



Biodiversity Net Gain Design Stage Report

Rayleigh Road, Thundersley, Essex

On Behalf of:

This Land Development Ltd.

January 2023

© SES 2023

www.ses-eco.co.uk

SES Quality Management

Project	Rayleigh Road, Thundersley
Report title	Biodiversity Net Gain Design Stage Report
Revision Number	Rev D

Revision	Status	Date	Author(s)	Technical review by	Quality review by
A	Final Draft	29/06/2022	Andrew Pankhurst BA(Hons) ACIEEM (Director) and Chris Kelly MSc BSc (Hons)	Sean Crossland MCIEEM CEcol (Technical Director)	Sean Crossland MCIEEM CEcol (Technical Director)
B	Final Draft	26/07/2022	Andrew Pankhurst BA(Hons) ACIEEM (Director) and Chris Kelly MSc BSc (Hons)	Sean Crossland MCIEEM CEcol (Technical Director)	Sean Crossland MCIEEM CEcol (Technical Director)
C	Final Draft	18/11/2022	Andrew Pankhurst BA(Hons) ACIEEM (Director) and Chris Kelly MSc BSc (Hons)	Sean Crossland MCIEEM CEcol (Technical Director)	Sean Crossland MCIEEM CEcol (Technical Director)
D	Final	31/01/2023	Andrew Pankhurst BA(Hons) ACIEEM (Director) and Chris Kelly MSc BSc (Hons)	Sean Crossland MCIEEM CEcol (Technical Director)	Sean Crossland MCIEEM CEcol (Technical Director)

Disclaimer

SES has prepared this report for the exclusive use of the client for the intended purpose as stated in the terms and conditions under which the scope of work has been agreed and completed.

No part of this report may be copied or duplicated without the express permission of the client and SES. The copyright of this document lies with SES, with all rights reserved.

The report may not be relied upon by any other party without explicit agreement from the client and SES. No other warranty, expressed or implied, is made as to the professional advice included in this report.

Site assessments / surveys (where required) have been restricted to a level of detail required to achieve the stated objectives of the work.

Due to the temporal nature of ecology, the findings of this report should not be relied upon if a significant amount of time has passed, as defined by the Chartered Institute of Ecology and Environmental Management (CIEEM) guidelines.

Executive summary

The biodiversity strategy for the site has been guided via a suite phase 2 ecological surveys, Biodiversity Net Gain (BNG) net gain principles and Lawton's principles to deliver landscape scale ecological networks. This strategy has been facilitated via application of the mitigation hierarchy and the creation of a mosaic of complementary habitats which build on the sites existing green infrastructure which connect to the wider landscape.

Habitat's onsite were mapped and subject to habitat condition assessments to assign type and condition which formed the sites habitat BNG baseline. The DEFRA metric 3.1 was then used to quantify habitat and linear units. The sites retained, enhanced and created habitats were then calculated with an aspiration to reach 10% BNG for habitat and linear units. Through the application of the site's biodiversity strategy a total of 10.48% and 11.99% net gain for habitat and linear are predicted to be achieved respectively.

To facilitate delivery a CEMP: Biodiversity and LEMP will be produced which will detail habitat implementation and management. The CEMP: Biodiversity should describe how retained habitats will be protected during the construction phase, to ensure their condition is not negatively impacted. The LEMP should be prepared over a 30-year period with more detail provided for the 1-3 year implementation and 3-5 year maintenance period. The LEMP should also contain proposals for monitoring visits and frequency of visits and scope for remedial works / changes to management prescriptions.

Implementation of the recommendations within the CEMP: Biodiversity and LEMP should be managed by the site Biodiversity Champion who will be the lead to ensure compliance with all ecological strategies for the site.

To demonstrate delivery an audit report will be prepared to demonstrate compliance with this strategy and BNG good practice principles (Natural England, July 2021).

Contents

1.0	Introduction and Aims.....	1
2.0	Methods	6
3.0	Baseline Conditions	9
4.0	BNG Good Practice Principles for Development	10
5.0	Proposed Design.....	13
7.0	BNG Metric.....	16
8.0	Implementation, Construction, Management and Monitoring Plans.....	17
9.0	Conclusions	18
10.0	References.....	19

Appendices

Appendix 1 – Site location & Boundary Plan.....	20
Appendix 2 – Parameter Plan – Multi Functional Openspace (Drawing number:303 Rev D).....	21
Appendix 3 – UKHabs Baseline Plan.....	22
Appendix 4 – Condition Assessment Table	23
Appendix 5 – Proposed habitats post development.....	25
Appendix 6 – DEFRA Metric.....	26

1.0 Introduction and Aims

Purpose of this Report

- 1.1** Southern Ecological Solutions Ltd. (SES) was commissioned by This Land Development Ltd. to undertake a site visit to carry out a habitat condition assessment and produce a Biodiversity Net Gain (BNG) design stage report for Rayleigh Road, Thundersley (Central Ordnance Survey Grid Reference TQ 80368 89116) (the site). A plan showing the application boundary and survey area is provided in Appendix 1.
- 1.2** The habitat condition assessments were carried out by suitable qualified ecologists and arborists Molly Dailide, Gary Meadowcroft (arborist) and Andrew Pankhurst in 2021 and 2022.
- 1.3** The findings of the habitat condition assessment were used to feed into the Biodiversity Net Gain (BNG) calculations for the site to determine the baseline value of both non-linear (area) habitat features and linear (hedgerows) habitat features. Further calculations of the proposed development were further calculated based on the Parameter Plan – Multifunctional Open Space (Broadway Malyan Dwg no. 303 Rev G will update with final), which is presented in Appendix 2. These calculations have been used to determine the level of BNG change as a result of the development and to identify any necessary measures to offset any habitat ecological impacts.

Site Background and Description

- 1.4** The site is located to the east of Rayleigh Road, Hadleigh, Essex. It is approximately 27.89 ha in area and comprised seven grassland fields with associated boundary hedgerows and ditches, with small fragments of broadleaved woodland and scrub. There are 13 buildings on site, used for a mixture of agricultural, equine, fishing and industrial purposes. A fishing lake is present in the north of the site. The site is designated is bordered by residential development to the west and south-west, a business park to the north, and further areas of grassland and woodland within further green-belt land to the south-east and east. There were two access points from Daws Heath Road to the south, with the site bordering Rayleigh Road to the west and Stadium Way to the north.
- 1.5** Further details of the habitats onsite are provided in the Ecological Impact Assessment (SES, 2022).

