EDWARDS HALL PARK, LEIGH-ON-SEA

BIODIVERSITY NET GAIN BASELINE ASSESSMENT

May 2024

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Title of Report	Edwards Hall Park, Leigh-on-Sea Biodiversity Net Gain Baseline Assessment
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This report has been compiled in accordance with BS 42021:2013 Biodiversity – Code of practice for planning and development, as has the assessment to which it relates.

The information, data, advice and opinions which have been prepared and provided are true and have been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct. We confirm that the opinions expressed are our true and professional *bona fide* opinions.

Contents

EDWARDS HALL PARK, LEIGH-ON-SEA
BIODIVERSITY NET GAIN BASELINE ASSESSMENT

1. EXECUTIVE SUMMARY

1.1 This report has been prepared by Essex Ecology Ltd., for Southend-on-Sea City Council. It comprises a Biodiversity Net Gain baseline assessment of land at Edwards Hall Park, Leigh-on-Sea.

1.2 The assessment was required in order to calculate the number of Biodiversity Units the site currently represents in order to explore opportunities for offsetting.

1.3 As the surveys were undertaken out of the optimal surveying season, a new assessment should be carried out at the optimum time of year to identify with greater accuracy the baseline biodiversity value use of the site prior to its use as a Biodiversity Net Gain offsetting site.

1.4 The site covers approximately 11.18 hectares (ha) and comprises four grassland fields, areas of broadleaved woodland, scrub and a pond, with hedgerows and lines of trees. The majority of the site is a designated Local Wildlife Site.

1.4 The baseline units for the site's area habitats have been calculated to be **98.43 habitat units**, with linear habitats amounting to **3.39 habitat units.**

1.5 Enhancing all of the sites moderate condition other neutral grassland (**8.12 ha**) to good condition would deliver **100.86 habitat units**.

1.6 Enhancing all of the sites poor condition Blackthorn scrub (**0.0791 ha**) to moderate condition would deliver **0.67 habitat units**.

1.7 Alternatively, enhancing all of the sites poor condition Blackthorn scrub to good condition would deliver **0.87 habitat units**.

1.8 Enhancing all of the sites poor condition broadleaved woodland (**0.1097 ha**) to moderate condition would deliver **1 habitat units**.

1.9 Enhancing all of the sites moderate condition broadleaved woodland (**2.2798 ha**) to good condition would deliver **28.32 habitat units**.

2. INTRODUCTION

2.1 General Introduction

This report has been prepared by Essex Ecology Ltd., for Southend-on-Sea City Council. It comprises a Biodiversity Net Gain baseline assessment of land at Edwards Hall Park, Leigh-on-Sea. The assessment was required in order to calculate the number of Biodiversity Units the site currently represents in order to explore opportunities for offsetting.

2.2 Site Location and Description

Edwards Hall Park is located at Tudor Mews, Leigh-on-Sea, Essex. The Ordnance Survey grid reference for the approximate site centre is TQ 83661 89701.

The site covers approximately 11.18 hectares (ha) and comprises four grassland fields, areas of woodland and scrub and a pond, with hedgerows and lines of trees. The majority of the site is a designated Local Wildlife Site (LoWS).

Immediately to the north and east of the site is Cherry Orchard Country Park, another LoWS, which is made up of shrubland, woodland, grassland and arable land, while to the west and south is residential housing. Rayleigh town centre lies approximately 3.15 kilometres west of the site.

See Maps 1 for a plan of the site and Appendix 1 for site photographs.

2.2.1 Designations

The majority of the site, excluding the carpark and surrounding amenity grassland, is a designated LoWS, R13 Edwards Hall Park. The site is selected because it supports a grassland community conforming to a Lowland Meadow Priority.

2.3 Objective

The aim of the assessment was to assess the site's biodiversity baseline using the latest Statutory Metric (DEFRA, 2023) for potential future use as a site for habitat creation in relation to offsetting the ecological impacts of development projects

elsewhere. Recommendations for habitat creation, enhancement and management are also included in this report.

2.4 Assessment Methodology

Habitats on the site were mapped in line with the UK Habitat Classification, using the methodology detailed in the UK Habitat Classification User Manual, Version 2.0 (UK Habitat Classification Working Group, July 2023) using data collected by Essex Ecology during site visits conducted on 31st October and 1st November 2023 during suitable weather conditions.

Each habitat (referred to under this system as a Primary Habitat) was classified using an alphanumeric code, with reference to the UK Habitat Classification Version 2.0 (UKHab Ltd. 2023). This method is designed to enable the description of each habitat on a hierarchical basis up to a maximum of five levels, including the identification of Habitats of Principal Importance in England (HPIE) (formerly known as Biodiversity Action Plan (BAP) habitats) and those listed on Annex I of the Conservation of Habitats and Species Regulations 2017 (as amended).

The site was mapped using QGIS. Habitat data was then converted into Biodiversity Units, so that the Statutory Metric could be applied.

Target notes have been used to describe certain areas of habitat, the locations of which are indicated on the habitat maps by use of target note codes (G for grassland, S for scrub and W for woodland).

Attributes that include extent, condition, distinctiveness and Biodiversity Units have been provided.

Habitat condition has been assessed according to the technical guidance provided with the Statutory Metric as well as the surveying ecologist's professional judgement.

Habitats are automatically assigned distinctiveness bands within the Statutory Metric. The distinctiveness bands and criterion thresholds are as follows:

Distinctiveness Band	Criterion Threshold
Very High Distinctiveness	Small amount of remaining habitat with a lot of it unprotected by designation. Endangered or Critical European red list habitats.
High Distinctiveness	Remaining Priority Habitats not in very high distinctiveness band and other red list habitats.
Medium Distinctiveness	Non-Priority Habitats with significant wildlife benefit and one replaceable Priority Habitat (arable field margins).
Low Distinctiveness	Agricultural and urban land use of lower biodiversity value.
Very Low Distinctiveness	Urban, with artificial structure, which are un-vegetated, unsealed surface or built linear features of very low biodiversity value.

