MKA
ECOLOGY

National Vegetation Classification Survey

Land at Stebbing, Essex

Site	*Land at Stebbing, Essex*
Project number	*119321*
Client name / Address	*Montare LLP, Thremhall Park, Start Hill, Bishop's Stortford, CM22 7WE*

Version number	Date of issue	Revisions
1.0	*November 2022*	*Original*

Author	*Lydia Ennis ACIEEM*	[redacted]
Surveyors	*Gabrielle Wilbur ACIEEM* *Lydia Ennis ACIEEM* *Will O'Connor CEcol MCIEEM*	
Reviewed by	*Andy Symes ACIEEM*	
Contact	*MKA Ecology Limited, 01763 262211, info@mkaecology.co.uk*	

Declaration of compliance

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

MKA Ecology Ltd is a CIEEM Registered Practice. This means that MKA Ecology Ltd are formally recognised for high professional standards, working at the forefront of our profession.

Validity of data

Unless stated otherwise the information provided within this report is valid for a maximum period of 24 months from the date of survey. If works at the site have not progressed by this time an updated site visit may be required in order to determine any changes in site composition and ecological constraints

CONTENTS

1. EXECUTIVE SUMMARY

MKA Ecology Ltd was commissioned to undertake a National Vegetation Classification survey of the grassland at Land at Stebbing, Essex. This was completed on 27 July 2022.

The Site covers two areas of land on the north-west edge of the village of Stebbing. The northern area is referred to as Plot 1A, and the southern area Plot 1B. A Preliminary Ecological Appraisal carried out in 2021 (Hybrid Ecology Ltd, 2021) identified the grassland as requiring further classification to establish its conservation value. A site walkover survey of both parcels was subsequently undertaken in October 2021 by MKA Ecology Ltd, which identified acidic species indicators in grassland within Parcel 1B.

The NVC survey was carried out on Parcel 1B only. The aim of the survey was to identify the best fit of the grassland to existing grassland communities to help understand their conservation significance. The survey comprised 15 quadrats across three distinct grassland communities. Survey data was analysed using the computer software programme MAVIS (Centre for Ecology and Hydrology, 2016) to provide the best statistical fit of quadrat data to the NVC community types described by British Plant Communities (Rodwell, 1992; Rodwell, 2000), indicated by a probability co-efficient.

The survey was undertaken during a period of drought; the grassland within Parcel 1B had experienced premature dieback of grasses and herbaceous species. It was still possible to identify the plants present, but the number of species present was markedly reduced as a result of the weather conditions.

Both acidic indicators recorded during the walkover were also detectable during the NVC survey, but comparison of the grassland quadrat data against the NVC community types returned by MAVIS indicates that all three grassland communities associate with neutral (MG) plant communities. Soil sampling carried out at the Site also indicates predominantly neutral soils within Parcel 1B. The results of the NVC survey and soil sampling together suggest that grassland habitats within Parcel 1B are mesotrophic in nature, not acidic.

The grassland communities identified as associating most strongly with the grassland in Parcel 1B are broadly distributed throughout lowland Britain on neutral soils. No likely NVC community associations identified in Parcel 1B qualify as Priority Habitats (under the NERC Act (2005)).

It is strongly recommended that existing grassland is retained and enhanced as part of the proposed development, to ensure that biodiversity net gain can be delivered within the development. A Biodiversity Net Gain Plan should be submitted with any planning application to demonstrate how a net gain will be achieved onsite. Bespoke seed mixes should be recommended following the results of this NVC survey and assessment.

A Landscape and Ecology Management Plan should be produced to detail the correct establishment and management of the retained grassland for the operational phase of the development.

2. INTRODUCTION

2.1. Aims and scope of the report

In June 2022 MKA Ecology Ltd was commissioned to undertake a National Vegetation Classification (NVC) survey at Land at Stebbing, Essex ('the Site'). The survey was carried out on 27 July 2022. The aims of the survey and this report are to;

- Undertake an NVC survey of the grassland within Parcel 1B;
- Identify the best fit of the grassland to existing grassland communities;
- Make an assessment on the botanical value of the grassland within Parcel 1B; and
- Detail recommendations for mitigation and enhancement where required.

2.2. Site description and previous survey effort

The survey area is shown on the map in **Figure 1**. Within this report this area is referred to as the Site or Land at Stebbing, Essex. The Site covers two areas of land on the north-west edge of the village of Stebbing. The northern area of land is referred to as Plot 1A, with the southern area referred to as Plot 1B; these comprise approximately 3.8ha and 2ha respectively. This land currently consists of meadow grassland, patches of scrub, wet woodland, hedgerows and lines of trees. The site falls under the authority of Uttlesford District Council.

A Preliminary Ecological Appraisal (PEA) of the Site was carried out in 2021 (Hybrid Ecology Ltd, 2021). The PEA identified the grassland onsite as requiring further classification to establish its conservation value. A site walkover survey of both parcels was subsequently undertaken in October 2021 by MKA Ecology Ltd, which identified acidic species indicators in grassland within Parcel 1B (see Figure 1). Acidic indicator plant species identified within Parcel 1B were common bent *Agrostis capillaris* and sheep's sorrel *Rumex acetosella*. Acidic indicator species were defined using the description for Lowland Dry Acid Grassland Priority Habitat (JNCC, 2008).

The NVC survey was carried out on Parcel 1B only, following identification of these acidic indicators, to confirm whether or not Parcel 1B qualifies as Lowland Dry Acid Grassland Priority Habitat.

2.3. Proposed development

The Site has been proposed for residential development. Some areas of existing greenspace will be retained and enhanced for their biodiversity value. Finalised plans are not available at this stage.

2.4. Legislation and planning policy

In Great Britain, wild plants that are legally protected are listed on Schedule 8 of The Wildlife and Countryside Act 1981 (as amended). Further minor amendments to wild plants protection measures are also provided under the Countryside and Rights of Way Act (2000). In summary, it is against the law to:

- Pick, uproot or destroy wild plants listed on Schedule 8;
- Sell, offer for sale, possess or transport for the purpose of sale, wild plants listed on Schedule 8;
- Advertise any plant listed on Schedule 8 for buying and selling.

Section 13 of The Wildlife and Countryside Act 1981 (as amended) also prohibits the uprooting of any wild plants not listed on Schedule 8. However, these actions related to all wild plants (including those under Schedule 8) are deemed lawful if:

- The action is carried out by the owner or occupier of the land;
- The action is carried out by someone who has gained permission from the owner or occupier of the land;
- The action is authorised in writing by the appropriate local authority;
- The action has been permitted under licence for purposes of science, education, conservation and photography or to preserve public health or safety, or other form of property, or fisheries.

Several plant species are also listed on Section 41 of the Natural Environment and Rural Communities (NERC) Act (2006). In addition to obligations under wildlife legislation, the revised National Planning Policy Framework (NPPF) reissued in 2021 requires planning decisions to contribute to conserving and enhancing the local environment. Further details are provided in Appendix 2.

