategic significance	Temporal multiplier	Difficulty multipliers	Habitat units delivered
Baseline ref	Baseline habitat	Proposed habitat (Pre-populated but can be overridden)	Distinctiveness change	Condition change				Ecological connectivity score	Strategic significance	Time to target condition/years	Difficulty of enhancement category	
4	Grassland - Other neutral grassland	Grassland - Other neutral grassland	Medium - Medium	Moderate - Good	0.13	Medium	Good	Low	Within area formally identified in local strategy	15	Low	1.55
7	Heathland and shrub - Mixed scrub	Woodland and forest - Other woodland; broadleaved	Medium - Medium	Moderate - Good	0.29	Medium	Good	Low	Within area formally identified in local strategy	15	Medium	3.19
8	Grassland - Other neutral grassland	Grassland - Other neutral grassland	Medium - Medium	Moderate - Good	0.29	Medium	Good	Low	Within area formally identified in local strategy	15	Low	3.45
9	Woodland and forest - Other woodland; broadleaved	Woodland and forest - Other woodland; broadleaved	Medium - Medium	Poor - Good	0.49	Medium	Good	Low	Within area formally identified in local strategy	32+	Medium	3.22
12	Heathland and shrub - Mixed scrub	Woodland and forest - Other woodland; broadleaved	Medium - Medium	Poor - Good	0.01	Medium	Good	Low	Within area formally identified in local strategy	32+	Medium	0.07
13	Woodland and forest - Other woodland; broadleaved	Woodland and forest - Other woodland; broadleaved	Medium - Medium	Poor - Good	0.4	Medium	Good	Low	Within area formally identified in local strategy	32+	Medium	2.63

Hedgerows

Baseline ref	New hedge number	Proposed habitats				Spatial quality		Temporal multiplier	Hedge units delivered
		Habitat type	Length km	Habitat distinctiveness	Habitat condition	Ecological connectivity	Strategic significance		
1		Native Species Rich Hedgerow - Associated with bank or ditch	0.36	High	Moderate	High	Within area formally identified in local strategy	5	3.20
2		Native Species Rich Hedgerow - Associated with bank or ditch	0.29	High	Moderate	High	Within area formally identified in local strategy	5	2.58
3		Native Species Rich Hedgerow - Associated with bank or ditch	0.79	High	Moderate	High	Within area formally identified in local strategy	5	7.03
4		Native Species Rich Hedgerow - Associated with bank or ditch	0.96	High	Moderate	High	Within area formally identified in local strategy	5	8.54
5		Native Species Rich Hedgerow	0.05	Medium	Moderate	High	Within area formally identified in local strategy	5	0.30
6		Native Species Rich Hedgerow	0.16	Medium	Moderate	High	Within area formally identified in local strategy	5	0.95
7		Native Species Rich Hedgerow	0.11	Medium	Moderate	High	Within area formally identified in local strategy	5	0.65
8		Native Species Rich Hedgerow	0.14	Medium	Moderate	High	Within area formally identified in local strategy	5	0.83

Baseline ref	UK Habitats - existing habitats			Habitat distinctiveness	Habitat condition	Ecological connectivity	Strategic significance	Suggested action to address habitat losses	Ecological baseline	Retention category biodiversity value					
	Hedge number	Hedgerow type	length KM	Distinctiveness	Condition	Ecological connectivity	Strategic significance		Total hedgerow units	Length retained	Length enhanced	Units retained	Units enhanced	Length lost	Units lost
1	1	Native Species Rich Hedgerow	0.21	Medium	Moderate	High	Within area formally identified in local strategy	Like for like or better	2.2218			0	0	0.21	2.2218
2	2	Native Species Rich Hedgerow	0.33	Medium	Moderate	High	Within area formally identified in local strategy	Like for like or better	3.4914			0	0	0.33	3.4914
3	3	Native Species Rich Hedgerow	0.15	Medium	Moderate	High	Within area formally identified in local strategy	Like for like or better	1.587	0.15		1.587	0	0	0
4	4	Native Species Rich Hedgerow	0.16	Medium	Moderate	High	Within area formally identified in local strategy	Like for like or better	1.6928			0	0	0.16	1.6928
5	5	Native Species Rich Hedgerow	0.09	Medium	Moderate	High	Within area formally identified in local strategy	Like for like or better	0.9522			0	0	0.09	0.9522
6	6	Native Species Rich Hedgerow	0.35	Medium	Moderate	High	Within area formally identified in local strategy	Like for like or better	3.703	0.1		1.058	0	0.25	2.645
7	7	Native Species Rich Hedgerow	0.05	Medium	Moderate	High	Within area formally identified in local strategy	Like for like or better	0.529	0.05		0.529	0	0	0
8	8	Native Species Rich Hedgerow	0.13	Medium	Moderate	High	Within area formally identified in local strategy	Like for like or better	1.3754	0.13		1.3754	0	0	0
9	9	Native Species Rich Hedgerow	0.31	Medium	Moderate	High	Within area formally identified in local strategy	Like for like or better	3.2798			0	0	0.31	3.2798
10	11	Native Species Rich Hedgerow	0.2	Medium	Moderate	High	Within area formally identified in local strategy	Like for like or better	2.116			0	0	0.2	2.116
11	12	Native Species Rich Hedgerow	0.24	Medium	Moderate	High	Within area formally identified in local strategy	Like for like or better	2.5392			0	0	0.24	2.5392
12	13	Native Species Rich Hedgerow	0.14	Medium	Moderate	High	Within area formally identified in local strategy	Like for like or better	1.4812			0	0	0.14	1.4812
13	14	Native Species Rich Hedgerow	0.17	Medium	Moderate	High	Within area formally identified in local strategy	Like for like or better	1.7986	0.17		1.7986	0	0	0
14	15	Native Species Rich Hedgerow	0.15	Medium	Moderate	High	Within area formally identified in local strategy	Like for like or better	1.587	0.15		1.587	0	0	0
15	16	Native Species Rich Hedgerow	0.15	Medium	Moderate	High	Within area formally identified in local strategy	Like for like or better	1.587	0.15		1.587	0	0	0

Offsite Habitats

Baseline ref	Habitats and areas			Habitat distinctiveness	Habitat condition	Ecological connectivity	Strategic significance	Suggested action to address habitat losses	Ecological baseline	Retention category biodiversity value						
	Broad habitat	Habitat type	Area (hectares)	Distinctiveness	Condition	Ecological connectivity	Strategic significance		Total habitat units	Area retained	Area enhanced	Area succession	Baseline units retained	Baseline units enhanced	Baseline units succession	Area lost
1	Grassland	Grassland - Modified grassland	0.84	Low	Poor	Low	Within area formally identified in local strategy	Same distinctiveness or better habitat required	1.93		0.84		0	1.93	0.00	0.00
2	Grassland	Grassland - Modified grassland	2.4	Low	Poor	Low	Within area formally identified in local strategy	Same distinctiveness or better habitat required	5.52		2.4		0	5.52	0.00	0.00
3	Cropland	Cropland - Cereal crops	0.64	Low	N/A - Agricultural	Low	Within area formally identified in local strategy	Same distinctiveness or better habitat required	1.47				0	0.00	0.00	0.64
4	Cropland	Cropland - Cereal crops	0.1	Low	N/A - Agricultural	Low	Within area formally identified in local strategy	Same distinctiveness or better habitat required	0.23				0	0.00	0.00	0.10
5	Grassland	Grassland - Modified grassland	0.25	Low	Poor	Low	Within area formally identified in local strategy	Same distinctiveness or better habitat required	0.58				0	0.00	0.00	0.25

