1. **INTRODUCTION**

Lowland calcareous grasslands are developed on shallow lime-rich soils generally overlying limestone rocks, including chalk. These grasslands are now largely found on distinct topographic features such as escarpments or dry valley slopes and sometimes on ancient earthworks in landscapes strongly influenced by the underlying limestone geology. More rarely, large remnant examples occur on flatter topography such as in Breckland and on Salisbury Plain. They are typically managed as components of pastoral or mixed farming systems, supporting sheep, cattle or sometimes horses; a few examples are cut for hay. Calcareous grassland in Warwickshire is mainly found in the south and east of the county in association with disused and active quarries or cuttings associated with disused and active railway lines and canals.

Unimproved and semi-improved limestone grasslands include a range of plant communities in which lime-tolerant (calcicolous) plants are characteristic. Typical species include common centuary (*Centaurium erythraea*), yellow-wort (*Blackstonia perfoliata*), kidney vetch (*Anthyllis vulnerari*) and dwarf thistle (*Cirsium acaule*). The particular community which is characteristic of the Cotswolds is the **Upright Brome - Tor Grass community** (CG5). There are also small pockets of CG5 and **Sheep’s-Fescue - Meadow Oat Grass community** (CG2) grassland on the older Triassic-Jurassic limestones which occur on the lower land immediately north of the Cotswolds. These community types, and establishing calcareous grasslands, are found in many of the quarries and cuttings associated with these areas. More ancient examples are now very rare but include Oxhouse Farm, Lighthorne Heath, Grove Hill, Frankton fields and Wilmcote Rough.

Nationally, unimproved and semi-improved limestone grasslands support a very rich flora and many nationally rare and scarce species such as early gentian (*Gentianella anglica*) and pasque flower (*Pulsatilla vulgaris*) although no such nationally scarce species occur in Warwickshire’s calcareous grassland.

Calcareous grassland is also extremely important for invertebrates, with perhaps in excess of 500 hundred strongly calcicolous Warwickshire species, including many Nationally Threatened, Nationally Scarce or Regionally Scarce flies, bees, wasps, moths, beetles and bugs. The Cotswolds hold nationally important populations of species such as heath snail, which occurs on a number of sites in the south of the county. The marbled white butterfly (*Melanargia galathea*) is a useful indicator species for assessing the quality of calcareous grassland and several declining butterflies are dependent on limestone grasslands, e.g. small blue (*Cupido minimus*) and grizzled skipper (*Pyrgus malvae*).

Scrub and secondary woodland is frequently associated with unimproved limestone grassland. Although scrub encroachment can be a significant problem, where managed...
appropriately, scrub can provide important habitats for a variety of species – and some insect species show a strong preference for calcareous scrub as opposed to scrub in general. Scrub-edge conditions are required by species such as the lesser whitethroat (*Sylvia curruca*), fly orchid (*Ophrys apifera*) and many species of moths (e.g. chalk carpet (*Scotopteryx bipunctaria*). Scrub also provides shelter for many warmth-loving invertebrates associated with limestone grassland. Any rough grassland associated with this habitat would be valuable for barn owls (*Tyto alba*).

### 2. OBJECTIVES* |

<table>
<thead>
<tr>
<th>TARGETS*</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. To achieve condition of 53ha of existing lowland calcareous grassland above 0.25ha that are currently in unfavourable condition, to favourable or recovering giving priority to those holding UK Biodiversity Action Plan Priority Species &amp; Red Data Book species. 2026</td>
</tr>
<tr>
<td>B. To restore 27ha of degraded lowland calcareous grassland. 2026</td>
</tr>
<tr>
<td>C. To expand the extent of the habitat by 16ha. 2026</td>
</tr>
</tbody>
</table>

*Derived from Regional Spatial Strategy Phase 3 Technical Report (2009) and based on a minimum mapping unit of 0.25ha. Numerical targets have been incorporated into section 6. See Generic Habitats Plan for rationale for derivation of targets and definitions of favourable and unfavourable condition (‘Habitats overview’ in ‘State of the Natural Environment’ (NE,2008, p49).