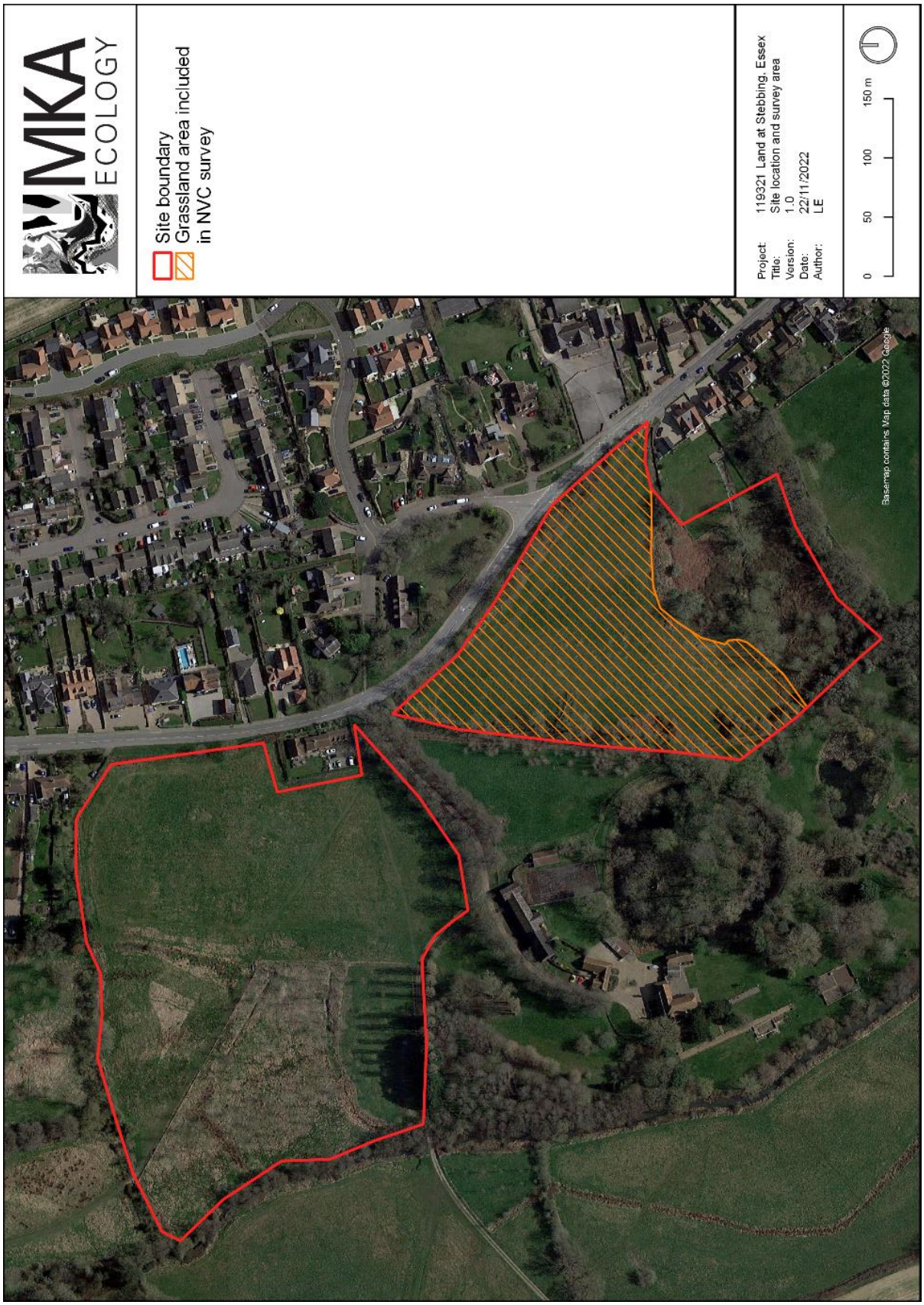
Uttlesford District Council has produced an adopted Local Plan (Uttlesford District Council, 2005), which covers number of policies relating to biodiversity and habitat conservation, including:

- Policy GEN7: Nature Conservation;
- Policy ENV7 - The Protection of the Natural Environment - Designated Sites; and
- Policy ENV8: Other Landscape Elements of Importance for Nature Conservation.

A new Local Plan is currently in preparation, to be published in 2023.

There is also a county-wide Biodiversity Action Plan in Essex (Essex BAP, 1999), which identifies a series of priority habitats and species. Where relevant these are discussed in further detail in Section 5.

Figure 1: Site location and NVC survey area at Land at Stebbing, Essex



3. METHODOLOGY

The NVC survey was completed on the grassland on 27 July 2022. Weather conditions for the survey are provided in Table 1 below.

Table 1: Summary of weather conditions

Date	Time of survey	Weather conditions*	
27 July 2022	11:30	Wind: 2	Temp: 23°C
		Cloud: 6-8	Rain: None

*Wind as per Beaufort Scale / Cloud cover given in Oktas.

3.1. NVC survey

The NVC survey is a system to classify habitats, defined by the vegetation communities which are present. Quantitative information about the distribution of plant species is gathered and compared to predefined classifications to indicate the vegetation communities that are present in an area. This enables an assessment of the ecological value of a habitat, and can assist in impact assessment, mitigation and management. The survey followed standard NVC methodology (Rodwell, 2006).

The NVC site visit identified three discrete grassland communities. The three grassland communities were surveyed, with five quadrats completed for each community (see Figure 2 for location of quadrats). The quadrats (2x2m^2) were surveyed in accordance with guidelines for short herbaceous vegetation in the NVC User's Handbook (Rodwell, 2006). In each quadrat all higher and lower plant species were identified, and their cover was measured, using the Domin Scale. The Domin Scale represents estimates of cover by numbers as shown in Table 2. Domin values for the quadrat data collected on this NVC survey are shown in Appendix 3.

In the NVC survey, plant keys were used to aid identification (Hubbard, 1984; Rose, 2006; Streeter et al. 2009). Plant species nomenclature follows that of Stace (2019).

Table 2: The Domin Scale as an estimate of percentage plant cover

Percentage Cover	Domin Scale
<4% - few individuals	1
<4% - several individuals	2
<4% - many individuals	3
4-10%	4

Percentage Cover	Domin Scale
11-25%	5
26-33%	6
34-50%	7
51-75%	8
76-90%	9
91-100%	10

The quadrat data was analysed using the computer software programme MAVIS (Centre for Ecology and Hydrology, 2016). MAVIS provides the best statistical fit of quadrat data to the NVC community types described by British Plant Communities (Rodwell, 1992; Rodwell, 2000), indicated by a probability co-efficient. The co-efficient indicates the percentage similarity of the quadrat with the NVC community types. Typically the NVC community type with the greatest probability co-efficient to the grassland quadrats is identified as the NVC community type of the grassland.

Under the NVC methodology for each sub-community there are:

- "constant species" which typically occur in four to five of the five quadrats in that sub-community; and
- "frequent species" which typically occur in three of the five quadrats (Rodwell, 2006).

A frequency value is provided next to each of these constant and frequent species in Appendix 3 which will show the number of quadrats that they were recorded in during the NVC survey. This assists with understanding the species responsible for the classification of vegetation types recorded as particular sub-communities.

3.2. Soil sampling and analysis

Soil sampling and analysis was also undertaken across the Site, including within Parcel 1B where the NVC survey took place. Soil samples were taken at three locations across Parcel 1B, and subsequent analysis of pH levels and available nutrients (phosphorus, potassium and magnesium) undertaken by NRM Ltd (NRM Ltd, 2022).

Locations of soil samples are shown in Figure 2.

3.3. Surveyor, author and reviewer

The survey was undertaken by:

- Gabrielle Wilbur ACIEEM, Senior Ecologist at MKA Ecology Ltd. Gabrielle has been undertaking botanical assessments for over six years and holds a Level 4 Botanical Society of Britain and Ireland (BSBI) Field Identification Skills Certificate;
- Will O'Connor CEcol MCIEEM, Director and Principal Ecologist at MKA Ecology Ltd. Will has over 15 years' experience as a consultant ecologist; and
- Lydia Ennis ACIEEM, Consultant Ecologist at MKA Ecology Ltd. Lydia has five years' experience as an ecologist and holds a Level 4 Botanical Society of Britain and Ireland (BSBI) Field Identification Skills Certificate.

This report has been drafted by Lydia and reviewed by Andy Symes ACIEEM, Consultant Ecologist at MKA Ecology Ltd. Andy has four years' experience as a professional ecologist and holds a Level 4 Botanical Society of Britain and Ireland (BSBI) Field Identification Skills Certificate.

