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Important Plants & Habitats Survey (NVC/UKHabs)

Survey site address:
Land Off The Common, The Common, Fritchley, Belper, Derbyshire DE4 5BW

Site Location
The site is is centred at National Grid Reference SK35285291 and has a size of approximately 17ha.

Client:
Mr & Mrs Harrison

Survey date:
25th June 2024

Project:
Outline Planning Application for the erection of up to 17 dwellings and associated infrastructure, (Access not Reserved) (May affect the Rights of Way)

LPA:
Amber Valley Borough Council

Executive Summary

The following is a summary of baseline ecological conditions identified at the time of survey and work you will need to commission to obtain planning permission and/or comply with legislation and other policy**.**

The site contains the following grassland communities.

Grassland
UKHabs: g3a6 other lowland meadow
NVC: MG1e *Arrhenatherum elatius grassland – Centaurea nigra subcommunity*

The development will lead to the loss or damage of a Section 41 Habitat of Principal Importance under the Natural Environment and Rural Communities (NERC) Act and is of regional importance. MG1e also qualifies the site for local wildlife status, rendering it of additional local importance. Under the National Planning Policy Framework (NPPF) the LPA are obliged to have "due regard" for the presence of s.41 habitats in their decision making.

A BNG assessment will be required to ascertain the scale of losses of habitat units. Offsite compensation, the payment of offsetting credits and/or a bespoke compensation agreement with the LPA may be required should the proposed plans not achieve BNG.

Recommendations are made within the body of the report for how the development could be designed to minimise losses and ensure the habitat and its community is not lost from the site and locale.

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Version control

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Final	1.0	Fay Brotherhood BSc (Hons) MSc, Consultant Ecologist	01/07/2024
Amended	2.0	Fay Brotherhood BSc (Hons) MSc, Consultant Ecologist	02/07/2024

Proportionality

The work involved in preparing and implementing all ecological surveys, impact assessments and measures for avoidance, mitigation, compensation and enhancement should be proportionate to the predicted degree of risk to biodiversity and to the nature and scale of the proposed development. Consequently, the decision-maker should only request supporting information and conservation measures that are relevant, necessary and material to the application in question. Similarly, the decision-maker and their consultees should ensure that any comments and advice made over an application are also proportionate. This approach is enshrined in Government planning guidance, for example, paragraph 185 of the National Planning Policy Framework for England. The desk studies and field surveys undertaken to provide a Preliminary Ecological Appraisal (PEA) might in some cases be all that is necessary.
(BS 42020, 2013)

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1.0 Introduction

Background

Arbtech Consultancy Ltd was instructed to undertake a botanical walkover survey (variously referred to as the; "survey, report"). Project, site and client details are named on the title page. A plan of the proposal will be provided in Appendix 1 (when available if not included).

Previous Reports

Previous ecological reports have been produced for the site. These comprise the following.

- **Preliminary Ecological Appraisal (PEA) (Astute Ecology, November 2021).**
- **Baseline Habitat Condition Assessment (Arbtech, June 2024)**
- **Badger walkover survey (Arbtech, June 2024).**

The recent submission for outline permission made use of this report which met criticism from the Derbyshire Wildlife Trust for its being out of date, using obsolete classification system and a lack of robustness of botanical conclusion arising from its having been conducted in winter, leading to a potentially erroneous classification of "species poor improved grassland" which under UKHabs would qualify it as "g4 modified grassland". A visit carried out in early September revealed that several other plant species were present including common knapweed, tufted vetch, common bird's-foot-trefoil, meadow vetchling, red clover and meadow buttercup, indicating the site hosts at least "g3c other neutral grassland".

Due to the site

1. Being of large size
2. Containing semi or unimproved grassland
3. Containing positive indicator species for important habitats (axiophytes)
4. Not being carried out within the optimal season for surveying vegetation

Phase 2 botanical surveys by a suitably experienced botanist were recommended to fully classify and condition assess the habitats on site as well as identify any important species. The surveys were to be undertaken in Summer (to classify and assess condition) and the results within would inform any Biodiversity Net Gain Calculation, habitat replacement, creation and enhancement plans.

Relevant information from the PEA and BHCA (which was conducted in parallel) is incorporated within the report.

Aims

The survey aims via a field visit to identify as full a range of plants as practical (within the limits of proportionality, practicality and the chosen sampling method, with particular attention paid to potentially Important Plants and axiophytes[1] and notable species. Using this information, the survey aims thus to;

1) Characterise the surveyed habitat in terms of its general vegetative sub community type and conservation importance (Important meaning; Local Biodiversity Action Plan/list habitats-Habitats of Principal Importance e.g. those under S.41 NERC Act -Annex 1 Habitats Directive habitats and irreplaceable habitats, (which once lost cannot be recreated), assisted by the use of both UKHabs and where appropriate, National Vegetation Classification coding.

