Biodiversity Net Gain Design Stage Report

Land to the south of Henham Road that includes both the Site and Off-site

On Behalf of:
Countryside Properties

August 2022

[redacted]

Ecology, Countryside Management
Professional Service ● Pragmatic Solutions
phone: 01268 711021 email: team@ses-eco.co.uk website: [redacted]
Address: The Sudbury Stables, Sudbury Road, Downham, Essex, CM11 1LB

SES Quality Management

Project	Land to the south of Henham Road that includes both the Site and Off-site
Project Number	J001769
Report title	Biodiversity Net Gain Design Stage Report
Revision Number	RevD

Revision	Status	Date	Author(s)	Technical review by	Quality review by
B	Final	4 August 2022	James Simpson BSc (Hons) MSc MCIEEM CEcol	Sean Crossland CEcol MCIEEM	Sean Crossland CEcol MCIEEM
C	Final	8 August 2022	James Simpson BSc (Hons) MSc MCIEEM CEcol	Sean Crossland CEcol MCIEEM	Sean Crossland CEcol MCIEEM
D	Final	12 August 2022	James Simpson BSc (Hons) MSc MCIEEM CEcol	Sean Crossland CEcol MCIEEM	Sean Crossland CEcol MCIEEM
E	Final	15 August 2022	James Simpson BSc (Hons) MSc MCIEEM CEcol	Sean Crossland CEcol MCIEEM	Sean Crossland CEcol MCIEEM

Disclaimer

Executive summary

1. This Biodiversity Net Gain (BNG) Design Stage Report incorporates the findings and recommendations of a habitat condition assessment surveys carried out on the site itself which included a field south of Henham Road, Elsenham, Essex and an area off-site located to the east of the site. The surveys were undertaken to inform a planning application for residential-led development of the site and, based on the Henham Road proposal scheme design plan, the expectations of delivering BNG.

2. The site covered 5.3ha made up of a grass pasture field grazed by sheep and cattle. In addition, the site included a line of trees and hedgerows which were predominantly along the borders of the site. The off-site area covered 3.45 hectares and consisted of three small fields lined by a mix of hedgerows, a line of trees and a ditch. The Stanstead Brook ran to the south of field 3 and divided fields 1 and 2. A small Alder dominated woodland was located within field 2.

3. A UK Habitats Classification Survey was carried of the site on 30th March 2022 and a later survey of the off-site fields was undertaken on 18th July 2022. In addition, the condition of each of the habitats on and off-site site were assessed to provide sufficient information for the baseline of the site habitats to be assessed within the Biodiversity Metric 3.1 calculator.

4. Based on the current calculations the difference between the habitat baseline for the site and off-site and the post development, which incorporates both habitat creation and enhancement, shows a biodiversity net gain of 21.12% for non-linear area habitat features and 190.27% net gain for hedgerows.

Contents

Appendices

1.0 Introduction and Aims

Purpose of this Report

1.1 Southern Ecological Solutions Ltd. (SES) was commissioned by Countryside Properties to undertake a site visit to carry out a UKHab survey and habitat condition assessment to feed into the production of a Biodiversity Net Gain (BNG) Design Stage Report for Henham Road, Elsenham, Essex. The survey covered two areas: the site itself (the site), which is centered on TL 53985 26276 and land to the east (the off-site), which is centered on TL 54364 26462. A plan showing the application boundary of the two areas is provided in Appendix 1.

1.2 The UKHabs survey and habitat condition assessment was carried out by James Simpson BSc (Hons) MSc MCIEEM CEcol on two separate days. The site was surveyed on 30th March 2022 and a later survey of the off-site fields was carried out on 18th July 2022. The conditions were assessed against the Biodiversity Metric 3.1 habitat condition assessment sheets.

1.3 The findings of the UKHabs and habitat condition assessment were used to feed into the Biodiversity Net Gain (BNG) Matrix 3.1 calculator for both the site and off-site to determine the baseline value of both non-linear (area) habitat features and linear habitat features. Further calculations of the proposed development were further calculated based on the proposed development for the site, 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 south east edge of the village of Elsenham, Essex, to the south of Henham road, which runs along the sites northern boundary. The site consisted of a single grass pasture approximately 5.3ha in extent, a full description of the field is presented in in the Henham Condition Assessment Field to the south of Henham Road report (SES 2022).

1.5 The off-site area is located just 75m to the east of the site. The off-site comprised of three small grass fields, a small broadleaved Alder *Alnus glutinosa* woodland. Linear features around the off-site included a few hedgerows, line of trees, a ditch and the Stanstead Brook bisected fields 1 and 2 and ran along the border of field 3. Brief descriptions of each of the habitat types is presented below, with their associated condition score. A UKHabs map of the off-site area is shown on Appendix 3 and photos illustrating the habitats are in Appendix 4.