3.4. Constraints

The summer of 2022 experienced severe drought conditions, during which this survey was undertaken. The grassland was parched and had premature dieback of grasses and herbaceous species. It was still possible to identify the plants present using floristic and vegetative characteristics, but the number of species present in the grassland, particularly herbaceous species, was markedly reduced as a result of the weather conditions. The implications of this constraint for the analysis and conclusions drawn from this survey are discussed in Section 5.

NVC communities are a continuum, and therefore the surveyed quadrats do not always fit perfectly into the NVC community types. Where the species composition of the quadrat and the NVC community type differed, the closest NVC community type was assigned to the quadrat.

Figure 2: Survey area, grassland sub-divisions and quadrat locations at Land at Stebbing, Essex

4. RESULTS

4.1. NVC survey

The results of the NVC surveys are outlined below. The MAVIS output is given as a number, which is the percentage fit to a particular community type. Photographs showing the grassland communities and quadrats within these grasslands are shown in Appendix 1.

Grassland A (Photograph 1, Photograph 2, Photograph 3, Photograph 4, Photograph 5, Appendix 1)
A total of 19 species were recorded in the five quadrats within Grassland A. Comparison of the grassland survey results against the NVC community types indicates correlations with a number of neutral or mesotrophic (MG) grassland communities, including those typified by Yorkshire fog *Holcus lanatus* / tufted hair-grass *Deschampsia cespitosa* (MG9), perennial rye-grass *Lolium perenne* / crested dog's-tail *Cynosurus cristatus* (MG6), *Lolium perenne* leys (MG7) and red fescue *Festuca rubra* / creeping bent *Agrostis stolonifera* / silverweed *Potentilla anserina* (MG11). No one community or sub-community demonstrates a notably stronger correlation with Grassland A.

Table 3 below details the percentage correlation output from MAVIS, with the top ten strongest correlations.

Table 3: MAVIS output for Grassland A at Land at Stebbing, Essex

Vegetation community code	Title	Correlation with NVC community type (percentage)
MG9b	*Holcus lanatus - Deschampsia cespitosa* grassland (*Arrhenatherum elatius* sub-community)	52.03
MG9	*Holcus lanatus - Deschampsia cespitosa* grassland	50.35
MG6	*Lolium perenne – Cynosurus cristatus* grassland	47.26
MG6a	*Lolium perenne – Cynosurus cristatus* grassland (typical sub-community)	46.74
MG7	*Lolium perenne* leys	45.51
MG6b	*Lolium perenne – Cynosurus cristatus* grassland (*Alopecurus pratensis* variant of typical sub-community)	45.26
MG11a	*Festuca rubra – Agrostis stolonifera – Potentilla anserina* grassland (*Lolium perenne* sub-community)	45.08
MG7d	*Lolium perenne* leys (*Lolium perenne - Alopecurus pratensis* sub-community)	43.48
MG9a	*Holcus lanatus - Deschampsia cespitosa* grassland (*Poa trivialis* sub-community)	43.44

Vegetation community code	Title	Correlation with NVC community type (percentage)
MG7c	*Lolium perenne* leys (*Lolium perenne - Alopecurus pratensis – Festuca pratensis* sub-community)	42.90

Grassland B (Photograph 6, Photograph 7, Photograph 8, Photograph 9, Photograph 10, Appendix 1)

A total of 16 species were recorded in the five quadrats in Grassland B. Comparison of the grassland survey results against the NVC community types indicates strong correlations with neutral or mesotrophic (MG) grassland communities, in particular the common nettle *Urtica dioica* sub-community of false oat-grass *Arrhenatherum elatius* grassland (MG1b). The correlation with this sub-community was notably stronger than other communities returned by MAVIS.

There were also correlations with other subcommunities of *Arrhenatherum elatius* grassland (MG1), as well as two other mesotrophic grassland types: *Lolium perenne* leys (MG7) and *Holcus lanatus / Deschampsia cespitosa* grassland (MG9). There were also weaker correlations with sparsely vegetated habitats (OV), either typified by willowherb *Epilobium* sp. (OV26d and OV27b) or *Urtica dioica* / cleavers *Galium aparine* (OV24).

Table 4 below details the percentage correlation output from MAVIS, with the top ten strongest correlations.

Table 4: MAVIS output for Grassland B at Land at Stebbing, Essex

Vegetation community code	Title	Correlation with NVC community type (percentage)
MG1b	*Arrhenatherum elatius* grassland (*Urtica dioica* sub-community)	57.82
MG1a	*Arrhenatherum elatius* grassland (*Festuca rubra* sub-community)	53.28
MG1c	*Arrhenatherum elatius* grassland (*Filipendula ulmaria* sub-community)	50.89
MG1	*Arrhenatherum elatius* grassland	49.92
MG7d	*Lolium perenne* leys (*Lolium perenne - Alopecurus pratensis* sub-community)	48.39
MG9b	*Holcus lanatus - Deschampsia cespitosa* grassland (*Arrhenatherum elatius* sub-community)	48.36
OV26d	*Epilobium hirsutum* community (*Arrhenatherum elatius – Heracleum sphondylium* sub-community)	43.38
MG7	*Lolium perenne* leys	43.20
OV24	*Urtica dioica – Galium aparine* community	42.91

Vegetation community code	Title	Correlation with NVC community type (percentage)
OV27b	*Epilobium angustifolium* community (*Urtica dioica – Cirsium arvense* sub-community)	42.46

Grassland C (Photograph 11, Photograph 12, Photograph 13, Photograph 14, Photograph 15, Appendix 1)

A total of 22 species were recorded in the five quadrats in Grassland C. Comparison of the grassland survey results against the NVC community types indicates strong correlations with neutral or mesotrophic (MG) grassland communities, in particular the hard rush *Juncus inflexus* sub-community of *Holcus lanatus* / soft rush *Juncus effusus* rush pasture (MG10b). The correlation with this sub-community was notably stronger than other communities returned by MAVIS.

Correlations were also returned with other sub-communities of *Holcus lanatus / Juncus effusus* rush pasture (MG10), as well as three other mesotrophic grassland types: *Holcus lanatus / Deschampsia cespitosa* grassland (MG9), *Cynosurus cristatus* / marsh-marigold *Caltha palustris* grassland (MG8) and meadow foxtail *Alopecurus pratensis* / great burnet *Sanguisorba officinalis* grassland (MG4). All are grassland community types associated with damp soils.

Table 5 below details the percentage correlation output from MAVIS, with the top ten strongest correlations.

Table 5: MAVIS output for Grassland C at Land at Stebbing, Essex

Vegetation community code	Title	Correlation with NVC community type (percentage)
MG10b	*Holcus lanatus – Juncus effusus* rush pasture (*Juncus inflexus* sub-community)	56.86
MG9	*Holcus lanatus - Deschampsia cespitosa* grassland	51.16
MG10	*Holcus lanatus – Juncus effusus* rush pasture	50.86
MG9b	*Holcus lanatus - Deschampsia cespitosa* grassland (*Arrhenatherum elatius* sub-community)	48.29
MG10a	*Holcus lanatus – Juncus effusus* rush pasture (typical sub-community)	47.62
MG9a	*Holcus lanatus - Deschampsia cespitosa* grassland (*Poa trivialis* sub-community)	47.08
MG8b	*Cynosurus cristatus – Caltha palustris* grassland	42.53
MG10c	*Holcus lanatus – Juncus effusus* rush pasture (*Iris pseudacorus* sub-community)	40.82

Vegetation community code	Title	Correlation with NVC community type (percentage)
MG8v2	*Cynosurus cristatus – Caltha palustris* grassland	40.77
MG4c	*Alopecurus pratensis – Sanguisorba officinalis* grassland	39.94

4.2. Soil sampling and analysis

Results of the analysis of soil samples in Parcel 1B undertaken by NRM Ltd (2022) are shown in Table 6. The pH scores across all three samples in Parcel 1B indicate predominantly mildly acidic to neutral soils. The index values returned for available nutrients indicate readily available levels of phosphorus, potassium and magnesium, with no areas of nutrient-poor soils identified.

