



Hallam Land Management Ltd

Land to the South of Grevatt's Lane, Ancton

Biodiversity Net Gain Report

February 2022

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CONTENTS

1.0	INTRODUCTION	3
2.0	METHODOLOGY.....	5
3.0	BASELINE CONDITIONS.....	8
4.0	PROPOSED DESIGN.....	14
5.0	BIODIVERSITY NET GAIN METRIC.....	24
6.0	BIODIVERSITY NET GAIN PRINCIPLES	25
7.0	CONCLUSION	26

TABLES

Table 1: Summary of Baseline Habitats

Table 2: Existing On-Site Hedgerows Biodiversity Units

Table 3: Existing On-Site Rivers Biodiversity Units

Table 4: Summary of Proposed Habitat Creation

Table 5: Hedgerow and Treeline Enhancement Biodiversity Units

Table 6: Hedgerow Creation in Biodiversity Units

Table 7: Rivers Enhancement in Biodiversity Units

Table 8: Biodiversity Metric 3.0 Headline Results

Table 9: Habitat Trading Summary

Table 10: Application of the Biodiversity Net Gain Principles to the Proposals

FIGURES

Figure 1: Baseline Habitat/Hedgerows/Rivers

Figure 2: Habitat Retention

Figure 3: Post-development Habitat/Hedgerows/Rivers

APPENDICES

Appendix A: Biodiversity Metric 3.0 Calculation

1.0 INTRODUCTION

- 1.1 This biodiversity net gain assessment has been prepared by FPCR Environment and Design Ltd behalf of Hallam Land Management for land to the south of Grevatt's Lane, Ancton (central OS Grid Reference: SU 98791 00971) to support a full planning application.

Site Location and Context

- 1.2 The site covers an area of approximately 73ha and is located to the south of Grevatt's Lane at the eastern edge of Bognor Regis. The site is currently used for agricultural (arable) purposes and is generally flat. The site comprises three field parcels and the boundaries comprise a variety of woodland, hedgerows and trees. Ryebank Rife separates the northern and southern fields.
- 1.3 Beyond the woodland along the southern boundary lies the northern edge of Ancton and residential properties. Access to the site is from Grevatt's Lane (A259) and a private road leading to the eastern boundary which is an agricultural access. To the west and east are agricultural fields, whilst there is a small industrial complex, Baird's Business Park, to the north east.

Site Proposals

- 1.4 The planning application is for golf course, practice greens and a driving range; with new access onto the A259. A number of buildings are proposed with a club house, and maintenance building, with associated infrastructure such as car parks and landscaping.
- 1.5 The project proposals are anticipated to be submitted for planning in Q1 2022.

Aims and Objectives

- 1.6 This Biodiversity Net Gain Report is based on the Chartered Institute of Ecology and Environmental Management (CIEEM) guidance¹. The scope and objectives of this report are to:
- Summarise the results of the baseline UKHab Survey undertaken on the site and to present the results of habitat condition assessment surveys following the Defra Biodiversity Metric 3.0 Technical Guidance.
 - Provide an overview of the proposed habitats following completion of the scheme.
 - Present the results of the Defra Biodiversity Metric 3.0 assessment completed for the proposals
 - Recommendations for the proposals to maximise their biodiversity potential
- 1.7 This report provides only a summary of the habitat baseline, and this report should be read in conjunction with the Ecological Appraisal (FPCR, 2022), which provides more detail on habitats.
- 1.8 This report has also been informed by a Landscape Concept Plan (Ref 1352.409.01) prepared by European Gold Design on 21st January 2022. This plan details the retained and proposed habitat creation relevant to the Biodiversity 3.0 Metric (Defra), with details regarding the practical elements of creation and management reserved for a Landscape Environment Management Plan (LEMP).

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

Legislative and Policy Context

- 1.9 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).
- 1.10 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.
- 1.11 The NPPF (2021) in particular seeks to ensure that the planning system contributes to and enhances the natural and local environment, protect and enhance biodiversity and geodiversity by:
- "174. d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;*
- 179. b) promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity."*
- 1.12 The Arun Local Plan 2011-2031 (2018) includes the following policies of relevance:

Policy ENV DM5: Development and Biodiversity

"Development schemes shall, in the first instance, seek to achieve a net gain in biodiversity and protect the existing habitats on site. They shall also however incorporate elements of biodiversity including green walls, roofs, bat and bird boxes as well as landscape features minimising adverse impacts on existing habitats (whether designated or not). Development schemes shall also be appropriately designed to facilitate the emergence of new habitats through the creation of links between habitat areas and open areas. Together, these provide a network of green spaces which serve to reconnect isolated sites and facilitate species movement."

The Environment Act (2021)

- 1.13 The Environment Act states that "the relevant percentage is 10%" as a biodiversity net gain target for development (*Schedule 7A, Part 1, 2(3)*). This has now been granted royal assent and passed into legislation, although it should be noted that there is transition period of two years, to enable development projects to account for these new requirements.

Measurable Net Gain

- 1.14 A key point in the current legislative context is that the term "measurable net gain" is not defined within the NPPF. Additionally, this term currently has no agreed definition in local or UK policy. Whilst a figure of 10% is widely viewed as best practice, it currently has no adopted policy support at either a local or national level and is considered an aspirational target, and not a mandatory requirement.