2.5 Mapping

The site habitat maps were produced using QGIS computer software. The Minimum Mapping Unit (MMU) was employed for this survey where possible. Minimum mapped habitat areas were 25m^2 and minimum mapped linear features were five metres in length. Habitats mapped as areas were digitised using polygons and linear habitats were mapped as lines.

2.6 Competence

Charlotte Smith has been with the company since September 2020 after previously working with Essex Ecology as an intern. She has completed a BSc in Zoology and is a Qualifying Member of the Chartered Institute of Ecology and Environmental Management (CIEEM). She has undertaken numerous ecological site appraisals, habitat assessments and a wide range of protected species surveys, including Great Crested Newt, reptile, bat and Water Vole. She has caried out multiple Biodiversity Net Gain assessments using Natural England Metrics 2.0, 3.0 and 4.0. She has attended a course specific to the Metric and UK Habitat Classification.

2.7 Constraints and Limitations

The habitats present on any site are subject to change over time. All assessments of this kind are based upon the situation as it was at the time the fieldwork upon which the assessment was based was carried out.

The habitat assessment was undertaken during the winter, at a time when many plant species cannot be identified. Therefore, the degree to which certain habitat types could be identified or differentiated from others and the accuracy of habitat condition assessments was limited.

Therefore, a new assessment should be carried out at the optimum time of year to identify with greater accuracy the baseline biodiversity value use of the site prior to its use as a Biodiversity Net Gain offsetting site.

3. ASSESSMENT RESULTS

3.1 Summary

The following UK Habitat Classification habitats are currently present at the site:

Baseline Area Habitats	Area (hectares)
Grassland – Modified grassland	0.2536
Grassland – Other neutral grassland	8.12
Scrub – Blackthorn scrub	0.0791
Scrub – Bramble scrub	0.1932
Woodland and forest – Other woodland; broadleaved	2.3895
Ponds	0.0329
Urban – Artificial unvegetated, unsealed surface	0.101
Urban – Developed land; sealed surface	0.012
Individual trees	0.0773
Total Habitat Area*:	**11.2586**

*Total Habitat Area is greater than the size of the site as a proxy for canopy biomass. It is based on the root protection formula derived from The British Standard "Trees in Relation to Design, Demolition and Construction - Recommendations" (BS 5837) (2012).

Baseline Linear Habitats	Length (kilometres)
Native hedgerow	0.231
Native hedgerow with trees	0.048
Line of trees	0.233
Total Length:	**0.512**

See Map 1 for baseline habitats and Map 2 for habitat parcel reference locations and Maps 3 for tree reference locations.

3.2 Strategic significance

Most of the site is a designated Local Wildlife Site. Therefore, all habitats outside of the LoWS are assigned a medium strategic significance whilst those within are assigned a high strategic significance. Urban habitats are assigned low strategic significance.

3.3 Baseline Area Habitat Conditions

3.3.1 Modified grassland

Vegetation dominated by a few fast-growing grasses on fertile, neutral soils. It is frequently characterised by an abundance of Rye-grass and White Clover.

The area immediately surrounding the car park has been classified as modified grassland, G1. There is a public footpath, G2, that runs parallel to the south-eastern boundary of the site that has also been classified as modified grassland.

The grassland is predominantly Perennial Rye.

Condition Criteria – Low Distinctiveness Grassland						
A	**B**	**C**	**D**	**E**	**F**	**G**
There are 6-8 vascular plant species per m2 present, including at least 2 forbs. **Note - this criterion is essential for achieving Moderate or Good condition.**	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for vertebrates and invertebrates to live and breed.	Any scrub present accounts for less than 20% of the total grassland area. (Some scattered scrub such as bramble *Rubus fruticosus* agg. may be present).	Physical damage is evident in less than 5% of total grassland area. Examples of physical damage include excessive poaching, damage from machinery use or storage, erosion caused by high levels of access, or any other damaging management activities.	Cover of bare ground is between 1% and 10%, including localised areas (for example, a concentration of rabbit warrens).	Cover of bracken *Pteridium aquilinum* is less than 20%.	There is an absence of invasive non-native plant species (as listed on Schedule 9 of WCA).

	Condition Assessment = – Low Distinctiveness Grassland								
	A	**B**	**C**	**D**	**E**	**F**	**G**	**Total Passes**	**Condition**
G1	Pass	Fail – all short	Pass	Pass	Fail	Pass	Pass	5	**Moderate**
G2	Fail – less than 6-8 vascular plant species*	Fail – all short	Pass	Fail – well walked path	Fail - majority is bare ground	Pass	Pass	3	**Poor**

*passing this criterion is essential for achieving Moderate or Good condition.

3.3.2 Other neutral grassland

Grasslands on neutral soils, with Perennial Rye-grass likely to be present at <30% with between nine and fifteen further species (m2) also present.

The grassland G3, is one of the main fields of the site with ridge and furrow present. At the time of the survey it had just been cut and the cuttings had been left, so it was hard to identify all species. Grass species recorded include Common Couch, Cock's-foot, Yorkshire Fog, Timothy and Bent, with other species including Field Bindweed, Meadow Buttercup, Common Sorrel, Lesser Stitchwort, Bird's-foot Trefoil and Red Bartsia. Some young Blackthorn and oak were found encroaching the grassland along its northern edge. Closer to the western edge of the field, species indicative of less favourable condition were recorded including Common Nettle, Creeping Thistle, alongside Great Willowherb and Smooth Tare.

The grassland G4 has been classified as g3c5 Arrhenatherum neutral grassland which is defined as 'False Oat-grass at least abundant but other tussocky grass species such as Tall fescue, Couch, Cock's-foot, Wood Small-reed may be frequent to dominant. Total grass cover is usually 50-75%. Forbs 50% cover and associated with less fertile soil.' The grassland was dominated by False Oat-grass and Tall Fescue, alongside Common Couch, Cock's-foot and Creeping Bent. Other species present include Wild Carrot, Common Fleabane, White Clover, Knapweed and Hemp Agrimony. There are some Dog Rose and oak saplings throughout the grassland. Some of the grassland has been left uncut while others had been recently cut at the time of survey.