Table 6: Soil analysis results for Parcel 1B, Land at Stebbing, Essex

Location reference*	Laboratory sample reference	Soil pH	Available nutrients index**		
			Phosphorus P	Potassium K	Magnesium Mg
1	55841/22	6.7	3	1	3
2	55842/22	6.8	2	2+	3
3	55843/22	7.0	3	4	3

*shown in Figure 2

**Index values are determined from the AHDB Fertiliser Recommendations RB209 9th Edition (AHDB, 2017)

The results of the soil analysis, and their implications for determining classification and conservation value of the grassland areas, is discussed further in Section 5.

5. EVALUATION AND RECOMMENDATIONS

5.1. Fit to NVC communities

Grassland A

Grassland A showed correlations with a number of mesotrophic grassland communities. Of these, the strongest association was with MG9 grassland (*Holcus lanatus - Deschampsia cespitosa* grassland). MG9 describes a mesotrophic grassland community characteristic of permanently damp soils in the British lowlands. This community has a coarse sward dominated by *Deschampsia cespitosa* and other large tussocky grass species including *Holcus lanatus*, cock's-foot *Dactylis glomerata* and *Arrhenatherum elatius*. There are two sub-communities of MG9, both of which are flagged by MAVIS as possible matches for Grassland A (see Table 3), together with the broad MG9 community. Of these, MG9b (*Holcus lanatus - Deschampsia cespitosa* grassland (*Arrhenatherum elatius* sub-community)) has the strongest correlation of any community, with a coefficient of 52.03.

Across all sub-communities of MG9, *Deschampsia cespitosa* features as a constant species, and is a significant influence in both the botanical and structural characteristics of MG9 grasslands. *Deschampsia cespitosa* was absent from quadrat data for Grassland A (despite the drought conditions at the time of survey, this species would still have been detectable), and so despite its strong correlation coefficient, the association of Grassland A with MG9 is highly unlikely. The correlation is likely as a result of the occurrence of some species within Grassland A within the constants for MG9, including *Holcus lanatus*.

Three other grassland communities were returned with correlations for Grassland A: MG6 (*Lolium perenne – Cynosurus cristatus* grassland); MG7 (*Lolium perenne* leys) and MG11a (*Festuca rubra – Agrostis stolonifera – Potentilla anserina* grassland (*Lolium perenne* sub-community)).

MG6 (*Lolium perenne – Cynosurus cristatus* grassland) describes the major permanent pasture grassland community found on moist free-draining soils in lowland Britain. It is a short, grass-dominated sward with *Lolium perenne* and *Cynosurus cristatus* the constant species. There are two sub-communities within MG6, both of which returned correlations with Grassland A. MG6a is the typical sub-community with slightly higher frequencies of *Agrostis stolonifera,* creeping buttercup *Ranunculus repens* and creeping thistle *Cirsium vulgare.* There are several variants within this sub-community. The MG6b sub-community is more species-rich, and also includes sweet vernal-grass *Anthoxanthum odoratum* in small amounts.

MG6 constant species were present within Grassland A, including *Anthoxanthum odoratum, Alopecurus pratensis and Agrostis stolonifera*, but these were recorded as occasional only, not constant. As a result, the species composition in Grassland A does not associate well with MG6 or its sub-communities.

MG7 (*Lolium perenne* leys) describes a common community found on amenity and recreational ground. *Lolium perenne* is a constant species across all sub-communities of MG7, with *Alopecurus pratensis* also featuring as a constant within the sub-communities for which correlations were returned with Grassland A (MG7c and MG7d). *Lolium perenne* was not recorded within Grassland A, while *Alopecurus pratensis* was recorded present but only occasional. Therefore association with this grassland community is highly unlikely.

MG11 (*Festuca rubra – Agrostis stolonifera – Potentilla anserina* grassland) describes a variable grassland with generally species-poor composition, dominated by *Agrostis stolonifera* with *Festuca rubra* and/or *Potentilla anserina*. In the *Lolium perenne* sub-community (MG11a), *Lolium perenne* is often co-dominant with *Agrostis stolonifera*, and other grasses feature more prominently, including *Holcus lanatus*, *Festuca pratensis*, *Dactylis glomerata*, *Agrostis capillaris* and *Phleum sp.* This community is found on moist but free-draining soils inundated with either fresh or brackish water. Distribution of MG11a is confined to lowland river valleys in the Midlands and south-west Britain.

Some constant species in Grassland A match those in MG11 (*Festuca rubra* and *Holcus lanatus*), although *Agrostis capillaris* was recorded as constant, rather than *Agrostis stolonifera*. *Potentilla anserina* and *Lolium perenne* were not recorded in quadrat data. As a result the species composition in Grassland A does not associate well with MG11a; the distribution of this sub-community also makes association highly unlikely.

Overall, Grassland A does not exhibit a clear correlation with any specific MG grassland community. It is likely that the drought conditions at the time of survey affected the quadrat data collected (see photos in Appendix 1). True species frequencies are likely not accurately represented within the data, making this grassland difficult to characterise accurately. **The association with MG communities only does suggest the grassland is mesotrophic in nature.**

Grassland B

The strongest association for Grassland B was with MG1 (*Arrhenatherum elatius* grassland). Three sub-communities, as well as the broad MG1 community, hold the highest correlation coefficients with Grassland B (see Table 4).

MG1 (*Arrhenatherum elatius* grassland) describes a grassland community dominated by coarse-leaved tussocky grasses; notably *Arrhenatherum elatius* as a constant, along with *Dactylis glomerata* and *Holcus lanatus*. Large umbellifers are also a feature of this community, with species such as cow parsley *Anthriscus sylvestris* and hogweed *Heracleum sphondylium* flowering sequentially within the sward. Beneath these tall species is an understorey of fine-leaved grasses (e.g. *Festuca rubra,* smooth meadow-grass *Poa pratensis,* rough meadow-grass *Poa trivialis, Lolium perenne* and common couch *Elytrigia repens*) and herbaceous species (e.g. clovers *Trifolium sp.*). MG1 is found throughout lowland

Britain on neutral soils, and develops on ungrazed and/or neglected land, such as road verges and railway embankments.

There are several sub-communities within MG1, three of which returned correlations with Grassland B. These are discussed below in decreasing value of correlation coefficient (see Table 4). Table 7 compares frequency scores for key species recorded in quadrat data for Grassland B with those of MG1 and its sub-communities.

MG1b sub-communities feature *Urtica dioica* as a constant, and large umbellifers are particularly frequent. *Urtica dioica* was recorded within Grassland B, but as frequent only and not constant. *Anthriscus sylvestris*, the only umbellifer recorded, was occasional only.

MG1a sub-communities are grass-dominated with *Arrhenatherum elatius, Dactylis glomerata* and *Festuca rubra* the dominant species. *Arrhenatherum elatius* and *Dactylis glomerata* were both constants within Grassland B, but *Festuca rubra* was not recorded.

MG1c sub-communities similarly have *Arrhenatherum elatius, Urtica dioica* and *Heracleum sphondylium* as constants, together with meadowsweet *Filipendula ulmaria*. *Filipendula ulmaria* was not recorded within quadrat data for Grassland B, although constant grasses are consistent with this sub-community, including *Alopecurus pratensis* and *Holcus lanatus*, which otherwise do not feature prominently in MG1 communities.

Overall, there is no one clear MG1 sub-community association for Grassland B. It lacks the constant species that characterise each of the three sub-communities. However, the grassland has a generally close association to the community as a whole, largely due to the constancy of *Arrhenatherum elatius*.