Off-site habitat descriptions

Field 1

1.6 Field 1 – is a part of long narrow field that lies to the north of the off-site area (Photo 1). The field at the time of survey had recently been mown leaving a very short sward of around 3 cm across the entire field. Damage of the grass sward was prevalent but the most notable damage was an area that had been fenced off along the northern boundary which has led to localised poaching. The field was dominated by grasses which was mainly a mix between perennial rye-grass *Lolium perenne* and Creeping Bent *Agrostis stolonifera.* Forbs tended to be rare to occasional within the sward and

included Creeping Buttercup *Ranunculus repens,* Dandelion *Taraxacum* sp.*,* Common Chickweed *Stellaria media,* Common mouse-ear *Cerastium fontanum* and Common Ragwort *Senecio jacobaea*

1.7 Field 1 was classified as g4 – Modified Grassland, a habitat of low distinctiveness. Based on the condition criteria for low distinctiveness grassland the field passed 3 of 7 criteria and failed the essential criterion 1, which gives an overall condition score of 'poor.' The grassland failed on the number of species m^2, sward height, physical damage and cover of bare ground.

Field 2

1.8 Field 2 was the eastern most field which located on slope with woodland and scrub bordering the boundaries of the field (Photo 2) and a small section of wet woodland within the field. Stanstead Brook ran along its western boundary. The field was dominated by grasses, with an average sward height of 17cm, grasses included a mix of Perennial Rye-grass, Creeping Bent, Yorkshire Fog *Holcus lanatus,* Rough Meadow-grass *Poa trivialis* and Smaller Cat's-tail *Phleum bertolonii.* The most widespread fobs included Creeping Buttercup and Common Mouse-ear, other forbs tended to occur rarely and included Meadow Buttercup *Ranunculus acris* and Selfheal *Prunella vulgaris.* Sub-optimal forbs also occurred throughout the sward but again mainly rarely that included Broad-leaved Dock *Rumex obtusifolius*, Spear Thistle *Cirsium vulgare* and Creeping Thistle *Cirsium arvense.* Towards the bottom of the slope and closer to the stream a few species more indicative of wetter conditions occurred that included Floating Sweet-grass *Glyceria fluitans* and the rushes that included Hard Rush *Juncus inflexus* and Jointed Rush *Juncus articulatus.*

1.9 Field 2 was classified as UKHabs classification g3c – other neutral grassland, a habitat of medium distinctiveness. Based on the condition criteria for medium to high distinctiveness grassland the field passed 2 of 5 criteria, which gives the field a condition score of 'poor.' The field failed on not closely representing the characteristics of the habitat type, varied sward height and cover of bare ground.

Field 3

1.10 Field 3 is a long linear field, which lead to the closest point to the site at its western end (Photo 3). The field is bordered along its southern edge by the Stanstead Brook and woodland along the western boundary. The field was mostly grass dominated, with an average sward height of 15cm with Perennial Ry-grass making up about 40% and higher through the centre of the field, other grasses that were frequent to abundant included Yorkshire-fog *Hoclus lanatus,* Creeping Bent, Smaller Cat's-tail, other grasses occurring rarely to occasional included Meadow Barley *Hordeum secalinum*, Rough Meadow-grass *Poa trivialis*, common bent *Agrostis capillaris* and Cock's-foot *Dactylis glomerata*. Forbs occurred sporadically throughout and included Creeping Buttercup, which was abundant, frequent Common Ragwort *Senecio jacobaea,* occasional Common mouse-ear and Meadow Buttercup and rarely occurring Red Clover *Trifolium pratense,* Creeping Cinquefoil *Potentilla reptans.* Jointed rush and hariy sedge were present but only rarely. Sub optimal species occurred occasionally throughout the sward that included Spear Thistle, Curled Dock *Rumex crispus* and Greater Plantain *Plantago major.*

1.11 Field 3 was classified as UKHabs classification g3c – other neutral grassland, a habitat of medium distinctiveness. Based on the condition criteria for medium to high distinctiveness grassland the field passed 2 of 5 criteria, which gives the field a condition score of 'poor.' The field failed on not closely representing the characteristics of the habitat type, varied sward height and cover of bare ground.

Wet Woodland

1.12 Within Field 2 and running along a section of Stanstead Brook was a small section of broadleaved woodland which was dominated by Alde ({Photo 4). Other woody species were all along the brook and included Sycamore *Acer pseudoplatanus* Hazel *Corylus avellana* and Elder *Sambucus nigra.* Beneath the Alders there was no scrub layer and the ground flora was dominated by Yorkshire Fog with frequent occurring Common Nettle *Utica Dioica,* The ground conditions were generally quite dry. The section of woodland along the brook had a range of woodland flora species present that included False-brome *Brachypodium sylvaticum,* Pendulus Sedge *Carex pendula,* Remote Sedge *Carex remota,* Violet *sp. Viola sp.,* Enchanter's-nightshade *Circaea lutetiana,* Dog's Mercury *Mercurialis perennis* and Hairy Brome *Bromopsis ramose.*

1.13 For woodland there are 13 criteria of which are divided into three: Good (3 points); Moderate (2 points); and Poor (1 point), the total across the 13 gives the condition assessment score, which are based on:

- Good - Total score >32 (33 to 39);
- Moderate - Total score 26 to 32; or
- Poor - Total score <26 (13 to 25).