2) Determine the presence of Important Species. These include Schedule 8 Protected Species and Schedule 5 Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019), Species of Principal Importance s.41 NERC Act (England), endemic, red listed, nationally rare/scarce species, species at the edge of their range, species on local biodiversity lists, common species present on sites containing a large proportion of the species local or regional population.

The conclusions drawn from the assessment will facilitate the following assessments of;

1) Conservation value of the site.
2) Impacts and their magnitude.
3) Recommendations for compensation, mitigation and/or enhancement.

[1] Axiophytes = worthy plants". Indicators of habitat considered important for conservation, such as ancient woodlands, clear water and species-rich meadows.

2.0 Surveyor and Limitations

Surveyor Experience and Qualifications

The site survey was undertaken by Fay Brotherhood BSc, (Hons) MSc. She has five years of experience in conducting bat related surveys and is a botanical and habitats specialist. She holds a National Diploma in Countryside Management, a BSc Hons in Wildlife Conservation and an MSc in Environmental Management. Professionally, as both a consultant ecologist and a ranger she has 6 years of professional survey experience and over 15 years of amateur experience in the identification of plants, fungi, and more recently, lichens and bryophytes. Her MSc dissertation aimed to ascertain the relationship between species distribution and historic land use in the grass verges and green spaces of Welwyn Garden City, Hertfordshire. She actively records in Hertfordshire and her home county of Leicestershire and is a member of the British Botanical Society of Britain and Ireland (BSBI) and the British Lichen Society (BLS).

	Temperature (°C)	Humidity (%)	Cloud Cover (%)	Wind (km/h)	Rain
	30	87	10	4	None

Limitations

The assessment is based on knowledge of onsite habitat dynamics, wider landscape ecology and individual species ecology and biology as currently understood and whilst every effort has been made to describe the baseline botanical conditions within the survey area, and evaluate these features, this report cannot provide a complete characterisation of the site as this can only be provided via a number of visits carried out over the year to capture late or earlier emerging plant species that may not have been visible at the time of the survey. This is likely to be disproportionate in terms of delay and cost. This is not considered a significant limitation, as conditions on site and from previous surveys are considered to provide an adequate overview of the sites value. Precautionary measures are provided where uncertainty remains.

Specific limitations comprised the following;

Biological Records Data (BRD)

- **Whilst planning policy and professional standards usually call for the inclusion of biological records data (BRD), no data has yet been obtained. However, in light of data collected and impact assessments made on the ground during the site visit, it is not considered that the inclusion of data would add particular weight to or alter any of the conclusions or recommendations within, particularly considering that data was obtained to inform the previous PEA (Astute Ecology, 2021).**

Desk Study Resources

- **Data gleaned from the desk study is based upon information provided by third parties. This has not been independently verified by Arbtech Consulting Limited. Publicly data from British Geological Society and the Landis Soilscapes App is of low resolution and ground truthing may be required to inform any required habitat creation works. Data on Magic cannot be relied upon to capture all Important Habitats, especially where they occur at the small and fragmentary scale.**

Species-complexes and hybrids

- **Certain taxa comprise 'micro-species' within larger "aggregates" the identification of which requires highly specialised skills and knowledge. Dandelions *Taraxacum, Hamata, Erythrosperma, Ruderalia, Celtica* agg, hawkweeds *Hieracium* spp, willows and sallows *Salix* spp. and brambles *Rubus* agg are specific examples. In addition, fungal taxonomy is in constant flux and new species and sub-species as well as varieties of named species are continually being named. The skill levels required to divide these are high and this means some subspecies and varieties may have been missed. The survey protocol followed here normally records ambiguous species requiring of specialist knowledge to genus level only unless subspecies can be easily divided. Notes are made where ambiguity remains, in particular if it is deemed that a lack of a definitive ID may carry a risk of failing to record a notable species. Preserved fungal samples are retained in case further analysis by e.g DNA sampling is required. Further survey is recommended if there are a sufficient number of unidentified/ambiguous fungal specimens as this may suggest the possibility of a notable mycoflora in requirement of specialist study.**

NVC limitations

- **The NVC methodology does not encompass a full assessment of all plants on a site and instead aims to sample the assemblage present in the aim of assigning it a community name. It aims to sample homogenous stands and therefore rare plants within the stand or plants present only in isolated places within the site may not be sampled. A walkover was conducted simultaneously in an attempt to capture missed species however a more in-depth sampling strategy would be required to capture the entire assemblage.**

All limitations have been taken into account during the evaluation of the site and requirement for further surveys and mitigation.

3.0 Desk Study

Desk Study Methodology

The desk study included a review of the magic.gov.uk database for statutory and non-designated sites and relevant non-statutory designations such as Important Plant Areas within a 2km radius of the site (farther afield sites are included if considered relevant to the assessment). Landscape value and context as well as geology and soils is ascertained from Google Satellite and historic imagery as well as important (Schedule 41 NERC) habitats mapped on Magic and geology and soils mapping on British Geological Society Map Viewer and Landis Soilscapes app as well as any specific relevant information found via wider web search. In addition, any granted European Protected Species Licences (EPSL) for Schedule 5 (Wildlife & Countryside Act 1981) for plants held on magic.gov.uk database have been considered where these are within influencing distance of the site.

