



Biodiversity Net Gain Statement Cropredy, Banbury

Project No: ObsSt09.1 Client: Obsidian Strategic Ltd Date: 23/03/2023

ISSUE RECORD

Client name Obsidian Strategic Ltd

Project name | Cropredy, Banbury

Project number

ObsSt09.1

Report title Biodiversity Net Gain Statement

Issue number 1 2

Date 28/11/2022 23/03/2023

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	ISO9001	QMF 32	Issue 1	Reviewed 04/03/2016	
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1 INTRODUCTION

1.1 Scope of Report

This report has been prepared by Peak Ecology Ltd on behalf of Obsidian Strategic Ltd. It provides the results of a Biodiversity Net Gain (BNG) assessment for the proposed development of approximately 60 residential dwellings, a new GP Surgery and associated access, private gardens and shared recreational spaces at the land off Claydon Road, Cropredy, Oxfordshire.

In relation to planning and development, this report should be read in conjunction with the Ecological Impact Assessment (Peak Ecology, 2021), breeding bird survey report (Turnstone Ecology Ltd, 2022) and bat survey report (Peak Ecology, 2023) for the site.

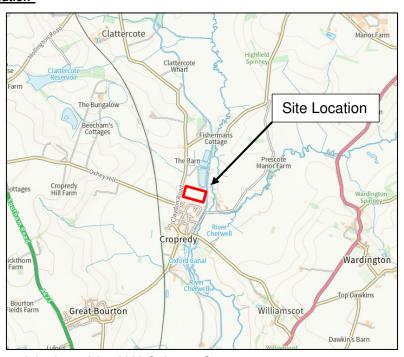
1.2 Site Description

The site comprised approximately 4.9ha of land at central grid reference SP 46922 47049. The site was dominated by modified grassland, bordered by mature hedgerows with trees, scrub, and the Oxford Canal to the east. A mature hedgerow associated with a ditch divided the east and west of the site.

The site is located just north of Cropredy, immediately adjacent to Cropredy Marina, and situated within a wider landscape of arable fields, woodland and small residential settlements.

The site location is illustrated below (Figure 1).

Figure 1: Site Location*



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1.3 Planning Context and Legislation

The National Planning Policy Framework (NPPF) 2021 requires that; when assessing a planning application all Local Planning Authorities (LPAs) must consider potential impacts on

biodiversity that may result from the proposals. In addition to this, county and borough councils typically have biodiversity policies within their Local Development Frameworks that they must also comply with.

Legislation changes in the new Environment Act include a mandatory Biodiversity Net Gain of 10% for most developments, and is expected to be fully implemented by planning authorities by November 2023. Currently there is a grace period to allow for local authorities to prepare for what options may be available to those sites which lack the 10% net gain. These options could include off-setting using additional land owned by the developer, or through agreement of a compensation payment so that suitable habitat can be created or enhanced as part of a wider national or regional strategy.

Cherwell District Council (CDC) identified the following strategic objectives within its Local Plan, adopted in 2015 (Cherwell District Council, 2015):

"Policy ESD 10: Protection and Enhancement of Biodiversity and the Natural Environment

Protection and enhancement of biodiversity and the natural environment will be achieved by the following:

- In considering proposals for development, a net gain in biodiversity will be sought by protecting, managing, enhancing and extending existing resources, and by creating new resources
- The protection of trees will be encouraged, with an aim to increase the number of trees in the District [...]
- Development proposals will be expected to incorporate features to encourage biodiversity, and retain and where possible enhance existing features of nature conservation value within the site. Existing ecological networks should be identified and maintained to avoid habitat fragmentation, and ecological corridors should form an essential component of green infrastructure provision in association with new development to ensure habitat connectivity [...]
- A monitoring and management plan will be required for biodiversity features on site to ensure their long term suitable management."

Special consideration with regards to the Oxford Canal is also stated within the adopted local plan:

"Policy ESD 16: The Oxford Canal

The length of the Oxford Canal through Cherwell District is a designated Conservation Area and proposals which would be detrimental to its character or appearance will not be permitted. The biodiversity value of the canal corridor will be protected."