Post development/ post intervention habitats																			
Proposed habitat	Area ha	Distinctiveness	Score	Condition	Score	Ecological connectivity			Strategic significance			Temporal multiplier		Difficulty multipliers		Spatial risk multiplier			
						Ecological connectivity	Connectivity	Connectivity multiplier	Strategic significance	Strategic significance	Strategic position multiplier	Time to target condition/years	Time to target multiplier	Difficulty of creation category	Difficulty of creation multiplier	Spatial risk category	Spatial risk multiplier	Habitat units delivered	
Woodland and forest - Wet woodland	0.64	High	6	Moderate	2	Medium	Moderately connected habitat	1.1	Within area formally identified in local strategy	High strategic significance	1.15	25	0.410	Medium	0.67	Compensation inside LPA or NCA, or deemed to be sufficiently local, to site of biodiversity loss	1	2.67	
Lakes - Ponds (Non- Priority Habitat)	0.1	High	6	Moderate	2	Medium	Moderately connected habitat	1.1	Within area formally identified in local strategy	High strategic significance	1.15	3	0.899	Low	1	Compensation inside LPA or NCA, or deemed to be sufficiently local, to site of biodiversity loss	1	1.36	
Lakes - Ponds (Non- Priority Habitat)	0.25	High	6	Moderate	2	Medium	Moderately connected habitat	1.1	Within area formally identified in local strategy	High strategic significance	1.15	3	0.899	Low	1	Compensation inside LPA or NCA, or deemed to be sufficiently local, to site of biodiversity loss	1	3.41	

	Baseline habitats	Change in distinctiveness and condition			Area ha	Distinctiveness	Condition	Ecological connectivity	Strategic significance	Temporal multiplier	Difficulty multipliers	Spatial risk multiplier	
Baseline ref	Baseline habitat	Proposed habitat (Pre-Populated but can be overridden)	Distinctiveness change	Condition change									
1	Grassland - Modified grassland	Grassland - Other neutral grassland	Low - Medium	Lower Distinctiveness Habitat - Good	0.84	Medium	Good	Low	Within area formally identified in local strategy	15	Low	Compensation inside LPA or NCA, or deemed to be sufficiently local, to site of biodiversity loss	7.59
2	Grassland - Modified grassland	Heathland and shrub - Mixed scrub	Low - Medium	Lower Distinctiveness Habitat - Good	2.4	Medium	Good	Low	Within area formally identified in local strategy	7	Low	Compensation inside LPA or NCA, or deemed to be sufficiently local, to site of biodiversity loss	27.03

Appendix B: Botanical Species Lists

TN1 Modified Grassland

Common Name	Scientific Name	Frequency
Italian rye grass	<i>Lolium multiflorum</i>	A
Rough Meadow-grass	<i>Poa trivialis</i>	A
Bramble	<i>Rubus fruticosus</i> agg.	LA
Cock's-foot	<i>Dactylis glomerata</i>	F
Common hogweed	<i>Heracleum sphondylium</i>	F
Common nettle	<i>Urtica dioica</i>	F
Creeping thistle	<i>Cirsium arvense</i>	F
Perennial ryegrass	<i>Lolium perenne</i>	F
Yorkshire fog	<i>Holcus lantatus</i>	F
Common mouse ear	<i>Cerastium fontanum</i>	LF
Broad-leaved dock	<i>Rumex obtusifolius</i>	O
Cow parsley	<i>Anthriscus sylvestris</i>	O
Curly dock	<i>Rumex crispus</i>	R
Dandelion	<i>Taraxacum officinale</i>	R

TN2 Ruderal

Common Name	Scientific Name	Frequency
Bristly ox-tongue	<i>Helminthotheca echioides</i>	F
Broad-leaved Dock	<i>Rumex obtusifolius</i>	F
Common Ragwort	<i>Jacobaea vulgaris</i>	F
Crested dog's -tail	<i>Cynosurus cristatus</i>	F
Mugwort	<i>Artemisia vulgaris</i>	F
Red Clover	<i>Trifolium pratense</i>	F
White Clover	<i>Trifolium repens</i>	F
Colts foot	<i>Tussilago farfara</i>	LF
Cock's-foot	<i>Dactylis glomerata</i>	O
Creeping Thistle	<i>Cirsium arvense</i>	O
Hedge Mustard	<i>Sisymbrium officinale</i>	O
Smooth meadow-grass	<i>Poa Pratensis</i>	O
Meadow foxtail	<i>Alopecurus pratensis</i>	O
Prickly Sow	<i>Sonchus asper</i>	O
Ribwort Plantain	<i>Plantago lanceolata</i>	O
Smooth sow thistle	<i>Sonchus oleraceus</i>	O
Willow	<i>Salix sp.</i>	O
Common vetch	<i>Vicia sativa</i>	R
Dove's-foot crane's-bill	<i>Geranium molle</i>	R
False oat grass	<i>Arrhenatherum elatius</i>	R
Pineapple Weed	<i>Matricaria discoidea</i>	R
Weld	<i>Reseda luteola</i>	R

TN3 Other Neutral Grassland

Common Name	Scientific Name	Frequency
Common Couch	<i>Elymus repens</i>	A/LD
Broad-leaved Dock	<i>Rumex obtusifolius</i>	A
Curled Dock	<i>rumex crispus</i>	A
Colt's-foot	<i>Tussilago farfara</i>	LF
Spear Thistle	<i>Cirsium vulgare</i>	LF
Common Ragwort	<i>Jacobaea vulgaris</i>	O
Creeping Bent	<i>Agrostis stolonifera</i>	O
Mugwort	<i>Artemisia vulgaris</i>	O
Red Bartsia	<i>Odontites vernus</i>	O
Red Clover	<i>Trifolium pratense</i>	O
Lolium sp.	<i>Lolium sp.</i>	O
Tufted Hair-grass	<i>Deschampsia cespitosa</i>	O
Willow sp.	<i>Salix sp.</i>	O
Alsike Clover	<i>Trifolium hybridum</i>	R
Teasel	<i>Dipsacus sp</i>	R

TN4a Other Neutral Grassland

Common Name	Scientific Name	Frequency
Common Mouse-ear	<i>Cerastium fontanum</i>	F
Red Fescue	<i>Festuca rubra agg.</i>	F
Cleavers	<i>Galium aparine</i>	F
Yorkshire-fog	<i>Holcus lanatus</i>	F
Common Bird's-foot-trefoil	<i>Lotus corniculatus</i>	F
Ribwort Plantain	<i>Plantago lanceolata</i>	F
Red Clover	<i>Trifolium pratense</i>	F
Common Bent	<i>Agrostis capillaris</i>	LF
Soft Rush	<i>Juncus effusus</i>	LF
Creeping Bent	<i>Agrostis stolonifera</i>	O
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>	O
Glaucous Sedge	<i>Carex flacca</i>	O
Cock's-foot	<i>Dactylis glomerata</i>	O
Tufted Hair-grass	<i>Deschampsia caespitosa</i>	O
Field Horsetail	<i>Equisetum arvense</i>	O
Cat's-ear	<i>Hypochaeris radicata</i>	O
Meadow Vetchling	<i>Lathyrus pratensis</i>	O
Oxeye Daisy	<i>Leucanthemum vulgare</i>	O
Gypsywort	<i>Lycopus europaeus</i>	O
Timothy	<i>Phleum pratense sens.lat.</i>	O
Rough Meadow-grass	<i>Poa trivialis</i>	O
Meadow Buttercup	<i>Ranunculus acris</i>	O
Creeping Buttercup	<i>Ranunculus repens</i>	O
Autumn Hawkbit	<i>Scorzoneroides autumnalis</i>	O
Hoary Ragwort	<i>Senecio erucifolius</i>	O
Common Dandelion	<i>Taraxacum officinale</i>	O
Hop Trefoil	<i>Trifolium campestre</i>	O
White Clover	<i>Trifolium repens</i>	O
Tufted Vetch	<i>Vicia cracca</i>	O

