

**Whitcher Wildlife Ltd.
Ecological Consultants.**



**LAND SOUTH OF DONCASTER ROAD,
DARFIELD, ENTIRE DEVELOPMENT.**

OS REF: SE 40239 04991.

BIODIVERSITY NET GAIN ASSESSMENT.

Ref No: 240123/BNG/1.

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1. INTRODUCTION.

1.1. A hybrid planning application is being submitted for the development of a large residential estate to the south of Doncaster Road, within the village of Darfield, Barnsley. The application is for full planning permission within the northern section of the site, known as 'Phase one', and for outline planning permission within the southern section of the site, known as 'Phase two'. Phase one also includes a drainage basin which will be situated to the south of the development.

1.2. Whitcher Wildlife Ltd were therefore commissioned to undertake a Biodiversity Net Gain (BNG) assessment of the entire site, to determine the baseline calculations of the entire survey area and determine what is required to allow the development to achieve a net gain.

1.3. Development plans for phase one are now finalised and indicative plans for phase two have been designed. This report shows both the baseline and post-works score of both phases.

1.4. An initial site visit was carried out on 17th January 2024 when a Preliminary Ecological Appraisal (PEA) was carried out. This ascertained rough baseline calculations including broad habitats and sizes, but detailed calculations could not be done due to survey being carried out well outside the optimum survey season.

1.5. Repeat visits were therefore undertaken throughout June 2024 to allow for an updated assessment of the habitats, including for condition assessments of each habitat parcel. A Rivers Condition Assessment (RCA) was also carried out on 21st March 2025 to facilitate a full BNG assessment of the watercourses across the site. A combination of both the initial survey and these updated surveys make up the findings of this assessment. Details of all condition assessments can be found within the accompanying condition assessment sheets.

1.6. Certain habitats on site span across both phase one and two of the development. This means that in the calculations, what is effectively the same habitat parcel will be split into two individual segments to reflect how much lies within each phase. This is the case for the following habitats: **W1, W2, W4, S2, S4** and both watercourses.

1.7. Two further BNG reports will accompany this one, one which covers phase one only, and one which covers phase two only. All will be accompanied by the relevant statutory metric and condition assessment sheets.

2. SURVEY METHODOLOGY.

2.1. All surveys were carried out in line with the Chartered Institute of Ecological and Environmental Management (CIEEM) survey standards and advice.

2.2. A baseline survey was carried out of the site to establish the baseline biodiversity value of the area. Prior to visiting the site, the survey area was cross referenced to maps and aerial photographs to give a general idea of the habitats and potential issues within the area and to identify potential access and walking routes.

2.3. The survey area was walked where access was agreed. All habitats within and immediately around the survey area were documented and the dominant species within that habitat listed in line with the UK Habitat Classification methodology to identify the primary habitat types throughout the survey area. All primary habitats are accompanied by secondary codes which are used to add further specific details where necessary. Each primary habitat and unique set off secondary codes will be shown individually in the appended annotated map.

2.4. All habitat surveys, including the initial Preliminary Ecological Appraisal were undertaken by Mitchel Greenhalgh, Managing Director of Whitcher Wildlife, and an Ecological Consultant with an array of experience in conducting surveys on a variety of flora and fauna in a professional capacity. Mitchel holds a level two Natural England survey licence in respect of both bats and great crested newts, a NatureScot licence in respect of bats and Natural England class licences for various invertebrates. He is also FISC level 4. He has attended courses run by CIEEM, the Species Recovery Trust and the FSC and also holds a BSc in environmental science attained from the University of Leeds. He is an Associate member of CIEEM and he is therefore committed to continuous professional development.

2.5. The River Condition Assessments (RCA) were carried out by Ruth Georgiou BSc, MCIEEM. Since 2004 Ruth has had experience in a professional capacity as a Wildlife Consultant carrying out ecology surveys and phase I habitat surveys. As a full member of CIEEM Ruth is subject to peer review on an annual basis. Ruth holds Natural England survey licences in respect of bats, great crested newts and white clawed crayfish and has held her own or has been named ecologist on site specific licences for badgers, great crested newts and bats. She also holds a degree in Environmental Science (BSc) and has successfully completed a number of courses run by CIEEM, BCT and FSC in the relative protected species, carrying out phase I habitat surveys and BNG

assessments. Ruth is also accredited to undertake MoRPh assessments to establish the condition of flowing watercourses to inform BNG assessments.

3. SITE DESCRIPTION.

3.1. The Survey Area.

3.1.1. The overall survey area comprises mainly arable land, separated into two main fields. It is located to the west of the north end of the village of Darfield, south of Doncaster Road and west of Upperwood Road and the 'Italian' estate.

3.1.2. Historic aerial imagery and maps show that the bulk of the site has been arable for a considerable length of time, having never been shown as land used for any other purpose.

3.1.3. Within the centre of the site is the old Darfield Quarry, which was then used as landfill for a number of years before being capped and left undisturbed.

3.1.4. The aerial map below shows the approximate location of the entire survey area, marked by the red shape. This covers both phase one and phase two of the development.



3.1.5. The further surroundings comprise predominantly arable land, residential housing estates, scattered woodland and grassland pockets.

3.2. Description of Habitats.

3.2.1. Appendices I and II of this report contain maps marked up with the varying habitats within phase one. The habitats within phase one are: -

- c1c – Cereal Crops
- g4 – Modified Grassland
- g3c – Other Neutral Grassland
- w1f7 – Other Lowland Mixed Deciduous Woodland
- h3h – Mixed Scrub
- h3d – Bramble Scrub
- h2a5 – Species-rich Native Hedgerow
- r1g – Other Standing Water
- r2 – Other Rivers and Streams

3.2.2. c1c – Cereal Crops.

3.2.2.1. Secondary codes: 516 active management.

3.2.2.1.1. A large part of phase one is made up by a large arable field, which is used for producing wheat.



3.2.2.1.2. The southern part of this field is also considered to be arable, but the crop appears to have failed, and likely does so consistently. This area of the site is dominated by black grass (*Alopecurus myosuroides*), with some other arable weeds present.



3.2.2.2. Secondary codes: 517 recent management.

Within the proposed basin location, to the west of the footpath, is a parcel of land which has been cropped in the past but at present is barren with arable weeds. To the further south and west, a barley crop is present within the field.



3.2.2.3. Secondary codes: 516 active management.

The vast majority of phase two is made up by a large arable field within the survey area.



3.2.3. g4 – Modified Grassland.

At the northern and northwestern end of the survey area, there is an area of grassland that is left uncropped and contains a species-poor sward. The dominant species within the habitat is Yorkshire fog (*Holcus lanatus*), which is accompanied by cocksfoot (*Dactylis glomerata*), timothy (*Phleum pratense*), rough meadow grass (*Poa trivialis*), perennial rye grass (*Lolium perenne*), Italian rye grass (*Lolium multiflorum*), false oat grass (*Arrhenatherum elatius*) and barren brome (*Anisantha sterilis*). Forbs such as creeping thistle (*Cirsium arvense*) and common poppy (*Papaver rhoeas*) are also present but rare within the habitat.



3.2.4. g3c – Other Neutral Grassland.

