Ecological Assessment of a Potential Woodland Creation Site at East Nethershields Farm, South Lanarkshire

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1 Introduction

Max and Sian Carstairs Ecological Consultants were commissioned by Tilhill Forestry Ltd to undertake ecological assessments in relation to a potential Woodland Creation proposal at East Nethershields Farm, South Lanarkshire. The aim of the assessments was to establish the current ecological value of the site as a guide to how this may be affected by the proposals. In addition, opportunities for ecological enhancement of the site via woodland creation were also assessed. Field surveys were conducted by Max and Sian Carstairs Ecological Consultants with a historical desk study undertaken by Tilhill Forestry Ltd.

2 Field Surveys

The following field surveys were undertaken by experienced bird and vegetation surveyor Max Carstairs (MCIEEM, CEnv, CBiol) between April and July 2022:

- A Phase 1 Habitat Survey (JNCC, 2010) with additional detail provided to National Vegetation Survey (NVC) level (Rodwell et. al., 1991 & 1992). The NVC is the most comprehensive description of British floral communities and identified 681 communities and sub-communities of vegetation across the British Isles. However, as the original classification involved identifying frequently occurring associations of species it therefore didn't capture the immense variation that occurs in nature.
- A breeding bird survey comprising two separate visits and following the methods of Brown & Shepherd (1993). The original methodology, developed for upland waders, was modified to include all bird species. In addition, two raptor watches were undertaken (Appendix 5).
- Searches on terrestrial ground for signs of protected species, e.g. pine marten & badger and riparian searches for otter and water vole. Signs observed for included droppings, feeding remains, hairs and footprints. The trees on the site were assessed for potential habitat suitability for bats and red squirrels.

2.1 <u>Limitations</u>

Cattle including bulls and cows with young calves were present in many of the fields and it was not possible to cover some of the ground. Several fields had been cut for haylage/silage at the time of the botanical survey though field margins remained present for assessment. Overall, the survey was comprehensive and the limitations are not considered to have affected the quality of the survey or the findings of this report.

2.2 Characterising Conservation Value

The conservation value of species and habitats was assessed using Table 1 as a guide.

Table 1. Indicative Criteria for Assessing Conservation Value

Level of Value	Examples				
International	Internationally designated sites (e.g. SAC, SPA, RAMSAR) or undesignated site				
	of equivalent quality. IUCN CR & E species*				
National	A nationally designated site (e.g. SSSI) or undesignated site of equivalent				
	quality. Wildlife & Countryside Act Schedule 8 Species. IUCN VU & NT species				
Regional	Wildlife reserves (e.g. SWT, RSPB & NTS) or sites of equivalent quality.				
	Species and habitat assemblages which significantly enrich regional				
	biodiversity. IUCN LC species.				
Local	Local Nature Conservation Sites or sites with equivalent value which enrich				
	the quality of local biodiversity.				
Negligible	A site containing only common species and habitats which are generally				
	present over a wide geographic area.				

^{*}The International Union for Conservation of Nature (IUCN) Red List of Threatened Species is a checklist of taxa that have undergone an extinction risk assessment. Categories include: Critically Endangered (CR). Endangered (E). Vulnerable (VU) Near Threatened (NT) Least Concern (LC)

UK Biodiversity Action Plan Species, Scottish Biodiversity List and Birds of Conservation Concern list categories are also taken into account during the assessment but are not included in Table 1 as many of these can be broad and could potentially fit into 2 or 3 Levels of Value.

The UK Biodiversity Action Plan (UK BAP) was published in 1994, and was the UK Government's response to the Convention on Biological Diversity (CBD) which the UK signed up to in 1992 in Rio de Janeiro. The CBD called for the development and enforcement of national strategies and associated action plans to identify, conserve, and protect existing biological diversity, and to enhance it wherever possible.