Yarrow	<i>Achillea millefolium</i>	R
Daisy	<i>Bellis perennis</i>	R
Hairy Sedge	<i>Carex hirta</i>	R
False Fox-sedge	<i>Carex otrubae</i>	R
Common Centaury	<i>Centaurium erythraea</i>	R
Spear Thistle	<i>Cirsium vulgare</i>	R
Broad-leaved Willowherb	<i>Epilobium montanum</i>	R
Dove's-foot Crane's-bill	<i>Geranium molle</i>	R
Compact Rush	<i>Juncus conglomeratus</i>	R
Hard Rush	<i>Juncus inflexus</i>	R
Silverweed	<i>Potentilla anserina</i>	R
Common Sorrel	<i>Rumex acetosa</i>	R
Lesser Trefoil	<i>Trifolium dubium</i>	R
Colt's-foot	<i>Tussilago farfara</i>	R
Hairy Tare	<i>Vicia hirsuta</i>	R

TN4b Other Neutral Grassland

Common Name	Scientific Name	Frequency
Yorkshire-fog	<i>Holcus lanatus</i>	D
Common Mouse-ear	<i>Cerastium fontanum</i>	F
Cock's-foot	<i>Dactylis glomerata</i>	F
Cow Parsley	<i>Anthriscus sylvestris</i>	LA
Rough Hawk's-beard	<i>Crepis biennis</i>	LF
Creeping Thistle	<i>Cirsium arvense</i>	O
Red Fescue	<i>Festuca rubra</i> agg.	O
Ribwort Plantain	<i>Plantago lanceolata</i>	O
Rough Meadow-grass	<i>Poa trivialis</i>	O
Common Nettle	<i>Urtica dioica</i>	O
Tufted Vetch	<i>Vicia cracca</i>	O
Meadow Buttercup	<i>Ranunculus acris</i>	P
Colt's-foot	<i>Tussilago farfara</i>	P
Mugwort	<i>Artemisia vulgaris</i>	R
Wild Teasel	<i>Dipsacus fullonum</i>	R
Dove's-foot Crane's-bill	<i>Geranium molle</i>	R
Oxeye Daisy	<i>Leucanthemum vulgare</i>	R
Creeping Buttercup	<i>Ranunculus repens</i>	R
Broad-leaved Dock	<i>Rumex obtusifolius</i>	R
Sallow	<i>Salix</i> sp.	R
Hairy Tare	<i>Vicia hirsuta</i>	R
Common Vetch	<i>Vicia sativa</i>	R

TN4c Other Neutral Grassland

Common Name	Scientific Name	Frequency
Red Fescue	<i>Festuca rubra</i> agg.	D
Yorkshire-fog	<i>Holcus lanatus</i>	F
Meadow Buttercup	<i>Ranunculus acris</i>	F
Creeping Buttercup	<i>Ranunculus repens</i>	F
Common Vetch	<i>Vicia sativa</i>	F

Tall Fescue	<i>Festuca arundinacea</i>	LA
Common Sorrel	<i>Rumex acetosa</i>	P
Broad-leaved Dock	<i>Rumex obtusifolius</i>	P
Crested Dog's-tail	<i>Cynosurus cristatus</i>	R
Common Spotted-orchid	<i>Dactylorhiza fuchsii</i>	R

TN4d Other Neutral Grassland

Common Name	Scientific Name	Frequency
Cock's-foot	<i>Dactylis glomerata</i>	D
Common Bent	<i>Agrostis capillaris</i>	A
Red Fescue	<i>Festuca rubra</i> agg.	LA
Creeping Thistle	<i>Cirsium arvense</i>	O
Creeping Thistle	<i>Cirsium arvense</i>	O
Common Mouse-ear	<i>Cerastium fontanum</i>	R
Common Nettle	<i>Urtica dioica</i>	R
Spear Thistle	<i>Cirsium vulgare</i>	R
Soft Rush	<i>Juncus effusus</i>	R

TN4e Other Neutral Grassland

Common Name	Scientific Name	Frequency
Crested Dog's-tail	<i>Cynosurus cristatus</i>	D
Yorkshire-fog	<i>Holcus lanatus</i>	F
Cat's-ear	<i>Hypochaeris radicata</i>	F
Common Bird's-foot-trefoil	<i>Lotus corniculatus</i>	F
Meadow Buttercup	<i>Ranunculus acris</i>	F
Hop Trefoil	<i>Trifolium campestre</i>	F
Red Clover	<i>Trifolium pratense</i>	F
White Clover	<i>Trifolium repens</i>	F
Common Vetch	<i>Vicia sativa</i>	F
Common Knapweed	<i>Centaurea nigra</i>	O
Ribwort Plantain	<i>Plantago lanceolata</i>	O
Daisy	<i>Bellis perennis</i>	R
Dandelion	<i>Taraxacum officinale</i> agg.	R
Hairy Tare	<i>Vicia hirsuta</i>	R

TN4f Other Neutral Grassland

Common Name	Scientific Name	Frequency
Red Fescue	<i>Festuca rubra</i> agg.	D
Common Mouse-ear	<i>Cerastium fontanum</i>	F
Yorkshire-fog	<i>Holcus lanatus</i>	F
Cat's-ear	<i>Hypochaeris radicata</i>	F
Soft Rush	<i>Juncus effusus</i>	F
Common Bird's-foot-trefoil	<i>Lotus corniculatus</i>	F
Ribwort Plantain	<i>Plantago lanceolata</i>	F
Meadow Buttercup	<i>Ranunculus acris</i>	F
White Clover	<i>Trifolium repens</i>	F
Creeping Buttercup	<i>Ranunculus repens</i>	LF
False Oat-grass	<i>Arrhenatherum elatius</i>	O

Red Clover	<i>Trifolium pratense</i>	O
Colt's-foot	<i>Tussilago farfara</i>	O
Common Vetch	<i>Vicia sativa</i>	O
Creeping Thistle	<i>Cirsium arvense</i>	R
Meadow Vetchling	<i>Lathyrus pratensis</i>	R
Tufted Vetch	<i>Vicia cracca</i>	R
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>	R
Daisy	<i>Bellis perennis</i>	R
Crested Dog's-tail	<i>Cynosurus cristatus</i>	R
Cock's-foot	<i>Dactylis glomerata</i>	R
Oxeye Daisy	<i>Leucanthemum vulgare</i>	R
Dog Rose	<i>Rosa canina</i> agg.	R
Common Sorrel	<i>Rumex acetosa</i>	R
Hoary Ragwort	<i>Senecio erucifolius</i>	R
Dandelion	<i>Taraxacum officinale</i> agg.	R

TN4g Other Neutral Grassland

Common Name	Scientific Name	Frequency
Crested Dog's-tail	<i>Cynosurus cristatus</i>	D
Rough Meadow-grass	<i>Poa trivialis</i>	D
Common Couch	<i>Elytrigia repens</i>	LD
Field Horsetail	<i>Equisetum arvense</i>	LA
Red Fescue	<i>Festuca rubra</i> agg.	LA
Yorkshire-fog	<i>Holcus lanatus</i>	F
Meadow Buttercup	<i>Ranunculus acris</i>	F
Red Clover	<i>Trifolium pratense</i>	F
Common Vetch	<i>Vicia sativa</i>	F
Creeping Bent	<i>Agrostis stolonifera</i>	O
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>	O
Common Mouse-ear	<i>Cerastium fontanum</i>	O
Creeping Thistle	<i>Cirsium arvense</i>	O
Meadow Vetchling	<i>Lathyrus pratensis</i>	O
Common Bird's-foot-trefoil	<i>Lotus corniculatus</i>	O
Annual Meadow-grass	<i>Poa annua</i>	O
Common Sorrel	<i>Rumex acetosa</i>	O
Colt's-foot	<i>Tussilago farfara</i>	O
Tufted Vetch	<i>Vicia cracca</i>	O
Hairy Tare	<i>Vicia hirsuta</i>	O
Dandelion	<i>Taraxacum officinale</i> agg.	R
Cow Parsley	<i>Anthriscus sylvestris</i>	R
Oval Sedge	<i>Carex ovalis</i>	R
Marsh Thistle	<i>Cirsium palustre</i>	R
Cat's-ear	<i>Hypochaeris radicata</i>	R
Compact Rush	<i>Juncus conglomeratus</i>	R
Hard Rush	<i>Juncus inflexus</i>	R
Curled Dock	<i>Rumex crispus</i>	R
Broad-leaved Dock	<i>Rumex obtusifolius</i>	R
Hop Trefoil	<i>Trifolium campestre</i>	R