1.14 In total the score given for the woodland was 23 and therefore the woodland is considered to be in Poor condition. The woodland scored a low on a number of criteria that included a lack structure, browsing damage, low number of native species, woodland regeneration, presence of veteran trees and deadwood.

Linear features

Hedgerows

1.15 In total there were five hedgerows numbered H2 to H6[1] (Photos 5-9), which occurred around the off-site. The hedgerow network was fragmented but connected up via woodland and lines of trees that generally retained a continuous network. The hedgerows ranged from species rich (H2) to hedgerows with trees (H3) to native hedges associated with a ditch (H4 to H6), albeit in places the ditches had become quite shallow.

1.16 For hedgerows there are eight attributes and additional two attributes for hedgerows with trees, for which the scores are based on:

Condition categories for hedgerows without trees:

- Good – No more that 2 failures in total; and no more than one in any functional group.
- Moderate – No more than 4 failures; and does not fail both attributes in more than one functional group.
- Poor – Fails a total of more than 4 attributes; or fails both attributes in more than one functional group.

[1] H1 was a hedgerow along the boundary of the site with Henham Road, which was removed from the off-site piece of land

Condition categories for hedgerows with trees:

- Good – No more that 2 failures in total; and no more than one in any functional group.
- Moderate – No more than 5 failures; and does not fail both attributes in more than one functional group.
- Poor – Fails a total of more than 5 attributes; or fails both attributes in more than one functional group.

1.17 All the hedgerows were considered to be good condition with only criteria being failed included gaps either at the base of the hedgerow or canopy gaps along the hedgerow.

Line of trees

1.18 There was a short line of three mature Oak *Quercus robur* than ran along the northern boundary of field 3 (Photo 10). The trees were mature with overlapping canopies and a dry shallow ditch running along its length.

1.19 Line of trees was classified as UKHabs classification w1g6 – Line of Tress and further identified based on the size of trees present as Ecologically Valuable, a habitat of medium distinctiveness. Based on the condition criteria for line of trees the habitat passed 5 of 5 criteria, which equates to a score of 'good.'

Ditch

1.20 There was a ditch which ran between field 1 and 3 which lead into the Stanstead Brook (Photo 11). The ditch was about 1m wide to 0.5m deep. The ditch was dominated by Fool's Water-cress *Apium nodiflorum* with occasional Float grass. Sub-optimal species of Spear thistle and Common Nettle occurred occasionally and scattered Hawthorn *Crataegus monogyna* occurred along the bank. A section was culverted to allow vehicle access between the fields.

1.21 The condition assessment for ditches contains 8 criteria. The ditched passed 5 of the 8 and failed 3 that included a lack of diversity of emergent vegetation, the impact of the culvert and lack of a maintained water level. Overall, the ditch was scored as 'poor.'

Condition assessment limitations

1.22 The condition assessment for the site was undertaken in late March, which is a sub-optimal time of year for botanical surveys and the off-site was undertaken in July which is considered a more optimal time of year. Species were identified and where necessary cross referenced against keys using (Rose et al, 2006; Poland et al 2009; Stace 2019). Given the types of habitats present onsite its not considered that the timing of the survey work would impact on determining the condition of the habitats onsite.

1.23 One of the off-site fields (field 1) had recently been mown making the calculation of % species present less obvious but every effort was made to provide the appropriate level of interpretation.

Proposed Project Description

1.24 The site is proposed for a residential development and associated road infrastructure. Around the eastern and southern borders of the site is the provision for public open spaces. The development will connect to Henham Road to the north.

1.25 The off-site is to provide the provision to offset any biodiversity losses due the development of the site and will be managed for a 30-year period to achieve the necessary ecological objectives.

Aims and Objectives

1.26 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; and
- calculate proposed mitigation measures (as far as possible) and enhancement opportunities where appropriate to demonstrate a net gain for biodiversity

Planning Policy and Legislation

1.27 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);
- National Policy Statement for National Networks (NPSNN) (Department for Transport, 2014);
- The Natural Environment and Rural Communities (NERC) Act (HMSO, 2006);
- National Character area Profile 86 South Suffolk and North Essex Clayland (Natural England, 2014)
- Adopted Uttlesford Local Plan 2005

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:

- SES (2022) Condition Assessment, Field to the south of Henham Road.
- 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.
- Henham Road proposal scheme design plan, land south of Henham Road, Elsenham (2022)

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 3.0: User Guide (Natural England, July 2021).

Table 1. Area habitat distinctiveness categories and multiplier scores (excluding intertidal habitats) (adapted from Biodiversity Metric 3.0: User Guide (Natural England, July 2021)

Category	Score	Definition
Very high	8	• 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	• 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	• 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	• Habitat of low biodiversity value e.g. temporary grass and clover ley. • Agricultural and Urban land of lower biodiversity value.
Very low	0	• 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. Note there were no irreplaceable habitats recorded onsite.

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, 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 Henham Road Proposed Scheme Design Plan (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 The design scheme and the off-site was used to calculate the extent of each habitat type that is to be created in the area of the original site or enhanced in relation to the off-site provision. 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 Henham Road Proposed Scheme Design Plan may change, which could lead to further adjustments of the metric. However, it is considered that the degree of accuracy based in 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.