2.0 METHODOLOGY

Baseline Habitat Assessment

2.1 This report accompanies an Ecological Appraisal for the Site which has been undertaken to inform the development proposals and to provide recommendations for mitigation and enhancement (of which measurable biodiversity net gain will form a part of). The following elements from the Ecological Appraisal have also used to inform this assessment:

- UKHab and Habitat Condition Assessment Surveys: completed by Oliver Grice-Jackson, a senior ecologist with over six years' experience in ecological consultancy who is experienced in botanical surveys, having achieved a level 4 on the Botanical Society of Britain and Ireland's (BSBI) Field Identification Skills Competency (FISC).
- The UKHab survey was undertaken on 23rd August 2021 during clear weather with some cloud cover (approximately 30%) with no rain and a light breeze (3 on the Beaufort Scale). The survey followed UKHab Survey technique as recommended by Natural England². The survey followed UKHab Survey technique as recommended by Natural England³ and the Chartered Institute of Ecology and Environmental Management⁴. The habitat condition survey followed the Natural England's The Biodiversity Metric 3.0 technical supplement⁵.
- A Rivers Condition Assessment completed on 26th January 2022 by Oliver Grice-Jackson.
- A desktop study was undertaken by consulting Sussex Biodiversity Records Centre (SBRC) and the Multi Agency Geographic Information for the Countryside (MAGIC) website⁶.

River Condition Assessment

2.2 The River Condition Assessment (RCA) was completed by Oliver Grice-Jackson, who is experienced in riparian surveys and accredited in conducting MoRPh field surveys, River Type desk studies, recording data using the RCA information system and interpreting RCA indicators and scores for baseline and post-intervention River Metric.

2.3 The river survey was undertaken on 26th January 2022, during weather conditions that were cloudy, strong breeze, no rain and a max temp of 9°C. The watercourse measured <5m wide with a survey length of approximately 2.3km split over two reaches within the redline boundary: 'Onsite 1' which bisected the site and 'Onsite 2' which ran southwards along the eastern boundary from the Onsite 1 reach. This resulted in seven sub-reaches being surveyed, titled sections 1-7 with 10m x5 modules (MoRPh5) per Section. Surveys were undertaken predominately from the left bank of Onsite 1 and from the right bank of Onsite 2 to work with access.

² Natural England, 2014. Protected species and development: advice for local planning authorities. (updated 2021) [online] Available at: <https://www.gov.uk/guidance/protected-species-how-to-review-planning-applications> [Accessed 05/03/2021]

³ Natural England, 2014. Protected species and development: advice for local planning authorities. (updated 2021) [online] Available at: <https://www.gov.uk/guidance/protected-species-how-to-review-planning-applications> [Accessed 05/03/2021]

⁴ CIEEM (2017) Guidelines for Preliminary Ecological Appraisal, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester

⁵ Natural England. 2021. The Biodiversity Metric 3.0 (JP039). (updated July 2021) [online] Available at: <http://publications.naturalengland.org.uk/publication/6049804846366720>

⁶ [Online]. <http://magic.defra.gov.uk/>

Natural England's The Biodiversity Metric 3.0

- 2.4 Natural England's published biodiversity net gain metric is an MS Excel spreadsheet that is used to quantify the predicted net-change in biodiversity value ("biodiversity units") of a proposed development site before and after development. It treats the flat "habitats" and linear features "hedgerows" separately, and is based on pre-determined values, along with published written guidance, set by a Natural England. The latest version of this metric is 3.0, published in July 2021, and this is the standard metric for assessing biodiversity net gain.
- 2.5 To facilitate this, the site has been mapped and digitised using the Biodiversity Metric 3.0 QGIS template, with the existing habitats identified and areas automatically generated. In accordance with the 3.0 Metric User Guide, habitats have been defined under UK Habitat Classification. The detailed landscaping proposals for the site were then uploaded into the QGIS template, and the proposed habitats mapped and digitised to generate areas for each of the habitats proposed for creation.
- 2.6 These pre- and post-development habitat areas were then inputted into the 3.0 Metric Calculation tool. Pre-development habitats were grouped into their habitat type and condition based on the results of the UKHab and condition assessment surveys, while post-developments were classified into their UKHab type as identified through the classification of proposed habitats within landscaping plans into appropriate UKHab types and their target condition scores. The metric then provides a habitat distinctiveness score for each of the baseline and proposed habitats which are pre-assigned scores based on the habitat type.
- 2.7 The strategic significance of the habitats was also assessed for both the pre- and post-development habitats based on the location of the site, its proximity to existing areas of biodiversity interest and its setting within wider habitat corridors.
- 2.8 The metric then assigns a range of pre-assigned factors to each of the proposed habitats. These have been advised by subject knowledge experts and are universal multipliers generated by the metric. The following are variables relevant to habitat creation, enhancement or restoration proposals:
- Difficult of creating or restoring/enhancing a habitat: This pre-assigned score is based on how difficult a particular habitat type is to create or restore/enhance.
 - Temporal risk: This is the 'time to target condition' for any habitat and determines how long a particular habitat type is likely to take to reach the condition score that was assigned to that habitat type.
 - Spatial Risk: This score is based on the distance between the site of habitat loss and any habitats creation or enhancement proposals at any offsite offsetting solutions.
- 2.9 Full details of the calculation methodology used is provided in the Biodiversity Metric 3.0 – User Guide

Limitations

- 2.10 Data provided by third party sources collated during the desktop study is generally made up from a wide range of sources including (but not limited to) those submitted by ecological consultancies, wildlife conservation organisations and volunteers. As such, this data is typically focused on areas

of known nature conservation, is reliant upon formal surveys having been undertaken within an area or the presence of an expert within the locality (particularly for invertebrate records) and as such this data can never be fully relied upon as a complete ecological dataset for any given area. Rather, this data is used as a guide to likely presence of notable ecological features and can never be relied upon for likely absence.