The grassland field G5 contains the species Yorkshire Fog, Cock's-foot, Tall Fescue, Creeping Bent and Red Fescue. Other species include Wild Carrot, Creeping Thistle, Creeping and Meadow Buttercup, Bird's-foot-trefoil, White Clover and Knapweed.

G6 is another grassland field at the north-west corner of the site. Grass species present include Perennial Rye-grass, Yorkshire Fog, Cock's-foot, Tall Fescue, and Red Fescue. Other species include Creeping Buttercup, Creeping Cinquefoil, Common Ragwort, Knapweed, Yarrow and Ribwort Plantain. There are areas of Hard Rush suggesting the area may get damp. Blackthorn suckers were found throughout.

Condition Criteria – Medium Distinctiveness Grassland					
A	**B**	**C**	**D**	**E**	**F**
The parcel represents a good example of its habitat type, with a consistently high	Sward height is varied (at least 20% of the sward is	Cover of bare ground is between	Cover of bracken *Pteridium aquilinum* is	Combined cover of species indicative of sub-optimal condition	There are 10 or more vascular plant species per m2 present,

proportion of characteristic indicator species present relevant to the specific habitat type (and relative to Footnote 3 suboptimal species which may be listed in the UKHab description). **Note - this criterion is essential for achieving Moderate or Good condition for non-acid grassland types only.**	less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.	1% and 5%, including localised areas, for example, rabbit warrens.	less than 20% and cover of scrub (including bramble *Rubus fruticosus* agg.) is less than 5%.	and physical damage (such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities) accounts for less than 5% of total area. If any invasive non-native plant species3 (as listed on Schedule 9 of WCA4) are present, this criterion is automatically failed.	including forbs that are characteristic of the habitat type. **Note - this criterion is essential for achieving Good condition for non-acid grassland types only.**

	Condition Assessment – Medium Distinctiveness Grassland							
	A	**B**	**C**	**D**	**E**	**F**	**Total Passes**	**Condition**
G3	Pass	Fail -all short	Pass	Pass - Some scrub encroachment but less than 5%	Pass	Fail – less than 10 or more vascular plant species per m2 present	4	**Moderate**
G4	Pass	Pass	Pass	Pass -– Some scrub encroachment but less than 5%	Pass	Fail – less than 10 or more vascular plant species per m2 present	5	**Moderate**
G5	Pass	Fail – all short	Pass	Pass - Some scrub encroachment but less than 5%	Pass	Fail – less than 10 or more vascular plant species per m2 present	4	**Moderate**
G6	Pass	Fail – all short	Pass	Pass - Some scrub encroachment but less than 5%	Pass	Fail – less than 10 or more vascular plant species per m2 present	4	**Moderate**

3.3.3 Heathland and shrub – Blackthorn scrub

Dense scrub with dominant Blackthorn.

Whilst Blackthorn is found along the margins of most of the fields, it cannot be recorded at scrub as it is over five metres and is therefore placed in the woodland section.

Dense Blackthorn scrub below five metres tall was recorded at the south-eastern corner of the field G4, and along the western edge of the field G5 where it formed a strip between the grassland and the woodland edge. These areas were entirely made up of Blackthorn.

Condition Criteria – Scrub				
A	**B**	**C**	**D**	**E**
The parcel represents a good example of its habitat type - the appearance and composition of the vegetation closely matches its UKHab description (where in its natural range). - At least 80% of scrub is native, - There are at least three native woody species, - No single species comprises more than 75% of the cover (except hazel *Corylus avellana*, common juniper *Juniperus communis*, sea buckthorn *Hippophae rhamnoides* or box *Buxus sempervirens*, which can be up to 100% cover).	Seedlings, saplings, young shrubs and mature (or ancient or veteran) shrubs are all present.	There is an absence of invasive non-native plant species (as listed on Schedule 9 of WCA) and species indicative of sub-optimal condition make up less than 5% of ground cover.	The scrub has a well-developed edge with scattered scrub and tall grassland and or forbs present between the scrub and adjacent habitat.	There are clearings, glades or rides present within the scrub, providing sheltered edges.

	Condition Assessment – Blackthorn scrub						
	A	**B**	**C**	**D**	**E**	**Total Passes**	**Condition**
S2	Fail – Single species comprises more than 75% of the cover	Fail – Seedlings not present	Pass	Pass	Fail – No clearings, glades or rides present within the scrub	2	**Poor**
S3	Fail – Single species comprises more than 75% of the cover	Fail - Seedlings not present	Pass	Pass	Fail - No clearings, glades or rides present within the scrub	2	**Poor**

3.3.4 <u>Heathland and shrub - Bramble scrub</u>

Dense scrub with dominant Bramble.

Dense Bramble scrub was recorded in multiple locations. The Bramble scrub patch S1 lies at the southern of the grassland field G4, south of the pond.

The Bramble scrub S4 is at the north-western end of the field G6, forming a strip between the grassland edge and the woodland, W1. S5 is another patch pf Bramble scrub further down at the corner of the field G6.

The area of scrub S6 is an open area of predominantly Brambles with some Common Nettle, surrounded by trees near the carpark.

Bramble scrub is automatically given a low condition score, 'poor', due to the dominance of that single species and therefore a condition assessment is not applicable.

3.3.5 Woodland and forest – Other woodland; broadleaved

Vegetation dominated by trees that are more than 5 metres high when mature, which form distinct, although sometimes open canopy with a canopy cover greater than 25%.

The woodland area W1 forms most of the field boundaries within the site. They are likely original hedgerows with standard trees that have since grown out and incorporated the boundary scrub. The woodland consists mainly of Blackthorn and oak standards, with some Ash and a Bramble understorey. The Blackthorn has started to sucker into all of the fields, along with some oak saplings.