2.15 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.

2.16 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).

2.17 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.

2.18 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.

2.19 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 The site and off-site was mapped and classified in accordance with UKHabs classification (Butcher *et al,* 2020) system and non-linear areas measured by hectares and linear features by kilometres (calculations are available within a separate Biodiversity Metric 3.1 workbook – Appendix 5).

3.2 Each of the additional factors have also been assessed and included within the Biodiversity Metric 3.1 workbook. Distinctiveness is automatically assigned score. Hedgerows are habitats of principal importance under section 41 of the Natural Environment and Rural Communities Act 2006, and as such have been treated as strategically significant.

3.3 A summary of the factors for distinctiveness, condition and strategic significance are presented in Table 2 below, along with the habitat value for each of the linear and non-linear features recorded on the site and the off-site area.

Table 2. Baseline distinctiveness, condition and strategic significance for linear and non-linear features including their habitat value

Habitat	Area(Ha)	Distinctiveness	Condition	Strategic significance	Habitat (unit) value
Site					
Modified grassland	5.3477	Low	Moderate	No local strategy	21.39
Urban Tree	0.08545824	Medium	Moderate	No local strategy	0.68
Urban Tree	0.26587008	Medium	Good	No local strategy	3.19
Off-site					
Modified grassland	0.7871	Grassland	Poor	No local strategy	1.57
Other neutral grassland	1.2127	Grassland	Poor	No local strategy	4.85
Other neutral grassland	1.1484	Grassland	Poor	No local strategy	4.59
Wet woodland	0.3004	Woodland and forest	Poor	Ecologically desirable	1.98
Habitat	**Linear (Km)**	**Distinctiveness**	**Condition**	**Strategic significance**	**Habitat (unit) value**
Site					
Line of Trees	0.028	Low	Poor	No local strategy	0.06
Line of Trees	0.05	Low	Poor	No local strategy	0.10
Native Hedgerow	0.014	Low	Moderate	Within local strategy	0.06
Native Hedgerow	0.013	Low	Poor	Within local strategy	0.03
Native Hedgerow	0.106	Low	Poor	Within local strategy	0.24
Offsite					
Line of Trees (Ecologically	0.48	Medium	Good	No local strategy	5.76

Valuable) - with Bank or Ditch					
Native Species Rich Hedgerow	0.116	Medium	Good	Within local strategy	1.60
Native Hedgerow with trees - Associated with bank or ditch	0.122	High	Good	Within local strategy	2.53
Native Hedgerow with trees	0.057	Medium	Good	Within local strategy	0.79
Native Hedgerow - Associated with bank or ditch	0.048	Medium	Good	Within local strategy	0.66
Native Hedgerow - Associated with bank or ditch	0.055	Medium	Good	Within local strategy	0.76

3.4 The baseline for the site therefore supports a total of 25.26 habitat units for the site and 13 units off-site for non-linear features and 0.49 hedgerow units on site and 12.09 off-site.

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, 2022)

Principle No.	Description	Statement of consideration
1	**The metric does not change the protection afforded to biodiversity.**	The designs for the site have considered the protection of the key features inline with local policy, which includes protected boundary features to the south of the site.
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.**	The application of the hierarchy has been applied to avoid, mostly, the key features. The development will see the loss of a habitat of low distinctiveness. The application will see the enhancement of higher distinctiveness habitats.
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. A precautionary approach has been considered to the value of the habitats to ensure the most accurate number of biodiversity units are afforded to each habitat type recorded onsite. 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.
4	**The metric focuses on typical habitats and widespread species; important or protected habitats and features should be given broader consideration.**	Adequate information has been recorded onsite to determine the associated 'typical' habitats onsite. There were no designated sites that will be impacted by these works, which will therefore not require further consideration. 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 working layout sets out the principles which reflects this approach and will be in-keeping with the local environment.

Principle No.	Description	Statement of consideration
5	**The metric design aims to encourage enhancement, not transformation, of the natural environment.**	The application includes the provision of a significant area of off-site land that can be enhanced to increase the potential of their habitat condition and the roles these habitats provide in the local ecology of the area.
6	**The metric is designed to inform decisions, not to override expert opinion.**	The ecological principles – such as the mitigation hierarchy will be applied though out the stages of development from design – implementation and operational phases. Documents such as Construction and Environmental Management Plans (CEMP) will be produced that will detail long-term management objectives, management prescriptions, timetable and monitoring.
7	**Compensation habitats should seek, where practical, to be local to the impact.**	The Henham Road Proposed Scheme Design Plan provides opportunities of the open spaces provide areas for compensation for the loss of modified grassland onsite which can be achieved by creating a more species rich grassland. The off-site provision, which is less than 100m from the site provides an opportunity to enhance areas of habitat which is very in-keeping with the local character of area. It's considered that the creation of onsite habitats and enhancement of off-site habitats will create 'more,' 'bigger' and 'better' functioning habitat.
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.**	The proposed development will lead into an area of lost habitat, albeit, a significant proportion is currently modified grassland, which has limited ecological value. The open combined areas on site and off-site will provide overall a larger area of land to be brought in to sympathetic ecological management, which collectively provide a linked-up patch work of grassland and hedgerows running beside the Stanstead Brook, which collectively provides habitats of a size to retain the necessary functionality to support the fauna associated with the site.