The Scottish Biodiversity List is a list of animals, plants, and habitats that Scottish Ministers consider to be of principal importance for biodiversity conservation in Scotland. Categories include: Conservation action needed (CAN), Avoid negative impacts (ANI), Watching brief only (WBO). The Dumfries and Galloway Local Biodiversity Action Plan which encompasses all of the above as well as additional information specific to the county was also consulted.

The conservation value of birds was primarily assessed using the *Birds of Conservation Concern in the United Kingdom, Channel Islands and the Isle of Man* alert system. These criteria were developed by various organisations including the Royal Society for the Protection of Birds and the British Trust for Ornithology. Birds are assigned to red, amber and green lists, with red signifying those in the greatest need of conservation action through to green for species which are not of particular conservation concern.

All relevant conservation designations were considered together with site factors including population size, distribution of species and size and distribution of habitats.

3 Field Survey Results

3.1 Phase 1 Habitats & NVC Communities

Maps of NVC communities on site are presented in Appendix 1, Figures 1 & 2. Percentages of NVC communities on site are presented in Appendix 2. A list of botanical species recorded on site is provided in Appendix 3.

3.1.1 Woodland & Scrub

A patch of trees and individual trees of mainly mature *Fagus sylvatica*, *Acer pseudoplatanus* and *Fraxinus excelsior* occurred in the survey area (Target Notes, Appendix 1, Figures 1 & 2).

Short *Crataegus monogyna* hedges bordered a small proportion of the fields though these were not broad enough to contain a specialist ground flora.

3.1.2 Improved grassland

MG6 Lolium perenne - Cynosurus cristatus grassland occurred extensively across the site and is associated with high levels of grazing and nutrient enrichment. Lolium perenne and Trifolium repens were usually the dominant species present, with frequent Cynosurus cristatus and Holcus lanatus. Cerastium fontanum also occurred regularly. Patches of Cirsium vulgare, Cirsium arvense, Stellaria media and Urtica dioica were rare as were individuals of Veronica serpyllifolia. In places Holcus lanatus and Ranunculus repens were dominant though Lolium perenne and Trifolium repens remained prominent.

Several fields immediately east of the A723 and A726 had been cut for haylage/silage at the time of survey though examination of the field margins suggested that **MG7 Lolium perenne Leys** dominated by *Lolium perenne* with few associates was present.

MG10 Holcus lanatus – Juncus effusus rush pasture occurred in occasional patches though in places covered extensive area of ground covering around 20% of the total area of the site. Juncus effusus was dominant with abundant to occasional Holcus lanatus. Other associates included Ranunculus repens, Deschampsia cespitosa, Epilobium palustre and Cerastium fontanum. A variant of this community, Holcus lanatus-Agrostis stolonifera-Ranunculus repens grassland, was present around stands of MG10 and is mapped as Hlan-A-R in Appendix 1, Figure 1. Holcus lanatus was dominant with abundant Ranunculus repens. Agrostis stolonifera and Cardamine pratensis occurred rarely.

This common variant was described by Averis and Averis (2020) though was not referred to in the original NVC system.

Small patches of *MG13 Agrostis stolonifera - Alopecurus geniculatus grassland* occurred on damp ground. These grasslands were characterised by abundant *Agrostis stolonifera*, and *Alopecurus geniculatus* with occasional associates such as *Ranunculus flammula*, *Cardamine pratensis*, *Cerastium glomeratum* and *C. fontanum*.

3.1.3 Calcareous grassland

CG10 Festuca ovina – Agrostis capillaris – Thymus polytrichus grassland occurred on slopes leading down to the Powmillon Burn at the southwestern edge of Lot 2 (Appendix 1, Figure 2). Pilosella officinarum, Lotus corniculatus, Galium verum, Agrostis capillaris and Festuca ovina occurred frequently, Hypochaeris radicata Alchemilla glabra, Trifolium pratense, Viola riviniana, Achillea millefolium, Prunella vulgaris, Campanula rotundifolia, Cynosurus cristatus, Anthoxanthum odoratum were occasional as were large patches of Thymus polytrichus.