Table 7: Comparison of frequency scores for key species in Grassland B with MG1 and sub-communities (adapted from Rodwell, 1992)

Species	Frequency values* in:				
	Grassland B	MG1b	MG1a	MG1c	MG1
Arrhenatherum elatius	5	5	5	5	5
Dactylis glomerata	5	4	4	4	4
Alopecurus pratensis	5	1	1	1	1
Holcus lanatus	5	2	2	4	3
Agrostis capillaris	3	1	1	1	1

Species	Frequency values* in:				
	Grassland B	MG1b	MG1a	MG1c	MG1
Urtica dioica	3	5	1	3	3
Elytrigia repens	3	2	2	2	2
Poa pratensis	3	1	2	1	2
Anthriscus sylvestris	2	2	2	1	2
Cirsium arvense	2	3	3	3	3
Heracleum sphondylium	0 (not recorded)	4	3	3	3

*defined as the number of times a species is recorded in each of 5 quadrats completed for each community (see Section 3.1). Scores of 5 and 4 indicate species 'constants' within a community.

Two other grassland communities returned correlations for Grassland B: MG7 and MG9b.

MG7 (*Lolium perenne* leys) describes a common community found on amenity and recreational ground. *Lolium perenne* is a constant species across all sub-communities of MG7, with *Alopecurus pratensis* also featuring as a constant within the sub-community for which a correlation was returned with Grassland B (MG7d). *Alopecurus pratensis* was recorded as a constant within Grassland B, but *Lolium perenne* was absent from quadrat data. *Arrhenatherum elatius*, which was a constant in Grassland B, does not feature with any prominence in MG7 grasslands. This, together with the absence of *Lolium perenne*, makes an association with this grassland community highly unlikely.

MG9 describes a mesotrophic grassland community characteristic of permanently damp soils in the British lowlands. This community has a coarse sward dominated by *Deschampsia cespitosa* and other large tussocky grass species including *Holcus lanatus*, *Dactylis glomerata* and *Arrhenatherum elatius*. The latter species is a constant in MG9b, the sub-community which returned a correlation with Grassland B. However, across all sub-communities *Deschampsia cespitosa* features as a constant species, and is a significant influence in both the botanical and structural characteristics of MG9 grasslands. *Deschampsia cespitosa* was absent from quadrat data for Grassland B (despite the drought conditions at the time of survey, this species would still have been detectable), and so the assignment of MG9 is highly unlikely.

Three correlations were also returned for open habitat communities, all with relatively low correlation co-efficients. OV26d (*Epilobium hirsutum* community (*Arrhenatherum elatius – Heracleum sphondylium* sub-community)) is characterised by species-poor tall herb vegetation, with great hairy willowherb *Epilobium hirsutum* a constant species within the community. OV27b (*Epilobium angustifolium* community (*Urtica dioica – Cirsium arvense* sub-community)) is also a tall herb community, dominated by rosebay willowherb

Epilobium angustifolium. Although both sub-communities feature Grassland B constant species, such as *Arrhenatherum elatius,* the absence of *Epilobium sp.* within quadrat data for Grassland B makes association with either of these communities highly unlikely.

OV24 is another tall herb community, dominated by *Urtica dioica*, with *Galium aparine* also a constant as a creeping herb. *Urtica dioica* was only recorded occasionally in Grassland B. The dominance of grass species over *Urtica dioica* makes association of Grassland B with OV24 highly unlikely.

Of all the correlations returned for Grassland B, the strongest association is with MG1. The constancy of *Arrhenatherum elatius* is the clearest indicator, and it is this characteristic that produces a close match with MG1 over other grassland and open habitat communities, where respective constant species are either rare or absent. Within MG1, it is not possible to identify a clear sub-community association; Grassland B lacks the constant species that characterise each of the three sub-communities for which correlations were returned. MG1 is a highly variable community. It is possible that drought conditions at the time of survey may mean that true species frequencies are likely not accurately represented within the data. However, this is not considered to affect Grassland B's general characterisation as MG1.

Grassland C

The strongest association for Grassland C was with MG10b *Holcus lanatus – Juncus effusus* rush pasture (*Juncus inflexus* sub-community). With a correlation coefficient of 56.86, this association was notably the strongest of the top ten correlations. MG9 (*Holcus lanatus - Deschampsia cespitosa* grassland) and MG10 (*Holcus lanatus – Juncus effusus* rush pasture (no sub-community defined)) were the second and third mostly likely options returned by MAVIS, with coefficients of 51.16 and 50.86 respectively.

MG10 describes a mesotrophic grassland community found throughout the British lowlands. The most important condition for this community is a consistently high soil moisture level. It is characterised by prominent tall tussocks of *Juncus effusus*, in otherwise species-poor and shorter grassland. *Holcus lanatus* and *Agrostis stolonifera* are the only constant grass species in this community type; other grasses do occur, but not in abundance.

MG10b describes a sub-community of MG10, where *Juncus inflexus* partly or wholly replaces *Juncus effusus* in the sward. This sub-community is also more species-rich than MG10; species such as hairy sedge *Carex hirta* and curled dock *Rumex crispus* feature more prominently within the sward. *Holcus lanatus and Agrostis stolonifera* remain the constant grasses, additionally with *Poa trivialis*.

Grassland C was still moist with a lush sward, and didn't appear to be adversely affected by drought conditions displayed in other grassland areas. Grassland C matches MG10b in the constancy of *Juncus inflexus* over *Juncus effusus,* along with the two main grass species, *Holcus lanatus* and *Agrostis stolonifera*. Other species prominent in the MG10b sub-community, including *Carex hirta, Ranunculus*

repens and *Rumex* sp. (in this case *Rumex crispus*), were also recorded as constants within Grassland C. A low frequency of *Poa trivialis* was recorded, which is not typical for MG10b, and no *Trifolium* sp., a species often frequent in this sub-community type, was found in the quadrats. Grassland C is also generally more species-rich than even is typical for MG10b, which is the more diverse sub-community within MG10. Some species typically rare or occasional within MG10/MG10b are constants in Grassland C, including *Anthoxanthum odoratum*, *Festuca rubra* and *Cirsium sp.*

Table 8 compares frequency scores for key species recorded in quadrat data for Grassland C with those of MG10 and MG10b (adapted from Rodwell, 1992).

Table 8: Comparison of frequency scores for key species in Grassland C with MG10/MG10b (adapted from Rodwell, 1992)

Species	Frequency values* in:		
	Grassland C	MG10	MG10b
Holcus lanatus	5	5	4
Agrostis stolonifera	4	4	5
Ranunculus repens	4	4	5
Juncus inflexus	4	2	5
Poa trivialis	1	3	4
Juncus effusus	2	5	3
Carex hirta	4	1	3
Trifolium repens	0 (not recorded)	2	3
Rumex crispus	5	2	3

*defined as the number of times a species is recorded in each of 5 quadrats completed for each community (see Section 3.1). Scores of 5 and 4 indicate species 'constants' within a community.

MG9 (*Holcus lanatus - Deschampsia cespitosa* grassland) returned the second highest correlation with Grassland C (see Table 5). MG9 describes a mesotrophic grassland community again characteristic of permanently damp soils in the British lowlands. This community has a coarse sward dominated by *Deschampsia cespitosa* and other large tussocky grass species including *Holcus lanatus*, *Dactylis glomerata* and *Arrhenatherum elatius*. There are two sub-communities of MG9, both of which returned correlations with Grassland C, albeit with lower coefficients than the broad MG9 community (see Table 5). Across all sub-communities *Deschampsia cespitosa* features as a constant species, and is a significant influence in both the botanical and structural characteristics of MG9 grasslands. *Deschampsia cespitosa* was absent from quadrat data for Grassland C (despite the drought conditions at the time of survey, this species would still have been detectable), and so the assignment of MG9 is highly unlikely. The correlation of MG9 is likely as a result of the occurrence of some species within Grassland C within the constants for MG9, including *Holcus lanatus*.