5.0 Proposed Design

Impact Assessment

5.1 Henham Road Proposed Scheme Design Plan used to assess the impact of the development and calculate the elements of habitat creation within areas of open space as shown in Appendix 2.

5.2 The Proposed Scheme Design Plan indicates most of the modified grassland onsite will be lost to development. This means there will be a total non-linear habitat loss of 22.06 units. To compensate for these losses a range of habitats are to be created onsite including modified grassland, other neutral grassland, gardens and urban trees to be planted across the site. The off-site provision provides and opportunity to enhance an existing area of habitat which will be in-keeping with the character of the local area.

Habitat Creation - site

5.3 Proposed Scheme Design Plan is to retain and enhance a robust green network around the perimeter of the site in particular along the southern and eastern boundaries of the site. These area will include a variety of habitats to include the following:

Modified grassland

5.4 Parts of the perimeter grassland will be modified grassland to be brought into a sympathetic management regime and to be sown with a diverse grass mix with the target to achieve a grassland of 'moderate' condition. This will likely require some level of management to consider how ecology of this area can be achieved. It's recommended within the LEMP for this grassland that considerations are given to national initiatives like 'No Mow May,' which many developers are committing to, to allow wildflowers to be able to flower providing a nectar source for invertebrates.

Grassland (open space)

5.5 For the purposes of the calculation, it is assumed that the condition of the created grasslands will be moderate for other neutral grassland. To achieve 'moderate' will require a rigorously applied management plan (LEMP), with appropriate monitoring and mechanisms for the remediation of poor performance.

Traditional Orchard

5.6 A traditional orchard will be planted in the north-east of the site, which will be sown with a species rich grassland and undergo a rigorously applied management plan (LEMP) to achieve 'moderate' condition.

Sustainable Urban Drainage Systems (SuDS)

5.7 The SuDS areas on site will be sown with a wildlife friendly wet wildflower meadow grassland mix, and managed to achieve moderate condition as part of the LEMP. Given this, for the purposes of this calculation the two attenuation basins delivered as part of this scheme will be treated as other neutral grassland.

Vegetated gardens

5.8 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. Therefore, based on these unknowns the 3.1 metric treats this habitat as "Condition Assessment N/A" and assigns a standard score.

Urban trees

5.9 The calculations are based upon the planting a mix of small and medium urban trees within the development. The plan indicates 123 trees will be delivered as part of the scheme - using the Urban Tree Helper tool it is calculated that 73 small trees and 50 medium trees would deliver an equivalent of 2.13ha, which would be expected to achieve trees in moderate condition.

Habitat Creation – off-site

5.10 The off-site provision for the area is centered on a piece of land that includes three grass fields, a small woodland, a section of Stanstead Brook and associated boundary features. This collection of habitat types is very in-keeping with the local character area of the South Suffolk and North Essex Clayland that is it incorporates an area of a gently undulating landscape with a mix of species rich hedgerows and woodlands with meadows and streams, with field pattens that are irregular. It is therefore recommended that the off-site areas aims to retain these characteristics and focus on enhancements of the habitats to create areas that are more sympathetically managed over a 30 year period so that they become more diverse with a richer structure and botanical diversity. The aims for the off-site area are to be incorporated into a management plan for the site which will clearly set out the following:

- Description and evaluation of features to be managed.
- Ecological trends and constraints on site that might influence management.
- Aims and objectives of management.
- Appropriate management options for achieving aims and objectives.
- Prescriptions for management actions.
- Preparation of a work schedule (including an annual work plan capable of being rolled forward over a five-year period).
- Details of the body or organisation responsible for implementation of the plan
- Ongoing monitoring and remedial measures.

5.11 Table 4 below provides all the details below for the post biodiversity net gain values for non-linear habitat units including consideration for the factors that include distinctiveness, condition and strategic significance.

Table 4. Post habitat distinctiveness, condition and strategic significance for non-linear features including their habitat value.

Habitat	Area(Ha)	Distinctiveness	Condition	Strategic significance	Habitat (unit) value
Site – created habitats					
Modified grassland	1.4014	Low	Moderate	No local strategy	4.86

Other neutral grassland	0.2354	Medium	Moderate	No local strategy	1.58
Traditional orchards	0.0852	High	Moderate	No local strategy	0.50
Artificial unvegetated, unsealed surface	0.1445	V.Low	N/A - Other	No local strategy	0.00
Developed land; sealed surface	2.2013	V.Low	N/A - Other	No local strategy	0.00
Introduced shrub	0.1436	Low	Poor	No local strategy	0.28
Vegetated garden	1.0953	Low	Poor	No local strategy	2.11
Urban Tree	2.128	Medium	Moderate	No local strategy	6.51
Off-site – enhanced habitats					
Grassland - Modified grassland	0.7871	Low	Good	No local strategy	3.42
Grassland - Other neutral grassland	1.2127	Medium	Moderate	No local strategy	8.25
Grassland - Other neutral grassland	1.1484	Medium	Good	No local strategy	9.98
Woodland and forest - Wet woodland	0.3004	High	Moderate	Ecologically desirable	2.91

5.12 Table 4 shows that the total non-linear habitat created units onsite is 15.84 units and off-site enhancement is 24.56 units. A total of 40.04 units.