3.1.4 Watercourses

The Powmillon Burn was approximately 1.5m wide and up to 40cm deep with a bed composed mainly of cobbles and pebbles with some boulders (Wentworth, 1922). This watercourse was suitable for spawning salmonids.

A dry watercourse occurred in the north of the site. The channel was 50cm wide with an exposed bed composed mainly of cobbles and pebbles.

A ditch approximately 80cm wide with a muddy substrate occurred in the northern-most field. Vegetation of the channel and banks included *Sparganium erectum*, *Glyceria maxima* and *Filipendula ulmaria*.

3.2 Breeding Birds

Two surveys were conducted between early April and late June (Appendix 5). The Brown and Shepherd (1993) methodology for surveying upland waders was used and extended to all species. All breeding species were mapped (Appendix 1, Figure 3) except meadow pipits and skylark for which total estimated numbers of breeding pairs are presented (Appendix 4).

Red listed species breeding on site included skylark (2 pairs) and at least one pair of house sparrows which frequented the farm buildings.

Three amber listed species recorded breeding were meadow pipit, assessed as having 12 territories and a pair each of mallard and wren. Common gulls were observed flying over the site though not recorded breeding.

3.3 Mammals



Brown hare were observed several times in various locations across the site. Fox scats were found in various locations.

Signs of otters were not observed during the survey, though the site is likely to be visited by otters.

Mature trees contained a variety of potential roosting features for bats.

3.4 Other Fauna

No other fauna was recorded on the site which was not particularly favourable for reptiles and amphibians though small populations of these animals may be present.

4 Existing Conservation Value & Enhancement Opportunities

4.1 Habitats

The study area was mainly comprised of habitats of only local importance for wildlife and would be suitable for woodland development (Table 2 & Appendix 1, Figures 4 & 5).

Table 2. Conservation Designations and GWDTE Status of NVC Communities on Site.

Habitat	Annex 1 Habitat	BAP Habitat Status	Likely GWDTE* Status	Quality of Feature on Site	Overall Conservation Importance
CG10	✓	Priority	Highly Dependent	Regional	National
MG6	×	Broad	×	Local	Local
MG7	×	Broad	×	Local	Local
MG10	×	Broad	Moderately Dependent	Local	Local
MG13	×	Broad	×	Local	Local
Veteran trees	×	Broad	×	Local	Local
Watercourses	×	Broad	×	Local	Local

^{*}Groundwater Dependent Terrestrial Ecosystems (GWDTEs) are specifically protected under the EU Water Framework Directive.

The CG10 calcareous grassland next to the Powmillon Burn is of high conservation value and a highly dependent Groundwater Dependent Terrestrial Ecosystem.

Calcareous grassland is listed on Annex 1 of the Habitats Directive 1994. This obliged EU Member States to designate Special Areas of Conservation (SAC) to safeguard the conservation status of the best examples of this habitat. Habitats listed on Annex 1 are not protected under the Directive outside of SACs though can still contribute significantly to biodiversity and traditional landscape character. Furthermore, they may be taken into consideration during the planning process and CG10 is also a UK Priority Biodiversity Action Plan (BAP) habitat.

The setting of the calcareous grasslands at East Nethershields, i.e. in an enclosed field in an agricultural landscape means that they can be classified as Lowland Calcareous Grassland. This habitat has declined in Scotland with only an estimated 46 hectares remaining in 2004 (NatureScot, webpage). Lowland calcareous grasslands provide small patches of high species

diversity in an otherwise species-poor improved landscape and often contain rare plants and relatively diverse insect assemblages. Calcareous CG10 grasslands in Scotland are characterised by short turf often over skeletal sloping soils and are created by and maintained by grazing. In the absence of grazing at East Nethershields, taller vegetation may prosper, shading and eventually out-competing the current botanical assemblage. It is recommended that the grazing regime in this area of field is maintained for the benefit of calcareous grassland and its associated fauna.