Two other grassland communities were returned with correlations for Grassland C; MG8 and MG4. MG8 (*Cynosurus cristatus – Caltha palustris* grassland) is found on periodically inundated land, and characterised by a species-rich sward, predominantly grasses, with no single species dominant. Several of the Grassland C constant species are also constant in MG8, including *Holcus lanatus*, *Festuca rubra* and *Anthoxanum odoratum*. However, a characteristic of MG8 is that *Juncus spp.* are never dominant. *Juncus inflexus* is a constant in Grassland C, and so classification as MG8 is highly unlikely.

MG4 (*Alopecurus pratensis – Sanguisorba officinalis* grassland) is a lowland wet grassland community characteristic of traditional hay meadow management on seasonally flooded land. Widespread river modification, improvement of and development on floodplain grassland means that this grassland community is now scarce in lowland Britain. Two MG4 grass species constants, *Holcus lanatus* and *Festuca rubra*, were also recorded as constants in Grassland C, which explains the correlation with this grassland community type. However, Grassland C is not currently managed with hay meadow regimes, and the rarity of this grassland community type means that classification as MG4 is highly unlikely.

Of all the correlations returned for Grassland C, MG10b has the strongest association. Grassland C is more species-rich than is typical for this sub-community, but the constancy of *Holcus lanatus* and *Agrostis stolonifera*, along with dominance of *Juncus inflexus*, closely matches this sub-community, and is the most likely match within MG10. For MG9, MG8 and MG4, there are key differences with Grassland C that make an association with these communities highly unlikely.

5.2. Overall evaluation

The most likely NVC associations for each of the three grassland areas identified at Land at Stebbing, Essex, are presented in Table 9 below.

Table 9: NVC associations for grassland areas at Land at Stebbing, Essex

Area*	NVC community associations	Comments
Grassland A	MG	Survey constraints (drought conditions) meant that data did not show clear association with a specific community.
Grassland B	MG1	Constancy of *Arrhenatherum elatius* is the clearest indicator. No clear sub-community association identified, possibly due to survey constraints (drought conditions)
Grassland C	MG10b	Constancy of *Holcus lanatus* and *Agrostis stolonifera*, along with dominance of *Juncus inflexus*, closely matches this sub-community. Not affected by survey constraints as soils in this area were still damp.

*Grassland areas shown in Figure 2

The grassland communities identified in Table 9 are broadly distributed throughout lowland Britain on neutral soils. Parcel 1B is situated on a hill, with Grasslands A and B occupying the top and slopes, and Grassland C located at the lowest topographical location, adjacent to a wet woodland area with ponds and a stream in close proximity. Characterisation of Grassland C as a moist grass community and Grasslands A and B as communities typical of drier soils is therefore to be expected.

All three grasslands show strongest associations with mesotrophic communities (i.e. characteristic of neutral soils). A walkover survey in October 2021 identified acidic grass species indicators in within Parcel 1B (*Agrostis capillaris* and *Rumex acetosella*). Both these species are identified as indicator species for Lowland Dry Acid Grassland Priority Habitat (JNCC, 2008). *Agrostis capillaris* was recorded as occasional in Grassland A, frequent in Grassland B, and occasional in Grassland C. *Rumex acetosella* was recorded present within Parcel 1B on the day of the NVC survey, but did not occur in any quadrat data collected. The fact that both acidic indicators recorded during the walkover were also detectable during the NVC survey suggest that drought conditions likely did not adversely affect the broad habitat characterisation as acidic or neutral grassland. Soil sampling results also indicate predominantly neutral soils within Parcel 1B (see Table 6, Section 4.2). Overall, the results of the NVC survey and soil sampling suggest that grassland habitats within Parcel 1B are mesotrophic in nature, not acidic.

5.3. Recommendations

Opportunities to retain and enhance the existing grassland onsite should be pursued within the proposed development, in line with Policy ENV8 of Uttlesford District Local Plan (see Appendix 2).

Policy ENV8 of Uttlesford Local Plan (Uttlesford District Council, 2005) stipulates that:

"Development that may adversely affect landscape elements [including] semi-natural grasslands…will only be permitted if the following criteria apply: a) The need for the development outweighs the need to retain the elements for their importance to wild fauna and flora; b) Mitigation measures are provided that would compensate for the harm and reinstate the nature conservation value of the locality."

A new local plan, due to be published in 2023, will likely include similar policy, with a requirement for any development to deliver at least 10% biodiversity net gain, in line with the Environment Act (2021).

It is strongly recommended that existing grassland is retained and enhanced as part of the proposed development, to ensure that biodiversity net gain can be delivered within the development. A Biodiversity Net Gain Plan should be submitted with any planning application to demonstrate how a net gain will be achieved onsite.

Recommendation 1

Retain and enhance existing grassland within the proposed development to ensure biodiversity net gain can be delivered within the development.

The provision of species-rich grassland would assist in improving the biodiversity value of the site post-development. The species mix used should be designed for neutral soils, as this will reflect local conditions. Bespoke seed mixes should be recommended following the results of this NVC survey and assessment, once it is confirmed which areas of grassland are to be retained and enhanced.

Recommendation 2

Retain and enhance existing grassland within the proposed development. Create species-rich grassland on site, with bespoke seed mixes following the results of this NVC survey and assessment, once it is confirmed which areas of grassland are to be retained and enhanced.

A Landscape and Ecology Management Plan should be produced to detail the correct establishment and management of the retained grassland on for the operational phase of the development.

Recommendation 3

Develop a Landscape and Ecology Management Plan to ensure the correct management of the species-rich grassland post-development.

Opportunities should also be explored to provide additional ecological enhancements to offset any loss of existing grassland. This could include the provision of green roofs on new buildings. Where feasible, an extensive green roof system should be installed, where wildflowers can be established or seeded/plug planted. Incorporating areas of bare ground/substrate would also be beneficial for invertebrate species.

Recommendation 4

Explore opportunities for an extensive green roof where wildflower turf can be established.

6. CONCLUSION

This NVC survey and concurrent soil sampling indicates that, despite acidic grassland indicators being identified within Parcel 1B at Land at Stebbing, Essex, the grassland onsite is of a neutral character and supports grassland communities that are widely distributed in lowland Britain.

The drought conditions experienced during the survey have restricted the characterisation of grassland communities, in particular for Grassland A. Nevertheless, the outputs from MAVIS statistical software, in combination with the soil analysis, point over-ridingly towards the Site supporting neutral grassland communities, even if the exact nature of the communities cannot be defined by the quadrat data. The survey constraint imposed by drought conditions is therefore not considered to have adversely affected the conclusions drawn in this report.

It is strongly recommended that existing grassland is retained and enhanced as part of the proposed development, to ensure that biodiversity net gain can be delivered within the development. The results from this NVC survey should be used to inform the most appropriate choice of seed mix and enhancement technique, to ensure successful enhancement and conservation gains.

7. REFERENCES

AHDB (2017) Agriculture and Horticulture Development Board: Nutrient Management Guide (RB209). Updated May 2017. Available at:

[redacted].

Anon. (1981). *The Wildlife & Countryside Act*. HMSO, London.

British Standards Institution (2013). *British Standard 42020:2013, Biodiversity – Code of practice for planning and development.* British Standards Institution: London.

Centre for Ecology and Hydrology. (2016). *Modular Analysis for Vegetation Information System (MAVIS) Plot Analyser* v.1.00.

Essex BAP (1999) Essex Biodiversity Action Plan: A Wilder Future for Essex. Available at: https://www.braintree.gov.uk/downloads/file/2436/e47-the-essex-biodiversity-action-plan-1999.

Hybrid Ecology Ltd (2021) *Preliminary Ecological Appraisal: Land adjacent to Stebbing, Essex. V1: July 2021.* Hybrid Ecology Ltd: Chelmsford.

JNCC (2008) UK Biodiversity Action Plan Priority Habitat Descriptions: Lowland Dry Acid Grassland. Available at: https://jncc.gov.uk/our-work/uk-bap-priority-habitats/.