- 2.11 The UKHab habitat map has been reproduced from detailed field notes and informed by aerial imagery, OS mapping and site maps provided by the client. The accuracy of this habitat figure is therefore ultimately guided by the accuracy of these sources and can only be relied upon to a certain degree of resolution.
- 2.12 Natural ecological communities are susceptible to change; at times this change can be rapid as a result of internal and external environmental factors. The biodiversity offsetting calculations are based on ecological assessments of habitats carried out during 2021; as a result, changes which may affect the conclusions of this report may occur, if a prolonged period of time elapses prior to the commencement of the project.
- 2.13 The River Assessment of Ryebank Rife was undertaken in January, which is a sub-optimal time for habitat surveying as many plant species will not be present making accurate determination of habitat types difficult. However, it is expected that update surveys of the Rife habitat can be completed during the optimal survey period (April-July) in 2022.
- 2.14 Professional judgement was applied to determine whether ripple effect on the water were created by the river itself or wind identified as a limitation during the survey.
- 2.15 The aim of biodiversity offsetting is to compensate for significant adverse impacts on biodiversity identified after appropriate avoidance, minimisation and on-site rehabilitation measures have been taken, according to the mitigation hierarchy as required by the NPPF.
- 2.16 No other limitations specific to this report influenced this assessment.

3.0 BASELINE CONDITIONS

Biodiversity Units

Habitats

- 3.1 The site was dominated by four large arable field compartments, with narrow field margins, some of which were assessed as being priority arable field margin habitats. These field habitats were bordered by broadleaved treelines, mixed scrub, ditches and native hedgerow habitats, with the Ryebank Rife dividing the northern and southern extent of the site. A priority deciduous woodland belt habitat is located along the western and southern boundaries of the site. Public right of way runs through this woodland habitat onsite, connecting Grevatt's Lane to the Ancton residential area south of the site. A summary of the baseline habitats is provided in *Table 1* below. The baseline Habitats are show in *Figure 1*.
- 3.2 The biodiversity units for each habitat on the site have been calculated and are presented in *Table 1*. A brief description of the habitats and their target condition are detailed below with species lists provided in the FPCR Ecological Appraisal (2022).

Table 1: Summary of Baseline Habitats

Habitat	Description	Area (ha)	Condition	Distinctiveness	Biodiversity Units
Cropland – Cereal Crop c1c	This habitat was identified across the fields in the southern and western extents of the site, comprised of wheat <i>Triticum sp</i> crop during the time of survey.	53.983	N/A – Agricultural	Low	107.97
Cropland – Non-Cereal Crop c1d	This habitat was identified in the field compartments in the northern extent of the site, which supported oilseed rape <i>Brassica napus</i> during the time of survey.	10.960	N/A - Agricultural	Low	21.92
Cropland – Arable Field Margin – Game Seed Mix c1a8	Arable margin in the south-eastern periphery of the site sown with a range of herbaceous species including occasional common poppy <i>Papaver rhoeas</i> , sainfoin <i>Onobrychis viciifolia</i> and cornflower <i>Centaurea cyanus</i> . Common bird's-foot trefoil was locally frequent while corn marigold <i>Chrysanthemum segetum</i> and kidney vetch <i>Anthyllis vulneraria</i> were rarely encountered.	0.414	N/A - Agricultural	Medium	1.66
Cropland – Arable Field Margin – Tussocky c1a5	Two arable field margins sown along the southern boundaries in the southern and south-western extent of the site. These habitats were dominated by red fescue <i>Festuca rubra</i> , cocks foot <i>Dactylus glomerata</i> and occasional Italian rye grass <i>Lolium multiflorum</i> .	0.595	N/A - Agricultural	Medium	2.38
Bramble Scrub h3f	Patches of unmanaged dense scrub were recorded in the northern extent of the site, dominated by bramble <i>Rubus fruticosus agg.</i> with occasional hawthorn <i>Crataegus monogyna</i> present.	0.500	Poor	Medium	2.00
Mixed Scrub h3f	A linear belt of dense scrub covering a dry ditch, separating the two field compartments in the northern extent of the site. This habitat was comprised of a mixture of hawthorn and bramble with a mixture of poplar <i>Populus sp.</i> , aspen <i>Populus tremula</i> and sycamore <i>Acer pseudoplatanus</i> trees occasionally present.	0.222	Moderate	Medium	1.78
Grassland – Modified Grassland g4	This habitat was recorded occasionally throughout the site, associated with narrow arable field margins. It was comprised of coarse grass species with limited herbaceous diversity recorded.	0.0793	Poor	Low	0.16
Sparsely Vegetated Land – Ruderal/Ephemeral c1c17	This habitat was identified along the field boundaries of site, comprised of dense unmanaged ruderal vegetation, with abundant species including broad-leaved dock <i>Rumex obtusifolius</i> , common nettle, creeping cinquefoil <i>Potentilla reptans</i> , common knapweed <i>Centaurea nigra</i> , teasel <i>Dipsacus fullonum</i> and <i>Buddleja sp.</i>	1.026	Poor	Low	2.05