3.2.4.1. Secondary codes: 10 scattered scrub, 104 other grazed. – **ONG1.**

3.2.4.1.1. Within the old tip area of the site, there are still some relatively open areas which remain as grassland, although likely not for much longer as the scrub is encroaching heavily. The sward is short in places, likely due to rabbit grazing, but this varies across the habitat parcel.

3.2.4.1.2. Species composition varies throughout the habitat but is generally diverse and includes the following species: red fescue (*Festuca rubra* agg.), false oat grass (*Arrhenatherum elatius*), cocksfoot (*Dactylis glomerata*), Yorkshire fog (*Holcus lanatus*), annual meadow grass (*Poa annua*), rough meadow grass (*Poa trivialis*), meadow foxtail (*Alopecurus pratensis*), creeping bent (*Agrostis stolonifera*), common knapweed (*Centaurea nigra*), weld (*Reseda luteola*), biting stonecrop (*Sedum acre*), ragwort (*Jacobaea vulgaris*), nettle (*Urtica dioica*), common vetch (*Vicia sativa*), rosebay willowherb (*Chamaenerion angustifolium*), mugwort (*Artemisia vulgaris*), creeping cinquefoil (*Potentilla reptans*), tansy (*Tanacetum vulgare*), feverfew (*Tanacetum parthenium*), false fox sedge (*Carex otrubae*), black medick (*Medicago lupulina*), bird's foot trefoil (*Lotus corniculatus*), hogweed (*Heracleum sphondylium*), cleavers (*Galium aparine*), hedge bedstraw (*Galium album*), cutleaf cranesbill (*Geranium dissectum*), dove's foot cranesbill (*Geranium molle*), hedgerow cranesbill (*Geranium pyrenaicum*), meadow cranesbill (*Geranium pratense*), white clover (*Trifolium repens*), red clover (*Trifolium pratense*), lesser trefoil (*Trifolium dubium*), smooth hawkbeard (*Crepis capillaris*), white campion (*Silene latifolia*), lesser burdock

(*Arctium minus*), teasel (*Dipsacus fullonum*), broadleaved dock (*Rumex obtusifolius*), willowherbs (*Epilobium* spp.), toad rush (*Juncus bufonius*), sheep's sorrel (*Rumex acetosella*), broadleaved plantain (*Plantago major*), ribwort plantain (*Plantago lanceolata*), common centaury (*Centaureum erythraea*), common mouse-ear (*Cerastium fontanum*), red bartsia (*Odontites vernus*), ox-eye daisy (*Leucanthemum vulgare*), creeping buttercup (*Ranunculus repens*), meadow buttercup (*Ranunculus acris*), creeping thistle (*Cirsium arvense*), spear thistle (*Cirsium vulgare*), black horehound (*Ballota nigra*), early forget-me-not (*Myosotis ramosissima*), field forget-me-not (*Myosotis arvensis*), wood forget-me-not (*Myosotis sylvatica*), hemlock (*Conium maculatum*), yarrow (*Achillea millefolium*) and ground ivy (*Glechoma hederacea*).



3.2.4.1.3. The scrub within this grassland is taking over the habitat, with open grassland extremely limited. Without any management, the site is likely to succeed to scrub within the coming years regardless of the development.

3.2.4.1.4. The scrub is described further on in this report, but within the grassland, species typically include Japanese knotweed (*Reynoutria japonica*), Japanese rose (*Rosa rugosa*), dog rose (*Rosa canina*), sweetbriar (*Rosa rubiginosa*), *Rubus* spp., including *R. armeniacus* and *R. Caesius*, hawthorn (*Crataegus monogyna*), sycamore

(*Acer pseudoplatanus*), crab apple (*Malus sylvestris*), gorse (*Ulex europeaus*), whitebeam (*Sorbus aria*), plum (*Prunus domestica*) and bracken (*Pteridium aquilinum*).



3.2.4.2. Secondary codes: 10 scattered scrub, 128 tall or tussocky sward. – **ONG2.**

Just south of the grassland described above, is a parcel of rank grassland that has a taller sward. This was also being heavily encroached upon by scrub and included species such as Yorkshire Fog (*Holcus lanatus*), false oat grass (*Arrhenatherum elatius*), curled dock (*Rumex crispus*) creeping thistle (*Cirsium arvense*), rosebay willowherb (*Chamerion angustifolium*), nettle (*Urtica dioica*) and common poppy (*Papaver rhoeas*). The scrub within this habitat comprises mainly bramble (*Rubus* sp.), gorse (*Ulex europeaus*), hawthorn (*Crataegus monogyna*) and oak (*Quercus robur*) saplings.



3.2.4.3. Secondary codes: 10 scattered scrub– **ONG3.**

To the south of the southern arable field but north of the watercourse, there is a grass margin which comprises a mixture of coarse grasses, tall forbs and typical riparian species. These include reed canary grass (*Phalaris arundinacea*), false oat grass (*Arrhenatherum elatius*), soft brome (*Bromus hordeaceus*), timothy (*Phleum pratense*), Yorkshire fog (*Holcus lanatus*), perennial rye grass (*Lolium perenne*), cocksfoot (*Dactylis glomerata*), rough meadow grass (*Poa trivialis*), great willowherb (*Epilobium hirsutum*), marsh woundwort (*Stachys palustris*), nettle (*Urtica dioica*), creeping thistle (*Cirsium arvense*), teasel (*Dipsacus fullonum*), southern marsh orchid (*Dactylorhiza praetermissa*), meadowsweet (*Filipendula ulmaria*), bristly oxtongue (*Helminthotheca echinoides*), hogweed (*Heracleum sphondylium*), broadleaved dock (*Rumex obtusifolius*) and ragwort (*Jacobaea vulgaris*). Bramble (*Rubus* sp.) is frequent within this habitat.



3.2.4.4. Secondary codes: 10 scattered scrub, 104 other grazed. – **ONG4.**

Around the northern perimeter of the southern field, is a grass margin which sits between the woodland and arable field. It is relatively species poor, with its grasses finely grazed by rabbits. Species include fescue (*Festuca* sp.), false oat grass (*Arrhenatherum elatius*), creeping bent (*Agrostis stolonifera*), Yorkshire fog (*Holcus lanatus*), creeping thistle (*Cirsium arvense*), willowherbs (*Epilobium* spp.), selfheal (*Prunella vulgaris*), toad rush (*Juncus bufonius*), ragwort (*Jacobaea vulgaris*), smooth sow thistle (*Sonchus oleraceus*), white clover (*Trifolium repens*), black medick (*Medicago lupulina*) and a solitary southern marsh orchid (*Dactylorhiza praetermissa*). Bramble (*Rubus* sp.) is becoming dominant within this habitat.