### 3. NATIONAL BAP OBJECTIVES AND TARGETS

Lowland Calcareous Grassland is on the current UK Biodiversity Action Plan (BAP) list of Priority Habitats published in 2007 ([Joint Nature Conservation Committee](https://www.jncc.gov.uk/)). The targets and objectives for the Lowland Calcareous Grassland BAP, updated in 2010-11, may be seen online.

### 4. CURRENT STATUS

Calcareous grassland in the sub-region is largely confined to the south and east of Warwickshire within the Cotswolds and Feldon areas (and with limited areas in the south of the Arden). The majority has a relatively recent origin, falling within old or partially worked quarries, where disturbance has ceased some time ago. Further more important examples occur in cuttings. A little exists within agricultural settings (often on steeper ground that has been left out of improvement schemes) and along some road verges and railway or canal cuttings. Scrub invasion is a common problem at many sites, with rabbits often playing a crucial role in maintaining open grassland.
Nationally, the cover of calcareous grassland has suffered a sharp decline over the last 50 years. Such grasslands are highly susceptible to changes in, or cessation of, management. It is estimated that before 1935, unimproved limestone grassland covered over 40% of the Cotswolds, this has sharply declined to around 1.5% today. This loss has been driven predominantly by changes in agricultural policy, leading to conversion of grasslands to arable crops, artificial improvement and reseeding (improved leys).

Baseline data from the 1998-2001 Habitat Biodiversity Audit recorded the total area of calcareous grassland in Warwickshire, Coventry and Solihull to be 62.9ha, with 27.6ha unimproved and 35.3ha improved. However, figures from the HBA in 2012 were 118.75ha, with 35ha unimproved and 83.75ha semi-improved. This apparent doubling of the area may reflect an increase in the area of the habitat and/ or an increase in the level of recording. Provided targets for restoration and expansion are met, this area will increase to 131.75ha by 2015 and to 161.75ha by 2026.

Five Warwickshire Sites of Special Scientific Interest (SSSIs) have unimproved calcareous grassland but this is mostly only a small proportion of each site, the remainder being scrub and woodland. In 2014 the total resource within the SSSIs was c.24ha, less than 22% of the total SSSI area. The largest areas are Oxhouse Farm, Harbury Railway Cutting & Quarry and Ufton Fields, with the two other areas - Copmill Hill and Stockton Railway Cutting - each less than 1ha. Other important examples of calcareous grassland (both unimproved and improved) designated as Local Wildlife Sites (LWS) are Lighthorne Heath (Quarry), Grove Hill, the Bishops Hill - Bishops Bowl complex and Southam (Long Itchington) Quarry. The designation of Gaydon test site has been deferred (2012).

**Natural England estimates of calcareous grassland on SSSIs in Warwickshire, Coventry & Solihull in 2014**

<table>
<thead>
<tr>
<th>SSSI</th>
<th>Unimproved calcareous grassland area (ha)</th>
<th>Total site area (ha)</th>
<th>Associated habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copmill Hill</td>
<td>0.42</td>
<td>11.51</td>
<td>Scrub (2.18 ha of grassland on site has developed from ploughed land and is not yet classed as calcareous grassland)</td>
</tr>
<tr>
<td>Harbury Railway Cutting</td>
<td>6.85</td>
<td>26.75</td>
<td>Scrub and woodland</td>
</tr>
<tr>
<td>Oxhouse Farm</td>
<td>8.34</td>
<td>17.4</td>
<td>Scrub</td>
</tr>
<tr>
<td>Stockton Railway Cutting &amp;</td>
<td>0.96</td>
<td>24.1</td>
<td>Scrub and bare ground</td>
</tr>
<tr>
<td>Quarry</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ufton Fields</td>
<td>7.7</td>
<td>32.5</td>
<td>Scrub and woodland</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>24.27</strong></td>
<td><strong>112.26</strong></td>
<td></td>
</tr>
</tbody>
</table>

New lowland calcareous grassland creation schemes may be possible based on present or proposed new nature reserves, or as part of quarry restoration schemes.