The site does not lie within the Oxford Green Belt, nor does it fall under any specific strategy areas identified within the adopted local plan (Cherwell District Council, 2015).

In relation to habitats, the LPA requires sufficient information about the value of the current habitats on site and the likely value of the proposed habitats on site, to ensure **a net gain in biodiversity** as a result of the development, to satisfy the NPPF requirement.

In addition, any potential impacts on designated sites, priority species and habitats such as those listed on the UK Post-2010 Biodiversity Framework (formerly UK BAP) and species that receive legal direct protection (typically via the Conservation of Habitats and Species Regulations 2017 (as amended) and/or the Wildlife and Countryside Act 1981 (as amended)) are all material planning considerations.

2 METHODOLOGY

2.1 Fieldwork

A habitat survey was carried out on the 29th September 2021, by Ecologist Sally Clague BSc (Hons) and Assistant Ecologist Niamh Gibson BSc (Hons) to produce an Ecological Impact Assessment. This information was then used to inform the Biodiversity Net Gain (BNG) assessment.

Following standard methodology (JNCC, 2010) the survey comprised a walkover of the site to classify and map the extent of habitat types based on the identification of individual plant species. Any evidence of invasive plants such as Japanese knotweed *Reynoutria japonica* was also noted. Nomenclature for vascular plant species follows Stace (2019).

The survey was undertaken within the optimal season for botanical surveys (April to September, inclusive).

2.2 Biodiversity Impact Assessment

The Natural England Biodiversity Metric 3.1: Calculation Tool requires all habitats to be classified under the UK Habitat Classification categories. The Phase 1 habitats identified on site were converted to UK Habitat Classification habitat types suitable for use within the calculator, using the translation tab within the metric. The extent of each habitat was mapped and the area of each was calculated alongside the areas of proposed habitats. Post-development area calculations were produced using the concept drawing (J0043785_006) provided by Carter Jonas (Carter Jonas, 2023), and detailed habitat types have been suggested within this report by Peak Ecology which enables the proposed development to achieve an appropriate net gain.

Condition assessments were attributed to the habitats present on site using the Biodiversity Metric 3.1 Technical Supplement. Target conditions for proposed habitats have been assigned based on the information provided within the landscaping plans, including extent of habitats, species composition of seeding and planting recommendations, and predicted success of management. The Strategic Significance of each habitat was also included in the calculator; this assessment was made based on relevant habitat action plans or any inclusion within the local strategy.

Based on the information above, the Biodiversity Metric 3.1: Calculation Tool was then used to assess whether the development would incur a biodiversity net loss or gain.

All documents and calculation tools used are from the April 2022 update of the Biodiversity Metric.

3 RESULTS, EVALUATION AND RECOMMENDATIONS

3.1 Baseline Habitats

Table 1 below details the baseline habitats present on site as recorded during the PEA survey conducted by Peak Ecology (Peak Ecology, 2021).

Table 1 : Baseline habitats

UK Habitat Classification	BNG Habitat Type	Description	Condition Assessment
	Grassland – Modified grassland	The eastern side of the site comprised a field of modified grassland which had been recently mown at the time of survey. Species diversity was low in this area, and was dominated by perennial rye grass Lolium perenne.	Assigned poor condition.
Modified grassland (g4)			Condition sheet used: Grassland habitat type (low distinctiveness)
			Condition assessment criteria passed: 3, 5, 6, 7
	Grassland – Modified grassland	The western side of the site also comprised modified grassland, however the sward contained a greater variety of different species, including a mixture of grasses and forbs.	Assigned moderate condition.
Modified grassland (g4)			Condition sheet used: Grassland habitat type (low distinctiveness)
			Condition assessment criteria passed: 1, 3, 5, 6, 7
	Grassland – Other neutral grassland	Several small patches of tall ruderal vegetation were present within the modified grassland, with a larger area present along the southern boundary. These areas were dominated by creeping thistle <i>Cirsium arvense</i> , spear thistle <i>Cirsium vulgare</i> , willowherb <i>Epilobium sp.</i> , and teasel <i>Dipsacus fullonum</i> .	Assigned poor condition.
Other neutral grassland, tall herb (g3c,16)			Condition sheet used: Grassland habitat type (medium, high & very high distinctiveness)
			Condition assessment criteria passed: 2, 3, 4, 5
	Heathland and shrub – Mixed scrub	The eastern site boundary comprised a strip of mixed scrub dominated by bramble Rubus fruticosus agg., hawthorn Crataegus monogyna, nettle Urtica dioica and willowherb. The scrub bordered the bank of the Oxford Canal. Several scattered willow Salix sp. trees were present within the scrub.	Assigned moderate condition.
Mixed scrub, scattered trees (h3h, 11)			Condition sheet used: Scrub habitat type
,			Condition assessment criteria passed: 2, 3, 4