Urban – Developed Land Sealed Surface u1b	A small area of hardstanding was recorded at the vehicle access point from Grevatt's Lane along the northern boundary. This habitat supported limited diversity comprised of sparse coloniser species.	0.228	N/A - Other	V.Low	0.00
Woodland - Lowland Mixed Deciduous Woodland w1f7	Two linear woodland compartments along the western, eastern and southern peripheries of the site. This habitat was identified as a Habitat of Principle Importance, with canopy species including pedunculate oak <i>Quercus robur</i> , ash <i>Fraxinus excelsior</i> , lime <i>Tilia</i> sp. and horse chestnut <i>Aesculus hippocastanum</i> . The understorey consisted of species such as sycamore <i>Acer pseudoplatanus</i> , hazel <i>Coryllus avellana</i> , holly <i>Ilex aquifolium</i> , field maple <i>Acer campestre</i> and yew <i>Taxus baccata</i> . A footpath runs through the center of the woodland, providing a range of light levels, with heavily shaded areas dominated by ivy <i>Hederal helix</i> , while lighter areas supported good woodland flora indicators including hart's-tongue fern <i>Asplenium</i> , pendulous sedge <i>Carex pendula</i> , bramble <i>Rubus fruticosus</i> agg and stinking iris <i>Iris foetidissima</i> . The non-native invasive species montbretia <i>Cromosmia x crocosmiiflora</i> was noted in places along the southern boundary of the woodland.	5.500	Moderate	High	66.00

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.

Linear Features – Hedgerows and Treelines

- 3.3 A total of four hedgerows were present onsite, associated with the site, with all considered to be HPis on account of them supporting >80% native species. All hedgerows were considered to be subject to intensive management, lacking structure and supporting limited hedgerow buffers displaying indications of nutrient enrichment.
- 3.4 A total of six treelines were recorded onsite, mainly associated with the ditches bordering the arable field compartments. These features were comprised of broadleaved tree species at a range of ages, including pedunculate oak, field maple, sycamore and elm *Ulmus minor*, with alder *Alnus glutinosa* and crack willow *Salix fragilis* abundant in damp areas.
- 3.5 The biodiversity units for the linear features on the site have been calculated and are presented in Table 2.

Table 2: Existing On-Site Hedgerows Biodiversity Units

Habitat	Length (km)	Condition	Biodiversity Units
H1 Native Species Rich Hedgerow – Associated with Bank of Ditch	0.156	Moderate	2.06
H2 Native Hedgerow	0.488	Good	3.22
H3 Native Hedgerow – Associated with Bank or Ditch	0.031	Good	0.20
H4 Native Species Rich Hedgerow	0.755	Good	9.97
T1 Line of Trees	0.222	Moderate	0.89
T2 Line of Trees	0.07	Poor	0.14
T3 Line of Trees	0.092	Poor	0.18
T4 Line of Trees	0.134	Moderate	0.54
T5 Line of Trees	0.193	Moderate	0.77
T6 Line of Trees	0.064	Moderate	0.26
Totals:	2.21	-	18.23

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.

Linear Features – Rivers and Streams

- 3.1 A total of four ditches were identified with the site boundary, as well as two catchments of the Ryebank Rife dividing the northern and southern extent, as well as bordering the south eastern boundary of the site. The ditches D1 and D2 held small amounts of water, while D3 & D4 were dry. In general, the ditches supported unmanaged tall ruderal and scrub vegetation.
- 3.2 The Ryebank Rife flows from west to east bisecting the northern and southern extents of the site. A separate tributary to the rife runs down the eastern border of the site (Ditch D1). It is approximately 2-3m wide with steep sided banks, supporting shallow slow flowing water. During the time of survey, very few aquatic and marginal communities were recorded, although areas were abundant with common reed. The banks supported dense tall ruderal, including common nettle, common hogweed and creeping thistle, as well as and unmanaged scrub communities abundant with bramble, including saplings of field maple, sycamore and elder. A single vehicular crossing point is located across the northern stretched of the rife resulting in minor encroachment to the riparian zone.

- 3.3 The biodiversity units for river features on the site have been calculated and are presented in *Table 3*.

Table 3: Existing On-Site Rivers Biodiversity Units

Habitat	Length (km)	Condition	Watercourse Encroachment	Riparian Encroachment	Biodiversity Units
Ryebank Rife	1.442	Fairly Poor	No Encroachment	Minor	14.18
Ryebank Rife Tributary	0.85	Fairly Poor	No Encroachment	No Encroachment	8.80
D1 Ditch (Dry)	0.52	Moderate	No Encroachment	No Encroachment	3.95
D2 Ditch (Dry)	0.224	Moderate	No Encroachment	No Encroachment	1.70
Totals:	3.04	-			28.63

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

4.0 PROPOSED DESIGN

Habitats

Retained/Enhanced

- 4.1 Habitat retention is illustrated in *Figure 2* with enhancement shown in *Figure 3*.
- 4.2 The proposals include the retention the onsite priority lowland deciduous woodland habitats totalling 5.50ha. These habitats will be retained and managed appropriately to ensure the condition of the woodland is maintained, through the adoption of the following management practices:
- Selective thinning of diseased or damaged trees to create openings in the woodland to encourage tree regeneration and understorey establishment
 - Provision of an appropriately managed grassland buffer 15m from the woodland edge
 - Retaining deadwood in situ following thinning works
 - Minimise use of any pesticide and herbicides within site wide management.
- 4.3 Some of the mixed and bramble scrub habitats, totalling 0.51ha will be retained and enhanced under the current proposals, through the implementation of the following management practices:
- Additional planting of native woody shrub and tree species to increase diversity.
 - Regular appropriate cuts to maintain woody species diversity and structure, as well as prevent loss of adjacent habitats.
 - Minimise use of any pesticide and herbicides within site wide management
 - Removal of undesirable weed species and invasive species if they occur
- 4.4 The small patch of modified grassland will be integrated into the grassland habitats proposed across the site. Further details regarding the management of this are detailed in the habitat creation section below.