Proposed Project Description

- 1.6** Significant measures to benefit biodiversity have been included within the design of the proposed scheme. Such measures will have a particular emphasis on the creation of a mosaic of interconnected multi-functional, semi natural green open spaces that benefit both people and wildlife. Strategic enhancement of the habitats within the application site will ultimately improve connectivity to the wider landscape and across the site in a way that will benefit wildlife as a whole.
- 1.7** The overall enhancement strategy for the site will focus on the creation or restoration of the following habitats to create an ecologically permeable built landscape:
- Woodland
 - Mixed Scrub

- Neutral Grassland
- Lake
- Hedgerows
- Traditional Orchard

Aims and Objectives

1.8 The aims of this report are to:

- Calculate the baseline conditions as biodiversity units
- Calculate changes to biodiversity units as a result of the proposed development
- Calculate proposed mitigation measures (as far as possible) and enhancement opportunities where appropriate to demonstrate a net gain for biodiversity

Planning Policy and Legislation

1.9 This BNG assessment has been compiled with reference to the following relevant nature conservation legislation, planning policy and the UK Biodiversity Framework from which the protection of sites, habitats and species is derived in England including:

- UK Government's 25 Year Environmental Plan (DEFRA, 2018);
- Biodiversity 2020: A Strategy for England's Wildlife and Ecosystem Services (DEFRA, 2011);
- National Planning Policy Framework (NPPF) (MHCLG, 2019);
- The Natural Environment and Rural Communities (NERC) Act (HMSO, 2006);

Local Policy – specific

1.10 The policies related to nature conservation within the Castle Point Borough Council (CPBC) Adopted Local Plan (CPBC, 1998) and the CPBC Local Plan (2018 which has now been withdrawn) related to biodiversity relevant to this assessment, and other selected policies which either concern the site specifically, or relevant designations.

Policy EC7 – Natural and semi-natural features in urban areas

Natural features, semi-natural features and open spaces within urban areas shall be retained and enhanced wherever possible in order to safeguard their physical, visual, recreational and wildlife value.

Policy EC14 – Creation of new wildlife habitats

The council will encourage proposals for further nature reserves. It will also promote the creation of new wildlife habitats in conjunction with development proposals. In considering planning applications, the council will take into account the potential for the creation of wildlife habitats, particularly where these would enhance and complement existing elements of nature conservation on adjoining land.

Policy EC22 – Retention of trees, woodland and hedgerows

In schemes for new development, existing trees, hedgerows and woods shall be retained wherever possible. Where development takes place, loss of existing tree cover and hedgerows shall be kept to a

minimum. All trees and shrubs to be retained after development shall be suitably protected throughout the duration of construction.

Policy EC23 – Tree and shrub planting

In order to improve the physical environment, encouragement will be given to the planting of native trees and shrubs in appropriate cases.

Policy LP HO 13 – Land east of Rayleigh Road, Hadleigh

1. Land East of Rayleigh Road, Hadleigh as identified on the Policies Map, is allocated for residential purposes, to deliver around 455 new homes by 2033.
2. It is expected that a masterplan approach to this site will be taken to ensure that the development is attractively designed, contributing to environmental quality, and that infrastructure is provided to support growth in this location. The masterplan must deliver the following:
 - a. Access arrangements for the site, which also address peak time congestion at nearby junctions;
 - b. An urban design framework using a mix of urban design approaches built around the Arcadia approach in areas located within the Historic Natural Landscape and in the vicinity of important landscape features, and the Boulevard and Major Entry Point approaches to the spine road through the site, to create an attractive green, parkland environment, integrated into the existing landscape and topography;
 - c. Respects and retains as far as possible the hedge and tree-lined boundaries established;
 - d. An approach to wildlife that is consistent with policy LP NE 8 and results in a net gain in biodiversity;
 - e. The provision of greenways through the site, linking to the existing network of green infrastructure;
 - f. An increase in public open space provision across the site consistent with the requirement of policy LP HS 3, delivering additional accessible natural green space and children's play equipment;
 - g. Surface water management on and adjacent to the site ensuring no increase in the risk of surface water flooding to the site or nearby properties; and
 - h. The provision of a multi-use community building on site.
3. Detailed design proposals for the site must have regard to the Council's Residential Design Guidance.
4. Access arrangements for the site, before the first 250 homes are occupied.
5. Public transport waiting facilities and services must be improved on Rayleigh Road and Daws Heath Road.

Policy LP NE 2 – The Daws Heath Historic Natural Landscape

1. The extent of the Daws Heath Historic Natural Landscape is identified on the Policies Map. Pre Publication Local Plan November 2018 223 Conserving and enhancing the natural environment.
2. Within this landscape area, proposals which seek to enhance the quality of the landscape and its historic or ecological assets, or seek to provide greater public enjoyment of the landscape and its features will be supported.

3. Proposals for development that may impact on the visual quality of the landscape, or the quality of historic or ecological assets in this landscape area will be permitted where it can be demonstrated that:
 - a. Harm to ecological assets will be avoided in accordance with policy LP NE 8;
 - b. A precautionary approach to the identification and protection of archaeological assets has been taken in accordance with policies LP HE 4 and LP HE 5;
 - c. Harm to the visual quality of the landscape will be minimised due to the scale, location and/or design of development;
 - d. Any residual harm to the quality of the landscape will be mitigated through the provision of landscaping, which should comprise native species and must be sufficiently mature to integrate effectively into the environment and provide effective mitigation within 2 years of the development occurring. Where possible landscaping should provide wildlife corridors and greenways ; and
 - e. All other relevant policies within this plan are complied with.

Policy LP NE 6 – Local Wildlife Sites

1. The extents of the Local Wildlife Sites and potential Local Wildlife Sites in Castle Point are identified on the Policies Map.
2. The Council seeks the conservation and enhancement of Local Wildlife Sites and will support proposals which ensure the active conservation and enhancement of biodiversity interest at these sites.
3. The Council will encourage proposals for the active conservation management and biodiversity enhancement of potential Local Wildlife Sites in order to meet the selection criteria for designation as a Local Wildlife Site at a future date.
4. Development proposals which would result in harm to either a Local Wildlife Site or a potential Local Wildlife Site will not normally be permitted unless the need for the development outweighs the harm to biodiversity. In such circumstances proposals must fulfil the requirements of parts 3 and 4 of policy LP NE 8.