UK Habitat Classification	BNG Habitat Type	Description	Condition Assessment
Hedgerow Priority Habitat, ditch (h2a, 191)	Native Hedgerow – Associated with bank or ditch	Hedgerow HA divided the east and west of the site, dominated by blackthorn <i>Prunus spinosa</i> and hawthorn. The hedge had been recently infilled with saplings. A ditch approximately 1m wide and 1m deep was present under the length of the hedge. The majority of the ditch was dry but did hold some shallow water in places	Assigned good condition. Condition sheet used: Condition assessment of hedgerows Condition assessment criteria passed: A1, A2, B1, B2, C1, C2, D1, D2
Hedgerow Priority Habitat (h2a)	Native Hedgerow	Hedgerow HB was hawthorn dominated and bordered the south-eastern corner of the site. Disturbance to the base of the hedge from the adjacent residential gardens was high.	Assigned moderate condition. Condition sheet used: Condition assessment of hedgerows Condition assessment criteria passed: A1, A2, B1, B2, D1, D2
Hedgerow Priority Habitat (h2a)	Native Hedgerow with trees	Hedgerow HC was a small section of unmanaged hedgerow, comprising predominantly hawthorn and blackthorn, with several mature standard trees including cherry <i>Prunus sp.</i>	Assigned moderate condition. Condition sheet used: Condition assessment of hedgerows (including additional criteria) Condition assessment criteria passed: A1, A2, C1 D1, D2, E1, E2
Hedgerow Priority Habitat (h2a)	Native Hedgerow with trees - Associated with bank or ditch	Hedgerow HD comprised a hawthorn and blackthorn dominated hedgerow which bordered the west of the site. Mature standard sycamore <i>Acer pseudoplatanus</i> and ash <i>Fraxinus excelsior</i> trees were present along the length of the hedgerow. The hedgerow was 2.5m tall and up to 3m wide, associated with a heavily shaded ditch. The ditch was culverted under the marina access track north of the site. Whilst dry at the time of the survey, the absence of vegetation within the ditch indicates it would hold water following heavy rainfall.	Assigned good condition. Condition sheet used: Condition assessment of hedgerows (including additional criteria) Condition assessment criteria passed: A1, A2, B1, B2, C2, D1, D2, E1, E2

3.2 Biodiversity Net Gain Calculations

The biodiversity impact assessment calculations resulted in a **net gain of 15.31%** of on-site habitat units and a **net gain of 33.40%** in hedgerow units. The proposed habitats as presented in the concept drawing and habitat map (Appendix A), and their expected conditions are shown in Table 2.

The Biodiversity Metric 3.1: Calculation Tool excel spreadsheet has been submitted to the client for review with this report, along with all associated habitat mapping.

3.3 Proposed Habitats

Table 2 below details the proposed habitats on site as a result of the development, based on the development proposal drawing provided by Carter Jonas (Carter Jonas, 2023) on behalf of Obsidian Strategic Ltd, and recommendations from Peak Ecology.