The CG10 grassland at East Nethershields occupies a decent sized area of land and is a good example of those occurring within south-west Scotland (*Pers obs*). The grasslands are therefore, at least of regional value, and their listing as UK BAP Priority Habitats arguably elevates their importance to the national level. They will also contribute (a very small percentage) to the pool of calcareous grasslands occurring within the wider biogeographic area of northern Europe, though do not occur with a designated SAC.

4.2 Birds

The breeding bird assemblage is considered to be of local importance in terms of conservation value with two Red List and three Amber List species breeding on site (Appendix 4). No breeding waders were recorded and the numbers of meadow pipit and skylark were relatively low for the size of the site and habitats present.

The loss of grasslands would result in a loss of foraging habitat for these species though would provide opportunities for woodland raptors such as sparrowhawk and goshawk.

Overall, planting large areas of the site will result in a change in the bird assemblage from species of open habitats to woodland community. Species which could benefit from planting include sparrowhawk and goshawk, if appropriate woodland and open ground habitats are available.

4.3 Mammals

Brown hare and fox would potentially incur a loss of overall feeding/hunting habitat though also use woodland edges, clearings, and rides.

Badgers will lose grassland foraging habitat. However, badger is a common species and together with its setts was originally given protection to prevent acts contrary to their welfare rather than for conservation purposes.

Riparian habitats will be protected by mandatory buffer zones and no impacts relating to habitat loss for otters or water voles are anticipated.

Red squirrels can significantly benefit from woodland creation if appropriate planting is undertaken and prosper best when a range of suitable trees of different ages is present in order to provide continuity of seeds (Scottish Wildlife Trust, 2015).

4.4 Other Fauna

No significant adverse impacts are anticipated for populations of reptiles, amphibians and invertebrates and advice is given in Section 6 regarding working with these species during tree planting.

5 Conclusions and Recommendations

The habitats on site are of local conservation value with the exception of calcareous CG10 grasslands located along slopes of the Powmillon Burn. This habitat is of high conservation value, being a Habitats Directive Annex 1 and Priority BAP Habitat as well as a highly dependent GWDTE. This habitat is dependent on grazing and a continued grazing regime should be maintained.

The breeding bird assemblage on site is currently of only local conservation value. The woodland creation scheme will benefit bird communities of scrub and woodland, creating habitats for species such as sparrowhawk and goshawk.

Native mammals are unlikely to be significantly adversely affected by the proposals and may indeed benefit from increased structural diversity provided by woodland stands and rides.

Planting plans should take into account the habitat sensitivities mapped in Appendix 1, Figure 5 in order to minimise adverse impacts.

Recommendations in Section 6 below should be used as a basis for planning and conducting tree planting in a manner which is sympathetic to wildlife.

6 Preliminary Guidance for Site Operations

6.1 <u>Legal Protections</u>

Many locally occurring species have legal protection ranging from protection against killing and injury for common reptiles and amphibians to more comprehensive protection which extends to cover places used for shelter and protection by species such as bats, water voles and otter. Water voles are specifically protected in terms of damage, destruction or blocking access to their places of shelter or protection (on purpose or by not taking enough care). In addition, it is an offence to disturb them in a place of shelter or protection (on purpose or by not taking enough care). Badgers and their setts are also protected by law.

Common breeding birds, their nests, eggs and fledglings are similarly protected, and rare breeding birds are also protected against disturbance at the nest.

6.2 Pre-Works Checks

Prior to groundworks commencing, a protocol or Method Statement for working with reptiles and amphibians should be in place. This would also be required in relation to the removal of any stone walls e.g. where wider vehicle access may be required.

Many areas of grassland are suitable for badger setts. Therefore, checks for badgers should occur immediately prior to ground works in order to review the status and distribution of setts. Existing setts must have a works exclusion zone around them in accordance with current NatureScot guidance.

Similarly, any ground works, tree felling or scrub clearance prior to planting should also be immediately preceded by detailed checks for breeding birds, depending on the season.

Riparian habitats will be protected by mandatory buffer zones although protected species checks for otter and water vole should occur immediately prior to the commencement of any ground preparation works.