Policy LP NE 8 – Determining Applications affecting Ecologically Sensitive and Designated Sites

5. Proposals which can demonstrate a resultant net gain in biodiversity will in principle be supported, subject to compliance with other relevant policies in this plan.
6. Proposals resulting in any adverse impacts to European and internationally designated sites biodiversity including Ramsar sites, Special Protection Areas, potential Special Protection Areas, Marine Conservation Zones, Sites of Special Scientific Interest, Ancient Woodland, Local Nature Reserves and Special Roadside Verges will not be permitted except in exceptional circumstances when there are imperative reasons of overriding public interest. In such circumstances, adverse impacts should be controlled through avoidance, on-site management and on-site mitigation. Where this cannot be achieved development proposals will be refused.
7. Proposals which may result in adverse impacts to other sites with biodiversity interest, including those sites with protected species, priority species and/or priority habitats, will only be supported if they can meet the following requirements:

- a. Firstly, the developer must demonstrate that impacts to biodiversity cannot be avoided through the location of development on an alternative site with less harmful impacts;
- b. Where an alternative site is not available, the development proposal should seek to avoid adverse impact to biodiversity by virtue of the design and layout of the development. The Council must be satisfied that all reasonable opportunities to avoid impact to biodiversity have been taken;
- c. Where it has not been possible to avoid all impacts to biodiversity, as required by a) and b), the development proposal should seek to apply management and mitigation techniques which retain and enhance biodiversity on site. The Council must be satisfied that all reasonable opportunities to secure on-site management and mitigation have been taken;
- d. Where it is likely that impacts to a protected species, or BAP species is not fully addressed through a), b) and c), species relocation within the site, or to a site nearby will be required to address the remaining impacts to that species. The Council must be satisfied that the relocation site will provide a long-term suitable habitat for the species in question. A management plan must be put in place to manage the relocation site as a suitable habitat for a period of at least 20 years; then
- e. As a last resort, if the impacts to biodiversity in terms of both quantity and quality have not been fully addressed through a), b), c) and d) off-site compensation which would result in a net gain in biodiversity will be required. A compensation site must be identified which has the potential to be broadly equivalent to that habitat being lost, and a management plan prepared. Arrangements must be put in place to deliver that plan over a period of at least 20 years.

Policy LP NE 9 – Protecting and Enhancing the Landscape and Landscape Features

1. All development proposals must contribute positively towards creating a visually attractive green environment.
2. Development proposals must seek to protect and integrate key natural and semi-natural features including:
 - a. Established field boundaries, hedgerows and tree lines;
 - b. Established trees with a high visual amenity value;
 - c. Established areas of woodland; and
 - d. Topographical features including ridge lines, watercourses, ditch systems and bunds.
3. Development proposals must be designed to have regard to the character of the landscape, and seek to avoid harm to the landscape as a result of adverse impacts on:
 - a. The degree of openness;
 - b. The degree of tranquillity;
 - c. The scale and nature of existing development; and
 - d. The amount and density of existing vegetative screening.
4. The Council will also have regard to the specific requirements of the relevant policy LP NE 2 to LP NE 4 when the development proposal is located within a designated Historic Natural Landscape.

- 1.11 As previously stated the Local Plan and its policies have now been withdrawn and those above are presented as they were prior to withdrawal.

2.0 **Methods**

General

- 2.1 BNG is an approach to development that leaves biodiversity in a better state than before, whereby the development attempts to achieve a positive net outcome for biodiversity on the site, post development. This assessment identifies opportunities for ecological enhancement at the site, aiming to provide a net gain for biodiversity, based upon enhancing the current ecological resource, and creating new habitat where habitat losses have occurred.

Data sources

- 2.2 Several data sources informed the BNG assessment:
- An extended Phase 1 Habitat Survey was undertaken 20 October 2020 following best practice guidelines (Joint Nature Conservation Committee (JNCC), 2010).
 - A habitat condition assessment was undertaken in June 2022 by ecologist Molly Dailide and Andrew Pankhurst in 2021 (see Section 2.3 for detailed methods).
 - Publicly available Open Source Natural England datasets for Habitats of Principal Importance (HPI), ancient woodland (classed as irreplaceable habitat), and statutory designated sites for nature conservation.
 - The Proposed Parameter Plan – Multifunctional Open Space (Broadway Malyan, 2022, ref 303 Rev G) was digitised into GIS for use in BNG calculations.

BNG Assessment

- 2.3 All non-linear habitat parcels and linear hedgerow section data was entered into the Biodiversity Metric 3.1 calculation tool (an Excel workbook), with the additional information needed to calculate the habitat units in the ecological baseline for the site. This information creates the numerical parameters by which the number of Biodiversity Units for non-linear and linear habitats are calculated. A brief explanation of these factors is provided below.

Area / length

- 2.4 The metric assesses linear habitats, such as watercourses or hedgerows separately from other habitat parcels. Linear habitats are measured in kilometres (km), non-linear habitats are measured in hectares (ha). Areas and lengths were all calculated using measurement tools within QGIS.

Distinctiveness

- 2.5 Each habitat in the UK Habitat Classification is automatically assigned a score for distinctiveness within the metric. Distinctiveness recognises the different characteristics of habitats in relation to their capacity for supporting species richness, their tendency to support species found rarely in other habitats, and the rarity of the habitat itself. **Table 1** shows the categories for distinctiveness, taken from the Biodiversity Metric 3.1: User Guide (Natural England, April 2022).

Table 1. Area habitat distinctiveness categories and multiplier scores (excluding intertidal habitats) (adapted

from Biodiversity Metric 3.1: User Guide (Natural England, April 2022)

Category	Score	Definition
Very high	8	<ul style="list-style-type: none"> • Priority Habitats as defined in Section 41 of the Natural Environment and Rural Communities (NERC) Act that are highly threatened, internationally scarce and require conservation action, e.g. blanket bog. • Small amount of remaining habitat with a high proportion unprotected by designation. • Endangered or Critical European red list habitats
High	6	<ul style="list-style-type: none"> • Priority Habitats as defined in Section 41 of the NERC Act requiring conservation action, e.g. lowland fens. • Remaining Priority Habitats not in very high distinctiveness band & other red list habitats.
Medium	4	<ul style="list-style-type: none"> • Semi-natural habitats not classed as a Priority Habitat but with significant wildlife benefit, e.g. mixed scrub. • One Priority Habitat (arable field margins).
Low	2	<ul style="list-style-type: none"> • Habitat of low biodiversity value e.g. temporary grass and clover ley. • Agricultural and Urban land of lower biodiversity value.
Very low	0	<ul style="list-style-type: none"> • Little or no biodiversity value e.g. hard standing or sealed surface. • Urban – artificial structures which are un-vegetated, sealed surfaces or built linear features of very low biodiversity value.