There are two small areas of woodland within the grassland G5, W2 and W3. W2 is made up of Blackthorn, Hawthorn, oak and White Willow. W3 comprises of oak, Sycamore and Sweet Chestnut with some Bramble.

Condition Criteria – Other woodland; broadleaved						
	Features					
A	**Age Distribution of trees**					
	3 pts	3 age classes	**2 pts**	2 ages classes	**1 pt**	1 age class
B	**Wild, domestic and feral herbivore damage**					
	3 pts	none	**2 pts**	<40% of woodland	**1 pt**	>40% of woodland
C	**Invasive plant species**					
	3 pts	none	**2 pts**	<10% cover AND no Rhododendron or Cherry laurel	**1 pt**	>10% cover OR Rhododendron or Cherry Laurel
D	**Number of native tree species**					
	3 pts	five or more	**2 pts**	3-4 species	**1 pt**	0-2 species
E	**Cover of native tree and shrub species**					
	3 pts	>80% of canopy and understorey	**2 pts**	50-80% of canopy and understorey	**1 pt**	<50% of canopy and understorey
	Open space within woodland					

F	**3 pts**	10-20% temporary open space	**2 pts**	20-40% temporary open space	**1 pt**	>40% temporary open space
G	**Woodland regeneration**					
	3 pts	all three classes	**2 pts**	one or two classes	**1 pt**	no classes or coppice regrowth in woodland
H	**Tree health**					
	3 pts	<10% mortality and no pests/diseases/dieback	**2 pts**	10-25% mortality and/or dieback, low risk pests/disease present;	**1 pt**	>25% mortality or high risk pests/disease present
I	**Vegetation and ground flora**					
	3 pts	ancient woodland indicators	**2 pts**	recognisable NVC community	**1 pt**	no recognisable NVC community
J	**Woodland vertical structure**					
	3 pts	3+ storeys	**2 pts**	2 storeys	**1 pt**	0-1 storeys
K	**Veteran trees**					
	3 pts	2+/ha	**2 pts**	1/ha	**1 pt**	none
L	**Amount of deadwood**					
	3 pts	50%	**2 pts**	25-50%	**1 pt**	<25%
M	**Woodland disturbance**					
	3 pts	no enrichment/damage	**2 pts**	<1 ha enriched OR <20% area damaged ground	**1 pt**	>1 ha enriched OR >20% are damaged ground

Habitat type:	**Condition Assessment - Other woodland; broadleaved**														
Scores of '1' '2' or '3' are allocated against each criteria assessed.															
	Criterion													**TOTAL**	**Condition**
Parcel Ref	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**		
W1	2	3	3	2	3	1	3	2	1	2	1	1	2	26	Moderate
W2	2	3	3	2	2	1	1	3	1	1	2	1	2	24	Poor
W3	2	3	3	2	2	1	1	3	1	1	2	1	2	24	Poor

3.3.6 Pond (Non-priority)

There is one pond present onsite within the grassland field G4 at the south-eastern corner of the site. The pond is densely vegetated with a variegated form of Reed Sweet-grass, Yellow Flag, Bulrush and Branched Bur-reed. There is some planted Water Horsetail, and Duckweed on the water surface. The pond is surrounded by scrub.

Condition Criteria – Ponds	
A	The pond is of good water quality, with clear water (low turbidity) indicating no obvious signs of pollution. Turbidity is acceptable if the pond is grazed by livestock.
B	There is semi-natural habitat (moderate distinctiveness or above) completely surrounding the pond, for at least 10 m from the pond edge for its entire perimeter.
C	Less than 10% of the water surface is covered with duckweed Lemna spp. or filamentous algae.
D	The pond is not artificially connected to other waterbodies, such as agricultural ditches or artificial pipework.
E	Pond water levels can fluctuate naturally throughout the year. No obvious artificial dams, pumps or pipework.
F	There is an absence of listed non-native plant and animal species.
G	The pond is not artificially stocked with fish. If the pond naturally contains fish, it is a native fish assemblage at low densities.
H	Emergent, submerged or floating plants (excluding duckweed) cover at least 50% of the pond area which is less than 3 m deep.
I	The pond surface is no more than 50% shaded by adjacent trees and scrub.

Habitat type:	**Ponds**										
	Criterion (P -Pass, F-Fail)									**TOTAL**	**Condition**
Parcel Ref	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**		
P1	F	P	P	P	P	P	P	P	P	8	Moderate

3.3.7 Individual trees – rural trees

The broad habitat type 'Individual trees' may be used where a tree (or a group of trees) over 7.5cm in stem diameter at breast height (DBH) does not meet or contribute towards the definition of another broad habitat type, such as woodland.

11 trees were recorded individually across the whole site. The majority of the trees were recorded between the car park and allotment, and within the fields G3 and G4. Tree species include Hawthorn, Beech, oak and Rowan.

The trees T9 and T8 are oaks within the field G3. The trees T10 and T11 are within the hedgerow H3.

Four trees were recorded as good condition, and seven as moderate condition.

Condition Criteria – Individual trees
A: The tree is a native species (or at least 70% within the block are native species).

B: The tree canopy is predominantly continuous, with gaps in canopy cover making up <10% of total area and no individual gap being >5 m wide (individual trees automatically pass this criterion).
C: The tree is mature (or more than 50% within the block are mature).
D: There is little or no evidence of an adverse impact on tree health by human activities (such as vandalism, herbicide or detrimental agricultural activity). And there is no current regular pruning regime, so the trees retain >75% of expected canopy for their age range and height.
E: Natural ecological niches for vertebrates and invertebrates are present, such as presence of deadwood, cavities, ivy or loose bark.
F: More than 20% of the tree canopy area is oversailing vegetation beneath.