Linear features

5.13 The Henham Road Proposed Scheme Design Plan will lead to the enhancement of 50m of a line of tress and 108m of hedgerow onsite so that these features will achieve 'good' condition. The off-site linear features are already in good condition and therefore will not directly be enhanced but further measurement to in increase the linear network within the off-site area would be recommended as part of the overall strategy to enhance this area. Creation of around 0.605km of hedgerow will be delivered as part of the scheme. Table 5 sets out the potential habitat values for enhancing the linear features onsite.

Table 5. Post habitat distinctiveness, condition and strategic significance for linear features including their habitat value on the site .

Habitat	Linear(km)	Distinctiveness	Condition	Strategic significance	Habitat (unit) value
Line of Trees	0.05	Low	Good	Not in local strategy	0.17

Native hedgerows	0.106	Low	Good	Identified in local strategy	0.65
Hedge ornamental non-native (created)	0.605	V.Low	Poor	Not in local strategy	0.58

5.14 Table 5 shows that the total linear habitat units post development based on the Proposed Scheme is 1.4 units.

6.0 BNG Metric

6.1 With the inclusion of all of the measures set out above and in accordance with the DEFRA BNG 3.1 Metric, the calculation currently indicates a net change of -6.22 non-linear habitat units, a net loss of -24.62%. With the addition of the net gain of 11.56 units for the off-site area the overall scheme will achieve net gain of 21.12%. For the linear features there will be a net change of 0.94 linear hedgerow units, a net gain of 190.27%s. Therefore, non-linear habitats will exceed the minimal expected net gain of 10% and the same is true for linear habitats. Table 6 provide the Headline Results table from the Matrix 3.1 calculator which is presented in Appendix 5.

6.2 Based on the current calculations the trading summary is satisfied (Table 6), and that all the losses have been replaced by suitable habitats of a similar or higher distinctiveness.

Table 6. Summary of the Biodiversity net gain results

On-site baseline	*Habitat units*	25.26
	Hedgerow units	0.49
	River units	0.00
On-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	19.04
	Hedgerow units	1.43
	River units	0.00
On-site net % change (Including habitat retention, creation & enhancement)	*Habitat units*	-24.62%
	Hedgerow units	190.27%
	River units	0.00%
Off-site baseline	*Habitat units*	13.00
	Hedgerow units	12.09
	River units	0.00
Off-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	24.56
	Hedgerow units	12.09
	River units	0.00
Total net unit change (including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	5.34
	Hedgerow units	0.94
	River units	0.00
Total on-site net % change plus off-site surplus (including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	21.12%
	Hedgerow units	190.27%
	River units	0.00%
Trading rules Satisfied?		Yes ✓

7.0 Implementation, Construction, Management and Monitoring Plans

7.1 It is recommended that a CEMP and LEMP be produced which will detail habitat implementation and management. The CEMP 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.

7.2 Implementation of the recommendations within the CEMP 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.

7.3 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.

7.4 The audit report should also demonstrate compliance with the BNG good practice principles (Natural England, 2022) (section 4.0).

8.0 Conclusions

8.1 The site at South of Henham Road, Essex consisted of a grass pasture with a few small lines of tress and hedgerows. The general condition of the non-linear habitats onsite was moderate with the linear habitats being mainly in poor condition. Overall, there proposed designed scheme for the site would not adequately address the biodiversity losses on site seeing a net loss of -24.62%. The proposal for this development has sort an offsite solution with similar types of habitat located less than 100m to the east of the site. The off-site provide an area of three small fields, a woodland, a few linear features in the form of hedgerows, lines of trees and a ditch as well having a section of the Stanstead d Brook running through it. With the addition of this off-site and enhancing the features the overall scheme can achieve a biodiversity net gain of 21.12% increase on the baseline of the site.

8.2 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. In addition a management plan will need to be prepared for the off-site to set out the objectives for the features for the site and detail the prescriptions and workplan over a thirty year period.

9.0 References

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

Butcher B, Edmonds R, Norton L and Treweek J (2020). The Uk Habitat Classification User Manual Version 1.1 at [redacted]

Defra (2007). Hedgerow survey handbook. A standard procedure for local surveys in the UK. Defra, London.

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

JNCC (2008) UK Biodiversity Action Plan; Priority Habitat Descriptions. BRIG (ed. Ant Maddock). [Online] Available from: http://archive.jncc.gov.uk/PDF/UKBAP_PriorityHabitatDesc-Rev2011.pdf

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

Natural England (2014). National Character area Profile 86 South Suffolk and North Essex Clayland

Natural England (2022). Biodiversity Metric 3.1 Auditing and accounting for biodiversity user guide. Natural England.