TN5 Woodland

Common Name	Scientific Name	Frequency
Common Alder	<i>Alnus glutinosa</i>	A
Grey Alder	<i>Alnus incana</i>	A
Silver Birch	<i>Betula pendula</i>	A
Bramble	<i>Rubus fruticosus agg.</i>	D
Yorkshire-fog	<i>Holcus lanatus</i>	D
Cock's-foot	<i>Dactylis glomerata</i>	F
Creeping Buttercup	<i>Ranunculus repens</i>	F
Tufted Vetch	<i>Vicia cracca</i>	LF
Wild Angelica	<i>Angelica sylvestris</i>	LF
Scots Pine	<i>Pinus sylvestris</i>	LF
Sessile Oak	<i>Quercus petraea</i>	LO
Ash	<i>Fraxinus excelsior</i>	O
Common Bird's-foot-trefoil	<i>Lotus corniculatus</i>	O
Common Mouse-ear	<i>Cerastium fontanum</i>	O
Cow Parsley	<i>Anthriscus sylvestris</i>	O
Creeping Thistle	<i>Cirsium arvense</i>	O
Hairy Tare	<i>Vicia hirsuta</i>	O
Hawthorn	<i>Crataegus monogyna</i>	O
Meadow Vetchling	<i>Lathyrus pratensis</i>	O
Red Clover	<i>Trifolium pratense</i>	O
Ribwort Plantain	<i>Plantago lanceolata</i>	O
White Clover	<i>Trifolium repens</i>	O
Cleavers	<i>Galium aparine</i>	P
Common Vetch	<i>Vicia sativa</i>	P
Dandelion	<i>Taraxacum officinale agg.</i>	P
Hybrid Oak	<i>Quercus petraea x robur (Q. x rosacea)</i>	P
Rough Meadow-grass	<i>Poa trivialis</i>	P
Sallow	<i>Salix sp.</i>	P
Crested Dog's-tail	<i>Cynosurus cristatus</i>	R
Curled Dock	<i>Rumex crispus</i>	R
Daisy	<i>Bellis perennis</i>	R
Dogwood	<i>Cornus sanguinea</i>	R
Glaucous Sedge	<i>Carex flacca</i>	R
Pedunculate Oak	<i>Quercus robur</i>	R
Red Fescue	<i>Festuca rubra agg.</i>	R
Yarrow	<i>Achillea millefolium</i>	R

TN6 Mixed Scrub

Common Name	Scientific Name	Frequency
Bramble	<i>Rubus fruticosus agg.</i>	LD
Hawthorn	<i>Crataegus monogyna</i>	A
Silver Birch	<i>Betula pendula</i>	LA
Willow	<i>Salix sp.</i>	F
Common Alder	<i>Alnus glutinosa</i>	O
Dogrose	<i>Rosa canina</i>	O
Dogwood	<i>Cornus sanguinea</i>	R

TN7 Mixed Scrub

Common Name	Scientific Name	Frequency
Red Fescue	<i>Festuca rubra</i> agg.	D
Alder	<i>Alnus glutinosa</i>	A
Willow	<i>Salix</i> sp	LA
False Oat-grass	<i>Arrhenatherum elatius</i>	F
Common Mouse-ear	<i>Cerastium fontanum</i>	F
Cock's-foot	<i>Dactylis glomerata</i>	F
Yorkshire-fog	<i>Holcus lanatus</i>	F
Meadow Buttercup	<i>Ranunculus acris</i>	F
silver birch	<i>Betula pendula</i>	F
Japanese rose	<i>Rosa rugosa</i>	LF
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>	O
Smooth Hawk's-beard	<i>Crepis capillaris</i>	O
Rough Meadow-grass	<i>Poa trivialis</i>	O
Rosebay Willowherb	<i>Chamerion angustifolium</i>	R
Crested Dog's-tail	<i>Cynosurus cristatus</i>	R
Cat's-ear	<i>Hypochaeris radicata</i>	R
Red Clover	<i>Trifolium pratense</i>	R
Tufted Hair-grass	<i>Deschampsia caespitosa</i>	R
Meadow Vetchling	<i>Lathyrus pratensis</i>	R

TN8 Other Neutral Grassland

Common Name	Scientific Name	Frequency
Broad-leaved Willowherb	<i>Epilobium montanum</i>	F
Cleavers	<i>Galium aparine</i>	F
Common Bird's-foot-trefoil	<i>Lotus corniculatus</i>	F
Common Mouse-ear	<i>Cerastium fontanum</i>	F
Poplar	<i>Populus alba</i>	F
Red Clover	<i>Trifolium pratense</i>	F
Red Fescue	<i>Festuca rubra</i> agg.	F
Ribwort Plantain	<i>Plantago lanceolata</i>	F
Silver Birch	<i>Betula pendula</i>	F
Common Bent	<i>Agrostis capillaris</i>	LF
Autumn Hawkbit	<i>Scorzoneroides autumnalis</i>	O
Cat's-ear	<i>Hypochaeris radicata</i>	O
Cock's-foot	<i>Dactylis glomerata</i>	O
Common Alder	<i>Alnus Glutinosa</i>	O
Common Dandelion	<i>Taraxacum officinale</i>	O
Common Ragwort	<i>Jacobaea vulgaris</i>	O
Creeping Bent	<i>Agrostis stolonifera</i>	O
Creeping Buttercup	<i>Ranunculus repens</i>	O
Field Horsetail	<i>Equisetum arvense</i>	O
Glaucous Sedge	<i>Carex flacca</i>	O
Gypsywort	<i>Lycopus europaeus</i>	O
Hoary Ragwort	<i>Senecio erucifolius</i>	O
Hop Trefoil	<i>Trifolium campestre</i>	O
Meadow Buttercup	<i>Ranunculus acris</i>	O

Meadow Vetchling	<i>Lathyrus pratensis</i>	O
Oxeye Daisy	<i>Leucanthemum vulgare</i>	O
Rough Meadow-grass	<i>Poa trivialis</i>	O
Apple	<i>Malus domestica</i>	R
Ash	<i>Fraxinus excelsior</i>	R
Broom	<i>Cytisus scoparius</i>	R
Colt's-foot	<i>Tussilago farfara</i>	R
Common Centaury	<i>Centaureum erythraea</i>	R
Common Hawthorn	<i>Crataegus monogyna</i>	R
Common Sorrel	<i>Rumex acetosa</i>	R
Compact Rush	<i>Juncus conglomeratus</i>	R
Daisy	<i>Bellis perennis</i>	R
Dove's-foot Crane's-bill	<i>Geranium molle</i>	R
False Fox-sedge	<i>Carex otrubae</i>	R
Hairy Sedge	<i>Carex hirta</i>	R
Hairy Tare	<i>Vicia hirsuta</i>	R
Hard Rush	<i>Juncus inflexus</i>	R
Lesser Trefoil	<i>Trifolium dubium</i>	R
Pedunculate Oak	<i>Quercus robur</i>	R
Rowan	<i>Sorbus aucuparia</i>	R
Scots Pine	<i>Pinus sylvestris</i>	R