- 2.6** It should be noted that irreplaceable habitats (such as ancient woodland) are not adequately measured by the metric and will require separate consideration which must comply with existing national and local policy and legislation. Data relating to these can be entered into the metric, so as to give an indicative picture of the biodiversity value of the habitats present on a site, but this should be supported by bespoke advice.

Condition

- 2.7** The condition of each habitat is assessed separately using the methods set out in the Biodiversity Metric 3.1: User Guide (Natural England, April 2022). This approach details condition criteria for each habitat type, and then applies thresholds for how many of these criteria are met to establish the condition score of the habitat. This requires detailed assessment of the habitat prior to completing the metric. Habitats at the bottom end of distinctiveness do not have a specific approach to condition assessment and are instead given a standard condition score. Scores assigned to condition are given as Good = 3; Moderate = 2; Poor = 1; and Not Applicable = 1.

Strategic significance

- 2.8** This element is to assess the habitats on site in relation to the geographical location in which they are found. Information to determine the significance of a habitat within a specific landscape can be found in a variety of sources that include: local plans, local biodiversity records and National Character Areas. The strategic significance is based on three categories which equates to a different score, which are as follows: High = 1.15; Medium = 1.1 and Low = 1.

Risk factors

- 2.9** The metric includes two risk factor multipliers that reflect the difficulties in creating certain habitat types in a way that achieves significant biodiversity benefits. These are “Time to target condition” and “Difficulty of creation”. These recognise that different habitats attain degrees of maturity at different rates and that the successful creation of some habitats is not certain, due to various environmental and human factors.
- 2.10** Thus, the planned creation of a habitat that will take a substantial amount of time to reach target condition, such as woodland, or that is considered difficult to achieve, such as lowland fen, would equate to fewer Habitat Units than an existing area of the same habitat. The metric contains standard multipliers for each habitat class.

Application of the metric

- 2.11** The Parameter Plan (Broadway Malyan, 2022)(Appendix 2), which illustrates the footprint of proposed development parcels, amenities, and infrastructure provision, has been used to assess and quantify the loss of habitat, and calculate the areas of habitat to be retained. These were entered into the metric to provide a value for the non-linear habitat units and the linear hedgerow units to be lost as a result of the development.
- 2.12** This was then used to calculate the extent of each habitat type that is to be created and this information was entered into the Site Habitat Creation section of the tool, along with values for the equivalent parameters as described above, to give a post-intervention value for Habitat and Hedgerow Units.
- 2.13** A comparison of the baseline habitat and hedgerow unit figures and the post-intervention figures then provides a figure for percentage net change in Biodiversity Units, positive or negative.

Assumptions and Limitations

- 2.14** It is considered that the degree of accuracy based on the current plan is acceptable to be able to inform the likelihood that the site will result in a loss or gain of biodiversity value and the scale of that change. It should be noted that exact figures will only be available at the detailed planning stage.
- 2.15** Based on the above, it should be noted that at the current stage of planning, sufficient detail has not been made available to measure hedgerows that will be provided on site. As such, calculations made in the metric are prescriptive of what will be required to achieve a net gain for hedgerows (rather than descriptive of what will be delivered). A highly conservative assumption has been used (described in section 5.17) that is considered to be entirely deliverable in line with current development plans.
- 2.16** It should be borne in mind that the metric does not use species explicitly. Instead, it uses broad habitat categories as a proxy for the biodiversity ‘value’ of the species communities that make up different habitats. The metric does not affect the legal obligations associated with protected species and this is beyond the scope of metric.
- 2.17** The DEFRA Biodiversity Metric 3.1 has been used in this report to demonstrate BNG. It is a useful tool to help inform plans and decisions to benefit biodiversity. However, it is important to be aware of its limitations. For BNG to be used appropriately and to be successfully implemented (i.e. achieving a BNG), the Good Practice Principles for Development established by Baker et al. (2019) must be adhered

to. These principles have been developed by the Construction Industry Research and Information Association (CIRIA), the Chartered Institute for Ecology and Environmental Management (CIEEM) and the Institute of Environmental Management and Assessment (IEMA).

- 2.18** The metric does not override existing planning policy or legislation, including the mitigation hierarchy, which should always be considered as the metric is applied. The mitigation hierarchy states that action must first be taken to avoid any adverse impact to biodiversity, to mitigate (on site) any impacts that cannot be avoided and, only as a last resort, to compensate (off site) for any remaining impacts.
- 2.19** The outputs of the metric are not absolute values but, instead, they provide proxy for the relative biodiversity worth of the site before and after intervention. The quality and reliability of outputs will depend on the quality of the inputs. Like for like habitat or better should be the aim and one habitat should not be replaced with another where possible.
- 2.20** It is important to emphasise that, while the metric provides a useful tool to demonstrate biodiversity net gain, it does not remove the need for professional judgement by a suitably competent ecologist. Ecological functionality is important to underpin the assessment and the site's design should ultimately be based upon the Good Practice Principles. The metric should also not be a reason to miss opportunities to benefit key species through biodiversity net gain where they are not directly accounted for within the metric.

3.0 Baseline Conditions

- 3.1** In total, 13 habitat types were identified, mapped, classified and measured by area (hectares), and hedgerows and lines of trees were identified, classified, mapped and measured by length (kilometres) (calculations are available within a separate Biodiversity Metric 3.1 workbook). The habitats which were previously recorded in 2020 and those updated in this report were recorded in accordance with the JNCC phase 1 classification. These habitats were then updated to the meet the UK Habitat classification system (Butcher *et al*, 2020) which is compatible with the Biodiversity Metric in 2021/22. The baseline habitats on site are set out in Table 2 with the UK Habs map and Phase1 map found in Appendix 3.

Table 2. UK Habitat classification system habitats recorded onsite

UK Habitat Classification
Bracken
Modified Grassland
Other Neutral Grassland
Bramble Scrub
Mixed Scrub
Ornamental Lake or Pond
Developed land, Sealed Surface
Vacant/ Derelict Land/ Bareground
Other Broadleaved Woodland
Lowland mixed deciduous woodland
Ruderal/ Ephemeral
Artificial unvegetated , unsealed surface
Line of Trees
Native Hedgerows and Trees

3.2 Baseline habitats on site were valued at 111.57 habitat units and 20.56 linear units. A full breakdown of habitat units is provided in the accompanying 3.1 BNG metric. Tables detailing habitat condition assessment are provided in Appendix 4.