3.2.4.5. Secondary codes: 32 scattered trees, 128 tall or tussocky sward. – **ONG5.**

Within the proposed basin area to the east of the footpath is a grassland with a tall sward dominated by coarse grasses. Species include false oat grass (*Arrhenatherum elatius*), cocksfoot (*Dactylis glomerata*), Yorkshire fog (*Holcus lanatus*), common knapweed (*Centaurea nigra*), white campion (*Silene latifolia*), red campion (*Silene dioica*), great willowherb (*Epilobium hirsutum*), creeping thistle (*Cirsium arvense*), spear thistle (*Cirsium vulgare*), curled dock (*Rumex crispus*), broadleaved dock (*Rumex obtusifolius*), sorrel (*Rumex acetosa*), cleavers (*Galium aparine*), common field speedwell (*Veronica persica*), mugwort (*Artemisia vulgaris*) and dandelion (*Taraxacum officinale* agg.). Two medium sized oak (*Quercus robur*) trees are present on the eastern boundary.



3.2.4.6. Secondary codes: 10 scattered scrub – **ONG6**.

The grassland along the eastern boundary of phase two and just south of W4 comprises a ranker and less diverse sward than the above. It comprises false oat grass (*Arrhenatherum elatius*), Yorkshire fog (*Holcus lanatus*), timothy (*Phleum pratense*), creeping bent (*Agrostis stolonifera*), rough meadow grass (*Poa trivialis*), soft brome (*Bromus hordeaceus*), Italian rye grass (*Lolium multiflorum*), bristly oxtongue (*Helminthotheca echioides*), great willowherb (*Epilobium* sp.) and hogweed (*Heracleum sphondylium*).



3.2.5. w1f7 – Other Lowland Mixed Deciduous Woodland

3.2.5.1. Secondary codes: 12 scattered bracken, 60 long continuity habitat. – **W1**.

3.2.5.1.1. To the northwest of the survey area, there is a section of mature woodland which is shown on historic maps from at least the mid-1800s, although smaller than it is now. Its age is evident due to the size of the trees and ground flora.

3.2.5.1.2. Species generally comprise sycamore (*Acer pseudoplatanus*), which is the dominant species, field maple (*Acer campestre*), oak (*Quercus robur*), lime (*Tilia x europaea*) and crack willow (*Salix fragilis*), with smaller species such as elder (*Sambucus nigra*), hawthorn (*Crataegus monogyna*) and hazel (*Corylus avellana*) also present. The understory comprises bluebells (*Hyacinthoides non-scripta*) which carpet the woodland in spring, bracken (*Pteridium aquilinum*), nettle (*Urtica dioica*), willowherbs (*Epilobium* spp.) and foxglove (*Digitalis purpurea*). Bittersweet (*Solanum dulcamara*) and creeping Jenny (*Lysimachia nummularia*) are present with the damper flushes.

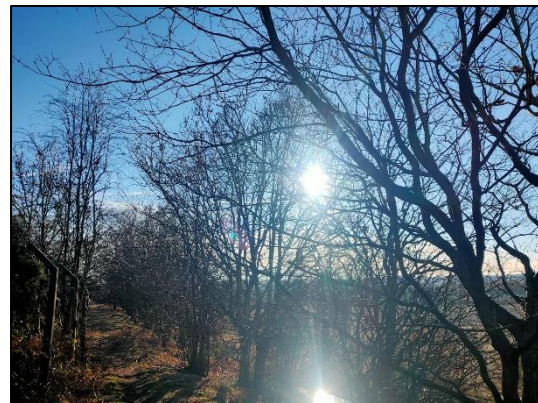


3.2.5.1.3. Just outside phase one but partially within phase 2, the ground flattens and becomes wetter. Here, crack willow (*Salix fragilis*) is the dominant species, accompanied by silver birch (*Betula pendula*) and alder (*Alnus glutinosa*).

3.2.5.1.4. This woodland is covered by a grouped Tree Preservation Order (TPO).

3.2.5.2. Secondary codes: 10 scattered scrub, 528 walking or cycling route. – **W2**.

Extending southwards from W1 described above, is further woodland that is evidently younger. Oak (*Quercus robur*) is the dominant species here. Tree density is lower and the trees are largely immature or semi-mature. A footpath runs through this section of woodland.



3.2.5.3. Secondary codes: 10 scattered scrub, 12 scattered bracken. 60 long continuity habitat. – **W4**.

3.2.5.3.1. Within the centre of the site, extending from the eastern boundary inwards is another large parcel of woodland. This again shows on historic maps and has therefore been present for some time. This woodland has a dense scrubby understory within its southern section, but is sparser on the east towards Upperwood Road, likely reflecting the difference in public accessibility. The woodland comprises oak (*Quercus robur*), sycamore (*Acer pseudoplatanus*), silver birch (*Betula pendula*), lime (*Tilia x europaea*), hawthorn (*Crataegus monogyna*) and small amounts of yew (*Taxus baccata*). The understory comprises bramble (*Rubus* sp.), holly (*Ilex aquifolium*), elder (*Sambucus nigra*), wild cherry (*Prunus avium*) saplings, bracken (*Pteridium aquilinum*), wood millet (*Milium effusum*), ivy (*Hedera helix*), cleavers (*Galium aparine*) and daffodils (*Narcissus* sp.). One of the hawthorns within this woodland is classed as a veteran tree.



3.2.5.3.2. Selected trees within this woodland are covered by TPOs.

3.2.5.4. Secondary codes: 33 line of trees.

There are numerous individual lines of trees within phase one. The first of these, known as **LOT1**, is a row of mostly cherry (*Prunus avium*) trees which form part of the northwestern boundary, between the site and neighbouring field. Hawthorn (*Crataegus monogyna*) is also frequent.



3.2.5.5. Secondary codes: 34 Ecologically valuable line of trees.

3.2.5.5.1. The second, known as **LOT2**, is a line of deciduous trees that link to the woodland to the west of the survey. This line of trees includes oak (*Quercus robur*), hawthorn (*Crataegus monogyna*), cherry (*Prunus avium*), sycamore (*Acer pseudoplatanus*) and elder (*Sambucus nigra*).



3.2.5.5.2. The only line of trees (**LOT3**) within phase two is a row of mature willows (*Salix* spp.) and oaks (*Quercus robur*) which run along the western boundary of the southern field. Some of the oaks are of considerable size.



3.2.5.5.4. **LOT4** is a line of trees which extends around the eastern perimeter of the old tip. It comprises sycamore (*Acer pseudoplatanus*), hawthorn (*Crataegus monogyna*), silver birch (*Betula pendula*), crab apple (*Malus sylvestris*), ash (*Fraxinus excelsior*), oak (*Quercus robur*) and whitebeam (*Sorbus aria*).



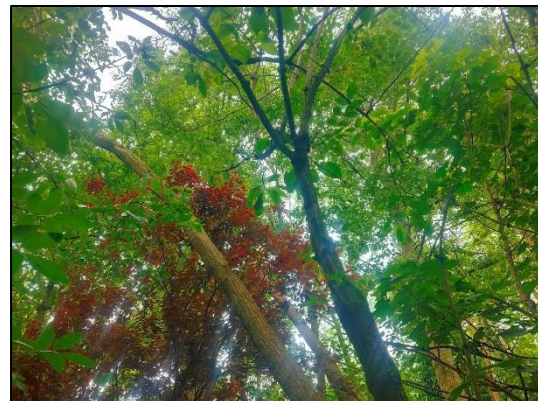
3.2.5.5.5. The final line of trees, known as **LOT5**, is located at the north of the old tip and comprises purely sycamore (*Acer pseudoplatanus*).