Table 2 - Proposed habitats

UK Habitat Classification	BNG Habitat Type	Description	Target Condition Assessment
Buildings, residential (u1b5, 109)	Urban – Developed land; sealed surface	The proposed buildings on site include 60 new residential dwellings and a GP Surgery	A condition score is not assigned within the calculator
Other developed land (u1b6)	Urban – Developed land; sealed surface	Hardstanding associated with the development including roads, driveways, car parking and pavements.	A condition score is not assigned within the calculator
Standing open water and canals, sustainable urban drainage feature (r1, 1190)	Urban – Sustainable urban drainage feature	A sustainable urban drainage system (SUDS) is proposed to manage surface water runoff from the development. Water will also be directed into the existing ditch associated with hedgerows H3 and H4.	Assigned moderate condition. Condition sheet used: Urban Habitat Type Condition assessment criteria passed: 2, 3, 4b
Suburban/ mosaic of developed/natural surface, garden (u1d, 230)	Urban – Vegetated garden	Areas of vegetated gardens associated with the dwellings, residential access and management only.	A condition score is not assigned within the calculator
Other developed land, Children's play space; non-permeable (u1b6, 612)	Urban – Developed land; sealed surface	Proposed installation of two local equipment area for play (LEAP) or local area for play (LAP) spaces, assumed to be placed on a tarmac or rubberised sealed surface.	A condition score is not assigned within the calculator
Tree (1170)	Urban – Urban tree, Individual trees	A total of 21 individual scattered trees are proposed for planting across the site. It is assumed these will comprise native species and will reach a medium size during the monitoring period.	Assigned moderate condition. Condition sheet used: Urban Trees Habitat Type Condition assessment criteria passed: 1, 2, 4, 6

UK Habitat Classification	BNG Habitat Type	Description	Target Condition Assessment
Tree (1170)	Urban – Urban tree, Linear blocks	A total of 123 individual native trees will form linear blocks of trees which will line the roads around the site. It is assumed that these trees will be set in tree pits to reduce potential damage to the surrounding roads and pavements as a result of tree growth over time. The trees are expected to reach only a small size due to limited soil availability within tree pits, and regular pruning which is expected of roadside trees.	Assigned poor condition. Condition sheet used: Urban Trees Habitat Type Condition assessment criteria passed: 1
Mixed scrub, scattered trees (h3h,11)	Heathland and shrub – Mixed scrub	The existing area of mixed scrub along the eastern boundary adjacent to the canal is to be retained. A fence will be erected to ensure a 10m standoff from the canal, which will be undisturbed. A new area of mixed scrub will be planted adjacent to the proposed hedgerow with trees along the southern boundary, to provide screening to the existing residential houses.	Assigned moderate condition. Condition sheet used: Scrub habitat type Condition assessment criteria passed: 1, 2, 3
Modified grassland (g4)	Grassland – Modified grassland	Some of the modified grassland in the western field will be retained and managed in its current condition.	Assigned moderate condition. Condition sheet used: Grassland habitat type (low distinctiveness) Condition assessment criteria passed: 1, 3, 5, 6, 7
Other neutral grassland (g3c)	Grassland – Other neutral grassland	The eastern field will be enhanced by planting an appropriate native species seed mix to increase the species density. A relaxed mowing regime will be followed to create a varied sward height which will provide microclimates for a range of insects, birds and small mammals.	Assigned good condition. Condition sheet used: Grassland habitat type (medium, high & very high distinctiveness) including additional criteria Condition assessment criteria passed: 1, 2, 3, 4, 5
Other neutral grassland (g3c)	Grassland – Other neutral grassland	Tall ruderal vegetation will be planted along the southern site boundary, adjacent to the mixed scrub and hedgerows in places.	Assigned poor condition. Condition sheet used: Grassland habitat type (medium, high & very high distinctiveness) including additional criteria Condition assessment criteria passed: 3, 4

UK Habitat Classification	BNG Habitat Type	Description	Target Condition Assessment
Hedgerow Priority Habitat (h2a)	Native Hedgerow with trees - Associated with bank or ditch	Hedgerow H1 - The existing western boundary hedgerow will be enhanced by infilling and addition of standard trees. The hedgerow will also be extended towards the southern boundary. A small section of hedgerow in the north-west corner of the site will be removed to create a new access point from Claydon Road.	Assigned good condition. Condition sheet used: Condition assessment of hedgerows (including additional criteria) Condition assessment criteria passed: A1, A2, B1, B2, C1, D1, D2, E1, E2
Hedgerow Priority Habitat (h2a)	Native Hedgerow with Trees	Hedgerow H2 will connect the existing sections HB and HC to create a single hedgerow along the southern boundary. Hedgerow H4 will border the northern edge of the site. These hedgerows will comprise native species and standard trees throughout.	Assigned good condition. Condition sheet used: Condition assessment of hedgerows (including additional criteria) Condition assessment criteria passed: A1, A2, B1, B2, C2, D1, D2, E1, E2
Hedgerow Priority Habitat (h2a)	Native Hedgerow - Associated with bank or ditch	Hedgerow H3 will be formed by the removal of a 75m length from existing hedgerow HA. The remainder of the hedgerows will be retained and maintained at their current condition.	Assigned good condition. Condition sheet used: Condition assessment of hedgerows Condition assessment criteria passed: A1, A2, B1, B2, C1, C2, D1, D2