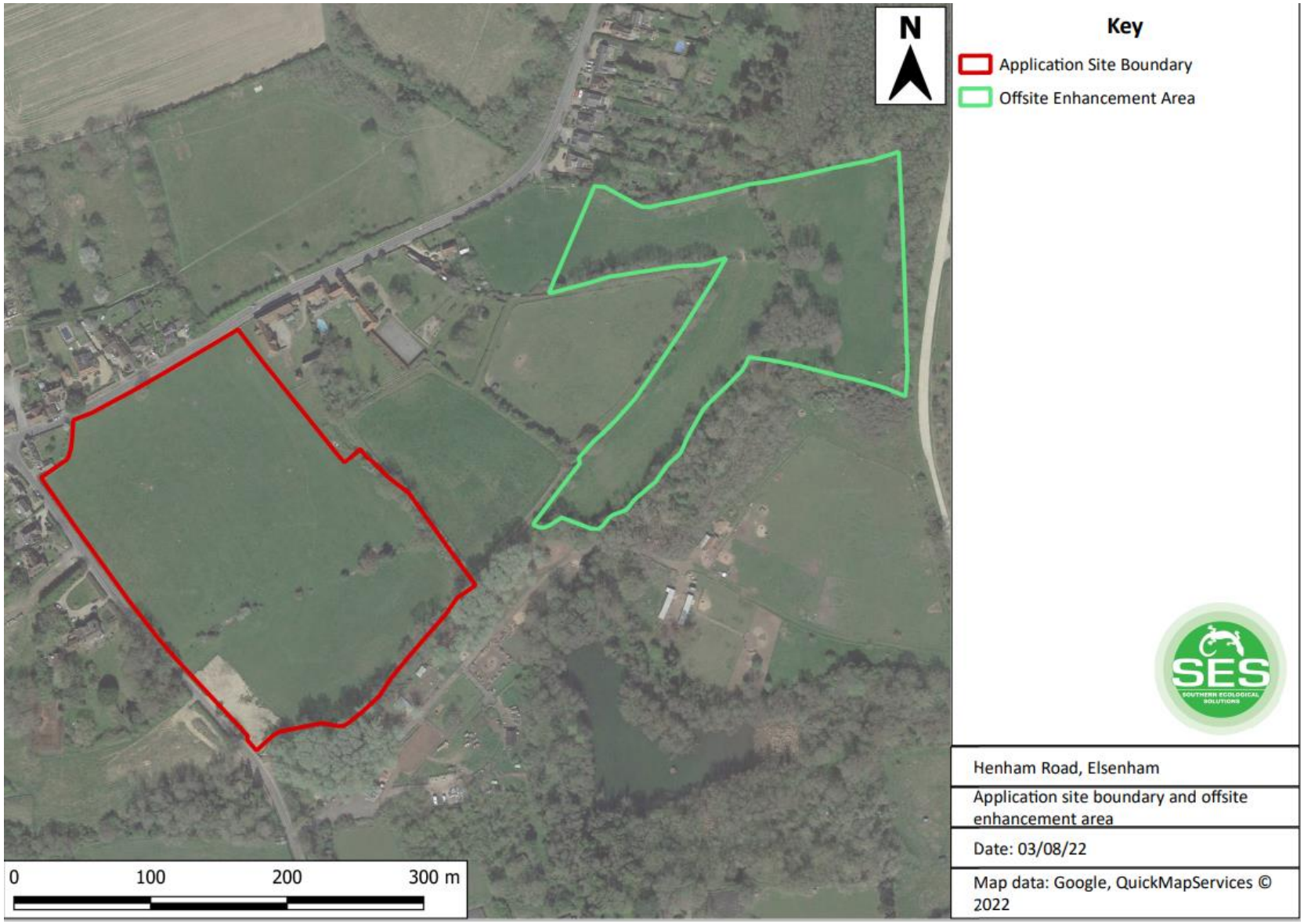
Rose R, O'reilly C (2006). The wildflower key: how to identify wild flowers, trees and shrubs in Britain and Ireland. Warne.

Panks S, White N, Newsome A, Potter J, Heydon M, Mayhew E, Alvarez M, Russell T, Scott S, Heaver M, Scott S H, Treweek J, Butcher B and Stone D 2021. Biodiversity metric 3.0: Auditing and accounting for biodiversity – User Guide. Natural England.

Poland J, Clement E (2009). The vegetative key to the British flora. Botanical Society of the British Isles.