TN9 Woodland

Retained woodland as per TN5

TN10 Modified Grassland

Common Name	Scientific Name	Frequency
Yorkshire-fog	<i>Holcus lanatus</i>	D
Cock's-foot	<i>Dactylis glomerata</i>	F
Common Mouse-ear	<i>Cerastium fontanum</i>	F
Cow Parsley	<i>Anthriscus sylvestris</i>	LA
Rough Hawk's-beard	<i>Crepis biennis</i>	LF
Common Nettle	<i>Urtica dioica</i>	O
Creeping Thistle	<i>Cirsium arvense</i>	O
Red Fescue	<i>Festuca rubra agg.</i>	O
Ribwort Plantain	<i>Plantago lanceolata</i>	O
Rough Meadow-grass	<i>Poa trivialis</i>	O
Tufted Vetch	<i>Vicia cracca</i>	O
Colt's-foot	<i>Tussilago farfara</i>	R
Broad-leaved Dock	<i>Rumex obtusifolius</i>	R
Common Vetch	<i>Vicia sativa</i>	R
Creeping Buttercup	<i>Ranunculus repens</i>	R
Dove's-foot Crane's-bill	<i>Geranium molle</i>	R
Hairy Tare	<i>Vicia hirsuta</i>	R
Meadow Buttercup	<i>Ranunculus acris</i>	R
Mugwort	<i>Artemisia vulgaris</i>	R
Oxeye Daisy	<i>Leucanthemum vulgare</i>	R

Sallow	<i>Salix sp.</i>	R
Wild Teasel	<i>Dipsacus fullonum</i>	R

TN11 Woodland

Common Name	Scientific Name	Frequency
Willow	<i>Salix sp.</i>	D
Sphagnum Moss	<i>Sphagnum sp</i>	LD
Soft Rush	<i>Juncus effusus</i>	LA
Common Sedge	<i>Carex nigra</i>	LA
Meadow Fescue	<i>Festuca pratensis</i>	LA
Silver Birch	<i>Betula pendula</i>	F
Field Horsetail	<i>Equisetum arvense</i>	F
Dandelion	<i>Taraxacum officinale agg.</i>	F
Common Alder	<i>Alnus glutinosa</i>	R
Meadow Buttercup	<i>Ranunculus acris</i>	R
Pedunculate Oak	<i>Quercus robur</i>	R

TN12 Mixed Scrub

Common Name	Scientific Name	Frequency
Great willow herb	<i>Epilobium hirsutum</i>	LD
Bulrush	<i>Typha latifolia</i>	LD
Bramble	<i>Rubus fruticosus agg.</i>	LD
creeping buttercup	<i>Ranunculus repens</i>	LA
Red Fescue	<i>Festuca rubra agg.</i>	LA
soft rush	<i>Juncus effusus</i>	F
Crested Dog's-tail	<i>Cynosurus cristatus</i>	F
Rough Meadow-grass	<i>Poa trivialis</i>	F
Field Horsetail	<i>Equisetum arvense</i>	F
Yorkshire-fog	<i>Holcus lanatus</i>	F
Meadow Buttercup	<i>Ranunculus acris</i>	F
Cow Parsley	<i>Anthriscus sylvestris</i>	LF
Common Alder	<i>Alnus glutinosa</i>	O
Willow	<i>Salix sp.</i>	O
Pedunculate Oak	<i>Quercus robur</i>	O
Red Clover	<i>Trifolium pratense</i>	O
Common Mouse-ear	<i>Cerastium fontanum</i>	O
Creeping Thistle	<i>Cirsium arvense</i>	O
Annual Meadow-grass	<i>Poa annua</i>	O
Scots Pine	<i>Pinus sylvestris</i>	R
Common Vetch	<i>Vicia sativa</i>	R
Dandelion	<i>Taraxacum officinale agg.</i>	R
Broad-leaved Dock	<i>Rumex obtusifolius</i>	R

TN13 Woodland

Woodland as per TN5 with increased prevalence of Scot's Pine.

TN14 Modified Grassland

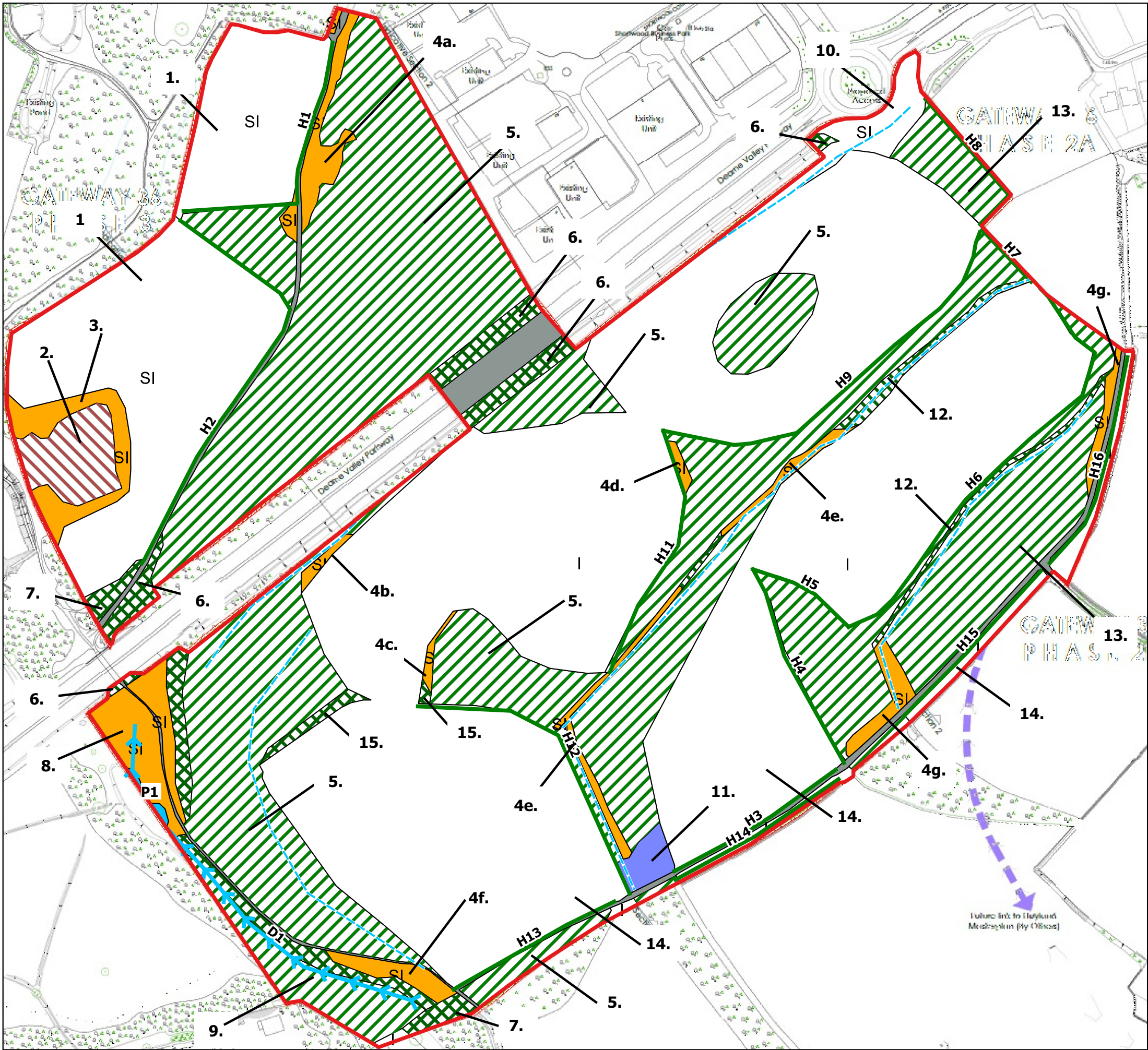
Common Name	Scientific Name	Frequency
Perennial Ryegrass	<i>Lolium perenne</i>	D
Annual Meadow Grass	<i>Poa annua</i>	F
Red Clover	<i>Trifolium pratense</i>	F
Rough Meadow-grass	<i>Poa trivialis</i>	F
White Clover	<i>Trifolium repens</i>	F
Broad-leaved Plantain	<i>Plantago major</i>	O
Yarrow	<i>Achillea millefolium</i>	O
Broad-leaved Dock	<i>Rumex obtusifolius</i>	R
Common Mouse Ear	<i>Cerastium fontanum</i>	R