3.4 Evaluation and Recommendations

The development proposal drawing provided by Carter Jonas (Carter Jonas, 2023) on behalf of Obsidian Strategic Ltd is, at the time of producing this report, a concept plan for the development. This BNG assessment therefore illustrates the feasibility of achieving a net gain in habitat and hedgerow units as part of the proposed development, assuming the condition of the proposed habitats can be met.

Upon confirmation of a final detailed development plan, and associated landscaping plans, the BNG assessment should be reviewed to ensure that the required net gain has still been achieved.

The Oxford Canal which lies adjacent to the site has not been assessed within this report, as a 10m standoff from the watercourse will be implemented. Should the final development plan not allow for this standoff, the watercourse will need to be assessed and the impacts of the development considered.

3.4.1 Habitats

The results indicate that the concept development proposals can result in a net gain in biodiversity on the development site. This is reliant on the establishment and ongoing maintenance of created habitats as detailed in the proposed habitat map (Appendix A) by Peak Ecology. The criteria required to be met by each habitat type are detailed below. The

conditions of the proposed habitats should be reviewed once final landscaping plans are produced for the development.

In order to secure a net gain for the site once a detailed development plan has been confirmed, it is recommended that a Landscape Environmental Management Plan (LEMP) be produced to ensure appropriate planting schemes are incorporated, and ongoing management guarantees proposed habitats reach their target condition within the predicted timeframes. Methods of habitat maintenance should be secured prior to commencement of the development.

3.4.1.1 SUDS drainage feature

To achieve a **moderate** condition, the SUDS feature must comprise planting of a diverse range of flowering plant species, must have an absence of invasive non-native species (for example Himalayan balsam *Impatiens glandulifera*) and the water table should be at or near the surface throughout the year.

3.4.1.2 Trees

The scattered trees incorporated into the grassland areas have been assumed to be able to reach a **moderate** condition during the assessment period. In order to achieve this condition, the trees must comprise native species, be subject to a relaxed pruning regime to allow trees to retain 75% of their expected canopy, and the canopy must oversail vegetation below.

The trees which form linear blocks along the new access road into the site are expected to achieve only a **poor** condition, as it is assumed that regular pruning will take place and that the trees will be situated into 'tree pits' or similar to protect the road and pavement surface. These trees should still comprise native species to have the greatest ecological benefit.

3.4.1.3 Mixed scrub

In order to achieve a **moderate** condition, the scrub habitat must comprise at least three woody species (for example hawthorn, blackthorn, elder *Sambucus nigra*, dogwood *Cornus sanguinea*), include a range of mature and young shrubs and must lack presence of invasive non-native species.

3.4.1.4 Modified grassland

The modified grassland on site will be retained at its current condition. The management of the grassland must be such to ensure a species density of 6-8 species per m², scattered scrub and bracken presence is kept below 20% coverage, bare ground coverage is below 10% and there is an absence of invasive non-native species.

3.4.1.5 Other neutral grassland

The enhancement of the modified grassland to the east of the site to achieve the classification of other neutral grassland of **good** condition would require planting of a suitable native species mix of >8m² species density, relaxed mowing to create a varied sward height, scattered scrub and bracken presence kept below 20% coverage, bare ground coverage kept below 10%, and ensuring an absence of invasive non-native and sub-optimal species.