Habitat type:	**Condition Assessment - Individual Trees**							
	Criterion (P -Pass, F-Fail)						**TOTAL**	**Condition**
Parcel Ref	**A**	**B**	**C**	**D**	**E**	**F**		
T1	F	P	F	P	F	P	3	Moderate
T2	F	P	F	P	F	P	3	Moderate
T3	F	P	F	P	P	P	4	Moderate
T4	P	P	P	P	P	P	6	Good
T5	P	P	P	P	F	P	5	Good
T6	P	P	F	P	P	P	5	Good
T7	F	P	F	P	F	P	3	Moderate
T8	P	P	F	P	F	P	4	Moderate
T9	P	P	F	P	F	P	4	Moderate
T10	F	P	F	P	F	P	3	Moderate
T11	F	P	P	P	P	P	5	Good

3.4 Linear Habitats

3.4.1 Hedgerows

There are three hedgerows present onsite. H1 is a short hedgerow that runs parallel to the carpark and comprises of Beech, Blackthorn and Sycamore trees.

H2 is on the south-western border and is made up of Blackthorn and Hawthorn, with some of the plants being tree size.

H3 is a long hedgerow that runs parallel to the south-eastern border of the site, adjacent to the field G3. There are some gaps at the eastern end. It comprises of predominantly Hawthorn, with some Blackthorn, Bramble, Ash and Elm.

Habitat Type: Linear Features: Hedgerows		**H1**	**H2**	**H3**
A1: Height	>1.5 m average along length	Pass	Pass	Pass
A2: Width	>1.5 m average along length	Pass	Pass	Pass
B1: Gap - hedge base	Gap between ground and base of canopy <0.5 m for >90% of length	Pass	Pass	Pass
B2: Gap - hedge canopy continuity	Gaps make up <10% of total length; and No canopy gaps >5 m	Pass	Pass	Pass
C1: Undisturbed ground and perennial vegetation	>1 m width of undisturbed ground with perennial herbaceous vegetation for >90% of length: · Measured from outer edge of hedgerow; and · Is present on one side of the hedgerow (at least).	Pass	Pass	Pass
C2: Nutrient-enriched perennial vegetation	Plant species indicative of nutrient enrichment of soils dominate <20% cover of the area of undisturbed ground.	Pass	Pass	Pass
D1: Invasive and neophyte species	>90% of the hedgerow and undisturbed ground is free of invasive non-native plant species (including those listed on Schedule 9 of WCA3) and recently introduced species.	Pass	Pass	Pass
D2: Current damage	>90% of the hedgerow or undisturbed ground is free of damage caused by human activities.	Pass	Pass	Pass
	Total:	**8**	**8**	**8**
	Condition:	**Good**	**Good**	**Good**

3.4.2 Line of Trees

There are two Lines of trees present onsite. The first is next to the carpark and comprises of four large oak trees. The second seems to be an overgrown hedgerow along the south-east border of the site, parallel to the public footpath. It is made up of Elm, Blackthorn, Hawthorn, and areas of tall Hornbeam and Beech.

Habitat Type: Linear Features: Line of Trees		**LT1**	**LT2**
A	At least 70% of trees are native species.	Pass	Pass

B	Tree canopy is predominantly continuous with gaps in canopy cover making up <10% of total area and no individual gap being >5 m wide.	Pass	Pass
C	One or more trees has veteran features and or natural ecological niches for vertebrates and invertebrates, such as presence of standing and attached deadwood, cavities, ivy or loose bark.	Pass	Fail
D	There is an undisturbed naturally-vegetated strip of at least 6 m on both sides to protect the line of trees from farming and other human activities (excluding grazing). Where veteran trees are present, root protection areas should follow standing advice.	Pass	Fail
E	At least 95% of the trees are in a healthy condition (deadwood or veteran features valuable for wildlife are excluded from this). There is little or no evidence of an adverse impact on tree health by damage from livestock or wild animals, pests or diseases, or human activity.	Pass	Pass
	Total:	**5**	**3**
	Condition:	**Good**	**Moderate**

4. BASELINE BIODIVERSITY UNIT CALCULATIONS

4.1 Baseline Biodiversity Units

The baseline Biodiversity Unit (BU) site values are presented in the following tables. Habitats that are of the same type and condition have been grouped together.

Area Habitat Type	Distinctiveness Score		Condition Score		Baseline Biodiversity Units (BU)
Grassland – Modified grassland	Low	2	Moderate	2	0.65
Grassland – Modified grassland	Low	2	Poor	1	0.23
Grassland – Other neutral grassland	Medium	4	Moderate	2	74.70
Heathland and shrub – Blackthorn scrub	Medium	4	Poor	1	0.079
Heathland and shrub – Bramble scrub	Medium	4	Condition Assessment N/A	1	0.193
Other woodland; broadleaved	Medium	4	Moderate	2	20.97
Other woodland; broadleaved	Medium	4	Poor	1	0.50
Ponds (Non-priority)	Medium	4	Moderate	2	0.30
Urban – Artificial unvegetated; unsealed surface	Very low	0	Condition Assessment N/A	1	0
Urban – Developed land; sealed surface	Very low	0	Condition Assessment N/A	1	0
Individual trees – rural trees	Medium	4	Good	3	0.33
Individual trees – rural trees	Medium	4	Moderate	2	0.48
Total:					**98.43***

*Note the sum of columns may differ from the total units stated. This is due to rounding and is not considered significant. The totals stated reflect those calculated within the Biodiversity Metric Calculator Tool.

Linear Habitat Type	Distinctiveness Score		Condition Score		Baseline Biodiversity Units (BU)
Native hedgerow	Low	2	Good	3	1.58
Native hedgerow with trees	Medium	4	Good	3	0.66

Line of trees	Low	2	Good	3	0.24
Line of trees	Low	2	Moderate	2	0.91
Total:					**3.39**

All calculations were put through the Biodiversity Net Gain Metric ‘Off-site habitats’ tabs.

5. POTENTIAL HABITAT UNIT UPLIFT

5.1 Overview

Habitat units can be gained by enhancing the current habitats to higher condition or higher value habitat type or creating new habitats. The following habitat enhancement measures are suggested. Recommendations are based on the site's current habitats and their condition, the relative feasibility of potential enhancement measures and the need to take other site use, including public use, into account.