Location plan in appendix 2

Site Context and Landscape Assessment

Site Description
The site survey area (Appendix 3) comprised two fields (together encompassing 0.8ha), with a tree lined western boundary bordered by stone walls. A public path and residential properties bounded the eastern boundary, whilst roads bounded the northern and southern boundaries.
A site location plan is provided in **Appendix 3**.

Landscape and Local Habitats
The site is set within rural Derbyshire, immediately northwest of the village of Fritchley at the south eastern corner of the Peak District. Whilst the local of the site is not mapped as containing any important habitat according to Magic, ancient and broad leaved woodland lies ~290m to the east in association with a large tract of ancient woodland forming the former Crich Chase. This is associated with the steep sited gorge of the River Derwent and forms a major landscape feature ,containing a mosaic of woodland, wood pasture and parkland, semi improved grassland, lowland meadow, lowland heathland and lowland dry acid grassland. Most of this is designated as Shining Cliffs Wood and Crich Chase SSSI. To the east of the site, notable habitats are distributed sparsely, restricted to fragmented blocks of broadleaved woodland and traditional orchards, the closest of which is an orchard which lies immediately across the road from the site, approximately 14.8m east.

Site History and Management
In the 1800's the site was marked on historic maps as being part of the former Chrich Common. At this time, the common had been enclosed (possibly recently

considering its persistence on the map) and the fields were present in their current layout as part of a strip of similar narrow fields, denoting some form of historic strip cultivation. It features a stone wall with open access running across the middle of the site from west to east, which is likely a relic from original enclosure.

It is understood the site has previously been used to graze livestock at present the site appears to be unmanaged and the dominance of false oat grass *Arrhenatherum elatius* indicates several years have passed with no grazing or cutting regime. However, Bing maps illustrates cutting has taken place relatively recently.

The primary mode of land use in this part of Derbyshire is pasture and as such it is likely the grassland on site is of long habitat, although it may have received agricultural improvements in the past.

Geology and Soils

The underlying geology comprises the mudstone, siltstone and sandstone of the Bowland Shale Formation, the mudstone component of which is weakly calcareous. Wells marked on historical maps at regular occurrence around the site and it is likely the mudstones are water bearing. As such the soils comprise slowly permeable seasonally wet acid loamy and clayey soils

Aspect & Topography

The grassland is sited at the top third of a gentle slope rising east to west from a watercourse to the high point of Bowmer rough. The slope becomes more acute to the southwestern corner of the field and the slope is east facing.

Designated Sites

- Crich Chase SSSI (~265m west) contains various woodland habitats alongside species-rich neutral and acid grasslands of the NVC types MG5 crested dog's-tail Cynosurus cristatus– common knapweed Centaurea nigra grassland and U4 sheep'sfescue Festuca ovina – common bent Agrostis capillaris – heath bedstraw Galium saxatile grassland; and a rich assemblage of grassland fungi, in particular its waxcaps (Hygrocybe), fairyclubs (Clavariaceae) and pinkgills (Entoloma).

- Cromford Canal SSSI/LNR (1.3km west) is designated for its freshwater habitats, although on the upper banks and towpath margins the marsh grades into grassland. Here 190 herbaceous plant species have been recorded. This diversity is well structured and provides a continuity and variety of food niches for the important insect fauna Characteristic species are lady's smock Cardamine pratensis, large bitter-cress Cardamine amara, meadowsweet Filipendula ulmaria wild angelica Angelica sylvestris, hemp agrimony Eupatorium cannabinum and gipsywort Lycopus europaeus. Skullcap Scutellaria galericulata and marsh woundwort Stachys palustris are occasional, and the lesser spearwort Ranunculus flammula is local. A rare woodland plant found on the canal banks is the small teasel Dipsacus pilosus. This may provide some useful context to this site although the microclimate deep in the gorge will be markedly different.

- Shining Cliff Woods SSSI (1.4km northwest) supports a range of woodland types with a generally north and western distribution and is not likely to provide useful

context to this site.

- Ambergate and Ridgeway Quarries (1.4km southeast) is a geological SSSI designated for its coal measures exposures and may provide some geological context.

There are 14 Local Wildlife Sites (LWS) within 2km. Most are woodland based, but some are designated for unimproved hay meadows and neutral grassland (The Torr, Fritchley Disused Tramway and Tithe Farm Meadows and Shining Cliff Meadows).

Important Plant Areas
The site is/is not within an Important Plant Areas, the nearest of which is over 26km north west.

Summarised Botanical Value Map
This categorises monads (1 x 1 km grid squares) as being of Low, Moderate or High botanical value according to the presence of Rare, Scarce and Threatened (RST) plant species and/or the proportion of Priority Habitat Positive Indicator (PHPI) species (axiophytes). This was developed as a way of targeting appropriate areas for tree planting (Natural England, 2023). The site is located in an area of high botanical value.