3.4.1.6 Other neutral grassland

Areas of tall ruderal vegetation would be planted, which would comprise tall annual species which colonise disturbed land (for example willowherb *Epilobium sp.*, common hogweed *Heracleum sphondylium*, cow parsley *Anthriscus sylvestris*, common nettle *Urtica dioica*, broadleaved dock *Rumex obtusifolius*). The ground will require preparation to allow such species to become established.

3.4.2 *Hedgerows*

The addition of new hedgerows, and the enhancement of existing hedgerows, will result in a net gain in hedgerow units on site. This is dependent on the successful laying of the proposed hedgerows, the inclusion of native species into the newly planted hedges and management of the hedgerows as per the condition assessment.

The criteria required to be met by hedgerows are detailed below. The conditions of the proposed habitats should be reviewed once final landscaping plans are produced for the development.

3.4.2.1 Hedgerows

All hedgerows would either be enhanced or planted in such a way that they achieve a condition of **good**. These hedgerows must have dimensions of at least 1.5m high x 1.5m wide, must not comprise gaps at the base or within canopy, must have less than 20% undesirable perennial ground vegetation and 10% invasive non-native species, and must be managed in a way that minimises damage. Trees which also comprise standard trees must also have at least one mature tree per 30m stretch of hedgerow, and trees must be kept in a healthy condition.

A detailed species list should be incorporated into the final Landscaping Plan to ensure that the species densities are suitable to achieve the required condition.

To encourage optimum flower and berry production, hedgerows should be subject to a relaxed management regime by rotational cutting. Hedgerows should be topped once a year and sided the next year to allow either the top or sides of the hedgerow to flower and fruit, in turn. Cutting should also take place between October and February, outside of the nesting bird season. Detailed management of hedgerows should be included within a LEMP for the site.

3.4.3 *Rivers*

A 10m development standoff from the Oxford Canal will be implemented by installing a fence to separate the development from the buffer zone. The habitat in this zone will remain unaffected by the proposed development, and therefore no further consideration on the condition of the watercourse is required with regards to the BNG assessment.

3.5 Site Enhancements

In addition to the overall net gain of habitat units on the site, further positive biodiversity enhancements may be included as part of the development. These enhancements will contribute to the ecological value of the site post-construction but are not taken into consideration by the BNG calculator.

The current habitats on site, in particular the hedgerows and grassland, were considered suitable to support nesting birds and foraging and commuting bats. The proposed plans will result in the loss of approximately 75m of hedgerow HA which bisects the site. in order to maintain this feature for foraging and commuting bats, individual trees will be planted between the end of hedgerow H3 and the southern site boundary to extend the linear feature and compensate for the loss of hedgerow.

Planting of new hedgerows (H4) and enhancement of existing hedgerows is also included to provide additional foraging resources for bats and birds.

The enhancement of an area of poor condition modified grassland to good condition neutral grassland will provide additional foraging opportunities for birds, as management of a varied sward will encourage a greater diversity of insects and pollinators. Species of conservation concern noted during on the site during the breeding bird surveys (Turnstone Ecology, 2022) including starling *Sturnus vulgaris*, song thrush *Turdus philomelos*, linnet *Linaria cannabina*, yellowhammer *Emberiza citrinella* and stock dove *Columba oenas*, would benefit from increased foraging opportunities.

Nest boxes should be considered for installation on new houses as part of the development, to increase nesting opportunities for bird species such as house sparrows *Passer domesticus*, starlings and swifts *Apus apus*. A standard, small hole-fronted nest box, with an entrance hole of 32mm diameter is recommended for house sparrow, and integrated nest boxes are preferable for swifts, which should be placed high on the vertical wall of a building (a minimum 5m above the ground), ideally under the eaves, with an unobstructed flight path.

Consideration should be given to the addition of bat boxes to the new buildings on site. Detailed recommendations for specific bat boxes are given within the further bat survey report produced by Peak Ecology (Peak Ecology, 2022). The installation of integrated bat boxes such as the 'Habibat Bat Box 001' or the '1FR Schwegler Bat Tube' (available at https://www.nhbs.com/4/integrated-bat-boxes) are preferable, as these are longer lasting due to reduced exposure to the elements compared with external bat boxes, and are self-cleaning as they are designed to prevent the build-up of droppings inside the boxes. The number of boxes recommended will be reviewed, once final development plans are in place.