Habitats such as the other neutral grassland fields recorded onsite may be subject to change when surveyed in favourable time of year to a different habitat type e.g. Lowland Meadow, which the fields have previously been recorded as. This habitat change will impact the habitat recommendations below and would therefore require them to be updated as well.

5.1.1 Temporal Risk Multiplier

The temporal risk is the 'time to target condition' for any habitat and determines how long a particular habitat type is likely to take to reach the desired condition score.

If habitats are to be enhanced/created in advance, then the temporal risk will need to be changed accordingly which will impact the level of biodiversity units provided.

5.2 Habitat Enhancement

The best way to gain habitat units would be to enhance the current habitats to higher condition.

5.2.1 Unit Uplift

The following table shows how many habitat units would be delivered from enhancing entire habitats to a higher condition.

Current habitat		**Size of area to be enhanced (ha)**	**Proposed Habitat**	
Habitat	**Current Condition**		**Proposed condition**	**Habitat units delivered**

Other neutral grassland	Moderate	8.12	Good	**100.86**
Blackthorn scrub	Poor	0.0791	Moderate	**0.67**
			Good	**0.87**
Other woodland; broadleaved	Poor	0.1097	Moderate	**0.86**
			Good	**1.00**
Other woodland; broadleaved	Moderate	2.2798	Good	**28.32**

5.2.2 Habitat Management

The table below shows the required management prescriptions needed to reach the target habitat conditions of each potential habitat enhancement. Refer to Maps 6 & 7 for locations of each habitat and current condition.

Habitat Enhancement		
Habitat Type	**Target Condition & Reference**	**Habitat management prescriptions**
Other neutral grassland	Moderate > **Good** **G3, G4, G5, G6**	1. Reducing scrub encroachment • Cutting back scrub that has already started to encroach into the grasslands • Preventing further encroachment with management of scrub edges and cutting of the grassland 2. Creating areas of varying sward height by leaving certain sections long on a rotation 3. Encouraging greater species diversity and more species per m2 (to above 10 per m2) by reducing the nutrients in the soil and preventing grass species from dominating • Removing grass cuttings to prevent nutrients breaking down into the grassland • Early spring cut to knock back dominant grasses
Blackthorn	Poor > **Good** **S2, S3**	1. Creating more open space to encourage greater structural diversity and sheltered edges • Clearing areas to create glades, clearings and rides within areas of dense scrub • Trimming of scrub edges to develop a graded margin down to field layer 2. Encouraging a varied age structure throughout the scrub patches • Selective thinning and coppicing to promote regeneration of seedlings and saplings
	Poor > **Moderate** **S2, S3**	The same management prescriptions mentioned above can be used to enhance poor condition scrub to moderate, along with: 3. Preventing dominance of one species (>75%) to create more biodiversity • Clearing areas of scrub to allow other species to regenerate

		• Planting of different native species
Other broadleaved woodland	Moderate > **Good** **W1**	1. Increase number of age classes and regeneration potential within the woodland 2. Increasing the amount of deadwood by introducing large pieces to the wood and where safe to do so leaving dead trees standing 3. Increase woodland regeneration through selective thinning and coppicing 4. Encourage greater structural diversity by developing woodland layers • Opening up areas to increase light into woodland and encourage lower canopy and shrub layer growth
	Poor > **Moderate** **W2, W3**	The same management prescriptions mentioned above can be used to enhance poor condition woodland to moderate, along with: 5. Increasing number of native species within the woodland • Planting native species

Map 1. Edwards Hall Park,
Leigh-on-Sea,
Baseline Habitats

Red Line Boundary

Habitats Baseline
- Artificial unvegetated, unsealed surface
- Blackthorn scrub
- Bramble scrub
- Developed land; sealed surface
- Modified grassland
- Other neutral grassland
- Other woodland; broadleaved
- Ponds (priority habitat)

Hedgerow Baseline
- Line of trees
- Native hedgerow
- Native hedgerow with trees

Individual tree Baseline
- Existing Large Rural Tree
- Existing Medium Rural Tree
- Existing Small Rural Tree

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Map 2. Edwards Hall Park,
Leigh-on-Sea,
Habitat Reference Locations

Red Line Boundary

Area Habitats
- Artificial unvegetated, unsealed surface
- Blackthorn scrub
- Bramble scrub
- Developed land; sealed surface
- Modified grassland
- Other neutral grassland
- Other woodland; broadleaved
- Ponds (priority habitat)

Linear Habitats
- Line of trees
- Native hedgerow
- Native hedgerow with trees

Habitat Reference
G - Grassland
S - Scrub
W - Woodland
P - Pond
H - Hedgerow
LT - Line of trees