4.0 Field Survey

Field Survey Methodology

Species Identification

Species were identified where possible the field, supported by the use of a hand lens and/or macro photography. Where not readily identifiable in the field, descriptive location notes were made upon the field map and samples were taken via photographs (using zoom, manual focus and any light corrective factors to improve colour capture) and illustrating all identifying features such as leaf junctures, undersides, hairs, spine shapes etc).

Species data was collected using a suitable data collection app (such as iRecord), to collate photographs, grid reference and notes on habitat, relative abundance, relationships with other plants, abiotic variables (e.g. soil, aspect, topography) and other comments of note. Such apps usually provide an Auto ID service. Whilst these were used as a supportive methodology, Auto ID is notoriously unreliable. As such, any suggestions were validated or rejected via book and internet resource cross referencing (resources used are listed within the bibliography).

Where it was anticipated that more detailed examination may be required, physical samples were taken, with reference to codes of conduct for sample collection outlined in Rose et al (2006) and the Botanical Society for Britain and Ireland Code of Conduct and with respect to the Wildlife and Countryside Act 1981, which stipulates that landowner permission is required before any plant may be uprooted. Samples were identified at the desk using hand lens or microscope where necessary.

Verification by more experienced botanists such as the relevant County Recorder was sought where there was uncertainty. Where this was not possible and uncertainty over ID remains, this is noted, and species are recorded to genus level. If failure to attain a species level identification risks missing an important species, or may lead to an incorrect habitat classification, this too is noted.

UKHabs Assessment

The site was surveyed with due consideration to methodologies adapted to the sites individual circumstances set out in the UKHabs user manual (UKHabs Working Group, 2018), also incorporating adapted forms of the relevé method (Minnesota Department of Natural Resources. 2007) and the National Vegetation Classification (Rodwell, 2006), in the aim of ensuring full and efficient species capture,

The site was divided into several relevé plots corresponding to visually observable changes in vegetative characteristics. It was sampled methodically as linear zig zag transects across the site. In homogenous stands, sampling continued until no new species were found. Where the stand was predictably uniform in terms of relative abundance and distribution, sp/m2 scores were obtained directly from the relevé. Where the stand was more unpredictable, between 5-10 quadrats were used to gain sp/m2 scores in line with NVC methodology. Particular attention was paid during the walkover to structural elements such embankments, boundaries, slopes, areas of

short, grazed grass and areas of hard standing where additional species adapted to differing conditions may be present. During the survey, habitats were assessed for their suitability to support protected or notable species, and their presence, locations and growing conditions were recorded.

Notes were made on the overall species assemblage including their relative abundance via DAFOR (Dominant, Abundant, Frequent, Occasional, Rare) scores and on any other ecological incidental observations.

During the survey, habitats were assessed for the presence of or suitability for protected or notable species/assemblage and details regarding presence, locations and growing conditions were recorded.

Sp/m^2 scores were gained from quadrats.

NVC Survey

An NVC survey includes the monitoring of all plants present in similar (homogeneous) stands of plant composition and structure. In grassland, the majority of these plants are flowering plants, grasses, rushes and sedges, but some identification of mosses may be required for particular communities of plants. The method does not categorise the transition between vegetation types particularly well, and it is advised not to be used in these situations.

The composition and structure of plant communities present in similar (homogeneous) stands of grassland was assessed, to include flowering plants, grasses, rushes and sedges and mosses. The method does not categorise the transition between vegetation types particularly well, and its use in such situations is generally not advised.
The survey was carried out in the field using the following;

- Map of survey area.
- NVC record form suitable for the site.
- 2x2m quadrat
- Clipboard and stationery
- ID books and hand lens
- GPS

A brief walk-over of the habitat was undertaken to identify both similar and differing vegetation stands prior to commencing the survey, supported by the predictions made by desk maps. If significantly different communities were found to be present, this information was used to identify distinct sampling areas for quadrat placement.

2x2m Quadrat placement should prevent the introduction of bias by avoiding preferential selection of single structure types or areas of unusually high species richness and should aim to select uniform stands representative of the whole site, avoiding clear transitional zones. However, where the site is a grassland mosaic, this can be captured via even sampling of homogenous sward and community types within it. It should be noted that swards tend towards variability across sites and transitions

can be gradual and unavoidable. To counter this, the surveyor picked areas of sward that were clearly homogenous and displayed less "difference". Figure 1 provides examples of appropriate placements in relation to compositional and structural boundaries.