4.0 BNG Good Practice Principles for Development

4.1 The metric is a tool that can be used to help inform plans and decisions. It is important, however, to be aware of its limitations and to conduct assessments in accordance with the following principles and rules. The key principles and rules (as set out below) have therefore been considered as part of this assessment with justification provided as to how each BNG principle has been applied.

4.2 Table 3 outlines the BNG principles and provides a statement of how these were each considered during the assessment.

Table 3. BNG Principles (amended from Biodiversity Metric 3.1: User Guide (Natural England, April 2022))

Principle No.	Description	Statement of consideration
1	The metric does not change the protection afforded to biodiversity.	The landscaping masterplan designs have sought to retain the woodlands and boundary features and in addition enhance and buffer these features from the future development. This will retain the key functionality of the site and habitats that support the protected species as identified through the ecological surveys.
2	Biodiversity metric calculations can inform decision-making where application of the mitigation hierarchy and good practice principles conclude that compensation for habitat losses is justified.	<p>The application of the hierarchy has been applied to avoid, mostly, the key features, which includes features of principle importance (hedgerows and woodlands). Losses of the hedgerow network are based on the provision of access onto site or where appropriate will be replaced. With the addition of buffering, enhancement and new tree planting its considered that these features are adequately compensated.</p> <p>The majority of grassland onsite that will be lost is habitat type that is widespread across the southeast of England. The landscape proposal provides onsite compensation with the addition of newly created wildflower grasslands.</p>
3	The metric's biodiversity units are only a proxy for biodiversity and should be treated as relative values.	Every effort has been made to record accurately and map to a scale that is appropriate for the site. This is further supported by undertaking habitat condition assessments to detail the decision making process. Based on this approach its considered that although the values are only relative the best outcome for each habitat onsite has been calculated.

Principle No.	Description	Statement of consideration
4	The metric focuses on typical habitats and widespread species; important or protected habitats and features should be given broader consideration.	<p>Adequate information has been recorded onsite to determine the associated 'typical' habitats onsite.</p> <p>There were no designated sites onsite that will be impacted by these works but offsite non statutory sites have been considered in the design with complementary habitats to connect to the wider landscape in addition to mitigating potential new impact pathways e.g. recreational pressure through strategic placement of habitats .</p> <p>There were no rare or locally important species recorded onsite, although the features themselves and their species compositions that are to be retained should be considered in any enhancements and habitat creation work during any onsite landscaping. The ecological impact assessment sets out the principles which reflects this approach and will be in-keeping with the local environment.</p>
5	The metric design aims to encourage enhancement, not transformation, of the natural environment.	<p>Woodland and hedgerows onsite are to be retained where possible and to be enhanced (where possible). This will therefore be retaining in the first instance a semi-improved habitat that provides key ecological connectivity across the landscape which will be further enhanced through new planting, buffering and sympathetic management.</p> <p>The loss of the grassland will be replaced, where practical, onsite with grassland of the same or higher distinctiveness value .</p> <p>Overall, the landscape designs reflect the current landscape features onsite, which will be enhanced.</p>
6	The metric is designed to inform decisions, not to override expert opinion.	<p>The ecological principles – such as the mitigation hierarchy will be applied though out the stages of development from design – implementation and operational phases.</p> <p>Documents such as Construction and Environmental Management Plans (CEMP) and Landscape and Ecological Management Plans (LEMP) will be produced that will detail long-term management objectives, management prescriptions, timetable and monitoring.</p>

Principle No.	Description	Statement of consideration
7	Compensation habitats should seek, where practical, to be local to the impact.	<p>The parameter plan provides details on how the compensation for the loss of grassland and hedgerows are to be onsite in the first instance, thus being local to the impact. For example the attenuation features are designed to both buffer the boundary features onsite but in addition provide opportunities for the creation of Wildflower grassland. These compensation features are designed to be 'joined up' across the site to create a functioning network of ecological corridors, to provide features to support the local wildlife.</p> <p>It's considered that the enhancement and buffering of the boundaries will create 'more,' 'bigger' and 'better' functioning habitat. .</p>
8	The metric does not enforce a mandatory minimum 1:1 habitat size ratio for losses and compensation but consideration should be given to maintaining habitat extent and habitat parcels of sufficient size for ecological function.	<p>The proposed development will lead into an overall loss of habitat area. The compensation of the grassland loss with wildflower grassland as part of the attenuation features onsite provide a joined-up network of scrub and woodland, providing habitats of a size to retain the necessary functionality of a grassland and in a condition to support greater diversity of botanical species.</p>

5.0 Proposed Design

Impact Assessment

- 5.1** The DEFRA 3.1 metric calculator was run based off the information provided to assess the post-development biodiversity net gain calculations.
- 5.2** Approximately 4.84ha and 6.16ha of baseline habitat will be retained or enhanced respectively, leaving 17.86ha to be created in line with the masterplan layout. A total of 1.87km and 0.08km of baseline hedgerow will be retained or enhanced respectively.

Habitat Creation/Enhancement

- 5.3** The strategy for the site is to retain and enhance a robust green network around the perimeter of the site and through the middle, bearing in mind ecological and landscape constraints.
- 5.4** Proposed habitat types included in the calculator are detailed below, including proposed habitat conditions. Mechanisms to secure delivery are discussed in more detail in Section 7.

Other Neutral Grassland

- 5.5** A total of 2.465ha other neutral grassland will be created in line with current proposals. For the purposes of the calculation, it is assumed that the condition of the created grasslands will be 'Moderate'. A precautionary approach has been used for target condition as it is considered that 'Good' could be achieved. Notwithstanding a 'Moderate' condition will be targeted which will require a management plan (LEMP), with appropriate monitoring and mechanisms for the remediation of poor performance.

SuDS

- 5.6** As part of the development there will be a sustainable urban drainage system (SUDs) consisting of areas of varied topography and incorporating a mix of swales and attenuation basins. The SUDS system will be designed to be mostly dry throughout the season and sown with a wildflower mix appropriate for the soil conditions such as Emorsgate EM8 or similar. Based on the SUDS design its considered appropriate to use the classification of 'other neutral grassland' and will form part of the rest of the 'other neutral grassland' in 'Moderate' condition

Traditional Orchard

- 5.7** A traditional orchard (0.01ha) will be created which will target a 'Moderate' condition score due to the degree of difficulty creating this habitat and the time to target condition stipulations.

Mixed Scrub

- 5.8** Species rich mixed scrub will be created totaling 1.1648ha. This habitat will connect with grassland and woodland habitats creating a habitat mosaic. It is considered that 'Good' condition could be achieved through appropriate management via a LEMP but a precautionary approach has been applied and as such a moderate condition has been applied.