Habitat Creation

- 4.5 Proposals include the creation of a range of habitats throughout the site, some of which will be managed to promote biodiversity value, including rough grassland, waterbodies, and additional scrub planting. In addition, amenity grassland will be used to create the golf tees, fairways and greens, which will be managed to prioritise their amenity character and use.
- 4.6 The waterbodies to be created within the proposal will be designed to hold water year-round with additional reedbed habitat being planted around the edges, to maximise biodiversity value of these habitats.
- 4.7 The mixed scrub habitats due to be implemented under the proposals, will be primarily created using a variety of native scrub and tree species. These habitats will be appropriately managed to maintain structure and diversity, whilst allowing maturity of tree species to develop and eventually transition parts of these scrub habitats into early successional woodland habitats.
- 4.8 In the northern extent of the site proposed buildings, a water reservoir, ornamental planting and further amenity grassland used for practice ranges and greens will be managed primarily for their

amenity use. Nevertheless, planting a diverse range of ornamental plants will provide some value wildlife, particularly pollinators that can take advantage of flowering species.

- 4.9 Further hardstanding and loose aggregate surface will be created for vehicle access roads and footpaths around the golf course.
- 4.10 The biodiversity units for each habitat on the site have been calculated and are presented in *Table 4*, along with a description of the brief management recommendations which will be employed to achieve the target conditions for each habitat type.

Table 1: Summary of Proposed Habitat Creation

Habitat (Landscaping Plan Reference)	Habitat (UKHab Type)	Targets for Creation/Management	Area (ha)	Target Condition	Distinctiveness	Biodiversity Units
Rough Grassland	Modified Grassland	The rough grassland is designed to be grass dominant, with 20% wildflowers expected at the time of seeding. Appropriate management can ensure this wildflower abundance is maintained and improved over time. In order to achieve this management prescriptions, implement the following measures: • Ensuring management encourages a varied sward height, particularly during the spring/summer • Regular management to prevent scrub/bracken encroachment • Reseeding any areas of failed establishment	28.86	Moderate	Low	100.10
Grass turf	Modified Grassland	The golf tees, fairways and greens will be managed solely for their amenity value and so will likely be in poor condition.	22.93	Poor	Low	44.25
Wildflower Meadow Planting	Other Neutral Grassland	Areas of habitat around the waterbodies within the site, to be planted up using native species rich meadow seed mixes, preferably of local provenance. Appropriate management will ensure wildflower abundance is maintained and improved over time, through the implementation of the following measures: • Ensuring management encourages a varied sward height, particularly during the spring/summer • Regular management to prevent scrub/bracken encroachment • Reseeding any areas of failed establishment • Preventing over grazing pressures and damage from rabbits.	0.040	Moderate	Medium	0.27
Native scrub	Mixed Scrub	Areas of native scrub and tree planting will be incorporated within areas rough grassland to contribute to a mosaic of habitats and promote a diversity of plants and structure within the site peripheries. These will be managed to achieve good condition through the following measures: • Planting will ensure a diversity of species with within blocks of scrub with no one species comprising more than 75% cover • Management will encourage a diverse structure to scrub, with more open areas in larger blocks of scrub to encourage natural regeneration	7.176	Good	Medium	60.30

		• The borders of scrub will be subject to relaxed management extended at least 2m from the scrub edge to encourage a diverse interface between habitats. • Replacement planting of failed specimens during establishment period • Additional planting after 10 years where natural regeneration has not been successful • Habitats allowed to mature in places to achieve early successional woodland habitats to establish.				
Ponds	Ponds (Non-Priority Habitat)	The waterbodies on the course will be designed to hold water year round and will be planted up with marginal vegetation to create diverse features. The following management prescriptions will be employed to reach the target condition: • The features will be designed to allow water levels to fluctuate naturally through the year. • The waterbodies will not be stocked with fish and they will be monitored to ensure that fish are not introduced • Management of nearby habitats will be free from fertilizer input to prevent eutrophication of the waterbodies. The ponds will be monitored for the establishment of duckweed and this will be removed where it becomes prevalent • Marginal vegetation will be introduced and allow to establish such that it covers at least 50% of the waterbodies area that is less than 3m deep.	2.236	Moderate	Medium	16.08
Aquatic Marginal Planting	Reedbeds	Reedbed planting will be created around the edges of the waterbodies across the proposals. These habitats will be planted up with reedbeds and other marginal species in and the following management prescriptions will be created to reach the target condition; • Marginal vegetation will be introduced and allow to establish such that it covers at least 50% of the waterbodies area that is less than 3m deep. • Management of nearby habitats will be free from fertilizer input to prevent eutrophication of the waterbodies. The ponds will be monitored for the establishment of duckweed and this will be removed where it becomes prevalent • Management of scrub and scattered tree to prevent encroachment into the reedbed habitats.	0.9602	Moderate	High	6.02