Entomological surveys have shown that the two most important sites for calcicolous insects are the Bishops Hill – Bishops Bowl complex and Southam Quarry, not currently SSSIs but appearing to support considerable national significance (the latter is the richest bumblebee site in the Midlands today).
4.1 Legal and Policy Status

A wide range of species and habitats are protected under international and domestic laws, including the Wild Birds Directive (1979), the Wildlife and Countryside Act (1981), the Conservation Regulations (1994) and EC Habitats Directive (1992). Protection of sites is afforded nationally through SSSI, Special Areas of Conservation (SAC) and Local Nature Reserve (LNR) statutory status. Other sites are offered recognition of their value through Local Wildlife Site status (LWS), Local Character Areas and identified Landscape Scale Areas. The National Planning Policy Framework (2012) chapter/section 11 states conditions with regard to any development negatively affecting biodiversity, including protected sites, ancient woodland and other irreplaceable habitats (paragraph 118). The Wildlife & Countryside Act and schedule 2 of the Conservation of Habitats & Species Regulations (2010) make it an offence to intentionally kill, injure, take, possess, sell, buy or transport a range of species.

About 80% of the known area of unimproved calcareous grassland in Warwickshire, Coventry & Solihull is on SSSI land, the largest area being at Oxhouse Farm. Work within the LBAP area continues to classify other lowland calcareous grasslands as Local Wildlife Sites (LWSs) which will afford them policy protection within the planning system.

4.2 Current Factors Affecting the Habitat

In the past lowland calcareous grassland was lost across England primarily to agriculture, and to a lesser extent development. The main factors affecting the habitat in our area at present are:

- **Encroachment of scrub** and the ‘simplification’ of vegetation structure due to a lack of conservation management such as light grazing, controlled burning and cutting – large expanses of uniform species-rich calcareous grassland has intrinsic value- many insects need large expanses for viable populations.

- **Fragmentation and isolation** as the sites in Warwickshire are scattered across the south and east of the county, often some distance from one-another and often only of a small size. Many calcicolous insects require clusters of larger sites for viable populations and are now restricted to the Southam and Harbury areas, where this still occurs.

- **Changes in farming** and the reduced availability of suitable livestock leading to a lack of grazing and coarser vegetation (though rabbits can alleviate this).

- **Lack of active management or inappropriate management** particularly of the road, rail and canal cuttings, has allowed scrub to take over and in places, develop into woodland. Tree planting schemes have also damaged existing sites, as have some quarrying activities.

- **Quarry infill** of some old limestone workings is occurring at some sites e.g. Cross Hands and being considered at some others. This may threaten the evolving grassland of the spoil heaps. However, there are opportunities for sympathetic restoration to increase the area of calcareous grassland in some cases (especially at Southam where the quarries are largely un-vegetated at present.

- **New quarrying**, e.g. expansion of Southam Quarry and the creation of the new quarry at Lodge Farm, Rugby, which provides opportunities for large gains of habitat.
5. LOCAL ACTION

- An accurate digitised database of calcareous grassland in the sub-region has been established by the Habitat Biodiversity Audit (HBA) and is annually updated.
- Lowland calcareous grasslands have been identified as a priority habitat for sustainable management in the Midland Clay Pastures Natural Area.
- A number of sites are under positive nature conservation management e.g. Stockton, Ufton Fields, Harbury and Grove Hill.
- The principal action is currently the scrub control programmes supported by Natural England on the various SSSIs.
- The Natural England Grazing Animals Project (GAP) is a partnership of farmers, land-managers and organisations that are committed to promoting the benefits of grazing with the natural environment and our cultural heritage in mind. It is part of the Rare Breed Survival Trust, based at Kenilworth.
- There are Environmental Stewardship Scheme agreements administered by Natural England for the management of calcareous grassland and within the area covered by the action plan there are up to 10 agreements with such management. There are agri-environment schemes in place for the management and restoration of calcareous grassland at Grove Hill, Ardens Grafton, Bearley (North of Stratford), Ilmington (NW of Shipston-on-Stour).
- In the past some road verges have been identified to the County Council highways division for special treatment. In the south, there are mechanisms in place (2013) to manage certain roadside verges sensitively, e.g. Ettington, Southam, some with local volunteer groups.
- Detailed invertebrate survey work on many calcareous has taken place over recent years, particularly for groups such as flies, beetles, wasps & bees and butterflies. This has highlighted some potential SSSIs and will assist with LWS designation.