Other Woodland; Broadleaved

- 5.9** Approximately 0.26ha and 0.06ha of other broadleaved woodland will be enhanced from poor-moderate and from moderate-fairly good respectively. The LEMP and Woodland Management Plan will target a good condition score, but 'fairly good' has been selected in the metric to ensure a robust assessment.

Other Woodland; Mixed

- 5.10** New woodland will be planted to aid connectivity through the site and facilitate a habitat mosaic with grassland and scrub. A total of 0.0657ha will be created targeting a 'Moderate' condition score. This woodland will be managed via a LEMP and or Woodland Management Plan

Lowland Mixed Deciduous Woodland

- 5.11** Approximately 0.17ha of lowland mixed deciduous woodland will be enhanced from moderate to fairly good condition. The LEMP and Woodland Management Plan will target a good condition score, but 'fairly good' has been selected in the metric to ensure a robust assessment.

Allotments

- 5.12** A total of 0.4209ha of allotment will be created within the site targeting a 'Moderate' condition score.

Urban trees

- 5.13** The calculations are based upon the planting a mix of small and medium urban trees within the development and using the Urban Tree Helper tool to calculate the areas which amounts to c.3.94 ha. Given the time to condition of 30 years it is considered that with management the trees would achieve a moderate condition.

Vegetated Gardens

- 5.14** Vegetated gardens are an unknown and will be under the management of private householders. The management of these spaces will, overtime, vary with some negatively impacted whilst others will likely be enhanced through planting. Vegetated gardens require no condition assessment and are 'Low' distinctiveness habitat.

Modified Grassland

- 5.15** Areas of modified grassland will be created for formal recreation. Therefore, a target condition of 'Poor' has been assigned

Summary of Non-linear Habitats

- 5.16** The accompanying 3.1 metric provides details for the post-intervention biodiversity net gain values for non-linear habitat units including consideration for factors including distinctiveness, condition, and strategic significance. The created non-linear habitat units post development are projected to be 46.68

which, taken together with retained and enhanced habitats, provides a post-development valuation of 123.27 units.

Hedgerows

- 5.17** The proposed parameter plan will lead to a network of native hedgerows to be enhanced, created and managed across the site. Approximately 0.45km of native hedgerow will be provided at site boundaries in the north and south, associated with public greenspace. At the current stage of planning, sufficient detail has not been made available to measure the hedgerows that will be provided alongside housing. As such, calculations made in the metric are prescriptive of what will be required to achieve a net gain for hedgerows (rather than descriptive of what will be delivered).
- 5.18** The current metric prescribes delivery of 0.2km ornamental non-native in addition to the native hedgerow that will be delivered. Given the size of the site, this assumption/prescription is considered to be highly conservative and entirely deliverable in line with the current size of the development footprint. A management plan (LEMP and CEMP) will be established to ensure all retained native hedgerows on site are buffered from damaged during construction and managed to a favourable condition.
- 5.19** Following the above, the accompanying metric shows that the created linear habitat units post development is projected to be 1.53 which, taken together with the retained habitats, provides a post-development valuation of 6.88 hedgerow units.

6.0 **BNG Metric**

7.1 With the inclusion of all of the measures set out above, the metric calculation currently indicates a net change of 11.69 non-linear habitat units, a net gain of 10.48% and a net change of 2.46 linear habitat units, a net gain of 11.99%. The DEFRA BNG 3.1 Metric is provided in Appendix 6 and summary provided in Table 4 below.

Table 4. Summary of the Biodiversity net gain results

On-site baseline	<i>Habitat units</i>	111.57
	<i>Hedgerow units</i>	20.56
	<i>River units</i>	0.00
On-site post-intervention (Including habitat retention, creation & enhancement)	<i>Habitat units</i>	123.27
	<i>Hedgerow units</i>	23.02
	<i>River units</i>	0.00
On-site net % change (Including habitat retention, creation & enhancement)	<i>Habitat units</i>	10.48%
	<i>Hedgerow units</i>	11.99%
	<i>River units</i>	0.00%
Off-site baseline	<i>Habitat units</i>	0.00
	<i>Hedgerow units</i>	0.00
	<i>River units</i>	0.00
Off-site post-intervention (Including habitat retention, creation & enhancement)	<i>Habitat units</i>	0.00
	<i>Hedgerow units</i>	0.00
	<i>River units</i>	0.00
Total net unit change (including all on-site & off-site habitat retention, creation & enhancement)	<i>Habitat units</i>	11.69
	<i>Hedgerow units</i>	2.46
	<i>River units</i>	0.00
Total on-site net % change plus off-site surplus (including all on-site & off-site habitat retention, creation & enhancement)	<i>Habitat units</i>	10.48%
	<i>Hedgerow units</i>	11.99%
	<i>River units</i>	0.00%
Trading rules Satisfied?	Yes ✓	

7.0 Implementation, Construction, Management and Monitoring Plans

- 8.1** It is recommended that a CEMP: Biodiversity and LEMP will be produced which will detail habitat implementation and management. The CEMP: Biodiversity should describe how retained habitats will be protected during the construction phase, to ensure their condition is not negatively impacted. The LEMP should be prepared over a 30-year period with more detail provided for the 1-3 year implementation and 3-5 year maintenance period. The LEMP should also contain proposals for monitoring visits and frequency of visits and scope for remedial works / changes to management prescriptions. All drawings and maps will be produced using QGIS to allow accurate monitoring.
- 8.2** Implementation of the recommendations within the CEMP: Biodiversity and LEMP should be managed by the site Biodiversity Champion who will be the lead to ensure compliance with all ecological strategies for the site.
- 8.3** The audit report should include information in the “as built” metric compared to the original baseline plans and the “as built” habitat plan. Where the “as built” habitat plan differs from the original designs, more detailed information may be required, to ensure transparency about what has been delivered. Where differences occur, a copy of the same metric version, e.g. a completed workbook including the full calculations that lead to the final biodiversity unit scores, should be submitted. Summary results of metric calculations would not be sufficient. Where appropriate, detailed justifications for the choice of habitat types, distinctiveness and condition should be added to the comments column or provided separately in a report.
- 8.4** The audit report should also demonstrate compliance with the BNG good practice principles (Natural England, July 2021) (section 4.0).