3.2.6. w1g – Other Woodland; Broadleaved.

Secondary codes: 10 scattered scrub, 31 secondary woodland. – **W3**.

There is a small section of woodland which has established within a triangle of land, south of Darfield Garden Centre. Tree species include sycamore (*Acer pseudoplatanus*), oak (*Quercus robur*), buckthorn (*Rhamnus cathartica*), elder (*Sambucus nigra*), lime (*Tilia x europaea*), hazel (*Corylus avellana*) and crack willow (*Salix fragilis*), with understory species comprising sea buckthorn (*Hippophae rhamnoides*), bramble (*Rubus* sp.), holly (*Ilex aquifolium*), deutzia (*Deutzia scabra*), cuckoo pint (*Arum maculatum*), nettle (*Urtica dioica*), honeysuckle (*Lonicera periclymenum*), rose (*Rosa* sp.), dogwood (*Cornus* sp.) and garlic mustard (*Alliaria petiolata*). Many trees have a sparse covering of ivy (*Hedera helix*).



3.2.7. h3h - Mixed Scrub.

3.2.7.1. Secondary codes: 524 invasive non-native species. – **S1**.

3.2.7.1.1. The largest section of scrub is located within the old tip area and dominates much of the centre of the site. This section of scrub is varied in its maturity and species composition, but it is difficult to separate into smaller parcels.

3.2.7.1.2. Species present within this scrub include species described before in ONG1, along with elder (*Sambucus nigra*), blackthorn (*Prunus spinosa*), buddleia (*Buddleja davidii*), oak (*Quercus robur*) saplings, willow-leaved cotoneaster (*Cotoneaster salicifolius*), elder (*Sambucus nigra*) and silver birch (*Betula pendula*) along with an understory of a variety of species previously described in ONG1.



3.2.7.2. Secondary codes: None - **S2**.

A smaller parcel of dense scrub is present between the southern arable field and the woodlands. Species within this include gorse (*Ulex europeaus*), broom (*Cytisus scoparius*), bramble (*Rubus* sp.), oak (*Quercus robur*), turkey oak (*Quercus cerris*) and elder (*Sambucus nigra*).



3.2.8. h3d – Bramble Scrub.

Secondary codes: None – S4.

To the southeast of phase one, merging into phase 2, is a fringe of bramble scrub.



3.2.9. h2a5 – Species-rich Native Hedgerow.

3.2.9.1. Secondary codes: 317 recent management. – **H1**.

3.2.9.1.1. The longest hedgerow on site is the one that comprises most of the northern and lies between the survey area and Barnsley Road / Doncaster Road. This hedgerow comprises hawthorn (*Crataegus monogyna*), holly (*Ilex aquifolium*), wild cherry

(*Prunus avium*), wych elm (*Ulmus glabra*), hazel (*Corylus avellana*) and elder (*Sambucus nigra*). Leading along Barnsley Road, species-richness reduces as it becomes predominantly hawthorn.



3.2.9.1.2. The understorey of the hedgerow comprises false oat grass (*Arrhenatherum elatius*), rough meadow grass (*Poa trivialis*), cocksfoot (*Dactylis glomerata*), barren brome (*Anisantha sterilis*), creeping thistle (*Cirsium arvense*), dog's mercury (*Mercurialis perennis*), nettle (*Urtica dioica*), yarrow (*Achillea millefolium*), common vetch (*Vicia sativa*), hogweed (*Heracleum sphondylium*), hemlock (*Conium maculatum*), garlic mustard (*Alliaria petiolata*), mugwort (*Artemisia vulgaris*) and broadleaved dock (*Rumex obtusifolius*).

3.2.9.2. Secondary codes: 11 hedgerow with trees, 317 recent management. – **H2**.

As the above hedgerow extends westwards along Doncaster Road, mature trees become more frequent. Hawthorn (*Crataegus monogyna*) is the dominant hedgerow species with five sycamore (*Acer pseudoplatanus*) and individual ash (*Fraxinus excelsior*) and lime (*Tilia x europaea*) trees present within.

3.2.9.3. Other hedgerows make up the boundary of the site, particularly along the northeastern section of the survey area, but these all appear to belong to the residents of the neighbouring houses and comprise largely ornamental species. Example photographs of these are shown below.



3.2.10. r1b – Other Standing Water.

Secondary codes: 50 ditch.

A ditch, which lies just north and east of the boundary between much of phase one and phase two, begins to the south of W1. Some sections are almost dry whilst others hold approximately 50cm of water. The resurvey in summer found it to be almost totally dry. The ditch varies in its width throughout the site.



3.2.10. r2 – Other Rivers and Streams.

3.2.10.1. There are two watercourses that lie either on the site or close enough that the red line boundary extends within 10m of the top of the banks of the watercourse.

3.2.10.2. The first of these extends along part of the eastern boundary of phase one, and the southeastern boundary of phase two. Where it extends along the eastern boundary of phase one, it is culverted underground. It emerges above ground at the easternmost point of phase two, where it then flows along the site boundary southwards. Part way along the boundary it flows outside of the site boundary and along the edge of the

adjacent garden habitats, until it flows into another watercourse towards the southern end of phase two.

3.2.10.3. Large sections of this watercourse comprise an artificial channel, and it is very much overgrown with the hedgerow boundary vegetation, scrub and grassland habitat.

3.2.10.4. The nature of this watercourse is shown in the photographs below. The first photograph shows the overgrown nature of the watercourse.



3.2.10.5. The second watercourse flows from the pond in W1, through the woodland and then along a tree line (LOT3) along the western boundary of phase two. It follows the boundary of the phase two area and proceeds to flow along the southern boundary of phase two. It then turns to flow alongside the area that is within phase one of the development, where the new drainage basin will be created.

3.2.10.6. The nature of this watercourse changes throughout. Through W1, there is a poorly defined channel (Photo 1) and the water is very shallow. Where it flows along the tree line boundary there is a distinct open channel (Photo 2), but then where it flows between the two arable fields along the southern boundary of phase two, the channel narrows and the banks are very much undercut (Photo 3). The channel then opens up again where it flows away from phase two (Photo 4).