Pond P1

Common Name	Scientific Name	Frequency
Bulrush	<i>Typha latifolia</i>	D
Soft Rush	<i>Juncus effusus</i>	A
Water Mint	<i>Mentha citrata</i>	LA
Gypsywort	<i>Lycopus europaeus</i>	F
Field Horsetail	<i>Equisetum arvense</i>	R

Offsite Parcel 1: Modified Grassland

Common Name	Scientific Name	Frequency
Dandelion	<i>Taraxacum officinale agg.</i>	A
Perennial Ryegrass	<i>Lolium perenne</i>	A
Red Clover	<i>Trifolium pratense</i>	A
Yorkshire-fog	<i>Holcus lanatus</i>	A
Cock's-foot	<i>Dactylis glomerata</i>	F
Common Bent	<i>Agrostis capillaris</i>	F
Tare sp	<i>Vicia sp</i>	F
False Oat-grass	<i>Arrhenatherum elatius</i>	LF
White Clover	<i>Trifolium repens</i>	LF
Common Sorrel	<i>Rumex acetosa</i>	O
Crested Dog's-tail	<i>Cynosurus cristatus</i>	O
Common hogweed	<i>Heracleum sphondylium</i>	O
Lesser Trefoil	<i>Trifolium dubium</i>	O
Meadow Foxtail	<i>Alopecurus pratensis</i>	O
Ribwort Plantain	<i>Plantago lanceolat</i>	O



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Key

- Site Boundary
- Woodland - Mostly Broadleaved
- Urban: Sealed/Unsealed Surfaces
- Modified Grassland - Improved
- Other neutral grassland
- Woodland - Wet
- Sparsely Vegetated - ruderal
- Modified Grassland - Poor semi-improved
- Scrub - mixed
- Pond
- > Running water
- Intact hedge
- Dry ditch

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masterplanning environmental assessment landscape design urban design ecology architecture arboriculture

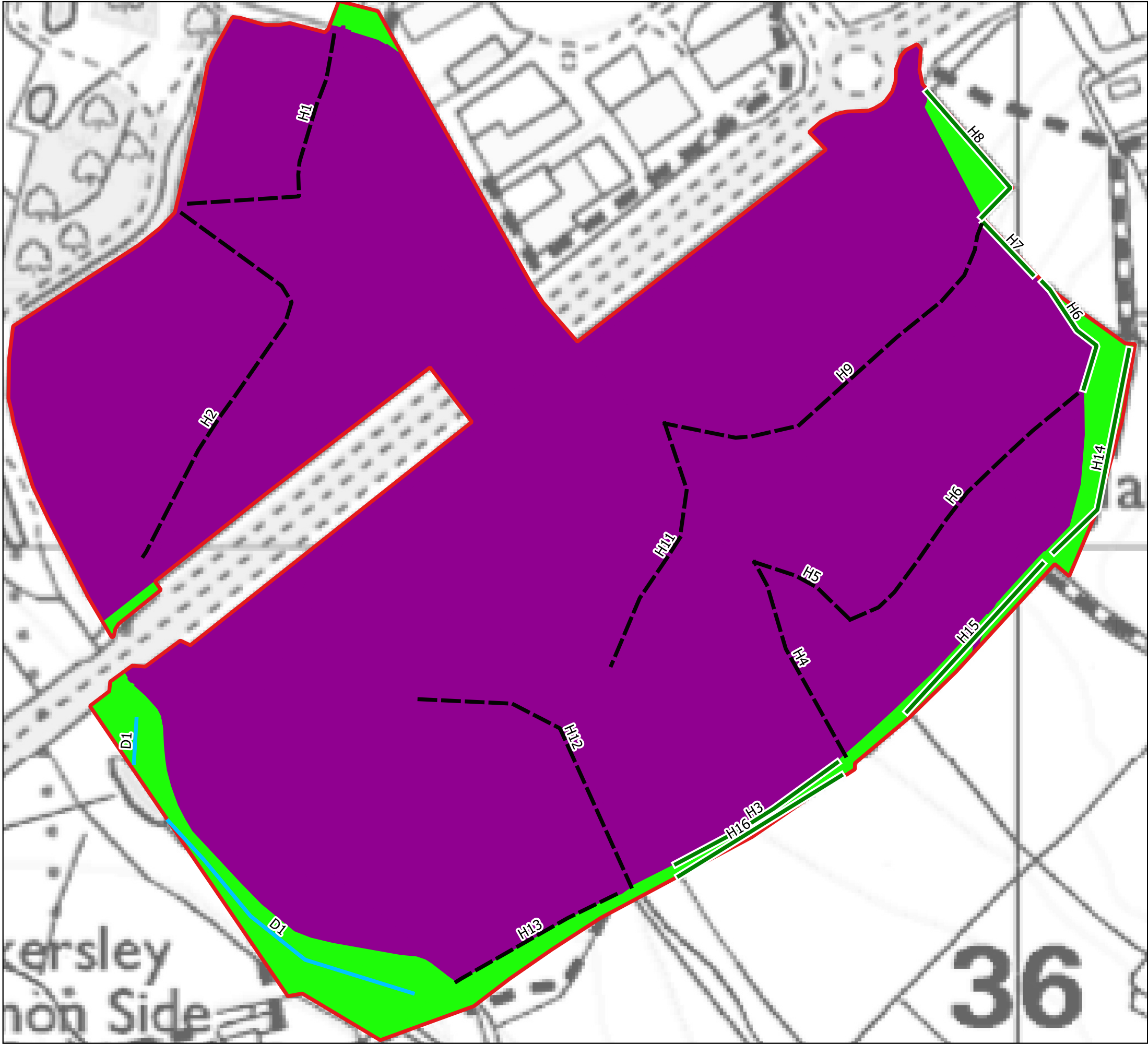
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client
Harworth Group
project
Dearne Valley Parkway, Rockingham,
Barnsley - Phases 2 and 3
drawing title
Onsite Baseline Habitat

scale @ A3
1:3000
drawn
JDH
issue
14/5/2020

drawing / figure number
Figure 1

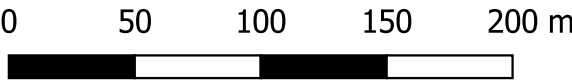


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Key

- Site Boundary
- Development Area
- Retained and Enhanced Habitats
- Hedgerow Removal
- Hedgerow Retained
- Retained Ditch