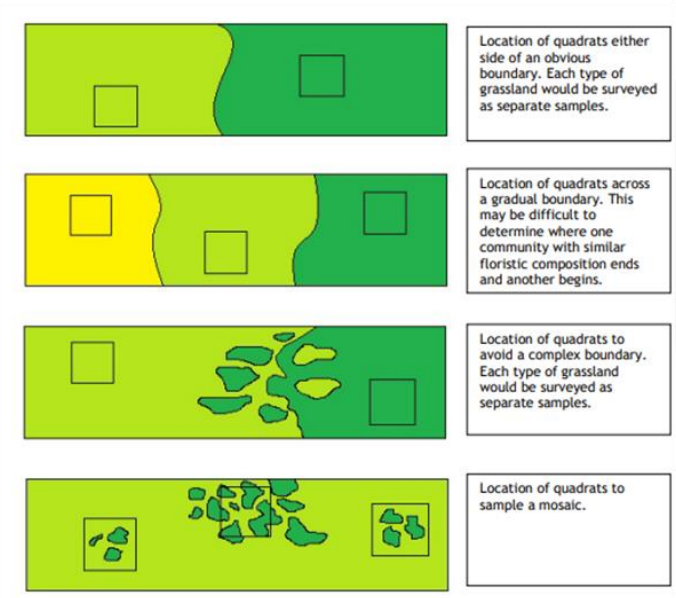


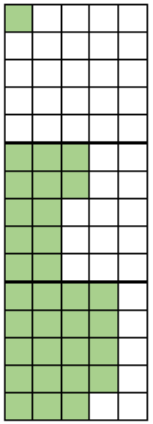
Figure 1: Examples of quadrat placement for uniform stands and mosaics (Save our Magnificent Meadows, 2015).

Between a minimum of 3 and an ideal of 5 quadrats are generally placed within each similar stand with a 10-figure grid reference recorded. In the case of this site, 10 quadrats were used to ensure even coverage of two distinct vegetation structures. All plants within the quadrat were recorded alongside an estimation of percentage cover, using either the DOMIN scale or Braun-Blanquet scale as illustrated in Table 1, noting that whilst the DOMIN scale can be related to the simpler BraunBlanquet scale they cannot be related vice versa. The DAFOR (Dominant, Abundant, Frequent, Occasional and Rare) scale was not used as there is no quantitative meaning to these frequencies and they cannot be used to analyse the subsequent data. In some cases percentage totals were over 100% to factor in the tendency for plants to layer themselves above one another.

DOMIN scale		Braun-Blanquet scale	
Cover	**Scale**	**Cover**	**Scale**
91-100%	10	76 -100%	5
76-90%	9	51-75%	4
51-75%	8	26-50%	3
34-50%	7	6-25%	2
26-33%	6	1-5%	1
11-25%	5	<1%	*
4-10%	4		
< 4% (many individuals)	3		
< 4% (several individuals)	2		
< 4% (few individuals)	1		

Examples of quadrat placement for uniform stands and mosaics

Percentage covers were estimated by imagining the plant as grouped into a corner or lined against one edge of the quadrat, in terms of the number of squares filled by the plant on a 5 x 5 grid with each square representing 4% as illustrated in Table 2.



4% of a quadrat
DOMIN = 4
Braun-Blanquet = 1*

48% of a quadrat
DOMIN = 7
Braun-Blanquet = 3

76% of a quadrat
DOMIN = 9
Braun-Blanquet = 5

*Below this = 1-3 on DOMIN or 1 on Braun-Blanquet

Examples of percentage estimations

Notes were made on the following regarding the general site and within any individual community/structural subtypes for incorporation into the site descriptions.

- Altitude
- Slope

- Aspect
- Geology and soils
- Soil type
- Bare rock, bare soil and vegetation litter recorded as a percentage.
- Terrain description (i.e., notes, annotated sketch, photographs.

Site management information e.g., grazing burning etc.

5.0 Field Survey Results

The following table/s presents the results of the field survey parcels. Indicator species (axiophytes) for the relevant habitat of importance are highlighted in green. Important species are highlighted in bold.

Grassland	
Description & evaluation *The garden forms a clearing within the woodland, which contains an at present unmanaged lawn. The community is a species poor one, dominated by Yorkshire fog and*	
Species #	***23***
Species/2m²	**Northern field – 8-12** **Southern field - 9-12**
Grass:forb ratio	***80:20***
North field	

Scientific name	Common name	Q1	Q2	Q3	Q4	Q5	Constancy
Centaurea nigra	Common knapweed	2			1	1	**III**
Holcus lanatus	Yorkshire fog	10	9	5	7	9	V
Arrhenatherum elatius	False oat grass	9	9	9	9	9	V
Plantago lanceolata	Ribwort plantain	4	7		2	2	IV
Dactylis glomerata	Cocksfoot	5	4	6		4	IV

Agrostis capillaris	Common bent	4	4	4		2	IV
Anthoxathum odoratum	Sweet vernal grass	3		4	4	4	IV
Rumex acetosa	Common sorrel		3	1	2	4	IV
Heracleum sphondylium	Common hogweed			1		1	II
Alopecurus pratensis	Meadow foxtail				3		II
Ranunculus acris	Meadow buttercup				2	2	II
Lathyrus pratensis	Meadow vetchling				4	6	II
Rumex obtusifolius	Broad leaved dock			2			I
Vicia sepium	Bush vetch					1	I
Leucanthemum vulgare	Oxeye daisy	1					I
Trifolium pratense	Red clover			1			I
Trifolium repens	White clover			1			I
Sp. no per quadrat		8	6	10	9	12	