8.0 **Conclusions**

- 9.1** The 3.1 metric has demonstrated that the site at Rayleigh Road, Hadleigh can deliver a net gain of c.10.48% for habitats and c.11.99% for hedgerows. Some measures included are prescriptive rather than descriptive (hedgerows/urban trees), and it is considered that these measures are wholly achievable within the design scheme.
- 9.2** Currently, based on the parameter plan proposals all appropriate measures have been considered in accordance with BNG Good Practice Principles for Development.
- 9.3** To ensure the delivery of these ecological features there will be a requirement for an appropriate CEMP and LEMP to be in place from design to the operational phase of the development, which should be delivered under an appropriate planning condition. It is considered that if implemented, the site can deliver a BNG gain and adhere to both local and national current planning policy.

9.0 **References**

Baker et al. (2019) Biodiversity net gain. Good practise principles for development *A practical guide*. CIRIA London

Broadway Malyan (2021) Parameter Plan Multi Functional Open Space Rev G dwg no. 303.

Butcher B, Edmonds R, Norton L and Treweek J (2020). The Uk Habitat Classification User Manual Version 1.1 at <http://www.ukhab.org/>

Defra (2018), *25 Year Environment Plan*, HM Government.

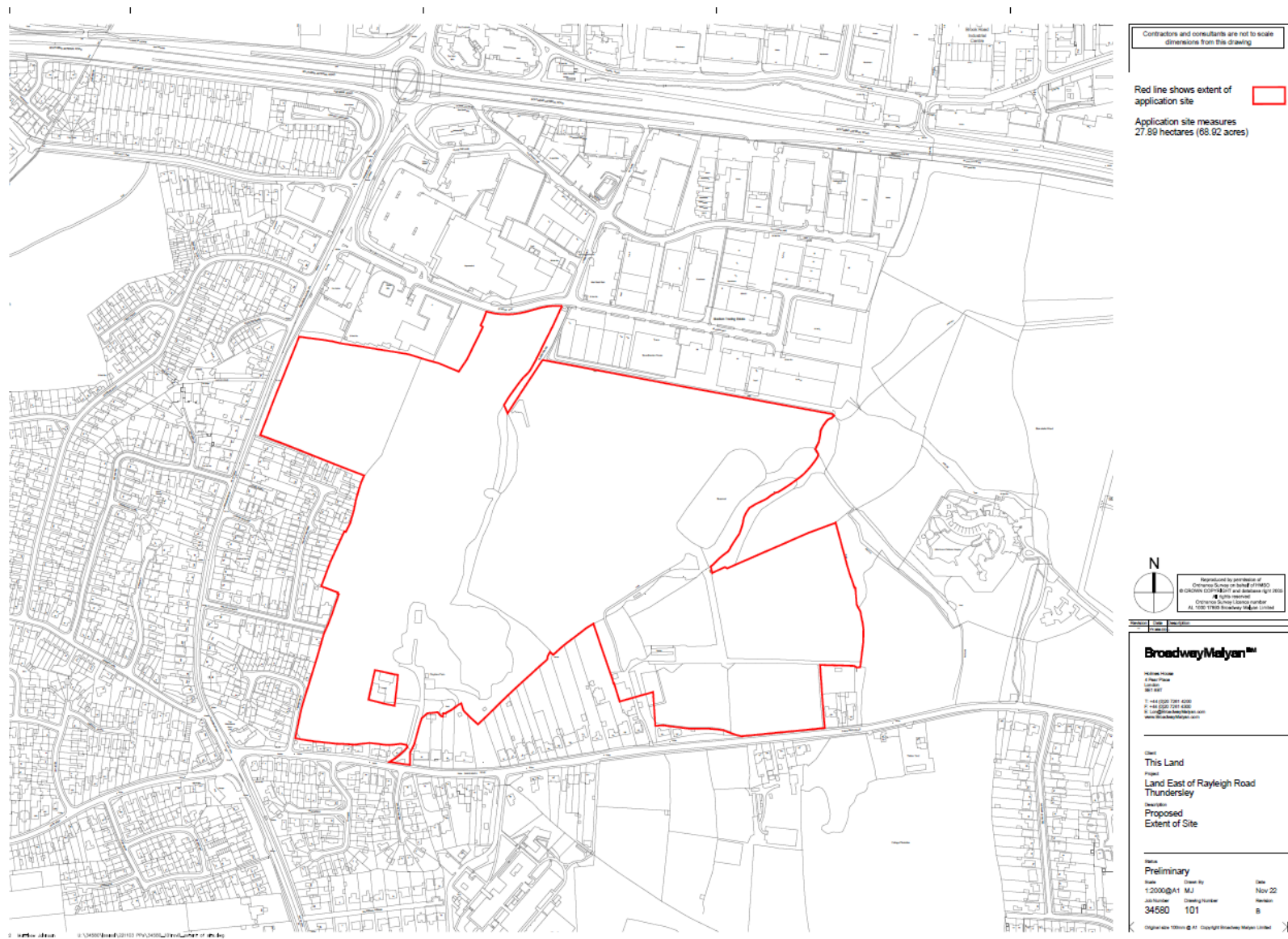
Ministry of Housing, Communities and Local Government (MHCLG) (2021) National Planning Policy Framework. [Online]. Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

Castle Point Borough Council, 2018. Castle Point Local Plan (now withdrawn)