Arrangements should be made to exclude calcareous grasslands from the planting design and to continue grazing of this land where possible.

Large trees with potential roost features for bats must remain undamaged in case they contain roosts. If these require felling, presence/absence surveys for bats should be undertaken.

7 References

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Appendix 1. Figures

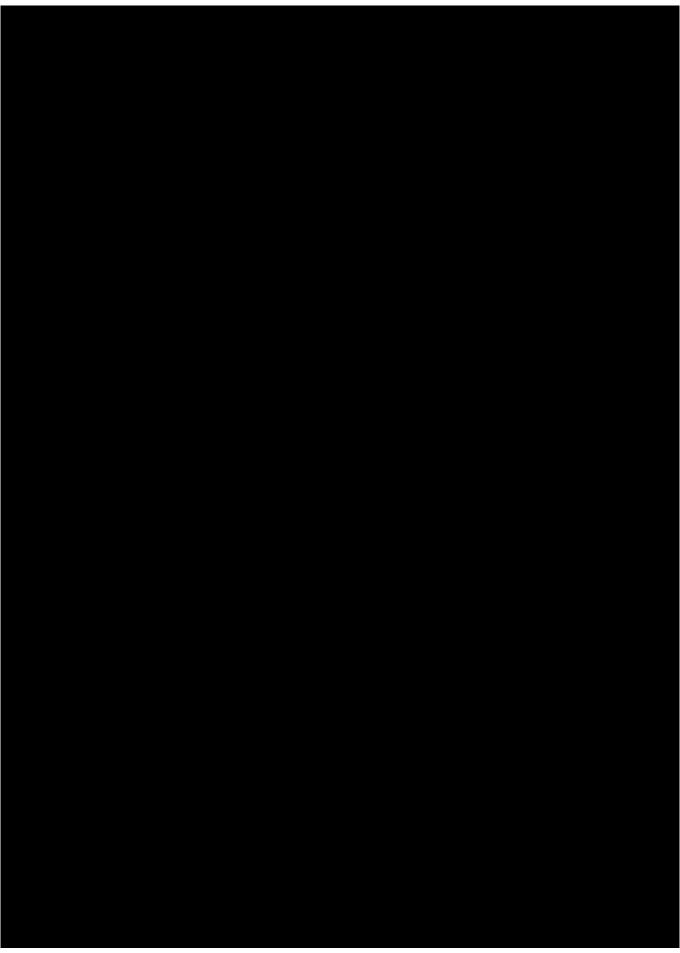


Figure 2: Lot 2 NVC Map