NRM Ltd (2022) *Soil Analysis Report for Land at Stebbing, Essex. Laboratory card reference: 12792/22.* NRM Ltd (part of Cawood): Bracknell.

Rodwell, J.S. (1992). *British Plant Communities 3: Grasslands and Montane Communities*. Cambridge University Press, Cambridge.

Rodwell, J.S. (2000). *British Plant Communities 5: Maritime communities and vegetation of open habitats*. Cambridge University Press, Cambridge.

Rodwell, J. S (2006). *National Vegetation Classification: Users' handbook*. Joint Nature Conservation Committee: Peterborough.

Rose, F. (2006) *The Wildflower Key*. Frederick Warne and Co.: London.

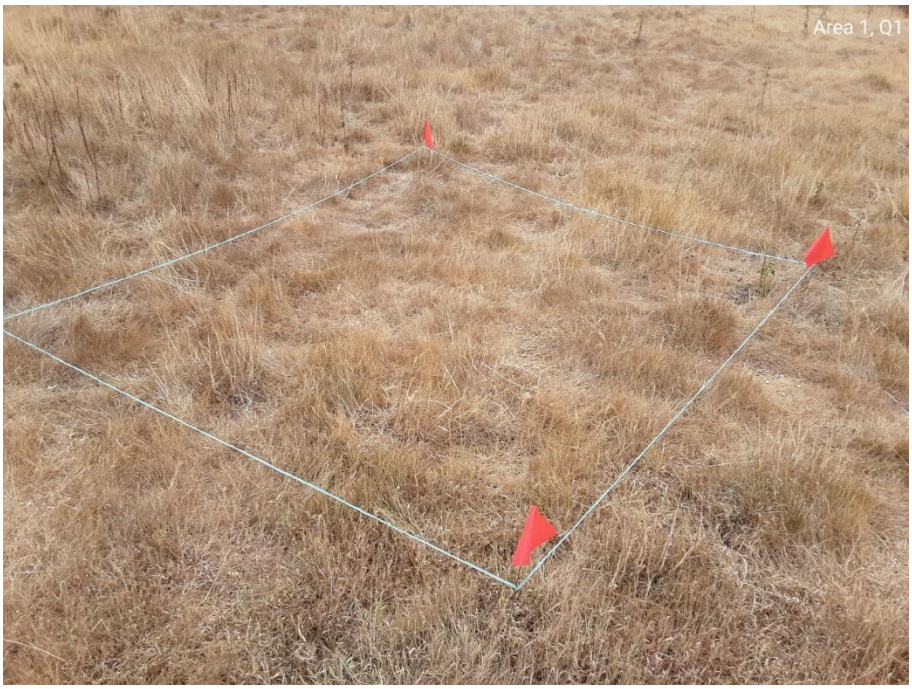
Stace, C. (2019) *New Flora of the British Isles (4th edition).* Cambridge University Press, Cambridge.
Streeter, D., Hart-Davies, C., Hardcastle, S., Cole. F & Harper, L. (2009) *Collins Flower Guide*. Collins: London.

Uttlesford District Council (2005) Uttlesford Local Plan: adopted January 2005. Available at: https://www.uttlesford.gov.uk/local-plan-2005.

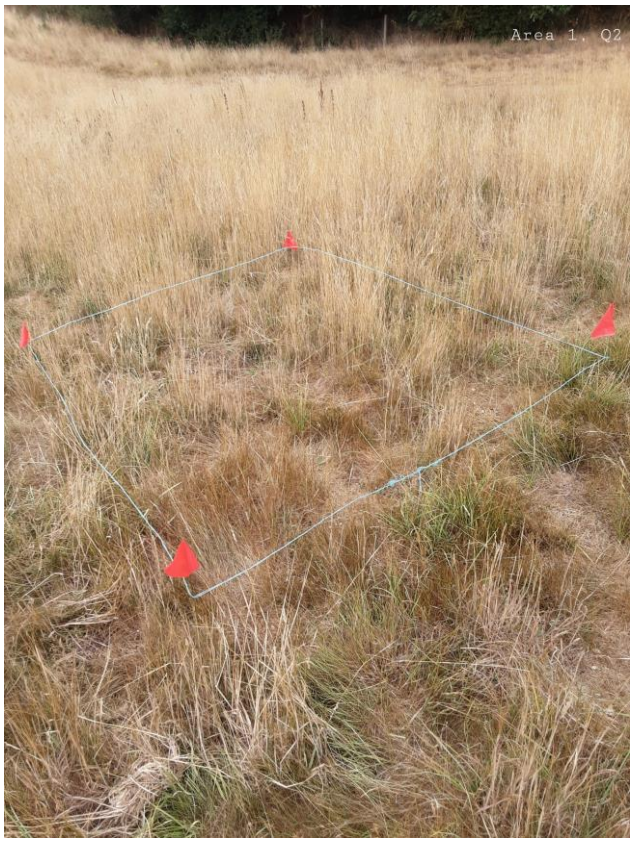
8. APPENDICES

8.1. Appendix 1: Photographs

Photograph 1: Grassland A, Quadrat 1



Photograph 2: Grassland A, Quadrat 2



Photograph 3: Grassland A, Quadrat 3

Photograph 4: Grassland A, Quadrat 4

Photograph 5: Grassland A, Quadrat 5

Photograph 6: Grassland B, Quadrat 1

Photograph 7: Grassland B, Quadrat 2

Photograph 8: Grassland B, Quadrat 3

Photograph 9: Grassland B, Quadrat 4

Photograph 10: Grassland B, Quadrat 5

Photograph 11: Grassland C, Quadrat 1

Photograph 12: Grassland C, Quadrat 2

Photograph 13: Grassland C, Quadrat 3

Photograph 14: Grassland C, Quadrat 4

Photograph 15: Grassland C, Quadrat 5

8.2. Appendix 2: National and local planning policy

National Planning Policy Framework (NPPF)

Full text is available at: https://www.gov.uk/government/publications/national-planning-policy-framework--2

The revised NPPF was updated on 20 July 2021 setting out the Government's planning policies for England and the process by which these should be applied. The policies within the NPPF are a material consideration in the planning process. The key principle of the NPPF is a presumption in favour of sustainable development, with sustainable development defined as a balance between economic, social and environmental needs.

Policies 174 to 188 of the NPPF address conserving and enhancing the natural environment, stating that the planning system should:

- Contribute to and enhance the natural and local environment by protecting and enhancing valued landscapes;
- Recognise the wider benefits of ecosystem services; and
- Minimise impacts on biodiversity and provide net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity.

Furthermore, there is a focus on re-use of existing brownfield sites or sites of low environmental value as a priority, and discouraging development in National Parks, Sites of Specific Scientific Interest, the Broads or Areas of Outstanding Natural Beauty other than in exceptional circumstances.

Where possible, planning policies should also

"Promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity".

Section 41 of Natural Environments and Rural Communities (NERC) Act 2006

Full legislation text available at: http://www.legislation.gov.uk/ukpga/2006/16/section/41

Many of the species above, along with a host of others not afforded additional protection, are listed on Section 41 of the NERC Act 2006.

Section 41 (S41) of the Natural Environment and Rural Communities (NERC Act 2006) requires the Secretary of State to publish a list of habitats and species that are of principal importance for the conservation of biodiversity in England. The list (including 56 habitats and 943 species) has been drawn up in consultation with Natural England and draws upon the UK Biodiversity Action Plan (BAP) List of Priority Species and Habitats.

The S41 list should be used to guide decision-makers such as local and regional authorities to have regard to the conservation of biodiversity in the exercise of their normal functions – as required under Section 40 of the NERC Act 2006. The duty applies to all local authorities and extends beyond just conserving what is already there, to carrying out, supporting and requiring actions that may also restore or enhance biodiversity.