		- Replanting of reedbeds in patches where reedbed has failed to establish. - Monitoring and management to ensure invasive non-native species do not establish within the reedbeds.				
Golf Paths	Artificial unvegetated, unsealed surface	The paths throughout the golf course proposals to be designed using loose substrate to create an artificial, unsealed surface. Not expected to contribute the biodiversity of the site.	1.403	N/A - Other	V. Low	0.00
Buildings and Road Infrastructure	Developed Land; sealed surface	The buildings and hardstanding to be created in the northern extent of the site, used for parking and the golf clubhouse. These surfaces will be sealed and are not expected to contribute to the biodiversity of the site.	1.680	N/A - Other	V. Low	0.00
Ornamental Planting Beds	Vegetated Garden	Planting beds to be created around the clubhouse buildings in the north-eastern extent of the site. These beds to include a mixture of native and ornamental grasses, herbs and low-level shrub planting, and be managed to promote the ecological and pollination benefits onsite. Management principles to achieve the target condition will include; - Monitoring and removal of diseased plants, or invasive species which colonized in this habitat. - Management of low level shrubs species to prevent encroachment and decline in herbaceous layers. - Replacement of species where individual plants have failed.	0.2073	Poor	Low	0.40
Irrigation Storage Lakes	Reservoirs	Two large waterbodies in the northern extent of the site will be used for irrigation and water management purposes. The banks of these waterbodies to be planted up with inundated plant communities which can respond to water level changes. The following management measures should be implemented to ensure these habitats reach their target condition; - The features will be designed to allow water levels to fluctuate naturally through the year. - The waterbodies will not be stocked with fish and they will be monitored to ensure that fish are not introduced - Management of nearby habitats will be free from fertilizer input to prevent eutrophication of the waterbodies. The ponds will be monitored for the establishment of duckweed and this will be removed where it becomes prevalent.	1.7996	Moderate	Medium	8.07

Linear Features - Hedgerows and Treelines

Retained/Enhanced Hedgerows

- 4.11 A small section (approximately 0.05km) of hedgerows H1, H4 and the entirety of H2 are to be lost; however, all other hedgerows across the site will be retained and enhanced through a commitment towards their long-term management with the aim of maximising their biodiversity value. The following measures will be employed within the site to enhance the existing hedgerows:
- Hedgerows will be subjected to reduced management to encourage the establishment of tall, bushy hedgerows.
 - Additional planting of a range of native hedgerow species will be carried out within retained hedgerows to close up gaps and create more continuously dense and bushy features.
 - Fertiliser use will be prohibited within grasslands adjacent to hedgerows to prevent nutrient enrichment.
 - A minimum of 1m adjacent the hedgerows will be managed as 'undisturbed' ground where possible within the site boundary. Management of grasslands within these areas adjacent to hedgerows will be in line with the management of rough grasslands.
- 4.12 Small sections of treeline T2 totalling 0.04km will be lost under the scheme to facilitate access, whilst all the remaining treelines will be retained and enhanced under the proposals. The following measures will be employed with the site boundary to enhance the existing treelines;
- Removal of non-native and invasive tree species, such as sycamore, from the treeline and further native tree species planting.
 - Removal of scrub, as well as diseased and damaged tree standards to promote the growth of the remaining trees in the treeline.
 - Provision of grassland buffer habitats either side of the treeline to be managed.
 - Fertiliser use will be prohibited within grasslands adjacent to treelines to prevent nutrient enrichment as a result of the site management operations.
- 4.13 *Table 5* provides a summary of the hedgerows to be enhanced, their target condition and the biodiversity unit value of the enhanced hedgerows.

Table 2: Hedgerow and Treeline Enhancement in Biodiversity Units

Hedgerow	Length (km)	Target Condition	Biodiversity Units Delivered
H1 Native Species Rich Hedgerow – Associated with Bank of Ditch	0.111	Good	2.49 ^
H4 Native Species Rich Hedgerow	0.755	Good	13.46 ^
T2 Treeline	0.04	Moderate	0.11 ^
Totals:	0.033	-	16.05

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.

^ It is anticipated that the biodiversity unit value of these hedgerows will increase as a result of enhancement

– No change to the biodiversity unit value of these hedgerows is anticipated

It is anticipated that the biodiversity unit value of these hedgerows will decrease as a result of enhancement (due to losses associated with access)

Hedgerow Creation

- 4.14 In line with the framework proposals, there will be the creation of a number of hedgerows including native hedgerows associated with the clubhouse development areas in the northern extent of the site. A single native species rich hedgerow will also be planted along the north-eastern boundary of the site.
- 4.15 Altogether 0.477km of native hedgerow planting will be carried out generating a total of 1.74 units, while a single native species rich hedgerow with trees will line the north-eastern border of the site, approximately 0.423km and delivering 3.91 units. In total this will result in seven new native hedgerow being planted to achieve moderate condition by implementing the measures mentioned above (section 4.12) and the below:
- Failed specimens will be replaced during establishment on a like-for-like basis
 - Hedgerows will be managed to encourage tall, wide and bushy features with only one side of hedgerows cut each year.
- 4.16 Table 6 provides a summary of the hedgerows to be created, their target condition and the biodiversity unit value of each. The single species hedgerow resource has been grouped into a single row owing to the number of small lengths anticipated and their ornamental character.