6. PROPOSED LOCAL ACTIONS

<table>
<thead>
<tr>
<th>ACTION</th>
<th>Lead</th>
<th>Partners</th>
<th>By</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLEASE CONSULT THE ‘GENERIC HABITATS’ ACTION PLAN IN CONJUNCTION WITH THIS DOCUMENT FOR ACTIONS COMMON TO ALL HABITAT PLANS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Policy, Legislation &amp; Protection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PL1. Ensure that any site meeting the relevant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NE</td>
<td>LWSP</td>
<td>WWT</td>
<td>SMBC</td>
</tr>
</tbody>
</table>
PLEASE CONSULT THE ‘GENERIC HABITATS’ ACTION PLAN IN CONJUNCTION WITH THIS DOCUMENT FOR ACTIONS COMMON TO ALL HABITAT PLANS

criteria is considered for designation as an SSSI.

<table>
<thead>
<tr>
<th>ACTION</th>
<th>Lead</th>
<th>Partners</th>
<th>By</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PL2.</strong> Continue to select all qualifying lowland calcareous grassland sites as LWSs and enter onto database.</td>
<td>LWSP</td>
<td>NE HBA SDC RBC</td>
<td>ongoing</td>
</tr>
<tr>
<td><strong>PL3.</strong> Ensure that the protection of all calcareous grassland is included in Local Development Frameworks, Neighbourhood Plans and any other relevant strategies, including targets for maintenance, achieving condition and expansion for each relevant Local Authority.</td>
<td>WCC</td>
<td>NE SDC WWTT RBC</td>
<td>ongoing</td>
</tr>
<tr>
<td><strong>PL4.</strong> Ensure that new minor or major developments result in net biodiversity gain through adherence to the mitigation hierarchy.</td>
<td>WCC</td>
<td>NE WWTT LPAs NWBC NBBC</td>
<td>ongoing</td>
</tr>
</tbody>
</table>

**Site / Species Safeguard & Management**

| SM1. Maintain favourable ecological condition of all 118.75ha (HBA, 2012) of existing calcareous grassland by ensuring the appropriate management of all sites. | tbc | NE WWT SDC RBC CFE WBRC HAg LOs | ongoing |
| SM2. Continue to achieve favourable condition of 17ha of existing calcareous grassland by 2015 and a further 36ha by 2026 by appropriate management, including 6 new sites. | tbc | NE WWTT BC LOs | 2015-2026 |
| SM3. Continue restoration of degraded calcareous grassland at the five SSSIs and other sites, restoring at least 8ha by 2015 and a further 19ha by 2026. | tbc | NE LOs | 2015-2026 |
| SM4. Expand the area of calcareous grassland on calcareous ground/ quarry restoration by 5ha by 2015 and a further 11ha by 2026. | tbc | WWT SDC WCC RBC QOs LOs | 2015-2026 |
| SM5. Work at a landscape scale, focusing effort on identified important clusters of calcareous grassland to maximise benefit, 'rewilding' the wider countryside and restoring the range of the habitat to build resilience to climate change. Target areas are: Feldon Pastures, Feldon Parkland, High Cross Plateau, Cotswolds | BC | NE WCC WWT SDC RBC CFE AONB LOs | 2026 |
## Advisory