South Field

Scientific name	Common name	Q1	Q2	Q3	Q4	Q5	Constancy
Holcus lanatus	Yorkshire fog	6	7	8	9	9	V
Arrhenatherum elatius	False oat grass	6	3	8	9	8	V
Anthoxanthum odoratum	Sweet vernal grass	4	6	5	4	4	V
Centaurea nigra	Common knapweed	4	6	4	2	7	IV
Vicia sepium	Bush vetch	1	2	3		2	IV
Lathyrus pratensis	Meadow vetchling	6	6	4		1	IV
Ranunculus acris	Meadow buttercup	2	3	3			III
Trifolium pratense	Red clover		2			1	II
Rumex acetosa	Common sorrel	2		1			II
Plantago lanceloata	Ribwort plantain		2	3			II
Hypochaeris radicata	Catsear		1		1	2	III
Conopodium majus	Pignut			2			I

Vicia cracca	Tufted vetch				1	1	II
Rumex obtustifolius	Broad leaved dock				1		I
Agrostis capillaris	Common bent				4	3	II
Dactylis glomerata	Cocksfoot				2	3	II
Trisetum flavescens	Yellow oat grass				2	2	II
Alopecurus pratensis	Meadow foxtail		3				I
Trifolium pratense	red clover	1	1				II
Sp. no per quadrat		9	12	10	10	12	

6.0 Data Processing Methodology

The below text details how the collected data was handled post survey in the formulation of the conclusions cited in section 7.0.

Post Survey Classification Methodology

Plants

UKHabs

The community on site was classified via UKHabs methodology (UKHabs Working Group, 2018) using UK Habitat Classification Version 2.01 (UKHab Ltd, 2023). Use of this was augmented by the supplementary species list and descriptions for cryptic UKHab grasslands document developed by Joshua Styles MSc AMRSB MCIEEM FISC Level 6. Where possible, the habitat was classified giving due consideration to methodologies and habitat descriptions set out in the National Vegetation Classification (Rodwell, 1998; Rodwell 2006), and the relevant British Plant Communities Volume (Rodwell, various dates).

Nomenclature follows that set out in Stace (2019). Nomenclature for other taxa (e.g bryophytes, lichens) use relevant internet resources as taxonomical changes are frequent within these groups.

NVC

The habitat was classified giving due consideration to methodologies and habitat descriptions set out in the National Vegetation Classification (Rodwell, 1998; Rodwell 2006). Data tables were created based on frequency and coverage as per the below table. Frequency (as denoted by Roman numerals) refers to the number of times a species is found in the quadrats. Five quadrats were surveyed in line with best practice, but three quadrats can be used as a minimum. The descriptive measure of frequency refers to constancy or rarity of species throughout the community. Using the DOMIN or Blaun-Blanquet scales (noting that the NVC tables use the DOMIN

scale) species were ordered from greatest coverage and frequency to least coverage and frequency, in the understanding that NVC communities tend to be defined by their constant species.

NVC Frequency Scores			
Frequency class	**Percentage of quadrats**	**Descriptive measure**	**DAFOR transposition**
I	1 - 20% (1 quadrat of 3 or 5)	Scarce	Rare
II	21- 40%	Occasional	Occasional
III	41 – 60%	Frequent	Frequent
IV	61 – 80%	Constant	Abundant
V	81 – 100%	Constant	Dominant

Analysis was made preferentially by manual means, making use of the keys within the appropriate volume of Rodwell's British Plant Communities, which is reportedly recommended by the author himself (anecdotal pers. comms with a Mr Lamb) as the preferred means of analysis. This is because vegetative communities rarely behave in a predictably ordered manner and assigning communities via computer program can be impossible where communities exhibit transitional elements, which many do. The two software programs. Modular Analysis of Vegetation Information System (MAVIS) (Smart, 2000) from the Centre of Ecology and Hydrology and TABLEFIT (from the Centre of Ecology and Hydrology were used as a supporting resource in revealing possible options, with results interpreted critically. The data was entered into the selected programme. Where the result was ambiguous or otherwise suspect the analysis was if considered necessary ran a second time with all ruderals, shrubs and tree seedlings removed. The rational for this is based on the final, open vegetation communities (OV) part of the classification for which the presence of such species may provide a false output for the community by overriding other vegetation. Post analysis, the potential community outputs were assessed for good match using the relevant NVC handbooks and any other context providing supporting resources, taking into account any additional factors and variables that may impact final assessment.