Table 6: Hedgerow Creation in Biodiversity Units

Hedgerow	Length (km)	Target Condition	Biodiversity Units Delivered
H1c Native Species Rich Hedgerow with Trees	0.423	Moderate	3.91
H2c Native Hedgerow	0.042	Moderate	0.15
H3c Native Hedgerow	0.106	Moderate	0.39
H4c Native Hedgerow	0.082	Moderate	0.30
H5c Native Hedgerow	0.059	Moderate	0.22
H6c Native Hedgerow	0.15	Moderate	0.55
H7c Native Hedgerow	0.034	Moderate	0.13
Totals:	0.90	-	5.65

Linear Features - Rivers and Streams

Retained/Enhanced Rivers

- 4.17 Under the current proposals, ditch D1 in the south-eastern extent of the site will be lost, while enhancements will focus on the Ryebank Rife, to maintain the biodiversity value of these habitats onsite. Two small crossings are proposed across the Ryebank Rife in the northern extent of the site, although through appropriate design, both the crossings over the rife as expected to result in only minor encroachment into the riparian zone. The following measures will be employed to facilitate the enhancements.
- Clearance of dense scrub and trees within the channel or on the bank tops.

- Provision of buffer habitats either side of the rife, to be maintained to enhance the biodiversity value of that habitat.
- Planting of native species rich marginal and aquatic plant communities.
- Monitoring to ensure no nutrient enrichment or scrub encroachment occurs within the river channel and riparian zone.

4.18 These management principles follow river restoration guidance, and it is expected that the ditch could achieve a condition target of moderate if implemented.

4.19 *Table 7* provides a summary of the rivers to be enhanced, their target condition and the biodiversity unit value of the enhanced river.

Table 7: Rivers Enhancement in Biodiversity Units

Hedgerow	Length (km)	Target Condition	Biodiversity Units Delivered
Ryebank Rife	1.442	Moderate	17.13 ^
Ryebank Rife Tributary	0.85	Moderate	10.63 ^
Totals:	2.29	-	27.75

Ditch Creation

4.20 A single ditch measuring 0.156km will be created down the north-east boundary of the site, delivering 1.04 units, targeting a condition of moderate through the following management principles;

- Ditch to support minimum levels of water throughout the year.
- To be planted up with a variety of native inundated, marginal and aquatic plant communities along its extent.
- Monitoring and management to prevent nutrient enrichment levels and scrub encroachment from the adjacent habitats.
- Plant communities to be reseeded/plug planted where failure has occurred in the first few years of establishment.

Additional Enhancements

4.21 Additional mitigation measures will be implemented to contribute to a biodiversity net gain across the site. This will focus on the provision of faunal enhancements that are not captured within the Natural England Biodiversity Metric 3.0 calculations, but provide a benefit ecologically, and thus biodiversity will improve. To achieve this, the following enhancement habitat features will be implemented to support bats, bird and invertebrates, the location of these specific measures can be seen in Urban Wilderness Softworks General Arrangement Reference Plan (February 2022):

- Bat boxes will be installed on existing trees and the new buildings within the scheme, these will have a range to support different species
- Bird boxes will be installed within retained woodland habitats and on existing standard trees to provide additional nesting opportunities to generalist species. These will include small and

medium hole boxes suitable for starling and a range of tit species as well as open front boxes suitable for species such as wren and robin. A barn owl nesting box will be installed on a pole to the east.

- A range of deadwood piles will be created around the golf course, creating habitats for Saproxylic invertebrates.

5.0 BIODIVERSITY NET GAIN METRIC

- 5.1 The habitat retention, enhancement and creation proposals highlighted within this report have all been inputted into the Biodiversity Metric 3.0. *Table 8* provides a summary of the headline results of the biodiversity metric 3.0 assessment completed. The full metric has been provided in *Appendix A*.

Table 8: Biodiversity Metric 3.0 Headline Results

Baseline	Habitat Units	205.91
	Linear Feature - Hedgerow and Tree Units	18.23
	Linear Features - Rivers Units	28.63
Post-Intervention	Habitat Units	307.29
	Linear Feature - Hedgerow and Tree Units	24.34
	Rivers Units	30.50
Total Net Unit Change	Habitat Units	+101.38
	Linear Feature – Hedgerow and Tree Units	+6.12
	Linear Features - Rivers Units	+1.87
Total Net Percentage Change	Habitat Units	49.24%
	Linear Feature - Hedgerow and Tree Units	33.56%
	Linear Features - Rivers Units	6.53%

- 5.2 As shown in *Table 8*, the assessment has demonstrated the proposals will lead net gains across all the metrics, with significant gains achieved in the habitats and hedgerows metrics.

Habitat Trading

Trading Summary

- 5.3 The vast majority of habitats to be lost include arable are low distinctiveness habitats. The proposals provide sufficient amounts of habitat creation to offset the loss of low distinctiveness habitats, through habitat enhancement/creation measures alone. Medium distinctiveness habitat losses include bramble scrub and priority arable margins, present on site totalling 1.73ha area. While the scrub habitat losses are offset through further mixed scrub planting, it is not possible to create arable habitats within the proposals, thus these losses have been compensated for through the planting of species rich grassland, ponds and scrub habitats, totalling 9.45 ha in area. There were no high or very high distinctiveness habitats that will be changed by the onsite proposals. *Table 9* summarises the habitat trading summaries across the site.