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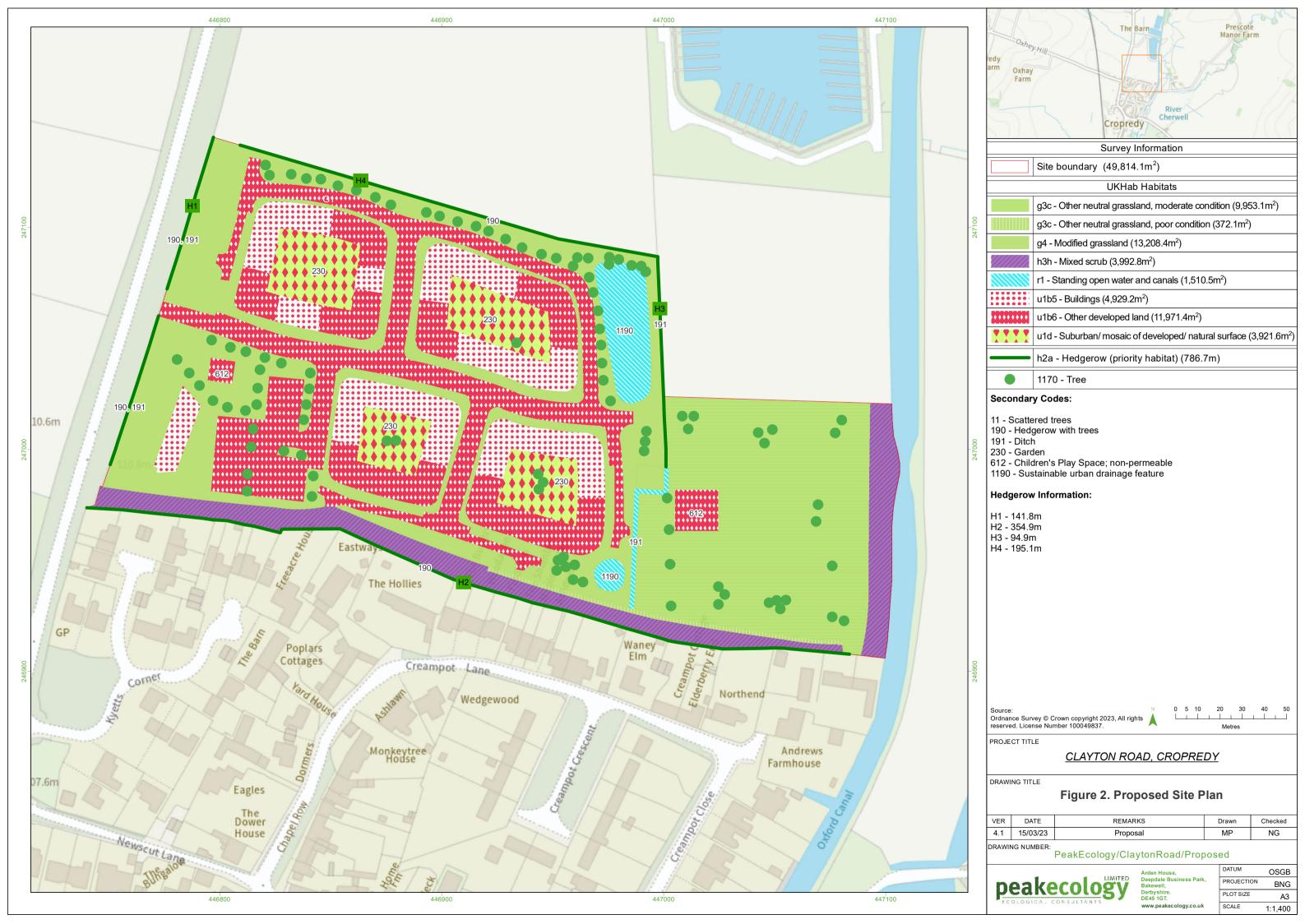
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APPENDIX A – Proposed Habitat Map

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APPENDIX B – Baseline Habitat Map

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