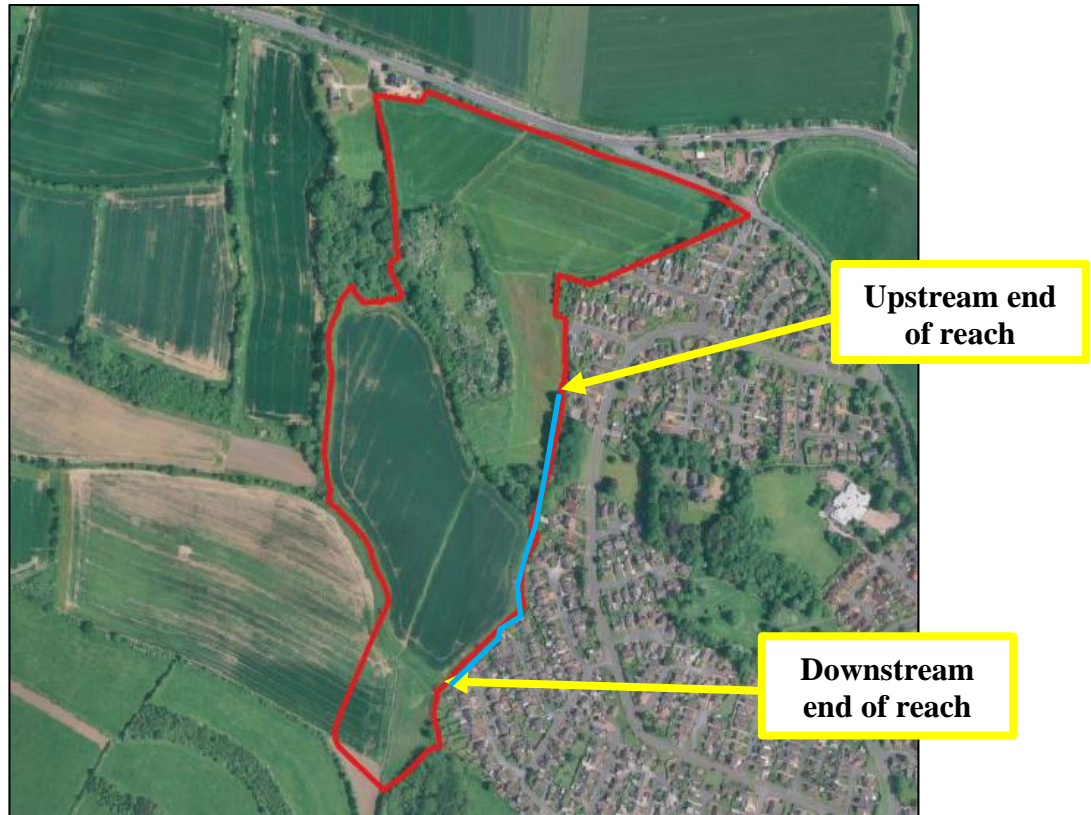


3.3. River Condition Assessment.

3.3.1. MoRPh baseline assessments were carried out of the two watercourses by an accredited surveyor. Both watercourses are unnamed, but for the purpose of the condition assessment are referred to as the ‘Italian Estate Watercourse’ and ‘Brookfield Watercourse’, named after the names of houses / housing estates they flow near.

3.3.2. Italian Estate Watercourse.

3.3.2.1. The length of the river reach in relation to the red line boundary of the site is shown on the map below. The upstream end of the reach is defined where the watercourse appears to start underground, shown on both recent and historic maps. The downstream end is defined by where it flows into the Brookfield Watercourse.



3.3.2.2. One MoRPh5 survey was carried out at the location shown in the map below. The length of this watercourse within or adjacent to the site is measured at approximately 410m, however approximately 170m of this length is culverted and only 240m is open watercourse. The MoRPh5 survey comprised five consecutive ten metre sections (50m total), which covered just short of 21% of the length of the sub reach adjacent to the red line boundary.



3.3.2.3. The photographs below show the nature of the Italian Estate Watercourse throughout the area included in the MoRPh5.

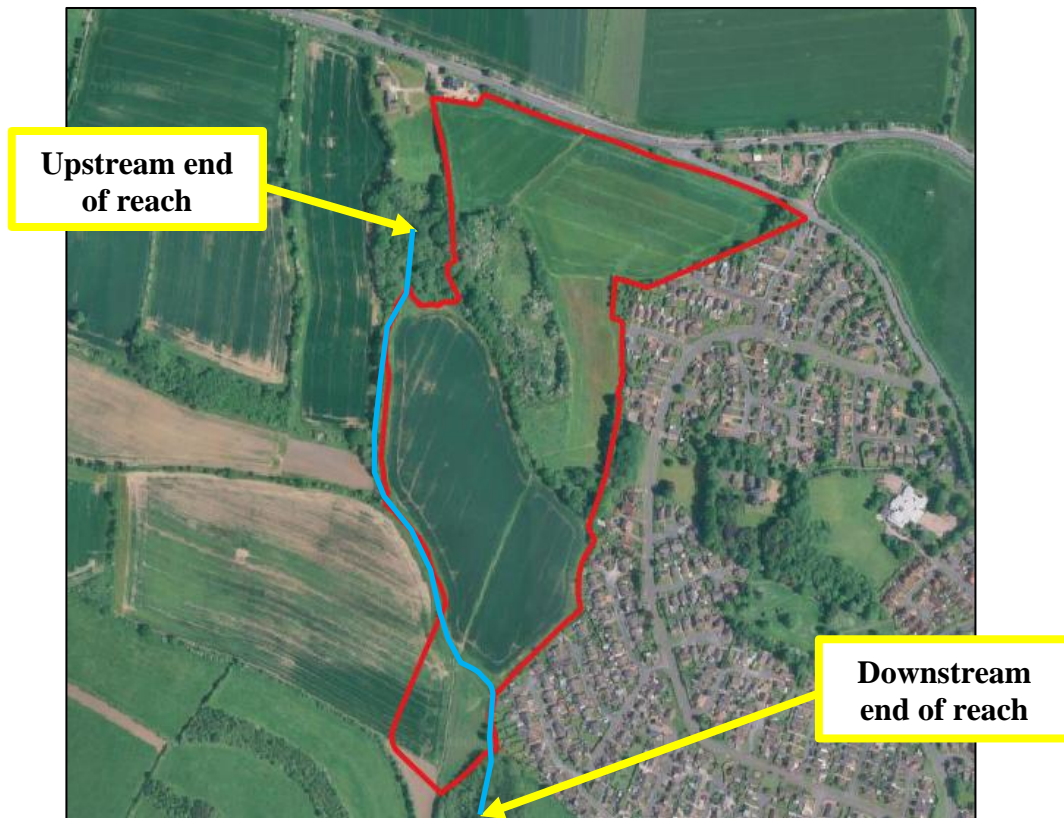


3.3.2.4. The MoRPh field survey information was put into the Cartographer online application, along with the necessary desktop exercise to establish the river type. This had an outcome of 'moderate' condition.

3.3.3. Brookfield Watercourse.

3.3.3.1. The length of the river reach in relation to the red line boundary of the site is shown on the map below. The upstream end of the reach is defined by the source of the

watercourse, which is a pond in the woodland adjacent to the site. The downstream end is defined by where it appears to flow underground for the remainder of its length.



3.3.3.2. Four MoRPh5 surveys were carried out at the locations shown in the map below. It was deemed necessary to undertake four surveys as the nature of the watercourse changes as it flows along the survey area. The first section is where it flows through the woodland habitat and does not have a well-defined channel, the second where it flows through a defined open channel along a tree line between two arable fields, the third is where it flows between two arable fields where the channel is more enclosed with undercut banks, and the fourth is where it opens up again and flows along the edge of a housing estate.

3.3.3.3. The length of Brookfield Watercourse adjacent to or within the red line boundary is measured at approximately 580m. The MoRPh5 surveys comprised five consecutive ten metre sections, in four locations, therefore covered a total of 200m, which covered just over 34% of the length of the sub reach adjacent to the red line boundary.



3.3.3.4. The photographs below show the nature of the Italian Estate Watercourse throughout the areas included in the MoRPh5's.