Table 9: Habitat Trading Summary

Trading Summary		
Distinctiveness Group	Trading Rule	Trading Satisfied?
Very High	Bespoke compensation likely to be required	Yes
High	Same habitat required	Yes
Medium	Same broad habitat or a higher distinctiveness habitat required	Yes
Low	Same distinctiveness or better habitat required	Yes

6.0 BIODIVERSITY NET GAIN PRINCIPLES

- 6.1 The above have been guided by the Biodiversity Net Gain Principles as set out by Natural England in the Biodiversity Metric 3.0 User Guide. *Table 10* lists all of the principles along with a description of how the principles has been applied to this assessment.

Table 10: Application of the Biodiversity Net Gain Principles to the Proposals

Principle	Indicators
Principle 1: Apply the Mitigation Hierarchy	Medium distinctiveness habitats have been retained throughout proposals wherever possible, with only small losses anticipated including small areas of mixed scrub.
Principle 2: Avoid losing biodiversity that cannot be offset by gains elsewhere	The proposals have sought to retain medium distinctiveness habitats wherever possible. The overall loss of habitat biodiversity units has led to additional enhancement measures being incorporated within the proposals to aim to seek biodiversity gains through alternative means.
Principle 3: Be inclusive and equitable	Preliminary biodiversity net gain calculations were provided during the design stage to inform the proposals.
Principle 4: Address risks	The habitats recommended for creation include those that would be suitable for establishment in line with landscape proposals. The condition scores have been set at achievable levels, though management will ultimately strive to improve the condition scores above those stated above where possible.
Principle 5: Make a measurable Net Gain contribution	While this assessment has demonstrated a gain in habitat biodiversity, there has been specific ecological enhancements proposed including bird and bat boxes.
Principle 6: Achieve the best outcomes for biodiversity	
Principle 7: Be additional	
Principle 8: Create a Net Gain legacy	A LEMP will be produced for the proposals to ensure that the management is secured in the long-term to ensure that the target conditions can be achieved.
Principle 9: Optimise sustainability	The proposals have been designed to conserve and enhance the existing woodland and Ryebank Rife habitats, as key ecological corridors throughout the

	site. The creation of further native habitats will support and improve the existing habitats onsite.
Principle 10: Be transparent	All assumptions have been set out within this report to ensure that the information used to inform the biodiversity metric 3.0 calculations can be reviewed

7.0 CONCLUSION

- 7.1 The approach to habitat creation has aimed to maximise biodiversity value within the space made available around the amenity/recreational functional land of a golf course. Biodiversity Net Gain and ecological beneficial habitats have been used to inform the habitat creation and enhancement proposals for the scheme and to guide decisions around additional habitat provision.
- 7.2 The proposals have demonstrated significant biodiversity gains are achievable under the hedgerows and habitats metric. The results of the assessment demonstrate further small gains of biodiversity units associated with the rivers metric. The proposals will lead to a delivery of positive net gain across the site, in line with the NPPF.
- 7.3 Further gains to the proposals will be implemented in line with the NPPF, to ensure that opportunities are provided for faunal species. These include a range of integrated bird, bat and insect boxes and other insect habitat features.

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Key

 Site Boundary

Baseline Habitats

 Arable field margins game bird mix

 Arable field margins tussocky

 Bramble scrub

 Cereal crops

 Developed land; sealed surface

 Lowland mixed deciduous woodland

 Mixed scrub

 Modified grassland

 Non-cereal crops

 Ruderal/Ephemeral

Baseline Linear Watercourse

 Wet Ditch

 Other Rivers and Streams

Baseline Hedgerows

 Line of Trees (w1g6NE2)

 Native Hedgerow (h2NE5)

 Native Species Rich Hedgerow (h2NE2)





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Key

 Red Line Boundary

Habitats Retention

 Enhanced

 Retained

 Lost

Hedgerow Retention

 Created

 Enhanced

 Retained

 Lost

Rivers Retention

 Created

 Retained

 Enhanced

 Lost

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masterplanning » environmental assessment » landscape design » urban design » ecology » architecture » arboriculture

0 100 200 m



Client:
Hallam Land Management
Project:
Land to the south of Grevatt's Lane,
Ancton
Drawing title:
HABITAT RETENTION

Scale:
1:5000

Drawn:
LG / JW

Issue:
7/12/2021

Location / Area covered:
Figure 2

Rev A



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Key

Site Boundary

Proposed Habitats

Artificial unvegetated, unsealed surface

Bramble scrub

Developed land; sealed surface

Lowland mixed deciduous woodland

Mixed scrub

Modified grassland

Other neutral grassland

Ponds (Non- Priority Habitat)

Reedbeds

Sustainable urban drainage feature

Vegetated garden

Proposed Hedgerows

Line of Trees (w1g6NE2)

Native Hedgerow (h2NE5)

Native Species Rich Hedgerow (h2NE2)

Native Species Rich Hedgerow with trees (h2NE1)

Proposed Linear Watercourses

Ditches

Other Rivers and Streams

Hallam Land Management
 Land to the south of Grevatt's Lane,
 Ancton
 PROPOSED HABITATS

Date: 01/08/2023
 Scale: 1:5000
 Drawn: LG/JW
 Checked: JG/JW
 Date: 07/02/2023
Figure 3 **Rev A**

APPENDIX A: BIODIVERSITY METRIC 3.0 CALCULATION