7.0 Community Classification

Community Characterisation
Grassland Community Classification **Habitat Classification** **UKHabs: g3a6 other lowland meadow** **NVC: MG1e *Arrhenatherum elatius grassland – Centaurea nigra subcommunity***
MAVIS output
Group 1: North Field NVC: MG9b 59.76 NVC: MG1c 55.08 NVC: MG9 52.58 NVC: MG1e 52.45 NVC: MG1a 51.90 NVC: MG1b 51.49 NVC: MG1 50.75 NVC: MG7D 49.23 NVC: MG6b 46.05 NVC: MG7C 45.91 Group 2: South field NVC: MG1e 49.80 NVC: MG9b 48.96 NVC: MG9 46.83 NVC: MG1c 45.86 NVC: MG1 44.84 NVC: MG4v2 44.39 NVC: MG6b 44.05 NVC: MG4b 43.61 NVC: MG1a 43.59 NVC: MG4a 42.62
Analysis and Discussion
NVC

Under National Vegetation Classification coding and referencing Referencing British Plant Communities. Vol 1: Vol 3: Grasslands and montane communities (Rodwell, 2006), the community in this parcel conforms most closely to the NVC category of

MAVIS output weighed in with the highest confidence values (over or around 50%) at **MG9b *Holcus lanatus-Deschampsia cespitosa grassland (Arrhenatherum elatius sub-community)*** or **MG1a, b, c and e *Arrhenatherum elatius grassland*** for the northern field and or **MG1e *Arrhenatherum elatius grassland – Centaurea nigra subcommunity*** and MG9b for the southern field.

This reflects the authors own observational opinion, which is that the field which is of a former higher distinctiveness meadow or pasture subtype, which through cessation of management is transitioning into a form of MG1 *Arrhenatherum grassland*. The appearance of MG1e within the southern meadow reflects the surveyors own field observations of the grassland becoming more species rich with a higher proportion of lowland meadow indicator species as one travels southward across the site, including pignut *Chenopodium majus* which is an indicator of ancient grassland.

The lack of consensus from Mavis as to which version of MG1 is represented reflects the surveyors' own observations, which were that the community did not appear to slot neatly into any one community. MG1a was likely selected due to the presence of *Rumex obtusifolius/acetosa* and large umbellifers alongside *Lathyrus pratensis* but can likely be ruled out as these generally pertain to unmanaged yet relatively newly created stands. Similarly, MG1b tends to reflect an unmanaged yet nutrient rich sward with a high proportion of nettle and cleavers. Neither is MG1c a particularly good match, this pertaining to a wetter grassland assemblage which is not reflective of the assemblage.

Taking the two fields as a whole **MG1e *Arrhenatherum elatius grassland – Centaurea nigra subcommunity*** would appear to represent the best fit, accounting for the presence of *Trisetum flavescens* with *Centaurea nigra, Leucanthemum vulgare* and *Lathyrus pratensis*, the latter of which was a strong constant. Some species from this assemblage are missing.

In terms of MG9b, this generally refers to a type of grassland with a somewhat damp hydrological regime that generally presents itself as a mosaic habitat around the tussock forming tall grass *Deschampsia flexuosa.* This species was absent from the site and the classification may have been inferred from the high relative abundance of *Holcus lanatus* which is a typical conspecific in these grasslands, as well as *Alopecuris pratensis* which can be indicative of wet or periodically inundated grassland types. Whilst in the absence of grazing, development to the *Arrhenatherum* sub-community can cause *D. cespitosa* to lose its competitive advantage, it would not be expected to be entirely absent.

It is likely that the grassland contains a formerly more distinctive assemblage (most likely MG5 *Centaureo -Cynosuretum* grassland) that may have been similar to stands of lowland meadow present within the general area, which through absence of management has been degraded and has likely lost some of its previous species assemblage as a consequence of historical agricultural improvements or other management issues such as overgrazing by stock. The community is therefore one in a state of flux as it degrades towards an *Arrhenatherum* dominated sward.

UKHabs

The site cannot qualify as level 5 classification **g3a5 lowland meadow** as it is not an Annex 1 MG4 floodplain meadow. It may qualify as **g3a6 other lowland meadow,** which subsumes NVC categories MG5, MG8, MG1c-e, MG2 and MG7c. The presence on the site of MG1e would qualify the grassland as a Section 41 Habitat of Principal Importance.

In addition, under UKHabs to qualify under level 4 classification **g3a lowland meadow** the community must adhere to the following criteria;

Meet at least two of the following;

1. >15 sp/m^2 (including grasses and excluding bryophytes. **FAIL – no more than 12**
2. >30% cover of broadleaved herbs and sedges, excluding *Trifolium repens, Ranunculus repens* and injurious weeds. **PASS**
3. <10% cover of rye grasses and *Trifolium repens.* **PASS**

AND EITHER 4 OR MORE of listed indicators at least 'present' on the DAFOR scale (this refers to both UKHabs and Josh Styles species lists).
PASS – x5 species (*Centaurea nigra, Lathyrus pratensis, Leucanthemum vulgare, Conopodium majus, Trifolium pratense)*
OR THREE OR MORE of these indicators at least 'occasional' on the DAFOR scale (but not limited to field corners or edges).
PASS – x3 species (*Centaurea nigra, Lathyrus pratensis, Trifolium pratense*

The site passes the criteria for **g3a6 other lowland meadow** under UKhabs criteria.