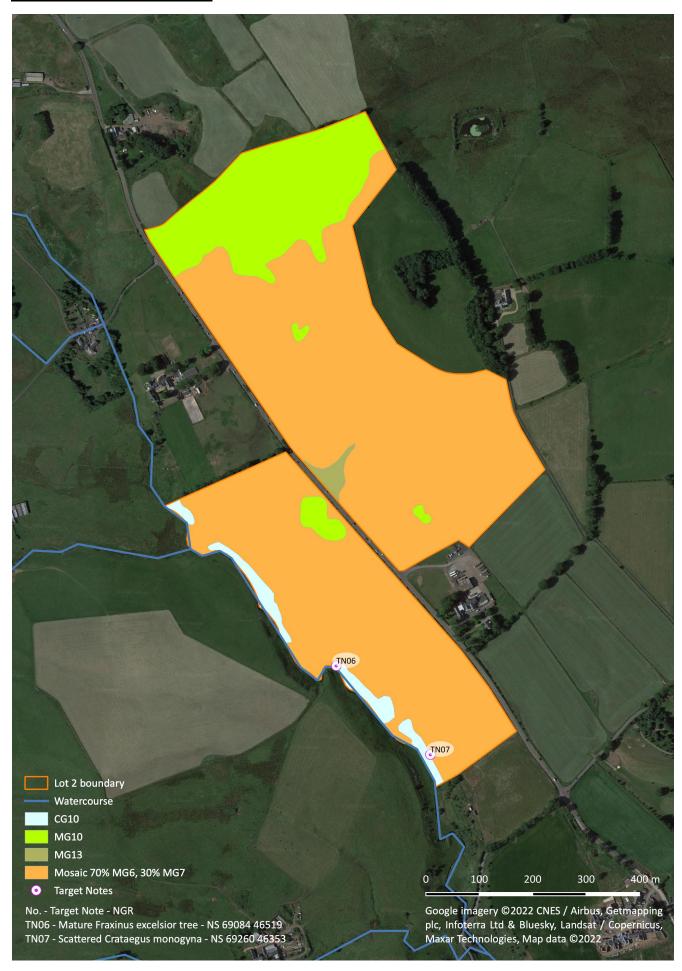


Figure 3: Breeding Bird Distribution Map

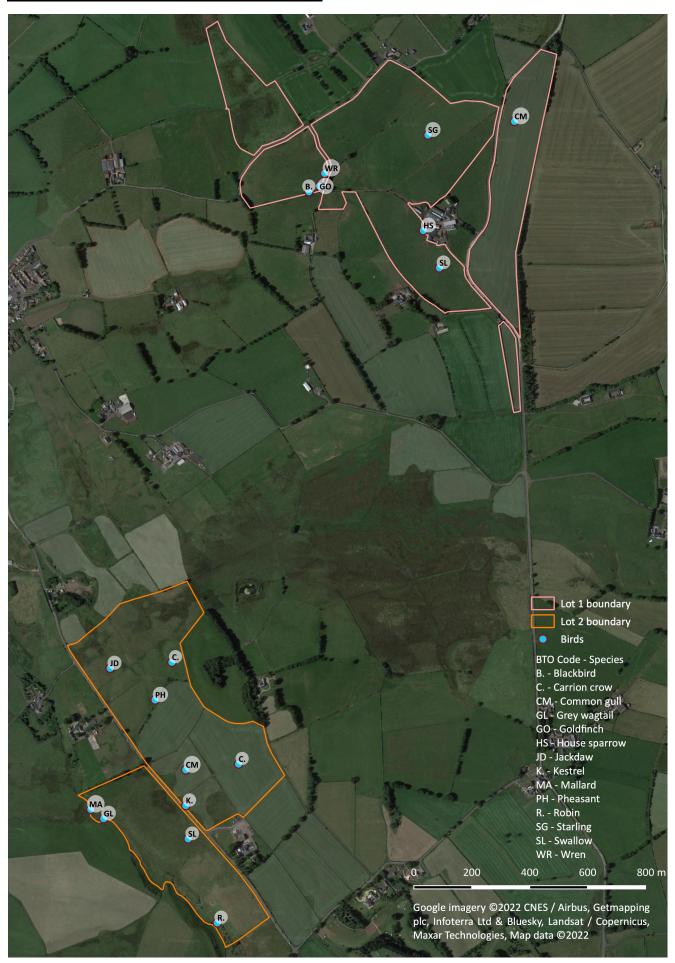


Figure 4: Lot 1 Habitat Sensitivities Map



Figure 5: Lot 2 Habitat Sensitivities Map



Appendix 2. Habitat Areas on Site

Habitat	Туре	Total Area (ha)	% Survey Area	
CG10	Calcareous grassland	1.1	1.2	
Hlan-A-R	Neutral grassland	3.2	3.3	
MG10	Improved grassland	10.9	11.3	
MG13	Improved grassland	0.7	0.7	
MG6	Improved grassland	56.7	58.4	
MG7	Improved grassland	24.3	25.0	
Total		97.0	100	