3.3.3.5. The MoRPh field survey information was put into the Cartographer online application, along with the necessary desktop exercises to establish the river type. This had an outcome of ‘moderate’ condition for where the watercourse flows through the central areas, along the treeline and between the two arable fields, and a ‘fairly good’ condition for where it flows through the woodland and along the housing estate. This is demonstrated in the map below.



4. BIODIVERSITY NET GAIN ASSESSMENT.

4.1. Baseline Biodiversity Value.

The below tables demonstrate the baseline units of phase one using the Statutory Metric, which is the current metric at the time of this report. A Rivers Condition Assessment (RCA) was carried out by an accredited ecologist, to determine the condition of the watercourses on the site and any sections of watercourse within 10m of the red line boundary. A copy of the metric will be provided alongside this report.

4.1.1. Area habitats:

Habitat Type	Area (hectares)	Distinctiveness	Condition	Total habitat units
Cereal crops	4.1771	Low	N/A	9.61
Cereal crops	0.8071	Low	N/A	1.86
Modified grassland	2.63	Low	Poor	6.05
Other neutral grassland	0.5	Medium	Good	6.90
Other neutral grassland	0.3661	Medium	Poor	1.68
Other neutral grassland	0.0885	Medium	Moderate	0.81
Other neutral grassland	0.6354	Medium	Moderate	5.85
Other woodland; broadleaved	0.1116	Medium	Moderate	1.03
Lowland mixed deciduous woodland	0.1168	High	Good	2.42
Lowland mixed deciduous woodland	0.1045	High	Moderate	1.44

Lowland mixed deciduous woodland	0.0464	High	Moderate	0.64
Lowland mixed deciduous woodland	0.4182	High	Moderate	5.77
Mixed scrub	1.5309	Medium	Moderate	14.08
Mixed scrub	0.0222	Medium	Moderate	0.20
Bramble scrub	0.0027	Medium	N/A	0.01
Urban tree	0.0326	Medium	Good	0.45
Cereal crops	6.325	Low	N/A	14.55
Other neutral grassland	0.1772	Medium	Moderate	1.63
Other neutral grassland	0.0749	Medium	Moderate	0.69
Other neutral grassland	0.1057	Medium	Moderate	0.97
Bramble scrub	0.0034	Medium	N/A	0.02
Mixed scrub	0.0456	Medium	Moderate	0.42
Mixed scrub	0.009	Medium	Moderate	0.08
Mixed scrub	0.1981	Medium	Moderate	1.82
Lowland mixed deciduous woodland	0.08	High	Good	1.66

Lowland mixed deciduous woodland	0.0504	High	Moderate	0.7
Lowland mixed deciduous woodland	0.0468	High	Moderate	0.65
Lowland mixed deciduous woodland	0.0273	High	Moderate	0.38
Total (exc. Trees)	18.7			82.36

4.1.2. Hedgerow habitats:

Hedgerow Type	Length (km)	Distinctiveness	Condition	Biodiversity units
Species-rich native Hedgerow	0.285	Medium	Moderate	2.62
Species-rich native hedgerow with trees	0.123	High	Moderate	1.7
Line of trees	0.069	Low	Moderate	0.32
Ecologically valuable line of trees	0.077	Medium	Moderate	0.71
Ecologically valuable line of trees	0.249	Medium	Moderate	2.29
Ecologically valuable line of trees	0.038	Medium	Moderate	0.35
Ecologically valuable line of trees associated with bank or ditch	0.179	Medium	Moderate	1.65
Total	1.02			9.63

4.1.3. Watercourse habitats:

Watercourse Type	Length (km)	Distinctiveness	Condition	Biodiversity units
Culvert	0.17	Low	Poor	0.27
Other rivers and streams	0.237	High	Moderate	1.31
Other rivers and streams	0.28	High	Fairly Good	4.83
Culvert	0.003	Low	Poor	0.00
Other rivers and streams	0.195	High	Moderate	2.69
Culvert	0.002	Low	Poor	0.00
Other rivers and streams	0.061	High	Moderate	0.77
Culvert	0.002	Low	Poor	0.00
Other rivers and streams	0.065	High	Fairly Good	0.98
Ditches	0.199	Medium	Poor	0.92
Total	1.21			11.77

4.2. Post Development Biodiversity Value.

4.2.1. Due to the scale of the development and the number of proposed units, it is not possible to achieve a net gain on site. Discussions are currently underway regarding additional land where the units for phase one can be offset but at this time, no agreements have been made.

4.2.2. Much of the land on site is to be lost to facilitate the development, although some sections, crucially most of the woodland, are to be retained. Please refer to the specific phase one and two reports for more detail on planting and retention for each phase of the development.

4.2.3. Despite some planting and retention of habitats, a large number of biodiversity units will require offsetting, mainly due to the losses of habitat in phase one, namely the good quality grassland and large area of mixed scrub which make up the old tip area.

4.2.4. There will be no change to the watercourse units for both the flowing watercourses and the ditch habitat, as the encroachment of the new development will not increase any more than the current encroachment on the site.

4.2.5. The tables below show what will be achieved on site.

4.2.5.1. *Area Habitats.*

Habitat Type	Area (hectares)	Distinctiveness	Condition	Total habitat units
<i>Retained Habitat</i>				
Other neutral grassland	0.0868	Medium	Moderate	0.8
Other neutral grassland	0.3797	Medium	Moderate	3.49
Other woodland; broadleaved	0.1116	Medium	Moderate	1.03
Lowland mixed deciduous woodland	0.1168	High	Good	2.42
Lowland mixed deciduous woodland	0.1045	High	Moderate	1.44
Lowland mixed deciduous woodland	0.0464	High	Moderate	0.64
Lowland mixed deciduous woodland	0.3995	High	Moderate	5.51
Mixed scrub	0.0205	Medium	Moderate	0.19
Bramble scrub	0.0027	Medium	N/A	0.01
Urban tree	0.0326	Medium	Good	0.45

Other neutral grassland	0.1702	Medium	Moderate	1.57
Other neutral grassland	0.0351	Medium	Moderate	0.32
Other neutral grassland	0.1057	Medium	Moderate	0.97
Bramble scrub	0.0034	Medium	N/A	0.02
Mixed scrub	0.0454	Medium	Moderate	0.42
Mixed scrub	0.009	Medium	Moderate	0.08
Mixed scrub	0.1896	Medium	Moderate	1.74
Lowland mixed deciduous woodland	0.08	High	Good	1.66
Lowland mixed deciduous woodland	0.0504	High	Moderate	0.7
Lowland mixed deciduous woodland	0.0407	High	Moderate	0.65
Lowland mixed deciduous woodland	0.0273	High	Moderate	0.38
<i>Created Habitat</i>				
Developed land; sealed surface	6.0504	V.Low	N/A	0
Vegetated garden	2.5931	Low	N/A	5.76
Modified grassland	0.1971	Low	Poor	0.44