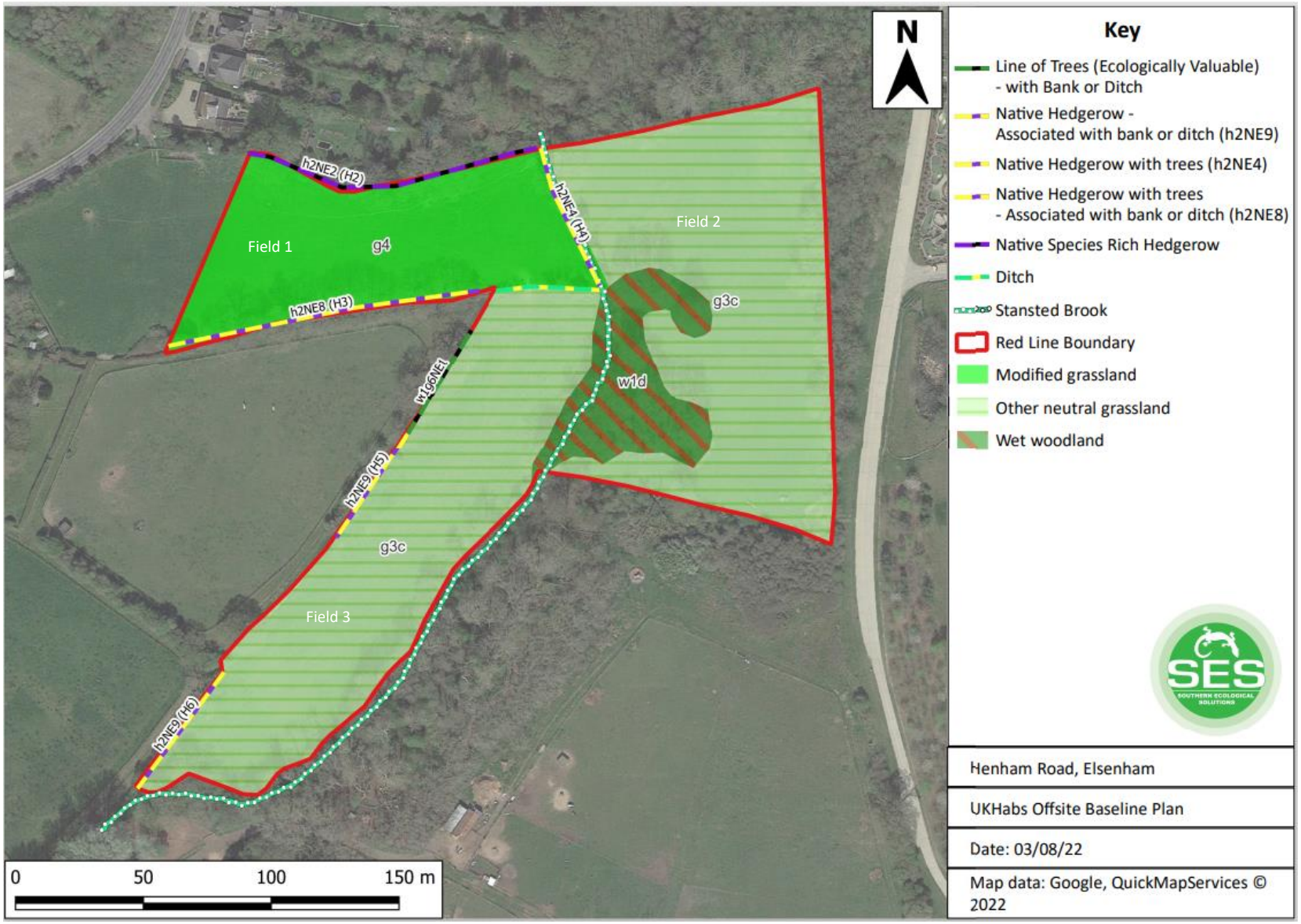
Stace, C. A. (2019) New Flora of the British Isles – Fourth Edition. C&M Floristics

Appendix 1 – Boundary plan of the site and off-site



Appendix 2 – Henham Road Proposed Scheme Design Plan

Appendix 3 – Condition assessment forms



Appendix 4 – Photographs of off-site habitat features

Photo 1: Field 1 – recently mown

Photo 2: Field 2

Photo 3: Field 3

Photo 4: Alder woodland

Photo 5: H2

Photo 6: H3

	
Photo 7: H4	Photo 8: H5
	
Photo 9: H6	Photo 10: Line of trees in field 3

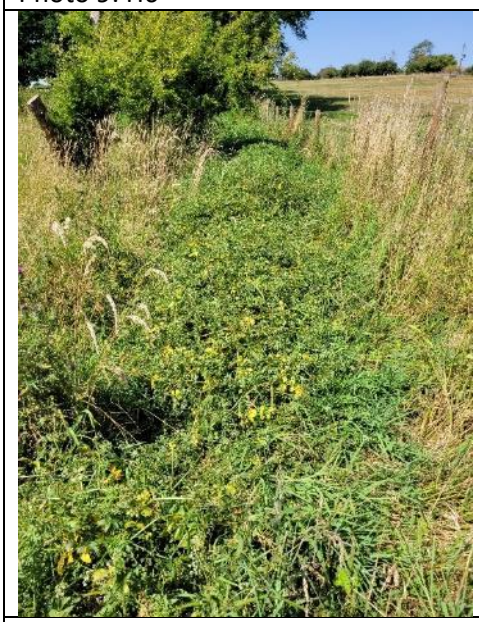



Photo 11: Ditch between fields 1 and 3	

Appendix 5 – DEFRA Metric 3.1