Appendix 3. Plants and Fungi Species List

Latin Name	Common Name
Achillea millefolium	Yarrow
Acer pseudoplatanus	Sycamore
Agrostis capillaris	Common bent grass
Agrostis stolonifera	Creeping bent
Alchemilla glabra	Smooth lady's mantle
Alopecurus geniculatus	Marsh foxtail
Anthoxanthum odoratum	Sweet vernal grass
Aphanes arvensis	Parsley piert
Argentina anserina	Silverweed
Bellis perennis	Daisy
Campanula rotundifolia	Harebell
Cardamine pratensis	Cuckoo flower
Carex nigra	Common sedge
Cerastium fontanum	Mouse-ear chickweed
Cerastium glomeratum	Sticky mouse-ear
Cirsium arvense	Creeping thistle
Cirsium palustre	Marsh thistle
Cirsium vulgare	Spear thistle
Crataegus monogyna	Hawthorn
Cynosurus cristatus	Crested dogs-tail
Deschampsia cespitosa	Tufted hair grass
Epilobium palustre	Marsh willowherb
Equisetum palustre	Marsh horsetail
Fagus sylvatica	Beech
Festuca ovina	Sheep's fescue
Filipendula ulmaria	Meadowsweet
Fraxinus excelsior	Ash
Galium saxatile	Heath bedstraw
Galium verum	Lady's bedstraw
Carpinus betulus	Hornbeam
Glyceria fluitans	Floating sweet-grass
Glyceria maxima	Reed sweet grass
Holcus lanatus	Yorkshire fog
Hypochaeris radicata	Cat's-ear
Juncus effusus	Soft rush
Lolium perenne	Perennial rye-grass
Lotus corniculatus	Bird's foot trefoil
Matricaria discoidea	Pineappleweed
Phleum pratense	Timothy grass
Pilosella officinarum	Mouse-ear hawkweed
Poa pratensis	
Poa pratensis Poa trivialis	Smooth meadow-grass
Pod trivialis Potentilla erecta	Rough meadow-grass Tormentil
Prunella vulgaris	Selfheal Blackthorn
Prunus spinosa	
Ranunculus flammula	Lesser spearwort
Ranunculus repens	Creeping buttercup
Rorippa nasturtium-aquaticum	Water-cress
Rumex acetosa	Common sorrel
Rumex obtusifolius	Broad-leaved doc
Sagina procumbens	Procumbent pearlwort
Sparganium erectum	Branched bur-reed
Stellaria media	Chickweed
Taraxacum sp.	Dandelion
Thymus polytrichus	Wild thyme

Latin Name	Common Name			
Trifolium pratense	Red clover			
Trifolium repens	White Clover			
Urtica dioica	Common nettle			
Veronica serpyllifolia	Thyme-leaved speedwell			
Viola riviniana	Common dog-violet			

Appendix 4. Bird Status on Site

Species	BTO code	Conservation status	Notes
House sparrow	HS	Red	1 pair around farm outbuildings
Skylark	S.	Red	2 breeding territories
Starling	SG	Red	Foraging flocks of up to 12
Mallard	MA	Amber	1 breeding territory
Meadow pipit	MP	Amber	12 breeding territories
Wren	WR	Amber	1 breeding territory
Kestrel	K	Amber	Hunting over road verge
Common gull	CM	Amber	Flyovers
Grey wagtail	GL	Amber	1 breeding territory
Blackbird	В	Green	1 breeding territory
Carrion crow	C.	Green	Foraging
Jackdaw	JD	Green	Foraging
Pheasant	PH	Green	Foraging
Swallow	SL	Green	Flyovers
Robin	R	Green	1 breeding territory
Grey wagtail	GL	Green	1 breeding territory
Goldfinch	GO	Green	1 breeding territory

Appendix 5. Bird Survey Weather Conditions

	Time		Weather							
Date	Brown -	Raptor	Rain	Frost or	Wind	Wind	Cloud	Cloud	Visibility	Temp (°C)
	Shepherd	watch		Snow	BF	direction	Height	cover		
27.04.22	14:15-	17:00-	×	×	3	NE-SW	300	70	> 5km	13
	17:00	18:00								
07.06.22	14:00-	17:00-	×	×	4	NE-SW	500	80	> 5km	18
	17:00	18:00								