client
Harworth Group

project
Dearne Valley Parkway, Rockingham,
Barnsley - Phases 2

drawing title
HABITAT RETENTION PLAN

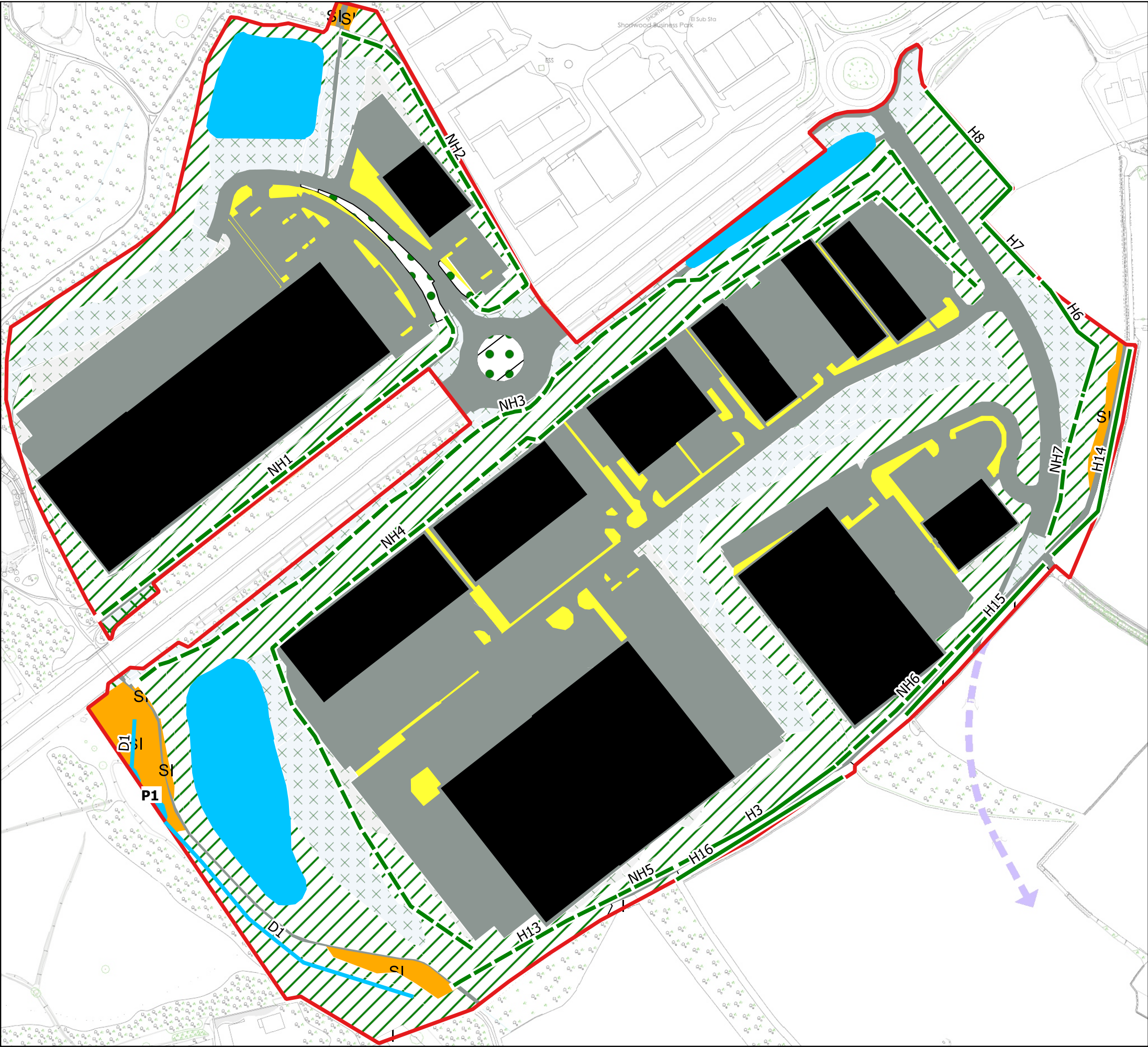
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drawn
JDH

issue
14/5/2020

drawing / figure number
Figure 2

rev
-

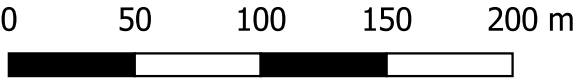


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Key

- Site Boundary
- Building
- Hardstanding
- Amenity Grassland
- Scattered Trees on Amenity Grassland
- Woodland (mainly broadleaved)
- Mixed scrub (retained)
- Mixed Scrub (Managed)
- SI Neutral grassland - semi-improved
- I Modified Grassland (Improved)
- Ponds (Overdeepend Attenuation features)
- New Hedgerow
- Retained Hedgerow
- Retained Ditch





client
Harworth Group
project
**Dearne Valley Parkway, Rockingham,
Barnsley - Phases 2 and 3**
drawing title
Onsite Habitat Creation Plan

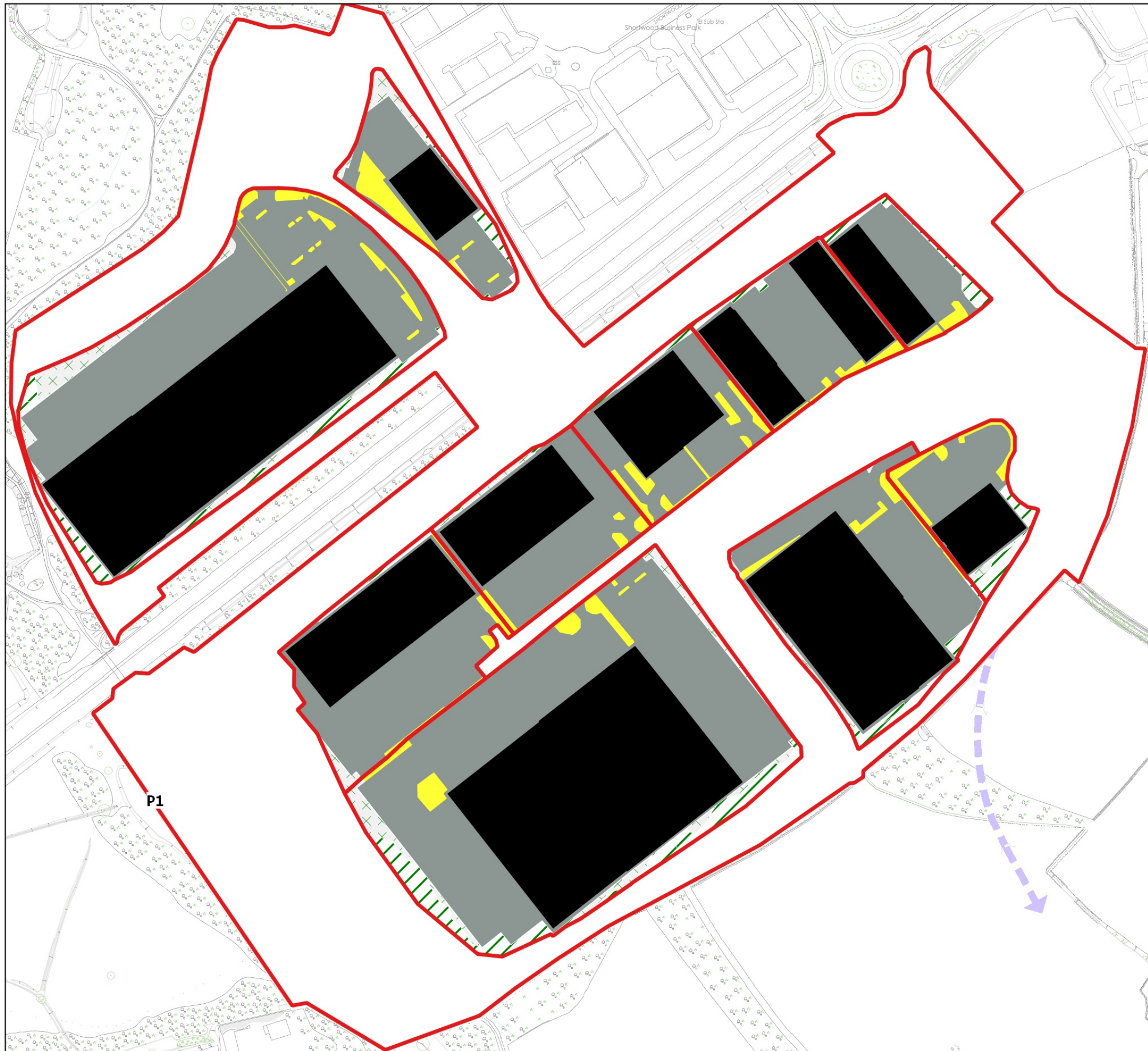
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drawn
JDH