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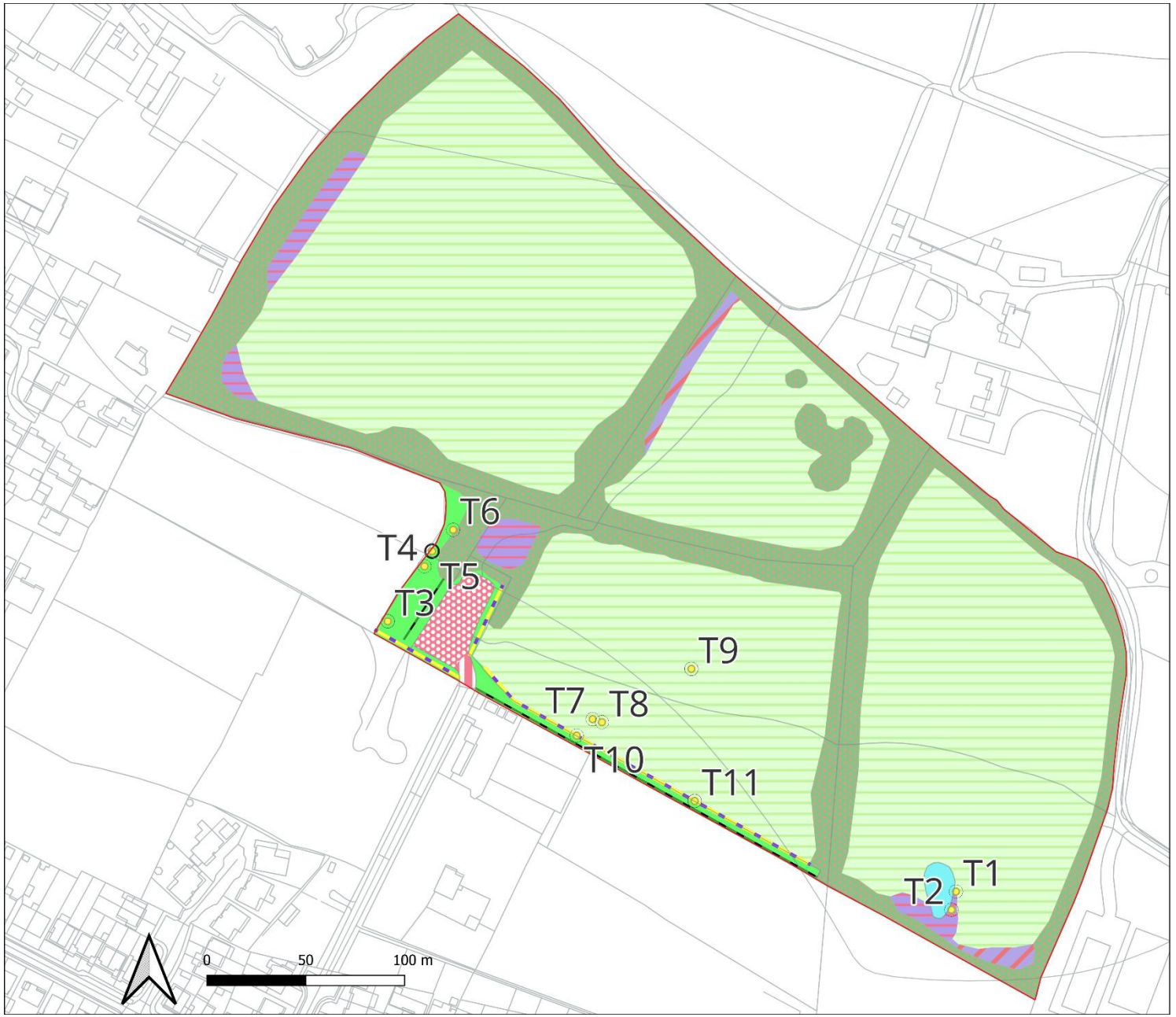

Map 3. Edwards Hall Park ,
Leigh-on-Sea,
Tree Reference Locations

Red Line Boundary

T1 - T11 - Tree Target Notes

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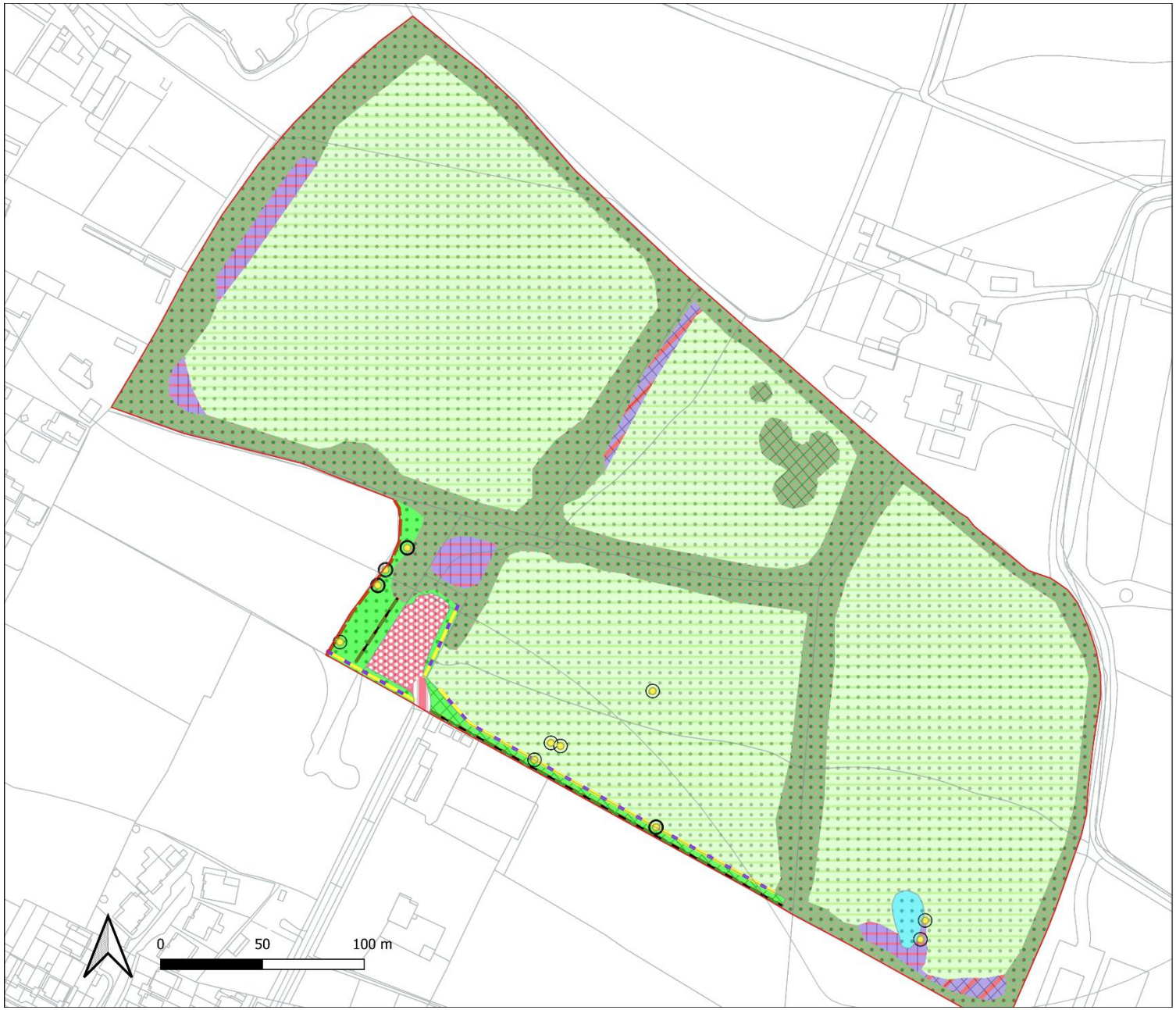