Local planning policy

Uttlesford District Council has produced an adopted Local Plan (Uttlesford District Council, 2005), which covers number of policies relating to biodiversity and habitat conservation, including:

- **Policy GEN7: Nature Conservation:** Development that would have a harmful effect on wildlife or geological features will not be permitted unless the need for the development outweighs the importance of the feature to nature conservation. Where the site includes protected species or habitats suitable for protected species, a nature conservation survey will be required. Measures to mitigate and/or compensate for the potential impacts of development, secured by planning obligation or condition, will be required. The enhancement of biodiversity through the creation of appropriate new habitats will be sought.
- **Policy ENV7: The Protection of the Natural Environment, Designated Sites:** Development proposals that adversely affect areas of nationally important nature conservation concern, such as Sites of Special Scientific Interest and National Nature Reserves, will not be permitted unless the need for the development outweighs the particular importance of the nature conservation value of site or reserve. Development proposals likely to affect local areas of nature conservation significance, such as County Wildlife sites, ancient woodlands, wildlife habitats, sites of ecological interest and Regionally Important Geological/ Geomorphological Sites, will not be permitted unless the need for the development outweighs the local significance of the site to the biodiversity of the District. Where development is permitted the authority will consider the use of conditions or planning obligations to ensure the protection and enhancement of the site's conservation interest.
- **Policy ENV8: Other Landscape Elements of Importance for Nature Conservation:** Development that may adversely affect these landscape elements: Hedgerows, Linear tree belts, Larger semi natural or ancient woodlands, Semi-natural grasslands, Green lanes and special verges, Orchards, Plantations, Ponds, reservoirs, River corridors, Linear wetland features, and networks or patterns of other locally important habitats, will only be permitted if the following criteria

apply: a) The need for the development outweighs the need to retain the elements for their importance to wild fauna and flora; b) Mitigation measures are provided that would compensate for the harm and reinstate the nature conservation value of the locality. Appropriate management of these elements will be encouraged through the use of conditions and planning obligations.

A new Local Plan is currently in preparation, to be published in 2023.

There is also a county-wide Biodiversity Action Plan in Essex (Essex BAP, 1999), which identifies a series of priority habitats and species. Priority habitats are:

- Ancient and/or species-rich hedgerows and green lanes;
- Ancient woodland;
- Cereal field margins;
- Coastal grazing marsh;
- Seagrass beds;
- Heathland;
- Old orchards;
- Reedbeds;
- Saline lagoons; and
- Urban areas.

8.3. Appendix 3: Floristic tables

Grassland A

Common name	Scientific name	Vegetation Cover in Quadrat					Constancy value	Frequency class
		Q1	Q2	Q3	Q4	Q5		
Yorkshire-fog	*Holcus lanatus*	1	1	1	1	1	5	*Constant*
Common bent	*Agrostis capillaris*	1	1	1	1		4	*Constant*
Red fescue	*Festuca rubra agg.*	1	1	1	1		4	*Constant*
Cock's-foot	*Dactylis glomerata*		1	1	1		3	*Frequent*
Common mouse-ear	*Cerastium fontanum*		1	1			2	*Occasional*
Creeping thistle	*Cirsium arvense*				1	1	2	*Occasional*
Hairy sedge	*Carex hirta*		1			1	2	*Occasional*
Common nettle	*Urtica dioica*					1	1	*Occasional*
Common ragwort	*Jacobaea vulgaris*	1					1	*Occasional*
Creeping bent	*Agrostis stolonifera*					1	1	*Occasional*
Creeping soft-grass	*Holcus mollis*	1					1	*Occasional*
False oat-grass	*Arrhenatherum elatius*			1			1	*Occasional*
Germander speedwell	*Veronica chamaedrys*		1				1	*Occasional*
Meadow buttercup	*Ranunculus acris*					1	1	*Occasional*
Meadow foxtail	*Alopecurus pratensis*			1			1	*Occasional*
Phleum sp.	*Phleum* sp.					1	1	*Occasional*
Rough-stalked feather-moss	*Brachythecium rutabulum*			1			1	*Occasional*
Sheep's sorrel	*Rumex acetosella*			1			1	*Occasional*
Sweet vernal-grass	*Anthoxanthum odoratum*					1	1	*Occasional*

Grassland B

Common name	Scientific name	Vegetation Cover in Quadrat					Constancy value	Frequency class
		Q1	Q2	Q3	Q4	Q5		
Cock's-foot	*Dactylis glomerata*	1	1	1	1	1	5	*Constant*
False oat-grass	*Arrhenatherum elatius*	1	1	1	1	1	5	*Constant*
Meadow foxtail	*Alopecurus pratensis*	1	1	1	1	1	5	*Constant*
Yorkshire-fog	*Holcus lanatus*	1	1	1	1	1	5	*Constant*
Common bent	*Agrostis capillaris*		1		1	1	3	*Frequent*
Common couch	*Elytrigia repens*	1			1	1	3	*Frequent*
Common nettle	*Urtica dioica*	1		1	1		3	*Frequent*
Smooth meadow-grass	*Poa pratensis*	1	1			1	3	*Frequent*
Cow parsley	*Anthriscus sylvestris*			1	1		2	*Occasional*
Creeping thistle	*Cirsium arvense*	1	1				2	*Occasional*
Field bindweed	*Convolvulus arvensis*			1		1	2	*Occasional*
Rough meadow-grass	*Poa trivialis*			1	1		2	*Occasional*
Lesser stitchwort	*Stellaria graminea*	1					1	*Occasional*
Phleum sp.	*Phleum* sp.					1	1	*Occasional*
Rough-stalked feather-moss	*Brachythecium rutabulum*				1		1	*Occasional*
Soft-brome	*Bromus hordeaceus*					1	1	*Occasional*

Grassland C

Common name	Scientific name	Vegetation Cover in Quadrat					Constancy value	Frequency class
		Q1	Q2	Q3	Q4	Q5		
Curled dock	*Rumex crispus*	1	1	1	1	1	5	*Constant*
Yorkshire-fog	*Holcus lanatus*	1	1	1	1	1	5	*Constant*
Creeping bent	*Agrostis stolonifera*		1	1	1	1	4	*Constant*
Creeping buttercup	*Ranunculus repens*	1	1	1		1	4	*Constant*
Hairy sedge	*Carex hirta*	1	1		1	1	4	*Constant*
Hard rush	*Juncus inflexus*		1	1	1	1	4	*Constant*
Marsh thistle	*Cirsium palustre*	1	1		1	1	4	*Constant*
Red fescue	*Festuca rubra*	1	1	1	1		4	*Constant*
Sweet vernal-grass	*Anthoxanthum odoratum*		1	1	1	1	4	*Constant*
Creeping thistle	*Cirsium arvense*	1			1	1	3	*Frequent*
Square-stalked St John's-wort	*Hypericum tetrapterum*		1	1		1	3	*Frequent*
Common nettle	*Urtica dioica*	1	1				2	*Occasional*
Meadow foxtail	*Alopecurus pratensis*			1		1	2	*Occasional*
Soft-rush	*Juncus effusus*				1	1	2	*Occasional*
Common bent	*Agrostis capillaris*	1					1	*Occasional*
Common mouse-ear	*Cerastium fontanum*				1		1	*Occasional*
Common ragwort	*Jacobaea vulgaris*	1					1	*Occasional*
Germander speedwell	*Veronica chamaedrys*	1					1	*Occasional*
Meadow thistle	*Cirsium dissectum*			1			1	*Occasional*
Rough meadow-grass	*Poa trivialis*					1	1	*Occasional*
Selfheal	*Prunella vulgaris*		1				1	*Occasional*
Water mint	*Mentha aquatica*					1	1	*Occasional*

MKA
ECOLOGY

MKA Ecology Limited, New Cambridge House, Bassingbourn Road, Litlington, Cambridgeshire SG8 0SS
01763 262 211 | info@mkaecology.co.uk | www.mkaecology.co.uk
Company registration no 5858121 | VAT no. 825137440