issue
20/5/2020

drawing / figure number
Figure 3a

rev
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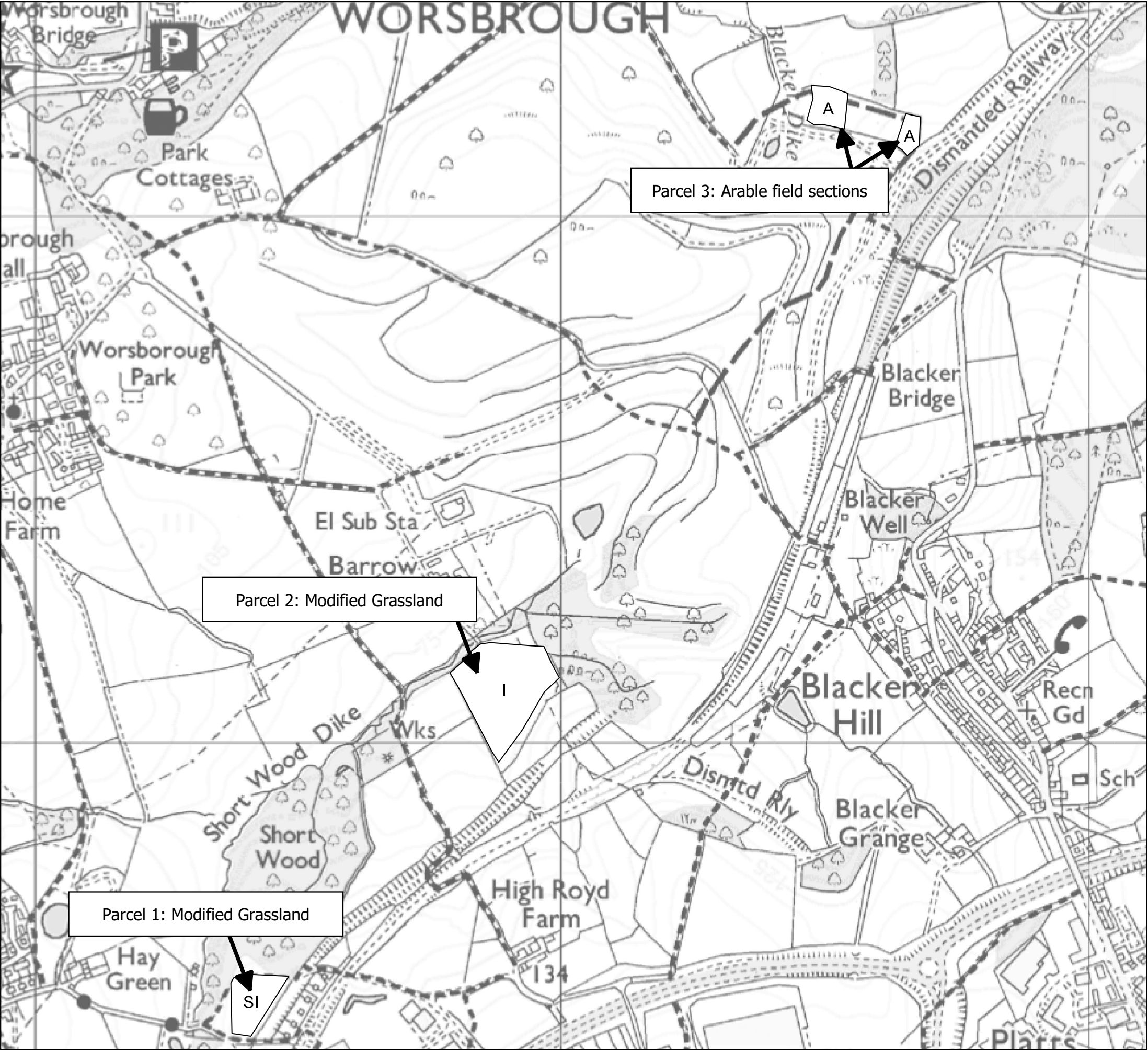


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Key

- Site and Plot Boundaries
- Building
- Hardstanding
- Amenity Grassland
- Mixed Scrub
- Broadleaved Woodland



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Key

- A Cultivated/disturbed land - arable
- I Modified grassland (Improved)
- SI Modified Grassland (Poor semi-improved)



client
Harworth Group

project
Dearne Valley Parkway, Rockingham,
Barnsley - Phases 2 and 3

drawing title
Offsite Baseline Habitats

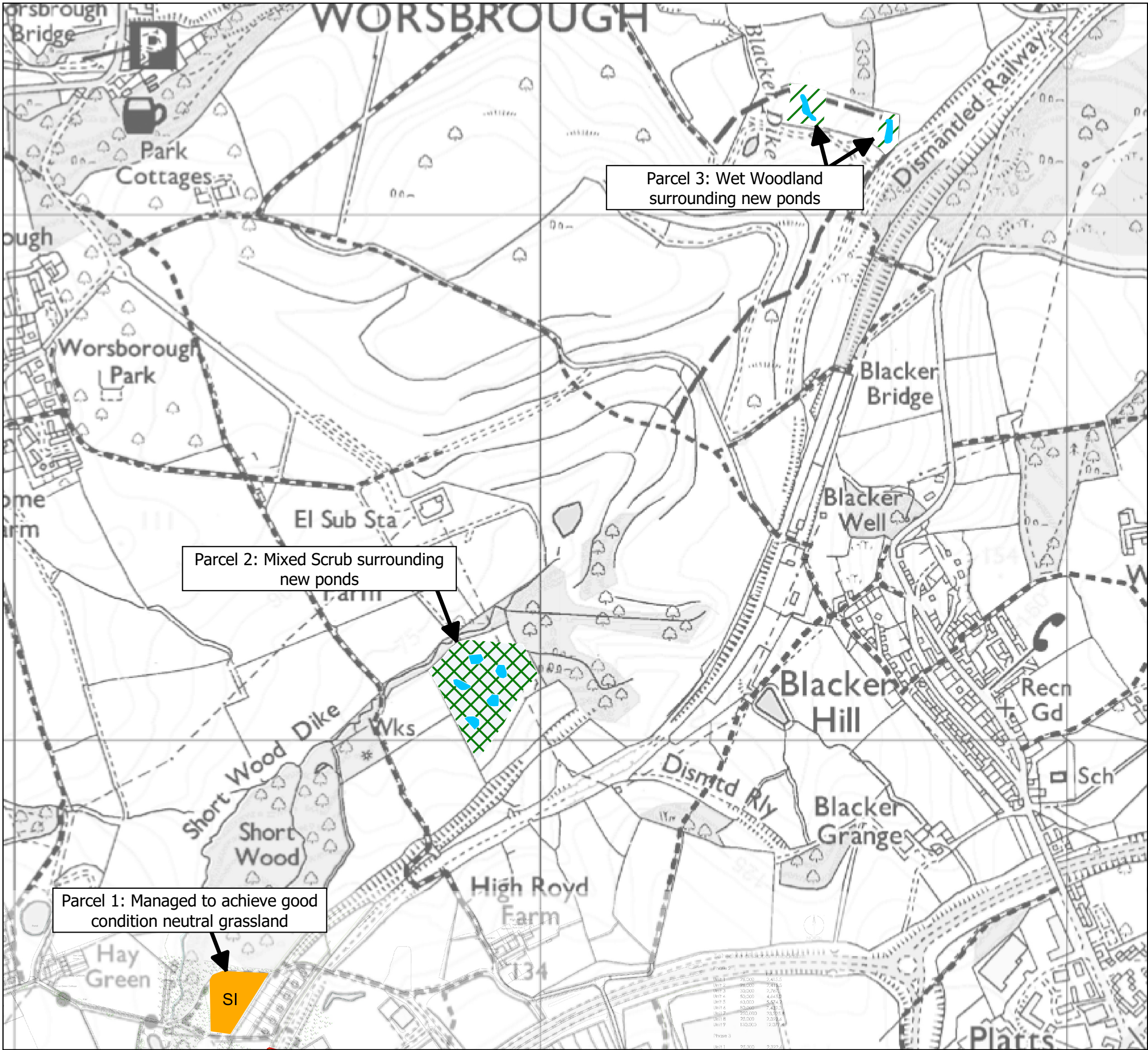
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Figure 4



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Key

- Broadleaved woodland - wet woodland
- SI Neutral grassland - semi-improved
- Mixed Scrub
- Standing water

client
Harworth Group

project
Dearne Valley Parkway, Rockingham,
Barnsley - Phases 2 and 3

drawing title
Offsite Habitat Provision

scale @ A3
1:7500

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8/7/2020

rev

Figure 5