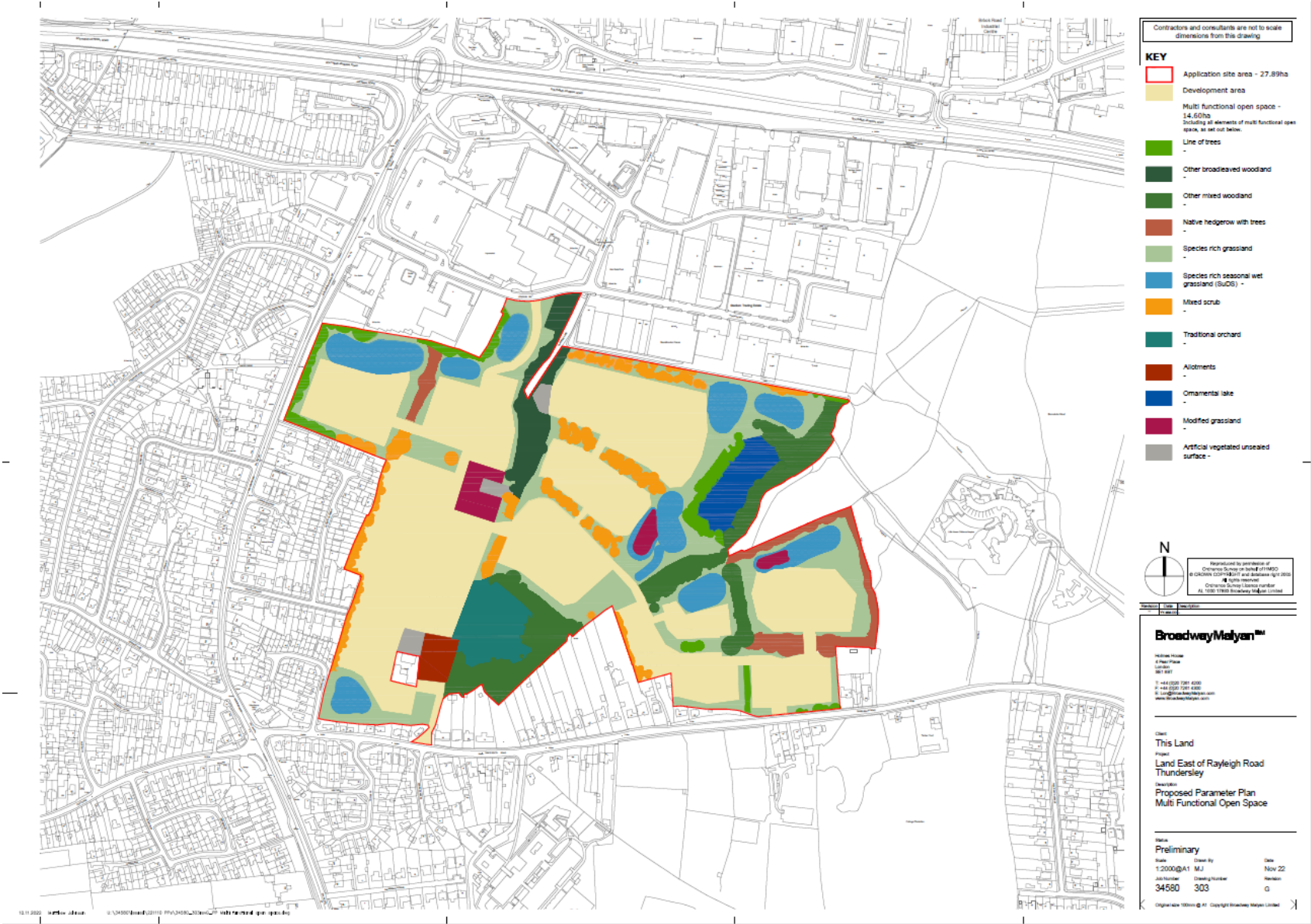
SES (2023), Ecological Impact Assessment: Rayleigh Road, Thundersley. SES: Unpublished.

STEPHEN PANKS A , NICK WHITE A , AMANDA NEWSOME A , JACK POTTER A , MATT HEYDON A , EDWARD MAYHEW A , MARIA ALVAREZ A , TRUDY RUSSELL A , SARAH J. SCOTT B , MAX HEAVER C , SARAH H. SCOTT C , JO TREWEEK D , BILL BUTCHER E and DAVE STONE A 2022. Biodiversity metric 3.1: Auditing and accounting for biodiversity – User Guide. Natural England.

Appendix 1 – Site location & Boundary Plan



Appendix 2 – Parameter Plan – Multi Functional Open Space (Drawing number:303 Rev G)- to be added



Appendix 3 – UKHabs Baseline Plan



Appendix 4 – Condition Assessment Table

Habitats

Habitat Parcel	Corresponding Condition Sheet	Condition Criteria													Score
		1	2	3	4	5	6	7	8	9	10	11	12	13	
F1	Low distinctiveness grassland	F	F	P	P	F	P	P							Poor
F2	Low distinctiveness grassland	F	F	P	P	F	P	P							Poor
F3	Low distinctiveness grassland	F	F	P	P	F	P	P							Poor
F4	Medium distinctiveness grassland	P	F	P	P	F									Moderate
F5	Medium distinctiveness grassland														Moderate
F6	Medium distinctiveness grassland	P	F	P	P	F									Moderate
F7	Medium distinctiveness grassland														Moderate
G1	Medium distinctiveness grassland	F	F	P	P	P									Poor
DS1	Scrub	F	F	P	P	F									Poor
DS2	Scrub	P	P	F	F	F									Poor
DS6	Scrub	P	P	P	P	P									Good
DS7	Scrub	P	F	P	F	F									Poor
Pond	Pond	P	F	P	P	P	P	F	F	P					Moderate
TR1	Urban	F	F	P											Poor
BG1	Urban	F	F	P											Poor
W1	Woodland	2	3	3	2	3	3	1	3	1	2	1	1	2	Moderate
W2	Woodland	3	3	3	4	3	2	1	3	2	2	1	1	2	Moderate
W2a	Woodland	1	3	3	1	3	2	1	3	1	1	1	2	3	Poor
W3	Woodland	3	3	3	3	3	3	2	3	2	3	3	1	2	Good
W4	Woodland	1	3	3	2	3	3	1	3	1	2	1	1	3	Moderate
W5	Woodland	1	3	3	2	3	3	1	3	1	2	1	1	3	Moderate
L1	Line of trees	P	P	P	F	P									Moderate
L2	Line of trees	P	F	P	F	P									Moderate
L3	Line of trees	P	P	P	P	P									Good
L4	Line of trees	P	P	P	P	P									Good
L5	Line of trees	P	P	P	F	P									Moderate
L6	Line of trees	P	F	P	F	P									Moderate
L7	Line of trees	P	P	F	F	F									Poor
L8	Line of trees	P	P	F	F	F									Poor
L9	Line of trees	P	P	P	F	F									Moderate
L10	Line of trees	P	P	P	P	P									Good

Hedgerows

Hedgerow	Criteria										Score
	A1	A2	B1	B2	C1	C2	D1	D2	E1	E2	
H1	P	P	F	P	P	F	P	P	P	P	Good
H2	P	F	F	P	P	P	P	F	N/A	N/A	Moderate
H3	P	P	F	P	P	F	P	P	P	F	Good
H4	P	F	F	P	P	P	P	F	N/A	N/A	Moderate
H5	P	F	F	P	P	F	P	F	N/A	N/A	Moderate
H6	P	P	F	P	P	F	P	F	P	P	Good
H7	P	P	P	P	P	P	P	P	N/A	N/A	Good
H8	P	P	P	P	P	P	P	P	N/A	N/A	Good

Appendix 5 – Proposed Habitats Post Development



Appendix 6 – DEFRA Metric 3.1

Appended separately.