Map 4. Edwards Hall Park, Leigh-on-Sea, Habitat Conditions

Red Line Boundary

Baseline Habitat Condition
- Moderate
- Poor
- N/A - Other
- Condition Assessment N/A

Baseline Hedgerow Condition
- Good
- Moderate

Baseline Individual tree Condition
- Moderate
- Good

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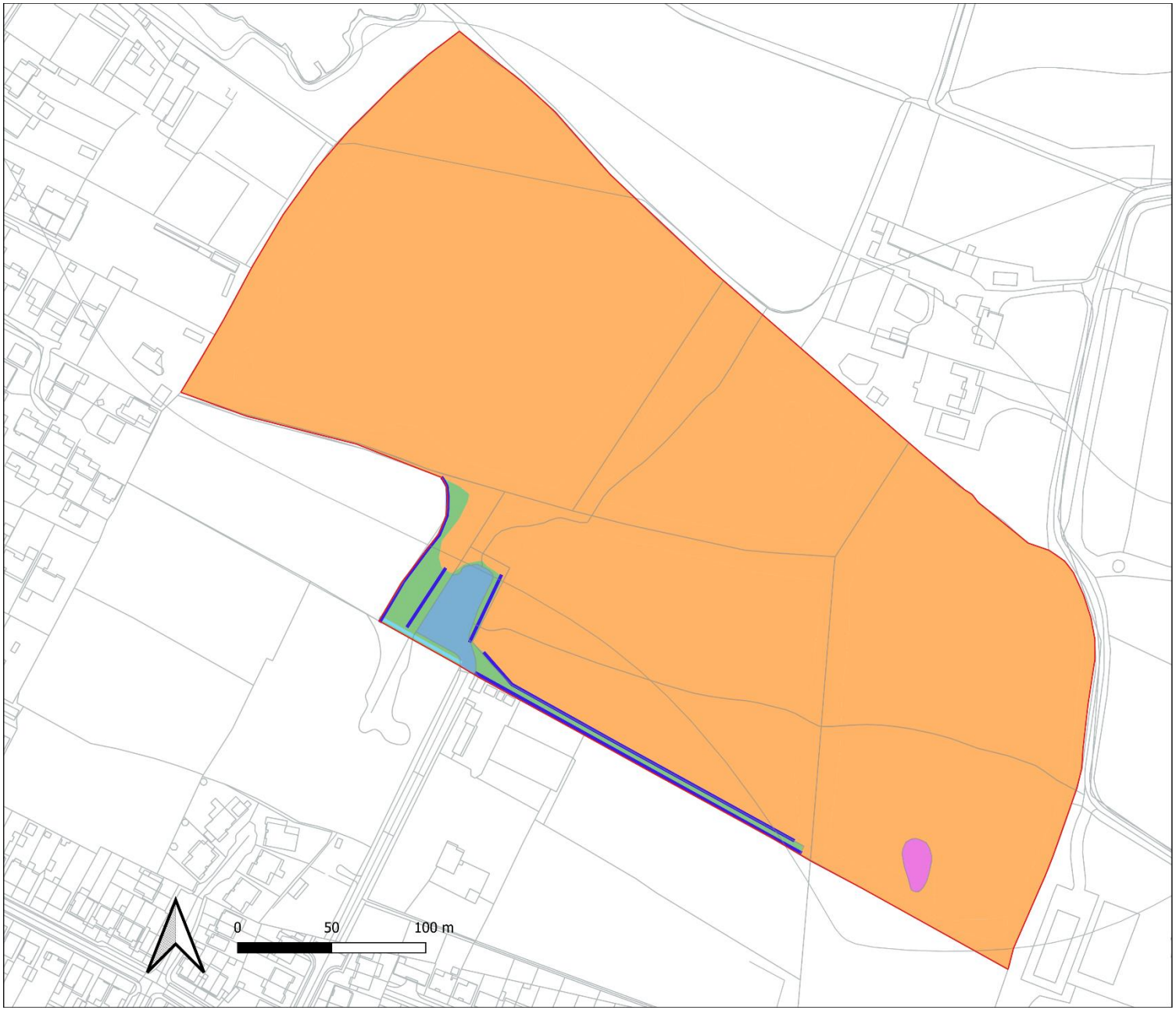

Map 5. Edwards Hall Park,
Leigh-on-Sea,
Habitat Distinctiveness

Red Line Boundary

Baseline Habitat Distinctiveness
- High
- Medium
- Low
- V.Low

Baseline Hedgerow Distinctiveness
- Medium
- Low

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Bibliography and References

The Statutory Biodiversity Metric (DEFRA) November 2023

UKHab Ltd (July 2023). UK Habitat Classification 2.0 (at https://www.ukhab.org)

Appendix 1: Photographs

Photograph 1. Grassland G3.

Photograph 2. Grassland G4.

Photograph 3. The pond P1.

Photograph 4. Grassland G5.

Photograph 5. The woodland W2.

Photograph 6. The grassland G6.

Photograph 7. The woodland W1.

Photograph 8. The hedgerow H1.

Photograph 9. The scrub patch S6.

Photograph 10. The scrub patch S4.