Modified grassland	0.0276	Low	Poor	0.06
Other neutral grassland	0.3164	Medium	Moderate	2.44
Other neutral grassland	0.0396	Medium	Moderate	0.3
Other neutral grassland	0.418	Medium	Moderate	3.22
Sustainable drainage system	0.6465	Low	Good	2.5
Urban Tree	0.4072	Medium	Moderate	1.43
Developed land; sealed surface	3.7043	V.Low	N/A	0
Vegetated garden	1.5876	Low	N/A	3.52
Modified grassland	0.2774	Low	Poor	0.62
Modified grassland	0.1675	Low	Poor	0.37
Modified grassland	0.2058	Low	Poor	0.46
Other neutral grassland	0.2572	Medium	Moderate	1.98
Other neutral grassland	0.1822	Medium	Moderate	1.4
Other neutral grassland	0.0041	Medium	Moderate	0.03
Mixed scrub	0.0005	Medium	Moderate	0.04

Urban Tree	0.4927	Medium	Moderate	1.73
Total (exc. Trees)	18.7			50.68

4.2.5.2. *Hedgerow Habitats.*

Hedgerow Type	Length (km)	Distinctiveness	Condition	Biodiversity units
<i>Retained Habitat</i>				
Species-rich native Hedgerow	0.264	Medium	Moderate	2.43
Species-rich native hedgerow with trees	0.091	High	Moderate	1.26
Line of trees	0.069	Low	Moderate	0.32
Ecologically valuable line of trees	0.077	Medium	Moderate	0.71
Ecologically valuable line of trees associated with bank or ditch	0.179	Medium	Moderate	1.65
Total	0.68			6.36

4.2.5.3. Watercourse Habitats.

Watercourse Type	Length (km)	Distinctiveness	Condition	Biodiversity units
<i>Retained Habitat</i>				
Culvert	0.17	Low	Poor	0.27
Other rivers and streams	0.237	High	Moderate	1.31
Other rivers and streams	0.28	High	Fairly Good	4.83
Culvert	0.003	Low	Poor	0.00
Other rivers and streams	0.195	High	Moderate	2.69
Culvert	0.002	Low	Poor	0.00
Other rivers and streams	0.061	High	Moderate	0.77
Culvert	0.002	Low	Poor	0.00
Other rivers and streams	0.065	High	Fairly Good	0.98
Ditches	0.199	Medium	Poor	0.92
Total	1.21			11.77

4.2.6. Based on the above, the overall development will result in a net loss of 31.68 habitat biodiversity units, which is equivalent to a 38.46% loss and a net loss of 3.28 hedgerow biodiversity units, equivalent to a 34% loss. There will be no loss, or gain, of watercourse units. Therefore, off-site habitat creation will be required to make up the losses and achieve the statutory 10% net gain.

4.2.7. An example of how this could be achieved for the area and hedgerow habitats is shown in the tables below.

4.2.7.1. Area habitats off site (baseline):

Habitat Type	Extent (Ha)	Distinctiveness	Condition	Biodiversity units
Cereal crops	7.8	Low	N/A	17.94
Total	7.8			14.49

4.2.7.2. Area habitats off site (post development):

Habitat Type	Extent (Ha)	Distinctiveness	Condition	Biodiversity units
<i>Created Habitats</i>				
Other neutral grassland	5.1	Medium	Moderate	39.26
Mixed Scrub	2.4	Medium	Moderate	18.48
Lowland mixed deciduous woodland	0.3	High	Moderate	0.44
Total	7.8			58.18

4.2.7.3. Hedgerow habitats off site (post development):

Hedgerow Type	Length (km)	Distinctiveness	Condition	Biodiversity units
Species-rich native hedgerow with trees	0.55	High	Medium	5.32
Total	0.55			5.32

4.2.8. If the above is achieved, the development will result in a net gain of 8.56 habitat biodiversity units, which is equivalent to a 10.39% gain and a net gain of 2.04 hedgerow biodiversity units, equivalent to a 21.18% gain.

4.2.9. There are a number of options for creating watercourse units to achieve the 10% net gain. The following options can be explored to try and achieve this:

- The creation of new ditches on the site.
- Creation of additional water channels.
- Enhancement in the condition of the sections of watercourse that are currently in 'moderate' condition.
- Removal of riparian encroachment along the watercourse that flows along the south eastern boundary of phase two.
- Removal of the culverted section of the watercourse that flows along the eastern boundary of phase one to open up the watercourse.

4.3. Biodiversity Net Gain Results.

4.3.1. Based on the on-site change only, the entire development will result in the below final results.

FINAL RESULTS		
Total net unit change <small>(Including all on-site & off-site habitat retention, creation & enhancement)</small>	<i>Habitat units</i>	-31.68
	<i>Hedgerow units</i>	-3.28
	<i>Watercourse units</i>	0.00
Total net % change <small>(Including all on-site & off-site habitat retention, creation & enhancement)</small>	<i>Habitat units</i>	-38.46%
	<i>Hedgerow units</i>	-34.00%
	<i>Watercourse units</i>	0.00%
Trading rules satisfied?	No - Check Trading Summaries ▲	

4.3.2. However, with the above off-site proposals in place for area habitats and hedgerow habitats, and carefully managed, the scheme will achieve above the 10% net gain for these habitats, which is required to support the application. However, this will require significant additional land and significant to ensure that both on-site and off-site habitat conditions are achieved. If this is done, the final results will be as shown below. It is yet to be agreed how the 10% uplift in watercourse units will be achieved.

FINAL RESULTS		
Total net unit change <small>(Including all on-site & off-site habitat retention, creation & enhancement)</small>	<i>Habitat units</i>	8.56
	<i>Hedgerow units</i>	2.04
	<i>Watercourse units</i>	0.00
Total net % change <small>(Including all on-site & off-site habitat retention, creation & enhancement)</small>	<i>Habitat units</i>	10.39%
	<i>Hedgerow units</i>	21.18%
	<i>Watercourse units</i>	0.00%
Trading rules satisfied?	Yes ✓	

4.3.3. To ensure the above is achieved, a Habitat Management and Monitoring Plan (HMMP) will be required which details how the proposed habitats will be both implemented and managed for a minimum of a thirty-year period.

4.3.4. Whilst an off-site gain should be achievable, the amount of land needed may differ from the above dependant on mitigation that is recommended upon completing of protected species surveys.

Prepared by:	
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Checked by:	
Ruth Georgiou. BSc, MCIEEM.	Date: 1 st April 2025