Conclusion (Assessment of Conservation Importance)

The site contains no Annex 1 or irreplaceable habitats; however it does contain a Section.41 Habitat of Principal Importance under the NERC Act due to representing a degraded version of a formerly higher distinctiveness subtype.

The presence of MG1e may qualify the site as a Local Wildlife Site under Derbyshire's assessment criteria.

The site is therefore of both **County (**Habitats which meet published county designated site criteria**)** and **Regional (**All semi-natural national priority habitats which do not fulfil relevant criteria for a national designation and/or do not fall under defined irreplaceable habitat categories).

Important Species

No species were present with any protections beyond the more general ones afforded to all wild plants under the Wildlife and Countryside Act 1981. No species on site were nationally or locally scarce or otherwise important beyond their value at the assemblage level, and for the habitat value provided to local invertebrate populations.

The survey was conducted during a sunny day and abundant invertebrate life was observed in association with the species on site, including butterflies, hoverflies, bees, beetles and spiders.

The dry stone walls surrounding the site have been colonised by abundant lichen and bryophytes.

8.0 Impacts and Recommendations

Impact Assessment & Recommendations
Impact Assessment
The development will lead to; • Loss of a Section 41, habitat and reduction of a lowland meadow and old grassland resource in Derbyshire, where 80 – 95 % of botanically interesting semi-natural grassland has reportedly been lost since 1983 (Huston, 2001). • Possible loss of local populations of some grassland plant species. • Loss of attendant invertebrate relationships. • Loss of lichen and bryophyte populations should dry stone walls be damaged or removed. It should be noted that under current conditions, the process of abandonment, in particular the cessation of grazing by livestock appears to be facilitating a transition to a less distinctive *Arrhenatherum* sward. It is therefore unlikely that the site is hosting an at present visible CHEGD+ grassland fungi resource as Griffith et al. (2022)

noted that CHEGD fungi tend to be at their most diverse and abundant in association with grazing, however there may be a notable mycoflora that may appear with renewed management.

Without an appropriate management regime the site will continue to degrade and the development, if planned sensitively in a manner that retains sufficient grassland to host self-sustaining populations of currently extant species and promote re-appearance of those which have been lost, could bring biodiversity net gains to the site.

Recommendations

- Retain and protect walls intact. If this is not possible, lichen surveys will be required to assess the importance of populations.
- A Biodiversity Net Gain Assessment will be required to determine habitat unit losses arising from the development and any habitat creation options that may be possible on or off site, or financial offsetting that may be required to compensate the losses.
- As a S.41 habitat is involved, a bespoke agreement may be required between the client and LPA.
- A 30-year Habitat Management and Monitoring Plan (HMMP) will be required as part of any BNG agreement. This is s legal BNG agreement, usually requested via condition, however the LPA may request an outline version prior to consent being granted to ensure proposals are appropriate and achievable.
- In addition to this, an Ecological Management Plan or a Landscape Ecological Management Plan is likely to be requested via condition to ensure the site caters to specific wildlife concerns, e.g invertebrates, bats and birds.

Mitigation/Compensation

Appropriate mitigation or compensation will be required against any destructive or degradative proposals and enhancements will need to be ecologically appropriate. The following options could be incorporated into the projects design to minimise habitat damage/losses

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- Retention of as much existing grassland as possible within site layout to be managed as public greenspace. Buildings could be restricted to terraces along the site frontage to preserve area of greenspace. Areas encapsulated within private gardens will not be included in BNG scores.
- Work from existing biodiversity resources. Re-seeding should be considered only as a last resort to avoid polluting local gene pools and altering local assemblages and must use locally sourced seedstock, e.g green hay from local reserves.
- Long term management of retained habitats in biodiversity sympathetic management regime (e.g. annual cut with arisings removed, no fertilisers, no pesticides)

- A Construction Ecological Management Plan will be required to detail how retained turf will be protected during development, e.g. using protective boards/mesh and fencing of areas beyond defined work zones.
- Where destruction is unavoidable losses will be compensated on nearby land within the clients control or via financial offsetting.
- Residents will be provided with handbooks describing the biodiversity value of the landscaped grounds to discourage mismanagement in the aim of achieving "tidiness".
- Avoid planting extensive areas of additional tree cover within established areas of retained grassland. Two forms of tree planting are considered acceptable in this context.

  1) Individual native specimen trees, which will emulate a wood pasture and parkland environment (oak and beech are good options with plentiful fungal associations).
  2) Small native species such as birch trees, which cast only light shade and being early successional pioneer species have large numbers of fungal associations and are likely to enhance the fungi population on site.

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Appendix 1 - Vegetative Community Map

(See accompanying Baseline Habitat Condition Survey)

Appendix 2 - Proposed Development Maps



Appendix 3 - Landscape Map



Appendix 4 - Photographs



Photo 1: The northern field viewed from the northern boundary



Photo 2: The southern and northern field viewed from the southern boundary



Photo 3: Lichen colonised dry stone wall