<table>
<thead>
<tr>
<th>ACTION</th>
<th>Lead</th>
<th>Partners</th>
<th>By</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1. Inform landowners of their lowland calcareous grassland resource and provide management advice, sources of machinery etc.</td>
<td>NE</td>
<td>WWT, AONB</td>
<td>ongoing</td>
</tr>
<tr>
<td>A2. Signpost Best Practice Guidelines to appropriate landowners via agri-environment schemes.</td>
<td>NE</td>
<td>WWT, CFE</td>
<td>ongoing</td>
</tr>
</tbody>
</table>

## Research & Monitoring

| RM1. Map digitally the remnant areas of unimproved and semi-improved calcareous grassland. | LWSP | HBA, WWT, WCC, SDC, RBC, LOs | ongoing |
| RM2. Identify sites for potential calcareous grassland expansion and restoration. | HBA | NE, BC, WWT, WCC, LEs | 2015 |
| RM3. Identify plant indicator species to establish criteria for assessing the quality of calcareous grassland habitat. | HBA | NE, WCC, BC, LWSP | Done |
| RM4. Use indicator species criteria for monitoring calcareous grassland condition and expansion every 5 years, particularly on LWSs. | HBA | NE, WWT, BC, LWSP | 5 yearly |

## Communication, Education & Publicity

| CP1. Inform and advise on the management of lowland calcareous grassland to land owners in order to illustrate best practice, at relevant events. | NE | WWT, CFE, LOs | ongoing |

**Abbreviations:**
- AONB – Cotswold AONB
- BC – Butterfly Conservation
- CCC – Coventry City Council
- CFE – Campaign for the Farmed Environment
- CSG – Core Steering Group
- HAg – Highways Agency
- HBA – Habitat Biodiversity Audit partnership
- LAg – Local Authority
- LAg – Local Entomologists
- LNPIG – Local Nature Partnership Implementation Group
- LAs – Local Planning Authorities
- LWSP – Local Wildlife Sites Project
- NE – Natural England
- OOs – Quarry owners
- QBC – Rugby Borough Council
- SDC – Stratford District Council
- SMBC – Solihull Metropolitan Borough Council
- WBRC – Warwickshire Biological Record Centre
- WCC – Warwickshire County Council
- WWT – Warwickshire Wildlife Trust

### 7. PROGRESS WITH ACTIONS

From 2015–2020 there will be a rolling programme of reporting on progress, of 10 action plans per year with an annual summary of results. Results will be entered onto the national Biodiversity Action Reporting System [BARS](https://www.warwickshirewildlifetrust.org.uk/LBAP). Progress with this plan up to 2008 can be seen at [www.warwickshirewildlifetrust.org.uk/LBAP](http://www.warwickshirewildlifetrust.org.uk/LBAP).
8. BIBLIOGRAPHY


Natural England (2010). Lowland Calcareous Grassland BAP Priority Habitat Inventory for England - habitat surveillance pilots and inventory updates are part of the ongoing monitoring projects carried out by Natural England.


9. FURTHER INFORMATION

UK Biodiversity Action Plan ‘Lowland Meadows’.

Habitat Biodiversity Audit (HBA) for Warwickshire, Coventry & Solihull – mapping data set and associated information. Phase 1 (JNCC) 1996-2002 and Phase 2 (Local Wildlife Sites) ongoing.

Statutory conservation agencies, Warwickshire Museum, Warwickshire Wildlife Trust and the Royal Society for the Protection of Birds provide advice on appropriate management, restoration and expansion of lowland calcareous grasslands.

Biodiversity Planning Toolkit - a new online resource to help incorporate biodiversity and geodiversity into the planning system and new development.

Buglife - the Invertebrate Conservation Trust. (2014) Promoting habitat mosaics for invertebrates in chalk downland provides information on the habitat-management requirements of key invertebrates.

The Grasslands Trust was established in 2002 to address the crisis facing our wildflower-rich grasslands.

Plantlife - a charity which carries out plant species and habitat conservation, owns and manages nature reserves, campaigns, and raises awareness through education.

Flora Locale - promotes the restoration of wild plants and habitats for the benefit of biodiversity, landscapes and people in town and countryside.

Nature After Minerals provides advice on creating and managing different grassland habitats.

10. CONTACT

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