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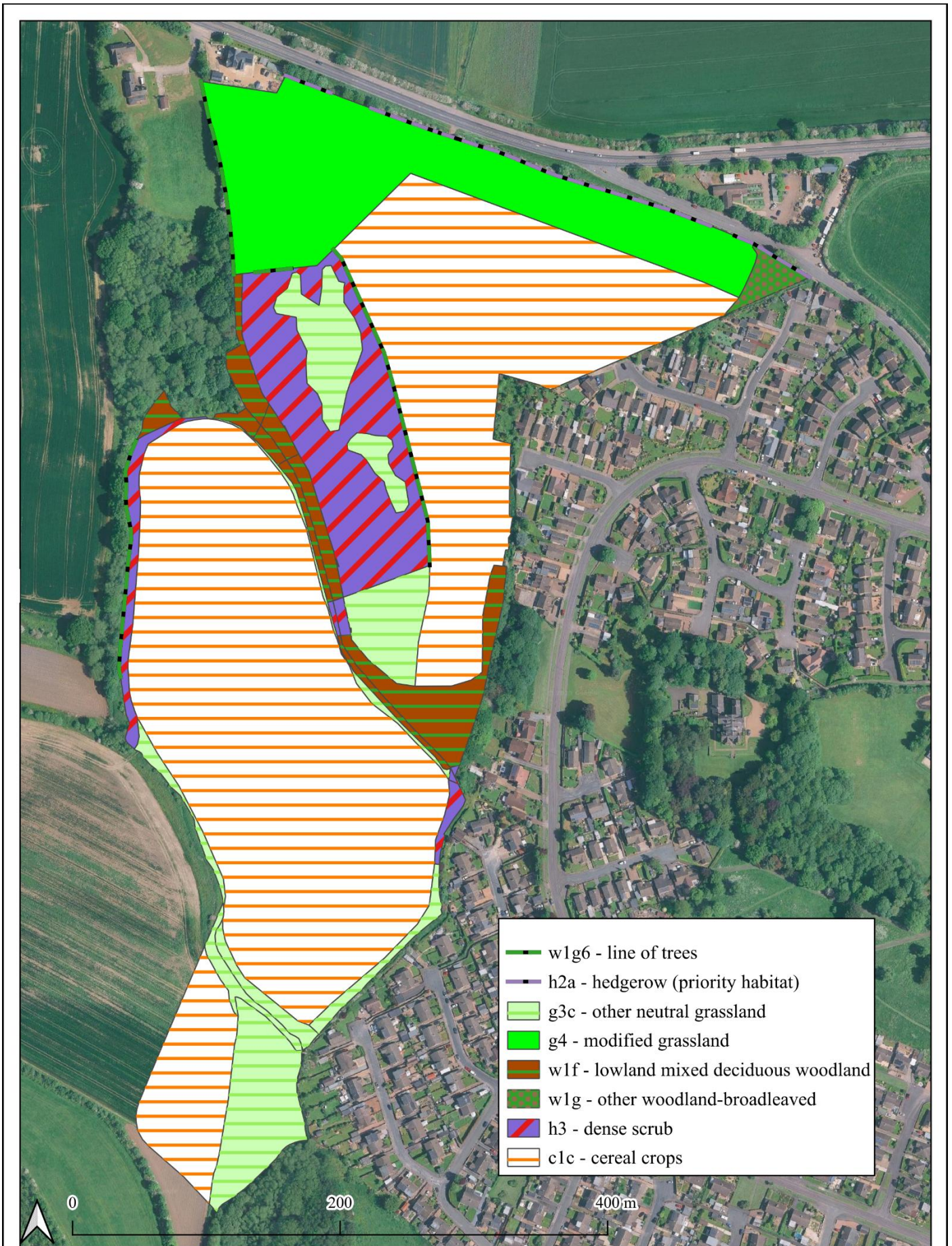
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Appendix I. ANNOTATED MAP OF ENTIRE SITE – BASELINE.



Site: Doncaster Road, Darfield, Entire Site

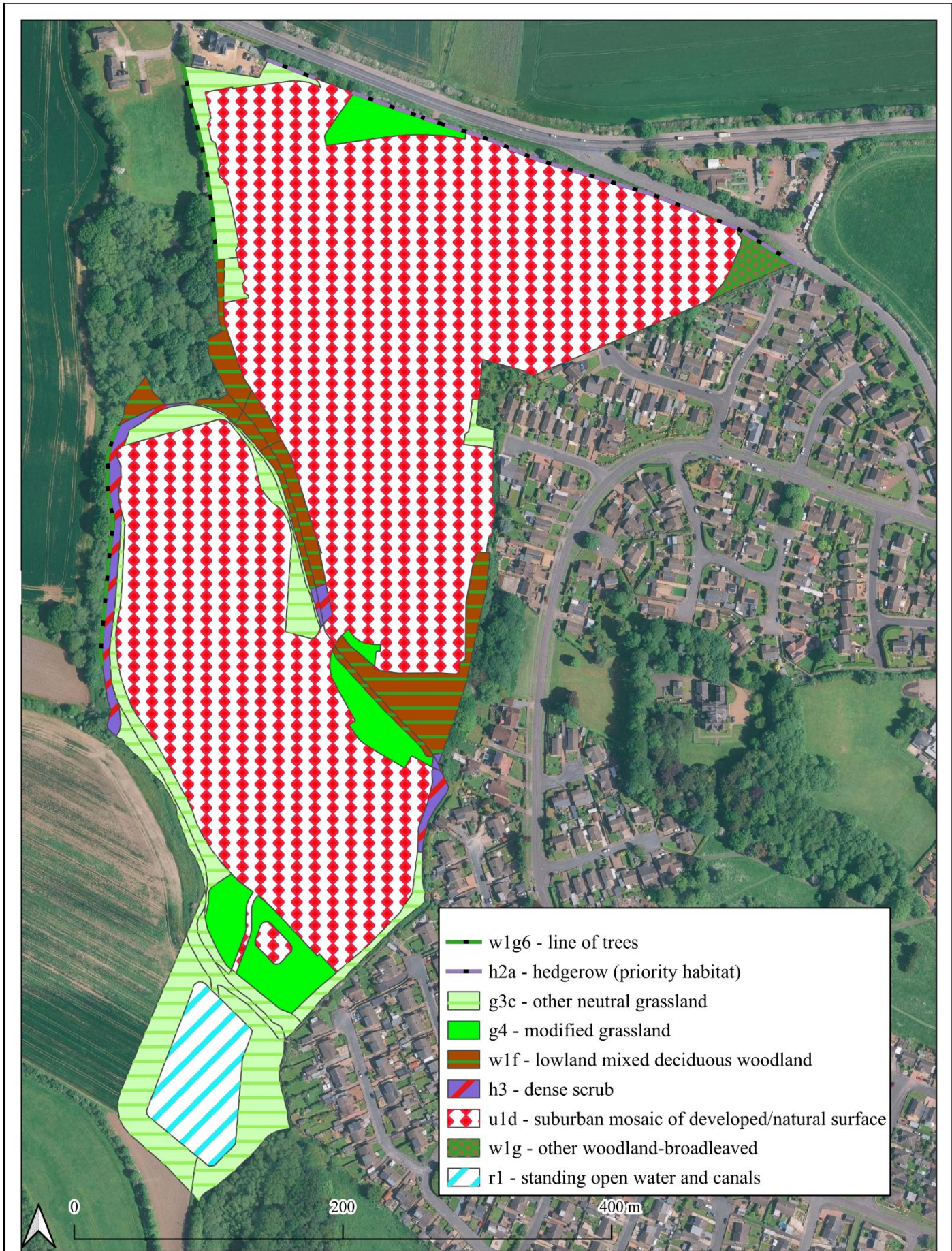
Date: 31.03.2025

Reference: 240123

Produced by: Mitch Greenhalgh



Appendix II. ANNOTATED MAP OF ENTIRE SITE – POST.



Site: Doncaster Road, Darfield, Entire Site

Reference: 240123

Date: 31.03.2025

Produced by: Mitch Greenhalgh



Appendix III. PROPOSED DEVELOPMENT PLAN.



